

Features

Unregulated Converters

- Industry Standard Pinout
- 1kVDC & 2kVDC Isolation
- UL94V-0 Package Material
- Toroidal Magnetics
- 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)	(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

Specifications (Core Operating Area)

Input Voltage Range	±10%	
Output Voltage Accuracy	±5%	
Line Voltage Regulation	1.2%/1% of Vin max.	
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. / 171mW max.	
Isolation Voltage (tested for 1 second)	1.000VDC min.	
Rated Working Voltage (long term isolation)	see Application Notes	
Isolation Voltage (tested for 1 second)	2.000VDC min.	
Rated Working Voltage (long term isolation)	see Application Notes	
Isolation Capacitance	20pF min. / 75pF max.	
Isolation Resistance	10 GΩ min.	
Short Circuit Protection	1 Second	
P-Suffix	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	RO types	1.4g
	RE types	2.2g

MTBF (+25°C)

Detailed Information see Application Notes chapter "MTBF"

using MIL-HDBK 217F

RO types

985 x 10³ hours

RE types

992 x 10³ hours

using MIL-HDBK 217F

RO types

200 x 10³ hours

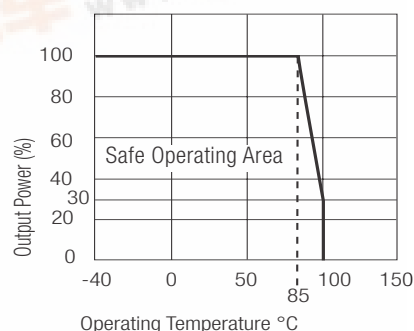
RE types

145 x 10³ hours

1 Watt SIP4 & SIP7 Single Output



Derating-Graph (Ambient Temperature)



Detailed Information see Application Notes chapter "MTBF"

using MIL-HDBK 217F

RO types

985 x 10³ hours

RE types

992 x 10³ hours

using MIL-HDBK 217F

RO types

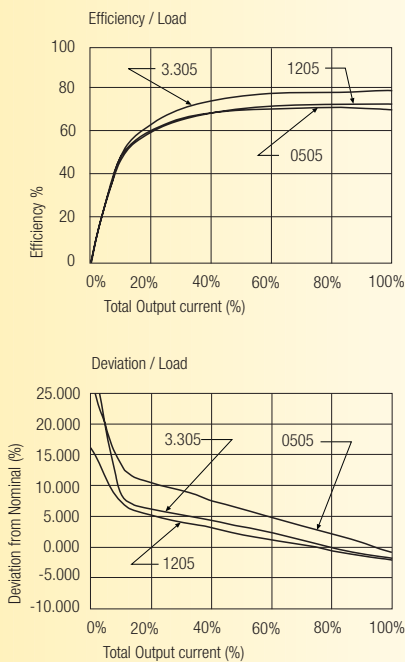
200 x 10³ hours

RE types

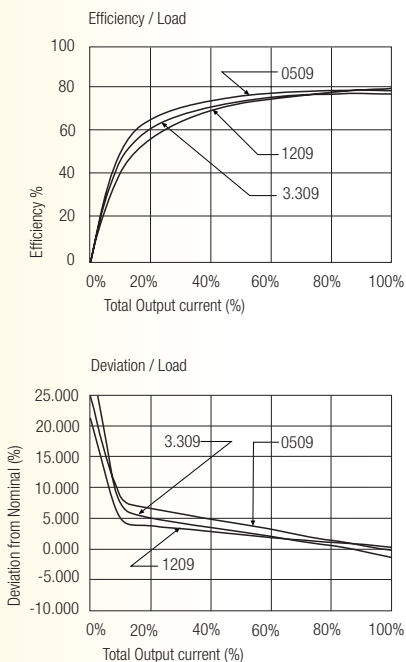
145 x 10³ hours

Typical Characteristics

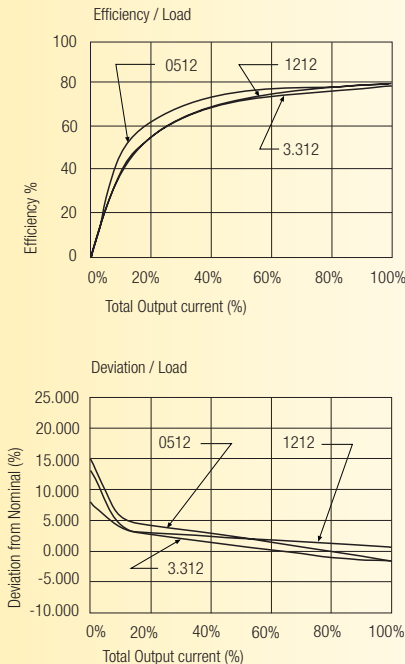
RO/RE-xx05S



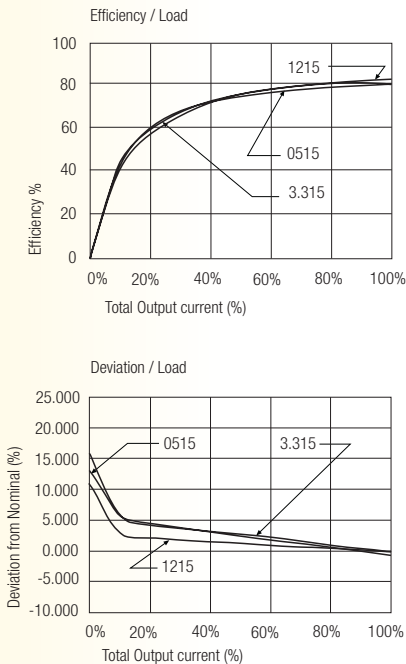
RO/RE-xx09S



RO/RE-xx12S

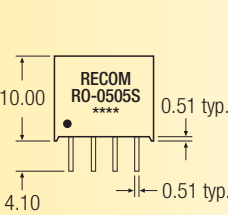


RO/RE-xx15S

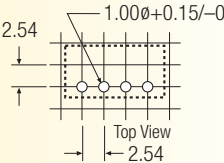
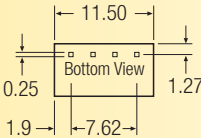


Package Style and Pinning (mm)

4 PIN SIP Package



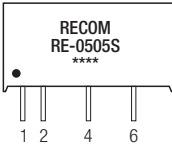
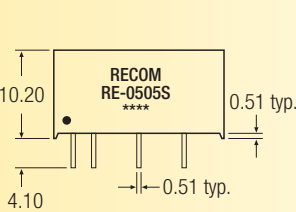
Recommended Footprint Details



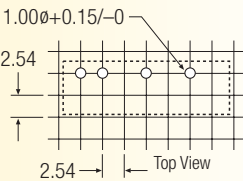
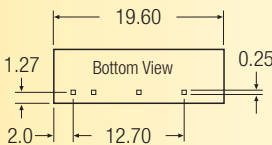
RO Pin Connections

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	