

# POWERLINE - DC/DC-Converter

EW-Series, 20W, 1.6 kV Isolation, 4:1 Wide Input Range (Single & Dual Output)

# RECOM

## Features

- 20 Watts Output Power
- 4:1 Wide Input Voltage Range
- International Safety Standard Approvals
- Six-Sided Continuous Shield
- High Efficiency up to 86%
- Standard 50.8 x 40.6 x 10.2mm Package
- Fixed Switching Frequency
- UL 1950 Component Recognised



## Selection Guide 24V and 48V Input Types

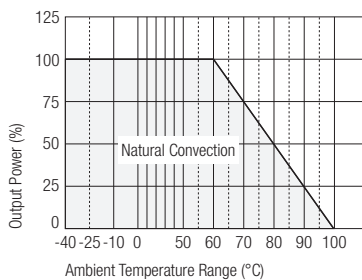
Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input Current (see note 7) mA	Efficiency (see note 8) %	Capacitive Load max. $\mu$ F
RP20-243.3SEW	9-36	3.3	4000	764	76	13000
RP20-2405SEW	9-36	5	4000	1111	79	6800
RP20-2412SEW	9-36	12	1670	1082	81	2200
RP20-2415SEW	9-36	15	1330	1082	81	755
RP20-2405DEW	9-36	$\pm$ 5	$\pm$ 2000	1111	79	$\pm$ 3400
RP20-2412DEW	9-36	$\pm$ 12	$\pm$ 833	1082	81	$\pm$ 680
RP20-2415DEW	9-36	$\pm$ 15	$\pm$ 666	1068	82	$\pm$ 450
RP20-483.3SEW	18-75	3.3	4000	377	77	13000
RP20-4805SEW	18-75	5	4000	548	80	6800
RP20-4812SEW	18-75	12	1670	541	81	2200
RP20-4815SEW	18-75	15	1330	541	81	755
RP20-4805DEW	18-75	$\pm$ 5	$\pm$ 2000	556	79	$\pm$ 3400
RP20-4812DEW	18-75	$\pm$ 12	$\pm$ 833	527	83	$\pm$ 680
RP20-4815DEW	18-75	$\pm$ 15	$\pm$ 666	521	84	$\pm$ 450

RP20-243.305DEW

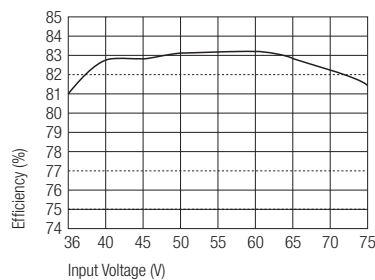
RP20-483.305DEW, output 3.3V(3A)/5V(2A), for detailed spec. contact Recom

## RP20-4805SE: Derating & Efficiency Curves

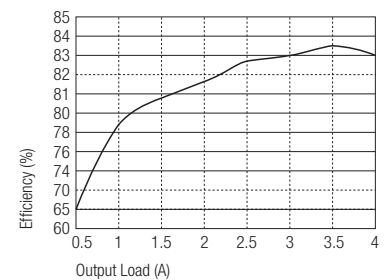
RP20-4805SE Derating Curve



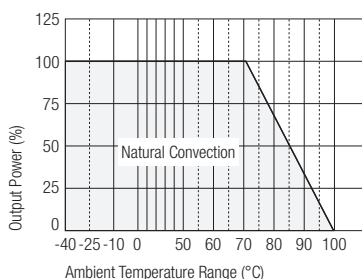
RP20-4805SE Efficiency vs Input Voltage



RP20-4805SE Efficiency vs Output Load



RP20-4805SE Derating Curve with Heat Sink (see note 3)



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

Output Power		20W max.
Voltage Accuracy (full Load and nominal Vin)	Single & Dual Auxiliary	±2% ±5%
Voltage Adjustability		±10%
Minimum Load (see note 1)		10% of FL
Line Regulation (LL-HL at FL)	Single & Dual Auxiliary	±0.5% ±5%
Load Regulation (10% to 100% FL)	Single Dual Auxiliary	±0.5% ±3% ±5%
Cross Regulation (see note 2)	Dual Auxiliary	±5% ±5%
Ripple and Noise (20MHz BW)	Single Dual Auxiliary	75mVp-p 100mVp-p 1% of Vout
Temperature Coefficient		±0.02% / °C max.
Transient Response Recovery Time (25% load step change)		500µsec
Over Voltage (zener diode clamp)	3.3V output 5V output 12V output 15V output	3.9V 6.2V 15V 18V
Short Circuit Protection		Hiccup, automatic recovery
Input Voltage Range	24V types nominal input 48V types nominal input	9-36VDC 18-75VDC
Input Filter		Pi Type
Input Surge Voltage (100 ms max.)	24V input 48V input	50VDC 100VDC
Input Reflected Ripple (see note 3)	Nominal Vin and full load	25mAp-p
Start Up Time (nominal Vin and constant resistor load)		20ms typ.
Remote ON/OFF (see note 4)	DC-DC ON DC-DC OFF	Open or 3.5V < Vr < 12V Short or 0V < Vr < 1.2V
Remote Off Input Current		20mA
Efficiency		See „Selection Guide“ table
Isolation Voltage		1600VDC
Isolation Resistance		10 <sup>9</sup> Ω
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		48g
Dimensions		50.8 x 40.6 x 10.2 mm
MTBF (see note 5)		1.928 x 10 <sup>6</sup> Hours
Operating Temperature Range		-40°C to +85°C (with derating)

continued on next page

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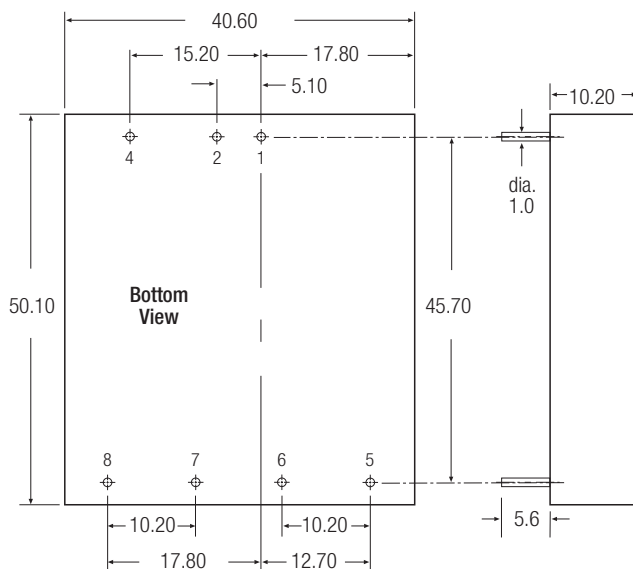
## Specifications continued (typical at nominal input and 25°C unless otherwise noted)

Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C
Thermal Impedance (see note 6)	Natural convection	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
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. The RP20 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. Cross regulation: Dual output – Asymmetrical load 25% to 100% full load.
3. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
4. The ON/OFF control pin voltage is referenced to negative input.
5. BELLCORE TR-NWT-00332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment).
6. Heat sink is optional and P/N: 7G-0011A. Operation temperature range please see curve.
7. Maximum value at nominal input voltage and full load.
8. Typical value at nominal input voltage and full load.
9. The RP20-243.305DEW and RP20-483.305DEW are safety approval pending.

## Package Style and Pinning (mm)



### Pin Connections

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

### External Output Trimming

Single	Dual
7	7
8	8
6	5

Pin Pitch Tolerance  $\pm 0.35$  mm