

POWERLINE - DC/DC-Converter

F-Series, 15W, 1.6 kV Isolation, 2:1 Wide Input Range (Single & Dual Output)

RECOM

Features

- 15 Watts Output Power
- 2:1 Wide Input Voltage Range
- International Safety Standard Approvals
- Six-Sided Continuous Shield
- High Efficiency up to 88%
- Standard 50.8 x 25.4 x 10.2 Package
- Fixed Switching Frequency
- UL 1950 E 196683 Recognized

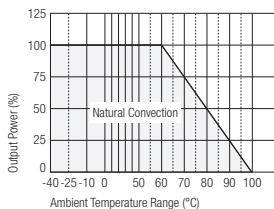


Selection Guide 12V, 24V and 48V Input Types

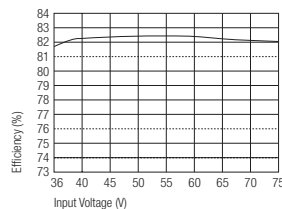
Part Number	Input Voltage VDC	Output Voltage VDC	Output Current mA	Input Current (see note 6) mA	Efficiency (see note 7) %	Capacitive Load max. μF
RP15-123.3SF	9-18	3.3	4000	1467	79	10200
RP15-1205SF	9-18	5	3000	1582	83	7050
RP15-1212SF	9-18	12	1250	1563	84	1035
RP15-1215SF	9-18	15	1000	1582	83	705
RP15-1205DF	9-18	±5	±1500	1582	83	±1020
RP15-1212DF	9-18	±12	±625	1524	86	±495
RP15-1215DF	9-18	±15	±500	1563	84	±165
RP15-243.3SF	18-36	3.3	4000	724	80	10200
RP15-2405SF	18-36	5	3000	781	84	7050
RP15-2412SF	18-36	12	1250	772	85	1035
RP15-2415SF	18-36	15	1000	781	84	705
RP15-2405DF	18-36	±5	±1500	781	84	±1020
RP15-2412DF	18-36	±12	±625	762	86	±495
RP15-2415DF	18-36	±15	±500	762	86	±165
RP15-483.3SF	36-75	3.3	4000	357	81	10200
RP15-4805SF	36-75	5	3000	396	83	7050
RP15-4812SF	36-75	12	1250	381	86	1035
RP15-4815SF	36-75	15	1000	381	86	705
RP15-4805DF	36-75	±5	±1500	391	84	±1020
RP15-4812DF	36-75	±12	±625	372	88	±495
RP15-4815DF	36-75	±15	±500	377	87	±165

RP15-4805SF: Derating & Efficiency Curves

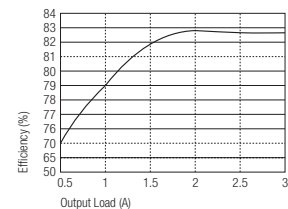
RP15-4805S Derating Curve



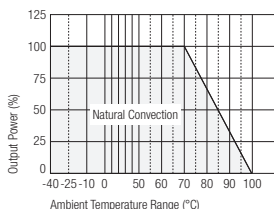
RP15-4805S Efficiency vs Input Voltage



RP15-4805S Efficiency vs Output Load



RP15-4805S Derating Curve with Heat Sink (see Note 4)



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

Output Power		15W max.	
Voltage Accuracy (full Load and nominal Vin)		±1%	
Minimum Load (see note 1)		10% of FL	
Line Regulation (LL-HL at full load)		±1%	
Load Regulation (10% to 100% FL)	Single Dual	±1% ±2%	
Cross Regulation (asymmetrical load 25%/100% FL)	Dual	±5%	
Ripple and Noise (20MHz bandwidth)	Single Dual	50mVp-p 75mVp-p	
Temperature Coefficient		±0.02%/°C, max.	
Transient Response (25% load step change)		500µsec	
Over Voltage (with zener diode clamp)	3.3V output 5V output 12V output 15V output	3.9V 6.2V 15V 18V	
Over Load Protection (% of full load at nominal Vin)		150% max.	
Short Circuit Protection		Hiccup, automatic recovery	
Input Voltage Range	RP15 12V nominal input RP15 24V nominal input RP15 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, see note 2)		20mA _{p-p}	
Start Up Time (nominal Vin and constant resistor load)		20ms typ.	
Remote ON/OFF (see note 3)	Positive logic Negative logic	DC-DC ON DC-DC OFF DC-DC ON DC-DC OFF	Open or 3.5V < Vr < 12V Short or 0V < Vr < 1.2V 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	Single output Dual output		500kHz typ. 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 4)			2.041 x 10 ⁶ Hours

continued on next page

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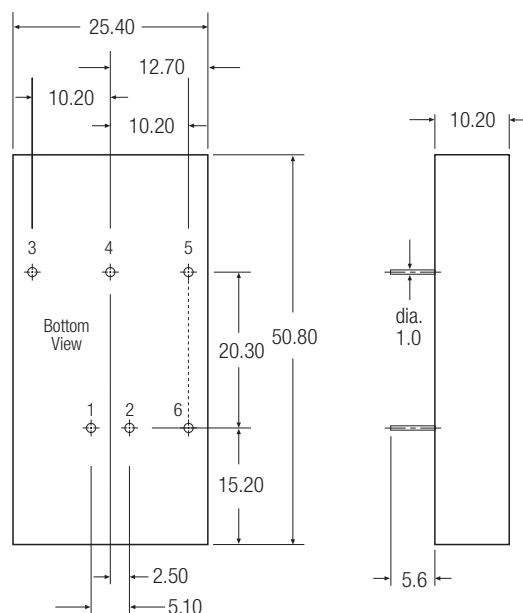
Specifications continued (typical at nominal input and 25°C unless otherwise noted)

Operating Temperature Range (see derating curves on previous page)	-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

- The RP15 E-series requires a minimum of 10% load on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specifications.
- Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
- The ON/OFF control is an optional function. There are positive logic and negative logic. The pin voltage is referenced to the negative input.
To order positive logic ON-OFF control add the suffix ' P ' (Ex: RP15-2405SF/P).
To order negative logic ON-OFF control add the suffix ' N ' (Ex: RP15-2405SF/N).
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
- Heat sink is optional and P/N: 7G -0020A. The thermal impedance is 10°C/Watt for natural convection.
- Maximum value at nominal input voltage and full load.
- 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