

# POWERLINE - DC/DC-Converter

EW-Ser. 30W, 1.6 kV Isolation, 4:1 Wide Input Range (Single Output)



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## Features

- Output Current up to 8A
- 30 Watts max. Output Power
- 4:1 Wide Input Voltage Range
- Six-Sided Continuous Shield
- High Efficiency up to 88%
- Standard Package, 50.8 mm x 25.4 mm x 10.2 mm
- Fixed Switching Frequency

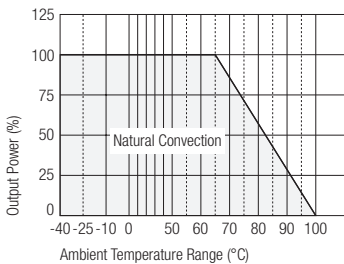


## Selection Guide 1.8V, 2.5V, 3.3V, 5V, 12V and 15V Input Types

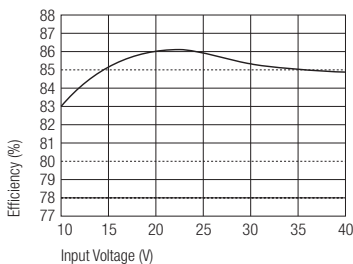
Part Number	Input Range (VDC)	Output Voltage (VDC)	Output Current (mA)	Input Current (see note 5) (mA)	Efficiency (see note 6) (%)	Max. Capacitive Load (μF)
RP30-241.8SEW	10-40	1.8	8000	789	80	65000
RP30-242.5SEW	10-40	2.5	8000	1068	82	33000
RP30-243.3SEW	10-40	3.3	6000	1006	86	19500
RP30-2405SEW	10-40	5	6000	1506	87	10200
RP30-2412SEW	10-40	12	2500	1506	87	3300
RP30-2415SEW	10-40	15	2000	1488	88	1100
RP30-481.8SEW	18-75	1.8	8000	390	81	65000
RP30-482.5SEW	18-75	2.5	8000	527	83	33000
RP30-483.3SEW	18-75	3.3	6000	497	87	19500
RP30-4805SEW	18-75	5	6000	744	88	10200
RP30-4812SEW	18-75	12	2500	753	87	3300
RP30-4815SEW	18-75	15	2000	744	88	1100

## RP30-243.3SEW: Derating and Efficiency Curves, External Output Trimming

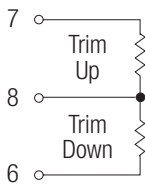
Derating Curve without Heat-Sink



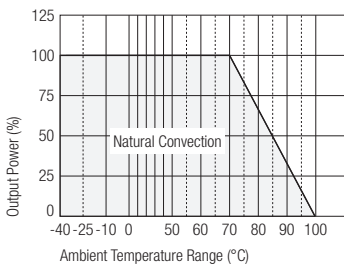
Efficiency vs Input Voltage



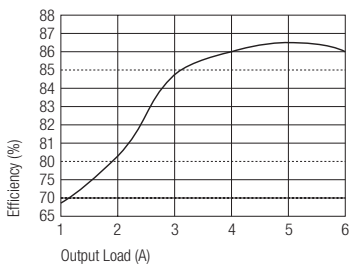
External Output Trimming



Derating Curve with Heat-Sink



Efficiency vs Output Load





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

Output Power	30W max.		
Voltage Accuracy (full Load and nominal Vin)	±1%		
Voltage Adjustability	± 10%		
Minimum Load	0%		
Line Regulation (LL-HL at FL)	±0.5%		
Load Regulation (10% to 100% FL)	±0.5%		
Ripple and Noise, 20MHz BW (measured with a 104pF/50V MLCC)	75mVp-p		
Temperature Coefficient	±0.02%/°C max.		
Transient Response Recovery Time (25% load step change)	300µsec		
Over Voltage Protection (zener diode clamp):	1.8V Output	3.0V	
	2.5V Output	3.6V	
	3.3V Output	3.9V	
	5V Output	6.2V	
	12V Output	15V	
	15V Output	18V	
Over Load Protection (0% of full load at nominal Vin)	150% typ.		
Short Circuit Protection	Hiccup, Automatic Recovery		
Input Voltage Range	24V types nominal input	10-40VDC	
	48V types nominal input	18-75VDC	
Under Voltage Lockout	24V Input	DC-DC ON	10VDC
		DC-DC OFF	8VDC
	48V Input	DC-DC ON	18VDC
		DC-DC OFF	16VDC
Input Filter	L-C Type		
Input Surge Voltage 100 ms max.	24V Input	50VDC	
	48V Input	100VDC	
Input Reflected Ripple (see note 1)	Nominal Vin and full load		
150mA	150mA		
Start Up Time (nominal Vin and constant resistor load)	25ms		
Remote ON/OFF (see note 2) (Positive logic)	DC-DC ON	Open or 3.5V < Vr < 12V	
	DC-DC OFF	Short or 0V < Vr < 1.2V	
Remote off Input Current	Nominal Vin	3mA	
Isolation Voltage	1600VDC		
Isolation Resistance	10 <sup>9</sup> Ω		
Isolation Capacitance	1000pF		
Switching Frequency	300kHz		
Designed to Meet Safety Standard	UL 1950, EN60950		
Case Material	Nickel-Coated Copper		
Base Material	Non-conducted Black Plastic		
Potting Material	Epoxy (UL94-V0)		
Weight	48g (1.69 oz)		
Dimensions	50.8 x 40.6 x 10.2 mm		
MTBF (see note 3)	1.315 x 10 <sup>6</sup> Hours		
Operating Temperature Range	-40°C to +85°C (with derating)		

continued on next page



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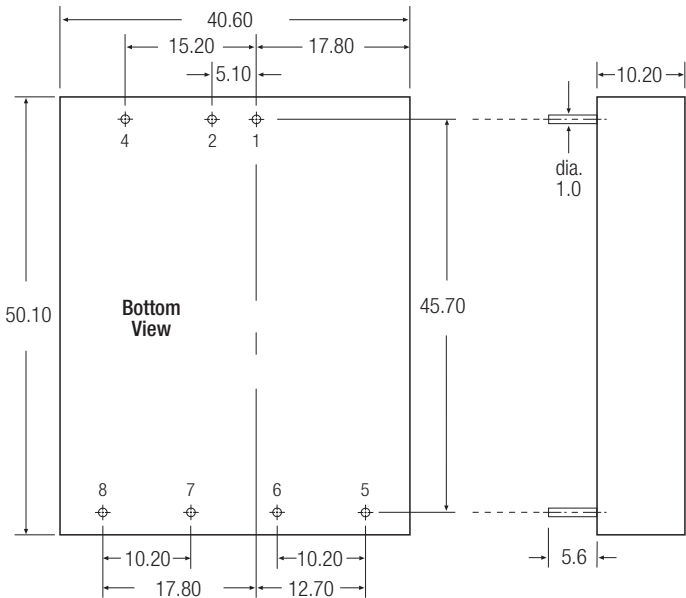
## Specifications continued (typical at nominal input and 25°C unless otherwise noted)

Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C
Thermal Impedance (see note 4)	Natural convection	10°C/Watt
	Natural convection with heat-sink	8.24°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 Air	EN61000-4-2	Perf. Criteria 2

### Notes:

1. Simulated source impedance of 12uH, 12uH inductor in series with +Vin.
2. The ON/OFF control function. There is positiv logic (standard) and negative logic (option).  
The pin voltage is referenced to negative input. To order negative logic ON-OFF control add the suffix 'N' (Ex: RP30-2405SEWN)
3. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
4. Heat sink is optional and P/N: 7G-0011A.
5. Maximum value at nominal input voltage and full load.
6. Typical value at nominal input voltage and full load.

## Package Style and Pinning (mm)



Pin Connections	
Pin #	Single
1	+Vin
2	-Vin
4	Ctrl
5	No Pin
6	+Vout
7	-Vout
8	Trim

Pin Pitch Tolerance  $\pm 0.35$  mm