

Features

Regulated Converters

- 2:1 Wide Range Voltage Input
- 1kVDC, 2kVD & 3kVDC Isolation
- UL94V-0 Package Material
- Continuous Short Circuit Protection with Current Foldback
- Low Noise
- No External Capacitor needed
- Efficiency to 83%

ECONOLINE

DC/DC-Converter

RSO Series

Selection Guide 5V, 12V, 24V and 48V Input Types

| Part Number | Input Voltage Range (VDC) | Rated Output Voltage (VDC) | Output Current Full Load (mA) | Efficiency typ. (%) | Capacitive Load max. (µF) |
|--------------------|---------------------------|----------------------------|-------------------------------|---------------------|---------------------------|
| SIP8 | | | | | |
| RSO-053.3S (H2/H3) | 4.5 - 9 | 3.3 | 300 | 68 | 470 |
| RSO-0505S (H2/H3) | 4.5 - 9 | 5 | 200 | 73 | 470 |
| RSO-0509S (H2/H3) | 4.5 - 9 | 9 | 111 | 74 | 220 |
| RSO-0512S (H2/H3) | 4.5 - 9 | 12 | 83 | 75 | 100 |
| RSO-0515S (H2/H3) | 4.5 - 9 | 15 | 67 | 75 | 47 |
| RSO-123.3S (H2/H3) | 9 - 18 | 3.3 | 300 | 69 | 470 |
| RSO-1205S (H2/H3) | 9 - 18 | 5 | 200 | 75 | 470 |
| RSO-1209S (H2/H3) | 9 - 18 | 9 | 111 | 78 | 220 |
| RSO-1212S (H2/H3) | 9 - 18 | 12 | 83 | 80 | 100 |
| RSO-1215S (H2/H3) | 9 - 18 | 15 | 67 | 80 | 47 |
| RSO-243.3S (H2/H3) | 18 - 36 | 3.3 | 300 | 70 | 470 |
| RSO-2405S (H2/H3) | 18 - 36 | 5 | 200 | 78 | 470 |
| RSO-2409S (H2/H3) | 18 - 36 | 9 | 111 | 81 | 220 |
| RSO-2412S (H2/H3) | 18 - 36 | 12 | 83 | 83 | 100 |
| RSO-2415S (H2/H3) | 18 - 36 | 15 | 67 | 83 | 47 |
| RSO-483.3S (H2/H3) | 36 - 72 | 3.3 | 300 | 70 | 470 |
| RSO-4805S (H2/H3) | 36 - 72 | 5 | 200 | 75 | 470 |
| RSO-4809S (H2/H3) | 36 - 72 | 9 | 111 | 78 | 220 |
| RSO-4812S (H2/H3) | 36 - 72 | 12 | 83 | 80 | 100 |
| RSO-4815S (H2/H3) | 36 - 72 | 15 | 67 | 80 | 47 |
| RSO-053.3D (H2/H3) | 4.5 - 9 | ±3.3 | ±150 | 71 | ±220 |
| RSO-0505D (H2/H3) | 4.5 - 9 | ±5 | ±100 | 74 | ±220 |
| RSO-0509D (H2/H3) | 4.5 - 9 | ±9 | ±56 | 75 | ±100 |
| RSO-0512D (H2/H3) | 4.5 - 9 | ±12 | ±42 | 76 | ±47 |
| RSO-0515D (H2/H3) | 4.5 - 9 | ±15 | ±34 | 76 | ±22 |
| RSO-123.3D (H2/H3) | 9 - 18 | ±3.3 | ±150 | 76 | ±220 |
| RSO-1205D (H2/H3) | 9 - 18 | ±5 | ±100 | 79 | ±220 |
| RSO-1209D (H2/H3) | 9 - 18 | ±9 | ±56 | 80 | ±100 |
| RSO-1212D (H2/H3) | 9 - 18 | ±12 | ±42 | 81 | ±47 |
| RSO-1215D (H2/H3) | 9 - 18 | ±15 | ±34 | 81 | ±22 |
| RSO-243.3D (H2/H3) | 18 - 36 | ±3.3 | ±150 | 74 | ±220 |
| RSO-2405D (H2/H3) | 18 - 36 | ±5 | ±100 | 77 | ±220 |
| RSO-2409D (H2/H3) | 18 - 36 | ±9 | ±56 | 78 | ±100 |
| RSO-2412D (H2/H3) | 18 - 36 | ±12 | ±42 | 80 | ±47 |
| RSO-2415D (H2/H3) | 18 - 36 | ±15 | ±34 | 80 | ±22 |
| RSO-483.3D (H2/H3) | 36 - 72 | ±3.3 | ±150 | 70 | ±220 |
| RSO-4805D (H2/H3) | 36 - 72 | ±5 | ±100 | 75 | ±220 |
| RSO-4809D (H2/H3) | 36 - 72 | ±9 | ±56 | 78 | ±100 |
| RSO-4812D (H2/H3) | 36 - 72 | ±12 | ±42 | 80 | ±47 |
| RSO-4815D (H2/H3) | 36 - 72 | ±15 | ±34 | 80 | ±22 |

1 Watt

**SIP8 Isolated
Single & Dual
Output**



**EN-60950-1 Certified
EN-60601-1 Certified
(Suffix H2/H3)**

RECOM

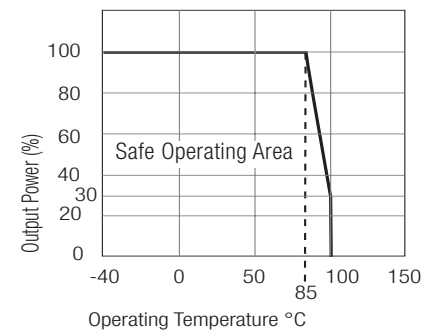
Description

High power-density, an industrial temperature range of -40°C to +85°C and extra features like Remote-On-Off-control are just some of the characteristics of this converter, ideal for highly sophisticated industrial-designs. The RSO series is available with isolation of 2kV or 3kV by choosing option "/H2" or "/H3" in which case it is also ideal for medical applications which additionally require EN-60601-1 certification.

Specifications (Core Operating Area)

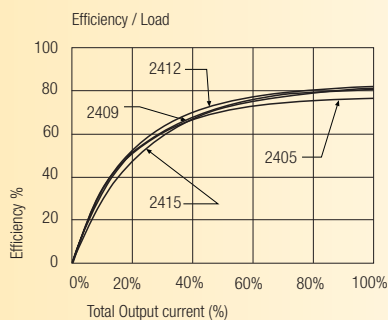
| | | | |
|---|--|--------------------------------------|------------------------------|
| Input Voltage Range | 2:1 | | |
| Output Voltage Accuracy | ±2% typ. | | |
| Line Voltage Regulation | ±0.2% max. | | |
| Load Voltage Regulation (10% to 100% full load) | ±0.4% max. | | |
| Output Ripple and Noise (20MHz limited) | 50mVp-p max. | | |
| Operating Frequency | 100kHz typ. | | |
| Efficiency at Full Load | up to 83% | | |
| No Load Power Consumption | 50mW min. / 139mW typ. / 250mW max. | | |
| Isolation Voltage | (tested for 1 second) | 1000VDC min. | |
| | H2 | 2000VDC min. | |
| | H3 | 3000VDC min. | |
| Rated Working Voltage | (long term isolation) | see Application Notes | |
| Isolation Capacitance (1000V version) | Single | 10pF min. / 40pF typ. / 60pF max. | |
| Isolation Capacitance (H2 and H3) | Single | 5pF min. / 30pF typ. / 60pF max. | |
| Isolation Capacitance (1000V version) | Dual | 120pF min. / 170pF typ. / 250pF max. | |
| Isolation Capacitance (H2 and H3) | Dual | 5pF min. / 30pF typ. / 60pF max. | |
| Isolation Resistance | >1GΩ min. | | |
| Short Circuit Protection | Continuous | | |
| Operating Temperature Range (free air convection) | -40°C to +85°C (see Graph) | | |
| Storage Temperature Range | -55°C to +125°C | | |
| Relative Humidity | 95% RH | | |
| Package Weight | 4.6g | | |
| MTBF (+25°C) | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F | 1685 x 10 ³ hours |
| | | using MIL-HDBK 217F | 254 x 10 ³ hours |

Derating-Graph (Ambient Temperature)

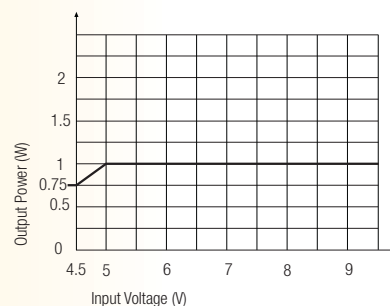


Typical Characteristics

RSO-24xx

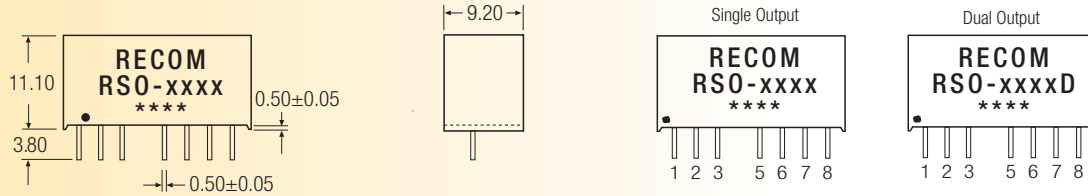


RSO-types

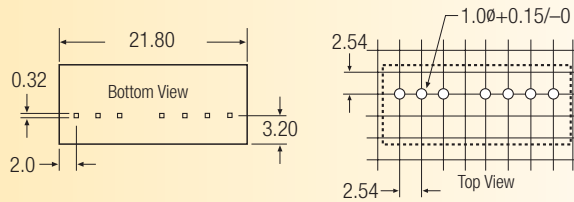


Package Style and Pinning (mm)

8 PIN SIP Package



Recommended Footprint Details



Pin Connections

| Pin # | Single | Dual |
|-------|--------|-------|
| 1 | -Vin | -Vin |
| 2 | +Vin | +Vin |
| 3 | CTRL | CTRL |
| 5 | NC | NC |
| 6 | +Vout | +Vout |
| 7 | -Vout | Com |
| 8 | NC* | -Vout |

NC = No Connection

NC* = NC, but no external Connection allowed.

XX.X ± 0.5 mm

XX.XX ± 0.25 mm

Control Pin Input Current: 10mA

Voltage Set Point Accuracy with external input/output capacitors refer to recommended test circuit: typ. ± 1% max. ±2%

Control Pin (CTRL) Input Current, control voltage applied via 1K resistor, output voltage must reduce to 0V: typ. 3mA max. 6mA

Pin 3 (CTRL)

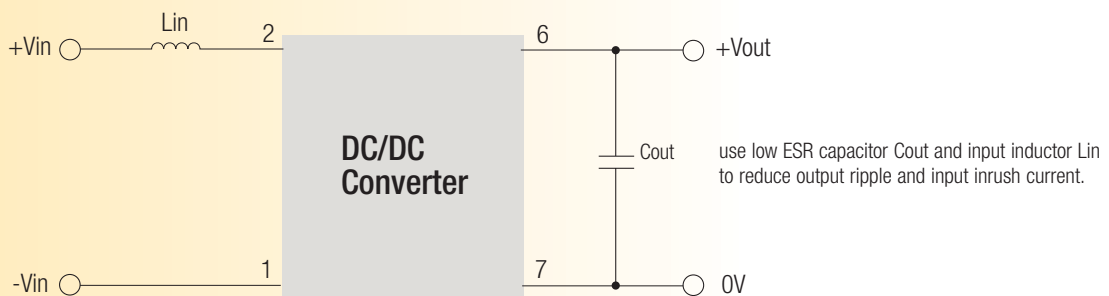
This pin provides an Off function which puts the converter into a low power mode. When the pin is 'high' the converter is OFF and when the pin is high 'Z' the converter is ON. There is no allowed low state for this pin. Voltage to be applied via a limiting resistor with a recommended value of 1K for RSO-05xx; 3.3K for RSO-12xx; RSO-24xx and 10K for RSO-48xx.

Pin 5 (NC)

This pin is used internally and must have no external connection.

Pin 8 (NC*)

No external connection allowed.



Lin RSO- types 4.7µH ~ 100µH

Cout RSO- types 22µF ~ 100µF/25V