Features

- 2:1 Wide Input Voltage Range
- 40 Watts Output Power
- 1.6kVDC Isolation
- UL Certified
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Design Meet Safety Standard
- Standard 50.8 x50.8x10.2mm Package
- Efficiency to 90 %
- Available as Power Module (RPM40-G)

Description

The RP40-G series 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 $2" \times 2"$ package meets military standards for thermal shock and vibration tolerance.

Selection Guide Single and Dual Outputs

Part Number	Input	Output	Output	Input (4)	Efficienc	cy (5) Capacitive (6)
	Range VDC	Voltage VDC	Current mA	Current mA	%	Load max.
RP40-123.3SG	9-18	3.3	8000	2750	84	21000µF
RP40-1205SG	9-18	5	8000	4065	86	13600µF
RP40-1212SG	9-18	12	3333	4065	86	2360µF
RP40-1215SG	9-18	15	2666	4015	87	1510µF
RP40-243.3SG	18-36	3.3	8000	1325	87	21000µF
RP40-2405SG	18-36	5	8000	1961	89	13600µF
RP40-2412SG	18-36	12	3333	2048	88	2360µF
RP40-2415SG	18-36	15	2666	1985	89	1510µF
RP40-483.3SG	36-75	3.3	8000	655	88	21000µF
RP40-4805SG	36-75	5	8000	969	90	13600µF
RP40-4812SG	36-75	12	3333	1000	89	2360µF
RP40-4815SG	36-75	15	2666	992	89	1510µF
RP40-1212DG	9-18	±12	±1800	4444	85	±1200µF
RP40-1215DG	9-18	±15	±1400	4321	85	±750μF
RP40-2412DG	18-36	±12	±1800	2169	87	±1200μF
RP40-2415DG	18-36	±15	±1400	2108	87	±750μF
RP40-4812DG	36-75	±12	±1800	1084	87	±1200μF
RP40-4815DG	36-75	±15	±1400	1054	87	±750μF
RP40-120512TG	9-18	5/±12	6000 / ±400	4024	86	6800μF/±330μF
RP40-120515TG	9-18	5/±15	6000 / ±300	3963	86	6800μF/±110μF
RP40-240512TG	18-36	5/±12	6000 / ±400	1989	87	6800μF/±330μF
RP40-240515TG	18-36	5/±15	6000 / ±300	1958	87	6800μF/±110μF
RP40-480512TG	36-75	5/±12	6000 / ±400	982	88	6800μF/±330μF
RP40-480515TG	36-75	5/±15	6000 / ±300	967	88	6800μF/±110μF

^{*} no suffix for CTRL function with Positive Logic (1=0N, 0=0FF), this is standard

Ordering Examples

RP40-2405SG = 24V Input, 5V Output, Positive Logic CTRL pin.

RP20-4812DG-HC = 48V Input, ±12V Output, Positive Logic CTRL pin, Heatsink fitted

RP20-120512TG-HC = 24V Input, 5V and \pm 12V Outputs, Positive Logic CTRL pin, Heatsink fitted

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DC/DC-Converter with 3 year Warranty



40 Watt Single, Dual & Triple Output





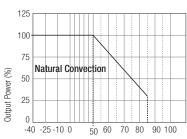


UL-60950-1 Certified E196683



Derating-Graph

(Ambient Temperature)
RP40-4805SG



Ambient Temperature Range (°C)

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

Refer to Application Notes

^{*} add suffix -HC for premounted heatsink and clips

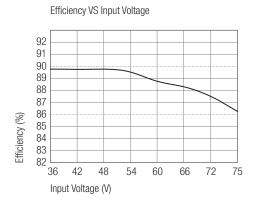
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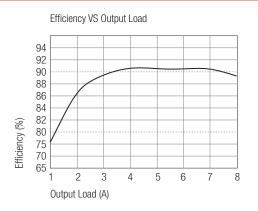
DC/DC-Converter

RP40-S_D_TG Series

Typical Characteristics

RP40-4805SG





Specifications (typical at nominal input and 25°C unless otherwise	se noted)	
Input Voltage Range	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	48V nominal input	36-75VDC
Under Voltage Lockout	12V input DC-DC ON	9VDC
	DC-DC OFF	8VDC
	24V input DC-DC ON	17.8VDC
	DC-DC OFF	16VDC
	48V input DC-DC ON	36VDC
	DC-DC OFF	34VDC
Input Filter (13)		L-C Type
Input Voltage Variation dv/dt	(Complies with ETS300 132 part 4.4)	5V/ms max
Input Surge Voltage (100 ms max.)	12V Input	36VDC
	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load (3))		40mAp-p
Start Up Time (nominal Vin and constant resistor load)		25ms typ.
Remote ON/OFF (7)	DC-DC ON	Open or 3.5V < Vr < 12V
(Positive logic)	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote OFF input current	Nominal input	2.5mA
Output Power		40W max.
Output Voltage Accuracy (full Load and nominal Vin)	Single & Dual	±1%
	Triple Main	±1%
	Auxiliary	±5%
Voltage Adjustability		±10%
Minimum Load	Single and Dual Positive	0%
	Dual and Triple	10% of full load
Line Regulation (low line, high line at full load)	Single & Dual	±0.5%
	Triple Main	±1%
	Triple Auxiliary	±5%
Load Regulation (10% to 100% full load see Note (9, 10))	Single	±0.5%
	Dual	±1%
	Triple Main	±2%
	Auxiliary	±5%

continued on next page

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DC/DC-Converter

RP40-S_D_TG Series

pecifications (typical at nominal input and 25°C unless otherwise no	oted)	
Cross Regulation (11)	Triple Main	±19
(Asymmetrical 25% <> 100% load)	Dual / Triple Auxiliary	±59
Ripple and Noise (20MHz bandwidth, with 1µF MLCC on output)	Single 3.3, 5V	50mVp-
(Measured with a 1004pF/50V MLCC)	Single 12, 15V	75mVp-
	Dual 12V	120mVp-
	Dual 15V	150mVp-
	RP40-xxxxxxTG (12)	50 / 75mVp-
Temperature Coefficient		±0.02%/°C max
Transient Response (25% load step change)		300µ:
Over Voltage Protection	3.3V	3.91
Zener diode clamp (only single)	5V	6.2
	12V	151
	15V	18\
Over Load Protection (% of full load at nominal Vin)		150% ma:
Undervoltage Lockout		See Application Notes
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see "Selection Guide" table
Isolation Voltage (rated for one minute)		1600VD0
Isolation Resistance		1 GΩ min
solation Capacitance		1000pF max
Operating Frequency (14)		300kHz typ
Approved to Safety Standards	Single, Triple	UL 1950, EN60950
	Dual	EN60950
Operating Temperature Range		-40°C to +85°C(with derating)
Maximum Case Temperature		100°C
Storage Temperature Range		-55°C to +125°C
Thermal Impedance ⁽⁸⁾	Natural convection	9.2°C/Wat
,	Heat Sink with 20LFM	7.6°C/Wat
	Heat Sink with 500LFM	2.8°C/Wat
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RF
Case Material		Nickel plated coppe
Base Material		Non-conductive black plastic FR4
Potting Material		Epoxy (UL94-V0
Conducted Emissions (16)	EN55022	Class A
Radiated Emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria E
Radiated Immunity	EN61000-4-3	Perf. Criteria E
Fast Transient	EN61000-4-4	Perf. Criteria E
Surge	EN61000-4-5	Perf. Criteria I
Conducted Immunity	EN61000-4-6	Perf. Criteria E
Weight		600
Packing Quantity	Refer to App Notes for tube dimensions	4 pcs per Tube
Dimensions		50.8 x 50.8 x 10.2mm
MTBF ⁽²⁾		1398 x 10 ³ hours

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DC/DC-Converter

RP40-S_D_TG Series

Notes:

- 1. Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +Vsense 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 (Ground fixed and controlled environment).
- 3. Simulated source impedance of 12µH. 12µH inductor in series with +Vin.
- 4. Maximum value at nominal input voltage and full load of standard type.
- 5. Typical value at nominal input voltage and full load.
- 6. Test by minimum Vin and constant resistor load.
- 7. The ON/OFF control pin voltage is referenced to negative input.
- 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 triple output required a minimum 10% 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 triple output: Main output(V1):10 to 100% with 10% to 100% balanced on auxiliaries.

Auxiliary outputs(V2 and V3):10% to 100% balanced on all outputs.

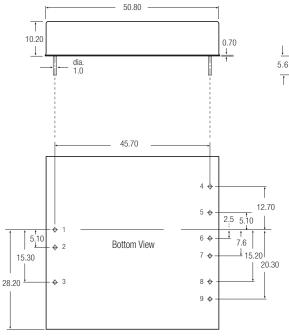
11. Cross regulation for triple output: Main output 100% load, auxiliary 100%, other auxiliary 25% to 100%.

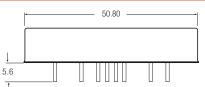
Auxiliary outputs(V2 and V3):main output 100% load, auxiliary 100%, other auxiliary

25% to 100% or main output 25%, auxiliary 25%, other auxiliary 25% to 100%.

- 12. The models of RP40-XX3.305DG are specified with a 1uF ceramic output capacitors.
- 13. An external filter capacitor is required for normal operation. The capacitor should be capable of handing 1A ripple current for 48V/24V models. RECOM suggest: Nippon chemi-con KY series, 220μ F/100V, ESR 90m Ω .
- 14. Operating frequency for dual output: master (5Vo) 300KHz slave (3.3Vo) 500KHz.
- 15.Any condition of dual output (3.3V/5V) rated lout current, not to exceed 8A of total output currents. The product safety approval pending.
- 16. See application notes for Class B common mode filter suggestion

Package Style and Pinning (mm)





Pin#	Single	Dual	Triple
1	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin
3	CTRL	CTRL	CTRL
4	NC	No Pin	+Aux
5	-Sense (Note1)	+Vout	Com
6	+Sense (Note1)	Com	-Aux
7	+Vout	Com	+Vout
8	-Vout	-Vout	-Vout(Com)
9	Trim	Trim	NC

NC = No Connection

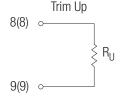
Pin Connections

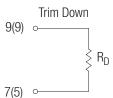
Pin Pitch Tolerance ±0.35 mm

External Output Trimming

Output can be externally trimmed by using the method shown below. () for dual output trim.

See Application Notes for more details





The product information and specifications are subject to change without prior notice. RECOM products are not authorized for use in safety-critical applications (such as life support) without RECOM's explicit written consent. A safety-critical application is defined as an application where a failure of a RECOM product may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The buyer shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.