

POWERLINE - DC/DC-Converter

E-Series, 10W, 1.6 kV Isolation, 2:1 Wide Input Range (Single & Dual Output)

RECOM

Features

- 10 Watts Output Power
- 2:1 Wide Input Voltage Range
- International Safety Standard Approvals
- Six-Sided Continuous Shield
- High Efficiency up to 86%
- Standard 50.8 x 25.4 x 10.2mm Package
- Fixed Switching Frequency
- UL 1950 Component Recognised

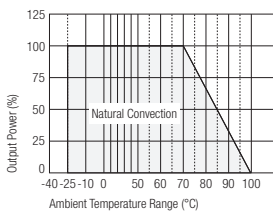


Selection Guide 12V, 24V and 48V Input Types

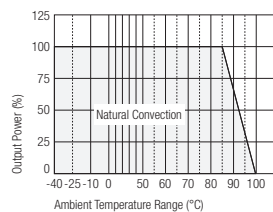
Part Number	Input Voltage	Output Voltage	Output Current	Input Current (see note 6)	Efficiency (see note 7)	Capacitive Load max. μ F
	VDC	VDC	mA	mA	%	
RP10-123.3SE	9-18	3.3	2000	724	80	6800
RP10-1205SE	9-18	5	2000	1082	81	4700
RP10-1212SE	9-18	12	830	1064	82	690
RP10-1215SE	9-18	15	670	1088	81	470
RP10-1205DE	9-18	\pm 5	\pm 1000	1068	82	\pm 680
RP10-1212DE	9-18	\pm 12	\pm 416	1053	83	\pm 330
RP10-1215DE	9-18	\pm 15	\pm 333	1041	84	\pm 110
RP10-243.3SE	18-36	3.3	2000	362	80	6800
RP10-2405SE	18-36	5	2000	534	82	4700
RP10-2412SE	18-36	12	830	519	84	690
RP10-2415SE	18-36	15	670	523	84	470
RP10-2405DE	18-36	\pm 5	\pm 1000	548	80	\pm 680
RP10-2412DE	18-36	\pm 12	\pm 416	520	84	\pm 330
RP10-2415DE	18-36	\pm 15	\pm 333	520	84	\pm 110
RP10-483.3SE	36-75	3.3	2000	183	79	6800
RP10-4805SE	36-75	5	2000	260	84	4700
RP10-4812SE	36-75	12	830	253	86	690
RP10-4815SE	36-75	15	670	258	85	470
RP10-4805DE	36-75	\pm 5	\pm 1000	267	82	\pm 680
RP10-4812DE	36-75	\pm 12	\pm 416	254	86	\pm 330
RP10-4815DE	36-75	\pm 15	\pm 333	260	84	\pm 110

RP10-4805SE: Derating & Efficiency Curves

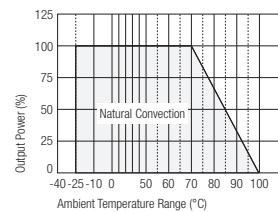
RP10-4805SE Derating Curve



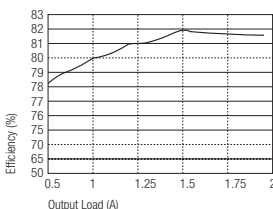
RP10-4805SE-M1 Derating Curve



RP10-4805SE-M2



RP10-4805S Efficiency vs Output Load



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

Output Power		10W max.	
Voltage Accuracy (full Load and nominal Vin)		±2%	
Minimum Load		10% of FL	
Line Regulation (LL-HL at full load)		±1%	
Load Regulation (10% to 100% FL)	Single	±1%	
	Dual	±2%	
Cross Regulation (asymmetrical load 25%/100% FL)	Dual	±5%	
Ripple and Noise (20MHz bandwidth)	Single	50mVp-p	
	Dual	75mVp-p	
Temperature Coefficient		±0.02%/°C, max.	
Transient Response (25% load step change)		500µsec	
Over Voltage Protection (with zener diode clamp)	3.3V output	3.9V	
	5V output	6.2V	
	12V output	15V	
	15V output	18V	
Over Load Protection (% of full load at nominal Vin)		150% max.	
Short Circuit Protection		Hiccup, automatic recovery	
Input Voltage Range	RP10 12V nominal input	9-18VDC	
	RP10 24V nominal input	18-36VDC	
	RP10 48V nominal input	36-75VDC	
Input Filter		Pi Type	
Input Surge Voltage (100 ms max.)	12V input	36VDC	
	24V input	50VDC	
	48V input	100VDC	
Input Reflected Ripple (nominal Vin and full load, see note 1)		30mA _{p-p}	
Start Up Time (nominal Vin and constant resistor load)		20ms typ.	
Remote ON/OFF (see note 2)	Positive logic	DC-DC ON DC-DC OFF	Open or 3.5V < Vr < 12V Short or 0V < Vr < 1.2V
	Negative logic	DC-DC ON DC-DC OFF	Short or 0V < Vr < 1.2V Open or 3.5V < Vr < 12V
Remote Off Input Current	Nominal input		2.5mA
Efficiency			see „Selection Guide“ table
Isolation Voltage			1600VDC min.
Isolation Resistance			10 ⁹ 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 (UL94-V0)
Weight			27g
Dimensions			50.8 x 25.4 x 10.2 mm
MTBF (see note 3)			1.976 x 10 ⁶ Hours

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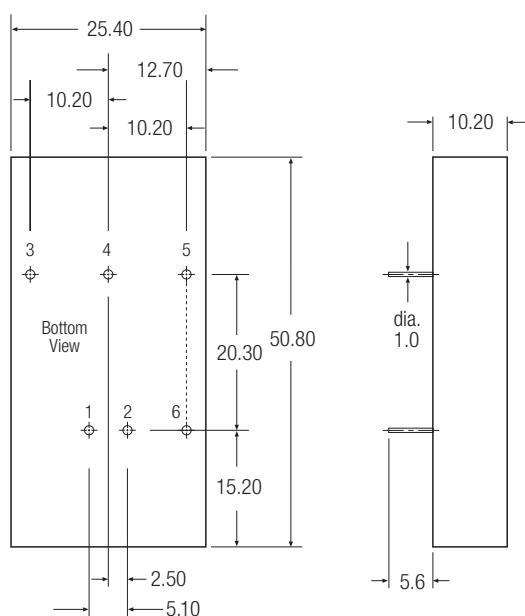
Specifications continued (typical at nominal input and 25°C unless otherwise noted)

Operating Temperature Range (see derating curves on previous page)	Standard M1 (see note 4) M2	-25°C to +85°C (with derating) -40°C to +85°C (non-derating) -40°C to +85°C (with derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C
Thermal Impedance (see note 5)	Natural convection	12°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 2G, 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
Surge	EN61000-4-5	Perf. Criteria 2
Fast Transient	EN61000-4-4	Perf. Criteria 2
ESD	EN61000-4-2	Perf. Criteria 2

Notes

1. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
2. The ON/OFF control is an optional function. There are positive logic and negative logic. The pin voltage is referenced to negative input.
To order positive logic ON-OFF control add the suffix ' P ' (Ex: RP10-2405P)
To order negative logic ON-OFF control add the suffix ' N ' (Ex: RP10-2405N)
3. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40 °C. (Ground fixed and controlled environment).
4. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and M2 version.
5. Heat sink is optional and P/N: 7G -0020A, Thermal impedance is 10°C/Watt for natural convection.
6. Maximum value at nominal input Voltage and full load of standard type.
7. Typical value at nominal input voltage and full load.

Package Style and Pinning (mm)



Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout
6	CTRL (Optional)	CTRL (Optional)

Pin Pitch Tolerance ± 0.35 mm