

## Features

- Ultraminiature Open Frame SMD
- 15 Watts Output Power
- 4:1 Input Voltage Range
- Single Output
- 2.25kVDC Isolation
- Fixed Operating Frequency
- Optional Remote On/Off and Trim pins
- Efficiency to 87%

## Description

The RP15-SOFW series are SMD open frame ultraminiature power DC/DC converters in a case half the size of industry standard 15W converters. The converters use solder ball pins to enable SMD mounting and can be reflow soldered. Despite their small size, the RP15-SOFW converters are fully specified devices with output currents up to 4 Amps, no minimum load, 2250VDC isolation and low ripple/noise figures. The outputs are also fully protected against short circuits, overcurrent and overvoltage. The RP15-SOFW series will find many uses in telecommunications and other demanding applications where price, board space or board height is at a premium.

## Selection Guide 24V and 48V Input Types

Part Number	Input Range VDC	Output Voltage VDC	Output Current mA	Input (1) Current mA	Efficiency (2) %	Capacitive (3) Load max.
RP15-243.3SOFW**	9-36	3.3	4000	60/680	85	1000µF
RP15-2405SOFW**	9-36	5	3000	70/754	87	1000µF
RP15-2412SOFW**	9-36	12	1300	10/793	86	330µF
RP15-2415SOFW**	9-36	15	1000	10/763	86	220µF
RP15-483.3SOFW**	18-75	3.3	4000	40/340	85	1000µF
RP15-4805SOFW**	18-75	5	3000	40/377	87	1000µF
RP15-4812SOFW**	18-75	12	1300	10/397	86	330µF
RP15-4815SOFW**	18-75	15	1000	10/382	86	220µF

\*\* Standard part is without suffix and has no Trim or CTRL connections

\* add suffix **/P** for CTRL function with positive logic (1=ON, 0=OFF) including trim pin

\* add suffix **/N** for CTRL function with negative logic (0=ON, 1=OFF) including trim pin

. \* add suffix **-R** for Tape and Reel Packaging

## Ordering Examples

RP15-4805SOFW = 48V 4:1 Input, 5V Output, No CTRL pin, No Trim Pin

RP15-4805SOFW/P = 48V 4:1 Input, 5V Output, Positive Logic CTRL pin and Trim pin fitted.

RP15-243.3SOFW/N = 24V 4:1 Input, 3.3V Output, Negative Logic CTRL pin and Trim pin fitted

## POWERLINE

DC/DC-Converter

with 3 year Warranty

# RECOM

## 15 Watt

## Single

## Output

## Open Frame

## SMD



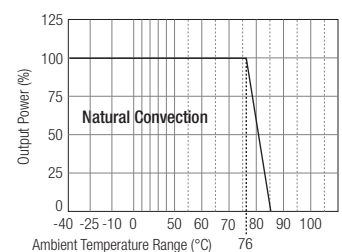
**UL-60950-1 Certified**  
**E196683**

# RP15-SOFW

## Derating-Graph

(Ambient Temperature)

RP15-4805SOFW



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 support service at [info@recom-development.at](mailto:info@recom-development.at)

**Refer to Application Notes**

**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) <sup>(4)</sup>		30mA <sub>p-p</sub>
Start Up Time (nominal Vin and constant resistor load)		30ms max.
Optional Remote ON/OFF <sup>(5)</sup>	DC-DC ON	Short or 0V < Vr < 1.2V
Negative logic (/N)	DC-DC OFF	Open or 3.0V < Vr < 15V
	DC-DC ON	Open or 3.0V < Vr < 15V
Positive logic (/P)	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote Pin drive current	Nominal Vin	-0.5mA~1.0mA
Remote OFF input current	Nominal Vin	2.5mA
Output Voltage Accuracy (full Load and nominal Vin)		±1%
Optional Output Trim <sup>(6)</sup>		±10%
Minimum Load		0%
Line Regulation (low line, high line at full load)	All Output voltages	±0.2%
Load Regulation (0% to full load)	All Output voltages	±0.2%
Ripple and Noise (20MHz bandwidth, with 1µF MLCC on output)	All Output voltages	100mV <sub>p-p</sub>
Temperature Coefficient		±0.02%/°C max.
Transient Response (25% load step change)		250µs
Over Voltage Protection	3.3V	3.7-5.4V
Zener diode clamp (only single)	5V	5.4-7.0V
	12V	13.5-19.6V
	15V	16.8-20.5V
Over Load Protection (% of full load at nominal Vin)		150% typ
Undervoltage Lockout		See Application Notes
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage (rated for one minute)	Basic Isolation	2250VDC
Isolation Resistance		1 GΩ min.
Isolation Capacitance		1500pF max.
Operating Frequency	3.3V, 5V All others	350kHz typ 400kHz typ
Operating Temperature Range		-40°C to +85°C (with derating)
Storage Temperature Range		-55°C to +125°C
Thermal Impedance	Natural convection	18.2°C/Watt
Thermal Shock		MIL-STD-810F
Vibration		10-55Hz, 2G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Base Material		FR4 PCB
Weight		10.5g
Packing Quantity	Refer to App Notes for tube dimensions	20 pcs per Tube 120 pcs per Reel
Dimensions		27.9 x 23.9 x 8.5mm

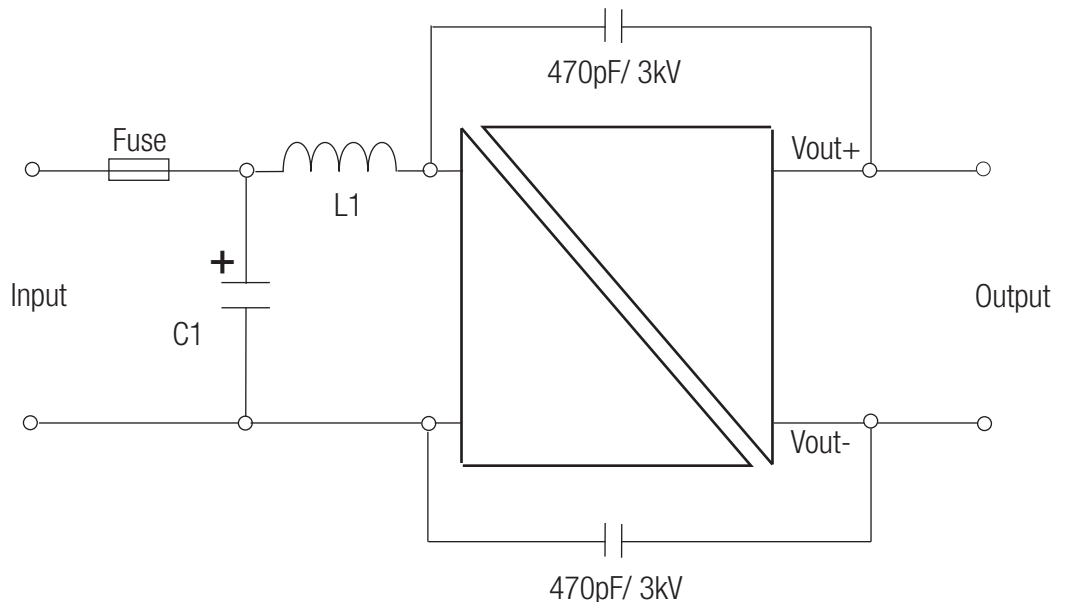
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**Specifications** (typical at nominal input and 25°C unless otherwise noted)

Conducted Emissions <sup>(6)</sup>	EN55022	Class A/B
Radiated Emissions	EN55022	ClassB
Radiated Immunity	EN61000-4-3	Perf. Criteria A
Fast Transient <sup>(7)</sup>	EN61000-4-4	Perf. Criteria A
Surge <sup>(7)</sup>	EN61000-4-5	Perf. Criteria A
Conducted Immunity	EN61000-4-6	Perf. Criteria A
MTBF <sup>(8)</sup>	Bellcore TR-NWT-000332	1322 x 10 <sup>3</sup> hours
	MIL-HDBK 217F	515 x 10 <sup>3</sup> hours

**EMC Filtering - For Class B filter suggestion, see Application Notes**

**Class A Filter**



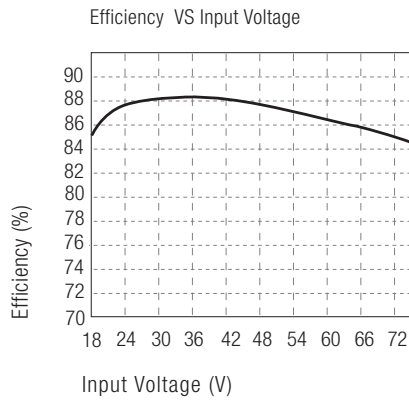
Vin=24V: C1=6.8µF/50V 1812 MLCC, L1 = 10µH, 2.6A, 40mOhm, 0705 SMD  
 Vin=48V: C1= 2.2µF/100V 1812 MLCC, L1 = 18µH, 1.6A, 10hm, 0705 SMD

**Notes :**

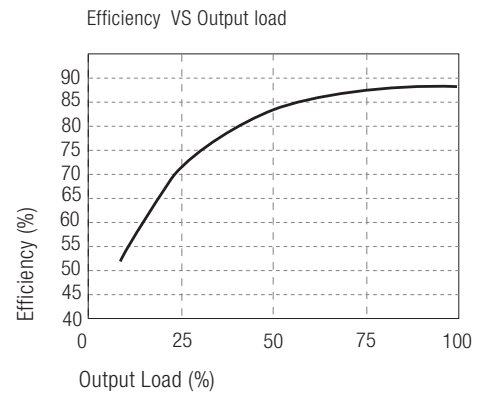
1. Values at nominal input voltage and no load/full load.
2. Typical Value at nominal input voltage and full load.
3. Test by minimum Vin and constant resistor load.
4. Simulated source impedance of 12µH. 12µH inductor in series with +Vin.
5. If no suffix is specified, the control and trim pins will be omitted. If fitted, 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. RP15-2405SOFW/P)  
 Negative logic ON/OFF is marked with suffix-N (eg. RP15-2405SOFW/N).
6. Meets Class A with external components shown above. Will meet Class B with external common mode filter (see Application Notes)
7. Requires external capacitor to meet EN61000-4-4\_5: 220µF/100V, low ESR (48mOhm)
8. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C.  
 MIL-HDBK 217F Notice 2. Ta = 25°C, full load, (Ground Benign, controlled environment).

Typical Characteristics

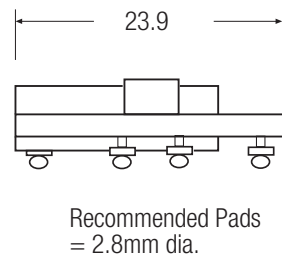
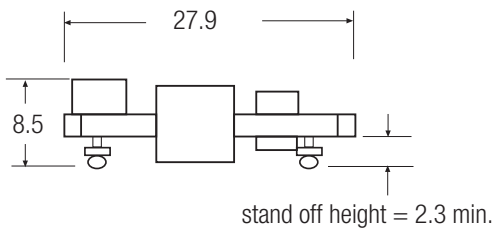
**RP15-4805SOFW**



**RP15-4805SOFW**



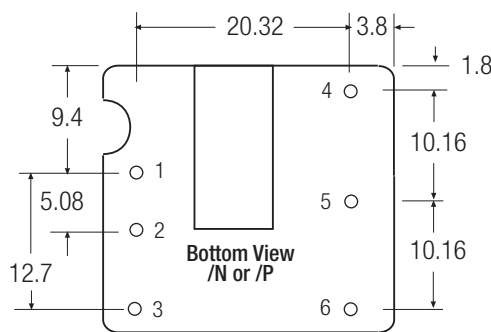
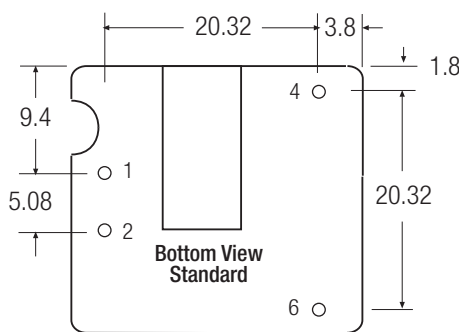
Package Style and Pinning (mm)



Pin Connections

Pin #	Standard	/P or /N
1	+Vin	+Vin
2	-Vin	-Vin
3	no pin	CTRL
4	+Vout	+Vout
5	no pin	Trim
6	-Vout	-Vout

PCB Tolerance  $\pm 0.5$  mm  
SMD Pin Pitch Tolerance  $\pm 0.25$  mm



## External Output Trimming (optional)

With /P or /N suffix, output can be externally trimmed by using the method shown here. See Application Notes for details.

