Features

Regulated Converters

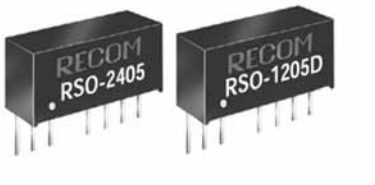
- 2:1 Wide Range Voltage Input
- 1kVDC, 2kVD & 3kVDC Isolation
- UL94V-0 Package Material
- Continuous Short Circuit Protection with Current Foldback
- Low Noise
- No External Capacitor needed
- Efficiency to 83%

ECONOLINE

DC/DC-Converter

RSO Series

1 Watt SIP8 Isolated Single & Dual Output



RECOM

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

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

RSO Series

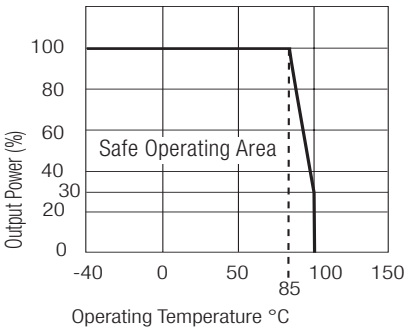
Description

High power-density covering the temperature range -40°C to +85°C, offering extra features like Remote-On-Off-function and Output-Filtering via 1 external capacitor only, 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 chosing option "/H2" or "/H3".

Specifications (Core Operating Area)

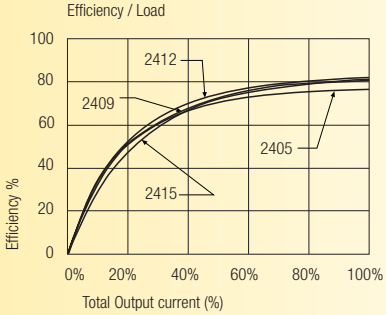
Input Voltage Range		2:1
Output Voltage Accuracy		±2% typ.
Line Voltage Regulation		±0.2% max.
Load Voltage Regulation (10% to 100% full load)		±0.4% max.
Output Ripple and Noise (20MHz limited)		50mVp-p max.
Operating Frequency		100kHz typ.
Efficiency at Full Load		up to 83%
No Load Power Consumption		50mW min. / 139mW typ. / 250mW max.
Isolation Voltage	(tested for 1 second)	1.000VDC 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	MSL Level 1	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
MTBF (+85°C) } *Detailed Information see Application Notes chapter "MTBF"*	using MIL-HDBK 217F	254 x 10^3 hours

Derating-Graph
(Ambient Temperature)

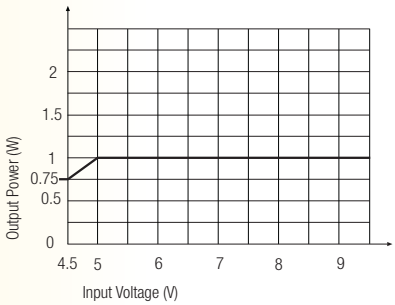


Typical Characteristics

RSO-24xx



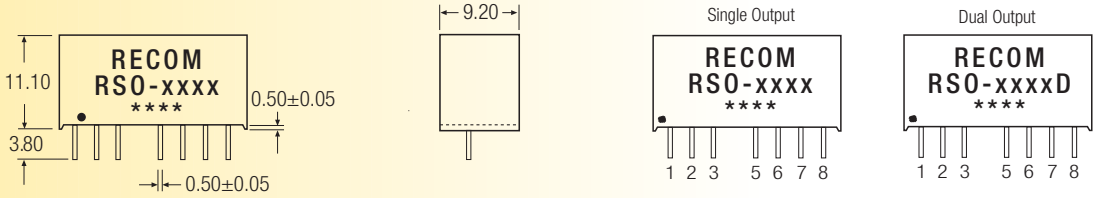
RSO-types



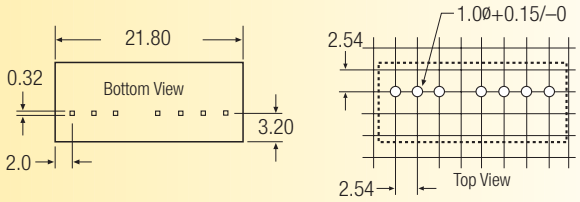
Package Style and Pinning (mm)

3rd angle projection

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	CS Optional external capacitor	–Vout

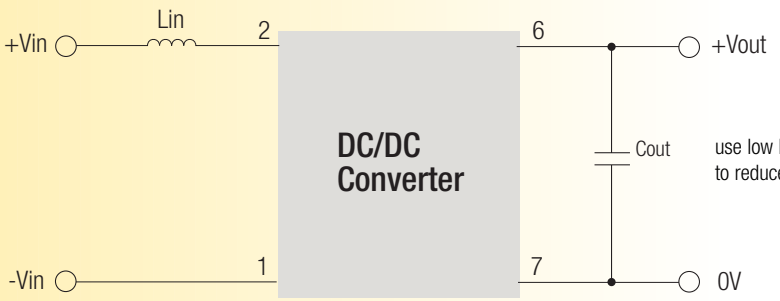
NC = No Connection
XX.X ± 0.5 mm
XX.XX ± 0.25 mm

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

Pin 8 (Cs)
This pin provides a connection point to the main reservoir capacitor. Additional capacitance can be added from this to pin 7. Any low ESR capacitor will improve ripple and noise in some measure. The benefit of this access point over simple additional output capacitance is that it precedes the output filter inductor. Maximum values of external capacitance will depend on the output voltage/loading of the converter and the desired ripple figure. Starting values can be in the range of 100uF.



use low ESR capacitor Cout and input inductor Lin to reduce output ripple and input inrush current.

L_{in}	RSO- types	4.7uH ~ 100uH
C_{out}	RSO- types	22uF ~ 100uF/25V