

## Features

## Regulated Converters

Rev. 1

- 4:1 Wide Input Voltage Range
- 12 Watts Regulated Output Power
- 1.6kVDC Isolation
- Over Current and Over Voltage Protection
- Five-Sided Shield
- No Derating to 61°C
- Standard DIP24 Pinning
- Efficiency to 88 %

## Description

The RP12-AW series wide range input DC/DC converter are certified to UL 60950-1 and cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required.

The DIP24 package is available in both pinned and SMD case styles and 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 <sup>(4,5)</sup> Current mA	Efficiency <sup>(6)</sup> %	Capacitive <sup>(7)</sup> Load max.
DIP24 (SMD)						
RP12-243.3SAW**	9-36	3.3	3500	55/602	84	2000µF
RP12-2405SAW**	9-36	5.1	2400	55/614	87	2000µF
RP12-2412SAW**	9-36	12	1000	25/610	86	430µF
RP12-2415SAW**	9-36	15	800	25/610	86	300µF
RP12-483.3SAW**	18-75	3.3	3500	20/301	84	2000µF
RP12-4805SAW**	18-75	5.1	2400	20/307	87	2000µF
RP12-4812SAW**	18-75	12	1000	13/302	87	430µF
RP12-4815SAW**	18-75	15	800	13/298	88	300µF
RP12-2405DAW**	9-36	±5	±1200	20/625	84	±1250µF
RP12-2412DAW**	9-36	±12	±500	25/610	86	±200µF
RP12-2415DAW**	9-36	±15	±400	25/610	86	±120µF
RP12-4805DAW**	18-75	±5	±1200	10/309	85	±1250µF
RP12-4812DAW**	18-75	±12	±500	13/301	87	±200µF
RP12-4815DAW**	18-75	±15	±400	13/301	87	±120µF

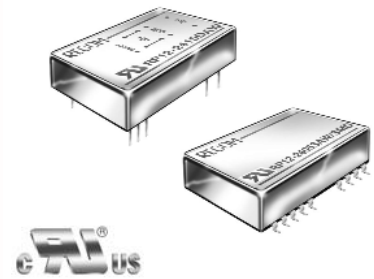
\*\* add Suffix SMD for SMD package

## POWERLINE

DC/DC-Converter

# RP12-S\_DAW Series

**12 Watt  
DIP24 & SMD,  
Single & Dual  
Output**

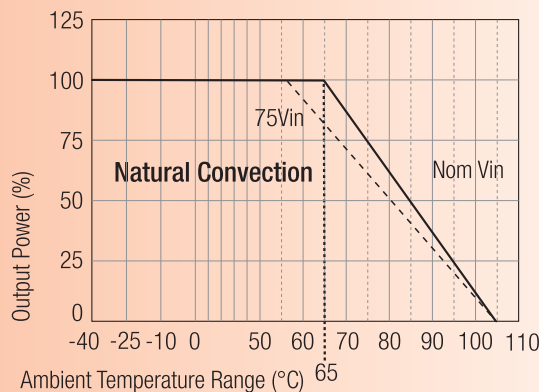


**UL-60950-1 Certified**

**RECOM**

## Derating Graph (Ambient Temperature)

### RP12-4805SAW



Derating graphs are valid only for the shown graphs and 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)

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

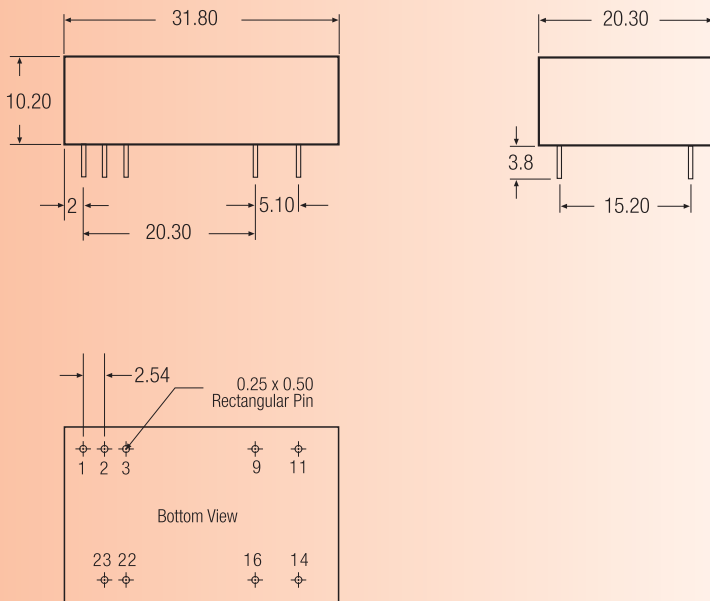
Input Voltage Range	24V nominal input 48V nominal input	9-36VDC 18-75VDC
Input Filter		Pi Type
Input Surge Voltage (100ms max)		50VDC (24V Type), 100VDC (48V Type)
Input Reflected Ripple (nominal Vin and full load)		20mAp-p
Start Up Time (nominal Vin and constant resistor load)		450ms typ.
Remote ON/OFF (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		12W max.
Output Voltage Accuracy (full Load and nominal Vin)		±1.2%
Minimum Load		0%
Line Regulation (low line, high line at full load)		±0.2%
Load Regulation (0% to 100% load)		±0.5% Single, ±0.5%
Cross Regulation Dual Output (asymmetric 25%/100% Load)		±5%
Ripple and Noise (20MHz bandwidth)		85mVp-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 (No derating)	5.1, 12, 15, ±12, ±15V 3.3, ±5V	-40°C to +65°C -40°C to +61°C
Maximum Case Temperature		+105°C
Storage Temperature Range		-55°C to +125°C
Thermal Impedance	Natural convection	20°C/Watt
Case Material		Nickel plated copper with non-conductive plastic base
Potting Material		Epoxy (UL94-V0)
Weight		18g (DIP), 20g (SMD)
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	EN61000-4-4	Perf. Criteria B
Surge	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 <sup>3</sup> hours

**Notes :**

1. The ON/OFF control pin voltage is referenced to negative input.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. Requires external filter to meet EN55022 Class A
4. Typical value at nominal input voltage and no load.
5. Maximum value at nominal input voltage and full load
6. Typical value at nominal input voltage and full load.
7. Test by minimum Vin and constant resistor load.

**Package Style and Pinning (mm)**

**DIP24 Package Style**



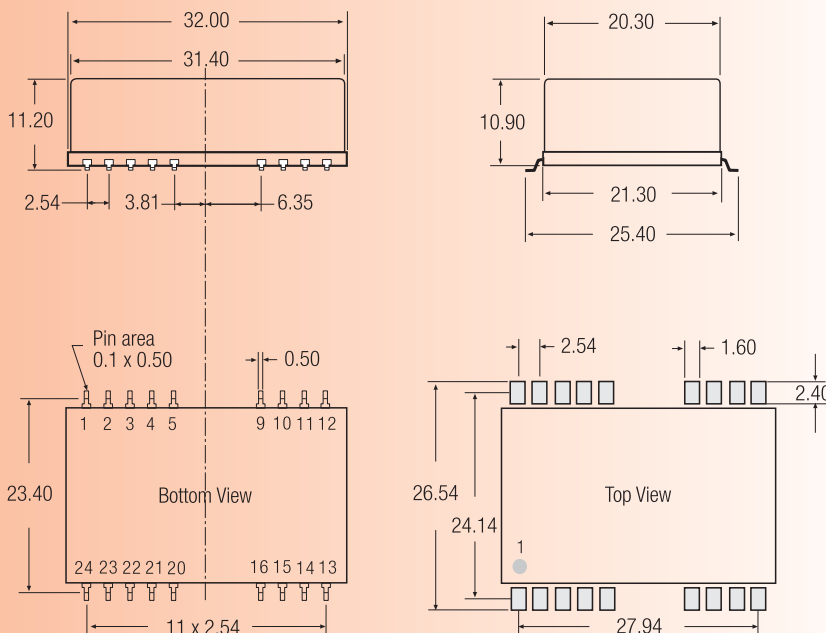
**Pin Connections**

Pin #	Single	Dual
1	ON/OFF	ON/OFF
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Com
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Com
22	+Vin	+Vin
23	+Vin	+Vin

NC = No Connection

Pin Pitch Tolerance  $\pm 0.35$  mm

**SMD Package Style**



**SMD Package Style**

Same spec. as the original DIP spec. and pin definition, excl. of the SMD type pin.

**Pin Connections**

Pin #	Single	Dual
1	ON/OFF	ON/OFF
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Com
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Com
22	+Vin	+Vin
23	+Vin	+Vin
Others	NC	NC

NC = No Connection

Pin Pitch Tolerance  $\pm 0.35$  mm