

Features

Unregulated Converters

- Efficiency 82% Full Load
- 1:1 Input Range
- 1kVDC and 2kVDC Isolation Option
- EN pending & UL Certified
- -40°C to +100°C Operating Temperature Range
- 1W SMD Package

Description

The R1S/E series is an unregulated DC/DC converter in fully encapsulated open Frame package style. This series has been designed to offer exceptionally high efficiency at low loads and an extended operating temperature range. Uses include battery powered supplies, green energy applications and general isolating/converting DC power where board space and high efficiency is a premium.

Selection Guide

Part Number SMD	Isolation Voltage (kVDC)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (typ.)	Capacitive Load (max.) ⁽¹⁾
R1S**-3.305/E*	1	3.3	5	200	81%	2200µF
R1S**-0505/E*	1	5	5	200	81%	2200µF
R1S**-1205/E*	1	12	5	200	82%	2200µF
R1S**-2405/E*	1	24	5	200	80%	2200µF

** without marking denotes 5 pins out of 8 fitted (includes /H option) - e.g. R1S-3.305/EH

** with marking "8" denotes 8 pins out of 8 fitted (/H option not available) - e.g. R1S8-3.305/E

* add Suffix "/H" for 2kVDC Isolation Voltage - e.g. R1S-3.305/EH

* add Suffix "/P" for Continuous Short Protection - e.g. R1S-3.305/EHP, R1S8-3.305/EP

* add Suffix "-R" for tape & reel packing - e.g. R1S-3.305/EHP-R, R1S8-3.305/E-R

Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage, full load and after warm-up)

Input Voltage Range	$\pm 10\%$	
Output Voltage Accuracy	3.3V, 5V, 12V, 24V	$\pm 5\%$ max.
Line Voltage Regulation (low line to high line at full load)	3.3V, 5V, 12V, 24V	1.2% max.
Load Voltage Regulation	Load Deviation 10% to 100%	15% max.
Output Ripple and Noise (20MHz BW)	50mVp-p typ., 100mVp-p max.	
Operating Frequency (V_{in} =nominal input)	20kHz min. / 90kHz max.	
Efficiency	see Selection Guide	
Minimum Load = 0%	Specifications valid for 10% minimum load only	
Isolation Voltage	(tested for 1 second)	1000 VDC
	(rated for 1 minute***)	500VAC / 60Hz
	H-Suffix (tested for 1 second)	2000 VDC
	H-Suffix (rated for 1 minute***)	1000VAC / 60Hz
Isolation Capacitance	75pF max.	
Isolation Resistance	(Viso=500V)	10GΩ min.
Short-Circuit Protection	1 second	
Operating Temperature Range	-40°C to +100°C	
Storage Temperature	-55°C to +125°C	
Reflow Temperature	RoHS compliant	245°C (30 sec.), Peak 255°C (5sec.) max.
Vapor Phase Process	(for more details see Application Notes)	230°C (90 sec.) max.
Relative Humidity	95% RH	
Package Weight	(R1S8/xx05/E = 1.1g)	1.0g
Packing Quantity	40 pcs per Tube 500 pcs per Reel	
MTBF (+25°C)	using MIL-HDBK 217F	3459 x 10 ³ hours
MTBF (+100°C)	using MIL-HDBK 217F	756 x 10 ³ hours
Certifications		
UL General Safety	Report: E358085	UL60950-1
EN General Safety	Report: SPCLVD1112018	EN60950-1 2nd Edition

Note: Detailed Information see Application Notes chapter "MTBF"

***Any data referred to in this datasheet are of indicative nature and based on our practical experience only. For further details, please refer to our Application Notes.

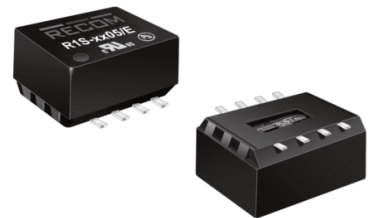
ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

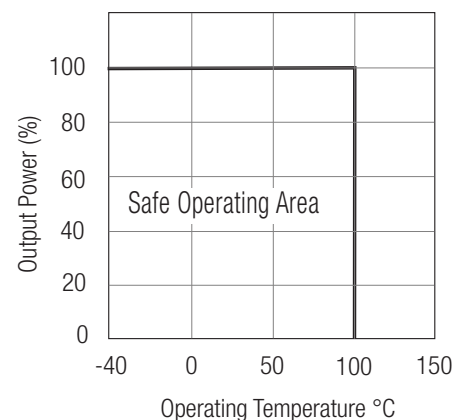
1 Watt SMD Single Output



EN-60950-1 Certified
UL-60950-1 Certified

R1S/E

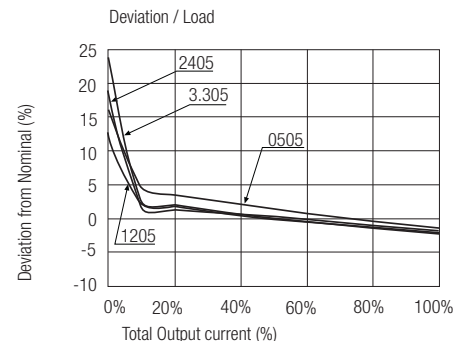
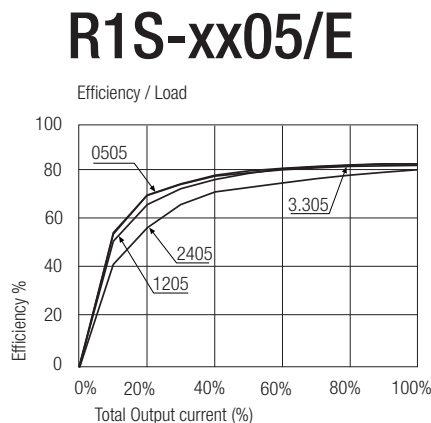
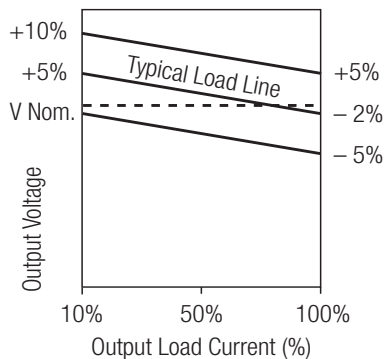
Derating-Graph (Ambient Temperature)



Refer to Application Notes

Typical Characteristics

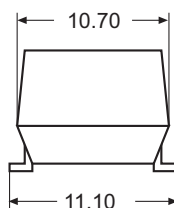
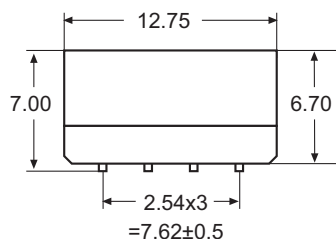
Tolerance Envelope



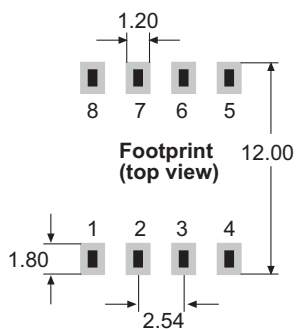
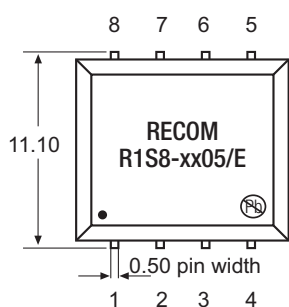
Notes

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.

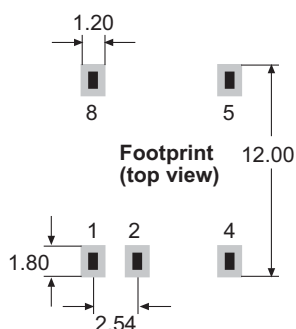
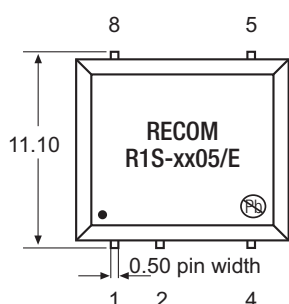
Package Style and Pinning



8 Pins:



5 Pins:



Pin Connections	Function	Function
Pin #	5 Pins	8 Pins
1	-Vin	-Vin
2	+Vin	+Vin
4	-Vout	-Vout
5	+Vout	+Vout
3,6,7	NA	NC
8	NC	NC

NC = No Internal Connection
NA = No Available Connection

Unit: mm
Tolerance: ± 0.25 mm