

Features

- 2:1 Wide Input Voltage Range
- 10 Watts Output Power
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- International Safety Standard Approvals
- UL 1950 Component Recognized
- Standard 50.8 x25.4x10.2mm Package
- Efficiency to 86%

POWERLINE DC/DC-Converter

RP10- S_DE Series

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

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input ⁽⁴⁾ Current mA	Efficiency ⁽⁵⁾ %	Capacitive ⁽⁶⁾ Load max. μF
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
RP10-243.3SE	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
RP10-483.3SE	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
RP10-1205DE	9-18	±5	±1000	1068	82	±680
RP10-1212DE	9-18	±12	±416	1053	83	±330
RP10-1215DE	9-18	±15	±333	1041	84	±110
RP10-2405DE	18-36	±5	±1000	548	80	±680
RP10-2412DE	18-36	±12	±416	520	84	±330
RP10-2415DE	18-36	±15	±333	520	84	±110
RP10-4805DE	36-75	±5	±1000	267	82	±680
RP10-4812DE	36-75	±12	±416	254	86	±330
RP10-4815DE	36-75	±15	±333	260	84	±110

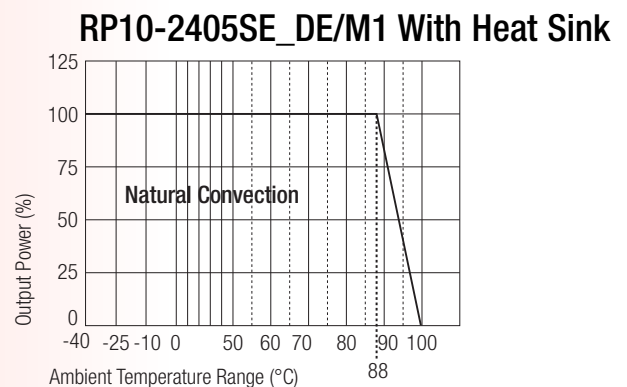
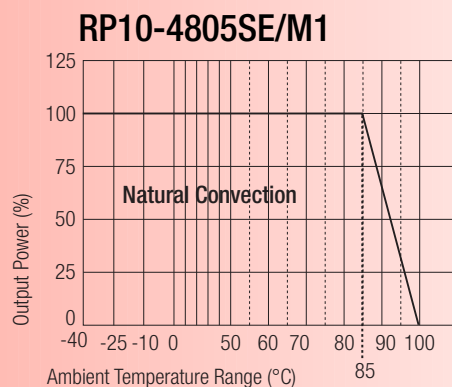
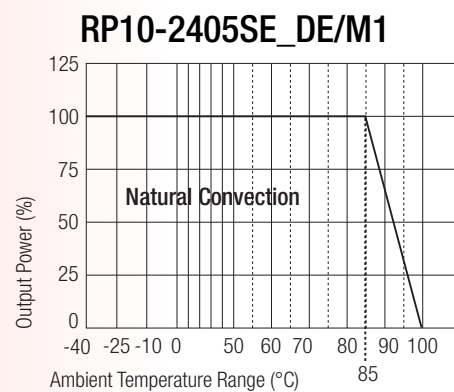
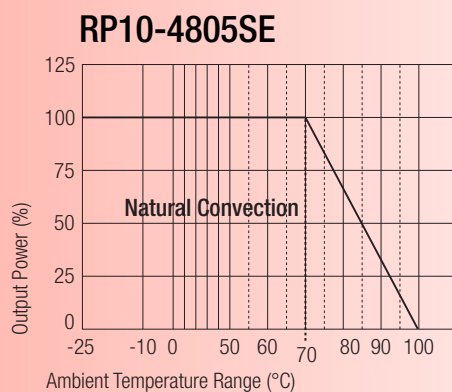
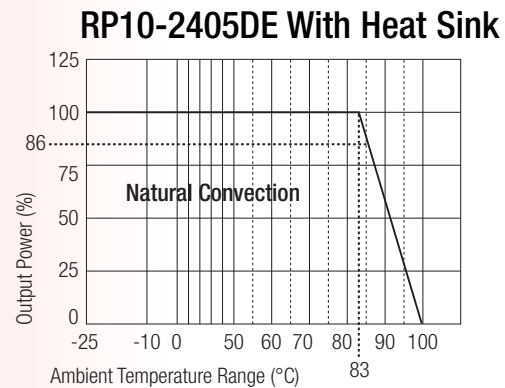
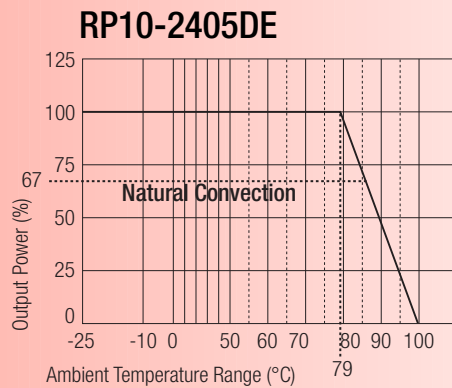
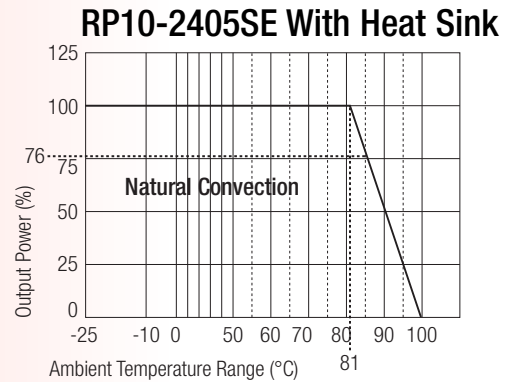
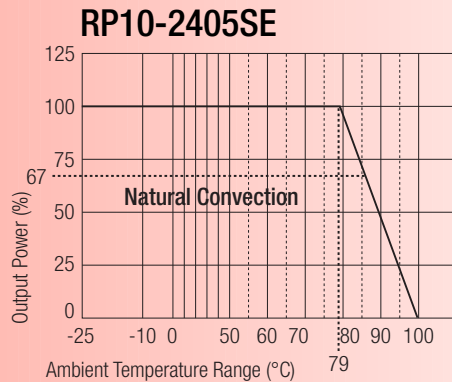
10 Watt 2" x 1" Package Single & Dual Output



Description

The E-Series of DC/DC Converters are fully certified to EN 60950: 2000. This makes them ideal for all Telecom and safety applications where approved isolation is required. They also meet UL 1950 and CSA 950 standards ⁽⁹⁾.

Derating-Graph (Ambient Temperature)



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

Input Voltage Range	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	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)		30mA _{p-p}
Start Up Time (nominal Vin and constant resistor load)		20ms typ.
Remote ON/OFF (see note 8) (Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
(Negative logic)	DC-DC ON	Short or 0V < Vr < 1.2V
	DC-DC OFF	Open or 3.5V < Vr < 12V
Remote OFF input current	Nominal input	2.5mA
Output Power		10W max.
Output Voltage Accuracy (full Load and nominal Vin)		±2%
Minimum Load (see Note 1)		10% of FL
Line Regulation (LL-HL at full load)		±1%
Load Regulation (25% to 100% FL)	Single	±1%
	Dual	±2%
Cross Regulation (asymmetrical load 25%/100% FL)		±5%
Ripple and Noise (20MHz bandwidth)	Single	50mV _{p-p}
	Dual	75mV _{p-p}
Temperature Coefficient		±0.02%/°C, max.
Transient Response (25% load step change)		500µS
Over Voltage Protection	3.3V output	3.9V
Zener diode clamp	5V output	6.2V
	12V output	15V
	15V output	18V
Over Load Protection (% of full load at nominal Vin)		150% typ
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage		1.600VDC min.
Isolation Resistance		10 ⁹ Ω min.
Isolation Capacitance		300pF max.
Operating Frequency		300kHz typ.
Approved to Safety Standards		UL 1950, EN60950
Operating Temperature Range (Reference Derating Curve)	Standard	-25°C to +85°C(with derating)
	M1	-40°C to +85°C(non derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C

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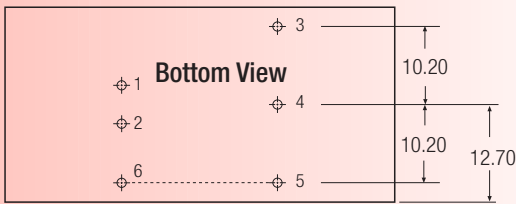
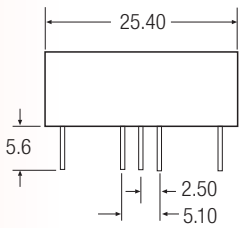
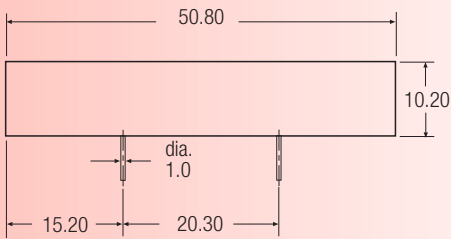
Specifications (typical at nominal input and 25°C unless otherwise noted)

Thermal Impedance	Natural convection	12°C/Watt
	Natural convection with Heat Sink	10°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 2G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel-Coated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Conducted Emissions	EN55022	Level A
Radiated Emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria 2
Radiated Immunity	EN61000-4-3	Perf. Criteria 2
Fast Transient	EN61000-4-4	Perf. Criteria 2
Surge	EN61000-4-5	Perf. Criteria 2
Conducted Immunity	EN61000-4-6	Perf. Criteria 2
Weight		27g
Dimensions		50.8 x 25.4 x 10.2mm
MTBF (see note 2)		1.976 x 10 ⁶ Hours

Notes :

1. The RP10 (W) series 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.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
3. Simulated source impedance of 12uH. 12uH 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 function can be positive or negative logic. The pin voltage is referenced to negative input.
Positive logic ON/OFF is standard, no suffix (Ex. RP10-2405SE)
Negative logic ON/OFF is marked with suffix-N (Ex. RP10-2405SE/N).
8. Heat sink is optional and P/N: 7G-0020A.
9. The M1 version (RP10-xxxxSE/M1, RP10-xxxxDE/M1) does not carry the UL certification.
10. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard version.
11. See application notes for EMI-filtering.

Package Style and Pinning (mm)



Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Com
5	-Vout	-Vout
6	CTRL	CTRL

Pin Pitch Tolerance ± 0.35 mm