

# Features

## Unregulated Converter

- Industry Standard Pinout
- 1kVDC or 2kVDC Isolation
- UL94V-0 Package Material
- Optional Continuous Short Circuit Protected
- Fully Encapsulated
- Custom Solutions Available
- Efficiency to 85 %

### Description

The RO DC/DC converters are typically used in general purpose power isolation and voltage matching applications, and feature a full industrial operating temperature range of -40°C to +85°C without derating.

### Selection Guide

Part Number	SIP 4	Input Voltage (2kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max. Capacitive Load <sup>(1)</sup>
RO-xx3.3S	(H)	3.3, 5, 12, 15, 24	3.3	303	75	2200µF	
RO-xx05S	(H)	3.3, 5, 12, 15, 24	5	200	78-80	1000µF	
RO-xx09S	(H)	3.3, 5, 12, 15, 24	9	111	78-80	1000µF	
RO-xx12S	(H)	3.3, 5, 12, 15, 24	12	83	80-84	470µF	
RO-xx15S	(H)	3.3, 5, 12, 15, 24	15	66	80-84	470µF	
RO-xx24S	(H)	3.3, 5, 12, 15, 24	24	42	78-85	220µF	

xx = Input Voltage (other input and output voltage combinations available on request)

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RO-0505S/P, RO-0505S/HP

### Specifications (measured at T<sub>A</sub> = 25°C, nominal input voltage, full load and after warm-up)

Input Voltage Range		±10%
Output Voltage Accuracy		±5%
Line Voltage Regulation		1.2%/1% of V <sub>in</sub> typ.
Load Voltage Regulation (10% to 100% full load)	3.3V output type 5V output type 9V, 12V, 15V, 24V output types	20% max. 15% max. 10% max.
Output Ripple and Noise (20MHz limited)		100mVp-p max.
Operating Frequency		50kHz min. / 100kHz typ. / 105kHz max.
Efficiency at Full Load		70% min. / 80% typ.
Minimum Load = 0%	Specifications valid for 10% minimum load only.	
Isolation Voltage	(tested for 1 second) (rated for 1 minute)	1000VDC 500VAC / 60Hz
Isolation Voltage	H-Suffix (tested for 1 second) H-Suffix (rated for 1 minute)	2000VDC 1000VAC / 60Hz
Isolation Capacitance		20pF min. / 75pF max.
Isolation Resistance		10 GΩ min.
Short Circuit Protection P-Suffix		1 Second 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		1.4g
Packing Quantity		42 pcs per Tube
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F
(+85°C)		using MIL-HDBK 217F

# ECONOLINE

## DC/DC-Converter

with 3 year Warranty

# RECOM

## 1 Watt

## SIP4

## Single Output

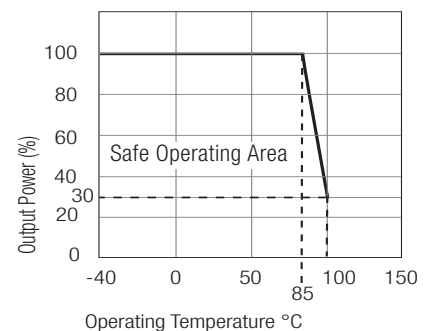


**EN-60950-1 Certified**  
**UL-60950-1 Certified**  
**EN-60601-1 Certified\***  
 (\*/H suffix)

# RO

## Derating-Graph

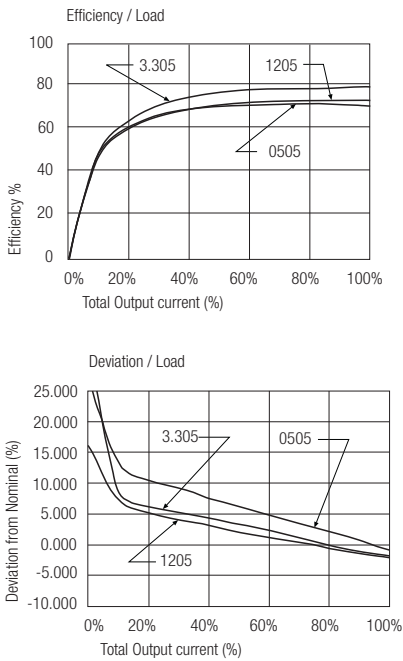
(Ambient Temperature)



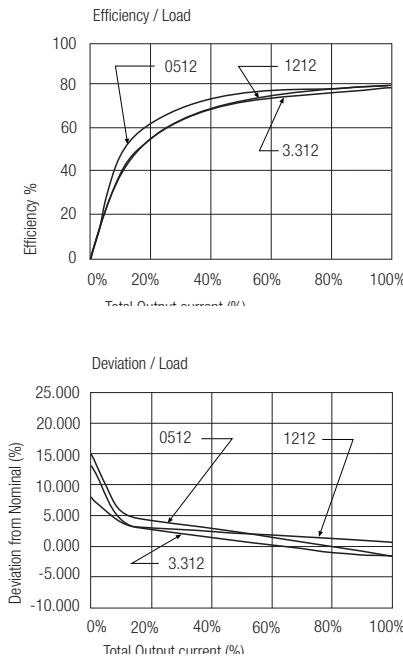
Refer to Application Notes

Typical Characteristics

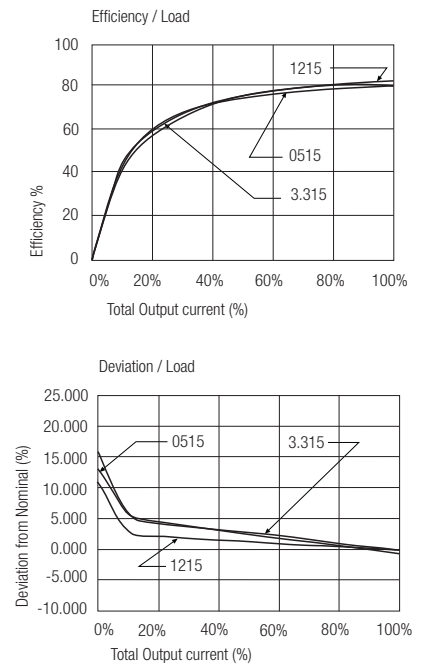
**RO-xx05S**



**RO-xx12S**



**RO-xx15S**



Notes

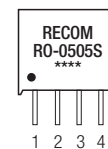
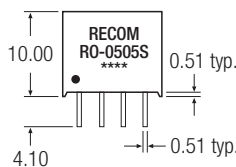
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Certifications

CB Test Report	Report: US/15348/UL	IEC 60950-1:2005 2nd Ed.
UL General Safety	Report: E358085	UL 60950-1 2nd Ed.
EN General Safety	Report: PS080804950C2	EN60950-1:2001 + A11:2004
EN Medical Safety	Report: MDD1112018 + RM1112018	IEC/EN 60601-1 3rd Edition Medical Report + ISO14971 Risk Assessment

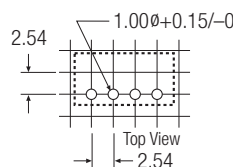
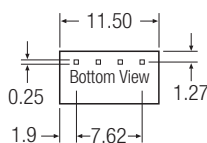
Package Style and Pinning (mm)

4 PIN SIP Package



3rd angle projection

Recommended Footprint Details



RO Pin Connections

Pin #	Single
1	-Vin
2	+Vin
3	-Vout
4	+Vout
XX.X	± 0.5 mm
XX.XX	± 0.25 mm