

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" x 2" Package and Pinning
- Efficiency to 86 %
- Available as Power Module (RPM40-GW)

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.

Selection Guide 24V and 48V Wide Input Types

| Part Number | Input Range VDC | Output Voltage VDC | Output Current mA | Input Current mA ^(4,5) | Efficiency % ⁽⁶⁾ | Capacitive Load max. ⁽⁷⁾ |
|---------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------|-------------------------------------|
| 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

POWERLINE

DC/DC-Converter

with 3 year Warranty

RECOM

40 Watt

2" x 2"

Single & Dual

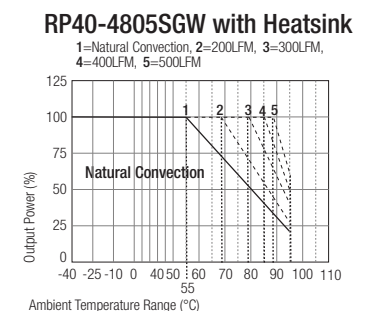
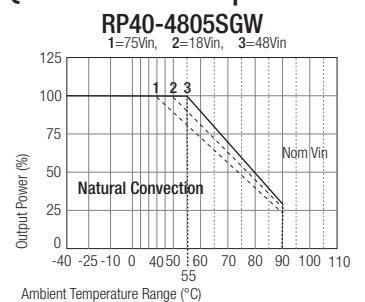
Output



UL-60950-1 Certified
E196683

RP40-GW

Derating-Graph (Ambient Temperature)



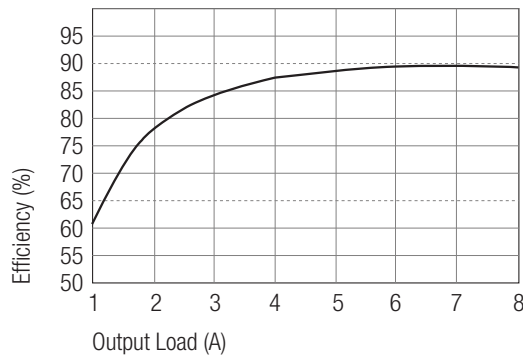
Refer to Application Notes

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)

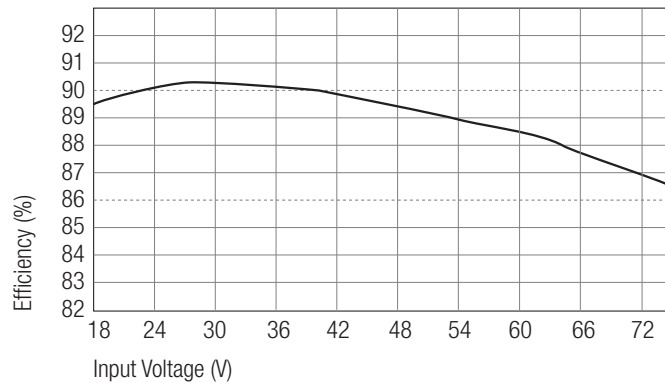
RP40-4805SGW

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⁾ | | 20mA _{p-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% | |

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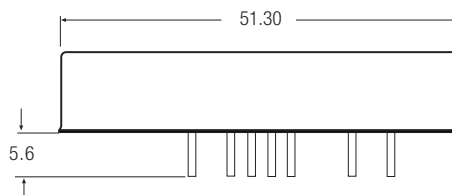
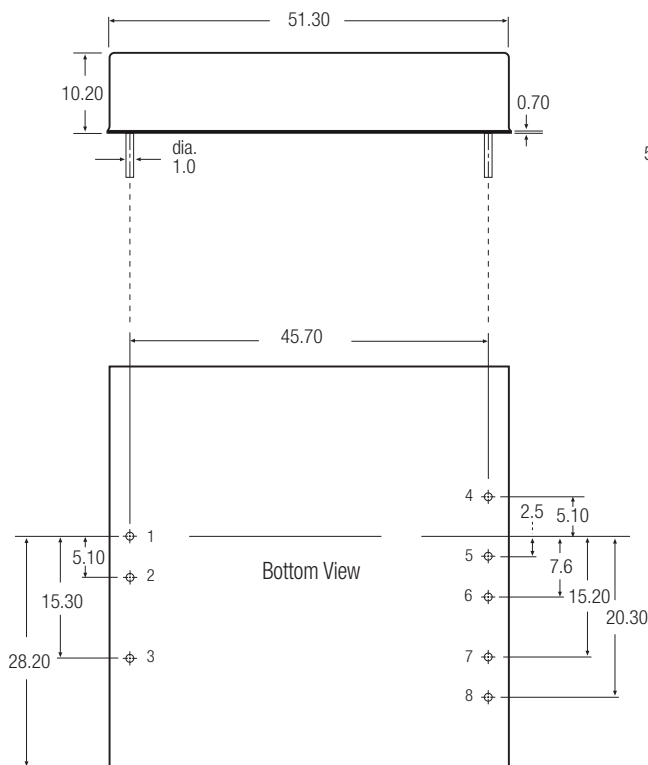
Specifications (typical at nominal input and 25°C unless otherwise noted)

| | | |
|---|--|--|
| 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 bandwidth, 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.

