

Features

Regulated Converters

- 4:1 Wide Input Voltage Range
- 15 Watts Regulated Output Power
- 1.6kVDC Isolation
- Over Current and Over Voltage Protection
- Six-Sided Shield
- No Derating to 65°C
- Standard 2" x 1" Package and Pinning
- Efficiency to 86 %

Description

The RP15-FW series wide range input DC/DC converters are certified to UL 60950-1 and to cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required. The industry standard 2" x 1" package meets military standards for thermal shock and vibration tolerance.

Selection Guide 24V and 48V Wide Input Types

| Part Number | Input Range VDC | Output Voltage VDC | Output Current mA | Input ^(4,5) Current mA | Efficiency ⁽⁶⁾ % | Capacitive ⁽⁷⁾ Load max. μ F |
|---------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------|---|
| RP15-243.3SFW | 9-36 | 3.3 | 4500 | 60/773 | 84 | 14750 μ F |
| RP15-2405SFW | 9-36 | 5 | 3000 | 60/777 | 86 | 7200 μ F |
| RP15-2412SFW | 9-36 | 12 | 1250 | 75/771 | 85 | 1250 μ F |
| RP15-2415SFW | 9-36 | 15 | 1000 | 75/762 | 86 | 800 μ F |
| RP15-483.3SFW | 18-75 | 3.3 | 4500 | 30/422 | 84 | 14750 μ F |
| RP15-4805SFW | 18-75 | 5 | 3000 | 30/381 | 86 | 7200 μ F |
| RP15-4812SFW | 18-75 | 12 | 1250 | 40/385 | 85 | 1250 μ F |
| RP15-4815SFW | 18-75 | 15 | 1000 | 40/381 | 86 | 800 μ F |
| RP15-2405DFW | 9-36 | \pm 5 | \pm 1500 | 85/801 | 82 | \pm 3600 μ F |
| RP15-2412DFW | 9-36 | \pm 12 | \pm 625 | 100/771 | 85 | \pm 625 μ F |
| RP15-2415DFW | 9-36 | \pm 15 | \pm 500 | 100/762 | 86 | \pm 400 μ F |
| RP15-4805DFW | 18-75 | \pm 5 | \pm 1500 | 45/400 | 82 | \pm 3600 μ F |
| RP15-4812DFW | 18-75 | \pm 12 | \pm 625 | 50/385 | 85 | \pm 625 μ F |
| RP15-4815DFW | 18-75 | \pm 15 | \pm 500 | 50/381 | 86 | \pm 400 μ F |

* add /P for CTRL function with Positive Logic (1=ON, 0=OFF)

* add /N for CTRL function with Negative Logic (0=ON, 1=OFF)

* add suffix -HC for premounted heatsink and clips

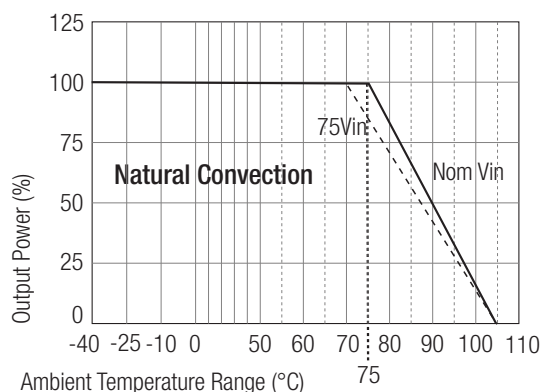
Ordering Examples

RP15-2405SFW/P = 24V 4:1 Input, 5V Output, Positive Logic CTRL pin fitted

RP15-4805DFW-HC = 48V 4:1 Input, \pm 5V Output, No CTRL pin, Heatsink fitted

Derating Graph (Ambient Temperature)

RP15-4805SFW



Derating graphs are valid only for the shown part numbers. If you need detailed derating information about a part number not shown here please contact our technical customer service at info@recom-development.at

POWERLINE

DC/DC-Converter



15 Watt

2" x 1"

Single & Dual Output



UL-60950-1 Certified
E196683

RP15-FW

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

| | | |
|---|---|---|
| Input Voltage Range | 24V nominal input 48V 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 (nominal Vin and full load) | | 20mA _{p-p} |
| Start Up Time (nominal Vin and constant resistor load) | | 20ms typ. |
| Remote ON/OFF (Optional. See note 1) | DC-DC ON DC-DC OFF | Open or 3.0V < Vr < 12V Short or 0V < Vr < 1.2V |
| Remote OFF input current | Nominal input | 2.5mA |
| Output Power | | 15W max. |
| Output Voltage Accuracy (full Load and nominal Vin) | | ±1% |
| Minimum Load | | 0% |
| Line Regulation (low line, high line at full load) | | ±0.2% |
| Load Regulation (0% to 100% full load) | Single Dual | ±0.5% ±1% |
| Cross Regulation Dual Output (asymmetrical 25% <>100%load) | Dual | ±5% |
| Ripple and Noise (20MHz bandwidth) (measured with a 104pF ceramic across the output) | 3.3, 5.0V 12, 15, ±5, ±12, ±15V | 50mV _{p-p} 75mV _{p-p} |
| Temperature Coefficient | | ±0.02%/°C max. |
| Transient Response (25% load step change) | | 250µs |
| Input Voltage Variation, dv/dt | complies with ETS300 132, part 4.4 | 5V/ms |
| Over Load Protection (% of full load at nominal Vin) | | 150% typ |
| Overvoltage Protection (Single) | | Zener Diode Clamp |
| Undervoltage Protection | | See Application Notes |
| Short Circuit Protection | | Continuous, automatic recovery |
| Efficiency | | see „Selection Guide“ table |
| Isolation Voltage | In to Out and I/O to case | 1600VDC min. |
| Isolation Resistance | | 10 GΩ min. |
| Isolation Capacitance | | 1500pF max. |
| Operating Frequency | | 400kHz typ. |
| Operating Temperature Range | 5.1, 12, 15, ±12, ±15V 3.3, ±5V with derating | -40°C to +75°C -40°C to +65°C -40°C to +105°C |
| Maximum Case Temperature | | +105°C |
| Storage Temperature Range | | -55°C to +125°C |
| Thermal Impedance (see note 8) | Natural convection with Heatsink | 12°C/Watt 10°C/Watt |
| Case Material | | Nickel plated copper |
| Base Material | | Non-conductive black plastic |
| Potting Material | | Epoxy (UL94-V0) |
| Weight | | 27g |
| Packing Quantity | Refer to App Notes for tube dimensions | 9 pcs per Tube |

continued on next page

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

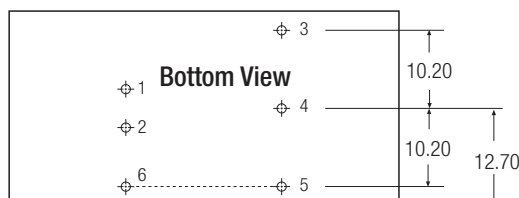
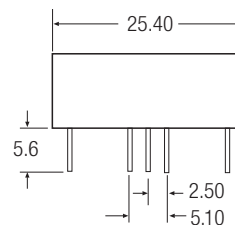
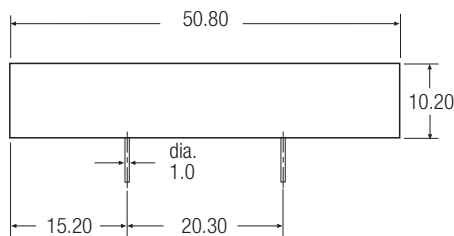
| | | |
|----------------------------------|------------------------|--|
| Conducted Emissions (see note 3) | EN55022 | Class A |
| Radiated Emissions (see note 3) | EN55022 | Class A |
| ESD | EN61000-4-2 | Perf. Criteria B |
| Radiated Immunity | EN61000-4-3 | Perf. Criteria A |
| Fast Transient (see note 3) | EN61000-4-4 | Perf. Criteria B |
| Surge (see note 3) | EN61000-4-5 | Perf. Criteria B |
| Conducted Immunity | EN61000-4-6 | Perf. Criteria A |
| Thermal Shock | | MIL-STD-810D |
| Vibration | | 10-55Hz, 10G, 30 Min. along X, Y and Z |
| Relative Humidity | | 5% to 95% RH |
| MTBF (see note 2) | Bellcore-TR-NWT-000332 | 2350 x 10 ³ hours |

Notes :

- The ON/OFF control function can be positive or negative logic. The pin voltage is referenced to negative input.
Positive logic ON/OFF is marked with suffix-P (eg. RP15-2405SFW/P)
Negative logic ON/OFF is marked with suffix-N (eg. RP15-2405SFW/N).
If no suffix is specified, the control pin will be omitted.
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
- RP15-24xxW meets Class A. RP15-48xxW requires 1µF MLCC across input to meet Class A.
An external capacitor (220µF/Low ESR) is required to meet EN61000-4-4 and -5
See application notes for Class B common mode filter suggestion.
- Typical value at nominal input voltage and no load.
- Maximum value at nominal input voltage and full load
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistor load.
- Optional Heatsink Part Number 7G-0020-C. Powerline DC/DC Converters can be ordered with pre-mounted heatsinks including antivibration fixing clips (add suffix -HC). See Application Notes for heatsink details.

Package Style and Pinning (mm)

2" x 1" Package Style



Pin Connections

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

* Optional. See Note 1.

Pin Pitch Tolerance ±0.35 mm