Features

Regulated Converters

- 4:1 Wide Input Voltage Range
- 40 Watts Regulated Output Power
- 1.6kVDC Isolation
- Over Current and Over Voltage Protection
- Six-Sided Shield
- No Derating to 55°C
- Standard 2" x2" Package and Pinning
- Efficiency to 86%
- Available as Power Module (RPM40-GW)

POWERLINE

DC/DC-Converter

with 3 year Warranty

RECOM

40 Watt 2" x 2" Single & Dual Output

Description

The RP40-GW series wide input range DC/DC converters are certified to UL 60950-1 and to cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required.
The industry standard 2" x 2" package meets military standards for thermal shock and vibration tolerance.

RoHS 2011/65/EU 6/6

UL-60950-1 Certified
E196683

RP40-GW

Selection Guide 24V and 48V Wide Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input [4,5] Current mA	Efficiency [6] %	Capacitive [7] Load max.
RP40-243.3SGW	9-36	3.3	10000	80/1677	86	25750µF
RP40-2405SGW	9-36	5	8000	100/2008	87	13600µF
RP40-2412SGW	9-36	12	3333	50/2008	87	2360µF
RP40-2415SGW	9-36	15	2666	50/2008	87	1510µF
RP40-483.3SGW	18-75	3.3	10000	60/838	86	25750µF
RP40-4805SGW	18-75	5	8000	65/992	88	13600µF
RP40-4812SGW	18-75	12	3333	30/1004	87	2360µF
RP40-4815SGW	18-75	15	2666	30/1004	87	1510µF
RP40-2412DGW	9-36	±12	±1667	60/2032	86	±1200µF
RP40-2415DGW	9-36	±15	±1333	70/2032	86	±750µF
RP40-4812DGW	18-75	±12	±1667	30/1016	86	±1200µF
RP40-4815DGW	18-75	±15	±1333	30/1016	86	±750µF

* no suffix for CTRL function with Positive Logic (1=ON, 0=OFF), this is standard
* add **/N** for CTRL function with Negative Logic (0=ON, 1=OFF)
* add suffix **-HC** for premounted heatsink and clips

Ordering Examples

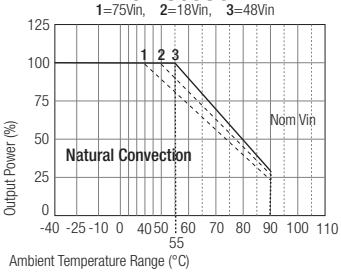
RP40-2405SGW = 24V 4:1 Input, 5V Output, Positive Logic CTRL pin.
RP20-4812DGW/N-HC = 48V 4:1 Input, ±12V Output, Negative Logic CTRL pin, Heatsink fitted

Derating-Graph

(Ambient Temperature)

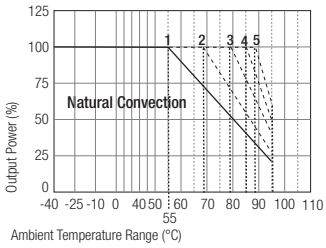
RP40-4805SGW

1=75Vin, **2**=18Vin, **3**=48Vin



RP40-4805SGW with Heatsink

1=Natural Convection, **2**=200LFM, **3**=300LFM, **4**=400LFM, **5**=500LFM



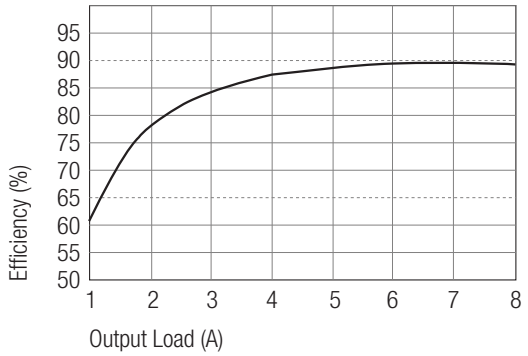
Refer to Application Notes

Derating graphs are valid only for the shown part numbers.
If you need detailed derating-information about a part-number not shown here please contact our technical support service at info@recom-development.at

Efficiency Graphs (25°C Ambient Temperature)

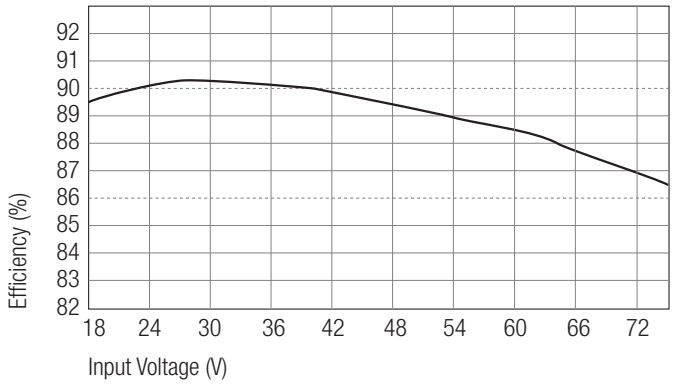
RP40-4805SGW

Efficiency VS Output Load



RP40-4805SGW

Efficiency VS Input Voltage



Specifications (typical at nominal input and 25°C unless otherwise noted)

Input Voltage Range		24V nominal input	9-36VDC
		48V nominal input	18-75VDC
Undervoltage Protection		24V Input	DC-DC ON = 9VDC, DC-DC OFF = 8VDC
		48V Input	DC-DC ON = 18VDC, DC-DC OFF = 16VDC
Input Filter			Pi Type
Input Voltage Variation dv/dt		(Complies with ETS300 132 part 4.4)	5V/ms max
Input Surge Voltage (100 ms max.)		24V Input	50VDC
		48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load) (3)			20mAp-p
Start Up Time (nominal Vin and constant resistive load)			20ms typ.
Remote ON/OFF (7)	(Positiv logic)	DC-DC ON	Open or 3V < Vr < 12V
		DC-DC OFF	Short or 0V < Vr < 1.2V
	(Negativ logic)	DC-DC ON	Short or 0V < Vr < 1.2V
		DC-DC OFF	Open or 3V < Vr < 12V
Remote OFF state input current		Nominal input	24Vin: 10mA
			48Vin: 5mA
Output Power			40W max.
Output Voltage Accuracy (full Load and nominal Vin)			±1%

continued on next page

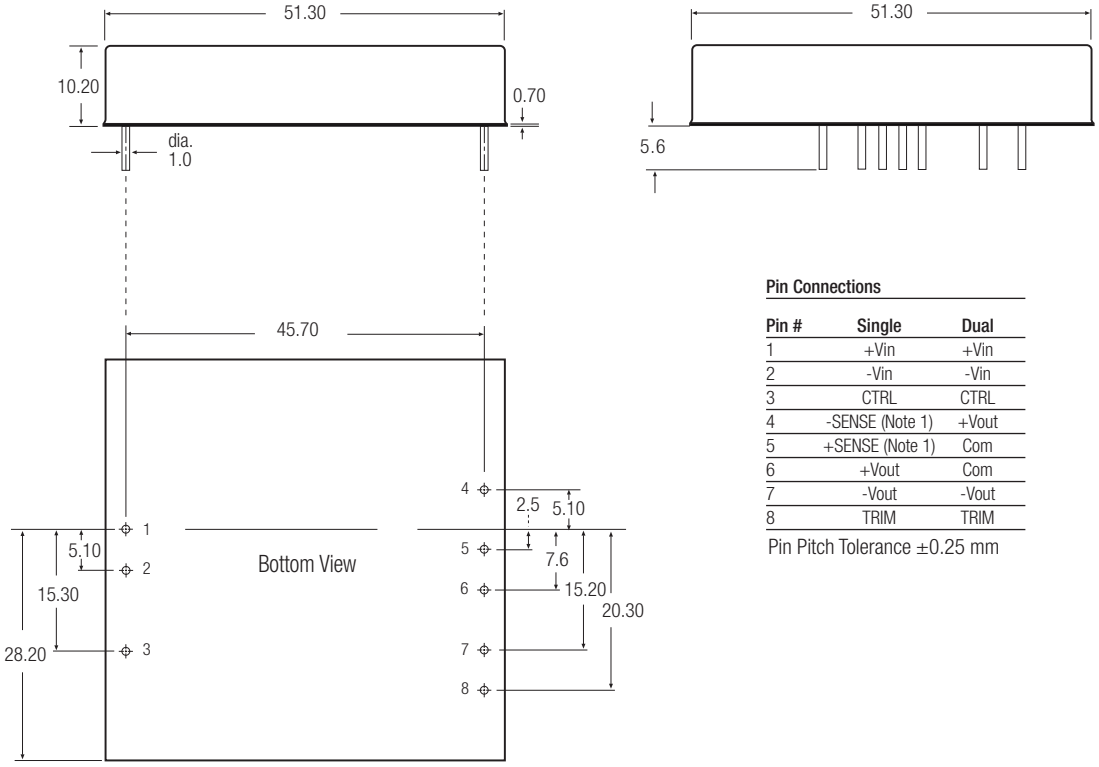
Specifications (typical at nominal input and 25°C unless otherwise noted)

Voltage Adjustability [1]		±10%
Load Regulation (min. load to full load) [9, 10]	Single	±0.5%
	Dual	±1%
Line Regulation (low line, high line at full load)		±0.2%
Cross Regulation [10]	Dual	±5%
Temperature Coefficient		±0.02%/°C max.
Ripple and Noise (20MHz bandwith, with 1µF MLCC on output)	Single 3.3, 5V	50mVp-p
	Single 12, 15V	75mVp-p
	Dual 12V	120mVp-p
	Dual 15V	150mVp-p
Transient Response (25% load step change)		250µs
Over Voltage Protection	3.3 Vout	3.9V
Zener diode clamp (only single)	5 Vout	6.2V
	12 Vout / ±12 Vout	15V / ±15V
	15 Vout / ±15 Vout	18V / ±18V
Over Load Protection (% of full load at nominal Vin)		150% max.
Undervoltage Lockout		See Application Notes
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage (rated for one minute)		1600VDC
Isolation Resistance		1 GΩ min.
Isolation Capacitance		2500pF max.
Operating Frequency		300kHz typ.
Operating Temperature Range		-40°C to +55°C(without derating) +55°C to +95°C(with derating)
Maximum Case Temperature		105°C
Storage Temperature Range		-55°C to +125°C
Over Temperature Protection		110°C typ.
Thermal Impedance [8]	Without Heat-Sink	9.2°C/Watt
	With Heat-Sink	7.6°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel plated copper
Base Material		RF4 PCB
Potting Material		Epoxy (UL94-V0)
Conducted Emissions [12, 13]	EN55022	Class A
Radiated Emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria A
Radiated Immunity	EN61000-4-3	Perf. Criteria A
Fast Transient	EN61000-4-4	Perf. Criteria B
Surge	EN61000-4-5	Perf. Criteria B
Conducted Immunity	EN61000-4-6	Perf. Criteria A
Weight		60g
Packing Quantity	Refer to App Notes for tube dimensions	4 pcs per Tube
Dimensions		50.8 x 50.8 x 10.2mm
MTBF [2]	Bellcore TR-NWT-000332	1105 x 10^3 hours
	MIL-HDBK-217F	151 x 10^3 hours

Notes :

1. For the single output: Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +sense should be connected to its corresponding +OUTPUT and likewise the -sense should be connected to its corresponding –OUTPUT.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C
MIL-HDBK-217F Notice 2 @ Ta=25°C, full load (GroundBenign, controlled environment).
3. Simulated source impedance of 12µH. 12µH inductor in series with +Vin.
4. Maximum value at nominal input voltage and no load.
5. Typical value at nominal input voltage and full load.
6. Test by minimum Vin and constant resistive load.
7. The ON/OFF control function. There are positive logic (standard) and negative logic (option). The pin voltage is referenced to Vin- input
   To order negative logic ON/OFF control add the suffix-N (Ex: RP40-4805SGW-N).
8. Heat sink is optional and P/N: 7G-0026-C. Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.
9. The dual output required a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
10. Load regulation for dual output : Min load to 100% load balanced on all outputs.
11. Cross regulation for dual output : asymmetrical load 25% <> 100% FL.
12. .The RP40-GW series required external filter to meets EN55022 class A.
13. See application notes for Class B common mode filter suggestion

Package Style and Pinning (mm)



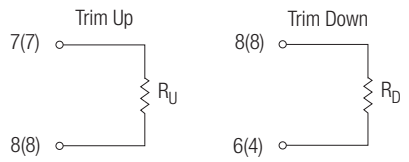
Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	-SENSE (Note 1)	+Vout
5	+SENSE (Note 1)	Com
6	+Vout	Com
7	-Vout	-Vout
8	TRIM	TRIM

Pin Pitch Tolerance ±0.25 mm

External Output Trimming

Output can be externally trimmed by using the method shown below. ( ) for dual output tri.
See Application Notes for more details.



The product information and specifications are subject to change without prior notice. All products are designed for non-safety critical commercial and industrial applications.
The Buyer agrees to implement safeguards that anticipate the consequences of any failures that might cause harm, loss of life and/or damage property.

Mouser Electronics

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RECOM:

RP40-2405SGW RP40-2405SGW-HC RP40-2412DGW RP40-2412DGW/N RP40-2412DGW/N-HC RP40-2412DGW-HC RP40-2412SGW RP40-2412SGW-HC RP40-2415DGW RP40-2415DGW/N RP40-2415DGW/N-HC RP40-2415DGW-HC RP40-2415SGW RP40-2415SGW-HC RP40-243.3SGW RP40-243.3SGW-HC RP40-4805SGW RP40-4805SGW-HC RP40-4812DGW RP40-4812DGW/N RP40-4812DGW/N-HC RP40-4812DGW-HC RP40-4812SGW RP40-4812SGW-HC RP40-4815DGW RP40-4815DGW/N RP40-4815DGW/N-HC RP40-4815DGW-HC RP40-4815SGW RP40-4815SGW-HC RP40-483.3SGW RP40-483.3SGW-HC RP40-2405SGW/N RP40-2405SGW/N-HC RP40-2412SGW/N RP40-2412SGW/N-HC RP40-2415SGW/N RP40-2415SGW/N-HC RP40-243.3SGW/N RP40-243.3SGW/N-HC RP40-4805SGW/N RP40-4805SGW/N-HC RP40-4812SGW/N RP40-4812SGW/N-HC RP40-4815SGW/N RP40-4815SGW/N-HC RP40-483.3SGW/N RP40-483.3SGW/N-HC