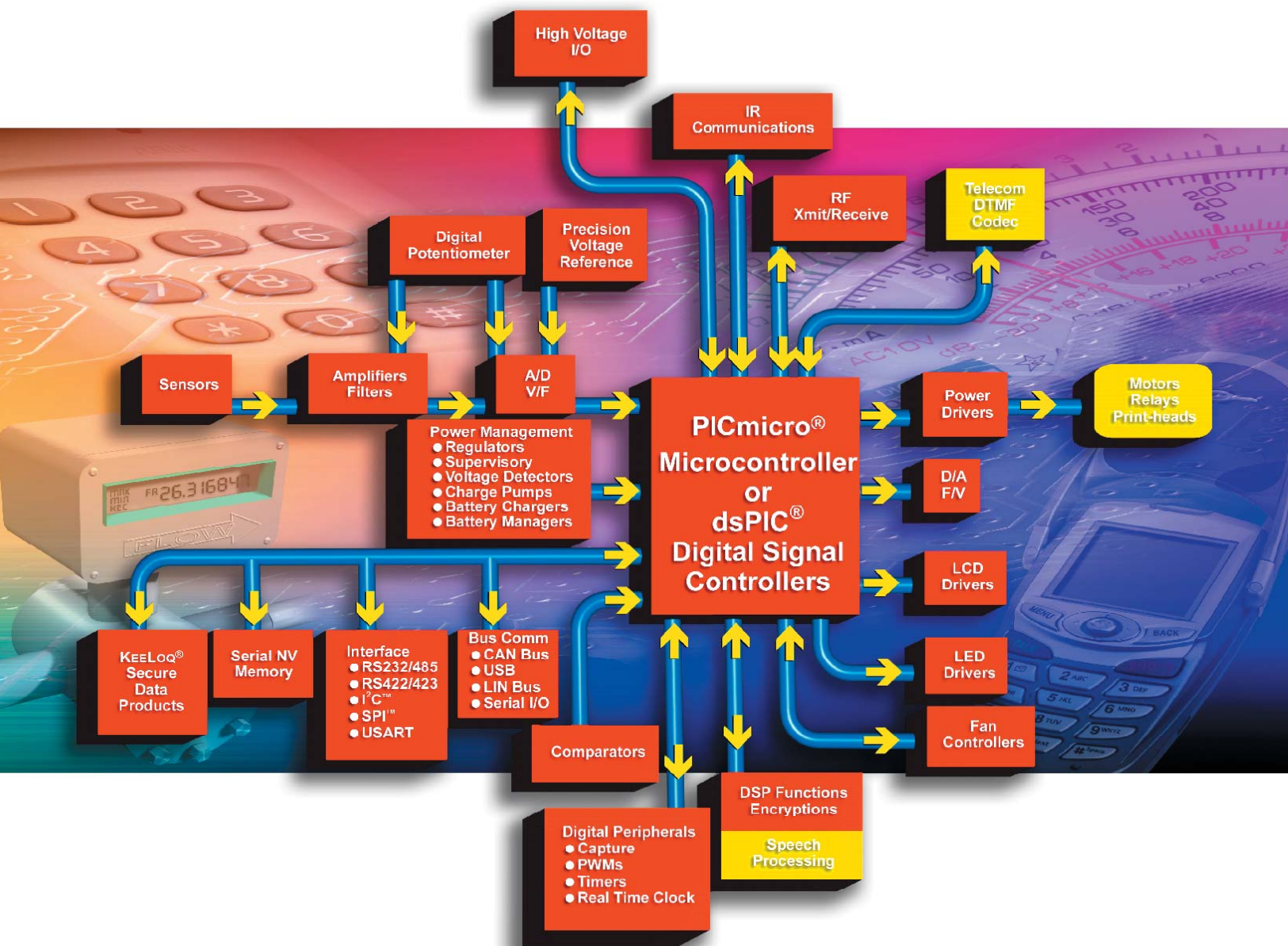




## 2005 Product Selector Guide



# Product Profile

## **8-bit PICmicro® Microcontrollers**

Microchip's PICmicro® family of microcontrollers combine high performance, low cost and small package size to offer the best price/performance ratio in the industry. Based on a powerful RISC core, these 8-bit PIC® microcontrollers fall into three product architecture categories, providing a variety of options for any application requirement:

- Baseline 8-bit architecture: 12-bit instruction set, 6-44 pin count, 384-3.5K bytes program memory, up to 5 MIPS
- Mid-Range 8-bit architecture: 14-bit instruction set, 8-68 pin count, 896-14K bytes program memory, up to 5 MIPS
- High Performance (PIC18) 8-bit architecture: 16-bit instruction set, 18-100 pin count, 8K-128K bytes program memory, up to 16 MIPS

The common architecture provides users with an easy migration path from 6 to 100 pins among all families with little or no code change required. Advanced features available are:

- Sophisticated timing peripherals
- Embedded analog peripherals including A/D and D/A converters, comparators, PBOR, PLVD, DAC, V<sub>REF</sub>, Op Amps and PSMC
- Communications peripherals (I<sup>2</sup>C™/SPI™/USB/CAN and USARTs)
- Low-power, single-chip RF solutions targeting RF connectivity for high-volume embedded control applications
- Battery management solutions
- Flexible programming options including In-Circuit Serial Programming™ (ICSP™) technology, self-programming (Enhanced Flash), One-Time-Programmable (OTP), QTP, SQTP and ROM

## **16-bit PICmicro® Microcontrollers**

The PIC24 microcontrollers build upon the high performance, wide selection of peripherals, Flash memory sizes and packaging choices found in the 8-bit PIC18 family. The PIC24 architecture, paired with the optimized MPLAB C30 C Compiler, provides the high throughput and C code density needed to achieve system performance goals and product launch schedules.

- Leadership 16-bit microcontroller performance and C code efficiency
- Extension of the 8-bit PIC18 microcontroller performance, memory and peripherals
- Easy migration path to dsPIC® digital signal controllers with over 40 MIPS and DSP capability, MPLAB® compatibility

## **16-bit dsPIC® Digital Signal Controllers**

Microchip's 16-bit High Performance Digital Signal Controllers (DSC) combine the best features of microcontrollers with the best features of DSPs in a single core. These dsPIC DSC devices reach speeds of up to 30 MIPS.

- C compiler efficiency programming, Flash, data EEPROM, and powerful peripherals
- Extensive software libraries for effortless design
- Familiar microcontroller architecture and design environment

## **Stand-Alone Analog & Interface Products**

Microchip offers a broad portfolio of analog and related products:

- Linear and Mixed-Signal. ADCs/DACs, digital potentiometers, op amps and comparators.
- Power Management. LDO and switching regulators, charge pumps, voltage references, CPU/system supervisors and voltage detectors, battery chargers and power MOSFET drivers.
- Thermal Management. Temperature sensors (logic output, voltage output, and serial output), brushless DC fan controllers, and fan fault detectors.
- Interface. Peripheral products supporting industry-standard networking protocols like CAN, LIN and infrared (including IrDA® Standard infrared), as well as products that provide embedded system input/output expansion capability.

## **Secure Data Products**

Microchip's KEELoq® code hopping algorithm combines high security, a small package outline and a very low cost to make this an ideal solution for unidirectional RKE systems. The KEELoq code hopping technology creates a high degree of security using a long code word length together with encryption and synchronization techniques.

## **Memory Products**

Microchip offers one of the broadest selections of serial EEPROMs in densities from 128 bits to 512 Kbits, with operating voltages down to 1.8V, in all popular bus protocols (I<sup>2</sup>C™, Microwire and SPI™ compatible). They are available in all standard temperature ranges from -40°C to +125°C and packaged in the world's smallest standard packaging; up to 16 Kbits in 5-lead SOT-23 and up to 256 Kbits in 8-lead MSOP.

## **Development Systems**

Microchip offers a full range of microcontroller development systems, including the MPLAB® ICE 2000 and ICE 9000 in-circuit emulators; MPLAB Integrated Development Environment; MPLAB C18 and C30 Compiler; the MPLAB ICD In-Circuit Debugger, MPLAB PM3 full-featured device programmer; PICSTART® low-cost development system; the PICKIT™ 1 Flash Starter Kit, SEEVAL® Serial EEPROM Evaluation Kit and various demonstration boards. Microchip has shipped more than 300,000+ development systems worldwide.

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## CURRENT dsPIC® DIGITAL SIGNAL CONTROLLER FAMILY PRODUCTS

| dsPIC® Digital Signal Controller (DSC) Family      |                        |                       |          |            |                 |                        |                     |                      |              |           |                     |                   |           |      |      |      |     |                 |
|----------------------------------------------------|------------------------|-----------------------|----------|------------|-----------------|------------------------|---------------------|----------------------|--------------|-----------|---------------------|-------------------|-----------|------|------|------|-----|-----------------|
| Product                                            | Program (Flash) KBytes | Memory (Flash) KWords | EE Bytes | SRAM Bytes | I/O Pins (max.) | Packages               | A/D 12-bit 200 ksps | A/D 10-bit 1000 ksps | Timer 16-bit | Input Cap | Output Comp/Std PWM | Motor Control PWM | Quad Enc. | UART | SPI™ | I²C™ | CAN | Codec Interface |
| dsPIC30F Motor Control and Power Conversion Family |                        |                       |          |            |                 |                        |                     |                      |              |           |                     |                   |           |      |      |      |     |                 |
| dsPIC30F2010                                       | 12                     | 4                     | 1024     | 512        | 20              | 28SO, 28SP, 28MM (6x6) | —                   | 6 ch                 | 3            | 4         | 2                   | 6                 | ✓         | 1    | 1    | 1    | —   | —               |
| dsPIC30F3010                                       | 24                     | 8                     | 1024     | 1024       | 20              | 28SO, 28SP, 44ML (8x8) | —                   | 6 ch                 | 5            | 4         | 2                   | 6                 | ✓         | 1    | 1    | 1    | —   | —               |
| dsPIC30F4012                                       | 48                     | 16                    | 1024     | 2048       | 20              | 28SO, 28SP, 44ML (8x8) | —                   | 6 ch                 | 5            | 4         | 2                   | 6                 | ✓         | 1    | 1    | 1    | 1   | —               |
| dsPIC30F3011                                       | 24                     | 8                     | 1024     | 1024       | 30              | 40P, 44PT, 44ML (8x8)  | —                   | 9 ch                 | 5            | 4         | 4                   | 6                 | ✓         | 2    | 1    | 1    | —   | —               |
| dsPIC30F4011                                       | 48                     | 16                    | 1024     | 2048       | 30              | 40P, 44PT, 44ML (8x8)  | —                   | 9 ch                 | 5            | 4         | 4                   | 6                 | ✓         | 2    | 1    | 1    | 1   | —               |
| NEW dsPIC30F5015                                   | 66                     | 22                    | 1024     | 2048       | 52              | 64PT                   | —                   | 16 ch                | 5            | 4         | 4                   | 8                 | ✓         | 1    | 2    | 1    | 1   | —               |
| NEW dsPIC30F6015                                   | 144                    | 48                    | 4096     | 8192       | 52              | 64PT                   | —                   | 16 ch                | 5            | 8         | 8                   | 8                 | ✓         | 2    | 2    | 1    | 2   | —               |
| NEW dsPIC30F5016                                   | 66                     | 22                    | 1024     | 2048       | 68              | 80PT                   | —                   | 16 ch                | 5            | 4         | 4                   | 8                 | ✓         | 1    | 2    | 1    | 1   | —               |
| dsPIC30F6010                                       | 144                    | 48                    | 4096     | 8192       | 68              | 80PF                   | —                   | 16 ch                | 5            | 8         | 8                   | 8                 | ✓         | 2    | 2    | 1    | 2   | —               |
| NEW dsPIC30F6010A                                  | 144                    | 48                    | 4096     | 8192       | 68              | 80PF, 80PT             | —                   | 16 ch                | 5            | 8         | 8                   | 8                 | ✓         | 2    | 2    | 1    | 2   | —               |
| dsPIC30F General Purpose Family                    |                        |                       |          |            |                 |                        |                     |                      |              |           |                     |                   |           |      |      |      |     |                 |
| dsPIC30F3014                                       | 24                     | 8                     | 1024     | 2048       | 30              | 40P, 44PT, 44ML (8x8)  | 13 ch               | —                    | 3            | 2         | 2                   | —                 | —         | 2    | 1    | 1    | —   | —               |
| dsPIC30F4013                                       | 48                     | 16                    | 1024     | 2048       | 30              | 40P, 44PT, 44ML (8x8)  | 13 ch               | —                    | 5            | 4         | 4                   | —                 | —         | 2    | 1    | 1    | 1   | AC97, I²S       |
| dsPIC30F5011                                       | 66                     | 22                    | 1024     | 4096       | 52              | 64PT                   | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | AC97, I²S       |
| dsPIC30F6011                                       | 132                    | 44                    | 2048     | 6144       | 52              | 64PF                   | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | —               |
| NEW dsPIC30F6011A                                  | 132                    | 44                    | 2048     | 6144       | 52              | 64PF, 64PT             | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | —               |
| dsPIC30F6012                                       | 144                    | 48                    | 4096     | 8192       | 52              | 64PF                   | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | AC97, I²S       |
| NEW dsPIC30F6012A                                  | 144                    | 48                    | 4096     | 8192       | 52              | 64PF, 64PT             | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | AC97, I²S       |
| dsPIC30F5013                                       | 66                     | 22                    | 1024     | 4096       | 68              | 80PT                   | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | AC97, I²S       |
| dsPIC30F6013                                       | 132                    | 44                    | 2048     | 6144       | 68              | 80PF                   | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | —               |
| NEW dsPIC30F6013A                                  | 132                    | 44                    | 2048     | 6144       | 68              | 80PF, 80PT             | 16 ch               | —                    | 5            | 8         | 8                   | —                 | —         | 2    | 2    | 1    | 2   | —               |

Abbreviations are found on the last page of the Selector Guide.

## dsPIC® Digital Signal Controller (DSC) Family (continued)

| Product                                     | Program<br>(Flash)<br>KBytes | Memory<br>(Flash)<br>KWords | EE<br>Bytes | SRAM<br>Bytes | I/O Pins<br>(max.) | Packages                  | A/D 12-bit<br>200 ksps | A/D 10-bit<br>1000 ksps | Timer<br>16-bit | Input<br>Cap | Output<br>Comp/Std<br>PWM | Motor<br>Control<br>PWM | Quad<br>Enc. | UART | SPI™ | I²C™ | CAN | Codec<br>Interface |
|---------------------------------------------|------------------------------|-----------------------------|-------------|---------------|--------------------|---------------------------|------------------------|-------------------------|-----------------|--------------|---------------------------|-------------------------|--------------|------|------|------|-----|--------------------|
| dsPIC30F General Purpose Family (continued) |                              |                             |             |               |                    |                           |                        |                         |                 |              |                           |                         |              |      |      |      |     |                    |
| dsPIC30F6014                                | 144                          | 48                          | 4096        | 8192          | 68                 | 80PF                      | 16 ch                  | —                       | 5               | 8            | 8                         | —                       | —            | 2    | 2    | 1    | 2   | AC97, I²S          |
| dsPIC30F6014A                               | 144                          | 48                          | 4096        | 8192          | 68                 | 80PF, 80PT                | 16 ch                  | —                       | 5               | 8            | 8                         | —                       | —            | 2    | 2    | 1    | 2   | AC97, I²S          |
| dsPIC30F Sensor Family                      |                              |                             |             |               |                    |                           |                        |                         |                 |              |                           |                         |              |      |      |      |     |                    |
| dsPIC30F2011                                | 12                           | 4                           | 0           | 1024          | 12                 | 18SO, 18P, 28ML<br>(6x6)  | 8 ch                   | —                       | 3               | 2            | 2                         | —                       | —            | 1    | 1    | 1    | —   | —                  |
| dsPIC30F3012                                | 24                           | 8                           | 1024        | 2048          | 12                 | 18SO, 18P, 28ML<br>(6x6)  | 8 ch                   | —                       | 3               | 2            | 2                         | —                       | —            | 1    | 1    | 1    | —   | —                  |
| dsPIC30F2012                                | 12                           | 4                           | 0           | 1024          | 20                 | 28SO, 28SP,<br>28ML (6x6) | 10 ch                  | —                       | 3               | 2            | 2                         | —                       | —            | 1    | 1    | 1    | —   | —                  |
| dsPIC30F3013                                | 24                           | 8                           | 1024        | 2048          | 20                 | 28SO, 28SP,<br>28ML (6x6) | 10 ch                  | —                       | 3               | 2            | 2                         | —                       | —            | 2    | 1    | 1    | —   | —                  |

Abbreviations are found on the last page of the Selector Guide.



## FUTURE dsPIC® DIGITAL SIGNAL CONTROLLER FAMILY PRODUCTS

| dsPIC® Digital Signal Controller (DSC) Family      |                        |             |      |                 |                  |                    |                      |              |           |                      |                   |                     |      |      |      |     |                 |
|----------------------------------------------------|------------------------|-------------|------|-----------------|------------------|--------------------|----------------------|--------------|-----------|----------------------|-------------------|---------------------|------|------|------|-----|-----------------|
| Product                                            | Program (Flash) Kbytes | SRAM KBytes | DMA  | I/O Pins (max.) | Packages         | A/D 12-bit 500ksps | A/D 10-bit 1,000ksps | Timer 16-bit | Input Cap | Output Comp/ Std PWM | Motor Control PWM | Quad Enc. Interface | UART | SPI™ | I²C™ | CAN | Codec Interface |
| dsPIC30F Motor Control and Power Conversion Family |                        |             |      |                 |                  |                    |                      |              |           |                      |                   |                     |      |      |      |     |                 |
| dsPIC30F2005                                       | 8                      | 300         | —    | 20              | 28SO, 28SP, 28MM | —                  | 1 A/D, 6 ch 4 S/H    | 3            | 3         | 1                    | 6                 | ✓                   | 1    | 0    | 0    | 0   | —               |
| dsPIC30F2015                                       | 12                     | 500         | —    | 20              | 28SO, 28SP, 28MM | —                  | 1 A/D, 6 ch 4 S/H    | 3            | 4         | 2                    | 6                 | ✓                   | 1    | 1    | 1    | 0   | —               |
| dsPIC33F Motor Control and Power Conversion Family |                        |             |      |                 |                  |                    |                      |              |           |                      |                   |                     |      |      |      |     |                 |
| dsPIC33FJ64MC506                                   | 64                     | 8           | 6 ch | 53              | 64PT             | —                  | 1 A/D, 16 ch 4 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ64MC508                                   | 64                     | 8           | 6 ch | 69              | 80PT             | —                  | 1 A/D, 18 ch 4 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ64MC510                                   | 64                     | 8           | 6 ch | 85              | 100PT            | —                  | 1 A/D, 24 ch 4 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ64MC706                                   | 64                     | 16          | 6 ch | 53              | 64PT             | —                  | 2 A/D, 16 ch 8 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ64MC710                                   | 64                     | 16          | 6 ch | 85              | 100PT            | —                  | 2 A/D, 24 ch 8 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 2   | —               |
| dsPIC33FJ128MC506                                  | 128                    | 8           | 6 ch | 53              | 64PT             | —                  | 1 A/D, 16 ch 4 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ128MC510                                  | 128                    | 8           | 6 ch | 85              | 100PT            | —                  | 1 A/D, 24 ch 4 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ128MC706                                  | 128                    | 16          | 6 ch | 53              | 64PT             | —                  | 2 A/D, 16 ch 8 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ128MC708                                  | 128                    | 16          | 6 ch | 69              | 80PT             | —                  | 2 A/D, 18 ch 8 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 2   | —               |
| dsPIC33FJ128MC710                                  | 128                    | 16          | 6 ch | 85              | 100PT            | —                  | 2 A/D, 24 ch 8 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 2   | —               |
| dsPIC33FJ256MC510                                  | 256                    | 16          | 6 ch | 85              | 100PT            | —                  | 1 A/D, 16 ch 4 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 1   | —               |
| dsPIC33FJ256MC710                                  | 256                    | 30          | 6 ch | 85              | 100PT            | —                  | 2 A/D, 24 ch 8 S/H   | 9            | 8         | 8                    | 8                 | ✓                   | 2    | 2    | 2    | 2   | —               |

| dsPIC® Digital Signal Controller (DSC) Family (continued) |                        |             |      |                 |          |                       |                      |              |           |                      |                   |                     |      |      |      |     |                 |
|-----------------------------------------------------------|------------------------|-------------|------|-----------------|----------|-----------------------|----------------------|--------------|-----------|----------------------|-------------------|---------------------|------|------|------|-----|-----------------|
| Product                                                   | Program (Flash) Kbytes | SRAM KBytes | DMA  | I/O Pins (max.) | Packages | A/D 12-bit 500ksps    | A/D 10-bit 1,000ksps | Timer 16-bit | Input Cap | Output Comp/ Std PWM | Motor Control PWM | Quad Enc. Interface | UART | SPI™ | I²C™ | CAN | Codec Interface |
| dsPIC33F General Purpose Family                           |                        |             |      |                 |          |                       |                      |              |           |                      |                   |                     |      |      |      |     |                 |
| dsPIC33FJ64GP206                                          | 64                     | 8           | 6 ch | 53              | 64PT     | 1 ADC, 18 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 1    | 0   | 1               |
| dsPIC33FJ64GP306                                          | 64                     | 16          | 6 ch | 53              | 64PT     | 1 ADC, 18 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 0   | 1               |
| dsPIC33FJ64GP310                                          | 64                     | 16          | 6 ch | 85              | 100PT    | 1 ADC, 32 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 0   | 1               |
| dsPIC33FJ64GP706                                          | 64                     | 16          | 6 ch | 53              | 64PT     | 2 ADC, 18 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |
| dsPIC33FJ64GP708                                          | 64                     | 16          | 6 ch | 69              | 80PT     | 2 ADC, 24 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |
| dsPIC33FJ64GP710                                          | 64                     | 16          | 6 ch | 85              | 100PT    | 2 ADC, 32 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |
| dsPIC33FJ128GP206                                         | 128                    | 8           | 6 ch | 53              | 64PT     | 1 ADC, 18 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 1    | 0   | 1               |
| dsPIC33FJ128GP306                                         | 128                    | 16          | 6 ch | 53              | 64PT     | 1 ADC, 18 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 0   | 1               |
| dsPIC33FJ128GP310                                         | 128                    | 16          | 6 ch | 85              | 100PT    | 1 ADC, 32 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 0   | 1               |
| dsPIC33FJ128GP706                                         | 128                    | 16          | 6 ch | 53              | 64PT     | 2 ADC, 18 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |
| dsPIC33FJ128GP708                                         | 128                    | 16          | 6 ch | 69              | 80PT     | 2 ADC, 24 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |
| dsPIC33FJ128GP710                                         | 128                    | 16          | 6 ch | 85              | 100PT    | 2 ADC, 32 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |
| dsPIC33FJ256GP506                                         | 256                    | 16          | 6 ch | 53              | 64PT     | 1 ADC, 18 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 1   | 1               |
| dsPIC33FJ256GP510                                         | 256                    | 16          | 6 ch | 85              | 100PT    | 1 ADC, 32 ch          | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 1   | 1               |
| dsPIC33FJ256GP710                                         | 256                    | 30          | 6 ch | 85              | 100PT    | 2 ADC, 32 ch<br>2 S/H | —                    | 9            | 8         | 8                    | —                 | —                   | 2    | 2    | 2    | 2   | 1               |

Abbreviations are found on the last page of the Selector Guide.

## CURRENT ANALOG/INTERFACE PRODUCTS

Lead-free versions of many devices are currently offered. Check Microchip's web site for availability.

| THERMAL MANAGEMENT PRODUCTS – Temperature Sensors |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
|---------------------------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Part #                                            | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (μA) | Features                                                                                                                                              | Packages                             |
| <b>Logic Output Temperature Sensors</b>           |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
| TC6501                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6501, Open-drain                                                                                                                          | 5-Pin SOT-23A                        |
| TC6502                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6502, Push-pull                                                                                                                           | 5-Pin SOT-23A                        |
| TC6503                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6503, Open-drain                                                                                                                          | 5-Pin SOT-23A                        |
| TC6504                                            | ±0.5                  | ±3                           | -55 to +125                    | +2.7 to +5.5  | 40                          | Cross to MAX6504, Push-pull                                                                                                                           | 5-Pin SOT-23A                        |
| TC620                                             | ±1                    | ±3                           | -40 to +125                    | +4.5 to +18   | 400                         | Two resistor-programmable trip points                                                                                                                 | 8-Pin PDIP, 8-Pin SOIC               |
| TC621                                             | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +4.5 to +18   | 400                         | Requires external thermistor, resistor-programmable trip points                                                                                       | 8-Pin PDIP, 8-Pin SOIC               |
| TC622                                             | ±1                    | ±5                           | -40 to +125                    | +4.5 to +18   | 600                         | Dual output, TO-220 for heat sink mounting, resistor-programmable trip points                                                                         | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220 |
| TC623                                             | ±1                    | ±3                           | -40 to +125                    | +2.7 to +4.5  | 250                         | Two resistor-programmable trip points                                                                                                                 | 8-Pin PDIP, 8-Pin SOIC               |
| TC624                                             | ±1                    | ±5                           | -40 to +125                    | +2.7 to +4.5  | 300                         | Dual output, resistor-programmable trip points                                                                                                        | 8-Pin PDIP, 8-Pin SOIC               |
| <b>Voltage Output Temperature Sensors</b>         |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
| MCP9700                                           | ±1                    | ±4                           | -40 to +125                    | +2.3 to +5.5  | 12                          | Linear Active Thermistor™ IC, Temperature slope: 10 mV/°C                                                                                             | 5-pin SC-70                          |
| MCP9701                                           | ±1                    | ±4                           | -10 to +125                    | +3.1 to +5.5  | 12                          | Linear Active Thermistor™ IC, Temperature slope: 19.53 mV/°C, cross to MAX6612                                                                        | 5-pin SC-70                          |
| TC1046                                            | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +4.4  | 60                          | High precision temperature-to-voltage converter, 6.25 mV/°C                                                                                           | 3-Pin SOT-23B                        |
| TC1047                                            | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +4.4  | 60                          | High precision temperature-to-voltage converter, 10 mV/°C                                                                                             | 3-Pin SOT-23B                        |
| TC1047A                                           | ±0.5                  | ±2                           | -40 to +125                    | +2.5 to +5.5  | 60                          | High precision temperature-to-voltage converter, 10 mV/°C                                                                                             | 3-Pin SOT-23B                        |
| <b>Serial Output Temperature Sensors</b>          |                       |                              |                                |               |                             |                                                                                                                                                       |                                      |
| MCP9800                                           | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement                        | 5-Pin SOT-23                         |
| MCP9801                                           | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability | 8-Pin MSOP, 8-pin SOIC               |
| MCP9802                                           | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement          | 5-Pin SOT-23                         |

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

**2:** TCN75 idle current is 250 μA. This device also has a Software Shutdown mode that reduces supply current to <1 μA.

**3:** MCP9805 max. accuracy measured at 85°C.

### THERMAL MANAGEMENT PRODUCTS – Temperature Sensors (continued)

| Part #                                               | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features                                                                                                                                                                | Packages                    |
|------------------------------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>Serial Output Temperature Sensors (continued)</b> |                       |                              |                                |               |                             |                                                                                                                                                                         |                             |
| MCP9803                                              | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SMBus/I <sup>2</sup> C™ compatible interface with time out, 0.0625°C to 0.5°C adj. resolution, power-saving one-shot temperature measurement, multi-drop capability     | 8-Pin MSOP, 8-Pin SOIC      |
| MCP9805                                              | ±0.5                  | ±1 <sup>(3)</sup>            | -20 to +125                    | +3.0 to +3.6  | 400                         | JEDEC compatible register set, SMBus/I <sup>2</sup> C™ compatible interface, programmable, shut-down modes and EVENT output                                             | 8-Pin TSSOP, 8-Pin 2x3 DFN  |
| TC77                                                 | ±0.5                  | ±1                           | -55 to +125                    | +2.7 to +5.5  | 400                         | SPI™ compatible interface, 0.0625°C temperature resolution                                                                                                              | 5-Pin SOT-23A, 8-Pin SOIC   |
| TC72                                                 | ±0.5                  | ±1                           | -55 to +125                    | +2.65 to +5.5 | 400                         | SPI™ compatible interface, power saving one-shot temperature measurement, 0.25°C temperature resolution                                                                 | 8-Pin MSOP, 8-Pin 3x3 DFN   |
| TC74                                                 | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +5.5  | 350                         | SMBus/I <sup>2</sup> C™ compatible interface, 1°C temperature resolution                                                                                                | 5-Pin SOT-23A, 5-Pin TO-220 |
| TCN75A                                               | ±0.5                  | ±2                           | -40 to +125                    | +2.7 to +5.5  | 500                         | SMBus/I <sup>2</sup> C™ compatible interface, power-saving one-shot temperature measurement, multi-drop capability, 0.0625°C to 0.5°C adjustable temperature resolution | 8-Pin SOIC, 8-Pin MSOP      |
| TCN75                                                | ±0.5                  | ±2                           | -55 to +125                    | +2.7 to +5.5  | 1,000 <sup>(2)</sup>        | SMBus/I <sup>2</sup> C™ compatible interface, multi-drop capability, interrupt output, 0.5°C temperature resolution                                                     | 8-Pin MSOP, 8-Pin SOIC      |

**NOTE** 1: These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.  
2: TCN75 idle current is 250 µA. This device also has a Software Shutdown mode that reduces supply current to <1 µA.  
3: MCP9805 max. accuracy measured at 85°C.

### THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors

| Part # | Description | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (µA) | Features                                                           | Packages                           |
|--------|-------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|--------------------------------------------------------------------|------------------------------------|
| TC642  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, minimum fan speed control                   | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC642B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC646  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, auto-shutdown                               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC646B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, auto-shutdown, fan auto-restart             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC647  | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, minimum fan speed control                   | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC647B | Fan Manager | <b>Note 1</b>         | <b>Note 1</b>                | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, minimum fan speed control, fan auto-restart | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |

**NOTE** 1: These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

**THERMAL MANAGEMENT PRODUCTS – Brushless DC Fan Controllers and Fan Fault Detectors (continued)**

| Part # | Description                   | Typical Accuracy (°C) | Maximum Accuracy @ 25°C (°C) | Maximum Temperature Range (°C) | Vcc Range (V) | Maximum Supply Current (μA) | Features                                                     | Packages                           |
|--------|-------------------------------|-----------------------|------------------------------|--------------------------------|---------------|-----------------------------|--------------------------------------------------------------|------------------------------------|
| TC648  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | Over-temperature alert, auto-shutdown                        | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC648B | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | Over-temperature alert, auto-shutdown, fan auto-restart      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC649  | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 1,000                       | FanSense™ Fan Monitor, auto-shutdown                         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC649B | Fan Manager                   | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 400                         | FanSense™ Fan Monitor, auto-shutdown, fan auto-restart       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC650  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | Over-temperature alert                                       | 8-Pin MSOP                         |
| TC651  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | Over-temperature alert, auto-shutdown                        | 8-Pin MSOP                         |
| TC652  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | FanSense™ Fan Monitor, over-temperature alert                | 8-Pin MSOP                         |
| TC653  | Fan Manager                   | ±1                    | ±3                           | -40 to +125                    | +2.8 to +5.5  | 90                          | FanSense™ Fan Monitor, over-temperature alert, auto-shutdown | 8-Pin MSOP                         |
| TC654  | Dual SMBus Fan Manager        | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data                              | 10-Pin MSOP                        |
| TC655  | Dual SMBus Fan Manager        | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data, over-temperature alert      | 10-Pin MSOP                        |
| TC664  | Single SMBus Fan Manager      | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data                              | 10-Pin MSOP                        |
| TC665  | Single SMBus Fan Manager      | Note 1                | Note 1                       | -40 to +85                     | +3.0 to +5.5  | 320                         | FanSense™ Fan Monitor, RPM data, over-temperature alert      | 10-Pin MSOP                        |
| TC670  | Predictive Fan Fault Detector | N/A                   | N/A                          | -40 to +85                     | +3.0 to +5.5  | 150                         | FanSense™ Fan Monitor, programmable threshold                | 6-Pin SOT-23                       |

**NOTE 1:** These devices use an external temperature sensor. Accuracy of the total solution is a function of the accuracy of the external sensor.

**POWER MANAGEMENT – Voltage References**

| Part #  | Vcc Range (V) | Output Voltage (V) | Max. Load Current (mA) | Initial Accuracy (max.%) | Temperature Coefficient (ppm/°C) | Max. Supply Current (μA @ 25°C) | Packages                   |
|---------|---------------|--------------------|------------------------|--------------------------|----------------------------------|---------------------------------|----------------------------|
| MCP1525 | 2.7 to 5.5    | 2.5                | ±2                     | ±1                       | 50                               | 100                             | 3-Pin TO-92, 3-Pin SOT-23B |
| MCP1541 | 4.3 to 5.5    | 4.096              | ±2                     | ±1                       | 50                               | 100                             | 3-Pin TO-92, 3-Pin SOT-23B |

**POWER MANAGEMENT – Linear Regulators**

| Part #                                               | Max. Input Voltage (V) | Output Voltage (V)                                | Output Current (mA) | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV) | Typical Output Voltage Accuracy (%) | Features                                            | Packages                                 |
|------------------------------------------------------|------------------------|---------------------------------------------------|---------------------|---------------------------------|-----------------------------|------------------------------------------------------|-------------------------------------|-----------------------------------------------------|------------------------------------------|
| <b>50 mA to 250 mA Low Dropout Linear Regulators</b> |                        |                                                   |                     |                                 |                             |                                                      |                                     |                                                     |                                          |
| TC2014                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 50                  | -40 to +125                     | 55                          | 45                                                   | ±0.4                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC1014                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC2054                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 50                  | -40 to +125                     | 55                          | 45                                                   | ±0.4                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1054                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1070                                               | 6.0                    | 1.23 → V <sub>IN</sub>                            | 50                  | -40 to +125                     | 50                          | 85                                                   | —                                   | Shutdown, Adjustable                                | 5-Pin SOT-23A                            |
| TC1072                                               | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0      | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown, Reference bypass input, Error output      | 6-Pin SOT-23A                            |
| TC1223                                               | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0            | 50                  | -40 to +125                     | 50                          | 85                                                   | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC1016                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0                                | 80                  | -40 to +125                     | 50                          | 150                                                  | ±0.5                                | Shutdown                                            | 5-Pin SC-70                              |
| TC2015                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 100                 | -40 to +125                     | 55                          | 90                                                   | ±0.4                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC1015                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC2055                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 100                 | -40 to +125                     | 55                          | 90                                                   | ±0.4                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1055                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1071                                               | 6.0                    | 1.23 → V <sub>IN</sub>                            | 100                 | -40 to +125                     | 50                          | 180                                                  | —                                   | Shutdown, Adjustable                                | 5-Pin SOT-23A                            |
| TC1073                                               | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0      | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown, Reference bypass input, Error output      | 6-Pin SOT-23A                            |
| TC1224                                               | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 3.6, 4.0, 5.0            | 100                 | -40 to +125                     | 50                          | 180                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC1188                                               | 6.0                    | 1.8, 2.8, 2.84, 3.15                              | 120                 | -40 to +125                     | 50                          | 130                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC1189                                               | 6.0                    | 1.8, 2.8, 2.84, 3.15                              | 120                 | -40 to +125                     | 50                          | 130                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A                            |
| TC2185                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 150                 | -40 to +125                     | 55                          | 140                                                  | ±0.4                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC1185                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 150                 | -40 to +125                     | 50                          | 270                                                  | ±0.5                                | Shutdown, Reference bypass input                    | 5-Pin SOT-23A                            |
| TC2186                                               | 6.0                    | 1.8, 2.7, 2.8, 3.0, 3.3                           | 150                 | -40 to +125                     | 55                          | 140                                                  | ±0.4                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1186                                               | 6.0                    | 1.8, 2.5, 2.7, 2.8, 2.85, 3.0, 3.3, 3.6, 4.0, 5.0 | 150                 | -40 to +125                     | 50                          | 270                                                  | ±0.5                                | Shutdown, Error output                              | 5-Pin SOT-23A                            |
| TC1187                                               | 6.0                    | 1.23 → V <sub>IN</sub>                            | 150                 | -40 to +125                     | 50                          | 270                                                  | —                                   | Shutdown, Adjustable                                | 5-Pin SOT-23A                            |
| TC1017                                               | 6.0                    | 1.8, 2.6, 2.7, 2.8, 2.85, 2.9, 3.3, 3.4           | 150                 | -40 to +125                     | 53                          | 285                                                  | ±0.5                                | Shutdown                                            | 5-Pin SOT-23A, 5-Pin SC-70               |
| MCP1700                                              | 6.0                    | 1.2, 1.8, 2.5, 3.0, 3.3, 5.0                      | 250                 | -40 to +125                     | 1.0                         | 300                                                  | ±0.4                                | 1.0 μF ceramic cap stable, Short-circuit protection | 3-Pin TO-92, 3-Pin SOT-23A, 3-Pin SOT-89 |
| MCP1701                                              | 10                     | 1.8, 2.5, 3.0, 3.3, 5.0                           | 250                 | -40 to +85                      | 1.1                         | 380                                                  | ±0.5                                | 10V max. input voltage                              | 3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92 |

- NOTE**
- 1: Depending on external transistor configuration.
  - 2: Each channel (for Dual and Quad LDOs).
  - 3: LDOs with shutdown (except Power-Management Combination Products as indicated) have typical shutdown currents of 0.05 μA.

**POWER MANAGEMENT – Linear Regulators (continued)**

| Part #                                                    | Max. Input Voltage (V) | Output Voltage (V)                                             | Output Current (mA)    | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. IOUT (mV) | Typical Output Voltage Accuracy (%) | Features                                                               | Packages                                 |
|-----------------------------------------------------------|------------------------|----------------------------------------------------------------|------------------------|---------------------------------|-----------------------------|------------------------------------------|-------------------------------------|------------------------------------------------------------------------|------------------------------------------|
| <b>300 mA Low Dropout Linear Regulators</b>               |                        |                                                                |                        |                                 |                             |                                          |                                     |                                                                        |                                          |
| TC1107                                                    | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                                   | 300                    | -40 to +125                     | 50                          | 240                                      | ±0.5                                | Shutdown, Reference bypass input                                       | 8-Pin MSOP, 8-Pin SOIC                   |
| TC1108                                                    | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                                   | 300                    | -40 to +125                     | 50                          | 240                                      | ±0.5                                |                                                                        | 3-Pin SOT-223                            |
| TC1173                                                    | 6.0                    | 2.5, 2.7, 2.8, 3.0, 3.3, 5.0                                   | 300                    | -40 to +125                     | 50                          | 240                                      | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin MSOP, 8-Pin SOIC                   |
| TC1174                                                    | 6.0                    | 1.23 → VIN                                                     | 300                    | -40 to +125                     | 50                          | 240                                      | —                                   | Shutdown, Reference bypass input, Adjustable                           | 8-Pin MSOP, 8-Pin SOIC                   |
| TC1269                                                    | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0                                        | 300                    | -40 to +125                     | 50                          | 240                                      | ±0.5                                | Shutdown, Reference bypass input                                       | 8-Pin MSOP                               |
| <b>500 mA to 800 mA Low Dropout Linear Regulators</b>     |                        |                                                                |                        |                                 |                             |                                          |                                     |                                                                        |                                          |
| TC1262                                                    | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0                                        | 500                    | -40 to +125                     | 80                          | 350                                      | ±0.5                                |                                                                        | 3-Pin TO-220, 3-Pin DDPAK, 3-Pin SOT-223 |
| TC1263                                                    | 6.0                    | 2.5, 2.8, 3.0, 3.3, 5.0                                        | 500                    | -40 to +125                     | 80                          | 350                                      | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin SOIC, 5-Pin TO-220, 5-Pin DDPAK    |
| TC1268                                                    | 6.0                    | 2.5                                                            | 500                    | -40 to +125                     | 80                          | 350                                      | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin SOIC                               |
| TC1264                                                    | 6.0                    | 1.8, 2.5, 3.0, 3.3                                             | 800                    | -40 to +125                     | 80                          | 450                                      | ±0.5                                |                                                                        | 3-Pin TO-220, 3-Pin DDPAK, 3-Pin SOT-223 |
| TC1265                                                    | 6.0                    | 1.8, 2.5, 3.0, 3.3                                             | 800                    | -40 to +125                     | 80                          | 450                                      | ±0.5                                | Shutdown, Reference bypass input, Error output                         | 8-Pin SOIC, 5-Pin TO-220, 5-Pin DDPAK    |
| TC2117                                                    | 6.0                    | 1.8, 2.5, 3.0, 3.3                                             | 800                    | -40 to +125                     | 80                          | 600                                      | ±0.5                                |                                                                        | 3-Pin SOT-223, 3-Pin DDPAK               |
| <b>1A and Above Low Dropout Linear Regulators</b>         |                        |                                                                |                        |                                 |                             |                                          |                                     |                                                                        |                                          |
| MCP1726                                                   | 6.0                    | Fixed: 5, 3.3, 3, 2.5, 1.8, 1.2, 0.8<br>Adjustable: 0.8 to 5.0 | 1000                   | -40 to +125                     | 140                         | 300                                      | ±0.4                                | Ceramic output capacitor stable, Shutdown, Cdelay, Power-Good          | 8-Pin 3x3 DFN, 8-Pin SOIC                |
| <b>Application Specific Low Dropout Linear Regulators</b> |                        |                                                                |                        |                                 |                             |                                          |                                     |                                                                        |                                          |
| TC1266                                                    | 6.0                    | 3.3                                                            | 200                    | -5 to +70                       | 230                         | 200                                      | ±1.0                                | PCI compliant                                                          | 8-Pin SOIC, 8-Pin MSOP                   |
| TC1267                                                    | 6.0                    | 3.3                                                            | 400                    | -5 to +70                       | 230                         | 300                                      | ±1.0                                | PCI compliant                                                          | 5-Pin DDPAK                              |
| TC57                                                      | 8                      | 2.5, 3.0, 3.3                                                  | 4,000 <sup>(1)</sup>   | -40 to +85                      | 50                          | 100 <sup>(1)</sup>                       | ±2.0                                | Shutdown, External transistor                                          | 5-Pin SOT-23A                            |
| TC59                                                      | -10                    | -3.0, -5.0                                                     | 100                    | -40 to +85                      | 3                           | 380                                      | ±0.5                                | Negative LDO                                                           | 3-Pin SOT-23A                            |
| <b>Power Management Combination Products</b>              |                        |                                                                |                        |                                 |                             |                                          |                                     |                                                                        |                                          |
| TC1300 <sup>(3)</sup>                                     | 6.0                    | 2.5, 2.7, 2.8, 2.85, 3.0, 3.3                                  | 300                    | -40 to +125                     | 80                          | 210                                      | ±0.5                                | Shutdown, Reference bypass input, LDO plus Reset output                | 8-Pin MSOP                               |
| TC1301A <sup>(3)</sup>                                    | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3                                 | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 103                         | LDO1: 104<br>LDO2: 150                   | ±0.5                                | Dual LDO plus Reset output, Shutdown, Reference bypass, Voltage detect | 8-Pin MSOP, 8-Pin 3x3 DFN                |
| TC1301B <sup>(3)</sup>                                    | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3                                 | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 114                         | LDO1: 104<br>LDO2: 150                   | ±0.5                                | Dual LDO plus Reset, per channel output shutdown, Reference bypass     | 8-Pin MSOP, 8-Pin 3x3 DFN                |
| TC1302A <sup>(3)</sup>                                    | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3                                 | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 103                         | LDO1: 104<br>LDO2: 150                   | ±0.5                                | Dual LDO, Output shutdown reference bypass, Voltage detect             | 8-Pin MSOP, 8-Pin 3x3 DFN                |

**NOTE 1:** Depending on external transistor configuration.

**NOTE 2:** Each channel (for Dual and Quad LDOs).

**NOTE 3:** LDOs with shutdown (except Power-Management Combination Products as indicated) have typical shutdown currents of 0.05 μA.

**POWER MANAGEMENT – Linear Regulators (continued)**

| Part #                                                   | Max. Input Voltage (V) | Output Voltage (V)             | Output Current (mA)    | Junction Temperature Range (°C) | Typical Active Current (μA) | Typical Dropout Voltage @ Max. I <sub>OUT</sub> (mV) | Typical Output Voltage Accuracy (%) | Features                                                                                              | Packages                  |
|----------------------------------------------------------|------------------------|--------------------------------|------------------------|---------------------------------|-----------------------------|------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Power-Management Combination Products (continued)</b> |                        |                                |                        |                                 |                             |                                                      |                                     |                                                                                                       |                           |
| TC1302B <sup>(3)</sup>                                   | 6.0                    | LDO1: 1.5-3.3<br>LDO2: 1.5-3.3 | LDO1: 300<br>LDO2: 150 | -40 to +125                     | 114                         | LDO1: 104<br>LDO2: 150                               | ±0.5                                | Dual LDO, per channel output shutdown, Reference bypass                                               | 8-Pin MSOP, 8-Pin 3x3 DFN |
| TC1305                                                   | 6.0                    | 2.5, 2.8, 3.0                  | 150 <sup>(2)</sup>     | -40 to +125                     | 120                         | 240                                                  | ±0.5                                | Dual LDO plus Reset output, Reference bypass input, Shutdown, Select Mode™ selectable output voltages | 10-Pin MSOP               |
| TC1306                                                   | 6.0                    | 1.8, 2.8, 3.0                  | 150 <sup>(2)</sup>     | -40 to +125                     | 120                         | 240                                                  | ±0.5                                | Dual LDO plus Reset output, Shutdown, Select Mode™ selectable output voltages                         | 8-Pin MSOP                |
| TC1307 <sup>(3)</sup>                                    | 6.0                    | 1.8, 2.5, 2.8, 3.0             | 150 <sup>(2)</sup>     | -40 to +125                     | 220                         | 200                                                  | ±0.5                                | Quad LDO plus Reset output, Shutdown, Select Mode™ selectable output voltage                          | 16-Pin QSOP               |

**NOTE** 1: Depending on external transistor configuration.  
2: Each channel (for Dual and Quad LDOs).  
3: LDOs with shutdown (except Power-Management Combination Products as indicated) have typical shutdown currents of 0.05 μA.

**POWER MANAGEMENT – Switching Regulators**

| Part #  | Description                                  | Input Voltage Range (V) | Output Voltage (V)                   | Operating Temperature Range (°C) | Control Scheme                 | Switching Frequency (kHz) | Typical Active Current (μA) | Output Current (mA)          | Features                                                                                                            | Packages                      |
|---------|----------------------------------------------|-------------------------|--------------------------------------|----------------------------------|--------------------------------|---------------------------|-----------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------|
| MCP1601 | Synchronous Buck Regulator                   | 2.7 to 5.5              | 0.9V to V <sub>IN</sub>              | -40 to +85                       | PFM/PWM/LDO                    | 750                       | 825 (PWM)<br>125 (PFM)      | 500                          | UVLO, Auto-switching, LDO                                                                                           | 8-Pin MSOP                    |
| MCP1612 | Synchronous Buck DC/DC Regulator             | 2.7 to V <sub>IN</sub>  | 0.8 to 5.5                           | -40 to +85                       | Constant frequency PWM         | 1400                      | 10,000                      | 1000                         | Overall efficiency >94% soft start, over-temperature and over-current protection                                    | 8-Pin MSOP, 8-Pin 3x3 DFN     |
| MCP1650 | Step-up DC/DC Controller                     | 2.7 to 5.5              | 2.5 to ext. tx limited               | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440                      | 2 duty cycles for min. and max. loads, shutdown control, UVLO, soft start                                           | 8-Pin MSOP                    |
| MCP1651 | Step-up DC/DC Controller                     | 2.7 to 5.5              | 2.5 to ext. tx limited               | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440                      | 2 duty cycles for min. and max. loads, shutdown control, low battery detect, UVLO, soft start                       | 8-Pin MSOP                    |
| MCP1652 | Step-up DC/DC Controller                     | 2.7 to 5.5              | 2.5 to ext. tx limited               | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440                      | 2 duty cycles for min. and max. loads, shutdown control, power-good indicator, UVLO, soft start                     | 8-Pin MSOP                    |
| MCP1653 | Step-up DC/DC Controller                     | 2.7 to 5.5              | 2.5 to ext. tx limited               | -40 to +125                      | Constant frequency, 2 fixed DC | 750                       | 120                         | 560/440                      | 2 duty cycles for min. and max. loads, shutdown control, low battery detect, power-good indicator, UVLO, soft start | 10-Pin MSOP                   |
| TC105   | Step-down DC/DC Controller                   | 2.2 to 10               | 3.0, 3.3, 5.0                        | -40 to +85                       | PFM/PWM                        | 300                       | 57                          | 1,000                        | Low-Power Shutdown mode                                                                                             | 5-Pin SOT-23A                 |
| TC120   | Step-down Regulator/Controller Combination   | 1.8 to 10               | 3.0, 3.3, 5.0                        | -40 to +85                       | PFM/PWM                        | 300                       | 52                          | 2,000                        | Soft-start, Low-Power Shutdown mode                                                                                 | 8-Pin SOP                     |
| TC125   | Step-up DC/DC Regulator                      | 0.9 to 10               | 3.0, 3.3, 5.0                        | -40 to +85                       | PFM                            | 100                       | 20                          | 80                           | Low-Power Shutdown mode                                                                                             | 5-Pin SOT-23A                 |
| TC126   | Step-up DC/DC Regulator                      | 0.9 to 10               | 3.0, 3.3, 5.0                        | -40 to +85                       | PFM                            | 100                       | 20                          | 80                           | Feedback voltage sensing                                                                                            | 5-Pin SOT-23A                 |
| TC115   | Step-up DC/DC Regulator                      | 0.9 to 10               | 3.0, 3.3, 5.0                        | -40 to +85                       | PFM/PWM                        | 100                       | 80                          | 140                          | Feedback voltage sensing, Low-Power Shutdown mode                                                                   | 5-Pin SOT-89                  |
| TC110   | Step-up DC/DC Controller                     | 2.0 to 10               | 3.0, 3.3, 5.0                        | -40 to +85                       | PFM/PWM                        | 100/300                   | 50/120                      | 300                          | Soft-start, Low-Power Shutdown mode                                                                                 | 5-Pin SOT-23A                 |
| TC1303  | Synchronous Buck Regulator, LDO w/Power Good | 2.7 to 5.5              | DC/DC: 0.8 to 4.5<br>LDO: 1.5 to 3.3 | -40 to +85                       | PFM/PWM                        | 2000                      | 65/600                      | DC/DC: 500 mA<br>LDO: 300 mA | PFM/PWM auto-switching, Power Good output                                                                           | 10-Pin MSOP<br>10-Pin 3x3 DFN |



**POWER MANAGEMENT – Switching Regulators (continued)**

| Part # | Description                     | Input Voltage Range (V) | Output Voltage (V)                   | Operating Temperature Range (°C) | Control Scheme | Switching Frequency (kHz) | Typical Active Current (μA) | Output Current (mA)          | Features                                 | Packages                      |
|--------|---------------------------------|-------------------------|--------------------------------------|----------------------------------|----------------|---------------------------|-----------------------------|------------------------------|------------------------------------------|-------------------------------|
| TC1304 | Synchronous Buck Regulator, LDO | 2.7 to 5.5              | DC/DC: 0.8 to 4.5<br>LDO: 1.5 to 3.3 | -40 to +85                       | PFM/PWM        | 2000                      | 65/600                      | DC/DC: 500 mA<br>LDO: 300 mA | PFM/PWM auto-switching, Power sequencing | 10-Pin MSOP<br>10-Pin 3x3 DFN |
| TC1313 | Synchronous Buck Regulator, LDO | 2.7 to 5.5              | DC/DC: 0.8 to 4.5<br>LDO: 1.5 to 3.3 | -40 to +85                       | PFM/PWM        | 2000                      | 65/600                      | DC/DC: 500 mA<br>LDO: 300 mA | PFM/PWM auto-switching                   | 10-Pin MSOP<br>10-Pin 3x3 DFN |

**POWER MANAGEMENT – PWM Controllers**

| Part #   | Description                          | Input Voltage Range (V) | Output Voltage (V)       | Operating Temperature Range (°C) | Control Scheme            | Switching Frequency (kHz) | Typical Active Supply (μA) | Output Current (mA) | Features                                     | Packages   |
|----------|--------------------------------------|-------------------------|--------------------------|----------------------------------|---------------------------|---------------------------|----------------------------|---------------------|----------------------------------------------|------------|
| MCP1630  | High-speed PWM to use with PIC® MCUs | 2.7 to 5.5              | VSS + 0.2V to VDD – 0.2V | -40 to +125                      | Cycle-by-Cycle DC control | 1000                      | 2.5                        | ±10                 | UVLO, current sense to VEXT, response <25 ns | 8-Pin MSOP |
| MCP1630V | High-speed PWM to use with PIC® MCUs | 2.7 to 5.5              | VSS + 0.2V to VDD – 0.2V | -40 to +125                      | Cycle-by-Cycle DC control | 1000                      | 2.5                        | ±10                 | Voltage mode and Average Current mode        | 8-Pin MSOP |

**POWER MANAGEMENT – Charge Pump DC-to-DC Converters**

| Part #                                    | Input Voltage Range (V) | Output Voltage (V)          | Operating Temperature Range (°C) | Maximum Input Current <sup>(1)</sup> (μA) | Typical Active Output Current (mA) | Features                                   | Packages                           |
|-------------------------------------------|-------------------------|-----------------------------|----------------------------------|-------------------------------------------|------------------------------------|--------------------------------------------|------------------------------------|
| <b>Inverting or Doubling Charge Pumps</b> |                         |                             |                                  |                                           |                                    |                                            |                                    |
| TC1044S                                   | 1.5 to 12               | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 160                                       | 20                                 | 85 kHz oscillator, Boost mode              | 8-Pin PDIP, 8-Pin SOIC             |
| TC7660                                    | 1.5 to 10               | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 180                                       | 20                                 | 10 kHz oscillator                          | 8-Pin PDIP, 8-Pin SOIC             |
| TC7660H                                   | 1.5 to 10               | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 1,000                                     | 20                                 | 120 kHz oscillator                         | 8-Pin PDIP, 8-Pin SOIC             |
| TC7660S                                   | 1.5 to 12               | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 160                                       | 20                                 | 45 kHz oscillator, Boost mode              | 8-Pin PDIP, 8-Pin SOIC             |
| TC7662B                                   | 1.5 to 15               | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 180                                       | 20                                 | 35 kHz oscillator, Boost mode              | 8-Pin PDIP, 8-Pin SOIC             |
| TC1219                                    | 1.5 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 115                                       | 25                                 | 12 kHz oscillator, Low-Power Shutdown mode | 6-Pin SOT-23A                      |
| TC1220                                    | 1.5 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 325                                       | 25                                 | 35 kHz oscillator, Low-Power Shutdown mode | 6-Pin SOT-23A                      |
| TC1221                                    | 1.8 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 600                                       | 25                                 | Shutdown, 125 kHz oscillator               | 6-Pin SOT-23A                      |
| TC1222                                    | 1.8 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 2,800                                     | 25                                 | Shutdown, 750 kHz oscillator               | 6-Pin SOT-23A                      |
| TCM828                                    | 1.5 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 90                                        | 25                                 | 12 kHz oscillator                          | 5-Pin SOT-23A                      |
| TCM829                                    | 1.5 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 260                                       | 25                                 | 35 kHz oscillator                          | 5-Pin SOT-23A                      |
| TC1240                                    | 2.5 to 4.0              | VOUT = 2 VIN                | -40 to +85                       | 900                                       | 40                                 | Shutdown, 160 kHz oscillator               | 6-Pin SOT-23A                      |
| TC1240A                                   | 2.5 to 5.5              | VOUT = 2 VIN                | -40 to +85                       | 900                                       | 40                                 | Shutdown, 160 kHz oscillator               | 6-Pin SOT-23A                      |
| TC7662A                                   | 3 to 18                 | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 200                                       | 40                                 | 12 kHz oscillator                          | 8-Pin PDIP                         |
| TC962                                     | 3 to 18                 | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 200                                       | 80                                 |                                            | 8-Pin PDIP, 16-Pin SOIC            |
| TC1121                                    | 2.4 to 5.5              | VOUT = -VIN or VOUT = 2 VIN | -40 to +85                       | 100                                       | 100                                | Low-Power Shutdown mode                    | 8-Pin MSOP, 8-Pin PDIP, 8-Pin SOIC |

**NOTE 1:** Measured at VDD = 5.0V at 25°C and no load.

**POWER MANAGEMENT – Charge Pump DC-to-DC Converters (continued)**

| Part #                                     | Input Voltage Range (V)      | Output Voltage (V)                                 | Operating Temperature Range (°C) | Maximum Input Current <sup>(1)</sup> (μA) | Typical Active Output Current (mA) | Features                                | Packages               |
|--------------------------------------------|------------------------------|----------------------------------------------------|----------------------------------|-------------------------------------------|------------------------------------|-----------------------------------------|------------------------|
| <b>Multi-Function Charge Pumps</b>         |                              |                                                    |                                  |                                           |                                    |                                         |                        |
| TCM680                                     | 2.0 to 5.5                   | VOUT = ±2 VIN                                      | -40 to +85                       | 1,000                                     | ±10                                | Generates ±6V from +3V or ±10V from +5V | 8-Pin PDIP, 8-Pin SOIC |
| <b>Inverting and Doubling Charge Pumps</b> |                              |                                                    |                                  |                                           |                                    |                                         |                        |
| TC682                                      | 2.4 to 5.5                   | VOUT = -2 VIN                                      | -40 to +85                       | 400                                       | 10                                 | 12 kHz oscillator                       | 8-Pin PDIP, 8-Pin SOIC |
| <b>Regulated Charge Pumps</b>              |                              |                                                    |                                  |                                           |                                    |                                         |                        |
| MCP1252                                    | 2.1/2.7 to 5.5<br>2.0 to 5.5 | Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V | -40 to +85                       | 120                                       | 120 mA for VIN>3.0V                | Power-Good output, 650 kHz oscillator   | 8-Pin MSOP             |
| MCP1253                                    | 2.1/2.7 to 5.5<br>2.0 to 5.5 | Selectable 3.3V or 5.0V or Adjustable 1.5V to 5.5V | -40 to +85                       | 120                                       | 120 mA for VIN>3.0V                | Power-Good output, 1 MHz oscillator     | 8-Pin MSOP             |

**NOTE 1:** Measured at VDD = 5.0V at 25°C and no load.

**POWER MANAGEMENT – CPU/System Supervisors**

| Part # | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                 | Reset Type  | Output         | Typical Reset Pulse Width (ms) | Typical Supply Current (μA) | Additional Features | Packages                                | Bond Options |
|--------|---------------|----------------------------------|-------------------------------------------|-------------|----------------|--------------------------------|-----------------------------|---------------------|-----------------------------------------|--------------|
| MCP102 | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9   | Active Low  | CMOS Push-Pull | 120                            | 1                           |                     | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| MCP103 | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.9   | Active Low  | CMOS Push-Pull | 120                            | 1                           | Max. 809 Pinout     | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| TC1272 | 1.2 to 5.5    | -40 to +85                       | 4.62, 4.37, 4.12                          | Active Low  | CMOS Push-Pull | 200                            | 17                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1275 | 1.2 to 5.5    | -40 to +85                       | 3.06, 2.88, 2.55                          | Active Low  | CMOS Push-Pull | 200                            | 20                          |                     | 3-Pin SOT-23B                           | N/A          |
| TCM809 | 1.2 to 5.5    | -40 to +85                       | 4.63, 4.38, 4.00, 3.08, 2.93, 2.63, 2.32  | Active Low  | CMOS Push-Pull | 240                            | 12                          |                     | 3-Pin SOT-23B, 3-Pin SC-70              | N/A          |
| TC1270 | 1.2 to 5.5    | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active Low  | CMOS Push-Pull | 280                            | 7                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| TCM811 | 1.0 to 5.5    | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active Low  | CMOS Push-Pull | 280                            | 6                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| MCP100 | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low  | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin TO-92, 3-Pin SOT-23B              | D, H         |
| MCP809 | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low  | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1274 | 1.8 to 5.5    | -40 to +85                       | 4.62, 4.37, 4.13                          | Active High | CMOS Push-Pull | 200                            | 17                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1277 | 1.8 to 5.5    | -40 to +85                       | 3.06, 2.88, 2.55                          | Active High | CMOS Push-Pull | 200                            | 20                          |                     | 3-Pin SOT-23B                           | N/A          |
| TCM810 | 1.2 to 5.5    | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32        | Active High | CMOS Push-Pull | 240                            | 12                          |                     | 3-Pin SOT-23B, 3-Pin SC-70              | N/A          |
| TC1271 | 1.2 to 5.5    | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active High | CMOS Push-Pull | 280                            | 7                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| TCM812 | 1.1 to 5.5    | -40 to +85                       | 4.63, 4.38, 3.08, 2.93, 2.63, 1.75        | Active High | CMOS Push-Pull | 280                            | 6                           | Manual Reset        | 4-Pin SOT-143                           | N/A          |
| MCP101 | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active High | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin TO-92, 3-Pin SOT-23B              | D, H         |
| MCP810 | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active High | CMOS Push-Pull | 350                            | 45                          |                     | 3-Pin SOT-23B                           | N/A          |
| MCP121 | 1.0 to 5.5    | -40 to +125                      | 1.9, 2.32, 2, 63, 2.93, 3.08, 4.38, 4.63  | Active Low  | Open-drain     | 120                            | 1                           |                     | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| TC1273 | 1.2 to 5.5    | -40 to +85                       | 4.62, 4.37, 4.12                          | Active Low  | Open-drain     | 200                            | 17                          |                     | 3-Pin SOT-23B                           | N/A          |
| TC1276 | 1.2 to 5.5    | -40 to +85                       | 3.06, 2.88, 2.55                          | Active Low  | Open-drain     | 200                            | 20                          |                     | 3-Pin SOT-23B                           | N/A          |

**POWER MANAGEMENT – CPU/System Supervisors (continued)**

| Part # | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                 | Reset Type      | Output                     | Typical Reset Pulse Width (ms) | Typical Supply Current (μA) | Additional Features             | Packages                                | Bond Options |
|--------|---------------|----------------------------------|-------------------------------------------|-----------------|----------------------------|--------------------------------|-----------------------------|---------------------------------|-----------------------------------------|--------------|
| MCP120 | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low      | Open-drain                 | 350                            | 45                          |                                 | 3-Pin TO-92, 3-Pin SOT-23, 8-Pin SOIC   | D, G, H      |
| TC1279 | 1.2 to 5.5    | -40 to +85                       | 4.62, 4.37, 4.125                         | Active Low      | Open-drain                 | 350                            | 900                         |                                 | 3-Pin SOT-23B                           | N/A          |
| MCP131 | 1.0 to 5.5    | -40 to +125                      | 1.9, 2.32, 2, 63, 2.93, 3.08, 4.38, 4.63  | Active Low      | Open-drain                 | 120                            | 1                           | 100kΩ Internal Pull-up Resistor | 3-Pin SOT-23B, 3-Pin SC-70, 3-Pin TO-92 | N/A          |
| MCP130 | 1.0 to 5.5    | -40 to +85                       | 4.72, 4.62, 4.47, 4.37, 3.075, 2.92, 2.62 | Active Low      | Open-drain w/ 5 kΩ Pull-up | 350                            | 45                          |                                 | 3-Pin TO-92, 3-Pin SOT-23, 8-Pin SOIC   | D, F, H      |
| TC1278 | 1.2 to 5.5    | -40 to +85                       | 4.62, 4.37, 4.125                         | Active High     | Open-drain                 | 350                            | 900                         |                                 | 3-Pin SOT-23B                           | N/A          |
| TC1232 | 4.5 to 5.5    | -40 to +85                       | 4.62, 4.37                                | Active Low/High | Open-drain                 | 610                            | 50                          | Watchdog Timer                  | 8-Pin PDIP, 8-Pin SOIC, 16-Pin SOIC     | N/A          |
| TC32M  | 4.5 to 5.5    | -40 to +85                       | 4.5                                       | Active Low      | Open-drain                 | 700                            | 50                          | Watchdog Timer                  | 3-Pin TO-92, 3-Pin SOT-223              | N/A          |

**POWER MANAGEMENT – Voltage Detectors**

| Part # | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V)                | Reset Type | Output                       | Minimum Reset Pulse Width (ms) | Typical Supply Current (μA) | Features     | Packages                                              |
|--------|---------------|----------------------------------|------------------------------------------|------------|------------------------------|--------------------------------|-----------------------------|--------------|-------------------------------------------------------|
| MCP111 | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.90 | Active Low | Open-drain                   | —                              | 1                           |              | 3-Pin SOT-23B, 3-Pin TO-92, 3-Pin SC-70, 3-Pin SOT-89 |
| MCP112 | 1.0 to 5.5    | -40 to +125                      | 4.63, 4.38, 3.08, 2.93, 2.63, 2.32, 1.90 | Active Low | CMOS Push-Pull               | —                              | 1                           |              | 3-Pin SOT-23B, 3-Pin TO-92, 3-Pin SC-70, 3-Pin SOT-89 |
| TC51   | 0.7 to 10     | -40 to +85                       | 3.0, 2.7, 2.2                            | Active Low | Open-drain                   | 50                             | 1                           | Reset delay  | 3-Pin SOT-23A                                         |
| TC52   | 1.5 to 10     | -40 to +85                       | 4.5/2.7, 3.0/2.7                         | Active Low | Open-drain                   | —                              | 2                           | Dual channel | 5-Pin SOT-23A                                         |
| TC53   | 1.5 to 10     | -40 to +85                       | 2.9, 2.7, 2.2                            | Active Low | CMOS Push-Pull or Open-drain | —                              | 1                           |              | 5-Pin SOT-23A                                         |
| TC54   | 0.7 to 10     | -40 to +85                       | 7.7, 4.3, 4.2, 3.0, 2.9, 2.7, 2.1, 1.4   | Active Low | CMOS Push-Pull or Open-drain | —                              | 1                           |              | 3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92              |

**POWER MANAGEMENT – Power MOSFET Drivers**

| Part #                                                    | Configuration         | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. Ω @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                           |
|-----------------------------------------------------------|-----------------------|----------------------------------|-------------------------|---------------------------------------------------------------------|-------------------------|---------------------------------------------------|------------------------------------|
| <b>Low-Side Drivers, 0.5A to 1.2A Peak Output Current</b> |                       |                                  |                         |                                                                     |                         |                                                   |                                    |
| TC1410                                                    | Single, Inverting     | -40 to +85                       | 0.5                     | 22/22                                                               | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1410N                                                   | Single, Non-inverting | -40 to +85                       | 0.5                     | 22/22                                                               | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1411                                                    | Single, Inverting     | -40 to +85                       | 1                       | 11/11                                                               | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1411N                                                   | Single, Non-inverting | -40 to +85                       | 1                       | 11/11                                                               | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| TC1426                                                    | Dual, Inverting       | 0 to +70                         | 1.2                     | 18/18                                                               | 16                      | 75/75                                             | 8-Pin PDIP, 8-Pin SOIC             |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

**POWER MANAGEMENT – Power MOSFET Drivers (continued)**

| Part #                                                                | Configuration                              | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. $\Omega$ @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                                            |
|-----------------------------------------------------------------------|--------------------------------------------|----------------------------------|-------------------------|----------------------------------------------------------------------------|-------------------------|---------------------------------------------------|-----------------------------------------------------|
| <b>Low-Side Drivers, 0.5A to 1.2A Peak Output Current (continued)</b> |                                            |                                  |                         |                                                                            |                         |                                                   |                                                     |
| TC1427                                                                | Dual, Non-inverting                        | 0 to +70                         | 1.2                     | 18/18                                                                      | 16                      | 75/75                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC1428                                                                | Dual, Inverting and Non-inverting          | 0 to +70                         | 1.2                     | 18/18                                                                      | 16                      | 75/75                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC4467                                                                | Quad, Inverting                            | -40 to +85                       | 1.2                     | 15/15                                                                      | 18                      | 40/40                                             | 14-Pin PDIP, 16-Pin SOIC (W)                        |
| TC4468                                                                | Quad, Non-inverting                        | -40 to +85                       | 1.2                     | 15/15                                                                      | 18                      | 40/40                                             | 14-Pin PDIP, 16-Pin SOIC (W)                        |
| TC4469                                                                | Quad, Non-inverting                        | -40 to +85                       | 1.2                     | 15/15                                                                      | 18                      | 40/40                                             | 14-Pin PDIP, 16-Pin SOIC (W)                        |
| <b>Low-Side Drivers, 1.5A Peak Output Current</b>                     |                                            |                                  |                         |                                                                            |                         |                                                   |                                                     |
| TC4403                                                                | Single, Non-inverting Floating Load Driver | -40 to +85                       | 1.5                     | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP                                          |
| TC4426A                                                               | Dual, Inverting                            | -40 to +125                      | 1.5                     | 9/9                                                                        | 18                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN                   |
| TC4427A                                                               | Dual, Non-inverting                        | -40 to +125                      | 1.5                     | 9/9                                                                        | 18                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN                   |
| TC4428A                                                               | Dual, Inverting and Non-inverting          | -40 to +125                      | 1.5                     | 9/9                                                                        | 18                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN                   |
| TC4426                                                                | Dual, Inverting                            | -40 to +125                      | 1.5                     | 10/10                                                                      | 18                      | 20/40                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP       |
| TC4427                                                                | Dual, Non-inverting                        | -40 to +125                      | 1.5                     | 10/10                                                                      | 18                      | 20/40                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP       |
| TC4428                                                                | Dual, Inverting and Non-inverting          | -40 to +125                      | 1.5                     | 10/10                                                                      | 18                      | 20/40                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin DFN, 8-Pin MSOP       |
| TC426                                                                 | Dual, Inverting                            | -40 to +85                       | 1.5                     | 15/10                                                                      | 18                      | 50/75                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC427                                                                 | Dual, Non-inverting                        | -40 to +85                       | 1.5                     | 15/10                                                                      | 18                      | 50/75                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC428                                                                 | Dual, Inverting and Non-inverting          | -40 to +85                       | 1.5                     | 15/10                                                                      | 18                      | 50/75                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC4404                                                                | Dual, Inverting                            | -40 to +85                       | 1.5                     | 10/10                                                                      | 18                      | 15/32                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC4405                                                                | Dual, Non-inverting                        | -40 to +85                       | 1.5                     | 10/10                                                                      | 18                      | 15/32                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| <b>Low-Side Drivers, 2.0A to 9.0A Peak Output Current</b>             |                                            |                                  |                         |                                                                            |                         |                                                   |                                                     |
| TC1412                                                                | Single, Inverting                          | -40 to +85                       | 2                       | 6/6                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                  |
| TC1412N                                                               | Single, Non-inverting                      | -40 to +85                       | 2                       | 6/6                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                  |
| TC1413                                                                | Single, Inverting                          | -40 to +85                       | 3                       | 4/4                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                  |
| TC1413N                                                               | Single, Non-inverting                      | -40 to +85                       | 3                       | 4/4                                                                        | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                  |
| TC4423                                                                | Dual, Inverting                            | -40 to +125                      | 3                       | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN              |
| TC4424                                                                | Dual, Non-inverting                        | -40 to +125                      | 3                       | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN              |
| TC4425                                                                | Dual, Inverting and Non-inverting          | -40 to +125                      | 3                       | 5/5                                                                        | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN              |
| TC429                                                                 | Single, Inverting                          | -40 to +85                       | 6                       | 2.5/2.5                                                                    | 18                      | 53/60                                             | 8-Pin PDIP, 8-Pin DFN, 8-Pin SOIC                   |
| TC4420                                                                | Single, Non-inverting                      | -40 to +125                      | 6                       | 2.8/2.5                                                                    | 18                      | 55/55                                             | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin DFN     |
| TC4429                                                                | Single, Inverting                          | -40 to +125                      | 6                       | 2.8/2.5                                                                    | 18                      | 55/55                                             | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin DFN     |
| TC4421                                                                | Single, Inverting                          | -40 to +125                      | 9                       | 1.4 (typ)/1.7                                                              | 18                      | 30/33                                             | 8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN                 |
| TC4421A                                                               | Single, Inverting                          | -40 to +125                      | 9                       | 1.25 (typ)/1.5                                                             | 18                      | 38/42                                             | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin 6x5 DFN |
| TC4422                                                                | Single, Non-inverting                      | -40 to +125                      | 9                       | 1.4 (typ)/1.7                                                              | 18                      | 30/33                                             | 8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN                 |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

## POWER MANAGEMENT – Power MOSFET Drivers (continued)

| Part #                                                                | Configuration         | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>th</sub> /R <sub>l</sub> ) (Max. $\Omega$ @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                                            |
|-----------------------------------------------------------------------|-----------------------|----------------------------------|-------------------------|-----------------------------------------------------------------------------|-------------------------|---------------------------------------------------|-----------------------------------------------------|
| <b>Low-Side Drivers, 2.0A to 9.0A Peak Output Current (continued)</b> |                       |                                  |                         |                                                                             |                         |                                                   |                                                     |
| TC4422A                                                               | Single, Non-inverting | -40 to +125                      | 9                       | 1.25 (typ)/1.5                                                              | 18                      | 38/42                                             | 8-Pin PDIP, 8-Pin SOIC, 5-Pin TO-220, 8-Pin 6x5 DFN |
| <b>High-Side/Low-Side Drivers</b>                                     |                       |                                  |                         |                                                                             |                         |                                                   |                                                     |
| TC4626                                                                | Single, Inverting     | -40 to +85                       | 1.5                     | 15/10                                                                       | 6                       | 35/45                                             | 8-Pin PDIP, 16-Pin SOIC (W)                         |
| TC4627                                                                | Single, Non-inverting | -40 to +85                       | 1.5                     | 15/10                                                                       | 6                       | 35/45                                             | 8-Pin PDIP, 16-Pin SOIC (W)                         |
| TC4431                                                                | Single, Inverting     | -40 to +85                       | 1.5                     | 10/10                                                                       | 30                      | 62/78                                             | 8-Pin PDIP, 8-Pin SOIC                              |
| TC4432                                                                | Single, Non-inverting | -40 to +85                       | 1.5                     | 10/10                                                                       | 30                      | 62/78                                             | 8-Pin PDIP, 8-Pin SOIC                              |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

## POWER MANAGEMENT – Battery Chargers

| Part #   | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                                                                                                    | Packages                    |
|----------|--------|-------------------|------------|---------------|-----------------------------|-------------|-------------------------------------------------------------------------------------------------------------|-----------------------------|
| MCP73826 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±1.0                        | Ext         | Small size                                                                                                  | 6-Pin SOT-23                |
| MCP73827 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±1.0                        | Ext         | Mode indicator, Charge Current monitor                                                                      | 8-Pin MSOP                  |
| MCP73828 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±1.0                        | Ext         | Temperature monitor                                                                                         | 8-Pin MSOP                  |
| MCP73831 | Linear | Li-Ion/Li-Polymer | 1          | 3.7 to 6.0    | ±0.5                        | Int         | SOT-23 charger, UVLO, Thermal regulation, Programmable charge current, 4.2, 4.35, 4.4 and 4.5V VREG options | 5-Pin SOT-23, 8-Pin 2x3 DFN |
| MCP73841 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 12     | ±0.5                        | Ext         | Safety charge timers, Temperature monitor                                                                   | 10-Pin MSOP                 |
| MCP73842 | Linear | Li-Ion/Li-Polymer | 2          | 8.7 to 12     | ±0.5                        | Ext         | Safety charge timers, Temperature monitor                                                                   | 10-Pin MSOP                 |
| MCP73843 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 12     | ±0.5                        | Ext         | Safety charge timers                                                                                        | 8-Pin MSOP                  |
| MCP73844 | Linear | Li-Ion/Li-Polymer | 2          | 8.7 to 12     | ±0.5                        | Ext         | Safety charge timers                                                                                        | 8-Pin MSOP                  |
| MCP73853 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | USB control, Safety charge timers, Temperature monitor, Thermal regulation                                  | 16-Pin QFN (4x4)            |
| MCP73855 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | USB control, Safety charge timers, Thermal regulation                                                       | 10-Pin DFN (3x3)            |
| MCP73861 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 12     | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation                                               | 16-Pin 4x4 QFN, 16-Pin SOIC |
| MCP73862 | Linear | Li-Ion/Li-Polymer | 2          | 8.7 to 12     | ±0.5                        | Int         | Safety charge timers, Temperature monitor, Thermal regulation                                               | 16-pin 4x4 QFN, 16-Pin SOIC |

## POWER MANAGEMENT – Hot Swap Controllers

| Part #   | Number of Outputs | V <sub>pos</sub> to V <sub>neg</sub> Differential Voltage (V) | Junction Temperature Range (°C) | OVLO       | UVLO       | Power Good | Int/Ext FET | Applications                        | Packages    |
|----------|-------------------|---------------------------------------------------------------|---------------------------------|------------|------------|------------|-------------|-------------------------------------|-------------|
| MCP18480 | 1                 | -0.3 to +15.0                                                 | -40 to +85                      | Adjustable | Adjustable | Adjustable | Ext         | -48V Telecom/Datacom, Bus/Backplane | 20-Pin SSOP |

**LINEAR – Op Amps**

| Part #  | # per Package | GBWP    | I <sub>q</sub> Typical (μA) | V <sub>os</sub> Max (mV) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temp. Range (°C) | Features                                            | Packages                                                                                          |
|---------|---------------|---------|-----------------------------|--------------------------|---------------------------------------|-----------------------|------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------|
| TC1034  | 1             | 90 kHz  | 6                           | 1.5                      | 125 <sup>(1)</sup>                    | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                           | 5-Pin SOT-23A <sup>(R)</sup>                                                                      |
| TC1035  | 1             | 90 kHz  | 6                           | 1.5                      | 125 <sup>(1)</sup>                    | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Shutdown pin             | 6-Pin SOT-23A <sup>(R)</sup>                                                                      |
| TC1029  | 2             | 90 kHz  | 12                          | 1.5                      | 125 <sup>(1)</sup>                    | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                           | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC                                                                |
| TC1030  | 4             | 90 kHz  | 5                           | 1.5                      | 125 <sup>(1)</sup>                    | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Shutdown pins            | 16-Pin QSOP                                                                                       |
| MCP6041 | 1             | 14 kHz  | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                           | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP, 5-Pin SOT-23 <sup>(S)</sup>                                   |
| MCP6042 | 2             | 14 kHz  | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                           | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6043 | 1             | 14 kHz  | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Chip Select              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6044 | 4             | 14 kHz  | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                           | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6141 | 1             | 100 kHz | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6142 | 2             | 100 kHz | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6143 | 1             | 100 kHz | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6144 | 4             | 100 kHz | 0.6                         | 3                        | 170 <sup>(1)</sup>                    | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G>10 stable              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP606  | 1             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP, 5-Pin SOT23 <sup>(S)</sup>                                   |
| MCP607  | 2             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                                               |
| MCP608  | 1             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output, Chip Select                    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                                               |
| MCP609  | 4             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                 | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP616  | 1             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP Input                      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP617  | 2             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP                            | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP618  | 1             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, Chip Select, PNP Input         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP619  | 4             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP Input                      | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6231 | 1             | 300 kHz | 20                          | 5                        | 52 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                           | 5-Pin SC-70 <sup>(U)</sup> , 5-Pin SOT-23 <sup>(S,R,U)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6232 | 2             | 300 kHz | 20                          | 5                        | 52 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                           | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6234 | 4             | 300 kHz | 20                          | 5                        | 52 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                           | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6241 | 1             | 550 kHz | 50                          | 5                        | 45 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                           | 5-Pin SC-70 <sup>(U)</sup> , 5-Pin SOT-23 <sup>(S,R,U)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6242 | 2             | 550 kHz | 50                          | 5                        | 45 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                           | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6244 | 4             | 550 kHz | 50                          | 5                        | 45 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                           | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

**NOTE** 1: Values are typical at 1 kHz  
2: Values are typical at 10 kHz

**LINEAR – Op Amps (continued)**

| Part #  | # per Package | GBWP    | I <sub>Q</sub> Typical (μA) | V <sub>OS</sub> Max (mV) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temp. Range (°C) | Features                                                        | Packages                                                            |
|---------|---------------|---------|-----------------------------|--------------------------|---------------------------------------|-----------------------|------------------|-----------------------------------------------------------------|---------------------------------------------------------------------|
| MCP6001 | 1             | 1 MHz   | 140                         | 4.5                      | 28 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 5-Pin SOT-23 <sup>(U)</sup> , 5-Pin SC-70 <sup>(S,R,U)</sup>        |
| MCP6002 | 2             | 1 MHz   | 140                         | 4.5                      | 28 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6004 | 4             | 1 MHz   | 140                         | 4.5                      | 28 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                              |
| MCP6271 | 1             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP  |
| MCP6272 | 2             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6273 | 1             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 5-Pin SOT-23 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP    |
| MCP6274 | 4             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                              |
| MCP6275 | 2             | 2 MHz   | 150                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP601  | 1             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                             | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP |
| MCP602  | 2             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                 |
| MCP603  | 1             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output, Chip Select                                | 6-Pin SOT-23 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP   |
| MCP604  | 4             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                             | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                              |
| MCP6281 | 1             | 5 MHz   | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP  |
| MCP6282 | 2             | 5 MHz   | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6283 | 1             | 5 MHz   | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 6-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP  |
| MCP6284 | 4             | 5 MHz   | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                              |
| MCP6285 | 2             | 5 MHz   | 400                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6291 | 1             | 10 MHz  | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP  |
| MCP6292 | 2             | 10 MHz  | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6293 | 1             | 10 MHz  | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 6-Pin SOT-23 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP    |
| MCP6294 | 4             | 10 MHz  | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                              |
| MCP6295 | 2             | 10 MHz  | 1100                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6021 | 1             | 10 MHz  | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, 1/2 V <sub>CC</sub> V <sub>REF</sub> | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                 |

**Legend:** S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

**NOTE** 1: Values are typical at 1 kHz

2: Values are typical at 10 kHz

### LINEAR – Op Amps (continued)

| Part #  | # per Package | GBWP   | I <sub>Q</sub> Typical (μA) | V <sub>OS</sub> Max (mV) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temp. Range (°C) | Features                               | Packages                               |
|---------|---------------|--------|-----------------------------|--------------------------|---------------------------------------|-----------------------|------------------|----------------------------------------|----------------------------------------|
| MCP6022 | 2             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6023 | 1             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6024 | 4             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

NOTE 1: Values are typical at 1 kHz

2: Values are typical at 10 kHz

### LINEAR – High Precision Operational Amplifiers

| Part #                    | # per Package | GBWP    | I <sub>Q</sub> MAX (mA) | Typical V <sub>OS</sub> (μV) | V <sub>OS</sub> Drift Max (μV/°C) | Operating Voltage (V) | Temp. Range (°C) | Features                           | Packages                |
|---------------------------|---------------|---------|-------------------------|------------------------------|-----------------------------------|-----------------------|------------------|------------------------------------|-------------------------|
| <b>Chopper Stabilized</b> |               |         |                         |                              |                                   |                       |                  |                                    |                         |
| TC7650                    | 1             | 2.0 MHz | 3.5                     | 5                            | 0.05                              | 4.5 to 16             | 0 to 70          | Single and Split Supply            | 8-Pin PDIP, 14-Pin PDIP |
| TC7652                    | 1             | 0.4 MHz | 3                       | 5                            | 0.05                              | 5 to 16               | 0 to 70          | Single and Split Supply, Low Noise | 8-Pin PDIP, 14-Pin PDIP |
| <b>Auto-Zero</b>          |               |         |                         |                              |                                   |                       |                  |                                    |                         |
| TC913A/B                  | 2             | 1.5 MHz | 1.1                     | 15                           | 0.15/0.30                         | 6.5 to 16             | 0 to 70          | Single and Split Supply            | 8-Pin PDIP, 8-Pin SOIC  |

### LINEAR – Programmable Gain Amplifiers (PGA)

| Part #  | Channels | -3dB BW (MHz) | I <sub>Q</sub> Typ. | V <sub>OS</sub> (μV) | Operating Voltage (V) | Temp. Range (°C) | Features                             | Packages                               |
|---------|----------|---------------|---------------------|----------------------|-----------------------|------------------|--------------------------------------|----------------------------------------|
| MCP6S21 | 1        | 2 to 12       | 1.1 mA              | 275                  | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6S22 | 2        | 2 to 12       | 1.1 mA              | 275                  | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP6S26 | 6        | 2 to 12       | 1.1 mA              | 275                  | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP6S28 | 8        | 2 to 12       | 1.1 mA              | 275                  | 2.5 to 5.5            | -40 to +85       | SPI, 8 Gain Steps, Software Shutdown | 16-Pin PDIP, 16-Pin SOIC               |
| MCP6S91 | 1        | 1 to 18       | 1.0 mA              | 4000                 | 2.5 to 5.5            | -40 to +125      | SPI, 8 Gain Steps, Software Shutdown | 8-Pin PDIP, 8-Pin SSOIC, 8-Pin MSOP    |
| MCP6S92 | 2        | 1 to 18       | 1.0 mA              | 4000                 | 2.5 to 5.5            | -40 to +125      | SPI, 8 Gain Steps, Software Shutdown | 8-Pin PDIP, 8-Pin SSOIC, 8-Pin MSOP    |
| MCP6S93 | 2        | 1 to 18       | 1.0 mA              | 4000                 | 2.5 to 5.5            | -40 to +125      | SPI, 8 Gain Steps, Software Shutdown | 10-Pin MSOP                            |

### LINEAR – Integrated Devices

| Part #  | # of Op Amps per Package | # of Comparators per Package | I <sub>Q</sub> Typical (μA) | V <sub>REF</sub> (V) | Operating Voltage (V) | Temp. Range (°C) | Features                                 | Packages                           |
|---------|--------------------------|------------------------------|-----------------------------|----------------------|-----------------------|------------------|------------------------------------------|------------------------------------|
| TC1026C | 1                        | 1                            | 12                          | 1.2                  | 1.8 to 5.5            | -40 to +85       | On-board V <sub>REF</sub>                | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC |
| TC1043C | 2                        | 2                            | 16                          | 1.2                  | 1.8 to 5.5            | -40 to +85       | On-board V <sub>REF</sub> , Shutdown pin | 16-Pin QSOP                        |



## LINEAR – Comparators

| Part #  | # per Package | VREF (V) | Typical Propagation Delay (μs) | Iq Typical (μA) | Vos Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features                                                          | Packages                                                                                        |
|---------|---------------|----------|--------------------------------|-----------------|--------------|-----------------------|------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| TC1027  | 4             | 1.2      | 4                              | 18              | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF, Rail-to-Rail Input/Output                          | 16-Pin PDIP, 16-Pin QSOP, 16-Pin SOIC                                                           |
| TC1037  | 1             | —        | 4                              | 4               | 5            | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                         | 5-Pin SOT-23A <sup>(S)</sup>                                                                    |
| TC1038  | 1             | —        | 4                              | 4               | 5            | 1.8 to 5.5            | -40 to +85       | Shutdown pin, Rail-to-Rail Input/Output                           | 6-Pin SOT-23A <sup>(S)</sup>                                                                    |
| TC1039  | 1             | 1.2      | 4                              | 6               | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF, Rail-to-Rail Input/Output                          | 6-Pin SOT-23A <sup>(S)</sup>                                                                    |
| TC1041  | 2             | 1.2      | 4                              | 10              | 5            | 1.8 to 5.5            | -40 to +85       | On-board VREF, Programmable hysteresis, Rail-to-Rail Input/Output | 8-Pin MSOP, 8-Pin SOIC                                                                          |
| MCP6541 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                              | 5-Pin SOT-23 <sup>(S,R)</sup> , 5-Pin SC-70 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6542 | 2             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6543 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output, Chip Select                 | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6544 | 4             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                          |
| MCP6546 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output                         | 5-Pin SOT-23 <sup>(S,R)</sup> , 5-Pin SC-70 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6547 | 2             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output                         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6548 | 1             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output, Chip Select            | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6549 | 4             | —        | 4                              | 1               | 5            | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output                         | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                          |

Legend: S = Standard Pinout; R = Reverse Pinout

## MIXED SIGNAL – Successive Approximation Register (SAR) A/D Converters

| Part #  | Resolution (bits) | Maximum Sampling Rate (ksamples/sec) | # of Input Channels | Input Type   | Interface        | Input Voltage Range (V) | Max. Supply Current (μA) | Max. INL | Temp. Range (°C) | Packages                               |
|---------|-------------------|--------------------------------------|---------------------|--------------|------------------|-------------------------|--------------------------|----------|------------------|----------------------------------------|
| MCP3021 | 10                | 22                                   | 1                   | Single-ended | I <sup>2</sup> C | 2.7 to 5.5              | 250                      | ±1 LSB   | -40 to +125      | 5-Pin SOT-23A                          |
| MCP3001 | 10                | 200                                  | 1                   | Single-ended | SPI              | 2.7 to 5.5              | 500                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3002 | 10                | 200                                  | 2                   | Single-ended | SPI              | 2.7 to 5.5              | 650                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3004 | 10                | 200                                  | 4                   | Single-ended | SPI              | 2.7 to 5.5              | 550                      | ±1 LSB   | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3008 | 10                | 200                                  | 8                   | Single-ended | SPI              | 2.7 to 5.5              | 550                      | ±1 LSB   | -40 to +85       | 16-Pin PDIP, 16-Pin SOIC               |
| MCP3221 | 12                | 22                                   | 1                   | Single-ended | I <sup>2</sup> C | 2.7 to 5.5              | 250                      | ±2 LSB   | -40 to +125      | 5-Pin SOT-23A                          |
| MCP3201 | 12                | 100                                  | 1                   | Single-ended | SPI              | 2.7 to 5.5              | 400                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3202 | 12                | 100                                  | 2                   | Single-ended | SPI              | 2.7 to 5.5              | 550                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP3204 | 12                | 100                                  | 4                   | Single-ended | SPI              | 2.7 to 5.5              | 400                      | ±1 LSB   | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3208 | 12                | 100                                  | 8                   | Single-ended | SPI              | 2.7 to 5.5              | 400                      | ±1 LSB   | -40 to +85       | 16-Pin PDIP, 16-Pin SOIC               |
| MCP3301 | 13                | 100                                  | 1                   | Differential | SPI              | 2.7 to 5.5              | 450                      | ±1 LSB   | -40 to +85       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP3302 | 13                | 100                                  | 2                   | Differential | SPI              | 2.7 to 5.5              | 450                      | ±1 LSB   | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3304 | 13                | 100                                  | 4                   | Differential | SPI              | 2.7 to 5.5              | 450                      | ±1 LSB   | -40 to +85       | 16-Pin PDIP, 16-Pin SOIC               |

### MIXED SIGNAL – Delta-Sigma A/D Converters

| Part #                | Resolution (bits) | Maximum Sampling Rate (samples/sec) | # of Input Channels    | Interface | Supply Voltage Range (V) | Typical Supply Current (μA) | Typical INL (%FSR) | Temp. Range (°C) | Features                                       | Packages                 |
|-----------------------|-------------------|-------------------------------------|------------------------|-----------|--------------------------|-----------------------------|--------------------|------------------|------------------------------------------------|--------------------------|
| MCP3551               | 22                | 15                                  | 1 Diff                 | SPI™      | 2.7 to 5.5               | 120                         | 0.0002             | -40 to +125      | Simultaneous 50/60 Hz rejection                | 8-Pin SOIC, 8-Pin MSOP   |
| MCP3553               | 22                | 60                                  | 1 Diff                 | SPI™      | 2.7 to 5.5               | 120                         | 0.0002             | -40 to +125      |                                                | 8-pin SOIC, 8-Pin MSOP   |
| TC3400 <sup>(1)</sup> | 10 to 16          | >400                                | 1 Diff                 | 2-Wire    | 1.8 to 5.5               | 260                         | 0.0038             | 0 to +85         |                                                | 8-Pin PDIP, 8-Pin SOIC   |
| TC3401 <sup>(1)</sup> | 10 to 16          | >400                                | 2 Diff                 | 2-Wire    | 1.8 to 5.5               | 300                         | 0.0038             | 0 to +85         | Enable mode, Reset monitor, Power-fail monitor | 16-Pin PDIP, 16-Pin QSOP |
| TC3402 <sup>(1)</sup> | 10 to 16          | >400                                | 4 Diff                 | 2-Wire    | 1.8 to 5.5               | 250                         | 0.0038             | 0 to +85         |                                                | 16-Pin PDIP, 16-Pin QSOP |
| TC3405 <sup>(1)</sup> | 10 to 16          | >400                                | 3 Single-ended, 1 Diff | 2-Wire    | 1.8 to 5.5               | 250                         | 0.0038             | 0 to +85         | Enable mode, Reset monitor                     | 16-Pin PDIP, 16-Pin QSOP |

NOTE 1: All TC340X are not recommended for new designs.

### MIXED SIGNAL – Energy Measurement ICs

| Part #  | Dynamic Measurement | Typical Measurement Accuracy | Gain        | Typical Voltage Reference Drift | Typical Supply Current | Supply Voltage Range (V) | Temp. Range (°C) | Features                         | Packages    |
|---------|---------------------|------------------------------|-------------|---------------------------------|------------------------|--------------------------|------------------|----------------------------------|-------------|
| MCP3905 | 500:1               | 0.1%                         | 1, 2, 8, 16 | 15 ppm                          | 4 mA                   | 4.5 to 5.5               | -40 to +85       | Active (real) power pulse output | 24-Pin SSOP |

### MIXED SIGNAL – Dual Slope A/D Converters

| Part #  | Supply Voltage (V) | Input Voltage Range (V)  | Resolution            | Sampling Rate (Conv/s) | Input Channels | Data Interface          | Temp. Range (°C) | Features                                                                                       | Packages                                             |
|---------|--------------------|--------------------------|-----------------------|------------------------|----------------|-------------------------|------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------|
| TC500   | ±4.5 to ±7.5       | VSS + 1.5V to VDD – 1.5V | Up to 16 bits         | 4 to 10                | 1              | 3-Wire                  | 0 to +70         | Differential input range, Programmable resolution/conversion time                              | 16-Pin PDIP, 16-Pin SOIC, 16-Pin CerDIP              |
| TC500A  | ±4.5 to ±7.5       | VSS + 1.5V to VDD – 1.5V | Up to 17 bits         | 4 to 10                | 1              | 3-Wire                  | 0 to +70         | Differential input range, Programmable resolution/conversion time                              | 16-Pin PDIP, 16-Pin SOIC, 16-Pin CerDIP              |
| TC510   | +4.5 to +5.5       | VSS + 1.5V to VDD – 1.5V | Up to 17 bits         | 4 to 10                | 1              | 3-Wire                  | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 24-Pin PDIP, 24-Pin SOIC                             |
| TC514   | +4.5 to +5.5       | VSS + 1.5V to VDD – 1.5V | Up to 17 bits         | 4 to 10                | 4              | 3-Wire                  | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 28-Pin PDIP, 28-Pin SOIC                             |
| TC520A  | +4.5 to +5.5       | —                        | —                     | —                      | —              | Serial port             | 0 to +70         | Optional serial interface adapter for TC500/500A/510/514                                       | 14-Pin PDIP, 16-Pin SOIC                             |
| TC530   | +4.5 to +5.5       | VSS + 1.5V to VDD – 1.5V | Up to 17 bits         | 3 to 10                | 1              | Serial port             | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 28-Pin PDIP, 28-Pin SOIC                             |
| TC534   | +4.5 to +5.5       | VSS + 1.5V to VDD – 1.5V | Up to 17 bits         | 3 to 10                | 4              | Serial port             | 0 to +70         | Differential input range, Programmable resolution/conversion time, Charge pump (-V) output pin | 40-Pin PDIP, 44-Pin MQFP                             |
| TC7109  | ±4.5 to ±5.5       | VSS + 1.5V to VDD – 1.0V | 12 bits plus sign bit | 2 to 10                | 1              | Parallel or Serial port | -25 to +85       | Differential input range                                                                       | 40-Pin PDIP, 40-Pin CerDip, 44-Pin PLCC, 44-Pin MQFP |
| TC7109A | ±4.5 to ±5.5       | VSS + 1.5V to VDD – 1.0V | 12 bits plus sign bit | 2 to 10                | 1              | Parallel or Serial port | -25 to +85       | Differential input range                                                                       | 40-Pin PDIP, 40-Pin CerDip, 44-Pin PLCC, 44-Pin MQFP |

**MIXED SIGNAL – Binary and BCD A/D Converters**

| Part #   | Description | Supply Voltage (V) | Input Voltage Range (V)                          | Resolution (Digits) | Resolution (Counts) | Max Power (mW) | Data Interface | Temp. Range (°C) | Features                               | Packages                                             |
|----------|-------------|--------------------|--------------------------------------------------|---------------------|---------------------|----------------|----------------|------------------|----------------------------------------|------------------------------------------------------|
| TC835    | BCD A/D     | ±5                 | V <sub>SS</sub> + 1.0V to V <sub>DD</sub> – 0.5V | 4½                  | ±20,000             | 30             | MUXed BCD      | 0 to +70         | Upgrade to TC7135                      | 64-Pin MQFP, 44-Pin MQFP, 28-Pin PDIP                |
| TC850    | Binary A/D  | ±5                 | V <sub>SS</sub> + 1.5V to V <sub>DD</sub> – 1.5V | 15-bit              | ±32,768             | 35             | 8-bit parallel | -25 to +70       | Highest conversion speed (40 conv/sec) | 44-Pin PLCC, 40-Pin PDIP, 40-Pin CerDIP              |
| TC7135   | BCD A/D     | ±5                 | V <sub>SS</sub> + 1.0V to V <sub>DD</sub> – 1.0V | 4½                  | ±20,000             | 30             | MUXed BCD      | 0 to +70         | For DMM, DPM, Data loggers             | 28-Pin PLCC, 28-Pin PDIP, 64-Pin MQFP                |
| TC14433  | BCD A/D     | ±4.5 to ±8         | ±199.9 mV to 1.999V                              | 3½                  | ±2,000              | 20             | MUXed BCD      | -40 to +85       | For DMM, DPM, Data loggers             | 24-Pin SOIC, 24-Pin PDIP, 28-Pin PLCC, 24-Pin CerDIP |
| TC14433A | BCD A/D     | ±4.5 to ±8         | ±199.9 mV to 1.999V                              | 3½                  | ±2,000              | 20             | MUXed BCD      | -40 to +85       | For DMM, DPM, Data loggers             | 24-Pin PDIP, 28-Pin PLCC, 24-Pin CerDIP              |

**MIXED SIGNAL – Display A/D Converters**

| Part #  | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temp. Range (°C) | Features                                   | Packages                                             |
|---------|--------------|--------------------|---------------------|---------------------|------------|------------------|--------------------------------------------|------------------------------------------------------|
| TC820   | LCD          | 9                  | 3¾                  | ±4,000              | 10         | 0 to +70         | DMM plus frequency counter and logic probe | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |
| TC7106  | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7106A | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7107  | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7107A | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7116  | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7116A | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7117  | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7117A | LED          | ±5                 | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7126  | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85       | Low-power TC7106                           | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7126A | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85       | Low-power TC7106                           | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7129  | LCD          | 9                  | 4½                  | ±20,000             | 4.5        | 0 to +70         | Lowest noise ±3 mV sensitivity             | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |

**MIXED SIGNAL – Digital Potentiometers**

| Part #  | Number of Taps | Memory   | Number per Package | Interface | Resistance (kOhms) | INL (max) | DNL (max) | Temp. Range (°C) | Comments                         | Packages                                            |
|---------|----------------|----------|--------------------|-----------|--------------------|-----------|-----------|------------------|----------------------------------|-----------------------------------------------------|
| MCP4011 | 64             | Volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Potentiometer mode               | 6-Pin SOT-23, 8-Pin SOIC, 8-Pin MSOP, 8-Pin 2x3 DFN |
| MCP4012 | 64             | Volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Rheostat mode                    | 6-Pin SOT-23                                        |
| MCP4013 | 64             | Volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Potentiometer to V <sub>SS</sub> | 6-Pin SOT-23                                        |

**MIXED SIGNAL – Digital Potentiometers (continued)**

| Part #   | Number of Taps | Memory       | Number per Package | Interface | Resistance (kOhms) | INL (max) | DNL (max) | Temp. Range (°C) | Comments                                            | Packages                                            |
|----------|----------------|--------------|--------------------|-----------|--------------------|-----------|-----------|------------------|-----------------------------------------------------|-----------------------------------------------------|
| MCP4014  | 64             | Volatile     | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Rheostat to Vss                                     | 5-Pin SOT-23                                        |
| MCP4021  | 64             | Non-volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Potentiometer mode, Shutdown, WiperLock™ Technology | 6-Pin SOT-23, 8-Pin SOIC, 8-Pin MSOP, 8-Pin 2x3 DFN |
| MCP4022  | 64             | Non-volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Rheostat mode, Shutdown, WiperLock™ Technology      | 6-Pin SOT-23                                        |
| MCP4023  | 64             | Non-volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Potentiometer to Vss, WiperLock™ Technology         | 6-Pin SOT-23                                        |
| MCP4024  | 64             | Non-volatile | 1                  | Up/Down   | 2, 5, 10, 50       | 0.5       | 0.5       | -40 to +125      | Rheostat to Vss, Shutdown, WiperLock™ Technology    | 5-Pin SOT-23                                        |
| MCP41010 | 256            | Volatile     | 1                  | SPI™      | 10                 | 1         | 1         | -40 to +85       | Potentiometer mode, Shutdown                        | 8-Pin PDIP, 8-Pin SOIC                              |
| MCP41050 | 256            | Volatile     | 1                  | SPI™      | 50                 | 1         | 1         | -40 to +85       | Potentiometer mode, Shutdown                        | 8-Pin PDIP, 8-Pin SOIC                              |
| MCP41100 | 256            | Volatile     | 1                  | SPI™      | 100                | 1         | 1         | -40 to +85       | Potentiometer mode, Shutdown                        | 8-Pin PDIP, 8-Pin SOIC                              |
| MCP42010 | 256            | Volatile     | 2                  | SPI™      | 10                 | 1         | 1         | -40 to +85       | Potentiometer mode, Shutdown                        | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP              |
| MCP42050 | 256            | Volatile     | 2                  | SPI™      | 50                 | 1         | 1         | -40 to +85       | Potentiometer mode, Shutdown                        | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP              |
| MCP42100 | 256            | Volatile     | 2                  | SPI™      | 100                | 1         | 1         | -40 to +85       | Potentiometer mode, Shutdown                        | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP              |

**MIXED SIGNAL – Frequency-to-Voltage/Voltage-to-Frequency Converters**

| Part # | Frequency Range (kHz) | Full Scale (ppm FS/°C) | Non-linearity (%FS) | Temp. Range (°C) | Packages                 |
|--------|-----------------------|------------------------|---------------------|------------------|--------------------------|
| TC9400 | 100                   | ±40                    | ±0.05               | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC |
| TC9401 | 100                   | ±40                    | ±0.02               | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC |
| TC9402 | 100                   | ±100                   | ±0.25               | -40 to +85       | 14-Pin PDIP, 14-Pin SOIC |

**MIXED SIGNAL – D/A Converters**

| Part #  | Resolution (Bits) | DACs per Package | Interface | VREF | Output Settling Time (μs) | DNL (LSB) | Typical Standby Current (μA) | Typical Operating Current (μA) | Temp. Range (°C) | Packages                               |
|---------|-------------------|------------------|-----------|------|---------------------------|-----------|------------------------------|--------------------------------|------------------|----------------------------------------|
| TC1320  | 8                 | 1                | SMBus     | Ext  | 10                        | ±0.8      | 0.1                          | 350                            | -40 to +85       | 8-Pin MSOP, 8-Pin SOIC                 |
| TC1321  | 10                | 1                | SMBus     | Ext  | 10                        | ±2        | 0.1                          | 350                            | -40 to +85       | 8-Pin MSOP, 8-Pin SOIC                 |
| MCP4821 | 12                | 1                | SPI       | Y    | 4.5                       | 1         | 0.3                          | 330                            | -40 to +125      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP4822 | 12                | 2                | SPI       | Y    | 4.5                       | 1         | 0.3                          | 415                            | -40 to +125      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP4921 | 12                | 1                | SPI       | Ext  | 4.5                       | 0.75      | 1                            | 175                            | -40 to +125      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| MCP4922 | 12                | 2                | SPI       | Ext  | 4.5                       | 0.75      | 1                            | 350                            | -40 to +125      | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

**NOTE:** The analog output is voltage.

### INTERFACE – Controller Area Network (CAN) Products

| Part #                 | Operating Voltage (V) | Temperature Range (°C) | Tx Buffers | Rx Buffers | Filters | Masks | Interrupt Output | Unique Features                                                                                                         | Packages                               |
|------------------------|-----------------------|------------------------|------------|------------|---------|-------|------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| MCP2510 <sup>(1)</sup> | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 6       | 2     | Yes              | CAN 2.0B Active controller with SPI interface to MCU, 3 transmit buffers, 2 receive buffers, HW and SW message triggers | 18-Pin PDIP, 18-Pin SOIC, 20-Pin TSSOP |
| MCP2515                | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 6       | 2     | Yes              | MCP2510 pin compatible upgrade with enhanced features including higher throughput and data byte filtering               | 18-Pin PDIP, 18-Pin SOIC, 20-Pin TSSOP |
| MCP25020               | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander, Configurable I/O, 2 PWM outputs                                                           | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25025               | 2.7 to 5.5            | -40 to +85             | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander, Configurable I/O, 2 PWM outputs, One-wire CAN option                                      | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25050               | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 2       | 1     | N/A              | Mixed-Signal CAN 2.0B Active I/O Expander, Configurable I/O, 4 10-bit ADCs, 2 PWM outputs                               | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25055               | 2.7 to 5.5            | -40 to +85             | 3          | 2          | 2       | 1     | N/A              | Mixed-Signal CAN 2.0B Active I/O Expander, Configurable I/O, 4 10-bit ADCs, 2 PWM outputs, One-wire CAN option          | 14-Pin PDIP, 14-Pin SOIC               |
| MCP2551                | 4.5 to 5.5            | -40 to +125            | n/a        | n/a        | n/a     | n/a   | N/A              | High-speed CAN Transceiver (1 Mbps max. CAN bus speed), ISO11898 compatible, Industry standard pinout                   | 8-Pin PDIP, 8-Pin SOIC                 |

**NOTE 1:** Not recommended for new designs.

### INTERFACE – Infrared Products

| Part #  | Operating Voltage (V) | Operating Temperature Range (°C) | Max. Baud Rate (Kbaud)    | Unique Features                                                                                            | Packages                              |
|---------|-----------------------|----------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------|
| MCP2120 | 2.5 to 5.5            | -40 to +85                       | 325                       | UART to IR encoder/decoder with both hardware and software baud rate selection                             | 14-Pin PDIP, 14-Pin SOIC              |
| MCP2122 | 1.8 to 5.5            | -40 to +85                       | 16x less than clock input | UART to IR encoder/decoder                                                                                 | 8-Pin PDIP, 8-Pin SOIC                |
| MCP2140 | 2.7 to 5.5            | -40 to +85                       | 9.6                       | IrDA® Standard protocol handler plus bit encoder/decoder, Fixed baud rate, Low-cost                        | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP |
| MCP2150 | 3.0 to 5.5            | -40 to +85                       | 115.2                     | IrDA® Standard protocol handler plus bit encoder/decoder on one chip for DTE applications, Programmable ID | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP |
| MCP2155 | 3.0 to 5.5            | -40 to +85                       | 115.2                     | IrDA® Standard protocol handler plus bit encoder/decoder on one chip for DCE applications, Programmable ID | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP |

**NOTE:** IrDA® is a registered trademark of Infrared Data Association.

### INTERFACE – Ethernet Products

| Part #   | Operating Voltage (V) | Operating Temperature Range (°C) | MAC | PHY       | TX/RX Dual Port RAM | Bus Type | Max Bus Speed (MHz) | Features                                                                                 | Packages                                 |
|----------|-----------------------|----------------------------------|-----|-----------|---------------------|----------|---------------------|------------------------------------------------------------------------------------------|------------------------------------------|
| ENC28J60 | 3.14 to 3.45          | -40 to +85                       | yes | 10-Base-T | 8 KB                | SPI      | 25                  | Ethernet controller, IEEE 802.3 compatible, Loopback Test modes, Auto-polarity detection | 28-Pin SOIC, 28-Pin SSOP, 28-Pin 6x6 QFN |

### INTERFACE – LIN Transceiver Products

| Part # | Description                          | Vreg Output Voltage (V) | Operating Temperature Range (°C) | Vreg Output Current (mA) | Vcc Range (V)            | Max Baud Rate | LIN Specification Supported | Packages                          |
|--------|--------------------------------------|-------------------------|----------------------------------|--------------------------|--------------------------|---------------|-----------------------------|-----------------------------------|
| MCP201 | LIN Transceiver with integrated VREG | 4.75 to 5.25            | -40 to +125                      | 50                       | 7.4 to 18 <sup>(1)</sup> | 20 Kbaud      | Revision 1.2                | 8-pin PDIP, 8-pin SOIC, 8-Pin DFN |

**NOTE 1:** Can withstand 40V load dump.

### INTERFACE – Serial Peripherals

| Part #   | Description              | Operating Voltage (V) | Operating Temperature Range (°C) | Bus Type          | Max. Bus Frequency (kHz) | Features                                                                                                                 | Packages                                              |
|----------|--------------------------|-----------------------|----------------------------------|-------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| MCP23008 | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +85                       | I <sup>2</sup> C™ | 1700                     | 3 HW address pins, HW interrupt, 25 mA source/sink capability per I/O                                                    | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP                 |
| MCP23S08 | 8-bit I/O Port Expander  | 1.8 to 5.5            | -40 to +85                       | SPI™              | 10000                    | 2 HW address pins, HW interrupt, 25 mA source/sink capability per I/O                                                    | 18-Pin PDIP, 18-Pin SOIC, 20-Pin SSOP                 |
| MCP23016 | 16-bit I/O Port Expander | 2.0 to 5.5            | -40 to +85                       | I <sup>2</sup> C™ | 400                      | 3 H/W address inputs, HW interrupt, 25 mA source/sink capability per I/O                                                 | 28-Pin PDIP, 28-Pin SOIC, 28-Pin SSOP, 28-Pin 6x6 QFN |
| MCP23017 | 16-bit I/O expander      | 1.8 to 5.5            | -40 to +125                      | I <sup>2</sup> C™ | 1,700                    | 3 HW address pins, 25 mA sink/source per I/O, 100 kHz, 400 kHz and 3-4 MHz I <sup>2</sup> C™ supported, Interrupt output | 28-Pin PDIP, 28-Pin SOIC, 28-Pin SSOP, 28-Pin QFN     |
| MCP23S17 | 16-bit I/O expander      | 1.8 to 5.5            | -40 to +125                      | SPI™              | 10,000                   | 3 HW address pins, 25 mZ sink/source per I/O, Interrupt output                                                           | 28-Pin PDIP, 28-Pin SOIC, 28-Pin SSOP, 28-Pin QFN     |

## FUTURE ANALOG/INTERFACE PRODUCTS

Lead-free versions of many devices are currently offered. Check Microchip's web site for availability.

### Power Management – Low-Side Power MOSFET Drivers

| Part # | Configuration         | Operating Temperature (°C) | Peak Output Current (A) | Output Resistance (Ω) | Max. Supply Voltage | Input/Output Delay (td1, td2) | Packages                                                        |
|--------|-----------------------|----------------------------|-------------------------|-----------------------|---------------------|-------------------------------|-----------------------------------------------------------------|
| TC4451 | Single, Inverting     | -40 to +125                | 12                      | 0.6 (typ)/1.5         | 18                  | 15/15                         | 8-Pin SOIC, 8-Pin PDIP, 8-Pin 6x5 DFN, 5-Pin TO-220, 5-Pin DDPK |
| TC4452 | Single, Non-inverting | -40 to +125                | 12                      | 0.6 (typ)/1.5         | 18                  | 15/15                         | 8-Pin SOIC, 8-Pin PDIP, 8-Pin 6x5 DFN, 5-Pin TO-220, 5-Pin DDPK |

### Power Management – Battery Chargers

| Part #   | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                  | Packages                    |
|----------|--------|-------------------|------------|---------------|-----------------------------|-------------|---------------------------|-----------------------------|
| MCP73831 | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | Small size, Status output | 5-Pin SOT-23, 8-Pin 2x3 DFN |

### Power Management – Charge Pump DC/DC Converters

| Part #        | Input Voltage (V) | Output Voltage (V) | Operating Temperature Range (°C) | Maximum Input Current (mA) | Typical Active Output Current (mA) | Features                                                                                | Packages                    |
|---------------|-------------------|--------------------|----------------------------------|----------------------------|------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------|
| MCP1256/7/8/9 | 1.8 to 3.6        | 3.3                | -40 to +85                       | 100                        | 100                                | 650 kHz Oscillator, High-Efficiency Fractional mode, Low-Power Sleep and Shutdown modes | 10-Pin MSOP, 10-Pin 3x3 DFN |

### Power Management – Linear Regulators

| Part #  | Max. Input Voltage (V) | Output Voltage (V)                          | Output Current (mA) | Junction Temp. Range (°C) | Typical Active Current (mA) | Typical Dropout Voltage of Rated IOUT (mV) | Typical Output Voltage Accuracy (%) | Features                                         | Packages                                 |
|---------|------------------------|---------------------------------------------|---------------------|---------------------------|-----------------------------|--------------------------------------------|-------------------------------------|--------------------------------------------------|------------------------------------------|
| MCP1702 | 12                     | 1.2, 1.5, 1.8, 2.5, 2.8, 3.0, 3.5, 4.0, 5.0 | 250                 | -40 to +125               | 2                           | 650                                        | ±0.4                                | Ultra-low ground current, 12V max. input voltage | 3-Pin SOT-23A, 3-Pin SOT-89, 3-Pin TO-92 |

### Power Management – Switching Regulators

| Part #  | Description                      | Input Voltage (V) | Output Voltage (V) | Operating Temp. Range (°C) | Control Scheme | Switching Freq. (kHz) | Typical Active Current (mA) | Output Current (mA) | Features                                  | Packages                    |
|---------|----------------------------------|-------------------|--------------------|----------------------------|----------------|-----------------------|-----------------------------|---------------------|-------------------------------------------|-----------------------------|
| MCP1603 | Synchronous Buck DC/DC Regulator | 2.7 to 5.5        | 0.8 to 4.5         | -40 to +85                 | PFM/PWM        | 2000                  | 35                          | 500                 | PFM, PWM auto-switching, UVLO, soft-start | 5-Pin SOT-23, 8-Pin 2x3 DFN |

### Power Management – CPU/System Supervisors

| Part #  | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V) | Reset Type | Output         | Typical Reset Pulse Width (ms) | Typical Supply Current (μA) | Features                                           | Packages     |
|---------|---------------|----------------------------------|---------------------------|------------|----------------|--------------------------------|-----------------------------|----------------------------------------------------|--------------|
| MCP1316 | 1.0 to 5.5    | -40 to +125                      | 2.9, 4.6                  | Active-Low | CMOS Push-Pull | 200                            | 5                           | Watchdog Input (WDI time-out = 1.6s), Manual Reset | 5-Pin SOT-23 |

**Power Management – CPU/System Supervisors (continued)**

| Part #  | Vcc Range (V) | Operating Temperature Range (°C) | Nominal Reset Voltage (V) | Reset Type      | Output                        | Typical Reset Pulse Width (ms) | Typical Supply Current (µA) | Features                                                                                               | Packages     |
|---------|---------------|----------------------------------|---------------------------|-----------------|-------------------------------|--------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------|--------------|
| MCP1317 | 1.0 to 5.5    | -40 to +125                      | 2.9, 4.6                  | Active-High     | CMOS Push-Pull                | 200                            | 5                           | Watchdog Input (WDI time-out = 1.6s), Manual Reset                                                     | 5-Pin SOT-23 |
| MCP1318 | 1.0 to 5.5    | -40 to +125                      | 4.6                       | Active-Low/High | CMOS Push-Pull                | 200                            | 5                           | Watchdog Input (WDI time-out = 1.6s)                                                                   | 5-Pin SOT-23 |
| MCP1319 | 1.0 to 5.5    | -40 to +125                      | 4.6                       | Active-Low/High | CMOS Push-Pull                | 200                            | 1                           | Manual Reset                                                                                           | 5-Pin SOT-23 |
| MCP1320 | 1.0 to 5.5    | -40 to +125                      | 2.9, 4.6                  | Active-Low      | Open-Drain                    | 200                            | 5                           | Watchdog Input (WDI time-out = 1.6s), Manual Reset                                                     | 5-Pin SOT-23 |
| MCP1321 | 1.0 to 5.5    | -40 to +125                      | 4.6                       | Active-Low      | Open-Drain/<br>CMOS Push-Pull | 200                            | 5                           | Watchdog Input (WDI time-out = 1.6s), Two Reset outputs (Active-Low Open-Drain, Active-High Push-Pull) | 5-Pin SOT-23 |
| MCP1322 | 1.0 to 5.5    | -40 to +125                      | 4.6                       | Active-High     | Open-Drain/<br>CMOS Push-Pull | 200                            | 1                           | Manual Reset, Two Reset outputs (Active-Low Open-Drain, Active-High Push-Pull)                         | 5-Pin SOT-23 |

**Linear – Linear Gain Blocks**

| Part #  | Channels | -3dB BW (kHz) | I <sub>Q</sub> (µA) | V <sub>OS</sub> (mV) | Operating Voltage (V) | Temperature Range (°C) | Gain Steps (V/V) | Features              | Packages                               |
|---------|----------|---------------|---------------------|----------------------|-----------------------|------------------------|------------------|-----------------------|----------------------------------------|
| MCP6G01 | 1        | 1000          | 120                 | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6G02 | 2        | 1000          | 120                 | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP    |
| MCP6G04 | 4        | 1000          | 120                 | 3                    | 1.8 to 5.5            | -40 to +125            | 1, 10, 50        | Tri-State Control Pin | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |

**Mixed Signal – Successive Approximation Register (SAR) A/D Converters**

| Part #  | Resolution (bits) | Maximum Sampling Rate (ksamples/sec) | # of Input Channels | Input Type   | Interface | Input Voltage Range (V) | Maximum Supply current (mA) | Maximum INL (LSB) | Temperature Range (°C) | Packages                               |
|---------|-------------------|--------------------------------------|---------------------|--------------|-----------|-------------------------|-----------------------------|-------------------|------------------------|----------------------------------------|
| MCP3601 | 16                | 100                                  | 1                   | Single-ended | SPI       | 2.7 to 5.5              | 750                         | ±3                | -40 to +125            | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC     |
| MCP3602 | 16                | 100                                  | 2                   | Single-ended | SPI       | 2.7 to 5.5              | 1000                        | ±3                | -40 to +125            | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC     |
| MCP3604 | 16                | 100                                  | 4                   | Single-ended | SPI       | 2.7 to 5.5              | 750                         | ±3                | -40 to +125            | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |
| MCP3608 | 16                | 100                                  | 8                   | Single-ended | SPI       | 2.7 to 5.5              | 750                         | ±3                | -40 to +125            | 16-Pin PDIP, 16-Pin SOIC               |

**Interface – Passive Access Products**

| Part #  | Operating Voltage (V) | Operating Temp. Range (°C) | Bus Type | RF Carrier Frequency | Data Format | Features                                                                                                                    | Packages                               |
|---------|-----------------------|----------------------------|----------|----------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| MCP2030 | 1.8 to 3.6            | -40 to +85                 | SPI      | 125 kHz              | NRZ         | Three axis signal conditioning devices for passive access applications, high-sensitivity, configurable smart wake-up filter | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP |



## CURRENT PICmicro® MICROCONTROLLER FAMILY PRODUCTS

| Baseline 8-Bit PICmicro® Microcontroller Family (12-bit Instruction Set) |                                                                                         |                     |          |                             |                       |         |                |                |        |       |                 |                      |                       |                                                                        |                    |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------|----------|-----------------------------|-----------------------|---------|----------------|----------------|--------|-------|-----------------|----------------------|-----------------------|------------------------------------------------------------------------|--------------------|
| Product                                                                  | Program Memory Bytes & Type (Words)                                                     | RAM Bytes           | I/O Pins | Packages                    | Analog                |         | Digital        | Max. Speed MHz | IntOSC | ICSP™ | BOR/ PBOR/ PLVD | ICD # of Breakpoints | Operating Voltage (V) | Other Features                                                         |                    |
|                                                                          |                                                                                         |                     |          |                             | ADC                   | Comp.   | Timers/WDT     |                |        |       |                 |                      |                       |                                                                        |                    |
| NEW<br>NEW                                                               | PIC10FXXX: 500 ns Instruction Execution, 33 Instructions, 25 mA Source and Sink per I/O |                     |          |                             |                       |         |                |                |        |       |                 |                      |                       |                                                                        |                    |
|                                                                          | PIC10F200                                                                               | 384 StdFI (256)     | 16       | 4                           | 6OT, 8P               | —       | —              | 1-8 bit, 1-WDT | 4      | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                |                    |
|                                                                          | PIC10F202                                                                               | 768 StdFI (512)     | 24       | 4                           | 6OT, 8P               | —       | —              | 1-8 bit, 1-WDT | 4      | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                |                    |
|                                                                          | PIC10F204                                                                               | 384 StdFI (256)     | 16       | 4                           | 6OT, 8P               | —       | 1              | 1-8 bit, 1-WDT | 4      | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                | Band gap reference |
|                                                                          | PIC10F206                                                                               | 768 StdFI (512)     | 24       | 4                           | 6OT, 8P               | —       | 1              | 1-8 bit, 1-WDT | 4      | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                | Band gap reference |
|                                                                          | PIC10F220                                                                               | 384 StdFI (256)     | 16       | 4                           | 6OT, 8P               | 2x8-bit | —              | 1-8 bit, 1-WDT | 8      | 8 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                | Band gap reference |
|                                                                          | PIC10F222                                                                               | 768 StdFI (512)     | 23       | 4                           | 6OT, 8P               | 2x8-bit | —              | 1-8 bit, 1-WDT | 8      | 8 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                | Band gap reference |
|                                                                          | PIC12FXXX: 500 ns Instruction Execution, 33 Instructions, 25 mA Source and Sink I/O     |                     |          |                             |                       |         |                |                |        |       |                 |                      |                       |                                                                        |                    |
| NEW                                                                      | PIC12F508                                                                               | 768 StdFI (512)     | 25       | 6                           | 8P, 8SN, 8MS          | —       | —              | 1-8 bit, 1-WDT | 4      | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                |                    |
|                                                                          | PIC12F509                                                                               | 1,536 StdFI (1,024) | 41       | 6                           | 8P, 8SN, 8MS          | —       | —              | 1-8 bit, 1-WDT | 4      | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                |                    |
|                                                                          | PIC12F510                                                                               | 1,536 StdFI (1,024) | 38       | 6                           | 8P, 8SN, 8MS          | 3x8-bit | 1              | 1-8 bit, 1-WDT | 8      | 8 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                | Band gap reference |
|                                                                          | PIC16F5XX: 100-200 ns Instruction Execution, 33 Instructions, 25 mA Source and Sink I/O |                     |          |                             |                       |         |                |                |        |       |                 |                      |                       |                                                                        |                    |
| NEW                                                                      | PIC16F505                                                                               | 1,536 StdFI (1,024) | 72       | 12                          | 14P, 14JW, 14SL, 14ST | —       | —              | 1-8 bit, 1-WDT | 20     | 4 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                |                    |
|                                                                          | PIC16F506                                                                               | 1,536 StdFI (1,024) | 67       | 12                          | 14P, 14SO, 14ST       | 3x8-bit | 2              | 1-8 bit, 1-WDT | 20     | 8 MHz | ✓               | —                    | 1**                   | 2.0-5.5                                                                | Band gap reference |
|                                                                          | PIC16F54                                                                                | 768 StdFI (512)     | 25       | 12                          | 18P, 18SO, 20SS       | —       | —              | 1-8 bit, 1-WDT | 20     | —     | ✓               | —                    | —                     | 2.0-5.5                                                                |                    |
|                                                                          | PIC16F57                                                                                | 3072 StdFI (2048)   | 72       | 20                          | 28P, 28SO, 28SS, 28SP | —       | —              | 1-8 bit, 1-WDT | 20     | —     | ✓               | —                    | —                     | 2.0-5.5                                                                |                    |
|                                                                          | PIC16F59                                                                                | 3,072 StdFI (2,048) | 134      | 32                          | 40P, 44PT             | —       | —              | 1-8 bit, 1-WDT | 20     | —     | ✓               | —                    | —                     | 2.0-5.5                                                                |                    |
|                                                                          | PIC16C5X: 100-200 ns Instruction Execution, 33 Instructions, 25 mA Source and Sink I/O  |                     |          |                             |                       |         |                |                |        |       |                 |                      |                       |                                                                        |                    |
| PIC16C55A                                                                | 768 OTP (512)                                                                           | 24                  | 20       | 28P, 28JW, 28SP, 28SO, 28SS | —                     | —       | 1-8 bit, 1-WDT | 40             | —      | —     | —               | —                    | 2.5-5.5               |                                                                        |                    |
| PIC16C56A                                                                | 1,536 OTP (1,024)                                                                       | 25                  | 12       | 18P, 18JW, 18SO, 20SS       | —                     | —       | 1-8 bit, 1-WDT | 40             | —      | —     | —               | —                    | 2.5-5.5               |                                                                        |                    |
| PIC16CR56A                                                               | 1,536 ROM (1,024)                                                                       | 25                  | 12       | 18P, 18SO, 20SS             | —                     | —       | 1-8 bit, 1-WDT | 20             | —      | —     | —               | —                    | 2.5-5.5               |                                                                        |                    |
| PIC16C58B                                                                | 3,072 OTP (2,048)                                                                       | 73                  | 12       | 18P, 18JW, 18SO, 20SS       | —                     | —       | 1-8 bit, 1-WDT | 40             | —      | —     | —               | —                    | 2.5-5.5               |                                                                        |                    |
| PIC16CR58B                                                               | 3,072 ROM (2,048)                                                                       | 73                  | 12       | 18P, 18SO, 20SS             | —                     | —       | 1-8 bit, 1-WDT | 20             | —      | —     | —               | —                    | 2.5-5.5               |                                                                        |                    |
| PIC16HV540                                                               | 768 OTP (512)                                                                           | 25                  | 12       | 18P, 18JW, 18SO, 20SS       | —                     | —       | 1-8 bit, 1-WDT | 20             | —      | —     | BOR             | —                    | 3.5-15                | 8 high-voltage (15V) I/Os, 4 deep stack, 5 I/Os with wake-up-on-change |                    |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.  
Abbreviations are found on the last page of the Selector Guide.

| Mid-Range 8-Bit PICmicro® Microcontroller Family (14-bit Instruction Set)                                   |                                     |                          |           |          |                        |           |       |                          |                    |                |        |                 |                      |           |    |                                                           |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------------------|-----------|-------|--------------------------|--------------------|----------------|--------|-----------------|----------------------|-----------|----|-----------------------------------------------------------|
| Product                                                                                                     | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog    |       | Digital                  |                    | Max. Speed MHz | IntOSC | BOR/ PBOR /PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features                                            |
|                                                                                                             |                                     |                          |           |          |                        | ADC Ch    | Comp. | Timers/WDT               | Serial I/O         |                |        |                 |                      |           |    |                                                           |
| PIC12FXXX: 1 μs Instruction Execution, 35 Instructions, ICSP™                                               |                                     |                          |           |          |                        |           |       |                          |                    |                |        |                 |                      |           |    |                                                           |
| PIC12F629                                                                                                   | 1,792 StdFI (1,024)                 | 128                      | 64        | 6        | 8P, 8SN, 8MF           | —         | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                  | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                                           |
| PIC12F635                                                                                                   | 1,792 StdFI (1,024)                 | 128                      | 64        | 6        | 8P, 8SN, 8MF           | —         | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                  | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | —         | ✓  | KEELOQ® hardware peripheral, WUR                          |
| PIC12F675                                                                                                   | 1,792 StdFI (1,024)                 | 128                      | 64        | 6        | 8P, 8SN, 8MF           | 4x10-bit  | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                  | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                                           |
| PIC12F683                                                                                                   | 3,584 StdFI (2,048)                 | 256                      | 128       | 6        | 8P, 8SN, 8MF           | 4x10-bit  | 1     | 1-16 bit, 2-8 bit, 1-WDT | —                  | 20             | 8 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                                           |
| PIC16FXXX: 200 ns Instruction Execution, 35 Instructions, ICSP™ (except ROM), 25 mA Source and Sink per I/O |                                     |                          |           |          |                        |           |       |                          |                    |                |        |                 |                      |           |    |                                                           |
| PIC16F627A                                                                                                  | 1,792 StdFI (1,024)                 | 128                      | 224       | 16       | 18P, 18SO, 20SS, 28ML  | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART             | 20             | 4 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                                           |
| PIC16F628A                                                                                                  | 3,584 StdFI (2,048)                 | 128                      | 224       | 16       | 18P, 18SO, 20SS, 28ML  | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART             | 20             | 4 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                                           |
| PIC16F648A                                                                                                  | 7,168 StdFI (4,096)                 | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART             | 20             | 4 MHz  | BOR             | 1**                  | 1/0       | ✓  |                                                           |
| PIC16F630                                                                                                   | 1,792 StdFI (1,024)                 | 128                      | 64        | 12       | 14P, 14SL, 14ST        | —         | 1     | 1-8-bit, 1-16 bit, 1-WDT | —                  | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                                           |
| PIC16F636                                                                                                   | 3,584 StdFI (2,048)                 | 256                      | 128       | 12       | 14P, 14SL, 14ST        | —         | 2     | 1-8 bit, 1-16 bit, 1-WDT | —                  | 20             | 8 MHz  | BOR/ PLVD       | 1**                  | —         | ✓  | KEELOQ® hardware peripheral                               |
| PIC16F639                                                                                                   | 3,584 StdFI (2,048)                 | 256                      | 128       | 12       | 20P, 20SO, 20SS        | —         | 2     | 1-16 bit, 1-8 bit, 1-WDT | —                  | 20             | 8 MHz  | BOR             | 1**                  | —         | ✓  | Transponder Analog Front End, KEELOQ® hardware peripheral |
| PIC16F676                                                                                                   | 1,792 StdFI (1,024)                 | 128                      | 64        | 12       | 14P, 14SL, 14ST        | 8x10-bit  | 1     | 1-8 bit, 1-16 bit, 1-WDT | —                  | 20             | 4 MHz  | BOR             | 1**                  | —         | —  |                                                           |
| PIC16F684                                                                                                   | 3,584 StdFI (2,048)                 | 256                      | 128       | 12       | 14P, 14SL, 14ST        | 8x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                  | 20             | 8 MHz  | BOR             | 1**                  | 0/1       | ✓  |                                                           |
| PIC16F685                                                                                                   | 7,168 StdFI (4,096)                 | 256                      | 256       | 18       | 20P, 20SO, 20SS        | 12x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                  | 20             | 8 MHz  | BOR             | 1**                  | 0/1       | ✓  |                                                           |
| PIC16F687                                                                                                   | 3,584 StdFI (2,048)                 | 256                      | 128       | 18       | 20P, 20SO, 20SS        | 12x10-bit | 2     | 1-16 bit, 1-8 bit, 1-WDT | EUSART, I²C™/ SPI™ | 20             | 8 MHz  | BOR             | 1**                  | —         | ✓  |                                                           |
| PIC16F688                                                                                                   | 7,168 StdFI (4,096)                 | 256                      | 256       | 12       | 14P, 14SL, 14ST        | 8x10-bit  | 2     | 1-8 bit, 1-16 bit, 1-WDT | EUSART             | 20             | 8 MHz  | BOR             | 1**                  | —         | ✓  |                                                           |
| PIC16F689                                                                                                   | 7,168 StdFI (4,096)                 | 256                      | 256       | 18       | 20P, 20SO, 20SS        | 12x10-bit | 2     | 1-16 bit, 1-8 bit, 1-WDT | EUSART, I²C/SPI    | 20             | 8 MHz  | BOR             | 1**                  | —         | ✓  |                                                           |
| PIC16F690                                                                                                   | 7,168 StdFI (4,096)                 | 256                      | 256       | 18       | 20P, 20SO, 20SS        | 12x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | EUSART, I²C, SPI   | 20             | 8 MHz  | BOR             | 1**                  | 0/1       | ✓  |                                                           |
| PIC16F716                                                                                                   | 3,584 StdFI (2,048)                 | —                        | 128       | 13       | 18P, 18SO, 20SS        | 4x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | —                  | 20             | —      | BOR             | 1**                  | 0/1       | —  |                                                           |
| PIC16F72                                                                                                    | 3,584 StdFI (2,048)                 | —                        | 128       | 22       | 28SP, 28SO, 28SS, 28ML | 5x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI            | 20             | —      | BOR             | —                    | 1/0       | —  |                                                           |
| PIC16F73                                                                                                    | 7,168 StdFI (4,096)                 | —                        | 192       | 22       | 28SP, 28SO, 28SS, 28ML | 5x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI     | 20             | —      | BOR             | —                    | 2/0       | —  |                                                           |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

Abbreviations are found on the last page of the Selector Guide.

**Mid-Range 8-Bit PICmicro® Microcontroller Family (14-bit Instruction Set) (continued)**

| Product                                                                                                                 | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog    |       | Digital                  |                  | Max. Speed MHz | IntOSC | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features                                  |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------------------|-----------|-------|--------------------------|------------------|----------------|--------|-----------------|----------------------|-----------|----|-------------------------------------------------|
|                                                                                                                         |                                     |                          |           |          |                        | ADC Ch    | Comp. | Timers/WDT               | Serial I/O       |                |        |                 |                      |           |    |                                                 |
| PIC16FXXX: 200 ns Instruction Execution, 35 Instructions, ICSP™ (except ROM), 25 mA Source and Sink per I/O (continued) |                                     |                          |           |          |                        |           |       |                          |                  |                |        |                 |                      |           |    |                                                 |
| PIC16F737                                                                                                               | 7,168 StdFI (4,096)                 | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | 11x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | 8 MHz  | PBOR/ PLVD      | 1                    | 3/0       | ✓  |                                                 |
| PIC16F74                                                                                                                | 7,168 StdFI (4,096)                 | —                        | 192       | 33       | 40P, 44ML, 44L, 44PT   | 8x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI   | 20             | —      | BOR             | —                    | 2/0       | —  | PSP                                             |
| PIC16F747                                                                                                               | 7,168 StdFI (4,096)                 | —                        | 368       | 36       | 40P, 44PT, 44ML        | 14x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | 8 MHz  | PBOR/ PLVD      | 1                    | 3/0       | ✓  | PSP                                             |
| PIC16F76                                                                                                                | 14,336 StdFI (8,192)                | —                        | 368       | 22       | 28SP, 28SO, 28SS, 28ML | 5x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI   | 20             | —      | BOR             | —                    | 2/0       | —  |                                                 |
| PIC16F767                                                                                                               | 14,336 StdFI (8,192)                | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | 11x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | 8 MHz  | PBOR/ PLVD      | 1                    | 3/0       | ✓  |                                                 |
| PIC16F77                                                                                                                | 14,336 StdFI (8,192)                | —                        | 368       | 33       | 40P, 44ML, 44L, 44PT   | 8x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI   | 20             | —      | BOR             | —                    | 2/0       | —  | PSP                                             |
| PIC16F777                                                                                                               | 14,336 StdFI (8,192)                | —                        | 368       | 36       | 40P, 44PT, 44ML        | 14x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | 8 MHz  | PBOR/ PLVD      | 1                    | 3/0       | ✓  | PSP                                             |
| PIC16F785                                                                                                               | 3,584 StdFI (2,048)                 | 256                      | 128       | 18       | 20P, 20SO, 20SS        | 12x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                | 20             | 8 MHz  | BOR             | 1**                  | 1/0       | ✓  | 2-phase PWM, 2 x Op Amp, VREF                   |
| PIC16F818                                                                                                               | 1,792 EnhFI (1,024)                 | 128                      | 128       | 16       | 18P, 18SO, 20SS, 28ML  | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI          | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                                                 |
| PIC16F819                                                                                                               | 3,584 EnhFI (2048)                  | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI          | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                                                 |
| PIC16F84A                                                                                                               | 1,792 StdFI (1,024)                 | 64                       | 68        | 13       | 18P, 18SO, 20SS        | —         | —     | 1-8 bit, 1-WDT           | —                | 20             | —      | —               | —                    | —         | —  |                                                 |
| PIC16F87                                                                                                                | 7,168 EnhFI (4,096)                 | 256                      | 368       | 16       | 18P, 18SO, 20SS, 28ML  | —         | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, I²C/SPI  | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                                                 |
| PIC16F870                                                                                                               | 3,584 EnhFI (2,048)                 | 64                       | 128       | 22       | 28SP, 28SO, 28SS       | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART           | 20             | —      | BOR             | 1                    | 1/0       | —  |                                                 |
| PIC16F871                                                                                                               | 3,584 EnhFI (2,048)                 | 64                       | 128       | 33       | 40P, 44L, 44PT         | 8x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART           | 20             | —      | BOR             | 1                    | 1/0       | —  | PSP                                             |
| PIC16F872                                                                                                               | 3,584 EnhFI (2,048)                 | 64                       | 128       | 22       | 28SP, 28SO, 28SS       | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | MI²C/SPI         | 20             | —      | BOR             | 1                    | 1/0       | —  |                                                 |
| PIC16F873A                                                                                                              | 7,168 EnhFI (4,096)                 | 128                      | 192       | 22       | 28SP, 28SO, 28SS, 28ML | 5x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  |                                                 |
| PIC16F874A                                                                                                              | 7,168 EnhFI (4,096)                 | 128                      | 192       | 33       | 40P, 44ML, 44L, 44PT   | 8x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  | PSP                                             |
| PIC16F876A                                                                                                              | 14,336 EnhFI (8,192)                | 256                      | 368       | 22       | 28SP, 28SO, 28SS, 28ML | 5x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  |                                                 |
| PIC16F877A                                                                                                              | 14,336 EnhFI (8,192)                | 256                      | 368       | 33       | 40P, 44ML, 44L, 44PT   | 8x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI²C/SPI | 20             | —      | BOR             | 1                    | 2/0       | —  | PSP                                             |
| PIC16F88                                                                                                                | 7,168 EnhFI (4,096)                 | 256                      | 368       | 16       | 18P, 18SO, 20SS, 28ML  | 7x10-bit  | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, I²C/SPI  | 20             | 8 MHz  | BOR             | 1                    | 1/0       | ✓  |                                                 |
| PIC16F913                                                                                                               | 7,168 StdFI (4,096)                 | 256                      | 256       | 25       | 28P, 28SO, 28SS, 28ML  | 5x10-bit  | 2     | 2-8 bit, 1-16 bit, 1-WDT | AUSART, I²C/SPI  | 20             | 8 MHz  | BOR/ PLVD       | 1                    | 1/0       | ✓  | Integrated LCD control modules with 60 segments |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

Abbreviations are found on the last page of the Selector Guide.

**Mid-Range 8-Bit PICmicro® Microcontroller Family (14-bit Instruction Set) (continued)**

| Product                                                                                                                 | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages                     | Analog   |       | Digital                  |                      | Max. Speed MHz | IntOSC       | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                   |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------------------------|----------|-------|--------------------------|----------------------|----------------|--------------|---------------|----------------------|----------|----|--------------------------------------------------|
|                                                                                                                         |                                     |                          |           |          |                              | ADC Ch   | Comp. | Timers/WDT               | Serial I/O           |                |              |               |                      |          |    |                                                  |
| PIC16FXXX: 200 ns Instruction Execution, 35 Instructions, ICSP™ (except ROM), 25 mA Source and Sink per I/O (continued) |                                     |                          |           |          |                              |          |       |                          |                      |                |              |               |                      |          |    |                                                  |
| PIC16F914                                                                                                               | 7,168 StdFI (4,096)                 | 256                      | 256       | 36       | 40P, 44PT, 44ML              | 8x10-bit | 2     | 2-8 bit, 1-16 bit, 1-WDT | AUSART, I²C/SPI      | 20             | 8 MHz        | BOR/PLVD      | 1                    | 2/0      | ✓  | Integrated LCD control modules with 96 segments  |
| PIC16F916                                                                                                               | 14,336 StdFI (8,192)                | 256                      | 352       | 25       | 28P, 28SO, 28SS, 28ML        | 5x10-bit | 2     | 2-8 bit, 1-16 bit, 1-WDT | AUSART, I²C/SPI      | 20             | 8 MHz        | BOR/PLVD      | 1                    | 1/0      | ✓  | Integrated LCD control modules with 60 segments  |
| PIC16F917                                                                                                               | 14,336 StdFI (8,192)                | 256                      | 352       | 36       | 40P, 44PT, 44ML              | 8x10-bit | 2     | 2-8 bit, 1-16 bit, 1-WDT | AUSART, I²C/SPI      | 20             | 8 MHz        | BOR/PLVD      | 1                    | 2/0      | ✓  | Integrated LCD control modules with 96 segments  |
| PIC16F946                                                                                                               | 14,336 StdFI (8,192)                | 256                      | 336       | 53       | 64PT                         | 8x10-bit | 2     | 1-16 bit, 2-8 bit, 1-WDT | AUSART/I²C/SPI       | 20             | 8 MHz 32 kHz | BOR/PLVD      | 1                    | 2/0      | ✓  | Integrated LCD control modules with 168 segments |
| PIC16CXXX: 100-200 ns Instruction Execution, 35 Instructions, ICSP™ (except ROM), 25 mA Source and Sink per I/O         |                                     |                          |           |          |                              |          |       |                          |                      |                |              |               |                      |          |    |                                                  |
| PIC14000                                                                                                                | 7,168 OTP (4,096)                   | —                        | 192       | 20       | 28SP, 28SO, 28SS, 28JW       | 8 SLAC   | 2     | 1-8 bit, 1-16 bit, 1-WDT | I²C/SMB              | 20             | 4 MHz        | —             | —                    | —        | —  | Temperature Sensor, Program Reference Generator  |
| PIC16C432                                                                                                               | 3,584 OTP (2,048)                   | —                        | 128       | 12       | 20SS, 20P, 20JW              | —        | 2     | 1-8 bit, 1-WDT           | LIN                  | 20             | —            | BOR           | —                    | —        | —  | LIN XCVR, 18V/40 mA                              |
| PIC16C433                                                                                                               | 3,584 OTP (2,048)                   | —                        | 128       | 6        | 18SO, 18P, 18JW              | 4x8-bit  | —     | 1-8 bit, 1-WDT           | LIN                  | 10             | 4 MHz        | —             | —                    | —        | —  | LIN XCVR, 18V/40 mA                              |
| PIC16C554                                                                                                               | 896 OTP (512)                       | —                        | 80        | 13       | 18P, 18SO, 18JW, 20SS        | —        | —     | 1-8 bit, 1-WDT           | —                    | 20             | —            | —             | —                    | —        | —  |                                                  |
| PIC16C558                                                                                                               | 3,584 OTP (2,048)                   | —                        | 128       | 13       | 18P, 18SO, 18JW, 20SS        | —        | —     | 1-8 bit, 1-WDT           | —                    | 20             | —            | —             | —                    | —        | —  |                                                  |
| PIC16C62B                                                                                                               | 3,584 OTP (2,048)                   | —                        | 128       | 22       | 28SP, 28SO, 28SS, 28JW, 28ML | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —            | BOR           | —                    | 1/0      | —  |                                                  |
| PIC16C620A                                                                                                              | 896 OTP (512)                       | —                        | 96        | 13       | 18P, 18SO, 18JW, 20SS        | —        | 2     | 1-8 bit, 1-WDT           | —                    | 40             | —            | BOR           | —                    | —        | —  |                                                  |
| PIC16CR620A                                                                                                             | 896 ROM (512)                       | —                        | 96        | 13       | 18P, 18SO, 20SS              | —        | 2     | 1-8 bit, 1-WDT           | —                    | 20             | —            | BOR           | —                    | —        | —  |                                                  |
| PIC16C621A                                                                                                              | 1,792 OTP (1,024)                   | —                        | 96        | 13       | 18P, 18SO, 18JW, 20SS        | —        | 2     | 1-8 bit, 1-WDT           | —                    | 40             | —            | BOR           | —                    | —        | —  |                                                  |
| PIC16C622A                                                                                                              | 3,584 OTP (2,048)                   | —                        | 128       | 13       | 18P, 18SO, 18JW, 20SS        | —        | 2     | 1-8 bit, 1-WDT           | —                    | 40             | —            | BOR           | —                    | —        | —  |                                                  |
| PIC16C63A                                                                                                               | 7,168 OTP (4,096)                   | —                        | 192       | 22       | 28SP, 28SO, 28SS, 28JW, 28ML | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —            | BOR           | —                    | 2/0      | —  |                                                  |
| PIC16CR63                                                                                                               | 7,168 ROM (4,096)                   | —                        | 192       | 22       | 28SP, 28SO, 28SS             | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —            | BOR           | —                    | 2/0      | —  |                                                  |
| PIC16C65B                                                                                                               | 7,168 OTP (4,096)                   | —                        | 192       | 33       | 40P, 40JW, 44L, 44PQ, 44PT   | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —            | BOR           | —                    | 2/0      | —  | PSP                                              |
| PIC16CR65                                                                                                               | 7,168 ROM (4,096)                   | —                        | 192       | 33       | 40P, 44L, 44PQ, 44PT         | —        | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I²C/SPI       | 20             | —            | BOR           | —                    | 2/0      | —  | PSP                                              |
| PIC16C717                                                                                                               | 3,584 OTP (2,048)                   | —                        | 256       | 16       | 18P, 18SO, 18JW, 20SS        | 6x10-bit | —     | 1-16 bit, 2-8 bit, 1-WDT | MI²C/SPI             | 20             | 4 MHz        | PBOR/PLVD     | —                    | 0/1      | —  |                                                  |
| PIC16CR72                                                                                                               | 3,584 ROM (2,048)                   | —                        | 128       | 22       | 28SP, 28SO, 28SS             | 5x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I²C/SPI              | 20             | —            | BOR           | —                    | 1/0      | —  |                                                  |
| PIC16C745                                                                                                               | 14,336 OTP (8,192)                  | —                        | 256       | 22       | 28SP, 28SO, 28JW             | 5x8-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, low-speed USB | 24             | —            | BOR           | —                    | 2/0      | —  | USB 1.1, 64 bytes dual port RAM                  |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

Abbreviations are found on the last page of the Selector Guide.

### Mid-Range 8-Bit PICmicro® Microcontroller Family (14-bit Instruction Set) (continued)

| Product                                                                                                                     | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages                   | Analog    |       | Digital                  |                               | Max. Speed MHz | IntOSC | BOR/ PBOR /PLVD | ICD # of Breakpoints | CCP/ ECCP | nW | Other Features                              |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|----------------------------|-----------|-------|--------------------------|-------------------------------|----------------|--------|-----------------|----------------------|-----------|----|---------------------------------------------|
|                                                                                                                             |                                     |                          |           |          |                            | ADC Ch    | Comp. | Timers/WDT               | Serial I/O                    |                |        |                 |                      |           |    |                                             |
| PIC16CXXX: 100-200 ns Instruction Execution, 35 Instructions, ICSP™ (except ROM), 25 mA Source and Sink per I/O (continued) |                                     |                          |           |          |                            |           |       |                          |                               |                |        |                 |                      |           |    |                                             |
| PIC16C765                                                                                                                   | 14,336 OTP (8,192)                  | —                        | 256       | 33       | 40P, 40JW, 44L, 44PT       | 8x8-bit   | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, low-speed USB          | 24             | —      | BOR             | —                    | 2/0       | —  | USB 1.1, 64 bytes dual port RAM, PSP        |
| PIC16C770                                                                                                                   | 3,584 OTP (2,048)                   | —                        | 256       | 16       | 20P, 20SO, 20JW, 20SS      | 6x12-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | MI <sup>2</sup> C/SPI         | 20             | 4 MHz  | PBOR/ PLVD      | —                    | 0/1       | —  |                                             |
| PIC16C771                                                                                                                   | 7,168 OTP (4,096)                   | —                        | 256       | 16       | 20P, 20SO, 20JW, 20SS      | 6x12-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | MI <sup>2</sup> C/SPI         | 20             | 4 MHz  | PBOR/ PLVD      | —                    | 0/1       | —  |                                             |
| PIC16C773                                                                                                                   | 7,168 OTP (4,096)                   | —                        | 256       | 22       | 28SP, 28SO, 28SS, 28JW     | 6x12-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI | 20             | —      | PBOR/ PLVD      | —                    | 2/0       | —  |                                             |
| PIC16C774                                                                                                                   | 7,168 OTP (4,096)                   | —                        | 256       | 33       | 40P, 40JW, 44L, 44PQ, 44PT | 10x12-bit | —     | 1-16 bit, 2-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI | 20             | —      | PBOR/ PLVD      | —                    | 2/0       | —  | PSP                                         |
| PIC16C781                                                                                                                   | 1,792 OTP (1,024)                   | —                        | 128       | 16       | 20P, 20SO, 20SS, 20JW      | 8x8-bit   | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                             | 20             | 4 MHz  | PBOR            | —                    | —         | —  | Op Amp, PSMC, DAC                           |
| PIC16C782                                                                                                                   | 3,584 OTP (2,048)                   | —                        | 128       | 16       | 20P, 20SO, 20SS, 20JW      | 8x8-bit   | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                             | 20             | 4 MHz  | PBOR/ PLVD      | —                    | —         | —  | Op Amp, PSMC, DAC                           |
| PIC16C925                                                                                                                   | 7,168 OTP (4,096)                   | —                        | 176       | 52       | 68CL, 68L, 64PT            | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I <sup>2</sup> C/SPI          | 20             | —      | BOR             | —                    | 1/0       | —  | LCD module, static, 1/2, 1/3, 1/4 multiplex |
| PIC16C926                                                                                                                   | 14,336 OTP (8,192)                  | —                        | 336       | 52       | 68CL, 68L, 64PT            | 5x10-bit  | —     | 1-16 bit, 2-8 bit, 1-WDT | I <sup>2</sup> C/SPI          | 20             | —      | BOR             | —                    | 1/0       | —  | LCD module, static, 1/2, 1/3, 1/4 multiplex |

\*Contact Microchip Technology for availability date.

\*\* Requires ICD specific device with header module – refer to Development Tools.

Abbreviations are found on the last page of the Selector Guide.

### High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set)

| Product                                                                                                                                         | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages              | Analog             |       | Digital                  |                               | Max. Speed MHz | IntOSC       | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features             |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|-----------------------|--------------------|-------|--------------------------|-------------------------------|----------------|--------------|-----------------|----------------------|----------|----|----------------------------|
|                                                                                                                                                 |                                     |                          |           |          |                       | ADC Ch             | Comp. | Timers/WDT               | Serial I/O                    |                |              |                 |                      |          |    |                            |
| PIC18 Flash MCUs: 10 MIPS, V <sub>DD</sub> = 2.0 - 5.5V, Upwardly Compatible with PIC16C, 77 Instructions, C Compiler Efficient Instruction Set |                                     |                          |           |          |                       |                    |       |                          |                               |                |              |                 |                      |          |    |                            |
| PIC18C601                                                                                                                                       | ROM-less                            | —                        | 1536      | 26       | 64PT, 68L             | 8x10-bit 30 ksps   | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI | 25             | —            | —               | —                    | 2/0      | —  | 256 KB EMA, Bootloader RAM |
| PIC18C801                                                                                                                                       | ROM-less                            | —                        | 1536      | 37       | 80PT, 84L             | 12x10-bit 30 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI | 25             | —            | —               | —                    | 2/0      | —  | 2 MB EMA, Bootloader RAM   |
| PIC18F1220                                                                                                                                      | 4,096 EnhFI (2,048)                 | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 7x10-bit 30 ksps   | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART                        | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 0/1      | ✓  |                            |
| PIC18F1320                                                                                                                                      | 8,192 EnhFI (4,096)                 | 256                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 7x10-bit 30 ksps   | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART                        | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 0/1      | ✓  |                            |
| PIC18F2220                                                                                                                                      | 4,096 EnhFI (2,048)                 | 256                      | 512       | 25       | 28SP, 28SO            | 10x10-bit 30 ksps  | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 2/0      | ✓  |                            |
| PIC18F2221*                                                                                                                                     | 4,096 EnhFI (2,048)                 | 256                      | 512       | 25       | 28SP, 28SO, 28ML      | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                            |
| PIC18F2320                                                                                                                                      | 8,192 EnhFI (4,096)                 | 256                      | 512       | 25       | 28SP, 28SO            | 10x10-bit 30 ksps  | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, MI <sup>2</sup> C/SPI | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 2/0      | ✓  |                            |

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.

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NEW

| High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set) (continued)                                                    |                                     |                          |           |          |                  |                    |       |                          |                                         |                |              |                 |                      |          |    |                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------------|--------------------|-------|--------------------------|-----------------------------------------|----------------|--------------|-----------------|----------------------|----------|----|--------------------------------------------------------------|
| Product                                                                                                                                         | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages         | Analog             |       | Digital                  |                                         | Max. Speed MHz | IntOSC       | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                               |
|                                                                                                                                                 |                                     |                          |           |          |                  | ADC Ch             | Comp. | Timers/WDT               | Serial I/O                              |                |              |                 |                      |          |    |                                                              |
| PIC18 Flash MCUs: 10 MIPS, VDD = 2.0 - 5.5V, Upwardly Compatible with PIC16C, 77 Instructions, C Compiler Efficient Instruction Set (continued) |                                     |                          |           |          |                  |                    |       |                          |                                         |                |              |                 |                      |          |    |                                                              |
| PIC18F2321*                                                                                                                                     | 8,192 EnhFI (4,096)                 | 256                      | 512       | 25       | 28SP, 28SO, 28ML | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2331                                                                                                                                      | 8,192 EnhFI (4,096)                 | 256                      | 768       | 24       | 28SP, 28SO, 28MM | 5x10-bit, 200 ksps | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 2/0      | ✓  | 6-channel 14-bit Motor Control PWMs, 2-ch Quadrature Encoder |
| PIC18F2410                                                                                                                                      | 16,384 StdFI (8,192)                | —                        | 768       | 25       | 28SP, 28SO, 28ML | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2420                                                                                                                                      | 16,384 EnhFI (8,192)                | 256                      | 768       | 25       | 28SP, 28SO, 28ML | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2431                                                                                                                                      | 16,384 EnhFI (8,192)                | 256                      | 768       | 24       | 28SP, 28SO, 28MM | 5x10-bit, 200 ksps | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 2/0      | ✓  | 6-channel 14-bit Motor Control PWMs, 2-ch Quadrature Encoder |
| PIC18F2455                                                                                                                                      | 24,576 EnhFI (12,288)               | 256                      | 2048      | 23       | 28SP, 28SO       | 11x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, Mi <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  | Full-Speed USB 2.0 Compliant                                 |
| PIC18F2480                                                                                                                                      | 16,384 EnhFI (8,192)                | 256                      | 768       | 25       | 28SP, 28SO, 28ML | 8x10-bit 100 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/0      | ✓  | ECAN™ technology                                             |
| PIC18F2510                                                                                                                                      | 32,768 StdFI (16,384)               | —                        | 1536      | 25       | 28SP, 28SO, 28ML | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2520                                                                                                                                      | 32,768 EnhFI (16,384)               | 256                      | 1536      | 25       | 28SP, 28SO, 28ML | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2515                                                                                                                                      | 49,152 StdFI (24,576)               | —                        | 3968      | 25       | 28SP, 28SO       | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2525                                                                                                                                      | 49,152 EnhFI (24,576)               | 1024                     | 3968      | 25       | 28SP, 28SO       | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2550                                                                                                                                      | 32,768 EnhFI (16,384)               | 256                      | 2048      | 23       | 28SP, 28SO       | 11x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, Mi <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  | Full-Speed USB 2.0 Compliant                                 |
| PIC18F2580                                                                                                                                      | 32,768 EnhFI (16,384)               | 256                      | 1536      | 25       | 28SP, 28SO, 28ML | 8x10-bit 100 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/0      | ✓  | ECAN™ technology                                             |
| PIC18F2585                                                                                                                                      | 49,152 EnhFI (24,576)               | 1024                     | 3328      | 25       | 28SP, 28SO       | 8x10-bit 100 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/0      | ✓  | ECAN™ technology                                             |
| PIC18F2610                                                                                                                                      | 65,536 StdFI (32,768)               | —                        | 3968      | 25       | 28SP, 28SO       | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2620                                                                                                                                      | 65,536 EnhFI (32,768)               | 1024                     | 3968      | 25       | 28SP, 28SO       | 10x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  |                                                              |
| PIC18F2680                                                                                                                                      | 65,536 EnhFI (32,768)               | 1024                     | 3328      | 25       | 28SP, 28SO       | 8x10-bit 100 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/0      | ✓  | ECAN™ technology                                             |
| PIC18F4220                                                                                                                                      | 4,096 EnhFI (2,048)                 | 256                      | 512       | 36       | 40P, 44ML, 44PT  | 13x10-bit 30 ksps  | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 1/1      | ✓  | PSP                                                          |

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.

# High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set) (continued)

| Product                                                                                                                                                     | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages        | Analog             |       | Digital                  |                                         | Max. Speed MHz | IntOSC       | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|-----------------|--------------------|-------|--------------------------|-----------------------------------------|----------------|--------------|-----------------|----------------------|----------|----|--------------------------------------------------------------|
|                                                                                                                                                             |                                     |                          |           |          |                 | ADC Ch             | Comp. | Timers/WDT               | Serial I/O                              |                |              |                 |                      |          |    |                                                              |
| PIC18 Flash MCUs: 10 MIPS, V <sub>DD</sub> = 2.0 - 5.5V, Upwardly Compatible with PIC16C, 77 Instructions, C Compiler Efficient Instruction Set (continued) |                                     |                          |           |          |                 |                    |       |                          |                                         |                |              |                 |                      |          |    |                                                              |
| PIC18F4221*                                                                                                                                                 | 4,096 EnhFI (2,048)                 | 256                      | 512       | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4320                                                                                                                                                  | 8,192 EnhFI (4,096)                 | 256                      | 512       | 36       | 40P, 44ML, 44PT | 13x10-bit 30 ksps  | 2     | 3-16 bit, 1-8 bit, 1-WDT | AUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4321*                                                                                                                                                 | 8,192 EnhFI (4,096)                 | 256                      | 512       | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4331                                                                                                                                                  | 8,192 EnhFI (4,096)                 | 256                      | 768       | 36       | 40P, 44ML, 44PT | 9x10-bit 200 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 2/0      | ✓  | 8-channel 14-bit Motor Control PWMs, 2-ch Quadrature Encoder |
| PIC18F4410                                                                                                                                                  | 16,384 StdFI (8,192)                | —                        | 768       | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4420                                                                                                                                                  | 16,384 EnhFI (8,192)                | 256                      | 768       | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4431                                                                                                                                                  | 16,384 EnhFI (8,192)                | 256                      | 768       | 36       | 40P, 44ML, 44PT | 9x10-bit 200 ksps  | —     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, I <sup>2</sup> C/SPI            | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 1                    | 2/0      | ✓  | 8-channel 14-bit Motor Control PWMs, 2-ch Quadrature Encoder |
| PIC18F4455                                                                                                                                                  | 24,576 EnhFI (12,288)               | 256                      | 2048      | 34       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, Mi <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | Full-Speed USB 2.0 Compliant, Streaming Port                 |
| PIC18F4480                                                                                                                                                  | 16,384 EnhFI (8,192)                | 256                      | 768       | 36       | 40P, 44ML, 44PT | 11x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN™ technology                                             |
| PIC18F4510                                                                                                                                                  | 32,768 StdFI (16,384)               | —                        | 1536      | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4520                                                                                                                                                  | 32,768 EnhFI (16384)                | 256                      | 1536      | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4515                                                                                                                                                  | 49,152 StdFI (24576)                | —                        | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4525                                                                                                                                                  | 49,152 EnhFI (24576)                | 1024                     | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4580                                                                                                                                                  | 32,768 EnhFI (16384)                | 256                      | 1536      | 36       | 40P, 44ML, 44PT | 11x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN™ technology                                             |
| PIC18F4550                                                                                                                                                  | 32,768 EnhFI (16,384)               | 256                      | 2048      | 34       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | USB 2.0, Mi <sup>2</sup> C/SPI, EUSART  | 48             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | Full-Speed USB 2.0 Compliant, Streaming Port                 |
| PIC18F4585                                                                                                                                                  | 49,152 EnhFI (24,576)               | 1024                     | 3328      | 36       | 40P, 44ML, 44PT | 11x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN™ technology                                             |
| PIC18F4610                                                                                                                                                  | 65,536 StdFI (32,768)               | —                        | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |
| PIC18F4620                                                                                                                                                  | 65,536 EnhFI (32,768)               | 1024                     | 3968      | 36       | 40P, 44ML, 44PT | 13x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI           | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | PSP                                                          |

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.



**High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set) (continued)**

| Product                                                                                                                                         | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages        | Analog             |       | Digital                  |                                         | Max. Speed MHz | IntOSC       | BOR/ PBOR/ PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features          |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|-----------------|--------------------|-------|--------------------------|-----------------------------------------|----------------|--------------|-----------------|----------------------|----------|----|-------------------------|
|                                                                                                                                                 |                                     |                          |           |          |                 | ADC Ch             | Comp. | Timers/WDT               | Serial I/O                              |                |              |                 |                      |          |    |                         |
| PIC18 Flash MCUs: 10 MIPS, VDD = 2.0 - 5.5V, Upwardly Compatible with PIC16C, 77 Instructions, C Compiler Efficient Instruction Set (continued) |                                     |                          |           |          |                 |                    |       |                          |                                         |                |              |                 |                      |          |    |                         |
| PIC18F4680                                                                                                                                      | 65,536 EnhFI (32,768)               | 1024                     | 3328      | 36       | 40P, 44ML, 44PT | 11x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | CAN 2.0B, Mi <sup>2</sup> C/SPI, EUSART | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 1/1      | ✓  | ECAN                    |
| PIC18F6310                                                                                                                                      | 8,192 StdFI (4,096)                 | —                        | 768       | 54       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 3/0      | 3  | EMA                     |
| PIC18F6410                                                                                                                                      | 16,384 StdFI (8,192)                | —                        | 768       | 54       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                     |
| PIC18F6390                                                                                                                                      | 8,192 StdFI (4,096)                 | —                        | 768       | 50       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 128 Segments |
| PIC18F6490                                                                                                                                      | 16,384 StdFI (8,192)                | —                        | 768       | 50       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 128 Segments |
| PIC18F6520                                                                                                                                      | 32,768 EnhFI (16,384)               | 1024                     | 2048      | 52       | 64PT            | 12x10-bit 30 ksps  | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x AUSART, Mi <sup>2</sup> C/SPI        | 40             | —            | PBOR/ PLVD      | 1                    | 5/0      | —  | PSP                     |
| PIC18F6527                                                                                                                                      | 49,152 EnhFI (24,576)               | 1024                     | 3936      | 54       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP                     |
| PIC18F6585                                                                                                                                      | 49,152 EnhFI (24,576)               | 1024                     | 3328      | 53       | 64PT, 68L       | 12x10-bit 30 ksps  | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI, CAN 2.0B | 40             | —            | PBOR/ PLVD      | 1                    | 1/1      | —  | ECAN                    |
| PIC18F6622                                                                                                                                      | 65,536 EnhFI (32,768)               | 1024                     | 3936      | 54       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP                     |
| PIC18F6627                                                                                                                                      | 98,304 EnhFI (49,152)               | 1024                     | 3936      | 54       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP                     |
| PIC18F6680                                                                                                                                      | 65,536 EnhFI (32,768)               | 1024                     | 3328      | 53       | 64PT, 68L       | 12x10-bit 30 ksps  | 2     | 3-16 bit, 1-8 bit, 1-WDT | EUSART, Mi <sup>2</sup> C/SPI, CAN 2.0B | 40             | —            | PBOR/ PLVD      | 1                    | 1/1      | —  | ECAN                    |
| PIC18F6722                                                                                                                                      | 131,072 EnhFI (65,536)              | 1024                     | 3936      | 54       | 64PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x Mi <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/3      | ✓  | PSP                     |
| PIC18F8310                                                                                                                                      | 8,192 StdFI (4,096)                 | —                        | 768       | 70       | 80PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                     |
| PIC18F8410                                                                                                                                      | 16,384 StdFI (8192)                 | —                        | 768       | 70       | 80PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 2-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 3/0      | ✓  | EMA                     |
| PIC18F8390                                                                                                                                      | 8,192 StdFI (4,096)                 | —                        | 768       | 66       | 80PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 1-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 192 Segments |
| PIC18F8490                                                                                                                                      | 16,384 StdFI (8,192)                | —                        | 768       | 66       | 80PT            | 12x10-bit 100 ksps | 2     | 3-16 bit, 2-8 bit, 1-WDT | Mi <sup>2</sup> C/SPI, EUSART, AUSART   | 40             | 8 MHz 32 kHz | PBOR/ PLVD      | 3                    | 2/0      | ✓  | LCD: up to 192 Segments |

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.



# High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set) (continued)

|             | Product                                                                                                                                                                | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog              |                          | Digital                             |                                         | Max. Speed MHz | IntOSC       | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP | nW       | Other Features |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------------------|---------------------|--------------------------|-------------------------------------|-----------------------------------------|----------------|--------------|---------------|----------------------|----------|----------|----------------|
|             |                                                                                                                                                                        |                                     |                          |           |          |                        | ADC Ch              | Comp.                    | Timers/WDT                          | Serial I/O                              |                |              |               |                      |          |          |                |
| NEW         | PIC18 Flash MCUs: 10 MIPS, V <sub>DD</sub> = 2.0 - 5.5V, Upwardly Compatible with PIC16C, 77 Instructions, C Compiler Efficient Instruction Set (continued)            |                                     |                          |           |          |                        |                     |                          |                                     |                                         |                |              |               |                      |          |          |                |
|             | PIC18F8520                                                                                                                                                             | 32,768 EnhFI (16,384)               | 1024                     | 2048      | 68       | 80PT                   | 16x10-bit 30 ksp/s  | 2                        | 2-8 bit, 3-16 bit, 1-WDT            | 2x AUSART, MI <sup>2</sup> C/SPI        | 40             | —            | PBOR/PLVD     | 1                    | 5/0      | —        | PSP, EMA       |
|             | PIC18F8527                                                                                                                                                             | 49,152 EnhFI (24,576)               | 1024                     | 3936      | 70       | 80PT                   | 16x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2x EUSART, 2x MI <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18F8585                                                                                                                                                             | 49,152 EnhFI (24,576)               | 1024                     | 3328      | 69       | 80PT                   | 16x10-bit 30 ksp/s  | 2                        | 3-16 bit, 1-8 bit, 1-WDT            | EUSART, MI <sup>2</sup> C/SPI, CAN 2.0B | 40             | —            | PBOR/PLVD     | 1                    | 1/1      | —        | ECAN, EMA      |
|             | PIC18F8622                                                                                                                                                             | 65,536 EnhFI (32,768)               | 1024                     | 3936      | 70       | 80PT                   | 16x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2x EUSART, 2x MI <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18F8627                                                                                                                                                             | 98,304 EnhFI (49,152)               | 1024                     | 3936      | 70       | 80PT                   | 16x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2x EUSART, 2x MI <sup>2</sup> C/SPI     | 40             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18F8680                                                                                                                                                             | 65,536 EnhFI (32,768)               | 1024                     | 3328      | 69       | 80PT                   | 16x10-bit 30 ksp/s  | 2                        | 3-16 bit, 1-8 bit, 1-WDT            | EUSART, MI <sup>2</sup> C/SPI, CAN 2.0B | 40             | —            | PBOR/PLVD     | 1                    | 1/1      | —        | ECAN, EMA      |
| NEW         | PIC18F8722                                                                                                                                                             | 131,072 EnhFI (65,536)              | 1024                     | 3936      | 70       | 80PT                   | 16x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18FXXJXX Flash MCUs: 10 MIPS, V <sub>DD</sub> = 2.0 - 3.6V, Self-Write, Upwardly Compatible with PIC18/PIC16, 77 Instructions, C Compiler Efficient Instruction Set |                                     |                          |           |          |                        |                     |                          |                                     |                                         |                |              |               |                      |          |          |                |
|             | PIC18F24J10                                                                                                                                                            | 16,384 StdFI (8,192)                | —                        | 1024      | 21       | 28SP, 28SO, 28SS, 28ML | 10x10-bit 100 ksp/s | 2                        | 2-16 bit, 1-8 bit, 1-WDT            | EUSART, MI <sup>2</sup> C/SPI           | 40             | 32 kHz       | BOR           | 3                    | 2/0      | ✓        |                |
|             | PIC18F25J10                                                                                                                                                            | 32,768 StdFI (16,384)               | —                        | 1024      | 21       | 28SP, 28SO, 28SS, 28ML | 10x10-bit 100 ksp/s | 2                        | 2-16 bit, 1-8 bit, 1-WDT            | EUSART, MI <sup>2</sup> C/SPI           | 40             | 32 kHz       | BOR           | 3                    | 2/0      | ✓        |                |
|             | PIC18F44J10                                                                                                                                                            | 16,384 StdFI (8,192)                | —                        | 1024      | 32       | 40P, 44ML, 44PT        | 13x10-bit 100 ksp/s | 2                        | 2-16 bit, 1-8 bit, 1-WDT            | EUSART, 2xMI <sup>2</sup> C/SPI         | 40             | 32 kHz       | BOR           | 3                    | 1/1      | ✓        | PSP            |
|             | PIC18F45J10                                                                                                                                                            | 32,768 StdFI (16,384)               | —                        | 1024      | 32       | 40P, 44ML, 44PT        | 13x10-bit 100 ksp/s | 2                        | 2-16 bit, 1-8 bit, 1-WDT            | EUSART, 2xMI <sup>2</sup> C/SPI         | 40             | 32 kHz       | BOR           | 3                    | 1/1      | ✓        | PSP            |
|             | PIC18F65J10                                                                                                                                                            | 32,768 StdFI (16,384)               | —                        | 2048      | 50       | 64PT                   | 11x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP            |
|             | PIC18F65J15                                                                                                                                                            | 49,152 StdFI (24,576)               | —                        | 2048      | 50       | 64PT                   | 11x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP            |
|             | PIC18F66J10                                                                                                                                                            | 65,536 StdFI (32,768)               | —                        | 2048      | 50       | 64PT                   | 11x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP            |
|             | PIC18F66J15                                                                                                                                                            | 98,304 StdFI (49,152)               | —                        | 3936      | 50       | 64PT                   | 11x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP            |
|             | PIC18F67J10                                                                                                                                                            | 131,072 StdFL (65,536)              | —                        | 3936      | 50       | 64PT                   | 11x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP            |
|             | PIC18F85J10                                                                                                                                                            | 32,768 StdFL (16,384)               | —                        | 2048      | 66       | 80PT                   | 15x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18F85J15                                                                                                                                                            | 49,152 StdFL (24,576)               | —                        | 2048      | 66       | 80PT                   | 15x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2xEUSART, 2xMI <sup>2</sup> C/SPI       | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18F86J10                                                                                                                                                            | 65,536 StdFL (32,768)               | —                        | 2048      | 66       | 80PT                   | 15x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2x EUSART, 2x MI <sup>2</sup> C/SPI     | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP, EMA       |
|             | PIC18F86J15                                                                                                                                                            | 98,304 StdFL (49,152)               | —                        | 3936      | 66       | 80PT                   | 15x10-bit 100 ksp/s | 2                        | 3-16 bit, 2-8 bit, 1-WDT            | 2x EUSART, 2x MI <sup>2</sup> C/SPI     | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓        | PSP, EMA       |
| PIC18F87J10 | 131,072 StdFI (65,536)                                                                                                                                                 | —                                   | 3936                     | 66        | 80PT     | 15x10-bit 100 ksp/s    | 2                   | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI | 40                                      | 32 kHz         | BOR          | 3             | 2/3                  | ✓        | PSP, EMA |                |

\*Contact Microchip Technology for availability date.

Abbreviations are found on the last page of the Selector Guide.

## FUTURE PICmicro® MICROCONTROLLER FAMILY PRODUCTS

### Mid-Range 8-Bit PICmicro® Microcontroller Family (14-bit Instruction Set)

| Product                                                                                        | Program Memory: Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog       |       | Digital                  |                               | Max. Speed MHz | IntOSC          | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                              |
|------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------|-----------|----------|------------------------|--------------|-------|--------------------------|-------------------------------|----------------|-----------------|---------------|----------------------|----------|----|---------------------------------------------|
|                                                                                                |                                      |                          |           |          |                        | ADC Channels | Comp. | Timers/WDT               | Serial I/O                    |                |                 |               |                      |          |    |                                             |
| PIC12FXXX: 200 ns Instruction Execution, 35 Instructions, 25 mA Source and Sink per I/O        |                                      |                          |           |          |                        |              |       |                          |                               |                |                 |               |                      |          |    |                                             |
| PIC12F615                                                                                      | 1,792 StdFI (1,024)                  | —                        | 64        | 6        | 8P, 8SN, 8MD           | 4x10-bit     | 1     | 1-16 bit, 2-8 bit, 1-WDT | —                             | 20             | 8 MHz<br>32 kHz | BOR           | 1**                  | 0/1      | —  | High-Voltage Option with Internal Regulator |
| PIC16FXXX: 200 ns Instruction Execution, 35 Instructions, ICSP™, 25 mA Source and Sink per I/O |                                      |                          |           |          |                        |              |       |                          |                               |                |                 |               |                      |          |    |                                             |
| PIC16F616                                                                                      | 3,584 StdFI (2,048)                  | —                        | 128       | 12       | 14P, 14SL, 14ST, 16ML  | 8x10-bit     | 2     | 1-16 bit, 2-8 bit, 1-WDT | —                             | 20             | 8 MHz<br>32 kHz | BOR           | 1**                  | 0/1      | —  | High-Voltage Option with Internal Regulator |
| PIC16F631                                                                                      | 1,792 StdFI (1,024)                  | 128                      | 64        | 18       | 20P, 20SO, 20SS        | —            | 2     | 1-16 bit, 1-8 bit, 1-WDT | —                             | 20             | 8 MHz<br>32 kHz | BOR           | 1**                  | —        | ✓  |                                             |
| PIC16F677                                                                                      | 3,584 StdFI (2,048)                  | 256                      | 128       | 18       | 20P, 20SO, 20SS        | 12x10-bit    | 2     | 1-16 bit, 1-8 bit, 1-WDT | —                             | 20             | 8 MHz<br>32 kHz | BOR           | 1**                  | —        | ✓  |                                             |
| PIC16F883                                                                                      | 7,168 EnhFI (4,096)                  | 256                      | 256       | 25       | 28SP, 28SO, 28SS, 28ML | 11x10-bit    | 2     | 1-16 bit, 2-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI | 20             | 8 MHz<br>32 kHz | BOR           | 1                    | 1/1      | ✓  |                                             |
| PIC16F884                                                                                      | 7,168 EnhFI (4,096)                  | 256                      | 256       | 36       | 40P, 44PT, 44ML        | 14x10-bit    | 2     | 1-16 bit, 2-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI | 20             | 8 MHz<br>32 kHz | BOR           | 1                    | 1/1      | ✓  |                                             |
| PIC16F886                                                                                      | 14,336 EnhFI (8,192)                 | 256                      | 368       | 25       | 28SP, 28SO, 28SS, 28ML | 11x10-bit    | 2     | 1-16 bit, 2-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI | 20             | 8 MHz<br>32 kHz | BOR           | 1                    | 1/1      | ✓  |                                             |
| PIC16F887                                                                                      | 14,336 EnhFI (8,192)                 | 256                      | 368       | 36       | 40P, 44PT, 44ML        | 14x10-bit    | 2     | 1-16 bit, 2-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI | 20             | 8 MHz<br>32 kHz | BOR           | 1                    | 1/1      | ✓  |                                             |
| PIC16CRXX: 200 ns Instruction Execution, 35 Instructions, 25 mA Source and Sink per I/O        |                                      |                          |           |          |                        |              |       |                          |                               |                |                 |               |                      |          |    |                                             |
| PIC16CR73                                                                                      | 7,168 ROM (4,096)                    | —                        | 192       | 22       | 28SP, 28SO, 28SS, 28ML | 5x8-bit      | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I <sup>2</sup> C/SPI   | 20             | —               | BOR           | —                    | 2/0      | —  |                                             |
| PIC16CR74                                                                                      | 7,168 ROM (4,096)                    | —                        | 192       | 33       | 40P, 44ML, 44L, 44PT   | 8x8-bit      | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I <sup>2</sup> C/SPI   | 20             | —               | BOR           | —                    | 2/0      | —  | PSP                                         |
| PIC16CR76                                                                                      | 14,336 ROM (8,192)                   | —                        | 368       | 22       | 28SP, 28SO, 28SS, 28ML | 5x8-bit      | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I <sup>2</sup> C/SPI   | 20             | —               | BOR           | —                    | 2/0      | —  |                                             |
| PIC16CR77                                                                                      | 14,336 ROM (8,192)                   | —                        | 368       | 33       | 40P, 44ML, 44L, 44PT   | 8x8-bit      | —     | 1-16 bit, 2-8 bit, 1-WDT | USART, I <sup>2</sup> C/SPI   | 20             | —               | BOR           | —                    | 2/0      | —  | PSP                                         |

\*\* Requires ICD specific device with header module – refer to Development Tools.  
Abbreviations are found on the last page of the Selector Guide.

### High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set)

| Product                                                                                                                                                                                                 | Program Memory: Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages              | Analog              | Digital | Max. Speed MHz           | IntOSC                        | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP  | nW | Other Features |   |                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------|-----------|----------|-----------------------|---------------------|---------|--------------------------|-------------------------------|---------------|----------------------|-----------|----|----------------|---|-------------------------------------|
| PIC18FXXX: Upwardly Compatible with PIC16, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, Switchable Oscillator Sources, 4x PLL, 10-12 MIPS, ICSP™ |                                      |                          |           |          |                       |                     |         |                          |                               |               |                      |           |    |                |   |                                     |
| PIC18F1230                                                                                                                                                                                              | 4,096 EnhFI (2,048)                  | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 4x10-bit, 100 ksps  | 3       | 2-16 bit, 1-WDT          | EUSART                        | 40            | 8 MHz<br>32 kHz      | PBOR/PLVD | 3  | —              | ✓ | 6-channel 14-bit Motor Control PWMs |
| PIC18F1330                                                                                                                                                                                              | 8,192 EnhFI (4,096)                  | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML | 4x10-bit, 100 ksps  | 3       | 2-16 bit, 1-WDT          | EUSART                        | 40            | 8 MHz<br>32 kHz      | PBOR/PLVD | 3  | —              | ✓ | 6-channel 14-bit Motor Control PWMs |
| PIC18F2450                                                                                                                                                                                              | 16,384 EnhFI (8,192)                 | —                        | 768       | 23       | 28SP, 28SO, 28ML      | 10x10-bit, 100 ksps | —       | 2-16 bit, 1-8 bit, 1-WDT | USB 2.0, AUSART               | 48            | 8 MHz<br>32 kHz      | PBOR/PLVD | 3  | 1/0            | ✓ | Full-Speed USB 2.0 Compliant        |
| PIC18F2523                                                                                                                                                                                              | 32,768 EnhFI (16,384)                | 256                      | 1536      | 25       | 28SP, 28SO, 28ML      | 10x12-bit 100 ksps  | 2       | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI | 32            | 8 MHz<br>32 kHz      | PBOR/PLVD | 3  | 2/0            | ✓ | VDD = 2.7-3.6V                      |

Abbreviations are found on the last page of the Selector Guide.

# High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set) (continued)

| Product                                                                                                                                                                                                             | Program Memory: Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages        | Analog               |   | Digital                  |                               | Max. Speed MHz | IntOSC       | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------|-----------|----------|-----------------|----------------------|---|--------------------------|-------------------------------|----------------|--------------|---------------|----------------------|----------|----|-------------------------------------------|
| PIC18FXXX: Upwardly Compatible with PIC16, 77 Instructions, C Compiler Efficient Instruction Set, Software Stack Capability, Table Read/Write, Switchable Oscillator Sources, 4x PLL, 10-12 MIPS, ICSP™ (continued) |                                      |                          |           |          |                 |                      |   |                          |                               |                |              |               |                      |          |    |                                           |
| PIC18F4523                                                                                                                                                                                                          | 32,768 EnhI (16,384)                 | 256                      | 1536      | 36       | 40P, 44ML, 44PT | 13x12-bit 100 ksp/s  | 2 | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI²C/SPI              | 32             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 1/1      | ✓  | VDD = 2.7-3.6V, PSP                       |
| PIC18F4450                                                                                                                                                                                                          | 16,384 EnhFI (8,192)                 | —                        | 768       | 34       | 40P, 44ML, 44PT | 13x10-bit, 100 ksp/s | — | 2-16 bit, 1-8 bit, 1-WDT | USB 2.0, AUSART               | 48             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 1/0      | ✓  | Full-Speed USB 2.0 Compliant              |
| PIC18F6522                                                                                                                                                                                                          | 32,768 EnhFI (16,384)                | 1024                     | 2048      | 54       | 64PT            | 12x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI²C/SPI          | 40             | 8 MHz 32 kHz | PBOR          | 3                    | 2/3      | ✓  | PSP                                       |
| PIC18F6493                                                                                                                                                                                                          | 16,384 StdFI (8,192)                 | —                        | 768       | 50       | 64PT            | 12x12-bit 100 ksp/s  | 2 | 3-16 bit, 1-8 bit, 1-WDT | MI²C/SPI, EUSART, AUSART      | 32             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 2/0      | ✓  | VDD = 2.7-3.6V<br>LCD: up to 192 segments |
| PIC18F8493                                                                                                                                                                                                          | 16,384 StdFI (8,192)                 | —                        | 768       | 66       | 80PT            | 12x12-bit 100 ksp/s  | 2 | 3-16 bit, 2-8 bit, 1-WDT | MI²C/SPI, EUSART, AUSART      | 32             | 8 MHz 32 kHz | PBOR/PLVD     | 3                    | 2/0      | ✓  | VDD = 2.7-3.6V<br>LCD: up to 192 segments |
| PIC18F8522                                                                                                                                                                                                          | 32,768 EnhFI (16,384)                | 1024                     | 2048      | 70       | 80PT            | 16x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI²C/SPI          | 40             | 8 MHz 32 kHz | PBOR          | 3                    | 2/3      | ✓  | PSP, EMA                                  |
| PIC18FXXJXX: Flash and ROM MCUs: 10 MIPS, VDD = 2.0-3.6V, Self-Write Flash, Upwardly Compatible with PIC18/PIC16, 77 Instructions and C Compiler Efficient Instruction Set                                          |                                      |                          |           |          |                 |                      |   |                          |                               |                |              |               |                      |          |    |                                           |
| PIC18F63J90                                                                                                                                                                                                         | 8,192 StdFI (4,096)                  | —                        | 1024      | 49       | 64PT            | 12x10-bit, 100 ksp/s | 2 | 3-16 bit, 1-8 bit, 1-WDT | AUSART, EUSART, MI²C/SPI      | 40             | 8 MHz 32 kHz | BOR           | 3                    | 2/0      | ✓  | LCD: up to 128 segments                   |
| PIC18F64J90                                                                                                                                                                                                         | 16,384 StdFI (8,192)                 | —                        | 1024      | 49       | 64PT            | 12x10-bit, 100 ksp/s | 2 | 3-16 bit, 1-8 bit, 1-WDT | AUSART, EUSART, MI²C/SPI      | 40             | 8 MHz 32 kHz | BOR           | 3                    | 2/0      | ✓  | LCD: up to 128 segments                   |
| PIC18R65J10                                                                                                                                                                                                         | 32,768 ROM (16,384)                  | —                        | 2048      | 50       | 64PT            | 11x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI²C/SPI          | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓  | PSP                                       |
| PIC18F65J50                                                                                                                                                                                                         | 32,768 StdFI (16,384)                | —                        | 3936      | 49       | 64PT            | 8x10-bit 100 ksp/s   | 2 | 3-16 bit, 2-8 bit, 1-WDT | USB 2.0, 2xEUSART, 2xMI²C/SPI | 48             | 8 MHz 32 kHz | BOR           | 3                    | 2/3      | ✓  | Full-Speed USB 2.0 Compliant PMP          |
| PIC18F65J90                                                                                                                                                                                                         | 32,768 StdFI (16,384)                | —                        | 2048      | 49       | 64PT            | 12x10-bit, 100 ksp/s | 2 | 3-16 bit, 1-8 bit, 1-WDT | AUSART, EUSART, MI²C/SPI      | 40             | 8 MHz 32 kHz | BOR           | 3                    | 2/0      | ✓  | LCD: up to 128 segments                   |
| PIC18R66J10                                                                                                                                                                                                         | 65,536 ROM (32,768)                  | —                        | 2048      | 50       | 64PT            | 11x10-bit 100 ksp/s  | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI²C/SPI          | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓  | PSP                                       |
| PIC18F66J50                                                                                                                                                                                                         | 65,536 ROM (32,768)                  | —                        | 3936      | 49       | 64PT            | 8x10-bit 100 ksp/s   | 2 | 3-16 bit, 2-8 bit, 1-WDT | USB 2.0, 2xEUSART, 2xMI²C/SPI | 48             | 8 MHz 32 kHz | BOR           | 3                    | 2/3      | ✓  | Full-Speed USB 2.0 Compliant PMP          |
| PIC18F66J60                                                                                                                                                                                                         | 65,536 StdFI (32,768)                | —                        | 2048      | 39       | 64PT            | 11x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | EUSART, MI²C/SPI              | 42             | 32 kHz       | BOR           | 3                    | 2/3      | ✓  | 10Base-T Ethernet                         |
| PIC18F66J65                                                                                                                                                                                                         | 98,304 StdFI (49,152)                | —                        | 3808      | 39       | 64PT            | 11x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | EUSART, MI²C/SPI              | 42             | 32 kHz       | BOR           | 3                    | 2/3      | ✓  | 10Base-T Ethernet                         |
| PIC18R67J10                                                                                                                                                                                                         | 131,072 ROM (65,536)                 | —                        | 3936      | 50       | 64PT            | 11x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI²C/SPI          | 40             | 32 kHz       | BOR           | 3                    | 2/3      | ✓  | PSP                                       |
| PIC18F67J50                                                                                                                                                                                                         | 131,072 StdFI (65,536)               | —                        | 3936      | 49       | 64PT            | 8x10-bit 100 ksp/s   | 2 | 3-16 bit, 2-8 bit, 1-WDT | USB 2.0, 2xEUSART, 2xMI²C/SPI | 48             | 8 MHz 32 kHz | BOR           | 3                    | 2/3      | ✓  | Full-Speed USB 2.0 Compliant PMP          |
| PIC18F67J60                                                                                                                                                                                                         | 131,072 StdFI (65,536)               | —                        | 3808      | 39       | 64PT            | 11x10-bit, 100 ksp/s | 2 | 3-16 bit, 2-8 bit, 1-WDT | EUSART, MI²C/SPI              | 42             | 32 kHz       | BOR           | 3                    | 2/3      | ✓  | 10Base-T Ethernet                         |

Abbreviations are found on the last page of the Selector Guide.

| High-Performance 8-Bit PICmicro® Microcontroller Family (16-bit Instruction Set) (continued)                                                                                                       |                                      |                          |           |          |                        |                     |   |                          |                                              |                |               |               |                      |          |    |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------|-----------|----------|------------------------|---------------------|---|--------------------------|----------------------------------------------|----------------|---------------|---------------|----------------------|----------|----|---------------------------------------|
| Product                                                                                                                                                                                            | Program Memory: Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog              |   | Digital                  |                                              | Max. Speed MHz | IntOSC        | BOR/PBOR/PLVD | ICD # of Breakpoints | CCP/ECCP | nW | Other Features                        |
| PIC18FXXJXX: Flash and ROM MCUs: 10 MIPS, V <sub>DD</sub> = 2.0-3.6V, Self-Write Flash, Upwardly Compatible with PIC18/PIC16, 77 Instructions and C Compiler Efficient Instruction Set (continued) |                                      |                          |           |          |                        |                     |   |                          |                                              |                |               |               |                      |          |    |                                       |
| PIC18F83J90                                                                                                                                                                                        | 8,192 StdFI (4,096)                  | —                        | 1024      | 64       | 80PT                   | 12x10-bit, 100 ksps | 2 | 3-16 bit, 1-8 bit, 1-WDT | AUSART, EUSART, MI <sup>2</sup> C/SPI        | 40             | 8 MHz 32 kHz  | BOR           | 3                    | 2/0      | ✓  | LCD: up to 192 segments               |
| PIC18F84J90                                                                                                                                                                                        | 16,384 StdFI (8,192)                 | —                        | 1024      | 64       | 80PT                   | 12x10-bit, 100 ksps | 2 | 3-16 bit, 1-8 bit, 1-WDT | AUSART, EUSART, MI <sup>2</sup> C/SPI        | 40             | 8 MHz 32 kHz  | BOR           | 3                    | 2/0      | ✓  | LCD: up to 192 segments               |
| PIC18R85J10                                                                                                                                                                                        | 32,768 ROM (16,384)                  | —                        | 2048      | 66       | 80PT                   | 15x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI <sup>2</sup> C/SPI            | 40             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | PSP, EMA                              |
| PIC18F85J50                                                                                                                                                                                        | 32,768 StdFI (16,384)                | —                        | 3936      | 66       | 80PT                   | 12x10-bit 100 ksps  | 2 | 3-16 bit, 2-8 bit, 1-WDT | USB 2.0, 2xEUSART, 2xMI2C/SPI                | 48             | 8 MHz 32 kHz  | BOR           | 3                    | 2/3      | ✓  | Full-Speed USB 2.0 Compliant PMP, EMA |
| PIC18F85J90                                                                                                                                                                                        | 32,768 StdFI (16,384)                | —                        | 2048      | 64       | 80PT                   | 12x10-bit, 100 ksps | 2 | 3-16 bit, 1-8 bit, 1-WDT | AUSART, EUSART, MI <sup>2</sup> C/SPI        | 40             | 8 MHz 32 kHz  | BOR           | 3                    | 2/0      | ✓  | LCD: up to 192 segments               |
| PIC18R86J10                                                                                                                                                                                        | 65,536 ROM (32,768)                  | —                        | 2048      | 66       | 80PT                   | 15x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI <sup>2</sup> C/SPI            | 40             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | PSP, EMA                              |
| PIC18F86J50                                                                                                                                                                                        | 65,536 StdFI (32,768)                | —                        | 3936      | 66       | 80PT                   | 12x10-bit 100 ksps  | 2 | 3-16 bit, 2-8 bit, 1-WDT | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI   | 48             | 8 MHz 32 kHz  | BOR           | 3                    | 2/3      | ✓  | Full-Speed USB 2.0 Compliant PMP, EMA |
| PIC18F86J60                                                                                                                                                                                        | 65,536 StdFI (32,768)                | —                        | 2048      | 55       | 80PT                   | 15x10-bit 100 ksps  | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, MI <sup>2</sup> C/SPI              | 42             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | 10Base-T Ethernet                     |
| PIC18F86J65                                                                                                                                                                                        | 98,304 StdFI (49,152)                | —                        | 3808      | 55       | 80PT                   | 15x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, MI <sup>2</sup> C/SPI              | 42             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | 10Base-T Ethernet                     |
| PIC18R87J10                                                                                                                                                                                        | 131,072 ROM (65,536)                 | —                        | 3936      | 66       | 80PT                   | 15x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, 2xMI <sup>2</sup> C/SPI            | 40             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | PSP, EMA                              |
| PIC18F87J50                                                                                                                                                                                        | 131,072 StdFI (65,536)               | —                        | 3936      | 66       | 80PT                   | 12x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | USB 2.0, 2x EUSART, 2x MI <sup>2</sup> C/SPI | 48             | 8 MHz 32 kHz  | BOR           | 3                    | 2/3      | ✓  | Full-Speed USB 2.0 Compliant PMP, EMA |
| PIC18F87J60                                                                                                                                                                                        | 131,072 StdFI (65,536)               | —                        | 3808      | 55       | 80PT                   | 15x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2xEUSART, MI <sup>2</sup> C/SPI              | 42             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | 10Base-T Ethernet                     |
| PIC18F96J60                                                                                                                                                                                        | 65,536 StdFI (32,768)                | —                        | 2048      | 70       | 100PT                  | 16x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI          | 42             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | PSP, EMA, 10Base-T Ethernet           |
| PIC18F96J65                                                                                                                                                                                        | 98,304 StdFI (49,152)                | —                        | 3808      | 70       | 100PT                  | 16x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI          | 42             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | PSP, EMA, 10Base-T Ethernet           |
| PIC18F97J60                                                                                                                                                                                        | 131,072 StdFI (65,536)               | —                        | 3808      | 70       | 100PT                  | 16x10-bit, 100 ksps | 2 | 3-16 bit, 2-8 bit, 1-WDT | 2x EUSART, 2x MI <sup>2</sup> C/SPI          | 42             | 32 kHz        | BOR           | 3                    | 2/3      | ✓  | PSP, EMA, 10Base-T Ethernet           |
| PIC18FXXKXX Flash MCUs: 16 MIPS, V <sub>DD</sub> = 1.8-3.6V, Self-Write                                                                                                                            |                                      |                          |           |          |                        |                     |   |                          |                                              |                |               |               |                      |          |    |                                       |
| PIC18F25K20                                                                                                                                                                                        | 32,768 EnhFI (16,384)                | 256                      | 1536      | 25       | 28SP, 28SO, 28SS, 28ML | 11x10 bit 100 ksps  | 2 | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI                | 64             | 16 MHz 32 kHz | PBOR/PLVD     | 3                    | 1/1      | ✓  |                                       |
| PIC18F26K20                                                                                                                                                                                        | 65,536 EnhFI (32,768)                | 1024                     | 3968      | 25       | 28SP, 28SO, 28SS, 28ML | 11x10 bit 100 ksps  | 2 | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI                | 64             | 16 MHz 32 kHz | PBOR/PLVD     | 3                    | 1/1      | ✓  |                                       |
| PIC18F45K20                                                                                                                                                                                        | 32,768 EnhFI (16,384)                | 256                      | 1536      | 36       | 40P, 44ML, 44PT        | 14x10 bit 100 ksps  | 2 | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI                | 40             | 8 MHz 32 kHz  | PBOR/PLVD     | 3                    | 1/1      | ✓  | PSP                                   |
| PIC18F46K20                                                                                                                                                                                        | 65,536 EnhFI (32,768)                | 1024                     | 3968      | 36       | 40P, 44ML, 44PT        | 14x10 bit 100 ksps  | 2 | 3-16 bit, 1-8 bit, 1-WDT | EUSART, MI <sup>2</sup> C/SPI                | 40             | 8 MHz 32 kHz  | PBOR/PLVD     | 3                    | 1/1      | ✓  | PSP                                   |

Abbreviations are found on the last page of the Selector Guide.

| PIC24 16-Bit Microcontroller (MCU) Family                                          |                              |             |          |          |                      |       |               |           |                 |      |               |      |      |     |              |                |    |                |
|------------------------------------------------------------------------------------|------------------------------|-------------|----------|----------|----------------------|-------|---------------|-----------|-----------------|------|---------------|------|------|-----|--------------|----------------|----|----------------|
| Product                                                                            | Flash Program Memory (Bytes) | RAM (Bytes) | I/O Pins | Packages | Analog               |       | Digital       |           |                 |      |               |      |      | CAN | IntOSC       | Power On Reset | nW | Other Features |
|                                                                                    |                              |             |          |          | ADC Ch               | Comp. | Timers 16-bit | Input Cap | Output Comp/PWM | RTCC | UART w/ IrDA® | SPI™ | I²C™ |     |              |                |    |                |
| PIC24FJ128GA Family 16-bit Flash MCUs: 16 MIPS, VDD = 2.0 - 3.6V, Self-Write Flash |                              |             |          |          |                      |       |               |           |                 |      |               |      |      |     |              |                |    |                |
| PIC24FJ64GA006                                                                     | 64K                          | 8K          | 53       | 64PT     | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ64GA008                                                                     | 64K                          | 8K          | 69       | 80PT     | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ64GA010                                                                     | 64K                          | 8K          | 85       | 100PT    | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ96GA006                                                                     | 96K                          | 8K          | 53       | 64PT     | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ96GA008                                                                     | 96K                          | 8K          | 69       | 80PT     | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ96GA010                                                                     | 96K                          | 8K          | 85       | 100PT    | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ128GA006                                                                    | 128K                         | 8K          | 53       | 64PT     | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ128GA008                                                                    | 128K                         | 8K          | 69       | 80PT     | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24FJ128GA010                                                                    | 128K                         | 8K          | 85       | 100PT    | 16 X 10-bit 500 ksps | 2     | 5             | 5         | 5               | ✓    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, PMP      |
| PIC24HJ256GP Family 16-bit Flash MCUs: 40 MIPS, VDD = 3.0 - 3.6V, Self-Write Flash |                              |             |          |          |                      |       |               |           |                 |      |               |      |      |     |              |                |    |                |
| PIC24HJ64GP206                                                                     | 64                           | 8           | 53       | 64PT     | 18 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 1    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ64GP210                                                                     | 64                           | 8           | 85       | 100PT    | 32 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ64GP506                                                                     | 64                           | 8           | 53       | 64PT     | 18 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | 1   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ64GP510                                                                     | 64                           | 8           | 85       | 100PT    | 32 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | 1   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ128GP206                                                                    | 128                          | 8           | 53       | 64PT     | 18 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 1    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ128GP210                                                                    | 128                          | 8           | 85       | 100PT    | 32 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | —   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ128GP506                                                                    | 128                          | 8           | 53       | 64PT     | 18 x 12-bit 500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | 1   | 8 MHz 32 kHz | ✓              | ✓  | JTAG, DMA      |

Abbreviations are found on the last page of the Selector Guide.

**PIC24 16-Bit Microcontroller (MCU) Family (continued)**

| Product                                                                                        | Flash Program Memory (Bytes) | RAM (Bytes) | I/O Pins | Packages | Analog                      |       | Digital       |           |                 |      |               |      |      | CAN | IntOSC          | Power On Reset | nW | Other Features |
|------------------------------------------------------------------------------------------------|------------------------------|-------------|----------|----------|-----------------------------|-------|---------------|-----------|-----------------|------|---------------|------|------|-----|-----------------|----------------|----|----------------|
|                                                                                                |                              |             |          |          | ADC Ch                      | Comp. | Timers 16-bit | Input Cap | Output Comp/PWM | RTCC | UART w/ IrDA® | SPI™ | I²C™ |     |                 |                |    |                |
| PIC24HJ256GP Family 16-bit Flash MCUs: 40 MIPS, VDD = 3.0 - 3.6V, Self-Write Flash (continued) |                              |             |          |          |                             |       |               |           |                 |      |               |      |      |     |                 |                |    |                |
| PIC24HJ128GP510                                                                                | 128                          | 8           | 85       | 100PT    | 32 x 12-bit<br>500 ksps     | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | 1   | 8 MHz<br>32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ128GP306                                                                                | 128                          | 16          | 53       | 64PT     | 18 x 12-bit<br>500 ksps     | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | —   | 8 MHz<br>32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ128GP310                                                                                | 128                          | 16          | 85       | 100PT    | 32 x 12-bit<br>500 ksps     | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | —   | 8 MHz<br>32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ256GP206                                                                                | 256                          | 16          | 53       | 64PT     | 18 x 12-bit<br>500 ksps     | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | —   | 8 MHz<br>32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ256GP210                                                                                | 256                          | 16          | 85       | 100PT    | 32 x 12-bit<br>500 ksps     | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | —   | 8 MHz<br>32 kHz | ✓              | ✓  | JTAG, DMA      |
| PIC24HJ256CP610                                                                                | 256                          | 16          | 85       | 100PT    | (2) 16 x 12-bit<br>500 ksps | —     | 9             | 8         | 8               | —    | 2             | 2    | 2    | 2   | 8 MHz<br>32 kHz | ✓              | ✓  | JTAG, DMA      |

Abbreviations are found on the last page of the Selector Guide.

# MATURE – PICmicro® MICROCONTROLLER FAMILY PRODUCTS

Not recommended for new designs.

Please use a device from the recommended column for new designs.

| Product     | Program Memory (Bytes/Words) | Package Size | Recommended Design-In Device | Product    | Program Memory (Bytes/Words) | Package Size | Recommended Design-In Device |
|-------------|------------------------------|--------------|------------------------------|------------|------------------------------|--------------|------------------------------|
| PIC12C508   | 768/512x12                   | 8            | PIC12F508                    | PIC16C715  | 3,584/2,048x14               | 18           | PIC16F716                    |
| PIC12C508A  | 768/512x12                   | 8            | PIC12F508                    | PIC16C716  | 3,584/2,048x14               | 18           | PIC16F716                    |
| PIC12C509   | 1,536/1,024x12               | 8            | PIC12F509                    | PIC16C73A  | 7,168/4,096x14               | 28           | PIC16F73                     |
| PIC12C509A  | 1,536/1,024x12               | 8            | PIC12F509                    | PIC16C73B  | 7,168/4,096x14               | 28           | PIC16F73                     |
| PIC12C671   | 1,536/1,024x14               | 8            | PIC12F675                    | PIC16C74A  | 7,168/4,096x14               | 40           | PIC16F74                     |
| PIC12C672   | 3,584/2,048x14               | 8            | PIC12F683                    | PIC16C74B  | 7,168/4,096x14               | 40           | PIC16F74                     |
| PIC12CE673  | 1,792/1,024x14               | 8            | PIC12F675                    | PIC16C76   | 14,336/8,192x14              | 28           | PIC16F76                     |
| PIC12CE674  | 3,584/2,048x14               | 8            | PIC12F683                    | PIC16C77   | 14,336/8,192x14              | 40           | PIC16F77                     |
| PIC12CE518  | 768/512x12                   | 8            | PIC12F629                    | PIC16C923  | 7,168/4,096x14               | 68           | PIC16C925                    |
| PIC12CE519  | 1,536/1,024x12               | 8            | PIC12F629                    | PIC16C924  | 7,168/4,096x14               | 68           | PIC16C925                    |
| PIC12CR509A | 1,536/1,024x12               | 8            | PIC12F509                    | PIC16CE623 | 896/512x14                   | 18           | PIC16F627A                   |
| PIC16C505   | 1,536/1,024x12               | 14           | PIC16F505                    | PIC16CE624 | 1,792/1,024x14               | 18           | PIC16F627A                   |
| PIC16C54    | 768/512x12                   | 18           | PIC16F54                     | PIC16CE625 | 3,584/2,048x14               | 18           | PIC16F628A                   |
| PIC16C54A   | 768/512x12                   | 18           | PIC16F54                     | PIC16CR54A | 768/512x12                   | 18           | PIC16CR54C                   |
| PIC16C54C   | 768/512x12                   | 18           | PIC16F54                     | PIC16CR54C | 768/512x12                   | 18           | PIC16F54                     |
| PIC16C55    | 768/512x12                   | 28           | PIC16C55A                    | PIC16CR57C | 3,072/2,048x12               | 28           | PIC16F57                     |
| PIC16C56    | 1,536/1,024x12               | 18           | PIC16C56A                    | PIC16CR83  | 896/512x14                   | 18           | PIC16F84A                    |
| PIC16C57    | 3,072/2,048x12               | 28           | PIC16F57                     | PIC16CR84  | 1,792/1,024x14               | 18           | PIC16F84A                    |
| PIC16C57C   | 3,072/2,048x12               | 28           | PIC16F57                     | PIC16F627  | 1,792/1,024x14               | 18           | PIC16F627A                   |
| PIC16C62A   | 3,584/2,048x14               | 28           | PIC16C62B or PIC16F72        | PIC16F628  | 3,584/2,048x14               | 18           | PIC16F628A                   |
| PIC16C620   | 896/2,048x14                 | 18           | PIC16C620A                   | PIC16F83   | 896/512x14                   | 18           | PIC16F84A                    |
| PIC16C621   | 1,792/1,024x14               | 18           | PIC16C621A                   | PIC16F84   | 1,792/1,024x14               | 18           | PIC16F84A                    |
| PIC16C622   | 3,584/2,048x14               | 18           | PIC16C622A                   | PIC16F873  | 7,168/4,096x14               | 28           | PIC16F873A                   |
| PIC16C63    | 7,168/4,096x14               | 28           | PIC16C63B or PIC16F73        | PIC16F874  | 7,168/4,096x14               | 28           | PIC16F874A                   |
| PIC16C64A   | 3,584/2,048x14               | 40           | PIC16F74                     | PIC16F876  | 14,336/8,192x14              | 40           | PIC16F876A                   |
| PIC16C642   | 7,168/4,096x14               | 28           | PIC16F72                     | PIC16F877  | 14,336/8,192x14              | 40           | PIC16F877A                   |
| PIC16C65A   | 7,168/4,096x14               | 40           | PIC16C65B or PIC16F74        | PIC17C42A  | 4,096/2,048x16               | 40           | PIC18F4220                   |
| PIC16C66    | 1,4336/8,192x14              | 28           | PIC16F76                     | PIC17C43   | 8,192/4,096x16               | 40           | PIC18F4320                   |
| PIC16C662   | 7,168/4,096x14               | 40           | PIC16F74                     | PIC17C44   | 16,384/8,192x16              | 40           | PIC18F4420                   |
| PIC16C67    | 14,336/8,192x14              | 40           | PIC16F77                     | PIC17C752  | 16,384/8,192x16              | 68           | PIC18F6520                   |
| PIC16C71    | 1,792/1,024x14               | 18           | PIC16F716                    | PIC17C756A | 32,768/16,384x16             | 68           | PIC18F6520                   |
| PIC16C72    | 3,584/2,048x14               | 28           | PIC16F72                     | PIC17C762  | 16,384/8,192x16              | 84           | PIC18F8520                   |
| PIC16C72A   | 3,584/2,048x14               | 28           | PIC16F72                     | PIC17C766  | 32,768/16,384x16             | 84           | PIC18F8520                   |
| PIC16C710   | 896/512x14                   | 18           | PIC16F716                    | PIC18C242  | 16,384/8,192x16              | 28           | PIC18F2420                   |
| PIC16C711   | 1,792/1,024x14               | 18           | PIC16F716                    | PIC18C252  | 32,768/16,384x16             | 28           | PIC18F2520                   |
| PIC16C712   | 1,792/1,024x14               | 18           | PIC16F716                    | PIC18C442  | 16,384/8,192x16              | 40           | PIC18F4420                   |

| Product    | Program Memory<br>(Bytes/Words) | Package Size | Recommended Design-In Device |
|------------|---------------------------------|--------------|------------------------------|
| PIC18C452  | 32,768/16,384x16                | 40           | PIC18F4520                   |
| PIC18C658  | 32,768/16,384x16                | 68           | PIC18F6585                   |
| PIC18C858  | 32,768/16,384x16                | 84           | PIC18F8585                   |
| PIC18F242  | 16,384/8,192x16                 | 28           | PIC18F2420                   |
| PIC18F248  | 16,384/8,192x16                 | 28           | PIC18F2480                   |
| PIC18F252  | 32,768/16,384x16                | 28           | PIC18F2520                   |
| PIC18F258  | 32,768/16,384x16                | 28           | PIC18F2580                   |
| PIC18F442  | 16,384/8,192x16                 | 40           | PIC18F4420                   |
| PIC18F448  | 16,384/8,192x16                 | 40           | PIC18F4480                   |
| PIC18F452  | 32,768/16,384x16                | 40           | PIC18F4520                   |
| PIC18F458  | 32,768/16,384x16                | 40           | PIC18F4580                   |
| PIC18F2439 | 12,288/6,144x16                 | 28           | PIC18F2431                   |
| PIC18F2539 | 24,576/12,288x16                | 28           | PIC18F2431                   |

| Product    | Program Memory<br>(Bytes/Words) | Package Size | Recommended Design-In Device |
|------------|---------------------------------|--------------|------------------------------|
| PIC18F4439 | 12,288/6,144x16                 | 40           | PIC18F4431                   |
| PIC18F4539 | 24,576/12,288x16                | 40           | PIC18F4431                   |
| PIC18F6525 | 49,152/24,576x16                | 64           | PIC18F6527                   |
| PIC18F6620 | 65,536/32,768x16                | 64           | PIC18F6622                   |
| PIC18F6621 | 65,536/32,768x16                | 64           | PIC18F6622                   |
| PIC18F6720 | 131,072/65,536x16               | 64           | PIC18F6722                   |
| PIC18F8525 | 49,152/24,576x16                | 80           | PIC18F8527                   |
| PIC18F8620 | 65,536/32,768x16                | 80           | PIC18F8622                   |
| PIC18F8621 | 65,536/32,768x16                | 80           | PIC18F8622                   |
| PIC18F8720 | 131,072/65,536x16               | 80           | PIC18F8722                   |



## FOCUSED SOLUTIONS

| Product       | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog Peripherals | Digital Peripherals                    | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |                  |                 |                    |                         | Development Boards         |
|---------------|-------------------------------------|--------------------------|-----------|----------|------------------------|--------------------|----------------------------------------|----------------|----------------------|----------------------------|------------------|-----------------|--------------------|-------------------------|----------------------------|
|               |                                     |                          |           |          |                        |                    |                                        |                |                      | ISO-16845 Tested           | Transmit Buffers | Receive Buffers | Configurable RX/TX | Acceptance Filters/Mask |                            |
| CAN Solutions |                                     |                          |           |          |                        |                    |                                        |                |                      |                            |                  |                 |                    |                         |                            |
| PIC18F2480    | 16 KB EnhFI (8 KW)                  | 256                      | 768       | 25       | 28SP, 28SO, 28ML       | ADC                | EUSART, CCP                            | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2580    | 32 KB EnhFI (16 KW)                 | 256                      | 1536      | 25       | 28SP, 28SO, 28ML       | ADC                | EUSART, CCP                            | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2585    | 48 KB EnhFI (24 KW)                 | 1024                     | 3328      | 25       | 28SP, 28SO             | ADC                | EUSART, CCP                            | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F2680    | 64 KB EnhFI (32 KW)                 | 1024                     | 3328      | 25       | 28SP, 28SO             | ADC                | EUSART, CCP                            | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4480    | 16 KB EnhFI (8 KW)                  | 256                      | 768       | 36       | 40P, 44PT, 44ML        | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4580    | 32 KB EnhFI (16 KW)                 | 256                      | 1536      | 36       | 40P, 44PT, 44ML        | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4585    | 48 KB EnhFI (24 KW)                 | 1024                     | 3328      | 36       | 40P, 44PT, 44ML        | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F4680    | 64 KB EnhFI (32 KW)                 | 1024                     | 3328      | 36       | 40P, 44PT, 44ML        | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 3                    | Planned                    | 3                | 2               | 6                  | 16/2                    | DM163011 PICDEM™ CAN-LIN 2 |
| PIC18F6585    | 48 KB EnhFI (24 KW)                 | 1024                     | 3328      | 53       | 64PT, 68L              | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| PIC18F6680    | 64 KB EnhFI (32 KW)                 | 1024                     | 3328      | 53       | 64PT, 68L              | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| PIC18F8585    | 48 KB EnhFI (24 KW)                 | 1024                     | 3328      | 69       | 80PT                   | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| PIC18F8680    | 64 KB EnhFI (32 KW)                 | 1024                     | 3328      | 69       | 80PT                   | ADC/Comp           | EUSART, CCP/ECCP                       | 40             | 1                    | Yes                        | 3                | 2               | 6                  | 16/2                    | DM163015 PICDEM™ CAN-LIN 3 |
| dsPIC30F4011  | 48 KB EnhFI (16 KW)                 | 1024                     | 2048      | 30       | 40P, 44PT, 44ML (8x8)  | ADC                | CAN, SPI, I²C, 2xUART                  | 120            | 1                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300018 dsPICDEM™ 2       |
| dsPIC30F4012  | 48 KB EnhFI (16 KW)                 | 1024                     | 2048      | 20       | 28SP, 28SO, 44ML (8x8) | ADC                | CAN, SPI, I²C, 2xUART                  | 120            | 1                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300018 dsPICDEM™ 2       |
| dsPIC30F4013  | 48 KB EnhFI (16 KW)                 | 1024                     | 2048      | 30       | 40P, 44PT, 44ML (8x8)  | ADC                | CAN, SPI, I²C, 2xUART                  | 120            | 1                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300018 dsPICDEM™ 2       |
| dsPIC30F5011  | 65 KB EnhFI (22 KW)                 | 1024                     | 4096      | 52       | 64PT                   | ADC                | 2xCAN, 2xSPI, I²C, 2xUART              | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM™ 1.1 GP  |
| dsPIC30F5013  | 65 KB EnhFI (22 KW)                 | 1024                     | 4096      | 68       | 80PT                   | ADC                | 2xCAN, 2xSPI, I²C, 2xUART              | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM™ 1.1 GP  |
| dsPIC30F5015  | 66 KB EnhFI (22 KW)                 | 1024                     | 2048      | 52       | 64PT                   | ADC                | CAN, UART, 2xSPI, I²C                  | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300020***                |
| dsPIC30F5016  | 66 KB EnhFI (22 KW)                 | 1024                     | 2048      | 68       | 80PT                   | ADC                | CAN, UART, 2xSPI, I²C                  | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300020***                |
| dsPIC30F6010  | 147 KB EnhFI (49 KW)                | 4096                     | 8192      | 68       | 80PF                   | ADC                | 2xCAN, 2xSPI, I²C, 2xUART              | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300020***                |
| dsPIC30F6010A | 144 KB EnhFI (48 KW)                | 4096                     | 8192      | 68       | 80PF, 80PT             | ADC                | 2xCAN, 2xSPI, I²C, 2xUART              | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300020***                |
| dsPIC30F6011  | 131 KB EnhFI (44 KW)                | 2048                     | 6144      | 52       | 64PF                   | ADC                | 2xCAN, 2xSPI, I²C, 2xUART              | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM™ 1.1 GP  |
| dsPIC30F6011A | 131 KB EnhFI (44 KW)                | 2048                     | 6144      | 52       | 64PF, 64PT             | ADC                | 2xCAN, 2xSPI, I²C, 2xUART <sup>C</sup> | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM™ 1.1 GP  |

|     | Product                   | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages   | Analog Peripherals | Digital Peripherals                    | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |                  |                 |                    |                         | Development Boards             |
|-----|---------------------------|-------------------------------------|--------------------------|-----------|----------|------------|--------------------|----------------------------------------|----------------|----------------------|----------------------------|------------------|-----------------|--------------------|-------------------------|--------------------------------|
|     |                           |                                     |                          |           |          |            |                    |                                        |                |                      | ISO-16845 Tested           | Transmit Buffers | Receive Buffers | Configurable RX/TX | Acceptance Filters/Mask |                                |
| NEW | CAN Solutions (continued) |                                     |                          |           |          |            |                    |                                        |                |                      |                            |                  |                 |                    |                         |                                |
|     | dsPIC30F6012              | 147 KB EnhFI (49 KW)                | 4096                     | 8192      | 52       | 64PF       | ADC                | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM 1.1 GP Board |
|     | dsPIC30F6012A             | 147 KB EnhFI (49 KW)                | 4096                     | 8192      | 52       | 64PF, 64PT | ADC                | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM 1.1 GP Board |
| NEW | dsPIC30F6013              | 131 KB EnhFI (44 KW)                | 2048                     | 6144      | 68       | 80PF       | ADC                | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM 1.1 GP Board |
|     | dsPIC30F6013A             | 131 KB EnhFI (44 KW)                | 2048                     | 6144      | 68       | 80PF, 80PT | ADC                | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM 1.1 GP Board |
| NEW | dsPIC30F6014              | 147 KB EnhFI (49 KW)                | 4096                     | 8192      | 68       | 80PF       | ADC                | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     | DM300014 dsPICDEM 1.1 GP Board |
|     | dsPIC30F6014A             | 147 KB EnhFI (49 KW)                | 4096                     | 8192      | 68       | 80PF, 80PT | ADC                | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | Yes                        | 3                | 2               | 0                  | 4/2                     |                                |

Refer to Connectivity Design Center on [www.microchip.com/can](http://www.microchip.com/can) for further details. Abbreviations are found on the last page of the Selector Guide.

| Part #                              | Operating Voltage (V) | Temperature Range (°C) | Tx Buffers | Rx Buffers | Filters | Masks | Interrupt Output | Unique Features                                                                                           | Packages                               |
|-------------------------------------|-----------------------|------------------------|------------|------------|---------|-------|------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>CAN Peripherals/Transceivers</b> |                       |                        |            |            |         |       |                  |                                                                                                           |                                        |
| MCP2515                             | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 6       | 2     | Yes              | MCP2510 pin compatible upgrade with enhanced features including higher throughput and data byte filtering | 18-Pin PDIP, 18-Pin SOIC, 20-Pin TSSOP |
| MCP25020                            | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander. See "Interface Section" of the Analog/Interface Family Products.            | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25025                            | 2.7 to 5.5            | -40 to +85             | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander. See "Interface Section" of the Analog/Interface Family Products.            | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25050                            | 2.7 to 5.5            | -40 to +125            | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander. See "Interface Section" of the Analog/Interface Family Products.            | 14-Pin PDIP, 14-Pin SOIC               |
| MCP25055                            | 2.7 to 5.5            | -40 to +85             | 3          | 2          | 2       | 1     | N/A              | CAN 2.0B Active I/O Expander. See "Interface Section" of the Analog/Interface Family Products.            | 14-Pin PDIP, 14-Pin SOIC               |
| MCP2551                             | 4.5 to 5.5            | -40 to +125            | n/a        | n/a        | n/a     | n/a   | N/A              | CAN 2.0B Active I/O Expander. See "Interface Section" of the Analog/Interface Family Products.            | 8-Pin PDIP, 8-Pin SOIC                 |

|                                 | Product      | Program Memory Bytes & Type (Words) | EEPROM Data Memory | RAM Bytes | I/O Pins | Packages | Analog Peripherals | Digital Peripherals | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |     |           |                      |                            |  |
|---------------------------------|--------------|-------------------------------------|--------------------|-----------|----------|----------|--------------------|---------------------|----------------|----------------------|----------------------------|-----|-----------|----------------------|----------------------------|--|
|                                 |              |                                     |                    |           |          |          |                    |                     |                |                      | IEEE.802.3 Compliant       | MAC | PHY       | TX/RX Buffer (bytes) | Ethernet Voltage Range (V) |  |
| Ethernet Solutions – Integrated |              |                                     |                    |           |          |          |                    |                     |                |                      |                            |     |           |                      |                            |  |
| NEW                             | PIC18F66J60* | 16,384 EnhFI (8,192)                | —                  | 2048      | 39       | 64PT     | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F66J65* | 32,768 EnhFI (16,384)               | —                  | 3808      | 39       | 64PT     | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F67J60* | 49,152 EnhFI (24,576)               | —                  | 3808      | 39       | 64PT     | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F86J60* | 65,536 EnhFI (32,768)               | —                  | 2048      | 55       | 80PT     | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F86J65* | 16,384 EnhFI (8,192)                | —                  | 3808      | 55       | 80PT     | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F87J60* | 32,768 EnhFI (16,384)               | —                  | 3808      | 55       | 80PT     | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F96J60* | 49,152 EnhFI (24,576)               | —                  | 3808      | 70       | 100PT    | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F96J65* | 65,536 EnhFI (32,768)               | —                  | 3808      | 70       | 100PT    | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |
| NEW                             | PIC18F97J60* | 49,152 EnhFI (24,576)               | —                  | 3808      | 70       | 100PT    | ADC/Comp           | EUSART, CCP/ ECCP   | 42             | 3                    | Yes                        | Yes | 10 Base-T | 8192                 | 3.14 to 3.45               |  |

Abbreviations are found on the last page of the Selector Guide.

|                                         | Product  | MAC | PHY       | TX/RX Dual Port RAM Buffer | Interrupts | LEDs | Operating Voltage (V) | Max. Speed MHz | Serial | Features                           | Package          |
|-----------------------------------------|----------|-----|-----------|----------------------------|------------|------|-----------------------|----------------|--------|------------------------------------|------------------|
| <b>Ethernet Solutions – Stand-Alone</b> |          |     |           |                            |            |      |                       |                |        |                                    |                  |
| <b>NEW</b>                              | ENC28J60 | Yes | 10 Base-T | 8 KB                       | 2          | 2    | 3.3                   | 25             | SPI    | Loopback Test modes, auto-polarity | 28SO, 28SS, 28ML |

Abbreviations are found on the last page of the Selector Guide.

| Product       | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages             | Analog Peripherals | Digital Peripherals           | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |                        |                |                    |                | Development Boards      |
|---------------|-------------------------------------|--------------------------|-----------|----------|----------------------|--------------------|-------------------------------|----------------|----------------------|----------------------------|------------------------|----------------|--------------------|----------------|-------------------------|
|               |                                     |                          |           |          |                      |                    |                               |                |                      | Compliant                  | Speed                  | # of Endpoints | USB Buffer (bytes) | Streaming Port |                         |
| USB Solutions |                                     |                          |           |          |                      |                    |                               |                |                      |                            |                        |                |                    |                |                         |
| PIC16C745     | 14,336 OTP (8,192)                  | —                        | 256       | 22       | 28SP, 28SO, 28JW     | ADC                | UART                          | 24             | —                    | USB 1.1                    | Low-Speed (1.5 Mbit/s) | 16             | 64                 | —              | DM163010 PICDEM™ USB    |
| PIC16C765     | 14,336 OTP (8,192)                  | —                        | 256       | 33       | 40P, 40JW, 44L, 44PT | ADC                | UART                          | 24             | —                    | USB 1.1                    | Low-Speed (1.5 Mbit/s) | 16             | 64                 | —              | DM163010 PICDEM™ USB    |
| PIC18F2450*   | 16384 EnhFI (8192)                  | —                        | 768       | 23       | 28SP, 28SO, 28ML     | ADC/Comp           | USB 2.0, AUSART               | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 256                | —              | DM163025 PICDEM™ FS-USB |
| PIC18F2455    | 24,576 EnhFI (12,288)               | 256                      | 2048      | 24       | 28SP, 28SO           | ADC/Comp           | EUSART, Mi <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              | DM163025 PICDEM™ FS-USB |
| PIC18F2550    | 32,768 EnhFI (16,384)               | 256                      | 2048      | 24       | 28SP, 28SO           | ADC/Comp           | EUSART, Mi <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              | DM163025 PICDEM™ FS-USB |

\*Contact Microchip Technology Inc. for availability.

Refer to Connectivity Design Center on [www.microchip.com/usb](http://www.microchip.com/usb) for further details.

Abbreviations are found on the last page of the Selector Guide.

|     | Product                   | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages        | Analog Peripherals | Digital Peripherals                        | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |                        |                |                    |                | Development Boards      |
|-----|---------------------------|-------------------------------------|--------------------------|-----------|----------|-----------------|--------------------|--------------------------------------------|----------------|----------------------|----------------------------|------------------------|----------------|--------------------|----------------|-------------------------|
|     |                           |                                     |                          |           |          |                 |                    |                                            |                |                      | Compliant                  | Speed                  | # of Endpoints | USB Buffer (bytes) | Streaming Port |                         |
| NEW | USB Solutions (continued) |                                     |                          |           |          |                 |                    |                                            |                |                      |                            |                        |                |                    |                |                         |
|     | PIC18F4450*               | 16,384 EnhFI (8183)                 | —                        | 768       | 34       | 40P, 44ML, 44PT | ADC/Comp           | USB 2.0, AUSART                            | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 256                | —              | DM163025 PICDEM™ FS-USB |
|     | PIC18F4455                | 24,576 EnhFI (12,288)               | 256                      | 2048      | 36       | 40P, 44PT, 44ML | ADC/Comp           | EUSART, MI <sup>2</sup> C/SPI              | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | ✓              | DM163025 PICDEM™ FS-USB |
|     | PIC18F4550                | 32,768 EnhFI (16,384)               | 256                      | 2048      | 36       | 40P, 44PT, 44ML | ADC/Comp           | EUSART, MI <sup>2</sup> C/SPI              | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | ✓              | DM163025 PICDEM™ FS-USB |
|     | PIC18F65J50*              | 32,768 StdFI (16,384)               |                          | 3936      | 50       | 64PT            | ADC/Comp           | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              |                         |
|     | PIC18F66J50*              | 65,536 StdFI (32768)                | —                        | 3936      | 50       | 64PT            | ADC/Comp           | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              |                         |
|     | PIC18F67J50*              | 131,072 StdFI (65536)               | —                        | 3936      | 50       | 64PT            | ADC/Comp           | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              |                         |
|     | PIC18F85J50*              | 32,768 StdFI (16384)                | —                        | 3936      | 66       | 80PT            | ADC/Comp           | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              |                         |
|     | PIC18F86J50*              | 65,536 StdFI (32,768)               | —                        | 3936      | 66       | 80PT            | ADC/Comp           | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              |                         |
| NEW | PIC18F87J50*              | 131,072 StdFI (65,536)              | —                        | 3936      | 66       | 80PT            | ADC/Comp           | USB 2.0, 2xEUSART, 2xMI <sup>2</sup> C/SPI | 48             | 3                    | USB 2.0                    | Full-Speed (12 Mbit/s) | 16             | 1024               | —              |                         |

\*Contact Microchip Technology Inc. for availability.  
Refer to Connectivity Design Center on [www.microchip.com/usb](http://www.microchip.com/usb) for further details.  
Abbreviations are found on the last page of the Selector Guide.

| Part #                      | Mode   | Cell Type         | # of Cells | Vcc Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                                                                   | Packages         |
|-----------------------------|--------|-------------------|------------|---------------|-----------------------------|-------------|----------------------------------------------------------------------------|------------------|
| <b>USB Battery Chargers</b> |        |                   |            |               |                             |             |                                                                            |                  |
| MCP73853                    | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | USB control, Safety charge timers, Temperature monitor, Thermal regulation | 16-Pin QFN (4x4) |
| MCP73855                    | Linear | Li-Ion/Li-Polymer | 1          | 4.5 to 5.5    | ±0.5                        | Int         | USB control, Safety charge timers, Thermal regulation                      | 10-Pin DFN (3x3) |

| Product                           | Mode   | Cell Type           | # of Cells | Vin Range (V) | Max. Voltage Regulation (%) | Int/Ext FET | Features                                                                                                                    | Package                 |
|-----------------------------------|--------|---------------------|------------|---------------|-----------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Switching Battery Chargers</b> |        |                     |            |               |                             |             |                                                                                                                             |                         |
| PS200*                            | Switch | Li-Ion / Li-Polymer | 1-4        | 5-18          | ±1%                         | Ext         | Voltage and current regulation, safety charge timers and temperature limits, internal voltage regulator, 500 kHz (max.) PWM | 20-Pin PDIP, SOIC, SSOP |

\* Contact Microchip Technology for availability.

| Product                       | Battery Chemistry | # of Cells | Interface | Data Set | A/D Converter      | Programmable Memory               | Programmable I/O Functions | Accuracy | Time Base | Temp. Sensor     | Packaging                | Description                                                                                                                                              |
|-------------------------------|-------------------|------------|-----------|----------|--------------------|-----------------------------------|----------------------------|----------|-----------|------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Battery Fuel Gauge ICs</b> |                   |            |           |          |                    |                                   |                            |          |           |                  |                          |                                                                                                                                                          |
| PS501                         | Li-Ion NiMH       | 2-4 6-12   | SMBus     | > 1%     | 16-bit Sigma-Delta | 16 Kbytes Flash, 256 bytes EEPROM | 12 GPIO                    | -        | On-chip   | On-chip external | 28-pin SSOP              | Single chip field reprogrammable battery manager IC reports capacity, current, temperature, voltage and other status for Li-Ion or Nickel batteries.     |
| PS810                         | Li-Ion            | 1          | SMBus/SI  | -        | 16-bit Sigma-Delta | 4k x 16 Flash                     | 6 GPIO                     | 1%       | On-chip   | On-chip          | 14-pin TSSOP, 16-pin QFN | Single cell Li-Ion fuel gauge provides battery status such as run time to empty, run time to full, relative state-of-charge and battery state-of-health. |

## Radio Frequency Solutions

| Product                                                | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages   | Analog Peripherals | Digital Peripherals          | Max. Speed (MHz) | Function-Specific Specifications |                  |                    |                       |                       | Development Boards              |
|--------------------------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------|--------------------|------------------------------|------------------|----------------------------------|------------------|--------------------|-----------------------|-----------------------|---------------------------------|
|                                                        |                                     |                          |           |          |            |                    |                              |                  | Modulation                       | Data Rate (kbps) | Output Power (dBm) | Operating Voltage (V) | Frequency Range (MHz) |                                 |
| rfPIC® Microcontrollers with UHF RF Transmitter, ICSP™ |                                     |                          |           |          |            |                    |                              |                  |                                  |                  |                    |                       |                       |                                 |
| rfPIC12C509AF                                          | 1,536 OTP (1,024)                   | —                        | 41        | 6        | 20JW, 20SS | —                  | 1-8 bit Timer, WDT           | 4                | FSK, ASK                         | 40               | 2                  | 2.5-5.5               | 310-440               |                                 |
| rfPIC12C509AG                                          | 1,536 OTP (1,024)                   | —                        | 41        | 6        | 18JW, 18SO | —                  | 1-8 bit Timer, WDT           | 4                | ASK                              | 40               | 2                  | 2.5-5.5               | 310-440               |                                 |
| rfPIC12F675F                                           | 1,792 StdFI (1,024)                 | 128                      | 64        | 6        | 20SS       | 4x10-bit A/D, Comp | 1-8 bit, 1-16 bit Timer, WDT | 20               | FSK, ASK                         | 40               | 10                 | 2.0-5.5               | 380-450               | DV164102 rfPIC® Development Kit |
| rfPIC12F675H                                           | 1,792 StdFI (1,024)                 | 128                      | 64        | 6        | 20SS       | 4x10-bit A/D, Comp | 1-8 bit, 1-16 bit Timer, WDT | 20               | FSK, ASK                         | 40               | 10                 | 2.0-5.5               | 850-930               | DV164102 rfPIC® Development Kit |
| rfPIC12F675K                                           | 1,792 StdFI (1,024)                 | 128                      | 64        | 6        | 20SS       | 4x10-bit A/D, Comp | 1-8 bit, 1-16 bit Timer, WDT | 20               | FSK, ASK                         | 40               | 10                 | 2.0-5.5               | 290-350               | DV164102 rfPIC® Development Kit |

| Product                                        | Transmission Code Length Bits | Code Hopping Bits | Programmable Encryption Key Bits | Packages | Protocols       | Function Codes | Tunable OSC | CRC | Function-Specific Specifications |                    |                       |                       | Development Boards                 |
|------------------------------------------------|-------------------------------|-------------------|----------------------------------|----------|-----------------|----------------|-------------|-----|----------------------------------|--------------------|-----------------------|-----------------------|------------------------------------|
|                                                |                               |                   |                                  |          |                 |                |             |     | Modulation                       | Output Power (dBm) | Operating Voltage (V) | Frequency Range (MHz) |                                    |
| rfHCS KEeLoQ® Encoders with UHF RF Transmitter |                               |                   |                                  |          |                 |                |             |     |                                  |                    |                       |                       |                                    |
| rfHCS362F                                      | 69                            | 32                | 2 x 64                           | 20SS     | PWM, Manchester | 4 x 15         | ✓           | ✓   | FSK, ASK                         | 2                  | 2.2-5.5               | 310-440               | DM303006 KEeLoQ® Evaluation Kit II |
| rfHCS362G                                      | 69                            | 32                | 2 x 64                           | 18SO     | PWM, Manchester | 4 x 15         | ✓           | ✓   | ASK                              | 2                  | 2.2-5.5               | 310-440               | DM303006 KEeLoQ® Evaluation Kit II |

| Product                | Modulation   | Data Rate (kbps) | Frequency Range (MHz) | Sensitivity dBm (FSK) | IF Frequency Range (MHz) | Operating Voltage (V) | Package | Development Boards             |
|------------------------|--------------|------------------|-----------------------|-----------------------|--------------------------|-----------------------|---------|--------------------------------|
| <b>UHF RF Receiver</b> |              |                  |                       |                       |                          |                       |         |                                |
| rRXD0420               | ASK, FSK, FM | 80               | 300-450               | -111                  | 0.455-21.4               | 2.5-5.5               | 32LQ    | DV164102 rPIC® Development Kit |
| rRXD0920               | ASK, FSK, FM | 80               | 800-930               | -109                  | 0.455-21.4               | 2.5-5.5               | 32LQ    | DV164102 rPIC® Development Kit |

Refer to Design pages on [www.microchip.com](http://www.microchip.com) for further details.  
Abbreviations are found on the last page of the Selector Guide.

| Product                              | Carrier Frequency | Programming     | Anticollision | Memory Type | Memory Size | Protocols           | Packages                     | Other                                       |
|--------------------------------------|-------------------|-----------------|---------------|-------------|-------------|---------------------|------------------------------|---------------------------------------------|
| <b>microID® RFID Tagging Devices</b> |                   |                 |               |             |             |                     |                              |                                             |
| MCRF355                              | 13.56 MHz         | Contact/Factory | Yes           | R/W         | 154 bits    | ASK Manchester      | W, WF, S, WB, WFB, SB, P, SN | —                                           |
| MCRF360                              | 13.56 MHz         | Contact/Factory | Yes           | R/W         | 154 bits    | ASK Manchester      | W, WF, S, WB, WFB, SB, P, SN | 100 pF res cap                              |
| MCRF450                              | 13.56 MHz         | Contactless     | Yes           | R/W         | 1 Kbit      | PPM, ASK Manchester | W, WF, S, WB, WFB, SB, P, SN | 32-bit unique ID user lock control by block |
| MCRF452                              | 13.56 MHz         | Contactless     | Yes           | R/W         | 1 Kbit      | PPM, ASK Manchester | W, WF, S, WB, WFB, SB, P, SN | Dual 50 pF res cap                          |

| Product       | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages              | Analog Peripherals | Digital Peripherals                   | Max. Speed MHz | ICD # of Breakpoints | LCD Function-Specific Features |                |                                   |              |                   | Development Boards     |  |
|---------------|-------------------------------------|--------------------------|-----------|----------|-----------------------|--------------------|---------------------------------------|----------------|----------------------|--------------------------------|----------------|-----------------------------------|--------------|-------------------|------------------------|--|
|               |                                     |                          |           |          |                       |                    |                                       |                |                      | COMxSegment = # Segments       | Drive in Sleep | Software Configurable Driver Pins | Direct Drive | Intl. Charge Pump |                        |  |
| LCD Solutions |                                     |                          |           |          |                       |                    |                                       |                |                      |                                |                |                                   |              |                   |                        |  |
| PIC16C925     | 7,168 OTP (4,096)                   | —                        | 176       | 52       | 64PT, 68CL, 68L       | ADC                | I <sup>2</sup> C/SPI                  | 20             | —                    | 4x29 (116)                     | Yes            | No                                | Yes          | Yes               | DM163003 PICDEM™ 3 LCD |  |
| PIC16C926     | 14,336 OTP (8,192)                  | —                        | 336       | 52       | 64PT, 68CL, 68L       | ADC                | I <sup>2</sup> C/SPI                  | 20             | —                    | 4x29 (116)                     | Yes            | No                                | Yes          | Yes               | DM163003 PICDEM™ 3 LCD |  |
| PIC16F913     | 7,168 StdFI (4,096)                 | 256                      | 256       | 25       | 28P, 28SO, 28SS, 28ML | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x15 (60)                      | Yes            | Yes                               | Yes          | No                | DS163028 PICDEM™ LCD   |  |
| PIC16F914     | 7,168 StdFI (4,096)                 | 256                      | 256       | 36       | 40P, 44PT, 44ML       | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x24 (96)                      | Yes            | Yes                               | Yes          | No                | DS163028 PICDEM™ LCD   |  |
| PIC16F916     | 14,336 StdFI (8,192)                | 256                      | 352       | 25       | 28P, 28SO, 28SS, 28ML | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x15 (60)                      | Yes            | Yes                               | Yes          | No                | DS163028 PICDEM™ LCD   |  |
| PIC16F917     | 14,336 StdFI (8,192)                | 256                      | 352       | 36       | 40P, 44PT, 44ML       | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x24 (96)                      | Yes            | Yes                               | Yes          | No                | DS163028 PICDEM™ LCD   |  |
| PIC16F946     | 14,336 StdFI (8,192)                | 256                      | 336       | 53       | 64PT                  | ADC/Comp           | AUSART, I <sup>2</sup> C/SPI          | 20             | 1                    | 4x42 (168)                     | Yes            | Yes                               | Yes          | No                | DS163028 PICDEM™ LCD   |  |
| PIC18F6390    | 8,192 StdFI (4,096)                 | —                        | 768       | 50       | 64PT                  | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | No                | DM163028 PICDEM™ LCD   |  |
| PIC18F63J90*  | 8,192 StdFI (4,096)                 | —                        | 1024      | 49       | 64PT                  | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | Yes               |                        |  |
| PIC18F6490    | 1,6384 StdFI (8,192)                | —                        | 768       | 50       | 64PT                  | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | No                | DM163028 PICDEM™ LCD   |  |

\*Contact Microchip Technology Inc. for availability.  
Refer to LCD Design Center on [www.microchip.com/lcd](http://www.microchip.com/lcd) for further details.  
Abbreviations are found on the last page of the Selector Guide.

|     | Product                   | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages | Analog Peripherals | Digital Peripherals                   | Max. Speed MHz | ICD # of Breakpoints | LCD Function-Specific Features |                |                                   |              |                   | Development Boards   |
|-----|---------------------------|-------------------------------------|--------------------------|-----------|----------|----------|--------------------|---------------------------------------|----------------|----------------------|--------------------------------|----------------|-----------------------------------|--------------|-------------------|----------------------|
|     |                           |                                     |                          |           |          |          |                    |                                       |                |                      | COMxSegment = # Segments       | Drive in Sleep | Software Configurable Driver Pins | Direct Drive | Intl. Charge Pump |                      |
|     | LCD Solutions (continued) |                                     |                          |           |          |          |                    |                                       |                |                      |                                |                |                                   |              |                   |                      |
| NEW | PIC18F64J90*              | 16,384 StdFI (8,192)                | —                        | 1024      | 49       | 64PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | Yes               |                      |
| NEW | PIC18F65J90*              | 32,768 StdFI (16,384)               | —                        | 2048      | 49       | 64PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x32 (128)                     | Yes            | Yes                               | Yes          | Yes               |                      |
|     | PIC18F8390                | 8,192 StdFI (4,096)                 | —                        | 768       | 66       | 80PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (192)                     | Yes            | Yes                               | Yes          | No                | DM163028 PICDEM™ LCD |
|     | PIC18F83J90*              | 8,192 StdFI (4096)                  | —                        | 1024      | 65       | 80PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (192)                     | Yes            | Yes                               | Yes          | Yes               |                      |
|     | PIC18F8490                | 16,384 StdFI (8,192)                | —                        | 768       | 66       | 80PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (128)                     | Yes            | Yes                               | Yes          | No                | DM163028 PICDEM™ LCD |
| NEW | PIC18F84J90*              | 16,384 StdFI (8,192)                | —                        | 1024      | 65       | 80PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (192)                     | Yes            | Yes                               | Yes          | Yes               |                      |
| NEW | PIC18F85J90*              | 32,768 StdFI (16,384)               | —                        | 2048      | 65       | 80PT     | ADC/Comp           | EUSART, AUSART, MI <sup>2</sup> C/SPI | 40             | 3                    | 4x48 (192)                     | Yes            | Yes                               | Yes          | Yes               |                      |

\*Contact Microchip Technology Inc. for availability.

Refer to LCD Design Center on [www.microchip.com/lcd](http://www.microchip.com/lcd) for further details.

Abbreviations are found on the last page of the Selector Guide.

| <b>Display Solutions</b> |              |                    |                     |                     |            |                  |                                            |                                                      |
|--------------------------|--------------|--------------------|---------------------|---------------------|------------|------------------|--------------------------------------------|------------------------------------------------------|
| Part #                   | Display Type | Supply Voltage (V) | Resolution (Digits) | Resolution (Counts) | Power (mW) | Temp. Range (°C) | Features                                   | Packages                                             |
| TC820                    | LCD          | 9                  | 3¾                  | ±4,000              | 10         | 0 to +70         | DMM plus frequency counter and logic probe | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |
| TC7106                   | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7106A                  | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | For DMM, DPM, Data logger applications     | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7116                   | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7116A                  | LCD          | 9                  | 3½                  | ±2,000              | 10         | -25 to +85       | Hold function                              | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7126                   | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85       | Low-power TC7106                           | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7126A                  | LCD          | 9                  | 3½                  | ±2,000              | 0.5        | -25 to +85       | Low-power TC7106                           | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP, 40-Pin CerDIP |
| TC7129                   | LCD          | 9                  | 4½                  | ±20,000             | 4.5        | 0 to +70         | Lowest noise ±3 mV sensitivity             | 40-Pin PDIP, 44-Pin PLCC, 44-Pin MQFP                |

| Product                 | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages               | Analog Peripherals | Digital Peripherals   | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |               |                     |                   |                    | Development Boards                                                     |
|-------------------------|-------------------------------------|--------------------------|-----------|----------|------------------------|--------------------|-----------------------|----------------|----------------------|----------------------------|---------------|---------------------|-------------------|--------------------|------------------------------------------------------------------------|
|                         |                                     |                          |           |          |                        |                    |                       |                |                      | Timers                     | Input Capture | Output Comp/Std PWM | Motor Control PWM | Quadrature Encoder |                                                                        |
| Motor Control Solutions |                                     |                          |           |          |                        |                    |                       |                |                      |                            |               |                     |                   |                    |                                                                        |
| PIC12F683               | 3,584 StdFI (2,048)                 | 256                      | 128       | 6        | 8P, 8SN, 8MF           | ADC/Comp           | —                     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 1             | 1x10 bit            | —                 | —                  | PICkit™ 1                                                              |
| PIC16F684               | 3,584 EnhFI (2,048)                 | 256                      | 128       | 12       | 14P, 14SL, 14ST        | ADC/Comp           | —                     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 1             | 4x10 bit            | —                 | —                  | PICkit™ 1                                                              |
| PIC16F716               | 3,584 StdFI (2,048)                 | —                        | 128       | 13       | 18P, 18SO, 20SS        | ADC                | —                     | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 1             | 4x10 bit            | —                 | —                  | DM163022 PICDEM™ 2 Plus                                                |
| PIC16F737               | 7,168 StdFI (4,096)                 | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | ADC/Comp           | USART, MI²C/SPI       | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022 PICDEM™ 2 Plus                                                |
| PIC16F747               | 7,168 StdFI (4,096)                 | —                        | 368       | 36       | 40P, 44PT, 44ML        | ADC/Comp           | USART, MI²C/SPI       | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022 PICDEM™ 2 Plus                                                |
| PIC16F767               | 14,336 StdFI (8,192)                | —                        | 368       | 25       | 28SP, 28SO, 28SS, 28ML | ADC/Comp           | USART, MI²C/SPI       | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022 PICDEM™ 2 Plus                                                |
| PIC16F777               | 14,336 StdFI (8,192)                | —                        | 368       | 36       | 40P, 44PT, 44ML        | ADC/Comp           | USART, MI²C/SPI       | 20             | 1                    | 1-16 bit, 2-8 bit, WDT     | 3             | 3x10 bit            | —                 | —                  | DM163022 PICDEM™ 2 Plus                                                |
| PIC18F1230*             | 4,096 EnhFI (2048)                  | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | ADC/Comp           | EUSART                | 40             | 3                    | 2-16 bit, 1-WDT            | —             | —                   | 6                 | —                  |                                                                        |
| PIC18F1330*             | 8,192 EnhFI (4,096)                 | 128                      | 256       | 16       | 18P, 18SO, 20SS, 28ML  | ADC/Comp           | EUSART                | 40             | 3                    | 2-16 bit, 1-WDT            | —             | —                   | 6                 | —                  |                                                                        |
| PIC18F2331              | 8,192 EnhFI (4,096)                 | 256                      | 768       | 22       | 28SP, 28SO, 28MM       | 200 ksps ADC       | EUSART, I²C/SPI       | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 6                 | Yes                | DM183011 PICDEM™ MC, DM183021 PICDEM™ MC LV, PIC18F4431 Plug-in Module |
| PIC18F2431              | 16,384 EnhFI (8,192)                | 256                      | 768       | 22       | 28SP, 28SO, 28MM       | 200 ksps ADC       | EUSART, I²C/SPI       | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 6                 | Yes                | DM183011 PICDEM™ MC, DM183021 PICDEM™ MC LV, PIC18F4431 Plug-in Module |
| PIC18F4331              | 8,192 EnhFI (4,096)                 | 256                      | 768       | 34       | 40P, 44PT, 44ML        | 200 ksps ADC       | EUSART, I²C/SPI       | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 8                 | Yes                | DM183011 PICDEM™ MC, DM183021 PICDEM™ MC LV, PIC18F4431 Plug-in Module |
| PIC18F4431              | 16,384 EnhFI (8,192)                | 256                      | 768       | 34       | 40P, 44PT, 44ML        | 200 ksps ADC       | EUSART, I²C/SPI       | 40             | 1                    | 3-16 bit, 1-8 bit, WDT     | 3             | 2x10 bit            | 8                 | Yes                | DM183011 PICDEM™ MC, DM183021 PICDEM™ MC LV, PIC18F4431 Plug-in Module |
| dsPIC30F2010            | 12,288 EnhFI (4,096)                | 1024                     | 512       | 20       | 28SO, 28SP, 28MM (6x6) | 1 msps ADC         | UART, I²C/SPI         | 120            | 1                    | 3-16 bit, WDT              | 4             | 2                   | 6                 | Yes                | DM300020***                                                            |
| dsPIC30F3010            | 24,576 EnhFI (8,102)                | 1024                     | 1024      | 20       | 28SO, 28SP, 44ML (8x8) | 1 msps ADC         | UART, I²C/SPI         | 120            | 2                    | 5-16 bit, WDT              | 4             | 2                   | 6                 | Yes                | DM300020***                                                            |
| dsPIC30F3011            | 24,576 EnhFI (8,102)                | 1024                     | 1024      | 30       | 40P, 44PT, 44ML (8x8)  | 1 msps ADC         | 2xUART, I²C/SPI       | 120            | 2                    | 5-16 bit, WDT              | 4             | 4                   | 6                 | Yes                | DM300020***                                                            |
| dsPIC30F4011            | 49,152 EnhFI (16,384)               | 1024                     | 2048      | 30       | 40P, 44PT, 44ML (8x8)  | 1 msps ADC         | 2xUART, I²C/SPI, CAN  | 120            | 1                    | 5-16 bit, WDT              | 4             | 4                   | 6                 | Yes                | DM300020***                                                            |
| dsPIC30F4012            | 49,152 EnhFI (16,384)               | 1024                     | 2048      | 20       | 28SO, 28SP, 44ML (8x8) | 1 msps ADC         | UART, I²C/SPI, CAN    | 120            | 1                    | 5-16 bit, WDT              | 4             | 2                   | 6                 | Yes                | DM300020***                                                            |
| dsPIC30F5015            | 65,536 EnhFI (21,845)               | 1024                     | 2048      | 52       | 64PT                   | 1 msps ADC         | CAN, I²C, UART, 2xSPI | 120            | 2                    | 5-16 bit, WDT              | 4             | 4                   | 8                 | Yes                | DM300020***                                                            |

\*Contact Microchip Technology Inc. for availability.

\*\*\*Refer to dsPIC® DSC Brochure for further details.

Refer to Motor Control Design Center on [www.microchip.com/motor](http://www.microchip.com/motor) for further details.

Abbreviations are found on the last page of the Selector Guide.

NEW



|     | Product                             | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | RAM Bytes | I/O Pins | Packages   | Analog Peripherals | Digital Peripherals                    | Max. Speed MHz | ICD # of Breakpoints | Function-Specific Features |               |                     |                   |                    | Development Boards |
|-----|-------------------------------------|-------------------------------------|--------------------------|-----------|----------|------------|--------------------|----------------------------------------|----------------|----------------------|----------------------------|---------------|---------------------|-------------------|--------------------|--------------------|
|     |                                     |                                     |                          |           |          |            |                    |                                        |                |                      | Timers                     | Input Capture | Output Comp/Std PWM | Motor Control PWM | Quadrature Encoder |                    |
| NEW | Motor Control Solutions (continued) |                                     |                          |           |          |            |                    |                                        |                |                      |                            |               |                     |                   |                    |                    |
|     | dsPIC30F5016                        | 65,536 EnhFI (21,845)               | 1024                     | 2048      | 68       | 80PT       | 1 msp/s ADC        | CAN, I <sup>2</sup> C, UART, 2xSPI     | 120            | 2                    | 5-16 bit WDT               | 4             | 4                   | 8                 | Yes                | DM300020***        |
|     | dsPIC30F6010                        | 147,456 EnhFI (49,152)              | 4096                     | 8192      | 68       | 80PF       | 1 msp/s ADC        | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | 5-16 bit, WDT              | 8             | 8                   | 8                 | Yes                | DM300020***        |
| NEW | dsPIC30F6010A                       | 144KB EnhFI (48KW)                  | 4096                     | 8192      | 68       | 80PF, 80PT | 1 msp/s ADC        | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | 5-16 bit, WDT              | 8             | 8                   | 8                 | Yes                | DM300020***        |
| NEW | dsPIC30F6015                        | 144KB EnhFI (48KW)                  | 4096                     | 8192      | 52       | 64PT       | 1 msp/s ADC        | 2xCAN, 2xSPI, I <sup>2</sup> C, 2xUART | 120            | 2                    | 5 16-bit, WDT              | 8             | 8                   | 8                 | Yes                | DM300020***        |

\*Contact Microchip Technology Inc. for availability.

\*\*\*Refer to dsPIC® DSC Brochure for further details.

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Abbreviations are found on the last page of the Selector Guide.

#### Motor Control Solutions - MOSFET Drivers

| Part # | Configuration                     | Operating Temperature Range (°C) | Peak Output Current (A) | Output Resistance (R <sub>H</sub> /R <sub>L</sub> ) (Max. Ω @ 25°C) | Max. Supply Voltage (V) | Input/Output Delay (td1, td2) <sup>(1)</sup> (ns) | Packages                               |
|--------|-----------------------------------|----------------------------------|-------------------------|---------------------------------------------------------------------|-------------------------|---------------------------------------------------|----------------------------------------|
| TC1410 | Single, Inverting                 | -40 to +85                       | 0.5                     | 22/22                                                               | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| TC1411 | Single, Inverting                 | -40 to +85                       | 1                       | 11/11                                                               | 16                      | 30/30                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| TC1412 | Single, Inverting                 | -40 to +85                       | 2                       | 6/6                                                                 | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| TC1413 | Single, Inverting                 | -40 to +85                       | 3                       | 4/4                                                                 | 16                      | 35/35                                             | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP     |
| TC4421 | Single, Inverting                 | -40 to +125                      | 9                       | 1.4 (typ)/1.7                                                       | 18                      | 30/33                                             | 8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN    |
| TC4422 | Single, Non-inverting             | -40 to +125                      | 9                       | 1.4 (typ)/1.7                                                       | 18                      | 30/33                                             | 8-Pin PDIP, 5-Pin TO-220, 8-Pin DFN    |
| TC4423 | Dual, Inverting                   | -40 to +125                      | 3                       | 5/5                                                                 | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN |
| TC4425 | Dual, Inverting and Non-inverting | -40 to +125                      | 3                       | 5/5                                                                 | 18                      | 33/38                                             | 8-Pin PDIP, 16-Pin SOIC (W), 8-Pin DFN |

**NOTE 1:** \*td1 = delay time from input low-to-high transition to output transition. td2 = delay time from input high-to-low transition to output transition.

#### Motor Control Solutions - LINEAR – Comparators

| Part # | # per Package | V <sub>REF</sub> (V) | Typical Propagation Delay (μs) | I <sub>Q</sub> Typical (μA) | V <sub>OS</sub> Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features                                                                       | Packages                              |
|--------|---------------|----------------------|--------------------------------|-----------------------------|--------------------------|-----------------------|------------------|--------------------------------------------------------------------------------|---------------------------------------|
| TC1027 | 4             | 1.2                  | 4                              | 18                          | 5                        | 1.8 to 5.5            | -40 to +85       | On-board V <sub>REF</sub> , Rail-to-Rail Input/Output                          | 16-Pin PDIP, 16-Pin QSOP, 16-Pin SOIC |
| TC1037 | 1             | —                    | 4                              | 4                           | 5                        | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                                      | 5-Pin SOT-23A <sup>(S)</sup>          |
| TC1038 | 1             | —                    | 4                              | 4                           | 5                        | 1.8 to 5.5            | -40 to +85       | Shutdown pin, Rail-to-Rail Input/Output                                        | 6-Pin SOT-23A <sup>(S)</sup>          |
| TC1039 | 1             | 1.2                  | 4                              | 6                           | 5                        | 1.8 to 5.5            | -40 to +85       | On-board V <sub>REF</sub> , Rail-to-Rail Input/Output                          | 6-Pin SOT-23A <sup>(S)</sup>          |
| TC1041 | 2             | 1.2                  | 4                              | 10                          | 5                        | 1.8 to 5.5            | -40 to +85       | On-board V <sub>REF</sub> , Programmable hysteresis, Rail-to-Rail Input/Output | 8-Pin MSOP, 8-Pin SOIC                |

**Motor Control Solutions - LINEAR – Comparators (continued)**

| Part #  | # per Package | VREF (V) | Typical Propagation Delay ( $\mu$ s) | I <sub>Q</sub> Typical ( $\mu$ A) | V <sub>OS</sub> Max (mV) | Operating Voltage (V) | Temp. Range (°C) | Features                                               | Packages                                                                                        |
|---------|---------------|----------|--------------------------------------|-----------------------------------|--------------------------|-----------------------|------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| MCP6541 | 1             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                   | 5-Pin SOT-23 <sup>(S,R)</sup> , 5-Pin SC-70 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6542 | 2             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                   | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6543 | 1             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output, Chip Select      | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6544 | 4             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Push-Pull, Rail-to-Rail Input/Output                   | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                          |
| MCP6546 | 1             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output              | 5-Pin SOT-23 <sup>(S,R)</sup> , 5-Pin SC-70 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6547 | 2             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6548 | 1             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                              |
| MCP6549 | 4             | —        | 4                                    | 1                                 | 5                        | 1.6 to 5.5            | -40 to +85       | Open-drain, 9V, Rail-to-Rail Input/Output              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                          |

Legend: S = Standard Pinout; R = Reverse Pinout

| Part #                                            | # per Package | GBWP    | I <sub>Q</sub> Typical ( $\mu$ A) | V <sub>OS</sub> Max (mV) | Input Voltage Noise Density (nV/ $\sqrt{\text{rtHz}}$ ) | Operating Voltage (V) | Temp. Range (°C) | Features                                                          | Packages                                                        |
|---------------------------------------------------|---------------|---------|-----------------------------------|--------------------------|---------------------------------------------------------|-----------------------|------------------|-------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>Motor Control Solutions - LINEAR – Op Amps</b> |               |         |                                   |                          |                                                         |                       |                  |                                                                   |                                                                 |
| TC1034                                            | 1             | 90 kHz  | 6                                 | 1.5                      | 125 <sup>(1)</sup>                                      | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                         | 5-Pin SOT-23A <sup>(R)</sup>                                    |
| TC1035                                            | 1             | 90 kHz  | 6                                 | 1.5                      | 125 <sup>(1)</sup>                                      | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Shutdown pin                           | 6-Pin SOT-23A <sup>(R)</sup>                                    |
| TC1029                                            | 2             | 90 kHz  | 12                                | 1.5                      | 125 <sup>(1)</sup>                                      | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                         | 8-Pin PDIP, 8-Pin MSOP, 8-Pin SOIC                              |
| TC1030                                            | 4             | 90 kHz  | 5                                 | 1.5                      | 125 <sup>(1)</sup>                                      | 1.8 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Shutdown pins                          | 16-Pin QSOP                                                     |
| MCP6041                                           | 1             | 14 kHz  | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP, 5-Pin SOT-23 <sup>(S)</sup> |
| MCP6042                                           | 2             | 14 kHz  | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                              |
| MCP6043                                           | 1             | 14 kHz  | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, Chip Select                            | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                              |
| MCP6044                                           | 4             | 14 kHz  | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output                                         | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                          |
| MCP6141                                           | 1             | 100 kHz | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G <sub>v</sub> >10 stable              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                              |
| MCP6142                                           | 2             | 100 kHz | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G <sub>v</sub> >10 stable              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                              |
| MCP6143                                           | 1             | 100 kHz | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G <sub>v</sub> >10 stable, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                              |
| MCP6144                                           | 4             | 100 kHz | 0.6                               | 3                        | 170 <sup>(1)</sup>                                      | 1.4 to 5.5            | -40 to +85       | Rail-to-Rail Input/Output, G <sub>v</sub> >10 stable              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                          |
| MCP606                                            | 1             | 155 kHz | 19                                | 0.25                     | 38 <sup>(1)</sup>                                       | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP, 5-Pin SOT23 <sup>(S)</sup> |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

NOTE 1: Values are typical at 1 kHz

2: Values are typical at 10 kHz

| Part #                                                        | # per Package | GBWP    | I <sub>q</sub> Typical (μA) | V <sub>os</sub> Max (mV) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temp. Range (°C) | Features                                               | Packages                                                                                          |
|---------------------------------------------------------------|---------------|---------|-----------------------------|--------------------------|---------------------------------------|-----------------------|------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Motor Control Solutions - LINEAR – Op Amps (continued)</b> |               |         |                             |                          |                                       |                       |                  |                                                        |                                                                                                   |
| MCP607                                                        | 2             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                                               |
| MCP608                                                        | 1             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output, Chip Select                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                                               |
| MCP609                                                        | 4             | 155 kHz | 19                          | 0.25                     | 38 <sup>(1)</sup>                     | 2.5 to 5.5            | -40 to +85       | Rail-to-Rail Output                                    | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP616                                                        | 1             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP Input                         | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP617                                                        | 2             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP                               | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP618                                                        | 1             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, Chip Select, PNP Input            | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP619                                                        | 4             | 190 kHz | 19                          | 0.15                     | 32 <sup>(1)</sup>                     | 2.3 to 5.5            | -40 to +85       | Rail-to-Rail Output, PNP Input                         | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6231                                                       | 1             | 300 kHz | 20                          | 5                        | 52 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SC-70 <sup>(U)</sup> , 5-Pin SOT-23 <sup>(S,R,U)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6232                                                       | 2             | 300 kHz | 20                          | 5                        | 52 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6234                                                       | 4             | 300 kHz | 20                          | 5                        | 52 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6241                                                       | 1             | 550 kHz | 50                          | 5                        | 45 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SC-70 <sup>(U)</sup> , 5-Pin SOT-23 <sup>(S,R,U)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6242                                                       | 2             | 550 kHz | 50                          | 5                        | 45 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6244                                                       | 4             | 550 kHz | 50                          | 5                        | 45 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6001                                                       | 1             | 1 MHz   | 140                         | 4.5                      | 28 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SOT-23 <sup>(U)</sup> , 5-Pin SC-70 <sup>(S,R,U)</sup>                                      |
| MCP6002                                                       | 2             | 1 MHz   | 140                         | 4.5                      | 28 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6004                                                       | 4             | 1 MHz   | 140                         | 4.5                      | 28 <sup>(1)</sup>                     | 1.8 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6271                                                       | 1             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                |
| MCP6272                                                       | 2             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP6273                                                       | 1             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                 | 5-Pin SOT-23 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                  |
| MCP6274                                                       | 4             | 2 MHz   | 170                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                              | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |
| MCP6275                                                       | 2             | 2 MHz   | 150                         | 3                        | 20 <sup>(1)</sup>                     | 2.0 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                                                |
| MCP601                                                        | 1             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                    | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                               |
| MCP602                                                        | 2             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                    | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                                               |
| MCP603                                                        | 1             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output, Chip Select                       | 6-Pin SOT-23 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                 |
| MCP604                                                        | 4             | 2.8 MHz | 230                         | 2                        | 29 <sup>(1)</sup>                     | 2.7 to 5.5            | -40 to +125      | Rail-to-Rail Output                                    | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                                                            |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

NOTE 1: Values are typical at 1 kHz

2: Values are typical at 10 kHz

| Part #                                                        | # per Package | GBWP   | I <sub>Q</sub> Typical (μA) | V <sub>OS</sub> Max (mV) | Input Voltage Noise Density (nV/rtHz) | Operating Voltage (V) | Temp. Range (°C) | Features                                                        | Packages                                                           |
|---------------------------------------------------------------|---------------|--------|-----------------------------|--------------------------|---------------------------------------|-----------------------|------------------|-----------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Motor Control Solutions - LINEAR – Op Amps (continued)</b> |               |        |                             |                          |                                       |                       |                  |                                                                 |                                                                    |
| MCP6281                                                       | 1             | 5 MHz  | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6282                                                       | 2             | 5 MHz  | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                 |
| MCP6283                                                       | 1             | 5 MHz  | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 6-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6284                                                       | 4             | 5 MHz  | 445                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                             |
| MCP6285                                                       | 2             | 5 MHz  | 400                         | 3                        | 16 <sup>(1)</sup>                     | 2.2 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                 |
| MCP6291                                                       | 1             | 10 MHz | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 5-Pin SOT-23 <sup>(S,R)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP |
| MCP6292                                                       | 2             | 10 MHz | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                 |
| MCP6293                                                       | 1             | 10 MHz | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 6-Pin SOT-23 <sup>(S)</sup> , 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP   |
| MCP6294                                                       | 4             | 10 MHz | 1000                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                             |
| MCP6295                                                       | 2             | 10 MHz | 1100                        | 3                        | 8.7 <sup>(2)</sup>                    | 2.4 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Dual connected, Chip Select          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin MSOP                                 |
| MCP6021                                                       | 1             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, 1/2 V <sub>CC</sub> V <sub>REF</sub> | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                |
| MCP6022                                                       | 2             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                |
| MCP6023                                                       | 1             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output, Chip Select                          | 8-Pin PDIP, 8-Pin SOIC, 8-Pin TSSOP                                |
| MCP6024                                                       | 4             | 10 MHz | 1000                        | 0.5                      | 8.7 <sup>(2)</sup>                    | 2.5 to 5.5            | -40 to +125      | Rail-to-Rail Input/Output                                       | 14-Pin PDIP, 14-Pin SOIC, 14-Pin TSSOP                             |

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

NOTE 1: Values are typical at 1 kHz  
2: Values are typical at 10 kHz

| Part #                                                                          | # per Package | GBWP    | I <sub>Q</sub> MAX (mA) | Typical V <sub>OS</sub> (μV) | V <sub>OS</sub> Drift Max (μV/°C) | Operating Voltage (V) | Temp. Range (°C) | Features                | Packages               |
|---------------------------------------------------------------------------------|---------------|---------|-------------------------|------------------------------|-----------------------------------|-----------------------|------------------|-------------------------|------------------------|
| <b>Motor Control Solutions - LINEAR – High Precision Operational Amplifiers</b> |               |         |                         |                              |                                   |                       |                  |                         |                        |
| TC913A/B                                                                        | 2             | 1.5 MHz | 1.1                     | 15                           | 0.15/0.30                         | 6.5 to 16             | 0 to 70          | Single and Split Supply | 8-Pin PDIP, 8-Pin SOIC |

| Product                            | Program Memory Bytes & Type (Words) | EEPROM Data Memory Bytes | SRAM Bytes | I/O Pins (max.) | Packages               | A/D 12-bit 100 ksps (ch) | A/D 10-bit 500 ksps | Timer 16-bit | Input Cap | Output Comp/ Std PWM | Motor Control PWM | Quad. Encoder | UART | SPI™ | I <sup>2</sup> C™ |
|------------------------------------|-------------------------------------|--------------------------|------------|-----------------|------------------------|--------------------------|---------------------|--------------|-----------|----------------------|-------------------|---------------|------|------|-------------------|
| <b>High-Speed Sensor Solutions</b> |                                     |                          |            |                 |                        |                          |                     |              |           |                      |                   |               |      |      |                   |
| dsPIC30F2011                       | 12,288 EnhFI (4,096)                | —                        | 1024       | 12              | 18SO, 18P, 28ML (6x6)  | 8                        | —                   | 3            | 2         | 2                    | —                 | —             | 1    | 1    | 1                 |
| dsPIC30F3012                       | 24,576 EnhFI (8,192)                | 1024                     | 2048       | 12              | 18SO, 18P, 44ML (8x8)  | 8                        | —                   | 3            | 2         | 2                    | —                 | —             | 1    | 1    | 1                 |
| dsPIC30F2012                       | 12,288 EnhFI (4,096)                | —                        | 1024       | 20              | 28SO, 28SP, 28ML (6x6) | 10                       | —                   | 3            | 2         | 2                    | —                 | —             | 1    | 1    | 1                 |
| dsPIC30F3013                       | 24,576 EnhFI (8,192)                | 1024                     | 2048       | 20              | 28SO, 28SP, 28ML (6x6) | 10                       | —                   | 3            | 2         | 2                    | —                 | —             | 2    | 1    | 1                 |

Abbreviations are found on the last page of the Selector Guide.

| <b>Power-Managed Solutions Featuring <i>nanoWatt</i> Technology</b>                                                                                                                                  |                                                                                                         |                                     |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|
| <b>Minimum nanoWatt Feature Set (V<sub>DD</sub> = 2.0-5.5V)</b>                                                                                                                                      | <b>6-20 Pin</b>                                                                                         | <b>28-44 Pin</b>                    | <b>64-100 Pin</b>        |
| Internal Oscillator                                                                                                                                                                                  | PIC16F627A, PIC16F628A, PIC16F648A                                                                      |                                     |                          |
| Quick Start-up (4 MHz)                                                                                                                                                                               |                                                                                                         |                                     |                          |
| Power-Managed Modes                                                                                                                                                                                  |                                                                                                         |                                     |                          |
| Sleep                                                                                                                                                                                                |                                                                                                         |                                     |                          |
| Low-Power Timer1                                                                                                                                                                                     |                                                                                                         |                                     |                          |
| Low-Power Watchdog                                                                                                                                                                                   |                                                                                                         |                                     |                          |
| <b>Additional Features to Minimum</b>                                                                                                                                                                | <b>6-20 Pin</b>                                                                                         | <b>28-44 Pin</b>                    | <b>64-80 Pin</b>         |
| IntOSC: Quick Start-up (Two-Speed) and Clock Divide (8 MHz)<br>BOR                                                                                                                                   | PIC16F818, PIC16F819                                                                                    |                                     |                          |
| IntOSC: Quick Start-up (Two-Speed), Fail-Safe Clock Monitor and Clock Divide (8 MHz)<br>Ultra Low-Power Wake-up                                                                                      | PIC12F683<br>PIC16F684, PIC16F688                                                                       |                                     |                          |
| IntOSC: Quick Start-up (Two-Speed), Fail-Safe Clock Monitor and Clock Divide (8 MHz)<br>Ultra Low-Power Wake-up<br>Low-Power Watchdog – Enhanced<br>Software Controlled BOR                          | PIC16F631, PIC16F677, PIC16F685,<br>PIC16F687, PIC16F689, PIC16F785,<br>PIC16F690, PIC16F88X, PIC16F946 |                                     |                          |
| IntOSC: Quick Start-up (Two-Speed), Fail-Safe Clock Monitor and Clock Divide (8 MHz)<br>Ultra Low-Power Wake-up<br>Wake-up Reset<br>Low-Power Watchdog – Enhanced<br>PLVD<br>Software Controlled BOR | PIC12F635<br>PIC16F636, PIC16F639                                                                       |                                     |                          |
| IntOSC: Quick Start-up (Two-Speed), Fail-Safe Clock Monitor and Selectable Clock (31 kHz-8 MHz)<br>Power-Managed Modes: RC Run Modes<br>PLVD<br>PBOR                                                 | PIC16F87, PIC16F88                                                                                      | PIC16F7X7, PIC16F91X                | PIC16F946                |
| <b>Additional Features to Minimum</b>                                                                                                                                                                | <b>6-20 Pin</b>                                                                                         | <b>28-44 Pin</b>                    | <b>64-80 Pin</b>         |
| IntOSC: Quick Start-up (Two-Speed), Fail-safe Clock Monitor and Selectable Clock (31 kHz)<br>Power-Managed Modes: Multiple Idle Modes and RC Run Modes<br>BOR                                        |                                                                                                         | PIC18F2XJXX, PIC18F4XJXX            | PIC18F6XJXX, PIC18F8XJXX |
| IntOSC: Quick Start-up (Two-Speed), Fail-Safe Clock Monitor and Selectable Clock (31 kHz-8 MHz)<br>Power-Managed Modes: Multiple Idle Modes and RC Run Modes<br>PBOR                                 |                                                                                                         |                                     | PIC24FJ                  |
| IntOSC: Quick Start-up (Two-Speed), Fail-Safe Clock Monitor and Selectable Clock (31 kHz-8 MHz)<br>Power-Managed Modes: Multiple Idle Modes and RC Run Modes<br>PLVD<br>PBOR                         | PIC18F1X20, PIC18F1X30                                                                                  | PIC18F2XXX, PIC18F4XXX, PIC18FXXK20 | PIC18F6XXX, PIC18F8XXX   |

For additional details, please refer to device data sheets and design pages on [www.microchip.com](http://www.microchip.com).

## CURRENT SECURE DATA PRODUCTS

### KEELOQ® Encoder Devices

| Product | Transmission Code Length Bits | Code Hopping Bits | Programmable Encryption Key Bits | Seed Length | Operating Voltage (V) | Turnable OSC | Function Codes | CRC | Protocols                    | Other Features                                                                                 | Packages     |
|---------|-------------------------------|-------------------|----------------------------------|-------------|-----------------------|--------------|----------------|-----|------------------------------|------------------------------------------------------------------------------------------------|--------------|
| HCS101  | 66                            | —                 | —                                | —           | 3.5 to 13.0           | ✓            | 7              | No  | PWM                          | Fixed code support for non-secure applications, up to 28-bit serial numbers                    | 8P, 8SN      |
| HCS200  | 66                            | 32                | 64                               | 32          | 3.5 to 13.0           | No           | 7              | No  | PWM                          | Entry level, Fixed code support, Battery-low indicator                                         | 8P, 8SN      |
| HCS201  | 66                            | 32                | 64                               | 32          | 3.5 to 13.0           | ✓            | 7              | No  | PWM                          | Entry level, Fixed code support, Battery-low indicator, Step-up voltage operation              | 8P, 8SN      |
| HCS300  | 66                            | 32                | 64                               | 32          | 2.0 to 6.3            | No           | 15             | No  | PWM                          | LED Drive, Overflow bits, Time-out, Battery-low indicator                                      | 8P, 8SN      |
| HCS301  | 66                            | 32                | 64                               | 32          | 3.5 to 13.0           | No           | 15             | No  | PWM                          | LED Drive, Overflow bits, Time-out, Battery-low indicator                                      | 8P, 8SN      |
| HCS320  | 66                            | 32                | 64                               | 32          | 3.5 to 13.0           | No           | 16             | No  | PWM                          | Shift Operation, LED Drive, Overflow bits, Time-out, Battery-low indicator                     | 8P, 8SN      |
| HCS360  | 67                            | 32                | 64                               | 48          | 2.0 to 6.3            | No           | 15             | ✓   | IR Mode, PWM and Manchester  | 2 independent counters                                                                         | 8P, 8SN      |
| HCS361  | 67                            | 32                | 64                               | 48          | 2.0 to 6.3            | No           | 15             | ✓   | IR Mode, PWM and VPWM        | 2 independent counters                                                                         | 8P, 8SN      |
| HCS362  | 69                            | 32                | 2 x 64                           | 60          | 2.0 to 6.3            | ✓            | 15             | ✓   | PWM and Manchester           | Queue counter, PLL interface, Timer bits, Programmable time-out                                | 8P, 8SN, 8ST |
| HCS365  | 69                            | 32                | 2 x 64                           | 2 x 60      | 2.05 to 5.5           | Factory      | 15             | ✓   | PWM, VPWM PPM and Manchester | Dual Encoder Operation, 4 inputs, Queue counter                                                | 8P, 8SM      |
| HCS370  | 69                            | 32                | 2 x 64                           | 2 x 60      | 2.05 to 5.5           | Factory      | 15             | ✓   | PWM, VPWM PPM and Manchester | Step-up voltage regulation, Dual Encoder Operation, 6 inputs, Queue counter                    | 14P, 14SL    |
| HCS410  | 69                            | 32                | 2 x 64                           | 60          | 2.0 to 6.6            | ✓            | 7              | ✓   | PWM and Manchester           | Self-powered transponder and encoder, Bidirectional authentication, User EEPROM, Queue counter | 8P, 8SN, 8ST |

### KEELOQ® Decoder Devices

| Product | Reception Length Bits | Encoders Supported**                                                                                   | Transmitters Supported | Operating Voltage (V) | Functions                                 | Other Features                                                                                       | Packages  |
|---------|-----------------------|--------------------------------------------------------------------------------------------------------|------------------------|-----------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------|-----------|
| HCS500  | 66                    | HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365, HCS370, HCS410, HCS412, HCS473 | Up to 7                | 3.0 to 5.5            | S0, 15 Serial Functions                   | Full-featured decoder with serial interface to microcontrollers                                      | 8P, 8SM   |
| HCS512  | 66                    | HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365, HCS370, HCS410, HCS412, HCS473 | Up to 4                | 4.0 to 6.0            | S0, S1, S2, S3; VLow, 15 Serial Functions | Single chip decoder with secure learning                                                             | 18P, 18SO |
| HCS515  | 66                    | HCS200, HCS201, HCS300, HCS301, HCS320, HCS360, HCS361, HCS362, HCS365, HCS370, HCS410, HCS412, HCS473 | Up to 7                | 4.5 to 5.5            | S0, S1, 15 Serial Functions               | Full-featured decoder with serial and parallel interface. On-chip 1K transmitter and 1K user EEPROM. | 14P, 14SL |

### KEELOQ® Programmable Encoder/Decoder Flash Devices (x14), ICSP™

| Product   | Program Memory Bytes & Type (Words) | EEPROM Data Memory (Bytes) | RAM Bytes | I/O Pins | Analog       |             | Digital                  |            | Max. Speed MHz | IntOSC | BOR/PLVD | ICD # of Breakpoints | nW | Other Features               | Packages        |
|-----------|-------------------------------------|----------------------------|-----------|----------|--------------|-------------|--------------------------|------------|----------------|--------|----------|----------------------|----|------------------------------|-----------------|
|           |                                     |                            |           |          | ADC Channels | Comparators | Timers/WDT               | Serial I/O |                |        |          |                      |    |                              |                 |
| PIC12F635 | 1,792 StdFI (1,024)                 | 128                        | 64        | 6        | —            | 1           | 1-16 bit, 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | BOR/PLVD | 1**                  | ✓  |                              | 8P, 8SN, 8MF    |
| PIC16F636 | 3,584 StdFI (2,048)                 | 256                        | 128       | 12       | —            | 2           | 1-16 bit, 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | BOR/PLVD | 1**                  | ✓  |                              | 14P, 14SL, 14ST |
| PIC16F639 | 3,584 StdFI (2,048)                 | 256                        | 128       | 12       | —            | 2           | 1-16 bit, 1-8 bit, 1-WDT | —          | 20             | 8 MHz  | BOR/PLVD | 1**                  | ✓  | Transponder Analog Front End | 20P, 20SO, 20SS |

\*\* Requires ICD specific device with header module – refer to Development Tools.  
Abbreviations are found on the last page of the Selector Guide.

**CURRENT SERIAL ELECTRICALLY ERASABLE PROMS (EEPROM)**

| Product                                                                                                                                                                                                                   | E/W Cycles | Density (Organization) | Write Speed | Max. Clock Freq. | Operating Voltage (V) | Temps   | Max. Standby Current | Unique Features                                                                                                                                                                                                                                              | Packages <sup>(1)</sup>     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-------------|------------------|-----------------------|---------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <b>Microwire Compatible Serial EEPROM Family – Automatic ERAL before WRAL, self-timed erase and write cycle, power on/off data protection circuitry, sequential read function and industry standard 3-wire serial I/O</b> |            |                        |             |                  |                       |         |                      |                                                                                                                                                                                                                                                              |                             |
| 93C46A                                                                                                                                                                                                                    | 1M         | 1 Kbit (x8)            | 2 ms        | 2 MHz            | 4.5 to 5.5            | C, I, E | 5 µA                 | 93Cx6A and 93Cx6B devices have no ORG pin. 93Cx6A parts have x8 organization; 93Cx6B parts are x16. Devices in this family include POR (V <sub>DD</sub> detect) feature.                                                                                     | P, SN, ST, MS, OT, X/SN, MC |
| 93C46B                                                                                                                                                                                                                    | 1M         | 1 Kbit (x16)           | 2 ms        | 2 MHz            | 4.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93C56A                                                                                                                                                                                                                    | 1M         | 2 Kbits (x8)           | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93C56B                                                                                                                                                                                                                    | 1M         | 2 Kbits (x16)          | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93C66A                                                                                                                                                                                                                    | 1M         | 4 Kbits (x8)           | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93C66B                                                                                                                                                                                                                    | 1M         | 4 Kbits (x16)          | 2 ms        | 2 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93C76A                                                                                                                                                                                                                    | 1M         | 8 Kbits (x8)           | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93C76B                                                                                                                                                                                                                    | 1M         | 8 Kbits (x16)          | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93C86A                                                                                                                                                                                                                    | 1M         | 16 Kbits (x8)          | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 | Use 93C76C or 93C86C devices for P, SN, ST or MS packages.<br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages.<br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages.<br>Use 93C76C or 93C86C devices for P, SN, ST or MS packages.         | OT                          |
| 93C86B                                                                                                                                                                                                                    | 1M         | 16 Kbits (x16)         | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93LC46A                                                                                                                                                                                                                   | 1M         | 1 Kbit (x8)            | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93LC46B                                                                                                                                                                                                                   | 1M         | 1 Kbit (x16)           | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93LC56A                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8)           | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93LC56B                                                                                                                                                                                                                   | 1M         | 2 Kbits (x16)          | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93LC66A                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8)           | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93LC66B                                                                                                                                                                                                                   | 1M         | 4 Kbits (x16)          | 6 ms        | 2 MHz            | 2.5 to 5.5            | C, I, E | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, X/SN, MC |
| 93LC76A                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8)           | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 | Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.<br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.<br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages.<br>Use 93LC76C or 93LC86C devices for P, SN, ST or MS packages. | OT                          |
| 93LC76B                                                                                                                                                                                                                   | 1M         | 8 Kbits (x16)          | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93LC86A                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8)          | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93LC86B                                                                                                                                                                                                                   | 1M         | 16 Kbits (x16)         | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93AA46A                                                                                                                                                                                                                   | 1M         | 1 Kbit (x8)            | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 | 93AAx6A and 93AAx6B devices have no ORG pin. 93AAx6A parts have x8 organization; 93Cx6B parts are x16.                                                                                                                                                       | P, SN, ST, MS, OT, MC       |
| 93AA46B                                                                                                                                                                                                                   | 1M         | 1 Kbit (x16)           | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93AA56A                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8)           | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93AA56B                                                                                                                                                                                                                   | 1M         | 2 Kbits (x16)          | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93AA66A                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8)           | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93AA66B                                                                                                                                                                                                                   | 1M         | 4 Kbits (x16)          | 6 ms        | 2 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, OT, MC       |
| 93AA76A                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8)           | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93AA76B                                                                                                                                                                                                                   | 1M         | 8 Kbits (x16)          | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93AA86A                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8)          | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 | Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.<br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.<br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages.<br>Use 93AA76C or 93AA86C devices for P, SN, ST or MS packages. | OT                          |
| 93AA86B                                                                                                                                                                                                                   | 1M         | 16 Kbits (x16)         | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | OT                          |
| 93C46C                                                                                                                                                                                                                    | 1M         | 1 Kbit (x8 or x16)     | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 | 93Cx6C devices can be used in either x8 or x16 organization via the ORG pin. Devices in this family include POR (V <sub>DD</sub> detect) feature.                                                                                                            | P, SN, ST, MS, MC           |
| 93C56C                                                                                                                                                                                                                    | 1M         | 2 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93C66C                                                                                                                                                                                                                    | 1M         | 4 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93C76C                                                                                                                                                                                                                    | 1M         | 8 Kbits (x8 or x16)    | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93C86C                                                                                                                                                                                                                    | 1M         | 16 Kbits (x8 or x16)   | 2 ms        | 3 MHz            | 4.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93LC46C                                                                                                                                                                                                                   | 1M         | 1 Kbit (x8 or x16)     | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 | 93LCx6C devices can be used in either x8 or x16 organization via the ORG pin.                                                                                                                                                                                | P, SN, ST, MS, X/SN, MC     |
| 93LC56C                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, X/SN, MC     |
| 93LC66C                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, X/SN, MC     |
| 93LC76C                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93LC86C                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8 or x16)   | 6 ms        | 3 MHz            | 2.5 to 5.5            | I, E    | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93AA46C                                                                                                                                                                                                                   | 1M         | 1 Kbit (x8 or x16)     | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 | 93AAx6C devices can be used in either x8 or x16 organization via the ORG pin.                                                                                                                                                                                | P, SN, ST, MS, X/SN, MC     |
| 93AA56C                                                                                                                                                                                                                   | 1M         | 2 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, X/SN, MC     |
| 93AA66C                                                                                                                                                                                                                   | 1M         | 4 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, X/SN, MC     |
| 93AA76C                                                                                                                                                                                                                   | 1M         | 8 Kbits (x8 or x16)    | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |
| 93AA86C                                                                                                                                                                                                                   | 1M         | 16 Kbits (x8 or x16)   | 6 ms        | 3 MHz            | 1.8 to 5.5            | I       | 5 µA                 |                                                                                                                                                                                                                                                              | P, SN, ST, MS, MC           |

NOTE 1. X/SN package code denotes rotated pinouts.



| Product                                                                                                    | E/W Cycles                       | Density<br>(Organization)                                                    | Write Speed                          | Max. Clock<br>Frequency                             | Operating<br>Voltage (V)                                           | Temps                                | Unique Features                                                                                                                                                                                                                 | Packages                                                                                                                  |
|------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>2-Wire I<sup>2</sup>C™ Compatible Serial EEPROM Family – Self-timed write cycle and Page Write mode</b> |                                  |                                                                              |                                      |                                                     |                                                                    |                                      |                                                                                                                                                                                                                                 |                                                                                                                           |
| 24C00<br>24LC00<br>24AA00                                                                                  | 1M<br>1M<br>1M                   | 128 bits (x8)<br>128 bits (x8)<br>128 bits (x8)                              | 4 ms<br>4 ms<br>4 ms                 | 400 kHz<br>400 kHz<br>400 kHz                       | 4.5 to 5.5<br>2.5 to 6.0<br>1.8 to 6.0                             | C, I, E<br>C, I<br>C, I              | 100 kHz operation for voltages from 1.8V to 4.5V.                                                                                                                                                                               | P, SN, ST, OT, MC<br>P, SN, ST, OT, MC<br>P, SN, ST, OT, MC                                                               |
| 24C01C<br>24C02C                                                                                           | 1M<br>1M                         | 1 Kbit (x8)<br>2 Kbits (x8)                                                  | 1 ms<br>1 ms                         | 400 kHz<br>400 kHz                                  | 4.5 to 5.5<br>4.5 to 5.5                                           | C, I, E<br>C, I, E                   | The 24C01C and 24C02C are for applications which require fast byte write and/or extended temperature. Three address pins.                                                                                                       | P, SN, ST, MS, MC<br>P, SN, ST, MS, MC                                                                                    |
| 24LC014<br>24AA014                                                                                         | 1M<br>1M                         | 1 Kbit (x8)<br>1 Kbit (x8)                                                   | 10 ms<br>10 ms                       | 400 MHz<br>400 MHz                                  | 2.5 to 5.5<br>1.8 to 5.5                                           | I<br>I                               | Three address pins.                                                                                                                                                                                                             | P, SN, ST, MS, MC<br>P, SN, ST, MS, MC                                                                                    |
| 24LC01B<br>24LC02B<br>24LC04B<br>24LC08B<br>24LC16B                                                        | 1M<br>1M<br>1M<br>1M<br>1M       | 1 Kbit (x8)<br>2 Kbits (x8)<br>4 Kbits (x8)<br>8 Kbits (x8)<br>16 Kbits (x8) | 5 ms<br>5 ms<br>5 ms<br>5 ms<br>5 ms | 400 kHz<br>400 kHz<br>400 kHz<br>400 kHz<br>400 kHz | 2.5 to 5.5<br>2.5 to 5.5<br>2.5 to 5.5<br>2.5 to 5.5<br>2.5 to 5.5 | I, E<br>I, E<br>I, E<br>I, E<br>I, E | Hardware write protect. Schmitt trigger inputs.<br>2.5V operation @ extended temperatures.<br>100 kHz operation @ extended temperatures.<br>B version on 2-wire devices designates that address pins A0, A1, A2 are no-connect. | P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC |
| 24AA01<br>24AA02<br>24AA04<br>24AA08<br>24AA16                                                             | 1M<br>1M<br>1M<br>1M<br>1M       | 1 Kbit (x8)<br>2 Kbits (x8)<br>4 Kbits (x8)<br>8 Kbits (x8)<br>16 Kbits (x8) | 5 ms<br>5 ms<br>5 ms<br>5 ms<br>5 ms | 400 kHz<br>400 kHz<br>400 kHz<br>400 kHz<br>400 kHz | 1.8 to 5.5<br>1.8 to 5.5<br>1.8 to 5.5<br>1.8 to 5.5<br>1.8 to 5.5 | I<br>I<br>I<br>I<br>I                | Hardware write protect. Schmitt trigger inputs.<br>100 kHz operation for voltages from 1.8V to 2.5V.<br>For all devices in this section (24AA01 through 24AA16), pins A0, A1, A2 are no-connect.                                | P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC<br>P, SN, ST, MS, OT, MC |
| 24LC32A<br>24AA32A                                                                                         | 1M<br>1M                         | 32 Kbits (x8)<br>32 Kbits (x8)                                               | 5 ms<br>5 ms                         | 400 kHz<br>400 kHz                                  | 2.5 to 5.5<br>1.8 to 5.5                                           | I, E<br>I                            | 100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                                                               | P, SN, SM, ST, MS, MC<br>P, SN, SM, ST, MS, MC                                                                            |
| 24LC64<br>24AA64                                                                                           | 1M<br>1M                         | 64 Kbits (x8)<br>64 Kbits (x8)                                               | 5 ms<br>5 ms                         | 400 kHz<br>400 kHz                                  | 2.5 to 5.5<br>1.8 to 5.5                                           | I, E<br>I                            | 32-byte page. 100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                                                 | P, SN, SM, ST, MS, MC<br>P, SN, SM, ST, MS, MC                                                                            |
| 24LC65<br>24AA65<br>24C65                                                                                  | 1 M/10 M<br>1 M/10 M<br>1 M/10 M | 64 Kbits (x8)<br>64 Kbits (x8)<br>64 Kbits (x8)                              | 5 ms<br>5 ms<br>5 ms                 | 400 kHz<br>400 kHz<br>400 kHz                       | 2.5 to 5.5<br>1.8 to 5.5<br>4.5 to 5.5                             | C, I<br>C<br>C, I, E                 | 8-byte page, 64-byte input buffer, high-endurance block, write protectable in 4K blocks.<br>Smart Serial™ EEPROM.                                                                                                               | P, SM<br>P, SM<br>P, SM                                                                                                   |
| 24LC128<br>24AA128<br>24FC128                                                                              | 1M<br>1M<br>1M                   | 128 Kbits (x8)<br>128 Kbits (x8)<br>128 Kbits (x8)                           | 5 ms<br>5 ms<br>5 ms                 | 400 kHz<br>400 kHz<br>1 MHz                         | 2.5 to 5.5<br>1.8 to 5.5<br>2.5 to 5.5                             | I, E<br>I<br>I                       | 64-byte page. 100 kHz operation for voltages from 1.8V to 2.5V.<br>400 kHz operation for voltages below 4.5V (24FC128).                                                                                                         | P, SN, SM, ST, MS, MF<br>P, SN, SM, ST, MS, MF<br>P, SN, SM, ST, MS, MF                                                   |
| 24LC256<br>24AA256<br>24FC256                                                                              | 1M<br>1M<br>1M                   | 256 Kbits (x8)<br>256 Kbits (x8)<br>256 Kbits (x8)                           | 5 ms<br>5 ms<br>5 ms                 | 400 kHz<br>400 kHz<br>1 MHz                         | 2.5 to 5.5<br>1.8 to 5.5<br>2.5 to 5.5                             | I, E<br>I<br>I                       | 64-byte page. 100 kHz operation for voltages from 1.8V to 2.5V.<br>400 kHz operation for voltages below 4.5V (24FC256).                                                                                                         | P, SM, SN, ST, MS, MF<br>P, SM, SN, ST, MS, MF<br>P, SN, SM, ST, MS, MF                                                   |
| 24LC512<br>24AA512<br>24FC512                                                                              | 1M<br>1M<br>1M                   | 512 Kbits (x8)<br>512 Kbits (x8)<br>512 Kbits (x8)                           | 5 ms<br>5 ms<br>5 ms                 | 400 kHz<br>400 kHz<br>1 MHz                         | 2.5 to 5.5<br>1.8 to 5.5<br>2.5 to 5.5                             | I, E<br>I<br>I                       | 128-byte page, cascadeable up to 8 devices (4 Mbits).<br>100 kHz operation for voltages from 1.8 to 2.5V.<br>400 kHz operation for voltages below 4.5V. (24FC512).                                                              | P, MF, ST14, SM<br>P, MF, ST14, SM<br>P, MF, ST14, SM                                                                     |
| 24LC515<br>24AA515<br>24FC515                                                                              | 1M<br>1M<br>1M                   | 512 Kbits (x8)<br>512 Kbits (x8)<br>512 Kbits (x8)                           | 5 ms<br>5 ms<br>5 ms                 | 400 kHz<br>400 kHz<br>1 MHz                         | 2.5 to 5.5<br>1.8 to 5.5<br>2.5 to 5.5                             | I<br>I<br>I                          | Cascadeable up to 4 devices (2 Mbits).<br>100 kHz operation for voltages from 1.8V to 2.5V.                                                                                                                                     | P, SM<br>P, SM<br>P, SM                                                                                                   |

| Product                                                                                                                  | E/W Cycles | Density<br>(Organization) | Write Speed | Max. Clock<br>Frequency | Operating<br>Voltage (V) | Temps | Unique Features | Packages |
|--------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|-------------|-------------------------|--------------------------|-------|-----------------|----------|
| <b>ISO Smart Card Family – Self-timed write cycle and Page Write mode. All devices meet ISO7816 pinout requirements.</b> |            |                           |             |                         |                          |       |                 |          |
| 24LC01SC                                                                                                                 | 1M         | 1 Kbit (x8)               | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC02SC                                                                                                                 | 1M         | 2 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC04SC                                                                                                                 | 1M         | 4 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC08SC                                                                                                                 | 1M         | 8 Kbits (x8)              | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC16SC                                                                                                                 | 1M         | 16 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC32ASC                                                                                                                | 1M         | 32 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC64SC                                                                                                                 | 1M         | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC128SC                                                                                                                | 1M         | 128 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC256SC                                                                                                                | 1M         | 256 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24LC512SC                                                                                                                | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 2.5 to 5.5               | C, I  |                 | S, W, WF |
| 24AA01SC                                                                                                                 | 1M         | 1 Kbit (x8)               | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA02SC                                                                                                                 | 1M         | 2 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA04SC                                                                                                                 | 1M         | 4 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA08SC                                                                                                                 | 1M         | 8 Kbits (x8)              | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA16SC                                                                                                                 | 1M         | 16 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA32ASC                                                                                                                | 1M         | 32 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA64SC                                                                                                                 | 1M         | 64 Kbits (x8)             | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA128SC                                                                                                                | 1M         | 128 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA256SC                                                                                                                | 1M         | 256 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |
| 24AA512SC                                                                                                                | 1M         | 512 Kbits (x8)            | 5 ms        | 400 kHz                 | 1.8 to 5.5               | C     |                 | S, W, WF |

| Product                                                                                                                                                                    | E/W<br>Cycles | Density<br>(Organization) | Page Size | Write Speed | Max. Clock<br>Frequency | Operating Voltage<br>(V) | Temps | Unique Features | Packages <sup>(1)</sup> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------|-----------|-------------|-------------------------|--------------------------|-------|-----------------|-------------------------|
| <b>SPI™ Compatible Serial EEPROM Family – Page Write mode, HOLD pin, software enabled block write protection and hardware write-protect pin. Supports SPI™ modes 0, 3.</b> |               |                           |           |             |                         |                          |       |                 |                         |
| 25C040                                                                                                                                                                     | 1M            | 4 Kbits (x8)              | 16B       | 5 ms        | 3 MHz                   | 4.5 to 5.5               | I, E  |                 | P, SN, X/ST             |
| 25LC040                                                                                                                                                                    | 1M            | 4 Kbits (x8)              | 16B       | 5 ms        | 2 MHz                   | 2.5 to 5.5               | I     |                 | P, SN, X/ST             |
| 25AA040                                                                                                                                                                    | 1M            | 4 Kbits (x8)              | 16B       | 5 ms        | 1 MHz                   | 1.8 to 5.5               | I     |                 | P, SN, X/ST             |
| 25LC080A                                                                                                                                                                   | 1M            | 8 Kbits (x8)              | 16B       | 5 ms        | 10 MHz                  | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS           |
| 25AA080A                                                                                                                                                                   | 1M            | 8 Kbits (x8)              | 16B       | 5 ms        | 10 MHz                  | 1.8 to 5.5               | I     |                 | P, SN, ST, MS           |
| 25LC080B                                                                                                                                                                   | 1M            | 8 Kbits (x8)              | 32B       | 5 ms        | 10 MHz                  | 2.5 to 5.5               | I, E  |                 | P, SN, ST, MS           |
| 25AA080B                                                                                                                                                                   | 1M            | 8 Kbits (x8)              | 32B       | 5 ms        | 10 MHz                  | 1.8 to 5.5               | I     |                 | P, SN, ST, MS           |

**NOTE 1.** X/ST package code denotes rotated pinout.

| Product                                                                                                                                                                                | E/W Cycles | Density (Organization) | Page Size | Write Speed | Max. Clock Frequency | Operating Voltage (V) | Temps | Unique Features | Packages <sup>(1)</sup> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-----------|-------------|----------------------|-----------------------|-------|-----------------|-------------------------|
| <b>SPI™ Compatible Serial EEPROM Family – Page Write mode, HOLD pin, software enabled block write protection and hardware write-protect pin. Supports SPI™ modes 0, 3. (continued)</b> |            |                        |           |             |                      |                       |       |                 |                         |
| 25LC160A                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 16B       | 5 ms        | 10 MHz               | 2.5 to 5.5            | I, E  |                 | P, SN, ST, MS           |
| 25AA160A                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 16B       | 5 ms        | 10 MHz               | 1.8 to 5.5            | I     |                 | P, SN, ST, MS           |
| 25LC160B                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 32B       | 5 ms        | 10 MHz               | 2.5 to 5.5            | I, E  |                 | P, SN, ST, MS           |
| 25AA160B                                                                                                                                                                               | 1M         | 16 Kbits (x8)          | 32B       | 5 ms        | 10 MHz               | 1.8 to 5.5            | I     |                 | P, SN, ST, MS           |
| 25C320                                                                                                                                                                                 | 100K       | 32 Kbits (x8)          | 32B       | 5 ms        | 3 MHz                | 4.5 to 5.5            | I, E  |                 | P, SN                   |
| 25LC320                                                                                                                                                                                | 1M         | 32 Kbits (x8)          | 32B       | 5 ms        | 2 MHz                | 2.5 to 5.5            | I, E  |                 | P, SN, X/ST             |
| 25AA320                                                                                                                                                                                | 1M         | 32 Kbits (x8)          | 32B       | 5 ms        | 1 MHz                | 1.8 to 5.5            | I     |                 | P, SN, X/ST             |
| 25LC640                                                                                                                                                                                | 1M         | 64 Kbits (x8)          | 32B       | 5 ms        | 3 MHz                | 2.5 to 5.5            | I, E  |                 | P, SN, X/ST             |
| 25AA640                                                                                                                                                                                | 1M         | 64 Kbits (x8)          | 32B       | 5 ms        | 1 MHz                | 1.8 to 5.5            | I     |                 | P, SN, X/ST             |
| 25LC256                                                                                                                                                                                | 1M         | 256 Kbits (x8)         | 64B       | 5 ms        | 10 MHz               | 2.5 to 5.5            | I, E  |                 | P, SN, ST, MF           |
| 25AA256                                                                                                                                                                                | 1M         | 256 Kbits (x8)         | 64B       | 5 ms        | 10 MHz               | 1.8 to 5.5            | I     |                 | P, SN, ST, MF           |

**NOTE 1.** X/ST package code denotes rotated pinout.

| Product                                                                                                                                    | E/W Cycles | Density (Organization) | Write Speed | Max. Clock Frequency | Operating Voltage (V) | Temps | Unique Features                                                                                                                                                                     | Packages      |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------|-------------|----------------------|-----------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Identification Products (Application-Specific Products for Monitors, DRAM Modules, ACR Risers and Other Plug-And-Play Applications)</b> |            |                        |             |                      |                       |       |                                                                                                                                                                                     |               |
| 24LC21                                                                                                                                     | 1M         | 1 Kbit (x8)            | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Completely implements DDC1™/DDC2™ interface for VESA monitor identification. Improved noise filter. Write protection pin. Not recommended for new designs. Use 24LC21A or 24LCS21A. | P, SN         |
| 24LCS21                                                                                                                                    | 1M         | 1 Kbit (x8)            | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Same as 24LC21 plus software enabled write-protect pin. Not recommended for new designs. Use 24LC21A or 24LCS21A.                                                                   | P, SN         |
| 24LC21A                                                                                                                                    | 1M         | 1 Kbit (x8)            | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Same features as 24LC21 plus "return to DDC1" feature.                                                                                                                              | P, SN         |
| 24LCS21A                                                                                                                                   | 1M         | 1 Kbit (x8)            | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Same features as 24LC21A plus software enabled write-protect pin.                                                                                                                   | P, SN         |
| 24LCS22A                                                                                                                                   | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | I     | Implements VESA E-EDID 1.3 for flat panels and projectors. Includes "return to DDC1" feature and software - enabled write protect pin.                                              | P, SN         |
| 24LC024                                                                                                                                    | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Addressable, hardware write protection for DRAM DIMM modules and other applications.                                                                                                | P, SN, ST, MS |
| 24LC025                                                                                                                                    | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | C, I  | Addressable. No write-protect.                                                                                                                                                      | P, SN, ST, MS |
| 24AA52                                                                                                                                     | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 1.8 to 5.5            | I     | Addressable, hardware write protection and software write protection for lower half of the array. Designed for DRAM DIMM modules.                                                   | P, SN, ST, MS |
| 24LCS52                                                                                                                                    | 1M         | 2 Kbits (x8)           | 10 ms       | 400 kHz              | 2.5 to 5.5            | I     |                                                                                                                                                                                     | P, SN, ST, MS |

## FUTURE SERIAL ELECTRICALLY ERASABLE PROMS (EEPROM)

| Part #                                                                                                                                          | E/W Cycles | Density<br>(Organization) | Page Size | Write Speed | Max. Clock Freq. | Operating Voltage<br>(V) | Temps | Unique Features                              | Packages              |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|-----------|-------------|------------------|--------------------------|-------|----------------------------------------------|-----------------------|
| <b>SPI™ Compatible Serial EEPROM Family – Page Write mode, HOLD pin, software enabled block write protection and hardware write-protect pin</b> |            |                           |           |             |                  |                          |       |                                              |                       |
| 25LC010A                                                                                                                                        | 1M         | 1 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SN, ST, MS, MC, OT |
| 25AA010A                                                                                                                                        | 1M         | 1 Kbit (x8)               | 16B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                                              | P, SN, ST, MS, MC, OT |
| 25LC020A                                                                                                                                        | 1M         | 2 Kbits (x8)              | 16B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SN, ST, MS, MC, OT |
| 25AA020A                                                                                                                                        | 1M         | 2 Kbits (x8)              | 16B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                                              | P, SN, ST, MS, MC, OT |
| 25LC040A                                                                                                                                        | 1M         | 4 Kbits (x8)              | 16B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SN, ST, MS, MC, OT |
| 25AA040A                                                                                                                                        | 1M         | 4 Kbits (x8)              | 16B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                                              | P, SN, ST, MS, MC, OT |
| 25LC320A                                                                                                                                        | 1M         | 32 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SN, ST, MS         |
| 25AA320A                                                                                                                                        | 1M         | 32 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I, E  |                                              | P, SN, ST, MS         |
| 25LC640A                                                                                                                                        | 1M         | 64 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SN, ST, MS         |
| 25AA640A                                                                                                                                        | 1M         | 64 Kbits (x8)             | 32B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                                              | P, SN, ST, MS         |
| 25LC128                                                                                                                                         | 1M         | 128 Kbits (x8)            | 64B       | 5 ms        | 10 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SN, ST, MS         |
| 25AA128                                                                                                                                         | 1M         | 128 Kbits (x8)            | 64B       | 5 ms        | 10 MHz           | 1.8 to 5.5               | I     |                                              | P, SN, ST, MS         |
| 25LC1024                                                                                                                                        | 1M         | 1 Mbit (x8)               | 256B      | 5 ms        | 20 MHz           | 2.5 to 5.5               | I, E  |                                              | P, SM, MF             |
| 25AA1024                                                                                                                                        | 1M         | 1 Mbit (x8)               | 256B      | 5 ms        | 20 MHz           | 1.8 to 5.5               | I     |                                              | P, SM, MF             |
| <b>I²C™ Compatible Serial EEPROM Family</b>                                                                                                     |            |                           |           |             |                  |                          |       |                                              |                       |
| 24LC1025                                                                                                                                        | 1M         | 1 Mbit (x8)               | —         | 5 ms        | 400 kHz          | 2.5 to 5.5               | I, E  | Cascade up to 4 devices                      | P, SM                 |
| 24AA1025                                                                                                                                        | 1M         | 1 Mbit (x8)               | —         | 5 ms        | 400 kHz          | 1.8 to 5.5               | I     | Cascade up to 4 devices, 100 kHz @ 1.8V-2.5V | P, SM                 |

## DEVELOPMENT SYSTEMS

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems

Ordering MPLAB® ICE is as easy as 1, 2, and 3!

**NOTE 1:** Choose your PICmicro® MCU.

**2:** Choose your PICmicro® MCU package.

**3:** Find the right line on the next few pages for MPLAB® ICE part numbers. You're ready to order.

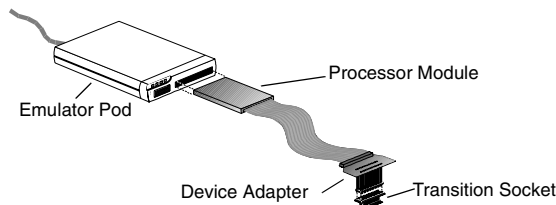
MPLAB® ICE is a modular emulator system with interchangeable components allowing the system to be easily configured to emulate different PICmicro® MCUs. Since this emulator supports package-specific emulation, customers need to know which device and package they intend to emulate. Then, the customer can use the *Cross Reference Parts List* on the following pages to identify the part numbers required to complete an MPLAB® ICE system. A complete system consists of:

**NOTE 1:** An emulator pod (including among other things the host-to-pod parallel cable and power supply)

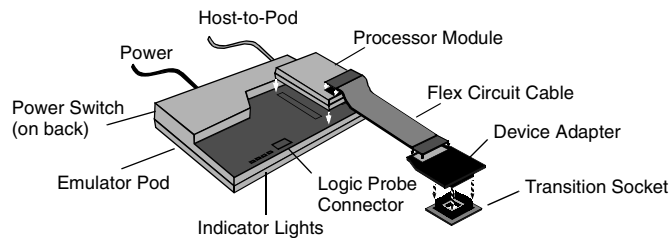
**2:** A processor module

**3:** A device adapter

**4:** A transition socket



#### MPLAB® ICE 2000 Emulator



#### MPLAB® ICE 4000 Emulator

An MPLAB® ICE emulator system is ordered as separate components. Knowing the terms will make it easy to order and use the MPLAB® ICE emulator system. Read more about each component:

##### 1. Emulator Pod

The MPLAB® ICE 2000 and MPLAB® ICE 4000 are full-featured emulator pods containing a main board with an additional board for expanded trace memory and complex control logic. The pods come with a standard parallel interface cable that connects the pods to the parallel port of the PC and a power supply. MPLAB® ICE 4000 also includes a USB interface cable that connects the pod to the USB port.

##### 2. Processor Module

The processor module is a PICmicro®, device-specific module that is inserted into the emulator pod. The processor module contains the emulator chip, logic, and low-voltage circuitry. A flex cable extends from the processor module and is connected to the device adapter at the target application.

##### 3. Device Adapter

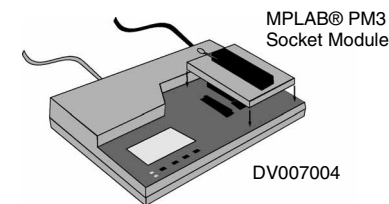
The device adapter provides a common interface for the PICmicro® MCU being emulated. This adapter contains a special device that provides an oscillator clock allowing the user to accurately emulate the RC characteristics of the PICmicro® MCU. The device adapter provides emulation support for standard DIP and PLCC styles. For emulation support of other packages, a transition socket is needed along with the device adapter.

##### 4. Transition Socket

The transition sockets are available in various styles to allow the common device adapter to be translated to support surface-mount packages, such as SOIC, SSOP, PQFP, TQFP and MLF.

### MPLAB® PM3 Programmers

MPLAB® PM3 Programmer (DV007004) is Microchip's production-rated programmer, which can be operated stand-alone or with a PC using MPLAB® IDE (included free). It comes complete with accessories needed to connect to a host system, including a power supply and cables, giving the developer complete control over the programming session. The programmer requires a socket module (to be purchased separately), which can be selected from the following chart by identifying the devices for programming and then picking the appropriate part number from their respective columns. MPLAB® PM3 has built-in ICSP™ programming capability.



### In-Circuit Debuggers: MPLAB® ICD 2

MPLAB® ICD 2 is a low cost, flash-based development tool that connects between the PC and the designer's target board allowing direct in-circuit debugging of the PICmicro® target microcontroller. Programs can be executed in real time or single step, watch variables established, break points set, memory read/writes accomplished and more. The MPLAB® ICD 2 can also be used as a development programmer for the microcontrollers.

## Development Systems Products

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards

|                                                    |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                       |                        |                                               |
|----------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|-----------------------|------------------------|-----------------------------------------------|
| Part Number                                        | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)   | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>Analog Interface Development Tools</b>          |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                       |                        |                                               |
| MCP2120                                            | 14P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                       |                        | DM163008                                      |
| MCP2150                                            | 18P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                       |                        | DM163008                                      |
| MCP25020                                           | 14P                     |                            |                    |                      |                            |                    |                      |                                        | AC164301                           |                       |                       |                        | DV250501                                      |
| MCP25020                                           | 14SO                    |                            |                    |                      |                            |                    |                      |                                        | AC164302                           |                       |                       |                        |                                               |
| MCP25025                                           | 14P                     |                            |                    |                      |                            |                    |                      |                                        | AC164301                           |                       |                       |                        | DV250501                                      |
| MCP25025                                           | 14SO                    |                            |                    |                      |                            |                    |                      |                                        | AC164302                           |                       |                       |                        |                                               |
| MCP25050                                           | 14P                     |                            |                    |                      |                            |                    |                      |                                        | AC164301                           |                       |                       |                        | DV250501                                      |
| MCP25050                                           | 14SO                    |                            |                    |                      |                            |                    |                      |                                        | AC164302                           |                       |                       |                        |                                               |
| MCP25055                                           | 14P                     |                            |                    |                      |                            |                    |                      |                                        | AC164301                           |                       |                       |                        | DV250501                                      |
| MCP25055                                           | 14SO                    |                            |                    |                      |                            |                    |                      |                                        | AC164302                           |                       |                       |                        |                                               |
| MCP2510                                            | 18P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                       |                        | DV251001                                      |
| MCP2515                                            | 18P                     |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                       |                        | DV251001                                      |
| <b>PICmicro® Microcontroller Development Tools</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                       |                        |                                               |
| PIC10F200                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | AC163020              | AC162059<br>+XLT06SOT |                        | DV164101 or<br>DV164120<br>+AC163020          |
| PIC10F200                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059              |                        | DV164101,<br>DV164120                         |
| PIC10F202                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | AC163020              | AC162059<br>+XLT06SOT |                        | DV164101 or<br>DV164120<br>+AC163020          |
| PIC10F202                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059              |                        | DV164101,<br>DV164120                         |
| PIC10F204                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | AC163020              | AC162059<br>+XLT06SOT |                        | DV164101 or<br>DV164120<br>+AC163020          |
| PIC10F204                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059              |                        | DV164101,<br>DV164120                         |
| PIC10F206                                          | 60T                     |                            |                    |                      |                            |                    |                      | AC164037                               | AC164321                           | AC163020              | AC162059<br>+XLT06SOT |                        | DV164101 or<br>DV164120<br>+AC163020          |
| PIC10F206                                          | 8P                      |                            |                    |                      |                            |                    |                      | AC164037                               | AC164301                           | ✓                     | AC162059              |                        | DV164101,<br>DV164120                         |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                          | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                        |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|--------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket     | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)    | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                          |                            |                    |                      |                                        |                                    |                       |                        |                        |                                               |
| PIC10F220                                                      | 6OT                     |                            |                    |                          |                            |                    |                      | AC164037*                              | AC164321*                          | AC163020*             | AC162059*<br>+XLT06SOT |                        | DV164101 or<br>DV164120<br>+AC163020          |
| PIC10F220                                                      | 8P                      |                            |                    |                          |                            |                    |                      | AC164037*                              | AC164301*                          | ✓ *                   | AC162059*              |                        | DV164101,<br>DV164120                         |
| PIC10F222                                                      | 6OT                     |                            |                    |                          |                            |                    |                      | AC164037*                              | AC164321*                          | AC163020*             | AC162059*<br>+XLT06SOT |                        | DV164101 or<br>DV164120<br>+AC163020          |
| PIC10F222                                                      | 8P                      |                            |                    |                          |                            |                    |                      | AC164037*                              | AC164301*                          | ✓ *                   | AC162059*              |                        | DV164101,<br>DV164120                         |
| PIC12C508                                                      | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                        |                        | DM163001,<br>DVMCPA                           |
| PIC12C508                                                      | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO                  |                            |                    |                      | AC124001                               | AC164312                           |                       |                        |                        |                                               |
| PIC12C508A                                                     | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                        |                        | DM163001,<br>DVMCPA                           |
| PIC12C508A                                                     | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO                  |                            |                    |                      | AC124001                               | AC164312                           |                       |                        |                        |                                               |
| PIC12C508A                                                     | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO                  |                            |                    |                      | AC164026                               | AC164302                           |                       |                        |                        |                                               |
| PIC12C508A                                                     | 8MF                     | PCM16XA0                   | DVA12XP080         | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              |                        |                        |                                               |
| PIC12C509                                                      | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                        |                        | DM163001,<br>DVMCPA                           |
| PIC12C509                                                      | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO                  |                            |                    |                      | AC124001                               | AC164312                           |                       |                        |                        |                                               |
| PIC12C509A                                                     | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                        |                        | DM163001,<br>DVMCPA                           |
| PIC12C509A                                                     | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO                  |                            |                    |                      | AC124001                               | AC164312                           |                       |                        |                        |                                               |
| PIC12C509A                                                     | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO                  |                            |                    |                      | AC164026                               | AC164302                           |                       |                        |                        |                                               |
| PIC12C509A                                                     | 8MF                     | PCM16XA0                   | DVA12XP080         | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              |                        |                        |                                               |
| PIC12C671                                                      | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                        |                        |                                               |
| PIC12C671                                                      | 8SM                     | PCM12XA0                   | DVA12XP081         | XLT08SO                  |                            |                    |                      | AC124001                               | AC164312                           |                       |                        |                        |                                               |
| PIC12C671                                                      | 8MF                     | PCM12XA0                   | DVA12XP081         | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              |                        |                        |                                               |
| PIC12C672                                                      | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                        |                        |                                               |
| PIC12C672                                                      | 8SM                     | PCM12XA0                   | DVA12XP081         | XLT08SO                  |                            |                    |                      | AC124001                               | AC164312                           |                       |                        |                        |                                               |
| PIC12C672                                                      | 8MF                     | PCM12XA0                   | DVA12XP081         | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              |                        |                        |                                               |

**NOTE:** See complete list of notes on page 94.

## Development Systems Products

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                      |                        |                                                 |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|----------------------|------------------------|-------------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)  | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits   |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                      |                        |                                                 |
| PIC12CE518                                                     | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                      |                        |                                                 |
| PIC12CE518                                                     | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC124001                               | AC164312                           |                       |                      |                        |                                                 |
| PIC12CE518                                                     | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC164026                               | AC164302                           |                       |                      |                        |                                                 |
| PIC12CE519                                                     | 8P, 8JW                 | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                      |                        |                                                 |
| PIC12CE519                                                     | 8SM                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC124001                               | AC164312                           |                       |                      |                        |                                                 |
| PIC12CE519                                                     | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC164026                               | AC164302                           |                       |                      |                        |                                                 |
| PIC12CE673                                                     | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                      |                        |                                                 |
| PIC12CE674                                                     | 8P, 8JW                 | PCM12XA0                   | DVA12XP081         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                      |                        |                                                 |
| PIC12F508                                                      | 8P                      | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162059             |                        | DV164101,<br>DM163014,<br>DV164120,<br>DM163029 |
| PIC12F508                                                      | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162059<br>+XLT08SO |                        |                                                 |
| PIC12F508                                                      | 8ST                     | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      |                                        | AC164306                           |                       |                      |                        |                                                 |
| PIC12F508                                                      | 8MS                     | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      |                                        | AC164325**                         |                       |                      |                        |                                                 |
| PIC12F509                                                      | 8P                      | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162059             |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC12F509                                                      | 8SN                     | PCM16XA0                   | DVA12XP080         | XLT08SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162059<br>+XLT08SO |                        |                                                 |
| PIC12F509                                                      | 8ST                     | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      |                                        | AC164306                           |                       |                      |                        |                                                 |
| PIC12F509                                                      | 8MS                     | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      |                                        | AC164325**                         |                       |                      |                        |                                                 |
| PIC12F510                                                      | 8P                      |                            |                    |                      |                            |                    |                      | AC124001*                              | AC164301*                          |                       | AC162070*            |                        | DV164101*,<br>DV164120,<br>DM163029             |
| PIC12F510                                                      | 8SN                     |                            |                    |                      |                            |                    |                      | AC164026*                              | AC164302*                          |                       |                      |                        |                                                 |
| PIC12F510                                                      | 8MS                     |                            |                    |                      |                            |                    |                      |                                        | AC164325**                         |                       |                      |                        |                                                 |
| PIC12F510                                                      | 8MF                     |                            |                    |                      |                            |                    |                      |                                        | AC164324**                         |                       |                      |                        |                                                 |

**NOTE:** See complete list of notes on page 94.



**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                          | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                                       |                        |                                                 |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|--------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------------------------|------------------------|-------------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket     | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)                   | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits   |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                          |                            |                    |                      |                                        |                                    |                       |                                       |                        |                                                 |
| PIC12F629                                                      | 8P                      | PCM12XB0                   | DVA12XP081         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162050                              |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC12F629                                                      | 8SN                     | PCM12XB0                   | DVA12XP081         | XLT08SO                  |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162050<br>+XLT08SO                  |                        |                                                 |
| PIC12F629                                                      | 8MF                     | PCM12XB0                   | DVA12XP081         | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              | AC162050<br>+XLT08DFN or<br>XLT08DFN2 |                        |                                                 |
| PIC12F635                                                      | 8P                      | PCM16YM0                   | DVA1002            | ACICE0201                |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162057                              |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC12F635                                                      | 8SN                     | PCM16YM0                   | DVA1002            | XLT08SO                  |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162057<br>+XLT08SO                  |                        |                                                 |
| PIC12F635                                                      | 8MF                     | PCM16YM0                   | DVA1002            | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              | AC162050<br>+XLT08DFN or<br>XLT08DFN2 |                        |                                                 |
| PIC12F675                                                      | 8P                      | PCM12XB0                   | DVA12XP081         |                          |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162050                              |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC12F675                                                      | 8SN                     | PCM12XB0                   | DVA12XP081         | XLT08SO                  |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162050<br>+XLT08SO                  |                        |                                                 |
| PIC12F675                                                      | 8MF                     | PCM12XB0                   | DVA12XP081         | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              | AC162050<br>+XLT08DFN or<br>XLT08DFN2 |                        |                                                 |
| PIC12F683                                                      | 8P                      | PCM12XC0                   | DVA1002            | ACICE0201                |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162058                              |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC12F683                                                      | 8SN                     | PCM12XC0                   | DVA1002            | XLT08SO                  |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162058<br>+XLT08SO                  |                        |                                                 |
| PIC12F683                                                      | 8MF                     | PCM12XC0                   | DVA1002            | XLT08DFN or<br>XLT08DFN2 |                            |                    |                      | AC124001<br>+AC164032                  | AC164324**                         | AC164032              | AC162058<br>+XLT08DFN or<br>XLT08DFN2 |                        |                                                 |
| PIC14000                                                       | 28SP, 28JW              | PCM14XA0                   | DVA14XP280         |                          |                            |                    |                      | AC144001                               |                                    | ✓                     |                                       |                        |                                                 |
| PIC14000                                                       | 28SO                    | PCM14XA0                   | DVA14XP280         | XLT28SO                  |                            |                    |                      | AC144002                               |                                    |                       |                                       |                        |                                                 |
| PIC14000                                                       | 28SS                    | PCM14XA0                   | DVA14XP280         | XLT28SS                  |                            |                    |                      | AC144002                               |                                    |                       |                                       |                        |                                                 |
| PIC16C52                                                       | 18P                     | PCM16XA0                   | DVA16XP180         |                          |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                                       |                        | DM163001                                        |
| PIC16C52                                                       | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO                  |                            |                    |                      | AC164002                               | AC164302                           |                       |                                       |                        |                                                 |

**NOTE:** See complete list of notes on page 94.

## Development Systems Products

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C54/54A/54C                                               | 18P, 18JW               | PCM16XA0                   | DVA16XP180         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C54/54A/54C                                               | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C54/54A/54C                                               | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C55/55A                                                   | 28P, 28JW               | PCM16XA0                   | DVA16XP280         | XLT28XP              |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001<br>DM163001                          |
| PIC16C55/55A                                                   | 28SP                    | PCM16XA0                   | DVA16XP280         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16C55/55A                                                   | 28SO                    | PCM16XA0                   | DVA16XP280         | XLT28SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C55/55A                                                   | 28SS                    | PCM16XA0                   | DVA16XP280         | XLT28SS2             |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C56/56A                                                   | 18P, 18JW               | PCM16XA0                   | DVA16XP180         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C56/56A                                                   | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C56/56A                                                   | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C57/57C                                                   | 28P, 28JW               | PCM16XA0                   | DVA16XP280         | XLT28XP              |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001<br>DM163001                          |
| PIC16C57/57C                                                   | 28SP                    | PCM16XA0                   | DVA16XP280         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16C57/57C                                                   | 28SO                    | PCM16XA0                   | DVA16XP280         | XLT28SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C57/57C                                                   | 28SS                    | PCM16XA0                   | DVA16XP280         | XLT28SS2             |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C58A/58B                                                  | 18P, 18JW               | PCM16XA0                   | DVA16XP180         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C58A/58B                                                  | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C58A/58B                                                  | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C62A                                                      | 28P, 28JW               | PCM16XB1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C62A                                                      | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C62A                                                      | 28SS                    | PCM16XB1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C62B                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C62B                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN4            |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              |                     |                        |                                               |
| PIC16C62B                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C62B                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C63                                                       | 28SP, 28JW              | PCM16XB1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022,<br>DVMCPA                           |
| PIC16C63                                                       | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C63A                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C63A                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN4            |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              |                     |                        |                                               |
| PIC16C63A                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C63A                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C64A                                                      | 40P, 40JW               | PCM16XB1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C64A                                                      | 44L                     | PCM16XB1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C64A                                                      | 44PQ                    | PCM16XB1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C64A                                                      | 44PT                    | PCM16XB1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C65A                                                      | 40P, 40JW               | PCM16XB1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C65A                                                      | 44L                     | PCM16XB1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C65A                                                      | 44PQ                    | PCM16XB1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C65A                                                      | 44PT                    | PCM16XB1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C65B                                                      | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C65B                                                      | 44L                     | PCM16XE1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C65B                                                      | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C65B                                                      | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C66                                                       | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C66                                                       | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C67                                                       | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C67                                                       | 44L                     | PCM16XE1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C67                                                       | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C67                                                       | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C71                                                       | 18P, 18JW               | PCM16XF0                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C71                                                       | 18SO                    | PCM16XF0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C72                                                       | 28SP, 28JW              | PCM16XB1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C72                                                       | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C72                                                       | 28SS                    | PCM16XB1                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C72A                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C72A                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              |                     |                        |                                               |
| PIC16C72A                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C72A                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C73A                                                      | 28SP, 28JW              | PCM16XB1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C73A                                                      | 28SO                    | PCM16XB1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C73B                                                      | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C73B                                                      | 28ML                    | PCM16XE1                   | DVA16XP282         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              |                     |                        |                                               |
| PIC16C73B                                                      | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C73B                                                      | 28SS                    | PCM16XE1                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C74A                                                      | 40P, 40JW               | PCM16XB1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C74A                                                      | 44L                     | PCM16XB1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C74A                                                      | 44PQ                    | PCM16XB1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C74A                                                      | 44PT                    | PCM16XB1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C74B                                                      | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C74B                                                      | 44L                     | PCM16XE1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C74B                                                      | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C74B                                                      | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C76                                                       | 28SP, 28JW              | PCM16XE1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C76                                                       | 28SO                    | PCM16XE1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C77                                                       | 40P, 40JW               | PCM16XE1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C77                                                       | 44L                     | PCM16XE1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C77                                                       | 44PQ                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C77                                                       | 44PT                    | PCM16XE1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C432                                                      | 20P, 20JW               | PCM16YB0                   | DVA16XP201         |                        |                            |                    |                      | AC164029                               | AC164301                           |                       |                     |                        | DM163005                                      |
| PIC16C432                                                      | 20SS                    | PCM16YB0                   | DVA16XP201         | XLT20SS1               |                            |                    |                      | AC164029                               | AC164307                           |                       |                     |                        | DM163007,<br>DM163011                         |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C433                                                      | 18P, 18JW               | PCM16YC0                   | DVA16XP185         |                      |                            |                    |                      | AC164030                               | AC164301                           |                       |                     |                        | DM163005                                      |
| PIC16C433                                                      | 18SO                    | PCM16YC0                   | DVA16XP185         | XLT18SO              |                            |                    |                      | AC164030                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C505                                                      | 14P, 14JW               | PCM16XA0                   | DVA16XP140         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16C505                                                      | 14SL                    | PCM16XA0                   | DVA16XP140         | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C554                                                      | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C554                                                      | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C554                                                      | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C557                                                      | 28P                     |                            |                    |                      |                            |                    |                      | AC164001                               | AC164301                           |                       |                     |                        |                                               |
| PIC16C557                                                      | 28SO                    |                            |                    |                      |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C558                                                      | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C558                                                      | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C558                                                      | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C620/620A                                                 | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C620/620A                                                 | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C620/620A                                                 | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C621/621A                                                 | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C621/621A                                                 | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C621/621A                                                 | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C622/622A                                                 | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C622/622A                                                 | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C622/622A                                                 | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C642                                                      | 28SP, 28JW              | PCM16XD0                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C642                                                      | 28SO                    | PCM16XD0                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C662                                                      | 40P, 40JW               | PCM16XD0                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C662                                                      | 44L                     | PCM16XD0                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C662                                                      | 44PQ                    | PCM16XD0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C662                                                      | 44PT                    | PCM16XD0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C710                                                      | 18P, 18JW               | PCM16XF0                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C710                                                      | 18SO                    | PCM16XF0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C710                                                      | 20SS                    | PCM16XF0                   | DVA16XP180         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C711                                                      | 18P, 18JW               | PCM16XF0                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C711                                                      | 18SO                    | PCM16XF0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C711                                                      | 20SS                    | PCM16XF0                   | DVA16XP180         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C712                                                      | 18P, 18JW               | PCM16XE1                   | DVA16XP182         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C712                                                      | 18SO                    | PCM16XE1                   | DVA16XP182         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C712                                                      | 20SS                    | PCM16XE1                   | DVA16XP182         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C715                                                      | 18P, 18JW               | PCM16XG0                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C715                                                      | 18SO                    | PCM16XG0                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C715                                                      | 20SS                    | PCM16XG0                   | DVA16XP180         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C716                                                      | 18P, 18JW               | PCM16XE1                   | DVA16XP182         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C716                                                      | 18SO                    | PCM16XE1                   | DVA16XP182         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C716                                                      | 20SS                    | PCM16XE1                   | DVA16XP182         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C717                                                      | 18P, 18JW               | PCM16XN1                   | DVA18XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C717                                                      | 18SO                    | PCM16XN1                   | DVA18XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C717                                                      | 20SS                    | PCM16XN1                   | DVA18XP180         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C745                                                      | 28SP, 28JW              | PCM16XQ1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163010                                      |
| PIC16C745                                                      | 28SO                    | PCM16XQ1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C765                                                      | 40P, 40JW               | PCM16XQ1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163010                                      |
| PIC16C765                                                      | 44L                     | PCM16XQ1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C765                                                      | 44PT                    | PCM16XQ1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16C770                                                      | 20P, 20JW               | PCM16XN1                   | DVA16XP200         |                        |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C770                                                      | 20SO                    | PCM16XN1                   | DVA16XP200         | XLT20SO1               |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C770                                                      | 20SS                    | PCM16XN1                   | DVA16XP200         | XLT20SS1               |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C771                                                      | 20P, 20JW               | PCM16XN1                   | DVA16XP200         |                        |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16C771                                                      | 20SO                    | PCM16XN1                   | DVA16XP200         | XLT20SO1               |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C771                                                      | 20SS                    | PCM16XN1                   | DVA16XP200         | XLT20SS1               |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C773                                                      | 28SP, 28JW              | PCM16XL0                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C773                                                      | 28SO                    | PCM16XL0                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C773                                                      | 28SS                    | PCM16XL0                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C774                                                      | 40P, 40JW               | PCM16XL0                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16C774                                                      | 44L                     | PCM16XL0                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       |                     |                        |                                               |
| PIC16C774                                                      | 44PQ                    | PCM16XL0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       |                     |                        |                                               |
| PIC16C774                                                      | 44PT                    | PCM16XL0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       |                     |                        |                                               |
| PIC16C781                                                      | 20P, 20JW               | PCM16XW0                   | DVA16XP202         |                        |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163012                                      |
| PIC16C781                                                      | 20SO                    | PCM16XW0                   | DVA16XP202         | XLT20SO1               |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C781                                                      | 20SS                    | PCM16XW0                   | DVA16XP202         | XLT20SS1               |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C782                                                      | 20P, 20JW               | PCM16XW0                   | DVA16XP202         |                        |                            |                    |                      | AC164028                               | AC164301                           | ✓                     |                     |                        | DM163012                                      |
| PIC16C782                                                      | 20SO                    | PCM16XW0                   | DVA16XP202         | XLT20SO1               |                            |                    |                      | AC164028                               | AC164302                           |                       |                     |                        |                                               |
| PIC16C782                                                      | 20SS                    | PCM16XW0                   | DVA16XP202         | XLT20SS1               |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16C923                                                      | 64SP                    | PCM16XJ0                   | DVA16XP640         |                        |                            |                    |                      | AC164025                               |                                    |                       |                     |                        |                                               |
| PIC16C923                                                      | 64PT                    | PCM16XJ0                   | DVA16PQ640         | XLT64PT1               |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C923                                                      | 68L, 68CL               | PCM16XJ0                   | DVA16XL680         |                        |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |
| PIC16C924                                                      | 64SP                    | PCM16XJ0                   | DVA16XP640         |                        |                            |                    |                      | AC164025                               |                                    |                       |                     |                        |                                               |
| PIC16C924                                                      | 64PT                    | PCM16XJ0                   | DVA16PQ640         | XLT64PT1               |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C924                                                      | 68L, 68CL               | PCM16XJ0                   | DVA16XL680         |                        |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |
| PIC16C925                                                      | 64PT                    | PCM16XT0                   | DVA16PQ640         | XLT64PT1               |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C925                                                      | 68L, 68CL               | PCM16XT0                   | DVA16XL680         |                        |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |
| PIC16C926                                                      | 64PT                    | PCM16XT0                   | DVA16PQ640         | XLT64PT1               |                            |                    |                      | AC164023                               | AC164319                           |                       |                     |                        |                                               |
| PIC16C926                                                      | 68L, 68CL               | PCM16XT0                   | DVA16XL680         |                        |                            |                    |                      | AC164022                               | AC164308                           | AC164024              |                     |                        | DM163003                                      |

**NOTE:** See complete list of notes on page 94.

## Development Systems Products

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16CE623                                                     | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16CE623                                                     | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16CE623                                                     | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16CE624                                                     | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16CE624                                                     | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16CE624                                                     | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16CE625                                                     | 18P, 18JW               | PCM16XC0                   | DVA16XP180         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16CE625                                                     | 18SO                    | PCM16XC0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16CE625                                                     | 20SS                    | PCM16XC0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F54                                                       | 18P                     | PCM16XA0                   | DVA16XP180         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        | DV164101,<br>DM163001,<br>DV164120            |
| PIC16F54                                                       | 18SO                    | PCM16XA0                   | DVA16XP180         | XLT18SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F54                                                       | 20SS                    | PCM16XA0                   | DVA16XP180         | XLT20SS              |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F57                                                       | 28P                     | PCM16XA0                   | DVA16XP280         | XLT28XP              |                            |                    |                      | AC164001                               | AC164301                           |                       |                     |                        | DV164101,<br>DM163001,<br>DV164120            |
| PIC16F57                                                       | 28SP                    | PCM16XA0                   | DVA16XP280         |                      |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16F57                                                       | 28SO                    | PCM16XA0                   | DVA16XP280         | XLT28SO              |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F57                                                       | 28SS                    | PCM16XA0                   | DVA16XP280         | XLT28SS2             |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F59                                                       | 40P                     |                            |                    |                      |                            |                    |                      | AC164038                               | AC164301                           |                       | ✓*                  |                        | DV164101,<br>DV164120                         |
| PIC16F59                                                       | 44PT                    |                            |                    |                      |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓*                  |                        |                                               |
| PIC16F72                                                       | 28SP, 28JW              | PCM16XS2                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     |                     |                        | DM163022                                      |
| PIC16F72                                                       | 28SO                    | PCM16XS2                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F72                                                       | 28SS                    | PCM16XS2                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F72                                                       | 28ML                    | PCM16XS2                   | DVA16XP282         | XLT28QFN4            |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              |                     |                        |                                               |
| PIC16F73                                                       | 28SP, 28JW              | PCM16XS2                   | DVA16XP282         |                      |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F73                                                       | 28ML                    | PCM16XS2                   | DVA16XP282         | XLT28QFN4            |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓*                  |                        |                                               |
| PIC16F73                                                       | 28SO                    | PCM16XS2                   | DVA16XP282         | XLT28SO              |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓*                  |                        |                                               |
| PIC16F73                                                       | 28SS                    | PCM16XS2                   | DVA16XP282         | XLT28SS              |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓*                  |                        |                                               |

**NOTE:** See complete list of notes on page 94.



**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F74                                                       | 40P                     | PCM16XS2                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F74                                                       | 44L                     | PCM16XS2                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓*                  |                        |                                               |
| PIC16F74                                                       | 44PT                    | PCM16XS2                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓*                  |                        |                                               |
| PIC16F74                                                       | 44ML                    | PCM16XS2                   | DVA16XL441         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓*                  |                        |                                               |
| PIC16F76                                                       | 28SP, 28JW              | PCM16XS2                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F76                                                       | 28ML                    | PCM16XS2                   | DVA16XP282         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓*                  |                        |                                               |
| PIC16F76                                                       | 28SO                    | PCM16XS2                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓*                  |                        |                                               |
| PIC16F76                                                       | 28SS                    | PCM16XS2                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓*                  |                        |                                               |
| PIC16F77                                                       | 40P, 40JW               | PCM16XS2                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓*                  |                        | DM163022                                      |
| PIC16F77                                                       | 44L                     | PCM16XS2                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓*                  |                        |                                               |
| PIC16F77                                                       | 44ML                    | PCM16XS2                   | DVA16XL441         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓*                  |                        |                                               |
| PIC16F77                                                       | 44PT                    | PCM16XS2                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓*                  |                        |                                               |
| PIC16F83                                                       | 18P                     | PCM16XH1                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F83                                                       | 18SO                    | PCM16XH1                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F84                                                       | 18P                     | PCM16XH1                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F84                                                       | 18SO                    | PCM16XH1                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F84A                                                      | 18P                     | PCM16XH1                   | DVA16XP180         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC16F84A                                                      | 18SO                    | PCM16XH1                   | DVA16XP180         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       |                     |                        |                                               |
| PIC16F84A                                                      | 20SS                    | PCM16XH1                   | DVA16XP180         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       |                     |                        |                                               |
| PIC16F87                                                       | 18P                     | PCM16YG0                   | DVA16XP186         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F87                                                       | 18SO                    | PCM16YG0                   | DVA16XP186         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F87                                                       | 20SS                    | PCM16YG0                   | DVA16XP186         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F87                                                       | 28ML                    | PCM16YG0                   | DVA16XP186         | XLT28QFN3              |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | ✓                   |                        |                                               |
| PIC16F88                                                       | 18P                     | PCM16YG0                   | DVA16XP186         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F88                                                       | 18SO                    | PCM16YG0                   | DVA16XP186         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F88                                                       | 20SS                    | PCM16YG0                   | DVA16XP186         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F88                                                       | 28ML                    | PCM16YG0                   | DVA16XP186         | XLT28QFN3              |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | ✓                   |                        |                                               |

**NOTE:** See complete list of notes on page 94.

## Development Systems Products

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                        |                        |                                                 |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|------------------------|------------------------|-------------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)    | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits   |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                        |                        |                                                 |
| PIC16F505                                                      | 14P, 14JW               | PCM16XA0                   | DVA16XP140         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162059               |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC16F505                                                      | 14SL                    | PCM16XA0                   | DVA16XP140         | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162059<br>+XLT14SO   |                        |                                                 |
| PIC16F505                                                      | 14ST                    | PCM16XA0                   | DVA16XP140         |                      |                            |                    |                      |                                        | AC164306                           |                       |                        |                        |                                                 |
| PIC16F506                                                      | 14P                     |                            |                    |                      |                            |                    |                      | AC124001*                              | AC164301*                          |                       | AC162070**             |                        | DV164101*,<br>DV164120,<br>DM163029             |
| PIC16F506                                                      | 14SO                    |                            |                    |                      |                            |                    |                      | AC164026*                              | AC164302*                          |                       |                        |                        |                                                 |
| PIC16F506                                                      | 14ST                    |                            |                    |                      |                            |                    |                      |                                        | AC164306*                          |                       |                        |                        |                                                 |
| PIC16F506                                                      | 16ML                    |                            |                    |                      |                            |                    |                      |                                        | AC164324**                         |                       |                        |                        |                                                 |
| PIC16F627                                                      | 18P, 18JW               | PCM16XP0                   | DVA16XP183         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                        |                        | DM163001                                        |
| PIC16F627                                                      | 18SO                    | PCM16XP0                   | DVA16XP183         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                        |                        |                                                 |
| PIC16F627                                                      | 20SS                    | PCM16XP0                   | DVA16XP183         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                        |                        |                                                 |
| PIC16F627A                                                     | 18P                     | PCM16YF0                   | DVA16XP186         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162053               |                        | DM163014                                        |
| PIC16F627A                                                     | 18SO                    | PCM16YF0                   | DVA16XP186         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162053<br>+XLT18SO   |                        |                                                 |
| PIC16F627A                                                     | 20SS                    | PCM16YF0                   | DVA16XP186         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162053<br>+XLT20SS   |                        |                                                 |
| PIC16F627A                                                     | 28ML                    | PCM16YF0                   | DVA16XP186         | XLT28QFN3            |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | AC162053<br>+XLT28QFN3 |                        |                                                 |
| PIC16F628                                                      | 18P, 18JW               | PCM16XP0                   | DVA16XP183         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     |                        |                        | DM163001                                        |
| PIC16F628                                                      | 18SO                    | PCM16XP0                   | DVA16XP183         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       |                        |                        |                                                 |
| PIC16F628                                                      | 20SS                    | PCM16XP0                   | DVA16XP183         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       |                        |                        |                                                 |
| PIC16F628A                                                     | 18P                     | PCM16YF0                   | DVA16XP186         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162053               |                        | DM163014                                        |
| PIC16F628A                                                     | 18SO                    | PCM16YF0                   | DVA16XP186         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162053<br>+XLT18SO   |                        |                                                 |
| PIC16F628A                                                     | 20SS                    | PCM16YF0                   | DVA16XP186         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162053<br>+XLT20SS   |                        |                                                 |
| PIC16F628A                                                     | 28ML                    | PCM16YF0                   | DVA16XP186         | XLT28QFN3            |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | AC162053<br>+XLT28QFN3 |                        |                                                 |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                         |                        |                                                 |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|-------------------------|------------------------|-------------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)     | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits   |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                         |                        |                                                 |
| PIC16F630                                                      | 14P                     | PCM16YD0                   | DVA16XP141         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162052                |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC16F630                                                      | 14SL                    | PCM16YD0                   | DVA16XP141         | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162052<br>+XLT14SO    |                        |                                                 |
| PIC16F630                                                      | 14ST                    | PCM16YD0                   | DVA16XP141         | XLT14SS              |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162052<br>+XLT14SS    |                        |                                                 |
| PIC16F636                                                      | 14P                     | PCM16YM0                   | DVA1002            | ACICE0207            |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162057                |                        | DV164120,<br>DM163029                           |
| PIC16F636                                                      | 14SL                    | PCM16YM0                   | DVA1002            | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162057<br>+XLT14SO    |                        |                                                 |
| PIC16F636                                                      | 14ST                    | PCM16YM0                   | DVA1002            | XLT14SS              |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162057<br>+XLT14SS    |                        |                                                 |
| PIC16F639                                                      | 20P                     | PCM16YM0*                  | DVA1002            | ACICE0203            |                            |                    |                      | AC164039                               | AC164301                           | ✓ *                   | AC162066**              |                        | DV164101*,<br>DM163014,<br>DM163029             |
| PIC16F639                                                      | 20SO                    | PCM16YM0*                  | DVA1002            | XLT20SO1             |                            |                    |                      | AC164039                               | AC164302                           |                       | AC162066**<br>+XLT20SO1 |                        |                                                 |
| PIC16F639                                                      | 20SS                    | PCM16YM0*                  | DVA1002            | XLT20SS1             |                            |                    |                      |                                        | AC164307                           |                       | AC162066**<br>+XLT20SS1 |                        |                                                 |
| PIC16F648A                                                     | 18P                     | PCM16YF0                   | DVA16XP186         |                      |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162053                |                        | DM163014                                        |
| PIC16F648A                                                     | 18SO                    | PCM16YF0                   | DVA16XP186         | XLT18SO              |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162053<br>+XLT18SO    |                        |                                                 |
| PIC16F648A                                                     | 20SS                    | PCM16YF0                   | DVA16XP186         | XLT20SS              |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162053<br>+XLT20SS    |                        |                                                 |
| PIC16F648A                                                     | 28ML                    | PCM16YF0                   | DVA16XP186         | XLT28QFN3            |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | AC162053<br>+XLT28QFN3  |                        |                                                 |
| PIC16F676                                                      | 14P                     | PCM16YD0                   | DVA16XP141         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162052                |                        | DM163014,<br>DV164101,<br>DV164120,<br>DM163029 |
| PIC16F676                                                      | 14SL                    | PCM16YD0                   | DVA16XP141         | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162052<br>+XLT14SO    |                        |                                                 |
| PIC16F676                                                      | 14ST                    | PCM16YD0                   | DVA16XP141         | XLT14SS              |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162052<br>+XLT14SS    |                        |                                                 |

**NOTE:** See complete list of notes on page 94.

## Development Systems Products

### MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)

|                                                         |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                         |                        |                                               |
|---------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|-------------------------|------------------------|-----------------------------------------------|
| Part Number                                             | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)     | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| PICmicro® Microcontroller Development Tools (continued) |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                         |                        |                                               |
| PIC16F684                                               | 14P                     | PCM16YK0                   | DVA1002            | ACICE0207            |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162055                |                        | DV164101,<br>DV164120,<br>DM163029            |
| PIC16F684                                               | 14SL                    | PCM16YK0                   | DVA1002            | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162055<br>+XLT14SO    |                        |                                               |
| PIC16F684                                               | 14ST                    | PCM16YK0                   | DVA1002            | XLT14SS              |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162055<br>+XLT14SS    |                        |                                               |
| PIC16F685                                               | 20P                     | PCM16YQ0**                 | DVA1004**          | ACICE0203            |                            |                    |                      | AC164039*                              | AC164301*                          | ✓ *                   | AC162061**              |                        | DV164120,<br>DM163029                         |
| PIC16F685                                               | 20SO                    | PCM16YQ0**                 | DVA1004**          | XLT20SO1             |                            |                    |                      | AC164039*                              | AC164302*                          |                       | AC162061**<br>+XLT20SO1 |                        |                                               |
| PIC16F685                                               | 20SS                    | PCM16YQ0**                 | DVA1004**          | XLT20SS1             |                            |                    |                      |                                        | AC164307*                          |                       | AC162061**<br>+XLT20SS1 |                        |                                               |
| PIC16F687                                               | 20P                     | PCM16YQ0**                 | DVA1004**          | ACICE0203            |                            |                    |                      | AC164039*                              | AC164301*                          | ✓ *                   | AC162061**              |                        | DV164120,<br>DM163029                         |
| PIC16F687                                               | 20SO                    | PCM16YQ0**                 | DVA1004**          | XLT20SO1             |                            |                    |                      | AC164039*                              | AC164302*                          |                       | AC162061**<br>+XLT20SO1 |                        |                                               |
| PIC16F687                                               | 20SS                    | PCM16YQ0**                 | DVA1004**          | XLT20SS1             |                            |                    |                      |                                        | AC164307*                          |                       | AC162061**<br>+XLT20SS1 |                        |                                               |
| PIC16F688                                               | 14P                     | PCM16YL0                   | DVA1002            | ACICE0207            |                            |                    |                      | AC124001                               | AC164301                           | ✓                     | AC162056                |                        | DV164101,<br>DV164120,<br>DM163029            |
| PIC16F688                                               | 14SL                    | PCM16YL0                   | DVA1002            | XLT14SO              |                            |                    |                      | AC164026                               | AC164302                           |                       | AC162056<br>+XLT14SO    |                        |                                               |
| PIC16F688                                               | 14ST                    | PCM16YL0                   | DVA1002            | XLT14SS              |                            |                    |                      | AC164026                               | AC164306                           |                       | AC162056<br>+XLT14SS    |                        |                                               |
| PIC16F689                                               | 20P                     | PCM16YQ0**                 | DVA1004**          | ACICE0203            |                            |                    |                      | AC164039*                              | AC164301*                          |                       | AC162061**              |                        | DV164120,<br>DM163029                         |
| PIC16F689                                               | 20SO                    | PCM16YQ0**                 | DVA1004**          | XLT20SO1             |                            |                    |                      | AC164039*                              | AC164302*                          |                       | AC162061**<br>+XLT20SO1 |                        |                                               |
| PIC16F689                                               | 20SS                    | PCM16YQ0*                  | DVA1004*           | XLT20SS1             |                            |                    |                      |                                        | AC164307*                          |                       | AC162061**<br>+XLT20SS1 |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                         |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|-------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)     | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                         |                        |                                               |
| PIC16F690                                                      | 20P                     | PCM16YQ0**                 | DVA1004**          | ACICE0203              |                            |                    |                      | AC164039*                              | AC164301*                          |                       | AC162061**              |                        | DV164120,<br>DM163029                         |
| PIC16F690                                                      | 20SO                    | PCM16YQ0**                 | DVA1004**          | XLT20SO1               |                            |                    |                      | AC164039*                              | AC164302*                          |                       | AC162061**<br>+XLT20SO1 |                        |                                               |
| PIC16F690                                                      | 20SS                    | PCM16YQ0**                 | DVA1004**          | XLT20SS1               |                            |                    |                      |                                        | AC164307*                          |                       | AC162061**<br>+XLT20SS1 |                        |                                               |
| PIC16F716                                                      | 18P                     | PCM16YJ0                   | DVA16XP187         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | AC162054                |                        | DM163001                                      |
| PIC16F716                                                      | 18SO                    | PCM16YJ0                   | DVA16XP187         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       | AC162054<br>+XLT18SO    |                        |                                               |
| PIC16F716                                                      | 20SS                    | PCM16YJ0                   | DVA16XP187         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       | AC162054<br>+XLT20SS    |                        |                                               |
| PIC16F737                                                      | 28SP                    | PCM16YH0                   | DVA18XP280         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                       |                        |                                               |
| PIC16F737                                                      | 28SO                    | PCM16YH0                   | DVA18XP280         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                       |                        |                                               |
| PIC16F737                                                      | 28SS                    | PCM16YH0                   | DVA18XP280         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                       |                        |                                               |
| PIC16F737                                                      | 28ML                    | PCM16YH0                   | DVA18XP280         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓                       |                        |                                               |
| PIC16F747                                                      | 40P                     | PCM16YH0                   | DVA18XP400         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                       |                        |                                               |
| PIC16F747                                                      | 44PT                    | PCM16YH0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                       |                        |                                               |
| PIC16F747                                                      | 44ML                    | PCM16YH0                   | DVA18XP400         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                       |                        |                                               |
| PIC16F767                                                      | 28P                     | PCM16YH0                   | DVA18XP280         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                       |                        |                                               |
| PIC16F767                                                      | 28SO                    | PCM16YH0                   | DVA18XP280         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                       |                        |                                               |
| PIC16F767                                                      | 28SS                    | PCM16YH0                   | DVA18XP280         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                       |                        |                                               |
| PIC16F767                                                      | 28ML                    | PCM16YH0                   | DVA18XP280         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓                       |                        |                                               |
| PIC16F777                                                      | 40P                     | PCM16YH0                   | DVA18XP400         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                       |                        |                                               |
| PIC16F777                                                      | 44PT                    | PCM16YH0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                       |                        |                                               |
| PIC16F777                                                      | 44ML                    | PCM16YH0                   | DVA18XP400         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                       |                        |                                               |
| PIC16F785                                                      | 20P                     | PCM16YN0**                 | DVA1004**          | ACICE0203              |                            |                    |                      | AC164039                               | AC164301                           | ✓ *                   | AC162060**              |                        | DV164120,<br>DM163029                         |
| PIC16F785                                                      | 20SO                    | PCM16YN0**                 | DVA1004**          | XLT20SO1               |                            |                    |                      | AC164039                               | AC164302                           |                       | AC162060**<br>+XLT20SO1 |                        |                                               |
| PIC16F785                                                      | 20SS                    | PCM16YN0**                 | DVA1004**          | XLT20SS1               |                            |                    |                      |                                        | AC164307                           |                       | AC162060**<br>+XLT20SS1 |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F818                                                      | 18P                     | PCM16YE0                   | DVA16XP186         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F818                                                      | 18SO                    | PCM16YE0                   | DVA16XP186         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F818                                                      | 20SS                    | PCM16YE0                   | DVA16XP186         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F818                                                      | 28ML                    | PCM16YE0                   | DVA16XP186         | XLT28QFN3              |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | ✓                   |                        |                                               |
| PIC16F819                                                      | 18P                     | PCM16YE0                   | DVA16XP186         |                        |                            |                    |                      | AC164010                               | AC164301                           | ✓                     | ✓                   |                        | DM163014                                      |
| PIC16F819                                                      | 18SO                    | PCM16YE0                   | DVA16XP186         | XLT18SO                |                            |                    |                      | AC164010                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F819                                                      | 20SS                    | PCM16YE0                   | DVA16XP186         | XLT20SS                |                            |                    |                      | AC164018                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F819                                                      | 28ML                    | PCM16YE0                   | DVA16XP186         | XLT28QFN3              |                            |                    |                      | AC164010<br>+AC164033                  | AC164322                           | AC164033              | ✓                   |                        |                                               |
| PIC16F870                                                      | 28SP, 28JW              | PCM16XR1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F870                                                      | 28SO                    | PCM16XR1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F870                                                      | 28SS                    | PCM16XR1                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F871                                                      | 40P                     | PCM16XR1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F871                                                      | 44L                     | PCM16XR1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F871                                                      | 44PT                    | PCM16XR1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F872                                                      | 28SP                    | PCM16XK1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F872                                                      | 28SO                    | PCM16XK1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F872                                                      | 28SS                    | PCM16XK1                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F873                                                      | 28SP                    | PCM16XK1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F873                                                      | 28SO                    | PCM16XK1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F873A                                                     | 28SP                    | PCM16XV0                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F873A                                                     | 28SO                    | PCM16XV0                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F873A                                                     | 28SS                    | PCM16XV0                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F873A                                                     | 28ML                    | PCM16XV0                   | DVA16XP282         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓                   |                        |                                               |
| PIC16F874                                                      | 40P                     | PCM16XK1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F874                                                      | 44L                     | PCM16XK1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F874                                                      | 44PQ                    | PCM16XK1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       | ✓                   |                        |                                               |
| PIC16F874                                                      | 44PT                    | PCM16XK1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F874A                                                     | 40P                     | PCM16XV0                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F874A                                                     | 44L                     | PCM16XV0                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F874A                                                     | 44PT                    | PCM16XV0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F874A                                                     | 44ML                    | PCM16XV0                   | DVA16XP401         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                   |                        |                                               |
| PIC16F876                                                      | 28SP                    | PCM16XK1                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F876                                                      | 28SO                    | PCM16XK1                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F876A                                                     | 28SP                    | PCM16XV0                   | DVA16XP282         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F876A                                                     | 28SO                    | PCM16XV0                   | DVA16XP282         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F876A                                                     | 28SS                    | PCM16XV0                   | DVA16XP282         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F876A                                                     | 28ML                    | PCM16XV0                   | DVA16XP282         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓                   |                        |                                               |
| PIC16F877                                                      | 40P                     | PCM16XK1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F877                                                      | 44L                     | PCM16XK1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F877                                                      | 44PQ                    | PCM16XK1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164014                               | AC164311                           |                       | ✓                   |                        |                                               |
| PIC16F877                                                      | 44PT                    | PCM16XK1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F877A                                                     | 40P                     | PCM16XV0                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   |                        | DM163022                                      |
| PIC16F877A                                                     | 44L                     | PCM16XV0                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   |                        |                                               |
| PIC16F877A                                                     | 44PT                    | PCM16XV0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F877A                                                     | 44ML                    | PCM16XV0                   | DVA16XP401         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                   |                        |                                               |
| PIC16F913                                                      | 28P                     | PCM16YP0**                 | DVA18XP280         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓ *                   | ✓                   |                        | DV164120                                      |
| PIC16F913                                                      | 28SO                    | PCM16YP0**                 | DVA18XP280         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F913                                                      | 28SS                    | PCM16YP0**                 | DVA18XP280         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F913                                                      | 28ML                    | PCM16YP0**                 | DVA18XP280         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031*             | ✓                   |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC16F914                                                      | 40P                     | PCM16YP0**                 | DVA18XP400         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓ *                   | ✓                   |                        | DV164120,<br>DM163029                         |
| PIC16F914                                                      | 44PT                    | PCM16YP0**                 | DVA18PQ440         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F914                                                      | 44ML                    | PCM16YP0**                 | DVA18XP400         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034*             | ✓                   |                        |                                               |
| PIC16F916                                                      | 28P                     | PCM16YP0**                 | DVA18XP280         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓ *                   | ✓                   |                        | DV164120                                      |
| PIC16F916                                                      | 28SO                    | PCM16YP0**                 | DVA18XP280         | XLT28SO                |                            |                    |                      | AC164017                               | AC164302                           |                       | ✓                   |                        |                                               |
| PIC16F916                                                      | 28SS                    | PCM16YP0**                 | DVA18XP280         | XLT28SS                |                            |                    |                      | AC164021                               | AC164307                           |                       | ✓                   |                        |                                               |
| PIC16F916                                                      | 28ML                    | PCM16YP0**                 | DVA18XP280         | XLT28QFN4              |                            |                    |                      | AC164012<br>+AC164031                  | AC164322                           | AC164031*             | ✓                   |                        |                                               |
| PIC16F917                                                      | 40P                     | PCM16YP0**                 | DVA18XP400         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓ *                   | ✓                   |                        | DV164120,<br>DM163029                         |
| PIC16F917                                                      | 44PT                    | PCM16YP0**                 | DVA18PQ440         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   |                        |                                               |
| PIC16F917                                                      | 44ML                    | PCM16YP0**                 | DVA18XP400         | XLT44QFN2              |                            |                    |                      | AC164012<br>+AC164034                  | AC164322                           | AC164034*             | ✓                   |                        |                                               |
| PIC16F946                                                      | 64PT                    | PCM16YP0**                 | DVA1005**          | XLT64PT5               |                            |                    |                      | TBD                                    | AC164303*                          |                       | ✓ *                 |                        |                                               |
| PIC16HV540                                                     | 18P, 18JW               |                            |                    |                        |                            |                    |                      | AC164001                               | AC164301                           | ✓                     |                     |                        |                                               |
| PIC16HV540                                                     | 18SO                    |                            |                    |                        |                            |                    |                      | AC164002                               | AC164302                           |                       |                     |                        |                                               |
| PIC16HV540                                                     | 20SS                    |                            |                    |                        |                            |                    |                      | AC164015                               | AC164307                           |                       |                     |                        |                                               |
| PIC17C42A                                                      | 40P, 40JW               | PCM17XA0                   | DVA17XP401         |                        |                            |                    |                      | AC174001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC17C42A                                                      | 44L                     | PCM17XA0                   | DVA17XL441         |                        |                            |                    |                      | AC174002                               | AC164317                           |                       |                     |                        |                                               |
| PIC17C42A                                                      | 44PQ                    | PCM17XA0                   | DVA17PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC174004                               | AC164316                           |                       |                     |                        |                                               |
| PIC17C42A                                                      | 44PT                    | PCM17XA0                   | DVA17PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC174005                               | AC164315                           |                       |                     |                        |                                               |
| PIC17C43                                                       | 40P, 40JW               | PCM17XA0                   | DVA17XP401         |                        |                            |                    |                      | AC174001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC17C43                                                       | 44L                     | PCM17XA0                   | DVA17XL441         |                        |                            |                    |                      | AC174002                               | AC164317                           |                       |                     |                        |                                               |
| PIC17C43                                                       | 44PQ                    | PCM17XA0                   | DVA17PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC174004                               | AC164316                           |                       |                     |                        |                                               |
| PIC17C43                                                       | 44PT                    | PCM17XA0                   | DVA17PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC174005                               | AC164315                           |                       |                     |                        |                                               |

**NOTE:** See complete list of notes on page 94.



**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                         | MPLAB® ICE 4000 System (2) |                    |                         |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|-------------------------|----------------------------|--------------------|-------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                         |                            |                    |                         |                                        |                                    |                       |                     |                        |                                               |
| PIC17C44                                                       | 40P, 40JW               | PCM17XA0                   | DVA17XP401         |                         |                            |                    |                         | AC174001                               | AC164301                           | ✓                     |                     |                        | DM163001                                      |
| PIC17C44                                                       | 44L                     | PCM17XA0                   | DVA17XL441         |                         |                            |                    |                         | AC174002                               | AC164317                           |                       |                     |                        |                                               |
| PIC17C44                                                       | 44PQ                    | PCM17XA0                   | DVA17PQ441         | XLT44PT or<br>XLT44PT3  |                            |                    |                         | AC174004                               | AC164316                           |                       |                     |                        |                                               |
| PIC17C44                                                       | 44PT                    | PCM17XA0                   | DVA17PQ441         | XLT44PT or<br>XLT44PT3  |                            |                    |                         | AC174005                               | AC164315                           |                       |                     |                        |                                               |
| PIC17C752                                                      | 68L                     | PCM17XA0                   | DVA17XL681         |                         |                            |                    |                         | AC174007                               | AC164308                           | AC164024              |                     |                        | DM173001                                      |
| PIC17C752                                                      | 64PT                    | PCM17XA0                   | DVA17PQ641         | XLT64PT2 or<br>XLT64PT5 |                            |                    |                         | AC174008                               | AC164319                           |                       |                     |                        |                                               |
| PIC17C756/756A                                                 | 68L, 68CL               | PCM17XA0                   | DVA17XL681         |                         |                            |                    |                         | AC174007                               | AC164308                           | AC164024              |                     |                        | DM173001                                      |
| PIC17C756/756A                                                 | 64PT                    | PCM17XA0                   | DVA17PQ641         | XLT64PT2 or<br>XLT64PT5 |                            |                    |                         | AC174008                               | AC164319                           |                       |                     |                        |                                               |
| PIC17C762                                                      | 84L                     | PCM17XA0                   | DVA17XL841         |                         |                            |                    |                         | AC174012                               | AC164318                           | AC164027              |                     |                        | DM173001                                      |
| PIC17C762                                                      | 80PT                    | PCM17XA0                   | DVA17PQ801         | XLT80PT or<br>XLT80PT3  |                            |                    |                         | AC174011                               | AC164320                           |                       |                     |                        |                                               |
| PIC17C766                                                      | 84L, 84CL               | PCM17XA0                   | DVA17XL841         |                         |                            |                    |                         | AC174012                               | AC164318                           | AC164027              |                     |                        | DM173001                                      |
| PIC17C766                                                      | 80PT                    | PCM17XA0                   | DVA17PQ801         | XLT80PT or<br>XLT80PT3  |                            |                    |                         | AC174011                               | AC164320                           |                       |                     |                        |                                               |
| PIC18C242                                                      | 28SP, 28JW              | PCM18XA0                   | DVA16XP282         |                         |                            |                    |                         | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C242                                                      | 28SO                    | PCM18XA0                   | DVA16XP282         | XLT28SO                 |                            |                    |                         | AC164017                               | AC164302                           |                       |                     | SW006011               |                                               |
| PIC18C252                                                      | 28SP                    | PCM18XA0                   | DVA16XP282         |                         |                            |                    |                         | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C252                                                      | 28JW                    | PCM18XA0                   | DVA16XP282         | XLT28XP                 |                            |                    |                         | AC164012                               | AC164301                           |                       |                     | SW006011               | DM163022                                      |
| PIC18C252                                                      | 28SO                    | PCM18XA0                   | DVA16XP282         | XLT28SO                 |                            |                    |                         | AC164017                               | AC164302                           |                       |                     | SW006011               |                                               |
| PIC18C442                                                      | 40P, 40JW               | PCM18XA0                   | DVA16XP401         |                         |                            |                    |                         | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C442                                                      | 44L                     | PCM18XA0                   | DVA16XL441         |                         |                            |                    |                         | AC164013                               | AC164309                           |                       |                     | SW006011               |                                               |
| PIC18C442                                                      | 44PT                    | PCM18XA0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3  |                            |                    |                         | AC164020                               | AC164305                           |                       |                     | SW006011               |                                               |
| PIC18C452                                                      | 40P, 40JW               | PCM18XA0                   | DVA16XP401         |                         |                            |                    |                         | AC164012                               | AC164301                           | ✓                     |                     | SW006011               | DM163022                                      |
| PIC18C452                                                      | 44L                     | PCM18XA0                   | DVA16XL441         |                         |                            |                    |                         | AC164013                               | AC164309                           |                       |                     | SW006011               |                                               |
| PIC18C452                                                      | 44PT                    | PCM18XA0                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3  |                            |                    |                         | AC164020                               | AC164305                           |                       |                     | SW006011               |                                               |
| PIC18C601                                                      | 68L                     |                            |                    |                         | PMF18WB1                   | DAF18-1            | XLT68L1                 | AC174007                               | AC164308                           |                       | ✓                   | SW006011               | DM163006                                      |
| PIC18C601                                                      | 64PT                    |                            |                    |                         | PMF18WB1                   | DAF18-1            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                             |                         | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|-----------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters          | Transition<br>Socket    | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                             |                         |                            |                    |                        |                                        |                                    |                       |                     |                        |                                               |
| PIC18C658                                                      | 68L                     | PCM18XB0                   | DVA18XL680                  |                         |                            |                    |                        | AC174007                               | AC164308                           | ✓ (7)                 |                     | SW006011               | DM163007                                      |
| PIC18C658                                                      | 64PT                    | PCM18XB0                   | DVA18PQ640                  | XLT64PT2 or<br>XLT64PT5 |                            |                    |                        | AC174008                               | AC164303                           |                       |                     | SW006011               |                                               |
| PIC18C801                                                      | 80PT                    |                            |                             |                         | PMF18WB1                   | DAF18-1            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18C801                                                      | 84L                     |                            |                             |                         | PMF18WB1                   | DAF18-1            | XLT84L1                | AC174012                               | AC164310                           |                       | ✓                   | SW006011               | DM163006                                      |
| PIC18C858                                                      | 84L                     | PCM18XB0                   | DVA18XL840                  |                         |                            |                    |                        | AC174012                               | AC164310                           | ✓ (7)                 |                     | SW006011               | DM163007                                      |
| PIC18C858                                                      | 80PT                    | PCM18XB0                   | DVA18PQ800                  | XLT80PT or<br>XLT80PT3  |                            |                    |                        | AC174011                               | AC164304                           |                       |                     | SW006011               |                                               |
| PIC18F242                                                      | 28SP                    | PCM18XH2                   | DVA16XP282 or<br>DVA18XP280 |                         | PMF18WC1                   | DAF18-2            | ACICE0204              | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F242                                                      | 28SO                    | PCM18XH2                   | DVA16XP282 or<br>DVA18XP280 | XLT28SO                 | PMF18WC1                   | DAF18-2            | XLT28SO                | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F248                                                      | 28SP                    | PCM18XD1                   | DVA16XP282                  |                         |                            |                    |                        | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163011                                      |
| PIC18F248                                                      | 28SO                    | PCM18XD1                   | DVA16XP282                  | XLT28SO                 |                            |                    |                        | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F252                                                      | 28SP                    | PCM18XH2                   | DVA16XP282 or<br>DVA18XP280 |                         | PMF18WC1                   | DAF18-2            | ACICE0204              | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F252                                                      | 28SO                    | PCM18XH2                   | DVA16XP282 or<br>DVA18XP280 | XLT28SO                 | PMF18WC1                   | DAF18-2            | XLT28SO                | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F258                                                      | 28SP                    | PCM18XD1                   | DVA16XP282                  |                         |                            |                    |                        | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163011                                      |
| PIC18F258                                                      | 28SO                    | PCM18XD1                   | DVA16XP282                  | XLT28SO                 |                            |                    |                        | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F442                                                      | 40P                     | PCM18XH2                   | DVA16XP401 or<br>DVA18XP400 |                         | PMF18WC1                   | DAF18-2            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F442                                                      | 44L                     | PCM18XH2                   | DVA16XL441                  |                         | PMF18WC1                   | DAF18-3            | XLT44L2                | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F442                                                      | 44PT                    | PCM18XH2                   | DVA16PQ441 or<br>DVA18PQ440 | XLT44PT or<br>XLT44PT3  | PMF18WC1                   | DAF18-3            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F448                                                      | 40P                     | PCM18XD1                   | DVA16XP401                  |                         |                            |                    |                        | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163011                                      |
| PIC18F448                                                      | 44L                     | PCM18XD1                   | DVA16XL441                  |                         |                            |                    |                        | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F448                                                      | 44PT                    | PCM18XD1                   | DVA16PQ441                  | XLT44PT or<br>XLT44PT3  |                            |                    |                        | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F452                                                      | 40P                     | PCM18XH2                   | DVA16XP401                  |                         | PMF18WC1                   | DAF18-2            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163022                                      |
| PIC18F452                                                      | 44L                     | PCM18XH2                   | DVA16XL441                  |                         | PMF18WC1                   | DAF18-3            | XLT44L2                | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F452                                                      | 44PT                    | PCM18XH2                   | DVA16PQ441                  | XLT44PT or<br>XLT44PT3  | PMF18WC1                   | DAF18-3            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F458                                                      | 40P                     | PCM18XD1                   | DVA16XP401         |                        |                            |                    |                      | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               | DM163011                                      |
| PIC18F458                                                      | 44L                     | PCM18XD1                   | DVA16XL441         |                        |                            |                    |                      | AC164013                               | AC164309                           |                       | ✓                   | SW006011               |                                               |
| PIC18F458                                                      | 44PT                    | PCM18XD1                   | DVA16PQ441         | XLT44PT or<br>XLT44PT3 |                            |                    |                      | AC164020                               | AC164305                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1220                                                     | 18P                     | PCM18XJ0                   | DVA18XP180         |                        | PMF18WD0                   | DAF18-2            | ACICE0202            | AC164010                               | AC164301                           | ✓*                    | ✓                   | SW006011               | DM163014                                      |
| PIC18F1220                                                     | 18SO                    | PCM18XJ0                   | DVA18XP180         | XLT18SO                | PMF18WD0                   | DAF18-2            | XLT18SO              | AC164010                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1220                                                     | 20SS                    | PCM18XJ0                   | DVA18XP180         | XLT20SS                | PMF18WD0                   | DAF18-2            | XLT20SS              | AC164018                               | AC164307                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1220                                                     | 28ML                    | PCM18XJ0                   | DVA18XP180         | XLT28QFN3              | PMF18WD0                   | DAF18-2            | XLT28QFN3            | AC164010<br>+AC164033                  | AC164322                           | AC164033*             | ✓                   | SW006011               |                                               |
| PIC18F1230                                                     | 18P                     |                            |                    |                        |                            |                    |                      | TBD                                    | AC164301*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1230                                                     | 18SO                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164302*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1230                                                     | 20SS                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164307*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1230                                                     | 28ML                    |                            |                    |                        |                            |                    |                      |                                        | AC164322*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1231                                                     | 18P                     |                            |                    |                        |                            |                    |                      | TBD                                    | AC164301*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1231                                                     | 18SO                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164302*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1231                                                     | 20SS                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164307*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1231                                                     | 28ML                    |                            |                    |                        |                            |                    |                      |                                        | AC164322*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1320                                                     | 18P                     | PCM18XJ0                   | DVA18XP180         |                        | PMF18WD0                   | DAF18-2            | ACICE0202            | AC164010                               | AC164301                           | ✓*                    | ✓                   | SW006011               | DM163014                                      |
| PIC18F1320                                                     | 18SO                    | PCM18XJ0                   | DVA18XP180         | XLT18SO                | PMF18WD0                   | DAF18-2            | XLT18SO              | AC164010                               | AC164302                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1320                                                     | 20SS                    | PCM18XJ0                   | DVA18XP180         | XLT20SS                | PMF18WD0                   | DAF18-2            | XLT20SS              | AC164018                               | AC164307                           |                       | ✓                   | SW006011               |                                               |
| PIC18F1320                                                     | 28ML                    | PCM18XJ0                   | DVA18XP180         | XLT28QFN3              | PMF18WD0                   | DAF18-2            | XLT28QFN3            | AC164010<br>+AC164033                  | AC164322                           | AC164033*             | ✓                   | SW006011               |                                               |
| PIC18F1330                                                     | 18P                     |                            |                    |                        |                            |                    |                      | TBD                                    | AC164301*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1330                                                     | 18SO                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164302*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1330                                                     | 20SS                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164307*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1330                                                     | 28ML                    |                            |                    |                        |                            |                    |                      |                                        | AC164322*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1331                                                     | 18P                     |                            |                    |                        |                            |                    |                      | TBD                                    | AC164301*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1331                                                     | 18SO                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164302*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1331                                                     | 20SS                    |                            |                    |                        |                            |                    |                      | TBD                                    | AC164307*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F1331                                                     | 28ML                    |                            |                    |                        |                            |                    |                      |                                        | AC164322*                          |                       | ✓*                  | SW006011*              |                                               |
| PIC18F2220                                                     | 28SP                    | PCM18XH2                   | DVA18XP280         |                        | PMF18WC1                   | DAF18-2            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                   | SW006011               |                                               |
| PIC18F2220                                                     | 28SO                    | PCM18XH2                   | DVA18XP280         | XLT28SO                | PMF18WC1                   | DAF18-2            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                   | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                        |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)    | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                        |                        |                                               |
| PIC18F2221                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4            | ACICE0204            | AC164012*                              | AC164301*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F2221                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4            | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F2221                                                     | 28ML                    | PCM18XN0*                  | DVA18XP280         | XLT28QFN4            | PMF18WH0*                  | DAF18-4            | XLT28QFN4            |                                        | AC164322*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F2320                                                     | 28SP                    | PCM18XH2                   | DVA18XP280         |                      | PMF18WC1                   | DAF18-2            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2320                                                     | 28SO                    | PCM18XH2                   | DVA18XP280         | XLT28SO              | PMF18WC1                   | DAF18-2            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2321                                                     | 28SP                    | PCM18XN0*                  | DVA18XP280         |                      | PMF18WH0*                  | DAF18-4            | ACICE0204            | AC164012*                              | AC164301*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F2321                                                     | 28SO                    | PCM18XN0*                  | DVA18XP280         | XLT28SO              | PMF18WH0*                  | DAF18-4            | XLT28SO              | AC164017*                              | AC164302*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F2321                                                     | 28ML                    | PCM18XN0*                  | DVA18XP280         | XLT28QFN4            | PMF18WH0*                  | DAF18-4            | XLT28QFN4            |                                        | AC164322*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F2331                                                     | 28SP                    | PCM18XL0                   | DVA18XP280         |                      | PMF18WF0                   | DAF18-4            | ACICE0204            | AC164035                               | AC164301                           | ✓*                    | ✓                      | SW006011               | DM183011,<br>DM183021                         |
| PIC18F2331                                                     | 28SO                    | PCM18XL0                   | DVA18XP280         | XLT28SO              | PMF18WF0                   | DAF18-4            | XLT28SO              | AC164036                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2331                                                     | 28MM                    | PCM18XL0                   | DVA18XP280         | XLT28QFN4            | PMF18WF0                   | DAF18-4            | XLT28QFN4            | AC164035<br>+AC164031                  | AC164322                           | AC164031*             | ✓                      | SW006011               |                                               |
| PIC18F2410                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                      | PCM18WH0                   | DAF18-4            | ACICE0204            | AC164035                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2410                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO              | PCM18WH0                   | DAF18-4            | XLT28SO              | AC164036                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2410                                                     | 28ML                    | PCM18XN0                   | DVA18XP280         | XLT28QFN4            | PCM18WH0                   | DAF18-4            | XLT28QFN4            | AC164035<br>+AC164031                  | AC164322                           | AC164031              | ✓                      | SW006011               |                                               |
| PIC18F2420                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                      | PCM18WH0                   | DAF18-4            | ACICE0204            | AC164035                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2420                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO              | PCM18WH0                   | DAF18-4            | XLT28SO              | AC164036                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2420                                                     | 28ML                    | PCM18XN0                   | DVA18XP280         | XLT28QFN4            | PCM18WH0                   | DAF18-4            | XLT28QFN4            | AC164035<br>+AC164031                  | AC164322                           | AC164031              | ✓                      | SW006011               |                                               |
| PIC18F2431                                                     | 28SP                    | PCM18XL0                   | DVA18XP280         |                      | PMF18WF0                   | DAF18-4            | ACICE0204            | AC164035                               | AC164301                           | ✓*                    | ✓                      | SW006011               | DM183011,<br>DM183021                         |
| PIC18F2431                                                     | 28SO                    | PCM18XL0                   | DVA18XP280         | XLT28SO              | PMF18WF0                   | DAF18-4            | XLT28SO              | AC164036                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2431                                                     | 28MM                    | PCM18XL0                   | DVA18XP280         | XLT28QFN4            | PMF18WF0                   | DAF18-4            | XLT28QFN4            | AC164035<br>+AC164031                  | AC164322                           | AC164031*             | ✓                      | SW006011               |                                               |
| PIC18F2439                                                     | 28P                     |                            |                    |                      |                            |                    |                      | AC164012                               |                                    |                       | ✓                      | SW006011               |                                               |
| PIC18F2439                                                     | 28SO                    |                            |                    |                      |                            |                    |                      | AC164017                               |                                    |                       | ✓                      | SW006011               |                                               |
| PIC18F2455                                                     | 28SP                    | PCM18XR0                   | DVA18XP280         |                      | PMF18WL0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | AC162063**             | SW006011               | DM163025                                      |
| PIC18F2455                                                     | 28SO                    | PCM18XR0                   | DVA18XP280         | XLT28SO              | PMF18WL0                   | DAF18-4            | XLT28SO              | AC164036                               | AC164302                           |                       | AC162063**<br>+XLT28SO | SW006011               | DM163025                                      |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                        |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)    | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                        |                        |                                               |
| PIC18F2480                                                     | 28SP                    | PCM18XP0                   | DVA18XP280         |                      | PMF18WJ0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓ *                   | ✓                      | SW006011               | DM163011                                      |
| PIC18F2480                                                     | 28SO                    | PCM18XP0                   | DVA18XP280         | XLT28SO              | PMF18WJ0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2480                                                     | 28MM                    | PCM18XP0                   | DVA18XP280         | XLT28QFN4            | PMF18WJ0                   | DAF18-4            | XLT28QFN4            | AC164012<br>+AC164031                  | AC164322                           | AC164031*             | ✓                      | SW006011               |                                               |
| PIC18F24J10                                                    | 28SP                    |                            |                    |                      |                            |                    |                      |                                        | AC164301*                          |                       | AC162067**             | SW006011               |                                               |
| PIC18F24J10                                                    | 28SO                    |                            |                    |                      |                            |                    |                      |                                        | AC164302*                          |                       | AC162067**<br>+XLT28SO | SW006011               |                                               |
| PIC18F24J10                                                    | 28SS                    |                            |                    |                      |                            |                    |                      |                                        | AC164307*                          |                       | AC162067**<br>+XLT28SS | SW006011               |                                               |
| PIC18F2510                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                      | PMF18WH0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               | DM163022                                      |
| PIC18F2510                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO              | PMF18WH0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2510                                                     | 28ML                    | PCM18XN0                   | DVA18XP280         | XLT28QFN4            | PMF18WH0                   | DAF18-4            | XLT28QFN4            | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓                      | SW006011               |                                               |
| PIC18F2515                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                      | PMF18WH0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2515                                                     | 28SO                    | PCM18XN0                   | DVA18CP280         | XLT28SO              | PMF18WH0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2520                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                      | PMF18WH0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               | DM163022                                      |
| PIC18F2520                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO              | PMF18WH0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2520                                                     | 28ML                    | PCM18XN0                   | DVA18XP280         | XLT28QFN4            | PMF18WH0                   | DAF18-4            | XLT28QFN4            | AC164012<br>+AC164031                  | AC164322                           | AC164031              | ✓                      | SW006011               |                                               |
| PIC18F2525                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                      | PMF18WH0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2525                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO              | PMF18WH0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2539                                                     | 28P                     |                            |                    |                      |                            |                    |                      | AC164012                               |                                    |                       | ✓                      | SW006011               |                                               |
| PIC18F2539                                                     | 28SO                    |                            |                    |                      |                            |                    |                      | AC164017                               |                                    |                       | ✓                      | SW006011               |                                               |
| PIC18F2550                                                     | 28SP                    | PCM18XR0                   | DVA18XP280         |                      | PMF18WL0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓ *                   | AC162063**             | SW006011               | DM163025                                      |
| PIC18F2550                                                     | 28SO                    | PCM18XR0                   | DVA18XP280         | XLT28SO              | PMF18WL0                   | DAF18-4            | XLT28SO              | AC164036                               | AC164302                           |                       | AC162063**<br>+XLT28SO | SW006011               | DM163025                                      |
| PIC18F2580                                                     | 28SP                    | PCM18XP0                   | DVA18XP280         |                      | PMF18WJ0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓ *                   | ✓                      | SW006011               | DM163011                                      |
| PIC18F2580                                                     | 28SO                    | PCM18XP0                   | DVA18XP280         | XLT28SO              | PMF18WJ0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2580                                                     | 28MM                    | PCM18XP0                   | DVA18XP280         | XLT28QFN4            | PMF18WJ0                   | DAF18-4            | XLT28QFN4            | AC164012<br>+AC164031                  | AC164322                           | AC164031*             | ✓                      | SW006011               |                                               |
| PIC18F2585                                                     | 28SP                    | PCM18XP0                   | DVA18XP280         |                      | PMF18WJ0                   | DAF18-4            | ACICE0204            | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               | DM163011                                      |
| PIC18F2585                                                     | 28SO                    | PCM18XP0                   | DVA18XP280         | XLT28SO              | PMF18WJ0                   | DAF18-4            | XLT28SO              | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                        |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)    | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                        |                                        |                                    |                       |                        |                        |                                               |
| PIC18F25J10                                                    | 28SP                    |                            |                    |                        |                            |                    |                        |                                        | AC164301*                          |                       | AC162067**             | SW006011               |                                               |
| PIC18F25J10                                                    | 28SO                    |                            |                    |                        |                            |                    |                        |                                        | AC164302*                          |                       | AC162067**<br>+XLT28SO | SW006011               |                                               |
| PIC18F25J10                                                    | 28SS                    |                            |                    |                        |                            |                    |                        |                                        | AC164307*                          |                       | AC162067**<br>+XLT28SS | SW006011               |                                               |
| PIC18F2610                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                        | PMF18WH0                   | DAF18-4            | ACICE0204              | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2610                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO                | PMF18WH0                   | DAF18-4            | XLT28SO                | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2620                                                     | 28SP                    | PCM18XN0                   | DVA18XP280         |                        | PMF18WH0                   | DAF18-4            | ACICE0204              | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F2620                                                     | 28SO                    | PCM18XN0                   | DVA18XP280         | XLT28SO                | PMF18WH0                   | DAF18-4            | XLT28SO                | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F2680                                                     | 28SP                    | PCM18XP0                   | DVA18XP280         |                        | PMF18WJ0                   | DAF18-4            | ACICE0204              | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               | DM163011                                      |
| PIC18F2680                                                     | 28SO                    | PCM18XP0                   | DVA18XP280         | XLT28SO                | PMF18WJ0                   | DAF18-4            | XLT28SO                | AC164017                               | AC164302                           |                       | ✓                      | SW006011               |                                               |
| PIC18F4220                                                     | 40P                     | PCM18XH2                   | DVA18XP400         |                        | PMF18WC1                   | DAF18-2            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F4220                                                     | 44ML                    | PCM18XH2                   | DVA18XP400         | XLT44QFN2              | PMF18WC1                   | DAF18-2            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                      | SW006011               |                                               |
| PIC18F4220                                                     | 44PT                    | PCM18XH2                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WC1                   | DAF18-3            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                      | SW006011               |                                               |
| PIC18F4221                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                        | PMF18WH0*                  | DAF18-4            | ACICE0206              | AC164012*                              | AC164301*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F4221                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WH0*                  | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020*                              | AC164305*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F4221                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN2              | PMF18WH0*                  | DAF18-4            | XLT44QFN2              |                                        | AC164322*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F4320                                                     | 40P                     | PCM18XH2                   | DVA18XP400         |                        | PMF18WC1                   | DAF18-2            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                      | SW006011               |                                               |
| PIC18F4320                                                     | 44ML                    | PCM18XH2                   | DVA18XP400         | XLT44QFN2              | PMF18WC1                   | DAF18-2            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                      | SW006011               |                                               |
| PIC18F4320                                                     | 44PT                    | PCM18XH2                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WC1                   | DAF18-3            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                      | SW006011               |                                               |
| PIC18F4321                                                     | 40P                     | PCM18XN0*                  | DVA18XP400         |                        | PMF18WH0*                  | DAF18-4            | ACICE0206              | AC164012*                              | AC164301*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F4321                                                     | 44PT                    | PCM18XN0*                  | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WH0*                  | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020*                              | AC164305*                          |                       | ✓*                     | SW006011*              |                                               |
| PIC18F4321                                                     | 44ML                    | PCM18XN0*                  | DVA18XP400         | XLT44QFN2              | PMF18WH0*                  | DAF18-4            | XLT44QFN2              |                                        | AC164322*                          |                       | ✓*                     | SW006011*              |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                                       |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)                   | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                        |                                        |                                    |                       |                                       |                        |                                               |
| PIC18F4331                                                     | 40P                     | PCM18XL0                   | DVA18XP400         |                        | PMF18WF0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM183011                                      |
| PIC18F4331                                                     | 44PT                    | PCM18XL0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WF0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4331                                                     | 44ML                    | PCM18XL0                   | DVA18XP400         | XLT44QFN2              | PMF18WF0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4410                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                        | PCM18WH0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               |                                               |
| PIC18F4410                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PCM18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4410                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2              | PCM18WH0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4420                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                        | PCM18WH0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               |                                               |
| PIC18F4420                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PCM18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4420                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2              | PCM18WH0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4431                                                     | 40P                     | PCM18XL0                   | DVA18XP400         |                        | PMF18WF0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM183011                                      |
| PIC18F4431                                                     | 44PT                    | PCM18XL0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WF0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4431                                                     | 44ML                    | PCM18XL0                   | DVA18XP400         | XLT44QFN2              | PMF18WF0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4439                                                     | 40P                     |                            |                    |                        |                            |                    |                        | AC164012                               |                                    |                       | ✓                                     | SW006011               |                                               |
| PIC18F4439                                                     | 44ML                    |                            |                    |                        |                            |                    |                        | AC164012<br>+AC164034                  |                                    |                       | ✓                                     | SW006011               |                                               |
| PIC18F4439                                                     | 44PT                    |                            |                    |                        |                            |                    |                        | AC164020                               |                                    |                       | ✓                                     | SW006011               |                                               |
| PIC18F4455                                                     | 40P                     | PCM18XR0                   | DVA18XP400         |                        | PMF18WL0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | AC162063**                            | SW006011               | DM163025                                      |
| PIC18F4455                                                     | 44ML                    | PCM18XR0                   | DVA18XP400         | XLT44QFN2              | PMF18WL0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | AC162063**<br>+XLT44QFN2              | SW006011               | DM163025                                      |
| PIC18F4455                                                     | 44PT                    | PCM18XR0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WL0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | AC162063**<br>+XLT44PT or<br>XLT44PT3 | SW006011               | DM163025                                      |
| PIC18F4480                                                     | 40P                     | PCM18XP0                   | DVA18XP400         |                        | PMF18WJ0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓*                    | ✓                                     | SW006011               | DM163011                                      |
| PIC18F4480                                                     | 44PT                    | PCM18XP0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WJ0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4480                                                     | 44ML                    | PCM18XP0                   | DVA18XP400         | XLT44QFN2              | PMF18WJ0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034*             | ✓                                     | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                                       |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)                   | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                        |                                        |                                    |                       |                                       |                        |                                               |
| PIC18F44J10                                                    | 40P                     |                            |                    |                        |                            |                    |                        |                                        | AC164301*                          |                       | AC162067**                            | SW006011               |                                               |
| PIC18F44J10                                                    | 44PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164305*                          |                       | AC162067**<br>+XLT44PT or<br>XLT44PT3 | SW006011               |                                               |
| PIC18F44J10                                                    | 44ML                    |                            |                    |                        |                            |                    |                        |                                        | AC164322*                          |                       | AC162067**<br>+XLT44QFN2              | SW006011               |                                               |
| PIC18F4510                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                        | PMF18WH0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM163022                                      |
| PIC18F4510                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4510                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2              | PMF18WH0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4515                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                        | PMF18WH0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               |                                               |
| PIC18F4515                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4515                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2              | PMF18WH0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4520                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                        | PMF18WH0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM163022                                      |
| PIC18F4520                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4520                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2              | PMF18WH0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4525                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                        | PMF18WH0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               |                                               |
| PIC18F4525                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4525                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2              | PMF18WH0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4539                                                     | 40P                     |                            |                    |                        |                            |                    |                        | AC164012                               |                                    |                       | ✓                                     | SW006011               |                                               |
| PIC18F4539                                                     | 44ML                    |                            |                    |                        |                            |                    |                        | AC164012<br>+AC164034                  |                                    |                       | ✓                                     | SW006011               |                                               |
| PIC18F4539                                                     | 44PT                    |                            |                    |                        |                            |                    |                        | AC164020                               |                                    |                       | ✓                                     | SW006011               |                                               |
| PIC18F4550                                                     | 40P                     | PCM18XR0                   | DVA18XP400         |                        | PMF18WL0                   | DAF18-4            | ACICE0206              | AC164012                               | AC164301                           | ✓ *                   | AC162063**                            | SW006011               | DM163025                                      |
| PIC18F4550                                                     | 44ML                    | PCM18XR0                   | DVA18XP400         | XLT44QFN2              | PMF18WL0                   | DAF18-4            | XLT44QFN2              | AC164012<br>+AC164034                  | AC164322                           | AC164034*             | AC162063**<br>+XLT44QFN2              | SW006011               | DM163025                                      |
| PIC18F4550                                                     | 44PT                    | PCM18XR0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3 | PMF18WL0                   | DAF18-5            | XLT44PT or<br>XLT44PT3 | AC164020                               | AC164305                           |                       | AC162063**<br>+XLT44PT or<br>XLT44PT3 | SW006011               | DM163025                                      |

**NOTE:** See complete list of notes on page 94.



**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                         | MPLAB® ICE 4000 System (2) |                    |                         |                                        |                                    |                       |                                       |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|-------------------------|----------------------------|--------------------|-------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6)                   | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                         |                            |                    |                         |                                        |                                    |                       |                                       |                        |                                               |
| PIC18F4580                                                     | 40P                     | PCM18XP0                   | DVA18XP400         |                         | PMF18WJ0                   | DAF18-4            | ACICE0206               | AC164012                               | AC164301                           | ✓*                    | ✓                                     | SW006011               | DM163011                                      |
| PIC18F4580                                                     | 44PT                    | PCM18XP0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3  | PMF18WJ0                   | DAF18-5            | XLT44PT or<br>XLT44PT3  | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4580                                                     | 44ML                    | PCM18XP0                   | DVA18XP400         | XLT44QFN2               | PMF18WJ0                   | DAF18-4            | XLT44QFN2               | AC164012<br>+AC164034                  | AC164322                           | AC164034*             | ✓                                     | SW006011               |                                               |
| PIC18F4585                                                     | 40P                     | PCM18XP0                   | DVA18XP400         |                         | PMF18WJ0                   | DAF18-4            | ACICE0206               | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM163011                                      |
| PIC18F4585                                                     | 44PT                    | PCM18XP0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3  | PMF18WJ0                   | DAF18-5            | XLT44PT or<br>XLT44PT3  | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4585                                                     | 44ML                    | PCM18XP0                   | DVA18XP400         | XLT44QFN2               | PMF18WJ0                   | DAF18-4            | XLT44QFN2               | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F45J10                                                    | 40P                     |                            |                    |                         |                            |                    |                         |                                        | AC164301*                          |                       | AC162067**                            | SW006011               |                                               |
| PIC18F45J10                                                    | 44PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164305*                          |                       | AC162067**<br>+XLT44PT or<br>XLT44PT3 | SW006011               |                                               |
| PIC18F45J10                                                    | 44ML                    |                            |                    |                         |                            |                    |                         |                                        | AC164322*                          |                       | AC162067**<br>+XLT44QFN2              | SW006011               |                                               |
| PIC18F4610                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                         | PMF18WH0                   | DAF18-4            | ACICE0206               | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               |                                               |
| PIC18F4610                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3  | PMF18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3  | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4610                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2               | PMF18WH0                   | DAF18-4            | XLT44QFN2               | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4620                                                     | 40P                     | PCM18XN0                   | DVA18XP400         |                         | PMF18WH0                   | DAF18-4            | ACICE0206               | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM163026,<br>DM163027-2                       |
| PIC18F4620                                                     | 44PT                    | PCM18XN0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3  | PMF18WH0                   | DAF18-5            | XLT44PT or<br>XLT44PT3  | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4620                                                     | 44ML                    | PCM18XN0                   | DVA18XP400         | XLT44QFN2               | PMF18WH0                   | DAF18-4            | XLT44QFN2               | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F4680                                                     | 40P                     | PCM18XP0                   | DVA18XP400         |                         | PMF18WJ0                   | DAF18-4            | ACICE0206               | AC164012                               | AC164301                           | ✓                     | ✓                                     | SW006011               | DM163011                                      |
| PIC18F4680                                                     | 44PT                    | PCM18XP0                   | DVA18PQ440         | XLT44PT or<br>XLT44PT3  | PMF18WJ0                   | DAF18-5            | XLT44PT or<br>XLT44PT3  | AC164020                               | AC164305                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F4680                                                     | 44ML                    | PCM18XP0                   | DVA18XP400         | XLT44QFN2               | PMF18WJ0                   | DAF18-4            | XLT44QFN2               | AC164012<br>+AC164034                  | AC164322                           | AC164034              | ✓                                     | SW006011               |                                               |
| PIC18F6310                                                     | 64PT                    | PCM18XQ0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WK0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                                     | SW006011               |                                               |
| PIC18F6390                                                     | 64PT                    | PCM18XQ0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WK0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                                     | SW006011               | DM163028                                      |
| PIC18F6410                                                     | 64PT                    | PCM18XQ0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WK0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                                     | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                         | MPLAB® ICE 4000 System (2) |                    |                         |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|-------------------------|----------------------------|--------------------|-------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                         |                            |                    |                         |                                        |                                    |                       |                     |                        |                                               |
| PIC18F6490                                                     | 64PT                    | PCM18XQ0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WK0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM163028                                      |
| PIC18F6520                                                     | 64PT                    | PCM18XE1                   | DVA18PQ640         | XLT64PT2 or<br>XLT64PT5 | PMF18WA2                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM183022                                      |
| PIC18F6525                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2 or<br>XLT64PT5 | PMF18WE0                   | DAF18-1            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6527                                                     | 64PT                    | PCM18XS0*                  | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WS0*                  | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008*                              | AC164303*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F6585                                                     | 68L                     | PCM18XK0                   | DVA18PQ802         | XLT68L1                 | PMF18WE0                   | DAF18-1            | XLT68L1                 | AC174007                               | AC164308                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6585                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2 or<br>XLT64PT5 | PMF18WE0                   | DAF18-1            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM163015                                      |
| PIC18F65J10                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F65J15                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F6620                                                     | 64PT                    | PCM18XE1                   | DVA18PQ640         | XLT64PT2 or<br>XLT64PT5 | PMF18WA2                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           | ✓ (7)*                | ✓                   | SW006011               | DM183022                                      |
| PIC18F6621                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2 or<br>XLT64PT5 | PMF18WE0                   | DAF18-1            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6622                                                     | 64PT                    | PCM18XS0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WS0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008*                              | AC164303*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F6627                                                     | 64PT                    | PCM18XS0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WS0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM183022                                      |
| PIC18F6680                                                     | 68L                     | PCM18XK0                   | DVA18PQ802         | XLT68L1                 | PMF18WE0                   | DAF18-1            | XLT68L1                 | AC174007                               | AC164308                           |                       | ✓                   | SW006011               |                                               |
| PIC18F6680                                                     | 64PT                    | PCM18XK0                   | DVA18PQ802         | XLT64PT2 or<br>XLT64PT5 | PMF18WE0                   | DAF18-1            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM163015                                      |
| PIC18F66J10                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F66J15                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F66J60                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F66J65                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F6720                                                     | 64PT                    | PCM18XE1                   | DVA18PQ640         | XLT64PT2 or<br>XLT64PT5 | PMF18WA2                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           | ✓ (7)*                | ✓                   | SW006011               | DM183022                                      |
| PIC18F6722                                                     | 64PT                    | PCM18XS0                   | DVA1003            | XLT64PT2 or<br>XLT64PT5 | PMF18WS0                   | DAF18-6            | XLT64PT2 or<br>XLT64PT5 | AC174008                               | AC164303                           |                       | ✓                   | SW006011               | DM183022                                      |
| PIC18F67J10                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F67J60                                                    | 64PT                    |                            |                    |                         |                            |                    |                         |                                        | AC164327**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F8310                                                     | 80PT                    | PCM18XQ0                   | DVA1003            | XLT80PT or<br>XLT80PT3  | PMF18WK0                   | DAF18-6            | XLT80PT or<br>XLT80PT3  | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                        | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|------------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                        |                            |                    |                        |                                        |                                    |                       |                     |                        |                                               |
| PIC18F8390                                                     | 80PT                    | PCM18XQ0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WK0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM163028                                      |
| PIC18F8410                                                     | 80PT                    | PCM18XQ0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WK0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8490                                                     | 80PT                    | PCM18XQ0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WK0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM163028                                      |
| PIC18F8520                                                     | 80PT                    | PCM18XE1                   | DVA18PQ800         | XLT80PT or<br>XLT80PT3 | PMF18WA2                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM183022                                      |
| PIC18F8525                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT or<br>XLT80PT3 | PMF18WE0                   | DAF18-1            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8527                                                     | 80PT                    | PCM18XS0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WS0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011*                              | AC164304*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F8585                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT or<br>XLT80PT3 | PMF18WE0                   | DAF18-1            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM163015                                      |
| PIC18F85J10                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F85J15                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F8620                                                     | 80PT                    | PCM18XE1                   | DVA18PQ800         | XLT80PT or<br>XLT80PT3 | PMF18WA2                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           | ✓ (7)                 | ✓                   | SW006011               | DM183022                                      |
| PIC18F8621                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT or<br>XLT80PT3 | PMF18WE0                   | DAF18-1            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               |                                               |
| PIC18F8622                                                     | 80PT                    | PCM18XS0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WS0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011*                              | AC164304*                          |                       | ✓*                  | SW006011               |                                               |
| PIC18F8627                                                     | 80PT                    | PCM18XS0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WS0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM183022                                      |
| PIC18F8680                                                     | 80PT                    | PCM18XK0                   | DVA18PQ802         | XLT80PT or<br>XLT80PT3 | PMF18WE0                   | DAF18-1            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM163015                                      |
| PIC18F86J10                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F86J15                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F86J60                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F86J65                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F8720                                                     | 80PT                    | PCM18XE1                   | DVA18PQ800         | XLT80PT or<br>XLT80PT3 | PMF18WA2                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           | ✓ (7)                 | ✓                   | SW006011               | DM183022                                      |
| PIC18F8722                                                     | 80PT                    | PCM18XS0                   | DVA1003            | XLT80PT or<br>XLT80PT3 | PMF18WS0                   | DAF18-6            | XLT80PT or<br>XLT80PT3 | AC174011                               | AC164304                           |                       | ✓                   | SW006011               | DM183022                                      |
| PIC18F87J10                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162062** (9)      | SW006011               | DM183022                                      |
| PIC18F87J60                                                    | 80PT                    |                            |                    |                        |                            |                    |                        |                                        | AC164328**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F96J60                                                    | 100PT                   |                            |                    |                        |                            |                    |                        |                                        | AC164323**                         |                       | AC162064**          | SW006011*              |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                                |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|----------------------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                                    | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>PICmicro® Microcontroller Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| PIC18F96J65                                                    | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | AC164323**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC18F97J60                                                    | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | AC164323**                         |                       | AC162064**          | SW006011*              |                                               |
| PIC24FJ64GA006                                                 | 64PT                    |                            |                    |                      |                            |                    |                      |                                        | AC164327**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ64GA008                                                 | 80PT                    |                            |                    |                      |                            |                    |                      |                                        | AC164328**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ64GA010                                                 | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | AC164323**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ96GA006                                                 | 64PT                    |                            |                    |                      |                            |                    |                      |                                        | AC164327**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ96GA008                                                 | 80PT                    |                            |                    |                      |                            |                    |                      |                                        | AC164328**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ96GA010                                                 | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | AC164323**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ128GA006                                                | 64PT                    |                            |                    |                      |                            |                    |                      |                                        | AC164327**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ128GA008                                                | 80PT                    |                            |                    |                      |                            |                    |                      |                                        | AC164328**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| PIC24FJ128GA010                                                | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | AC164323**                         |                       | AC162065**          | SW006012*              | DM240001**                                    |
| <b>rfPIC® Microcontroller Development Tools</b>                |                         |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |
| rfPIC12C509AF                                                  | 20JW                    | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓                     |                     |                        |                                               |
| rfPIC12C509AF                                                  | 20SS                    | PCM16XA0                   | DVA12XP080         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓                     |                     |                        |                                               |
| rfPIC12C509AG                                                  | 18JW                    | PCM16XA0                   | DVA12XP080         |                      |                            |                    |                      | AC124001                               | AC164301                           | ✓ (7)                 |                     |                        |                                               |
| rfPIC12C509AG                                                  | 18SO                    | PCM16XA0                   | DVA12XP080         | XLT18SO              |                            |                    |                      | AC124002                               | AC164302                           | ✓ (7)                 |                     |                        |                                               |
| rfPIC12F675F                                                   | 20SS                    | PCM12XB0                   | DVA12XP081         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓ (7)*                |                     |                        | DV164102<br>AC164101<br>AC164103              |
| rfPIC12F675H                                                   | 20SS                    | PCM12XB0                   | DVA12XP081         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓ (7)*                |                     |                        |                                               |
| rfPIC12F675K                                                   | 20SS                    | PCM12XB0                   | DVA12XP081         | XLT20SS              |                            |                    |                      | AC124002                               | AC164307                           | ✓ (7)*                |                     |                        | DV164102<br>AC164102<br>AC164104              |
| rfRXD0420                                                      | 32LQ                    |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        | DV164102                                      |
| rfRXD0920                                                      | 32LQ                    |                            |                    |                      |                            |                    |                      |                                        |                                    |                       |                     |                        |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                     |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                     |                        |                                               |
|-------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                         | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>dsPIC® DSC Development Tools</b> |                         |                            |                    |                      |                            |                    |                        |                                        |                                    |                       |                     |                        |                                               |
| dsPIC30F2010                        | 28SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28SO                | AC30F004                               | AC164302                           |                       | ✓                   | SW006012               | DM300017                                      |
| dsPIC30F2010                        | 28SP                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0204              | AC30F004                               | AC164301                           |                       | ✓                   | SW006012               | DM300017<br>DM300018                          |
| dsPIC30F2010                        | 28MM                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28QFN4              |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F2011                        | 18SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT18SO                | AC30F005                               | AC164302                           |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F2011                        | 18P                     |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0202              | AC30F005                               | AC164301                           |                       | ✓*                  | SW006012               | DM300018                                      |
| dsPIC30F2011                        | 28ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            |                        |                                        | AC164322                           |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F2012                        | 28SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28SO                | AC30F004                               | AC164302                           |                       | ✓*                  | SW006012               | DM300017                                      |
| dsPIC30F2012                        | 28SP                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0204              | AC30F004                               | AC164301                           |                       | ✓*                  | SW006012               | DM300017,<br>DM300018                         |
| dsPIC30F2012                        | 28ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28QFN4              |                                        | AC164322                           |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F3010                        | 28SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28SO                | AC30F004                               | AC164302                           |                       | ✓                   | SW006012               | DM300017                                      |
| dsPIC30F3010                        | 28SP                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0204              | AC30F004                               | AC164301                           |                       | ✓                   | SW006012               | DM300017,<br>DM300018                         |
| dsPIC30F3010                        | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN4              |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3011                        | 40P                     |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0206              | AC30F003                               | AC164301                           |                       | ✓                   | SW006012               | DM30018                                       |
| dsPIC30F3011                        | 44PT                    |                            |                    |                      | PMF30XA1                   | DAF30-3            | XLT44PT or<br>XLT44PT3 | AC30F006                               | AC164305                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3011                        | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN2              |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3012                        | 18SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT18SO                |                                        | AC164302                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3012                        | 18P                     |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0202              |                                        | AC164301                           |                       | ✓                   | SW006012               | DM300018                                      |
| dsPIC30F3012                        | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN5*             |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3013                        | 28SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28SO                | AC30F004                               | AC164302                           |                       | ✓                   | SW006012               | DM300017                                      |
| dsPIC30F3013                        | 28SP                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0204              | AC30F004                               | AC164301                           |                       | ✓                   | SW006012               | DM300017,<br>DM300018*                        |
| dsPIC30F3013                        | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN3*             |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3014                        | 40P                     |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0206              | AC30F003                               | AC164301                           |                       | ✓                   | SW006012               | DM300018                                      |
| dsPIC30F3014                        | 44PT                    |                            |                    |                      | PMF30XA1                   | DAF30-3            | XLT44PT or<br>XLT44PT3 | AC30F006                               | AC164305                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F3014                        | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN2              |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F4011                        | 40P                     |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0206              | AC30F003                               | AC164301                           |                       | ✓                   | SW006012               | DM300018                                      |
| dsPIC30F4011                        | 44PT                    |                            |                    |                      | PMF30XA1                   | DAF30-3            | XLT44PT or<br>XLT44PT3 | AC30F006                               | AC164305                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F4011                        | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN2              |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                 |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                         |                                        |                                    |                       |                     |                        |                                               |
|-------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|-------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                     | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket    | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>dsPIC® DSC Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                         |                                        |                                    |                       |                     |                        |                                               |
| dsPIC30F4012                                    | 28SO                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT28SO                 | AC30F004                               | AC164302                           |                       | ✓                   | SW006012               | DM300017                                      |
| dsPIC30F4012                                    | 28SP                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0204               | AC30F004                               | AC164301                           |                       | ✓                   | SW006012               | DM300017,<br>DM300018                         |
| dsPIC30F4012                                    | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN4               |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F4013                                    | 40P                     |                            |                    |                      | PMF30XA1                   | DAF30-4            | ACICE0206               | AC30F003                               | AC164301                           |                       | ✓                   | SW006012               | DM300018                                      |
| dsPIC30F4013                                    | 44PT                    |                            |                    |                      | PMF30XA1                   | DAF30-3            | XLT44PT or<br>XLT44PT3  | AC30F006                               | AC164305                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F4013                                    | 44ML                    |                            |                    |                      | PMF30XA1                   | DAF30-4            | XLT44QFN2               |                                        | AC164322                           |                       | ✓                   | SW006012               |                                               |
| dsPIC30F5011                                    | 64PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT2 or<br>XLT64PT5 | AC30F008                               | AC164319                           |                       | ✓                   | SW006012               | DM300016                                      |
| dsPIC30F5013                                    | 80PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT or<br>XLT80PT3  | AC30F007                               | AC164320                           |                       | ✓                   | SW006012               | DM300014,<br>DM300004-1,<br>DM300004-2        |
| dsPIC30F5015                                    | 64PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT2 or<br>XLT64PT5 | AC30F008*                              | AC164319*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F5016                                    | 80PT                    |                            |                    |                      | PMF30XA1                   | TBD                | TBD                     |                                        | AC164320*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F6010                                    | 80PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT2                | AC30F001                               | AC164314                           |                       | ✓                   | SW006012               | DM300020                                      |
| dsPIC30F6010A                                   | 80PF                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT80PT2                |                                        | AC164314*                          |                       | ✓*                  | SW006012               | DM300020                                      |
| dsPIC30F6010A                                   | 80PT                    |                            |                    |                      | PMF30XA1*                  | DAF30-2            | XLT80PT or<br>XLT80PT3  | AC30F007*                              | AC164320*                          |                       | ✓*                  | SW006012               | DM300020                                      |
| dsPIC30F6011                                    | 64PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT3 or<br>XLT64PT4 | AC30F002                               | AC164313                           |                       | ✓                   | SW006012               | DM300016                                      |
| dsPIC30F6011A                                   | 64PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT3 or<br>XLT64PT4 | AC30F008*                              | AC164313*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F6011A                                   | 64PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT2 or<br>XLT64PT5 | AC30F008*                              | AC164319*                          |                       | ✓*                  | SW006012               | DM300016                                      |
| dsPIC30F6012                                    | 64PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT3 or<br>XLT64PT4 | AC30F002                               | AC164313                           |                       | ✓                   | SW006012               | DM300016                                      |
| dsPIC30F6012A                                   | 64PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT3 or<br>XLT64PT4 | AC30F002*                              | AC164313*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F6012A                                   | 64PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT64PT2 or<br>XLT64PT5 | AC30F008*                              | AC164319*                          |                       | ✓*                  | SW006012               | DM300016                                      |
| dsPIC30F6013                                    | 80PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT2                | AC30F001                               | AC164314                           |                       | ✓                   | SW006012               | DM300014                                      |
| dsPIC30F6013A                                   | 80PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT2                | AC30F001*                              | AC164314*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F6013A                                   | 80PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT or<br>XLT80PT3  | AC30F007*                              | AC164320*                          |                       | ✓*                  | SW006012               | DM300014                                      |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                                                 |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                        |                                        |                                    |                       |                     |                        |                                               |
|-------------------------------------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|------------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number                                     | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket   | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| <b>dsPIC® DSC Development Tools (continued)</b> |                         |                            |                    |                      |                            |                    |                        |                                        |                                    |                       |                     |                        |                                               |
| dsPIC30F6014                                    | 80PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT2               | AC30F001                               | AC164314                           |                       | ✓                   | SW006012               | DM300014,<br>DM300004-1,<br>DM300004-2        |
| dsPIC30F6014A                                   | 80PF                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT2               | AC30F001*                              | AC164314*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC30F6014A                                   | 80PT                    |                            |                    |                      | PMF30XA1                   | DAF30-2            | XLT80PT or<br>XLT80PT3 | AC30F007*                              | AC164320*                          |                       | ✓*                  | SW006012               | DM300014,<br>DM300004-1,<br>DM300004-2        |
| dsPIC30F6015                                    | 64PT                    |                            |                    |                      | TBD                        | TBD                | TBD                    |                                        | AC164319*                          |                       | ✓*                  | SW006012               |                                               |
| dsPIC33FJ64GP206                                | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ64GP306                                | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ64GP310                                | 100PT                   |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ64GP706                                | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ64GP708                                | 80PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ64GP710                                | 100PT                   |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ128GP206                               | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ128GP306                               | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ128GP310                               | 100PT                   |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ128GP706                               | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ128GP708                               | 80PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ128GP710                               | 100PT                   |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ256GP506                               | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ256GP510                               | 100PT                   |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ256GP710                               | 100PT                   |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              | DM240001**,<br>DM300019**                     |
| dsPIC33FJ64MC506                                | 64PT                    |                            |                    |                      |                            |                    |                        |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |

**NOTE:** See complete list of notes on page 94.

**MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards (continued)**

|                   |                         | MPLAB® ICE 2000 System (1) |                    |                      | MPLAB® ICE 4000 System (2) |                    |                      |                                        |                                    |                       |                     |                        |                                               |
|-------------------|-------------------------|----------------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|----------------------------------------|------------------------------------|-----------------------|---------------------|------------------------|-----------------------------------------------|
| Part Number       | Lead Count/<br>Pkg Type | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | Processor<br>Module        | Device<br>Adapters | Transition<br>Socket | PRO MATE® II<br>Socket<br>Module (3,4) | MPLAB® PM3<br>Socket<br>Module (8) | PICSTART®<br>Plus (5) | MPLAB® ICD 2<br>(6) | MPLAB® CXX<br>Compiler | Demonstration<br>Boards or<br>Evaluation Kits |
| dsPIC33FJ64MC508  | 80PT                    |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ64MC510  | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ64MC706  | 64PT                    |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ64MC710  | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ128MC506 | 64PT                    |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ128MC510 | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ128MC706 | 64PT                    |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ128MC708 | 80PT                    |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ128MC710 | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ256MC510 | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |
| dsPIC33FJ256MC710 | 100PT                   |                            |                    |                      |                            |                    |                      |                                        | TBD                                |                       | ✓*                  | SW006012*              |                                               |

**NOTE:** See complete list of notes on page 94.

**NOTES - MPLAB® ICE 2000 and MPLAB® ICE 4000 Emulator Systems, PRO MATE® II Programmer Socket Modules, MPLAB® In-Circuit Debugger, Software Tools, Programmers and Demonstration Boards**

- NOTES**
- 1: MPLAB® ICE 2000 pod available separately. (ICE2000)
  - 2: MPLAB® ICE 4000 pod available separately. (ICE4000)
  - 3: PRO MATE® II Programmer unit (no longer available). (DV007003)
  - 4: Optional In-Circuit Serial Programming™ (ICSP™) Socket for PRO MATE® II available separately. (AC004004)
  - 5: PICSTART® Plus (DV003001)
  - 6: MPLAB® ICD 2 In-Circuit Debugger. Configurations are:  
(DV164005) ICD 2 module, USB cable and ICD cable.  
(DV164006) ICD 2 module, USB cable, ICD cable, serial cable, PICDEM™ 2 Plus and power supply.  
(DV164007) ICD 2 module, USB cable, ICD cable, serial cable and power supply;  
(DV164030) ICD 2 module, USB cable, ICD cable, serial cable and dsPICDEM™ Starter Demo Board;  
(AC162049) ICD 2 Universal Programming Module;  
(AC162051) ICD or ICD 2 28/40 PDIP Header Interface Board.
  - 7: Custom adapter required; not available from Microchip. See "Readme" for PICSTART® Plus.
  - 8: MPLAB® PM3 Programmer Unit available separately. (DV007004). ICSP™ function is built-in with MPLAB® PM3 Programmer.  
(AC164350) MPLAB® PM3 Adapter for PRO MATE® II Socket modules.
  - 9: Supported natively by ICD 2, but ICD 2 header gives user access to I/O pins RB6 and RB7.

\* Future support. Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

\*\* New/Future product. Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

✓ Supported with basic configuration. If a part number is listed in the column, that part is required and available separately.



| Demonstration Boards and Evaluation Kits |                                                                                                                                      |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Part Number                              | Description                                                                                                                          |
| <b>PICmicro® Demonstration Kits</b>      |                                                                                                                                      |
| DM163001                                 | PICDEM™ 1 Demo Board for PIC16C5X, 55X, 62X, CE62X, 71, 710, 711, 715, 770, 771, 83, 84, and PIC17C42, 43, 44                        |
| DM163003                                 | PICDEM™ 3 Demo Board for PIC16C923, 924 LCD                                                                                          |
| DM163006                                 | PICDEM™ 18R Demo Board for PIC18C601/801                                                                                             |
| DM163014                                 | PICDEM™ 4 Demo Board for PIC12F629, 675, PIC16F630, 676, 684, 627A, 628A, 648A, 818, 819, 87, 88, PIC18F1220, 1320                   |
| DM163022                                 | PICDEM™ 2 Plus Demo Board for PIC16C62, 63, 64, 65, 66, 67, 72, 73, 74, 76, 77, 87X, 773, 774 and PIC18CXX2, 642, 662, and PIC18FXXX |
| DM163026                                 | Low-Power Solutions Demo Board                                                                                                       |
| DM163028                                 | PICDEM™ LCD Demo Board (uses 64L/80L PIC18FXX90 and 28L/40L PIC16F91X family)                                                        |
| DM163029                                 | PICDEM™ Mechatronics Demo Board                                                                                                      |
| DV164101                                 | PICkit™ 1 8/14P Flash Development Kit for PIC12F629, 675 and PIC16F630, 676                                                          |
| DV164102                                 | rfPIC® Development Kit 1                                                                                                             |
| DV164120                                 | PICkit™ 2 Starter Kit                                                                                                                |
| PG164120                                 | PICkit™ 2 Microcontroller Programmer                                                                                                 |
| AC164101                                 | rfPIC® Transmitter Module (433.92 MHz)                                                                                               |
| AC164102                                 | rfPIC® Transmitter Module (315 MHz)                                                                                                  |
| AC164103                                 | rfRXD Receiver Module (433.92 MHz)                                                                                                   |
| AC164104                                 | rfRXD Receiver Module (315 MHz)                                                                                                      |
| AC164120                                 | Signal Analysis PICtail™ Daughter Board                                                                                              |
| AC163020                                 | PIC10F2XX Programmer Adapter                                                                                                         |
| AC163021                                 | 6L SOT-23 to 8P DIP Adapter Kit                                                                                                      |
| DM173001                                 | PICDEM™ 17 Demo Board for PIC17CXX                                                                                                   |
| DM183011                                 | PICDEM™ MC Development Board (uses 28L/40L PIC18FXX31 family)                                                                        |
| DM183021                                 | PICDEM™ MC LV Development Board (uses 28L PIC18F2331, 2431, dsPIC30F family)                                                         |
| DM183022                                 | PICDEM™ HPC Explorer Board                                                                                                           |
| DM240001**                               | Explorer 16 Demo Board                                                                                                               |
| <b>Connectivity Demonstration Kits</b>   |                                                                                                                                      |
| DM163004-LT                              | PICDEM.net™ TCP/IP Demo Board (with no text book)                                                                                    |
| DM163005                                 | PICDEM™ LIN Demo Board for PIC16C432/433 LIN bus                                                                                     |
| DM163007                                 | PICDEM™ CAN-LIN 1 Demo Board (uses 68L/84L PIC18CXX8 family)                                                                         |
| DM163010                                 | PICDEM™ USB Demo Board for PIC16C7X5                                                                                                 |
| DM163011                                 | PICDEM™ CAN-LIN 2 Demo Board (uses 28L/40L PIC18FXX8 and PIC18FXX8X family)                                                          |
| DM163015                                 | PICDEM™ CAN-LIN 3 Demo Board (uses 64L/80L PIC18FXX8X family)                                                                        |
| DM163025                                 | PICDEM™ FS USB Demo Board                                                                                                            |
| DM163027-2                               | PICDEM™ Z 2.4 GHz Demonstration Kit                                                                                                  |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

## Demonstration Boards and Evaluation Kits

| Part Number                                                | Description                                                                                                       |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Connectivity Demonstration Kits (continued)</b>         |                                                                                                                   |
| AC163027-1                                                 | PICDEM™ Z Motherboard                                                                                             |
| AC163027-2                                                 | PICDEM™ Z 2.4 GHz RF Card                                                                                         |
| <b>Mixed Signal Control Demonstration Kits</b>             |                                                                                                                   |
| AC163001                                                   | PICDEM™ MSC 1 Voltage Boost Demo Board; requires DM163012                                                         |
| AC163002                                                   | PICDEM™ MSC 1 High Power IR Demo Board; requires DM163012                                                         |
| AC163003                                                   | PICDEM™ MSC 1 Delta Sigma Demo Board; requires DM163012                                                           |
| AC163004                                                   | PICDEM™ MSC 1 Flow Rate Sensor Demo Board; requires DM163012                                                      |
| DM163012                                                   | PICDEM™ MSC 1 Mixed Signal Controller Demo Board for PIC16C781/782                                                |
| <b>dsPIC® Digital Signal Controller Demonstration Kits</b> |                                                                                                                   |
| DM183021                                                   | PICDEM™ MC LV Development Board (uses 28L PIC18F2331/2431, dsPIC30F family)                                       |
| DM240001**                                                 | Explorer 16 Demo Board                                                                                            |
| DM300004-1                                                 | dsPICDEM.net™ 1 FCC/JATE PSTN Support, Ethernet NIC Development Board                                             |
| DM300004-2                                                 | dsPICDEM.net™ 2 CTR-21 PSTN Support, Ethernet NIC Development Board                                               |
| DM300014                                                   | dsPICDEM™ 1.1 General Purpose Development Board                                                                   |
| DM300016                                                   | dsPICDEM™ 64-Pin Starter Development Board                                                                        |
| DM300017                                                   | dsPICDEM™ 28-Pin Starter Development Board                                                                        |
| DM300018                                                   | dsPICDEM™ 2 Development Board                                                                                     |
| DM300019**                                                 | dsPICDEM 80-Pin Starter Development Board                                                                         |
| DM300020                                                   | dsPICDEM™ MC1 Motor Control Development Board                                                                     |
| DM300021                                                   | dsPICDEM™ MC1H 3-Phase High Voltage Power Module                                                                  |
| DM300022                                                   | dsPICDEM™ MC1L 3-Phase Low Voltage Power Module                                                                   |
| <b>dsPIC® 16-bit DSC Software Tools</b>                    |                                                                                                                   |
| SW300001                                                   | Digital Filter Design                                                                                             |
| SW300002                                                   | dsPIC® V.22/V.22bis Soft Modem Library (free download: <a href="http://www.microchip.com">www.microchip.com</a> ) |
| SW300003-EVAL                                              | dsPIC® V.32 Soft Modem Library (Eval Copy)                                                                        |
| SW300003, 04, 05                                           | dsPIC® V.32 Soft Modem Library (5K, 25K, 100K licenses, respectively)                                             |
| SW300006                                                   | dsPIC® V.22/V.22bis Soft Modem Library by Vocal Technology                                                        |
| SW300010-EVAL                                              | dsPIC® Speech Recognition (Eval Copy)                                                                             |
| SW300010, 11, 12                                           | dsPIC® Speech Recognition (5K, 25K, 100K licenses, respectively)                                                  |
| SW300020                                                   | dsPIC30 Math Library: Double-Precision Floating Point Routines                                                    |
| SW300021                                                   | dsPIC30 Peripheral Library: Peripheral Initialization and Control Routines                                        |
| SW300022                                                   | dsPIC30 DSP Library: Data Signal Processing Library Suite (FFT, Filters)                                          |
| SW300023                                                   | dsPICworks™ Visual Algorithm Analyzer: Data Analyzer and Converter Tool                                           |
| SW300030                                                   | dsPIC® CMX Scheduler: Multi-tasking, Preemptive Scheduler for dsPIC30F                                            |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

| Demonstration Boards and Evaluation Kits            |                                                                                            |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------|
| Part Number                                         | Description                                                                                |
| <b>dsPIC® 16-bit DSC Software Tools (continued)</b> |                                                                                            |
| SW300031                                            | CMX-RTX for dsPIC® DSC: Fully Preemptive RTOS                                              |
| SW300032                                            | CMX-Tiny+ for dsPIC® DSC: Preemptive RTOS                                                  |
| SW300040-EVAL, 5K, 25K, 100K                        | dsPIC® Noise Suppression Library (Eval, 5K, 25K, 100K licenses, respectively)              |
| SW300050-EVAL, 5K, 25K, 100K                        | dsPIC® Symmetric Embedded Encryption Library (Eval, 5K, 25K, 100K licenses, respectively)  |
| SW300055-EVAL, 5K, 25K, 100K                        | dsPIC® Asymmetric Embedded Encryption Library (Eval, 5K, 25K, 100K licenses, respectively) |
| SW300060-EVAL, 5K, 25K, 100K                        | dsPIC® Acoustic Echo Cancellation Library (Eval, 5K, 25K, 100K licenses, respectively)     |
| SW300070-EVAL, 5, 25, 100K*                         | dsPIC® Speech Coding/Decoding Library (Eval, 5K, 25K, 100K licenses, respectively)         |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

| PowerSmart® Systems        |                                                                             |
|----------------------------|-----------------------------------------------------------------------------|
| Model Name/<br>Part Number | Description                                                                 |
| PS042                      | PS401 PowerCal™ Board                                                       |
| PS051                      | PowerInfo™ 2 Configuration Interface Board for use with PS501, PS200, PS810 |
| PS052                      | PowerCal™ 2 Configuration Interface Board for use with PS501, PS200, PS810  |
| PS2070**                   | PS200 Configurable Battery Charger Evaluation Board                         |
| PS2070EV**                 | PS200 Configurable Battery Charger Evaluation Board with PS051 PowerInfo™ 2 |
| PS5100                     | PS501 6-12 cell NiMH Module                                                 |
| PS5100EV                   | PS501 6-12 cell NiMH Module with PS051                                      |
| PS5162                     | 2-cell Li-Ion/Poly Fuel Gauge with safety                                   |
| PS5162EV                   | 2-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2            |
| PS5163                     | 3-cell Li-Ion/Poly Fuel Gauge with safety                                   |
| PS5163EV                   | 3-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2            |
| PS5164                     | 4-cell Li-Ion/Poly Fuel Gauge with safety                                   |
| PS5164EV                   | 4-cell Li-Ion/Poly Fuel Gauge with safety and PS051 PowerInfo™ 2            |
| PS8070**                   | PS8X0 Li-Ion/Poly Single Cell Fuel Gauge                                    |
| PS8070EV**                 | PS8X0 Li-Ion/Poly Single Cell Fuel Gauge with PS051 PowerInfo™ 2            |

\* Contact Microchip web site at [www.microchip.com](http://www.microchip.com) for availability.

| Memory Evaluation/Developer's Kits       |          |                                             |
|------------------------------------------|----------|---------------------------------------------|
| SEEVAL® 32 Serial EEPROM Developer's Kit | DV243002 | All serial EEPROMS, 24XX, 93XX, 25XX series |

### KEELOQ® Evaluation Kits

|                                              | HCS101   | HCS200/201 | HCS300/301/320 | HCS360/361 | HCS362   | HCS365/370 | HCS410/412 | HCS473   | HCS500/515 | HCS512   |
|----------------------------------------------|----------|------------|----------------|------------|----------|------------|------------|----------|------------|----------|
| KEELOQ® Transponder Evaluation Kit*          | –        | –          | –              | –          | –        | –          | DM303005   | –        | –          |          |
| KEELOQ® Evaluation Kit II*                   | DM303006 | DM303006   | DM303006       | DM303006   | DM303006 | DM303006   | DM303006   | DM303006 | DM303006   |          |
| PRO MATE® II Universal Programmer for SOIC*  | AC004002 | AC004002   | AC004002       | AC004002   | AC004002 | AC004003   | AC004002   | AC004003 | –          | AC164002 |
| PRO MATE® II Universal Programmer for DIP*   | AC004001 | AC004001   | AC004001       | AC004001   | AC004001 | AC004007   | AC004001   | AC004007 | –          | AC164001 |
| PRO MATE® II Universal Programmer for ICSP™* | AC004004 | AC004004   | AC004004       | AC004004   | AC004004 | AC004004   | AC004004   | AC004004 | AC004004   |          |

\* Support is limited to PRO MATE® II using MPLAB® IDE release 5.70.

### RFID Evaluation/Developer's Kits

|                                                   | MCRF355            | MCRF450/452 |
|---------------------------------------------------|--------------------|-------------|
| 13.56 MHz Anti-Collision microID® Developer's Kit | DV103003, DV103006 | DV103006    |
| microID® Programmer Kit only for MCRF355          | PG103003           | –           |

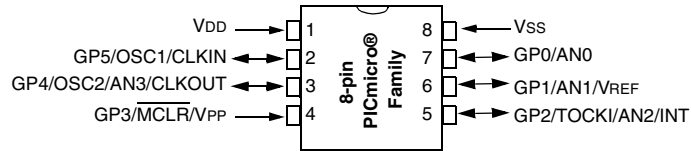
### Analog/Interface Demo/Eval/Developer's Kits

| Interface                                           | Part Number        | Devices Supported                                                     |
|-----------------------------------------------------|--------------------|-----------------------------------------------------------------------|
| MCP2140 IrDA® Wireless Temp. Demo                   | MCP2140DM-TMPSNS   | MCP2140                                                               |
| MCP215X Data Logger Demo Board                      | MCP215XDM          | MCP2150/55                                                            |
| MCP250XX CAN I/O Expanders Developer's Kit          | DV250501           | MCP25020, MCP25025, MCP25050, MCP25055                                |
| MCP2510/2515 CAN Developer's Kit                    | DV251001           | MCP2510, MCP2515                                                      |
| MCP2120/2150 Developer's Kit                        | DM163008           | MCP2120, MCP2150                                                      |
| MCP23X08 Evaluation Board                           | MCP23X08EV         | MCP23008, MCP23S08                                                    |
| MCP23X17 Evaluation Board                           | MCP23X17EV         | MCP23017, MCP23S17                                                    |
| <b>Linear</b>                                       | <b>Part Number</b> | <b>Devices Supported</b>                                              |
| MCP6S22 PGA PICtail™ Demo Board                     | MCP6S22DM-PICTL    | MCP6S22/92                                                            |
| MCP6SX2 PGA Photodiode PICtail™ Demo Board          | MCP6SX2DM-PCTLPD   | MCP6S22/92                                                            |
| MCP6SX2 PGA Thermistor PICtail™ Demo Board          | MCP6SX2DM-PCTLTH   | MCP6S22/92                                                            |
| MCP6S2X PGA Evaluation Board                        | MCP6S2XEV          | MCP6S2X                                                               |
| <b>Mixed Signal</b>                                 | <b>Part Number</b> | <b>Devices Supported</b>                                              |
| Mixed Signal PICtail™ Demo Board                    | MXSIGDM            | TX132X, MCP330X, MCP320X, MCP494X, MCP3221, MCP3201, MCP1525, MCP1541 |
| Evaluation Kit for Sigma-Delta A/D Converter Family | TX3400EV           | TX3400X                                                               |
| Single-Dual A/D                                     | DV3201A            | MCP3001, MCP3002, MCP3201, MCP3202                                    |
| MCP3201/02 Evaluation System Daughter Board         | DV3201A            | MCP3201/02                                                            |
| MXDEV Analog Evaluation System                      | DVMCPA             | MCP3001/02, MCP3004,/08, MCP3201/02, MCP3204/08                       |
| MCP3204/08 Evaluation System Daughter Board         | DV3204A            | MCP3204, MCP3208                                                      |
| MCP42XXX Digital Pot Evaluation Kit                 | DV42XXX            | MCP42010, MCP42050, MCP42100                                          |
| MCP402X Evaluation Board                            | MCP402XEV          | MCP4021, MCP4022, MCP4023, MCP4024                                    |

| Analog/Interface Demo/Eval/Developer's Kits          |                 |                                                                           |
|------------------------------------------------------|-----------------|---------------------------------------------------------------------------|
| Power Management                                     | Part Number     | Devices Supported                                                         |
| MCP1612 Synchronous Buck Regulator Evaluation Board  | MCP1612EV       | MCP1612                                                                   |
| MCP1630 +12V Dual Output Buck Converter Ref. Design  | MCP1630RD-DDBK1 | MCP1630                                                                   |
| MCP1630 Li-Ion Multi Bay Battery Charger Ref. Design | MCP1630RD-LIC1  | MCP1630                                                                   |
| MCP1630 NiMH Battery Charger Demo Board              | MCP1630DM-NMC1  | MCP1630                                                                   |
| MCP1601 Buck Regulator Evaluation Board              | MCP1601EV       | MCP1601                                                                   |
| Voltage Supervisor Evaluation Board                  | VSUPEV          | SOT-23 packages                                                           |
| MCP7386X Li-Ion Battery Charger Evaluation Board     | MCP7386XEV      | MCP73861/62                                                               |
| MCP165X 3W White LED Demo Board                      | MCP1650DM-LED1  | MCP1650/51                                                                |
| MCP1650 Boost Controller Evaluation Board            | MCP1650EV       | MCP1650                                                                   |
| MCP7384X Li-Ion Battery Charger                      | MCP7384XEV      | MCP7384X                                                                  |
| MCP7382X Li-Ion Battery Charger                      | MCP7382XEV      | MCP7382X                                                                  |
| MCP73855 Evaluation Board                            | MCP73855EV      | MCP73855                                                                  |
| Voltage Supervisor SOT23-5/6 Evaluation Board        | VSUPEV2         | SOT23-5/6-lead packages                                                   |
| MCP1726 Evaluation Board                             | MCP1726EV       | MCP1726                                                                   |
| Thermal Management Tools                             | Part Number     | Devices Supported                                                         |
| MCP9800 Thermal Sensor PICtail™ Demo Board           | MCP9800DM-PCTL  | MCP9800                                                                   |
| Demo Board for Tiny Serial Digital Thermal Sensor    | TC74DEMO        | TC74                                                                      |
| Fan Controller Demo Board for TC652                  | TC652DEMO       | TC652                                                                     |
| Fan Controller Demo Board for TC650                  | TC650DEMO       | TC650                                                                     |
| Evaluation Kit for the Fan Speed Controllers         | TC642EV         | TC642, TC646, TC647, TC648, TC649, TC642B, TC646B, TC647B, TC648B, TC649B |
| TC72 Digital Temperature Sensor                      | TC72DM-PICTL    | TC72                                                                      |
| TC77 Thermal Sensor PICtail™ Demo                    | TC77DM-PICTL    | TC77                                                                      |
| Demo Board for Fan Speed Controllers                 | TC642DEMO       | TC642                                                                     |
| TC1047A Temperature to Voltage                       | TC1047ADM-PICTL | TC1047A                                                                   |

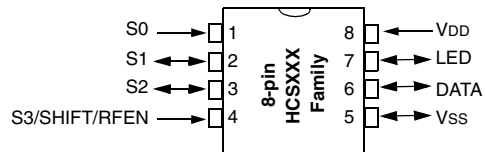
## PIN AND CODE COMPATIBILITY CHART

### 8-pin PICmicro® MCU Family



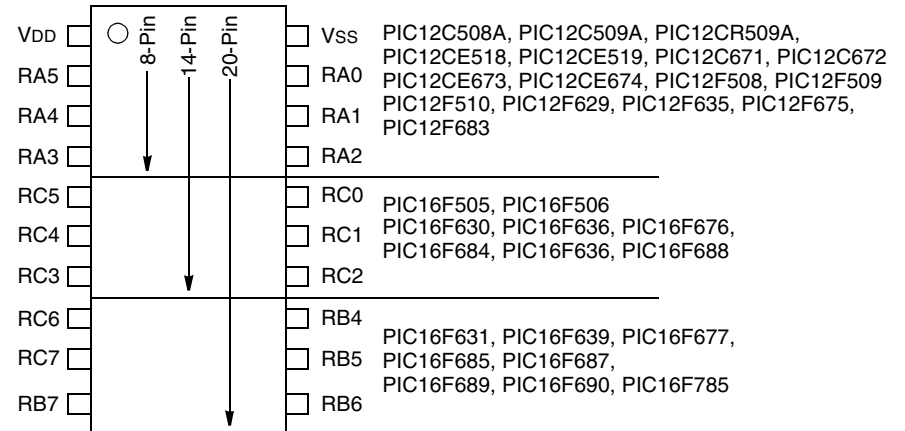
|             |            |           |
|-------------|------------|-----------|
| PIC12C508A  | PIC12C671  | PIC12F510 |
| PIC12C509A  | PIC12C672  | PIC12F629 |
| PIC12CR509A | PIC12CE673 | PIC12F635 |
| PIC12CE518  | PIC12CE674 | PIC12F675 |
| PIC12CE519  | PIC12F508  | PIC12F683 |
|             | PIC12F509  |           |

### 8-pin KEELoq® Family

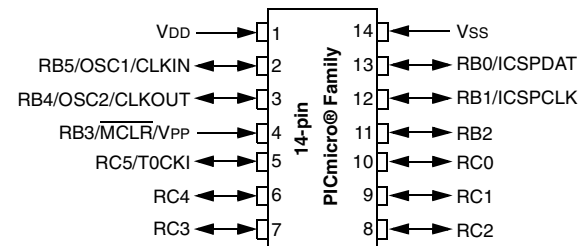


|        |        |        |
|--------|--------|--------|
| HCS101 | HCS300 | HCS360 |
| HCS200 | HCS301 | HCS361 |
| HCS201 | HCS320 | HCS362 |
|        |        | HCS365 |

### 8/14/20-pin PICmicro® MCU Family

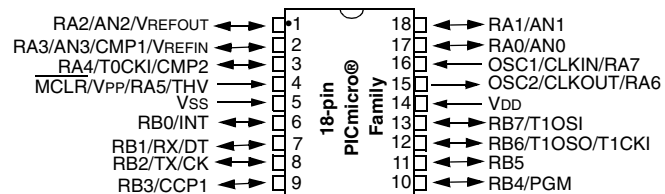


### 14-pin PICmicro® MCU Family



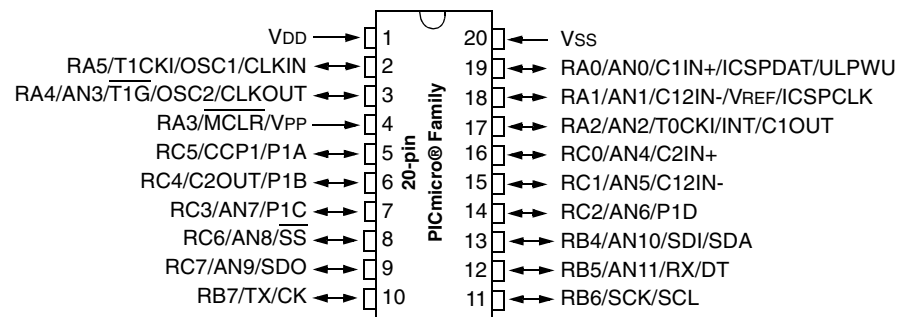
|           |           |           |
|-----------|-----------|-----------|
| PIC16F505 | PIC16F630 | PIC16F688 |
| PIC16F506 | PIC16F636 | PIC16F684 |
|           | PIC16F676 |           |

## 18-pin PICmicro® MCU Family



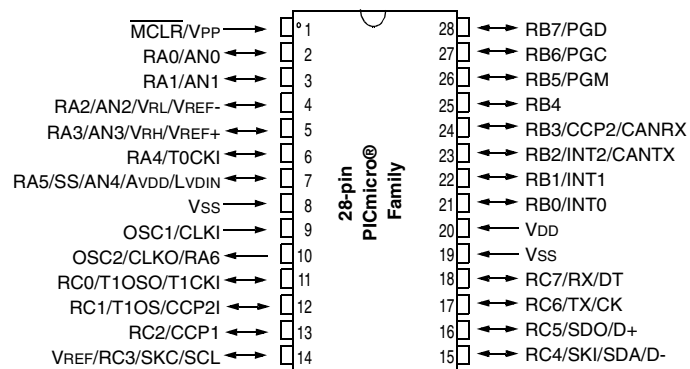
|             |            |           |            |
|-------------|------------|-----------|------------|
| PIC16C620A  | PIC16CE625 | PIC16C711 | PIC16F819  |
| PIC16CR620A | PIC16F627  | PIC16C712 | PIC16F87   |
| PIC16C621A  | PIC16F628  | PIC16C715 | PIC16F88   |
| PIC16C622A  | PIC16F627A | PIC16C716 | PIC16F54   |
| PIC16CE623  | PIC16F628A | PIC16F716 | PIC16HV540 |
| PIC16CE624  | PIC16F648A | PIC16C58B | PIC18F1220 |
| PIC16C54C   | PIC16C56A  | PIC16F84A | PIC18F1320 |
|             | PIC16C710  | PIC16F818 |            |

## 20-pin PICmicro® MCU Family



|           |           |
|-----------|-----------|
| PIC16F685 | PIC16F689 |
| PIC16F687 | PIC16F690 |

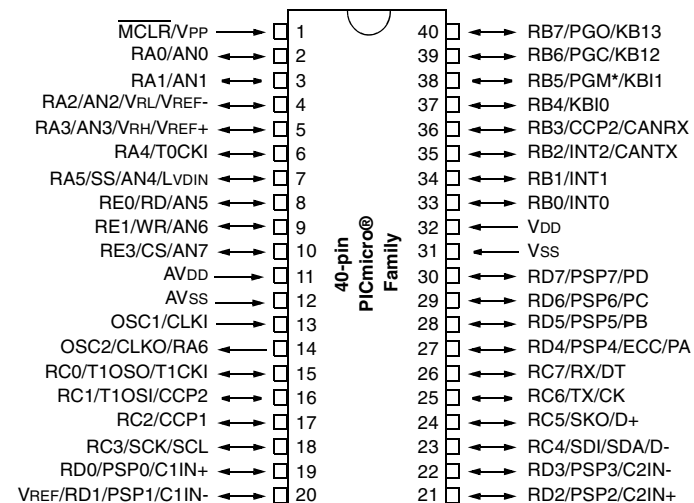
## 28-pin PICmicro® MCU Family



|            |             |            |
|------------|-------------|------------|
| PIC16C62B  | PIC16F767*  | PIC18F2331 |
| PIC16CR63  | PIC16F870*  | PIC18F2410 |
| PIC16C63A  | PIC16F872*  | PIC18F2420 |
| PIC16C642  | PIC16F873*  | PIC18F2431 |
| PIC16C66   | PIC16F873A* | PIC18F2455 |
| PIC16CR72  | PIC16F876*  | PIC18F2480 |
| PIC16C72A  | PIC16F876A* | PIC18F2510 |
| PIC16C73B  | PIC16F913*  | PIC18F2515 |
| PIC16C745  | PIC18C242   | PIC18F2520 |
| PIC16C76   | PIC18C252   | PIC18F2525 |
| PIC16C773  | PIC18F242   | PIC18F2550 |
| PIC16F57   | PIC18F248   | PIC18F2580 |
| PIC16F72*  | PIC18F252   | PIC18F2585 |
| PIC16F73*  | PIC18F258   | PIC18F2610 |
| PIC16F737* | PIC18F2220  | PIC18F2620 |
| PIC16F76*  | PIC18F2221  | PIC18F2680 |
|            | PIC18F2320  |            |
|            | PIC18F2321  |            |

\* PGM for PIC16FXXX devices is located on pin 24.

## 40-pin PICmicro® MCU Family

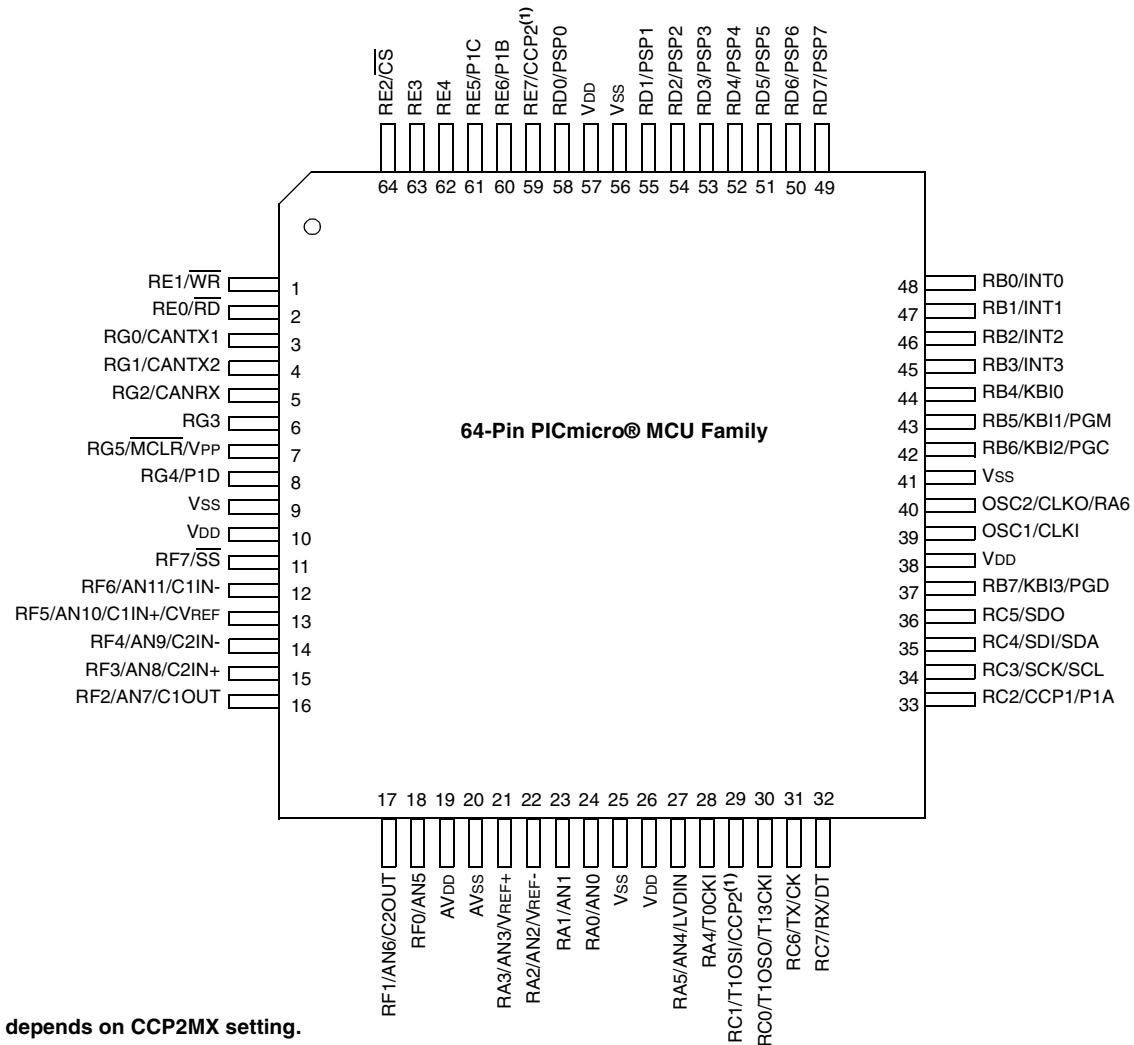


|            |             |            |
|------------|-------------|------------|
| PIC16CR65  | PIC16F874A* | PIC18F4331 |
| PIC16C65B  | PIC16F877*  | PIC18F4410 |
| PIC16C662  | PIC16F877A* | PIC18F4420 |
| PIC16C67   | PIC16F914*  | PIC18F4431 |
| PIC16C74B  | PIC16F917*  | PIC18F4455 |
| PIC16C765  | PIC18C442   | PIC18F4480 |
| PIC16C77   | PIC18C452   | PIC18F4510 |
| PIC16C774  | PIC18F442   | PIC18F4515 |
| PIC16F59   | PIC18F448   | PIC18F4520 |
| PIC16F74*  | PIC18F452   | PIC18F4525 |
| PIC16F747* | PIC18F458   | PIC18F4550 |
| PIC16F77*  | PIC18F4220  | PIC18F4580 |
| PIC16F777* | PIC18F4221  | PIC18F4585 |
| PIC16F871* | PIC18F4320  | PIC18F4610 |
| PIC16F874* | PIC18F4321  | PIC18F4620 |
|            |             | PIC18F4680 |

\* PGM for PIC16FXXX devices is located on pin 36.



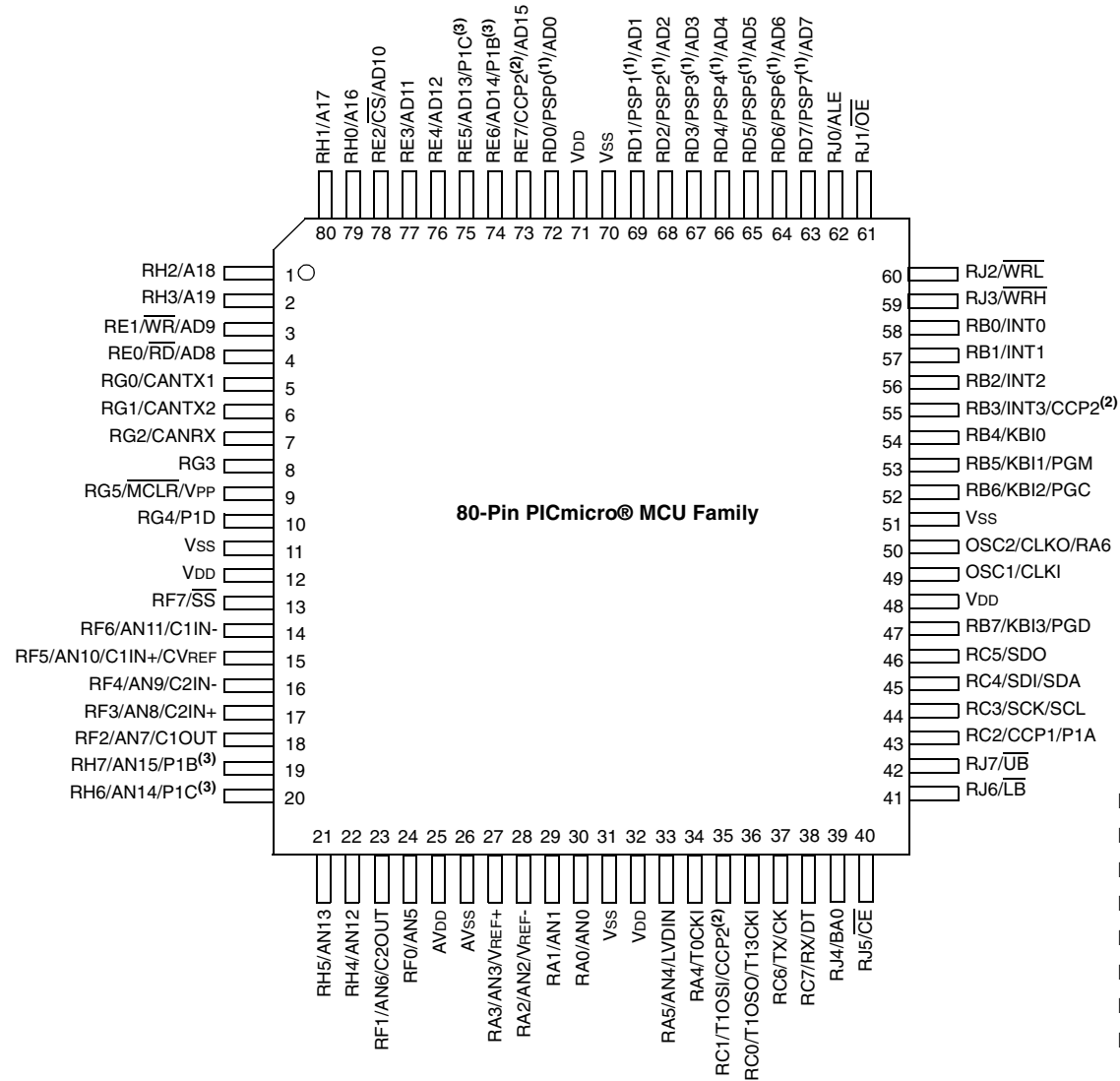
## 64-pin PICmicro® MCU Family



**Note 1:** CCP2 pin placement depends on CCP2MX setting.

|            |            |            |
|------------|------------|------------|
| PIC18F6310 | PIC18F6522 | PIC18F6621 |
| PIC18F6390 | PIC18F6525 | PIC18F6627 |
| PIC18F6410 | PIC18F6527 | PIC18F6680 |
| PIC18F6490 | PIC18F6585 | PIC18F6720 |
| PIC18F6520 | PIC18F6620 | PIC18F6722 |
|            | PIC18F6622 |            |

## 80-pin PICmicro® MCU Family



**Note 1:** PSP is available only in Microcontroller mode.

**Note 2:** CCP2 pin placement depends on CCP2MX and Processor mode settings.

**Note 3:** P1B and P1C pin placement depends on ECCPMX setting.

|            |            |
|------------|------------|
| PIC18F8310 | PIC18F8585 |
| PIC18F8390 | PIC18F8620 |
| PIC18F8410 | PIC18F8621 |
| PIC18F8490 | PIC18F8622 |
| PIC18F8520 | PIC18F8680 |
| PIC18F8522 | PIC18F8720 |
| PIC18F8525 | PIC18F8722 |
| PIC18F8527 |            |



18-LEAD CERDIP  
"JW"



20-LEAD CERDIP  
"JW"



28-LEAD CERDIP  
"JW"

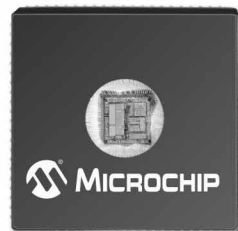


40-LEAD CERDIP  
"JW"

#### CERAMIC CHIP CARRIER CERQUAD



68-LEAD CERQUAD  
"CL"



84-LEAD CERQUAD  
"CL"



8-LEAD PDIP  
"P" OR "PA"



14-LEAD PDIP  
"P" OR "PD"



18-LEAD PDIP  
"P"



20-LEAD PDIP  
"P"



24-LEAD PDIP  
"P" OR "PG"



28-LEAD PDIP  
"P" OR "PI"



28-LEAD SKINNY PDIP  
"SP" OR "PJ"



40-LEAD PDIP  
"P" OR "PL"

#### PLASTIC QUAD FLATPACK "QFP"



32-LEAD LQFP  
"LQ"



44-LEAD MQFP  
"PQ"



32-LEAD PLCC  
"L"



44-LEAD PLCC  
"L" OR "W"



68-LEAD PLCC  
"L" OR "LS"



84-LEAD PLCC  
"L"

PACKAGES ARE APPROXIMATE SIZE

## PLASTIC SMALL OUTLINE "SOIC"



8-LEAD SOIC  
(.150") "SN" or "OA"



8-LEAD SOIC  
(.208") "SM"



14-LEAD SOIC  
(.150") "SL" or "OD"



28-LEAD SOIC  
"SO" or "OI"



16-LEAD SOIC  
(.150") "SL"



18-LEAD SOIC  
"SO"



20-LEAD SOIC  
"SO"

## PLASTIC SHRINK SMALL OUTLINE "SSOP"



20-LEAD SSOP  
"SS"



28-LEAD SSOP  
"SS"



16-LEAD QSOP



8-LEAD MSOP  
"MS" or "UA"



10-LEAD MSOP  
"UN"

## PLASTIC THIN QUAD FLATPACK "TQFP"



44-LEAD TQFP  
"PT"



64-LEAD TQFP  
"PT"



64-LEAD TQFP  
"PF"



80-LEAD TQFP  
"PT"



80-LEAD TQFP  
"PF"



100-LEAD TQFP  
"PT"

## SIDE BRAZED DUAL IN-LINE "DIP"



8-LEAD SIDE BRAZED  
"JW"



14-LEAD SIDE BRAZED  
"JW"



20-LEAD SIDE BRAZED  
"JW"



28-LEAD SIDE BRAZED  
(.300") "JW"

## PLASTIC THIN SHRINK SMALL OUTLINE



8-LEAD TSSOP  
(4.4 MM) "ST"



14-LEAD TSSOP  
(4.4 MM) "ST" (PICmicro® MCU)  
(4.4 MM) "ST14" (Memory)



20-LEAD TSSOP  
(4.4 MM) "ST"



8-LEAD DFN  
2x3 "MF"



8-LEAD DFN  
3x3 "MC"



8-LEAD DFN  
6x5 "MF"



28-LEAD QFN  
6x6 "ML" or "MM"



8-LEAD QFN  
4x4 "ML"



16-LEAD QFN  
4x4 "ML"



20-LEAD QFN  
4x4 "ML"



44-LEAD QFN  
8x8 "ML"

## CHIP SCALE PACKAGES



3-LEAD DDPACK



5-LEAD DDPACK

## SMALL OUTLINE TRANSISTORS



3-LEAD TRANSISTOR  
"TO" or "ZB"



3-LEAD SC-89



SOT-223



6-LEAD SOT-23  
"CH" or "OT"



3-LEAD SOT-23  
"TT" or "CB"



SOT-143  
"RC"



5-LEAD SOT-23  
"OT" or "CT"



5-LEAD SC-70  
"LT"



3-LEAD SC-70  
"LB"



5-LEAD TO-220

# Product Information System

## XXXXXXXXXX - XX X/XX XXX

[illegible]

|    |   |                                            |
|----|---|--------------------------------------------|
| 1M | = | 1000pF COB Module                          |
| 3M | = | 330pF COB Module                           |
| 7M | = | 2x68pF COB Module (IOA2)                   |
| CB | = | Chip on Board (COB)                        |
| CL | = | Windowed CERQUAD                           |
| G  | = | Lead Free                                  |
| JW | = | Windowed CERDIP                            |
| L  | = | Plastic Leaded Chip Carrier (PLCC)         |
| LQ | = | Plastic Low Quad Flatpack (LQFP)           |
| MC | = | Dual Flat-No Leads (DFN) 2x3 mm            |
| MF | = | Dual Flat - No Leads (DFN) 5x6 mm          |
| ML | = | Quad Flat - No Leads (QFN)                 |
| MM | = | Quad Flat - No Leads (DFN)                 |
| MS | = | Micro Small Outline (MSOP)                 |
| OT | = | 5-Lead or 6-Lead SOT-23                    |
| P  | = | Plastic DIP                                |
| PF | = | Plastic Thin Quad Flatpack<br>(TQFP 14x14) |
| PQ | = | Plastic Quad Flatpack (PQFP)               |
| PT | = | Plastic Thin Quad Flatpack (TQFP)          |

Blank = 0°C to +70°C  
I (Industrial) = -40°C to +85°C  
E (Extended) = -40°C to +125°C

|     |   |        |            |
|-----|---|--------|------------|
| -90 | = | 90 ns  |            |
| -10 | = | 100 ns |            |
| -12 | = | 120 ns |            |
| -15 | = | 150 ns |            |
| -17 | = | 170 ns |            |
| -20 | = | 200 ns | or 20 MIPS |
| -25 | = | 250 ns | or 30 MIPS |
| -30 | = | 300 ns |            |

## Crystal Frequency Designator for PICmicro® MCUs

|    |   |                                                    |
|----|---|----------------------------------------------------|
| LP | = | DC to 40 kHz, Low-Power Crystal Oscillator         |
| RC | = | DC to 4 MHz, Resistor/Capacitor Oscillator         |
| XT | = | DC to 4 MHz, Standard Crystal Resonator Oscillator |
| HS | = | DC to 20 MHz, High Speed Crystal Oscillator        |
| 02 | = | DC to 2 MHz, XT and RC Oscillator Support          |
| 04 | = | DC to 4 MHz Internal, XT and RC Oscillator Support |
| 04 | = | DC to 200 kHz, LP Oscillator Support               |
| 08 | = | DC to 8 MHz, HS Oscillator Support                 |
| 10 | = | DC to 10 MHz, HS Oscillator Support                |
| 16 | = | DC to 16 MHz, XT Oscillator Support                |
| 20 | = | DC to 20 MHz, HS Oscillator Support                |
| 25 | = | DC to 25 MHz, XT Oscillator Support                |
| 30 | = | DC to 30 MHz, HS Oscillator Support                |
| 33 | = | DC to 33 MHz, XT Oscillator Support                |
| 40 | = | DC to 40 MHz, HS Oscillator Support                |

T = Tape and Reel Shipments  
X = Rotated pinout

|    |   |                                  |
|----|---|----------------------------------|
| AA | = | 1.8V Serial EEPROM               |
| C  | = | CMOS EPROM/ROMless MCU           |
| C  | = | 5V Serial EEPROM                 |
| CE | = | CMOS EPROM/EEPROM MCU            |
| CR | = | CMOS ROM MCU                     |
| F  | = | Flash MCU                        |
| FC | = | High Speed serial EEPROM         |
| HC | = | High Speed                       |
| HV | = | High Voltage                     |
| LC | = | Low Voltage CMOS EPROM MCU       |
| LC | = | Low Voltage (2.5V) Serial EEPROM |

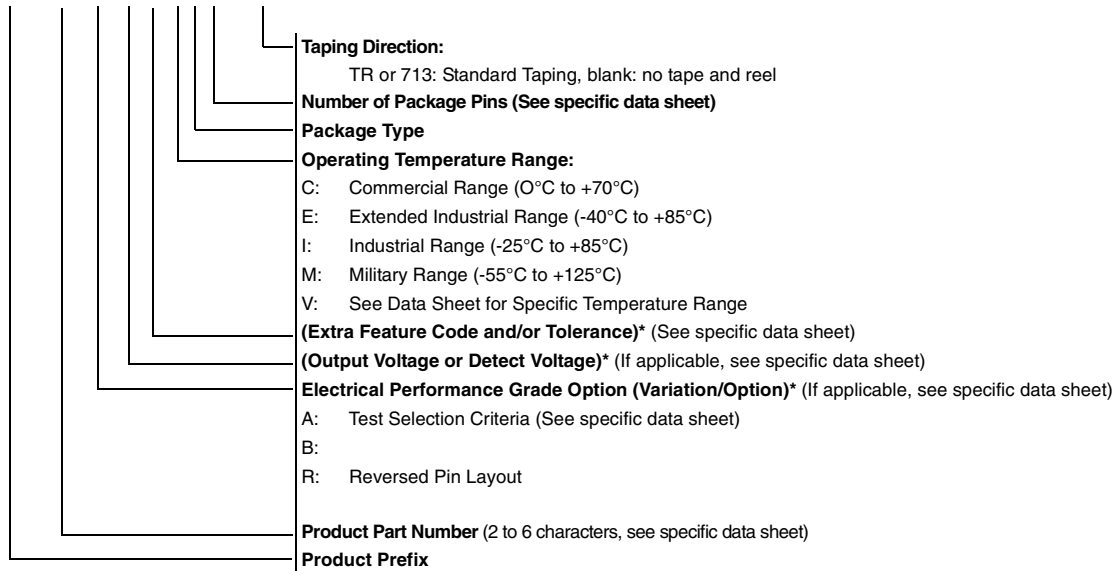
|     |   |                                   |
|-----|---|-----------------------------------|
| LCE | = | Low Voltage CMOS EPROM/EEPROM MCU |
| LCR | = | Low Voltage CMOS ROM MCU          |
| LCS | = | Low Voltage Security              |
| LF  | = | Low Voltage FLASH MCU             |
| LV  | = | Low Voltage                       |
| 24  | = | 2-Wire (I <sup>2</sup> C)         |
| 25  | = | SPI                               |
| 93  | = | 3-Wire (Microwire)                |

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## Part Number Suffix Designations

Ordering Information for all Microchip Analog Products beginning with "TC" (formerly TelCom Semiconductor Products)

TC 7106 A-60 1 C P L 713



**NOTE:** ( ) \* Used for voltage regulators and detectors.

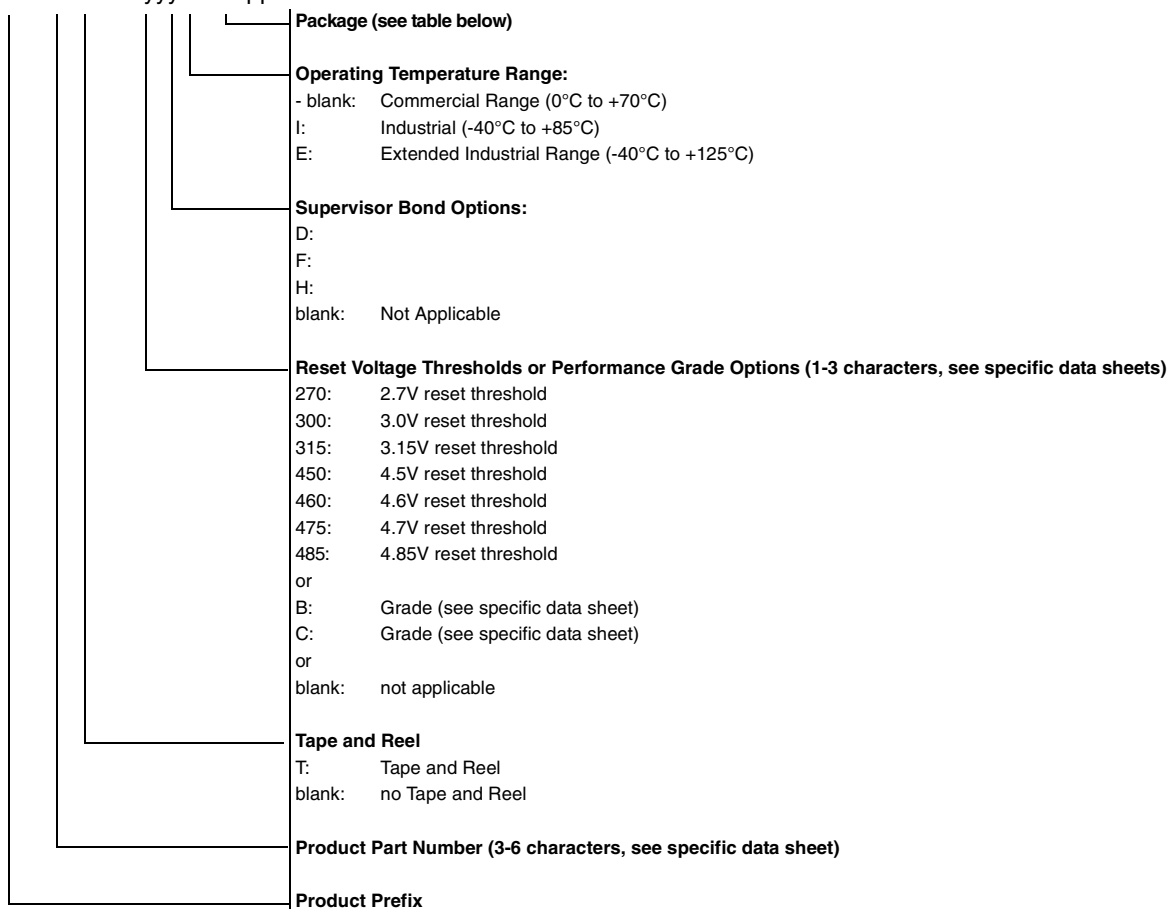
| Package | Description     | # of Pins |
|---------|-----------------|-----------|
| AB      | TO-220          | 3         |
| AK      | TO-220          | 7         |
| AT      | TO-220          | 5         |
| AV      | TO-220 (Formed) | 5         |
| BB      | TO-220B         | 3         |
| CB      | SOT-23A         | 3         |
| CH      | SOT-23A         | 6         |
| CT      | SOT-23A         | 5         |
| DB      | SOT-223         | 3         |
| EB      | DDPAK           | 3         |
| EK      | DDPAK           | 7         |
| ET      | DDPAK           | 5         |
| HA      | SOP             | 8         |
| JA      | CDIP (N)        | 8         |
| JD      | CDIP (N)        | 14        |
| JE      | CDIP (N)        | 16        |
| JG      | CDIP (W)        | 24        |
| JI      | CDIP (W)        | 28        |
| JL      | CDIP (W)        | 40        |
| KU      | MQFP            | 64        |
| KW      | MQFP            | 44        |
| LB      | SC-70           | 3         |
| LI      | PLCC            | 28        |
| LS      | PLCC            | 68        |
| LT      | SC-70           | 5         |
| LW      | PLCC            | 44        |

| Package | Description | # of Pins |
|---------|-------------|-----------|
| MB      | SOT-89      | 3         |
| MF      | DFN (3x3)   | 8         |
| MT      | SOT-89      | 5         |
| NB      | SOT-23B     | 3         |
| OA      | SOIC (N)    | 8         |
| OD      | SOIC (N)    | 14        |
| OE      | SOIC (W)    | 16        |
| OG      | SOIC (W)    | 24        |
| OI      | SOIC (W)    | 28        |
| OR      | SOIC (N)    | 16        |
| PA      | PDIP (N)    | 8         |
| PD      | PDIP (N)    | 14        |
| PE      | PDIP (N)    | 16        |
| PF      | PDIP (N)    | 24        |
| PG      | PDIP (W)    | 24        |
| PI      | PDIP (W)    | 28        |
| PJ      | PDIP (W)    | 28        |
| PL      | PDIP (W)    | 40        |
| QR      | QSOP (N)    | 16        |
| RC      | SOT-143     | 4         |
| SI      | SSOP (W)    | 28        |
| UA      | MSOP        | 8         |
| UN      | MSOP        | 10        |
| VB      | DPAK        | 3         |
| ZB      | TO-92       | 3         |
| ZM      | TO-92       | 2         |

# Part Number Suffix Designations

Ordering Information for all Microchip Analog Products beginning with "MCP" Prefix Parts

MCP xxxxx T - yyy z h / qq



| Package | Description       | # of Pins | Tube/Bag Qty. | Reel Qty. |
|---------|-------------------|-----------|---------------|-----------|
| TO      | TO-92             | 3         | 1000          | n/a       |
| TT      | SOT-23            | 3         | n/a           | 3000      |
| OT      | SOT-23            | 5         | n/a           | 3000      |
| P       | PDIP              | 8         | 60            | n/a       |
| SN      | SOIC              | 8         | 100           | 3300      |
| ST      | TSSOP             | 8         | 100           | 2500      |
| MS      | MSOP              | 8         | 100           | 2500      |
| MF      | DFN (2x3)         | 8         | n/a           | 3300      |
| MF      | DFN (3x3)         | 8         | 50            | 3300      |
| MF      | DFN (3x3, 10-Pin) | 10        | 120           | 3300      |
| ST      | TSSOP             | 14        | 96            | 2500      |
| P       | PDIP              | 14        | 30            | n/a       |
| SL      | SOIC              | 14        | 57            | 2600      |
| P       | PDIP              | 18        | 25            | n/a       |
| SO      | SOIC              | 18        | 42            | 1100      |
| ST      | TSSOP             | 20        | 74            | 2500      |
| SS      | SSOP              | 20        | 67            | 1600      |
| ML      | QFN (6x6)         | 28        | 50            | 1600      |
| ML      | QFN (4x4)         | 16        | 91            | 3300      |



| ABBREVIATIONS         |                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
| ADC                   | Analog-to-Digital Converter                                                                                                |
| ASK                   | Amplitude Shift Key                                                                                                        |
| AUSART                | Addressable USART (RS-232, RS-485)                                                                                         |
| BOR                   | Brown-Out Detection/Reset                                                                                                  |
| CAN                   | Controller Area Network                                                                                                    |
| CAP                   | Capture                                                                                                                    |
| CCP                   | Capture/Compare/1 PWM output                                                                                               |
| CRC                   | Cyclic Redundancy Check                                                                                                    |
| DAC                   | Digital-to-Analog Converter                                                                                                |
| 3 $\phi$              | 3 Phase PWMs                                                                                                               |
| 4 $\phi$              | 4 Phase PWMs                                                                                                               |
| E2                    | EEPROM (Reprogrammable)                                                                                                    |
| ECAN                  | Enhanced Controller Area Network                                                                                           |
| ECCP                  | Enhanced Capture/Compare/4 PWM outputs with program dead time                                                              |
| EMA                   | External Memory Addressing                                                                                                 |
| EnhFI                 | Enhanced Flash: 100K erase/write cycles, 40 year retention, self-programmable in socket from 2V to 5.5V, ICSP at 5V or 12V |
| EUSART                | Enhanced USART (RS232, RS485, LIN)                                                                                         |
| FSK                   | Frequency Shift Key                                                                                                        |
| I <sup>2</sup> C      | Inter-integrated Circuit Bus                                                                                               |
| ICSP <sup>TM</sup>    | In-Circuit Serial Programming <sup>TM</sup>                                                                                |
| ICD                   | # of In-Circuit Debug Breakpoints                                                                                          |
| IntOSC                | Internal Oscillator                                                                                                        |
| LNA                   | Low Noise Amplifier                                                                                                        |
| LVD                   | Low Voltage Detection                                                                                                      |
| LIN XCVR              | Local Interconnection Network Transceiver                                                                                  |
| MI <sup>2</sup> C/SPI | Master I <sup>2</sup> C/SPI                                                                                                |
| nW                    | nanoWatt                                                                                                                   |
| OTP                   | One-Time Programmable                                                                                                      |
| PBOR                  | Programmable Brown-Out Detection/Reset                                                                                     |
| PLVD                  | Programmable Low-Voltage Detection                                                                                         |
| PSMC                  | Programmable Switch Mode Controller                                                                                        |
| PSP                   | Parallel Slave Port                                                                                                        |
| PSMC                  | Programmable Switch Mode Controller                                                                                        |
| PWM                   | Pulse Width Modulator                                                                                                      |
| ROM-less              | External ROM necessary                                                                                                     |
| RSSI                  | Received Signal Strength Indicator                                                                                         |
| RTCC                  | Real Time Clock with Calendar                                                                                              |
| SLAC                  | Slope A/D Converter, up to 16 bits                                                                                         |
| SMB                   | System Management Bus                                                                                                      |
| SPI                   | Serial Peripheral Interface                                                                                                |
| StdFI                 | Standard Flash: up to 10,000 erase/write cycles, 40 year retention, ICSP capability at 12V                                 |
| ULPW                  | Ultra Low Power Wake-up                                                                                                    |
| USART                 | Universal Synchronous/Asynchronous Receiver/Transmitter                                                                    |
| USB                   | Universal Serial Bus                                                                                                       |
| VREF                  | Voltage Reference                                                                                                          |
| WDT                   | Watchdog Timer                                                                                                             |
| WUR                   | Wake-up Reset                                                                                                              |
| ✓P                    | Programmable                                                                                                               |
| x12                   | 12-bit Instruction Width                                                                                                   |
| x14                   | 14-bit Instruction Width                                                                                                   |
| x16                   | 16-bit Instruction Width                                                                                                   |

# Microchip Technology's Quality Policy

**In order to meet or exceed customer expectations at a reduced cost, we encourage our employees to support continuous improvement, anticipate problems and implement root cause solutions.**

## **Aggregate Approach**

Microchip has instituted an "aggregate" approach to understand, align, integrate and unite all company resources. Microchip consciously designed the enterprise as an aggregate system in which company culture, systems, practices, policies and employees work in unison to achieve Microchip's mission and goals. This aggregate system and culture is taught in the Microchip Culture class required for all new hires and taught by Executive Staff members.

The Quality Culture of Microchip is that every organization, business unit and individual owns the quality of their output, whether it is product, process, software or service.

A company must aggressively pursue continuous improvement, employee development, team deployment and statistical techniques to successfully achieve individual accountability of quality.

## **Continuous Improvement**

Microchip promotes a culture of continuous improvement. As stated above, each employee is measured on how they contribute to improvement. Continuous improvement teams are constantly looking to solve problems, allowing us to maximize our value to our customers.

## **Employee Development and Team Deployment**

Every employee has access to a full suite of training. Each employee is measured on Quality and Quantity of work, Teamwork, Continuous Improvement and Customer Satisfaction. Supervisors are measured on how their employees improve and learn. Employees have regular One-on-Ones with their supervisors and open door is a policy that is really practiced.

## **Statistical Techniques**

Microchip uses statistical process techniques in all aspects of our business. Decision-making, experiment definition and process control are a few areas where these techniques are applied. Every manufacturing employee is trained in SPC before they start their job, since they are the people closest to the product quality.

## **QS-9000 Certification**

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