

# POWERLINE - DC/DC-Converter

A-Series, 5W, 1.6 kV Isolation, Regulated, 2:1 Wide Input Range (Single & Dual Output)

# RECOM

## Features

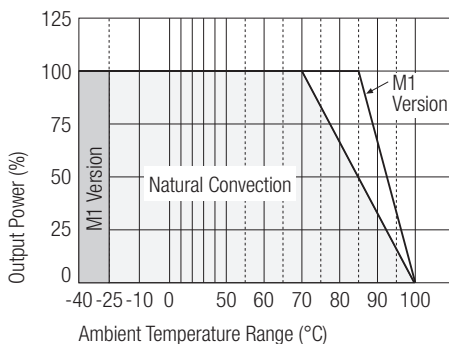
- 5 Watts Regulated Output Power
- 2:1 Wide Input Voltage Range
- Five-Sided Shield
- High Efficiency up to 84%
- Standard 24 Pin DIP & SMD Type Package
- International Safety Standard Approvals
- UL 1950 Component Recognised



## Selection Guide 12V, 24V and 48V Input Types

Part Number	SMD Suffix	Input Range	Output Voltage	Output Current	Input Current (see note 4)	Efficiency (see note 5)	Capacitive Load max. $\mu$ F
DIP		VDC	VDC	mA	mA	%	
RP05-123.3SA	(SMD)	9-18	3.3	1000	382	76	2200
RP05-1205SA	(SMD)	9-18	5	1000	563	78	1000
RP05-1212SA	(SMD)	9-18	12	470	603	82	220
RP05-1215SA	(SMD)	9-18	15	400	649	81	150
RP05-1205DA	(SMD)	9-18	$\pm$ 5	$\pm$ 500	563	78	$\pm$ 680
RP05-1212DA	(SMD)	9-18	$\pm$ 12	$\pm$ 230	597	81	$\pm$ 100
RP05-1215DA	(SMD)	9-18	$\pm$ 15	$\pm$ 190	617	81	$\pm$ 68
RP05-243.3SA	(SMD)	18-36	3.3	1000	194	75	2200
RP05-2405SA	(SMD)	18-36	5	1000	285	77	1000
RP05-2412SA	(SMD)	18-36	12	470	305	81	220
RP05-2415SA	(SMD)	18-36	15	400	325	81	150
RP05-2405DA	(SMD)	18-36	$\pm$ 5	$\pm$ 500	274	80	$\pm$ 680
RP053-2412DA	(SMD)	18-36	$\pm$ 12	$\pm$ 230	288	84	$\pm$ 100
RP05-2415DA	(SMD)	18-36	$\pm$ 15	$\pm$ 190	308	81	$\pm$ 68
RP05-483.3SA	(SMD)	36-75	3.3	1000	98	74	2200
RP05-4805SA	(SMD)	36-75	5	1000	143	77	1000
RP05-4812SA	(SMD)	36-75	12	470	151	82	220
RP05-4815SA	(SMD)	36-75	15	400	162	81	150
RP05-4805DA	(SMD)	36-75	$\pm$ 5	$\pm$ 500	141	78	$\pm$ 680
RP05-4812DA	(SMD)	36-75	$\pm$ 12	$\pm$ 230	147	82	$\pm$ 100
RP05-4815DA	(SMD)	36-75	$\pm$ 15	$\pm$ 190	154	81	$\pm$ 68

## RP05-4805SA: Derating Curve



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

Output Power		5W max.
Voltage Accuracy (full Load and nominal Vin)		±2%
Minimum Load (see note 1)		10% of FL
Line Regulation (LL-HL at full load)		±0.2%
Load Regulation (25% to 100% FL)	Single Dual	±0.5% ±1%
Cross Regulation (asymmetrical load 25%/100% FL)		±5%
Ripple and Noise (20MHz bandwidth)		50mVp-p
Temperature Coefficient		±0.02%/°C, max.
Transient Response (25% load step change)		200µsec
Over Load Protection (% of full load at nominal Vin)		170% typ.
Short Circuit Protection		Continuous, automatic recovery
Input Voltage Range	RP05 12V nominal input RP05 24V nominal input RP05 48V nominal input	9-18VDC 18-36VDC 36-75VDC
Input Filter		Pi Type
Input Surge Voltage (100 ms max.)	12V Input 24V Input 48V Input	36VDC 50VDC 100VDC
Input Reflected Ripple (nominal Vin and full load)		20mA <sub>p-p</sub>
Start Up Time (nominal Vin and constant resistor load)		600ms typ.
Efficiency		see „Selection Guide“ table
Isolation Voltage	In to out I/O to case I/O to case	1600VDC min. DIP type 1600VDC min. SMD type 1000VDC min.
Isolation Resistance		10 <sup>9</sup> Ω min.
Isolation Capacitance		300pF max.
Switching Frequency		300kHz typ.
Approved to Safety Standards		UL 1950, EN60950
Case Material		Nickel-coated copper
Base Material		Non-conducted black plastic
Potting Material		Epoxy (JL94-V0)
Weight	DIP SMD	16g 18g
Dimensions		See „Package Style and Pinning“ on next page
MTBF (see note 2)		3.165 x 10 <sup>6</sup> hours
Operating Temperature Range	Standard M1 (see note 3)	-25°C to +85°C (with derating) -40°C to +85°C (non-derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C

continued on next page

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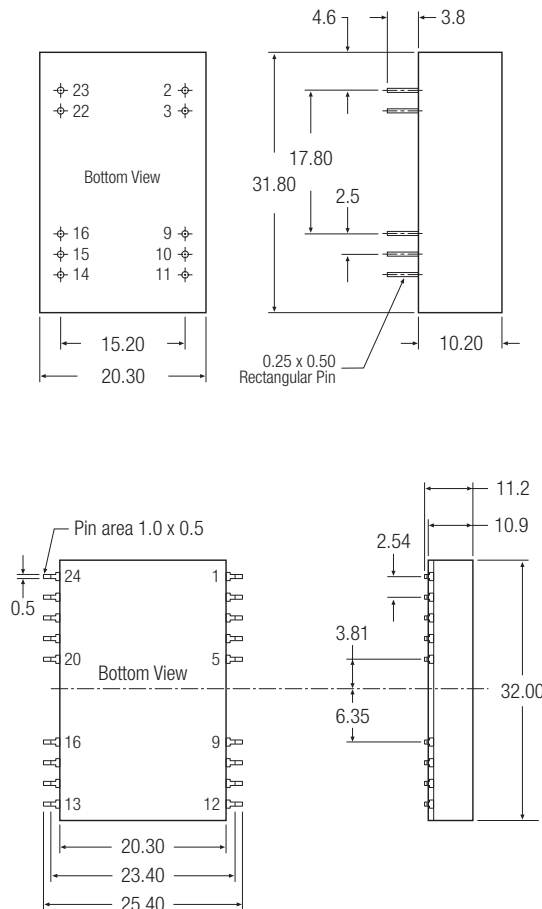
## Specifications continued (typical at nominal input and 25°C unless otherwise noted)

Thermal Impedance	Natural convection	20°C/Watt
Thermal Shock		MIL-STD-810D
Vibration	10-55Hz, 2G, 3 Min. Period, 30 Min. along X, Y and Z	
Relative Humidity		5% to 95% RH
Conducted Emissions	EN55022	Level A
Radiated Emissions	EN55022	Level A
Conducted Immunity	EN61000-4-6	Perf. Criteria 2
Radiated Immunity	EN61000-4-3	Perf. Criteria 2
Fast Transient	EN61000-4-4	Perf. Criteria 2
ESD	EN61000-4-2	Perf. Criteria 2

### Notes

1. The RP05 A-series requires a minimum of 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.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40 °C (Ground fixed and controlled environment).
3. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than the standard and the M2 version.
4. Maximum value at nominal input voltage and full load of standard type.
5. Typical value at nominal input voltage and full load.
6. There is no pin at pin 10 & pin 15 for the RP05-W series.

## Package Style and Pinning (mm)



### DIP Pin Connections

Pin #	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Common
10	NC (see note 6)	NC (see note 6)
11	NC	-Vout
14	+Vout	+Vout
15	NC (see note 6)	NC (see note 6)
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

### SMD Pin Connections

Pin #	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Common
10	NC	NC
11	NC	-Vout
14	+Vout	+Vout
15	NC	NC
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin
Others	NC	NC

Pin Pitch Tolerance  $\pm 0.35$  mm