

Features

- Ultraminiature 25.4 x25.4x9.9mm Package
- 15 Watts Output Power
- Wide 4:1 Input Voltage Range
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- Industry Standard Pinout
- Remote On/Off and Trim pins
- Efficiency to 87%

POWERLINE DC/DC-Converter

RP15- SAW Series

15 Watt Single Output

Description

The RP15-SAW series are ultraminiature wide input voltage range power DC/DC converters in a case half the size of industry standard 15W converters. Despite their small size, the RP15-SAW converters are fully specified devices with output currents up to 4 Amps, no minimum load, 1600VDC isolation and low ripple/noise figures. The outputs are also fully protected against short circuits, overcurrent and overvoltage.

The RP15-SAW series will find many uses in applications where board space and/or board height is at a premium.

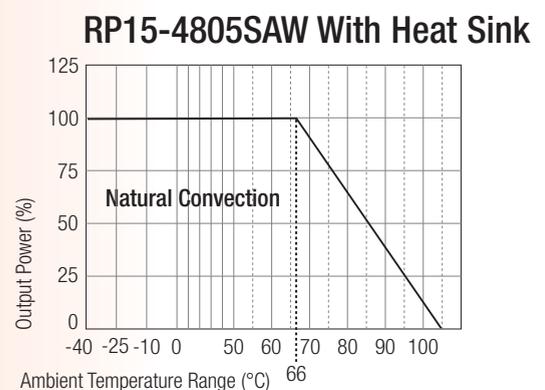
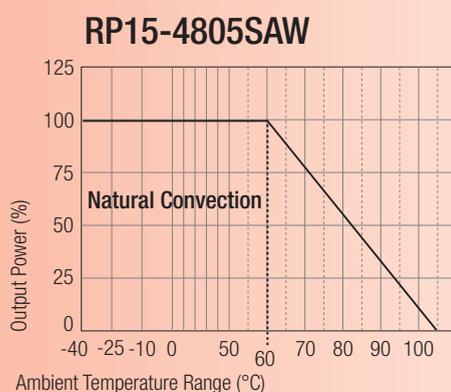
Selection Guide 24V and 48V Input Types

Part Number	Input Range	Output Voltage	Output Current	Input ⁽¹⁾ Current	Efficiency ⁽²⁾	Capacitive ⁽³⁾ Load max.
	VDC	VDC	mA	mA	%	µF
RP15-243.3SAW	9-36	3.3	4000	688	86	1000
RP15-2405SAW	9-36	5	3000	782	84	1000
RP15-2412SAW	9-36	12	1300	803	86	330
RP15-2415SAW	9-36	15	1000	772	85	220
RP15-483.3SAW	18-75	3.3	4000	336	86	1000
RP15-4805SAW	18-75	5	3000	382	86	1000
RP15-4812SAW	18-75	12	1300	392	87	330
RP15-4815SAW	18-75	15	1000	377	87	220



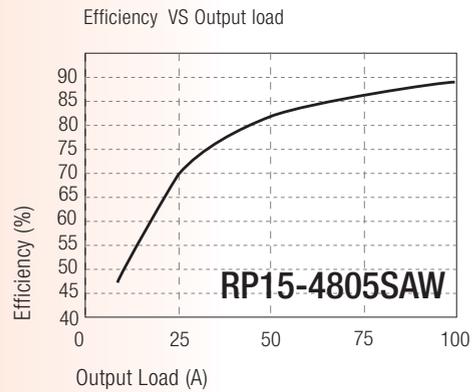
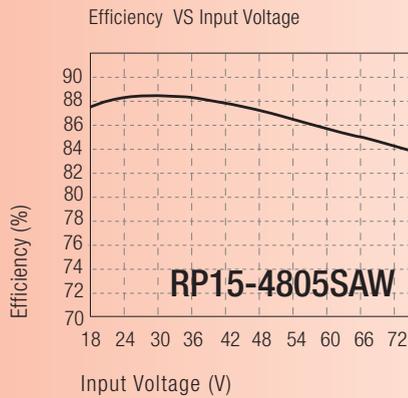
RECOM

Derating-Graph (Ambient Temperature)



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

Typical Characteristics



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) (see Note 4)		30mA _{p-p}
Start Up Time (nominal Vin and constant resistor load)		30ms max.
Remote ON/OFF (See Note 5) (Negative logic - Standard)	DC-DC ON DC-DC OFF	Short or 0V < Vr < 1.2V Open or 3.0V < Vr < 12V
Remote Pin drive current	Nominal Vin	-0.5mA~1.0mA
Remote OFF input current	Nominal Vin	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 full load)		±0.2%
Ripple and Noise (20MHz bandwidth)	3.3, 5V Outputs Others	75mV _{p-p} 100mV _{p-p}
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 12V 15V	5.4-7.0V 13.5-19.6V 16.8-20.5V
Over Load Protection (% of full load at nominal Vin)		150% typ
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage		1600VDC min.
Isolation Resistance		1 GΩ min.
Isolation Capacitance		1000pF max.
Operating Frequency		400kHz typ.

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

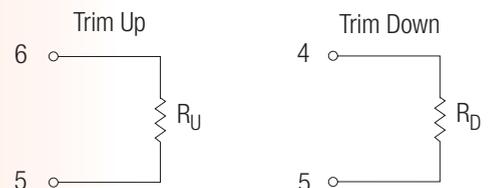
Operating Temperature Range	-40°C to +85°C(with derating)	
Maximum Case Temperature	+105°C	
Storage Temperature Range	-55°C to +125°C	
Thermal Impedance (see Note 6)	Natural convection	18.2°C/Watt
	Natural convection with Heat Sink	15.8°C/Watt
Thermal Shock	MIL-STD-810F	
Vibration	10-55Hz, 10G, 30 Min. along X, Y and Z	
Relative Humidity	5% to 95% RH	
Case Material	Nickel plated copper	
Base Material	FR4 PCB	
Potting Material	Epoxy (UL94-V0)	
Conducted Emissions (see Note 7)	EN55022	Level A
Radiated Emissions	EN55022	Level A
ESD	EN61000-4-2	Perf. Criteria A
Radiated Immunity	EN61000-4-3	Perf. Criteria A
Fast Transient	EN61000-4-4	Perf. Criteria A
Surge (see note 8)	EN61000-4-5	Perf. Criteria A
Conducted Immunity	EN61000-4-6	Perf. Criteria A
Weight	15g	
Dimensions	25.4 x 25.4 x 9.9mm	
MTBF (see Note 9)	Bellcore TR-NWT-000332	1330 x 10 ³ hours
	MIL-HDBK 217F	563 x 10 ³ hours

Notes :

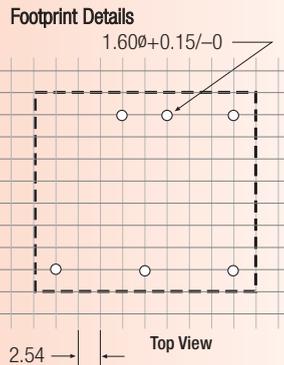
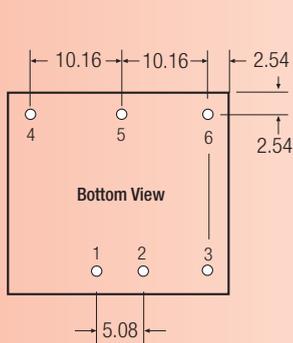
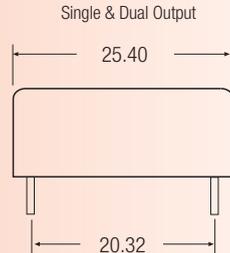
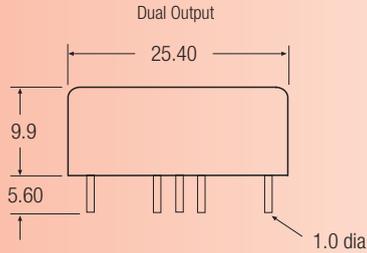
1. Maximum value at nominal input voltage and full load.
2. Typical Value at nominal input voltage and full load.
3. Test by minimum Vin and constant resistor load.
4. Simulated source impedance of 12μH. 12μH inductor in series with +Vin.
5. The pin voltage is referenced to negative input.
6. Optional Heat-sink P/N is 7G-0047-F
7. Meets Class A with external input capacitors
Will meet Class B with external filter
8. Requires external capacitor to meet EN61000-4-5: 220μF/100V, low ESR (48mOhm)
9. 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).

External Output Trimming

Output can be externally trimmed by using the method shown here. For suitable resistor values, see Application Notes



Package Style and Pinning (mm)



Pin Connections

Pin #	Function
1	+Vin
2	-Vin
3	On/Off
4	+Vout
5	Trim
6	-Vout

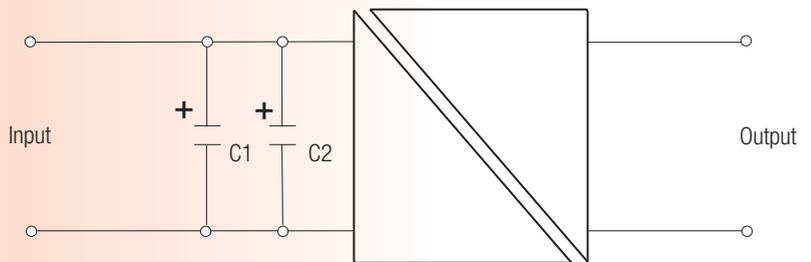
NC = No Connection

Case Tolerance ± 0.5 mm
Pin Pitch Tolerance ± 0.25 mm

EMC Filtering

Class A Filter

Vin=24V: C1=6.8 μ F/50V 1812 MLCC, C2 omitted.
Vin=48V: C1, C2 = 2.2 μ F/100V 1812 MLCC



Class B Filter

Vin=24V: C1,C2=6.8 μ F/50V 1812 MLCC, C3 omitted.
Common Mode Choke = CMC-06
Vin=48V: C1, C2, C3 = 2.2 μ F/100V 1812 MLCC
Common Mode Choke = CMC-01
C4,C5= 470pF/2kV 1808 MLCC

