

## Features

## Unregulated Converters

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

**ECONOLINE**

DC/DC-Converter

# RO & RE Series

### Selection Guide

Part Number	Input Voltage	Output Voltage	Output Current	Efficiency (%)	
SIP 4	SIP 7 (2kV)	(VDC)	(mA)	(%)	
RO-xx1.8S	RE-xx1.8S (H)	1.8, 3.3, 5, 9, 12, 15, 24	1.8	555	70
RO-xx3.3S	RE-xx3.3S (H)	1.8, 3.3, 5, 9, 12, 15, 24	3.3	303	75
RO-xx05S	RE-xx05S (H)	1.8, 3.3, 5, 9, 12, 15, 24	5	200	70-78
RO-xx09S	RE-xx09S (H)	1.8, 3.3, 5, 9, 12, 15, 24	9	111	76-78
RO-xx12S	RE-xx12S (H)	1.8, 3.3, 5, 9, 12, 15, 24	12	83	78-80
RO-xx15S	RE-xx15S (H)	1.8, 3.3, 5, 9, 12, 15, 24	15	66	80-84
RO-xx24S	RE-xx24S (H)	1.8, 3.3, 5, 9, 12, 15, 24	24	42	74-85

xx = Input Voltage

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RO-051.8S/P, RO-051.8S/HP

## 1 Watt SIP4 & SIP7 Single Output

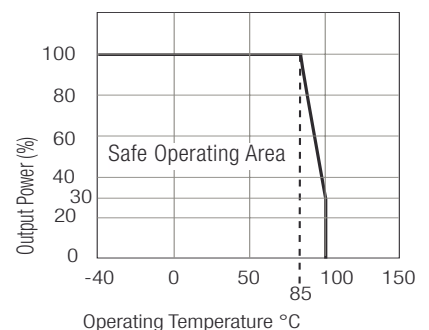


### Specifications (Core Operating Area)

Input Voltage Range		±10%	
Output Voltage Accuracy		±5%	
Line Voltage Regulation		1.2%/1% of Vin typ.	
Load Voltage Regulation (10% to 100% full load)	1.8V, 3.3V output types 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.	
No Load Power Consumption		101mW min. / 126mW typ. / 220mW max.	
Isolation Voltage (tested for 1 second)		1000VDC min.	
Rated Working Voltage (long term isolation)		see Application Notes	
Isolation Voltage (tested for 1 second)	H-Suffix	2000VDC min.	
Rated Working Voltage (long term isolation)	H-Suffix	see Application Notes	
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	RO types RE types	1.4g 2.2g	
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF" using MIL-HDBK 217F	RO types	985 x 10 <sup>3</sup> hours
		RE types	992 x 10 <sup>3</sup> hours
(+85°C)		RO types	200 x 10 <sup>3</sup> hours
		RE types	145 x 10 <sup>3</sup> hours

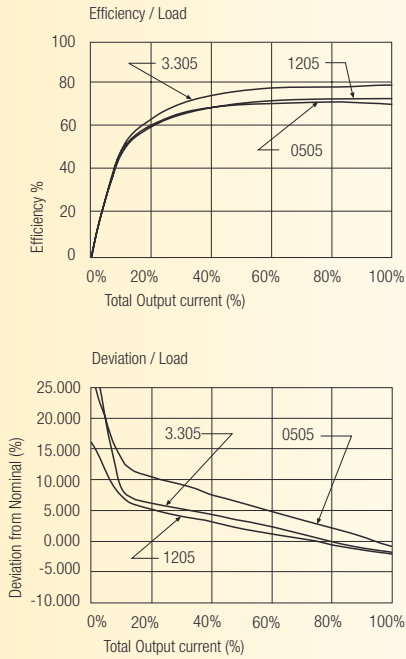
**RECOM**

## Derating-Graph (Ambient Temperature)

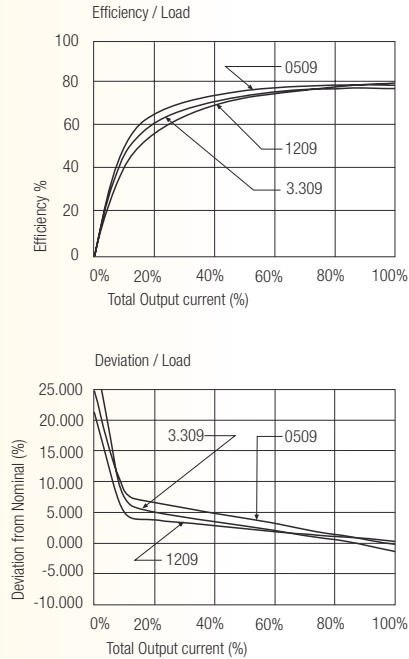


**Typical Characteristics**

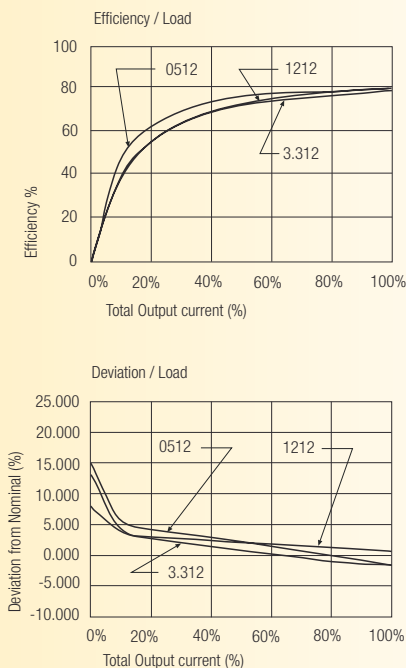
**RO/RE-xx05S**



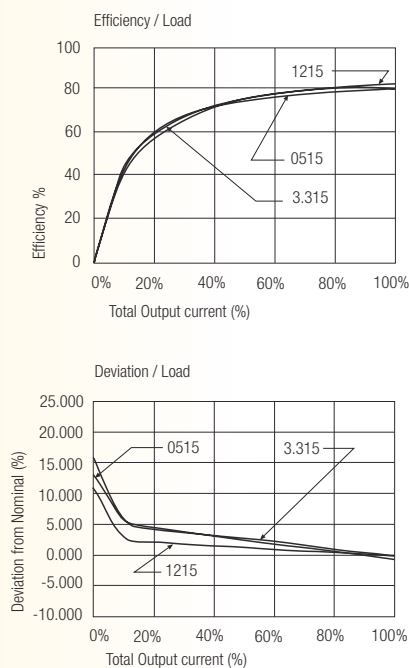
**RO/RE-xx09S**



**RO/RE-xx12S**

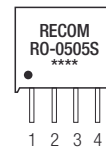
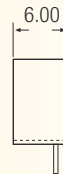
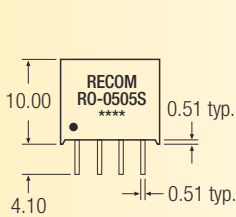


**RO/RE-xx15S**

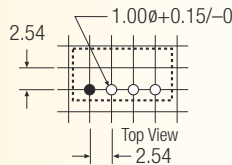
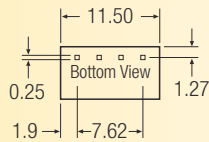


**Package Style and Pinning (mm)**

**4 PIN SIP Package**



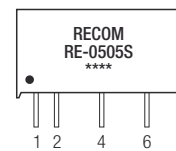
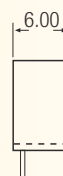
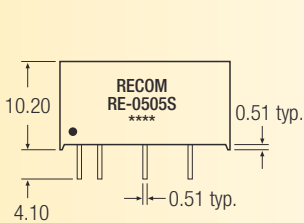
**Recommended Footprint Details**



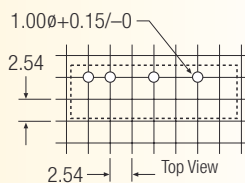
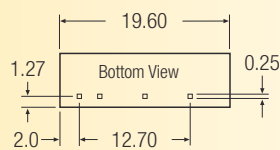
**RO Pin Connections**

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

**7 PIN SIP Package**



**Recommended Footprint Details**



**RE Pin Connections**

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