

## HIGH TEMPERATURE POSITIVE LINEAR REGULATOR

## HTPLREG

### FEATURES

- Specified Over -55 to +225°C
- Output Current up to 500 mA
- Calibrated +15, +12, +10, and +5V Output
- Input Voltage up to 28V
- 1.5 mA Quiescent Current
- Current Limit Short Circuit Protection
- Hermetic 4-Pin Power Package

### APPLICATIONS

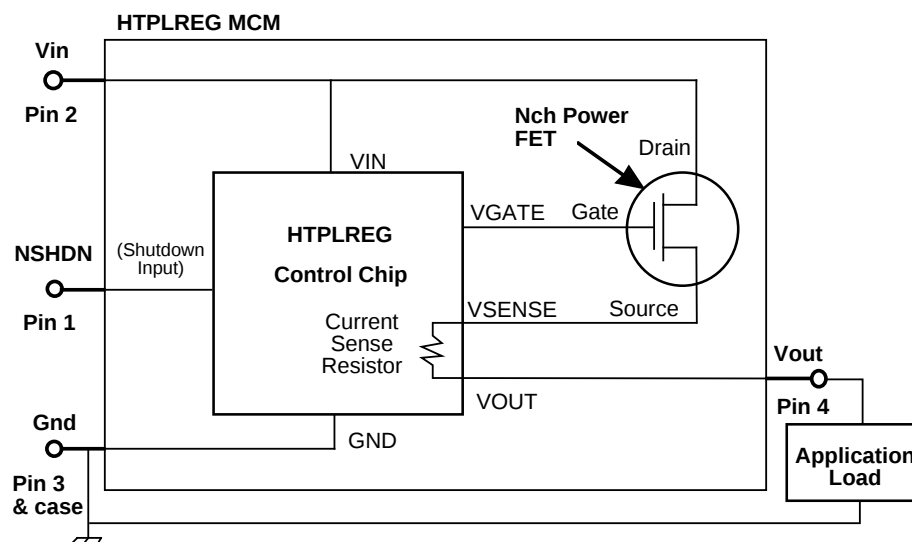
- Down-Hole Well
- Avionics
- Turbine Engine Control
- Industrial Process Control
- Nuclear Reactor
- Electric Power Conversion
- Heavy Duty Internal Combustion Engines

### GENERAL DESCRIPTION

The HTPLREG is a hybrid linear regulator designed to operate over an extremely wide temperature range of -55 to +225°C. The regulator's control circuit is fabricated with Honeywell's dielectrically isolated high-temperature (HT-MOS™) process. A silicon-on-insulator MOSFET is the power device. The HTPLREG is designed specifically for severe high-temperature applications such as down-hole oil well, aerospace, turbine engine and industrial control.

The HTPLREG is available with a calibrated +5, +12, +10, or +15V output. Output current is 500 mA over the specified temperature range, while quiescent current is 1.5 mA. Internal short circuit protection is provided. All parts are burned in to eliminate infant mortality. The HTPLREG is a high-reliability part designed specifically for applications with an extremely wide operating temperature range.

### FUNCTIONAL DIAGRAM



# HTPLREG

## ELECTRICAL CHARACTERISTICS

+5V Output and TA = -55 to +225°C, unless otherwise specified

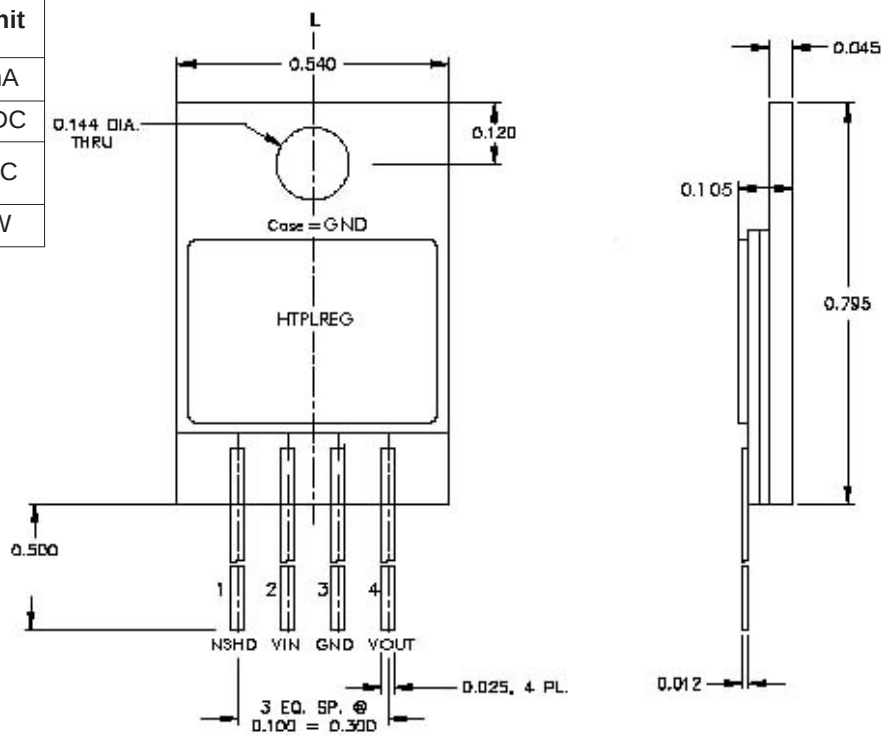
| Parameter              | Description                                                                                            | Conditions                                                                                                                      | Typical                         | Min.                           | Max.                            | Units  |
|------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------|---------------------------------|--------|
| V <sub>OUT</sub>       | Output voltage;<br>0 mA ≤ I <sub>out</sub> < 500mA<br>HTPLREG05<br>HTPLREG10<br>HTPLREG12<br>HTPLREG15 | 8.0V ≤ V <sub>IN</sub> ≤ 25V<br>13.0V ≤ V <sub>IN</sub> ≤ 28V<br>15.0V ≤ V <sub>IN</sub> ≤ 28V<br>18.0V ≤ V <sub>IN</sub> ≤ 28V | 5.00<br>10.00<br>12.00<br>15.00 | 4.75<br>9.50<br>11.40<br>14.25 | 5.25<br>10.50<br>12.60<br>15.75 | Volts  |
| I <sub>STDBY</sub>     | Supply current, no load                                                                                | V <sub>in</sub> =10V, no load                                                                                                   | —                               | 0.6                            | 1.5                             | mA     |
| LINE_REG               | Line regulation                                                                                        | I <sub>out</sub> =50mA                                                                                                          | —                               | 60                             | —                               | dB     |
| R <sub>OUT</sub>       | Output resistance                                                                                      | V <sub>in</sub> =10V                                                                                                            | —                               | —                              | 0.30                            | Ohms   |
| DROP_V                 | Dropout voltage                                                                                        | I <sub>out</sub> =250mA                                                                                                         | —                               | —                              | 3.0                             | Volts  |
| I <sub>LIMIT</sub>     | Current limit threshold                                                                                | V <sub>IN</sub> =10V                                                                                                            | 580                             | 500                            | 800                             | mA     |
| I <sub>SHORT</sub>     | Short circuit current                                                                                  | V <sub>IN</sub> =25V                                                                                                            | 650                             | 400                            | 1000                            | mA     |
| SHUTDN_V               | Shutdown threshold voltage on NSHDN pin.                                                               | V <sub>IN</sub> =20V<br>I <sub>out</sub> =300mA                                                                                 | 1.7                             | —                              | —                               | Volts  |
| I <sub>IL_SHUTDN</sub> | Shutdown pullup current                                                                                | —                                                                                                                               | 100                             | 50                             | 250                             | μAmps  |
| NOISE                  | Output noise                                                                                           | I <sub>out</sub> =500mA                                                                                                         | —                               | —                              | 2                               | mv/RMS |
| RIPPLE                 | Ripple rejection@120Hz                                                                                 | I <sub>out</sub> =500mA                                                                                                         | —                               | 66                             | —                               | dB     |

## ABSOLUTE MAXIMUM RATINGS (1)

| Rating              | Symbol           | Value       | Unit |
|---------------------|------------------|-------------|------|
| Output Current      | I <sub>OUT</sub> | 1.0         | mA   |
| Input Voltage       | V <sub>IN</sub>  | +30         | VDC  |
| Storage Temperature | T <sub>ST</sub>  | -65 to +325 | ° C  |
| Power Dissipation   | P <sub>d</sub>   | 6           | W    |

(1) Stresses in excess of those listed above may result in permanent damage. These are stress ratings only, and operation at these levels is not implied. Frequent or extended exposure to absolute maximum conditions may affect device reliability.

## PACKAGE DRAWING



## ORDERING INFORMATION

| Type        | V <sub>IN</sub> | V <sub>OUT</sub> |
|-------------|-----------------|------------------|
| HTPLREG05TC | 8-25V           | 5V               |
| HTPLREG10TC | 13-28V          | 10V              |
| HTPLREG12TC | 15-28V          | 12V              |
| HTPLREG15TC | 18-28V          | 15V              |

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