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

ECONOLINE
DC/DC-Converter
with 3 year Warranty

RECOM

1 Watt SMD
Single Output

Description The R1S/E series is an unregulated DC/DC converter in fully encapsulated SMD package style. This series has been designed to offer exeptionally 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.)
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°C, nominal input voltage, full load and after warm-up)

Input Voltage Range		±10%
Output Voltage Accuracy	3.3V, 5V, 12V, 24V	±5% max.
Line Voltage Regulation	3.3V, 5V, 12V, 24V	1.2% max.
(low line to high line at full load)		
Load Voltage Regulation	Load Deviation 10% to 100%	15% max.
Output Ripple and Noise (20MHz BW)		50mVp-p typ., 100mVp-p max.
Operating Frequency (Vin=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.
Vapour 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 10³ hours
MTBF (+100°C)	using MIL-HDBK 217F	756 x 10³ hours

Note: Detailed Information see Application Notes chapter "MTBF"

***Any data referred to in this datasheet are of indivative nature and based on our practical experience only. For further details, please refer to our Application Notes.
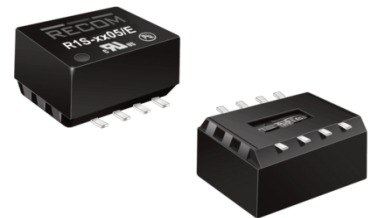
RoHS 2011/65/EU 6/6

EN-60950-1 (pending)
UL-60950-1 Certified

R1S/E

Derating-Graph
(Ambient Temperature)

Safe Operating Area

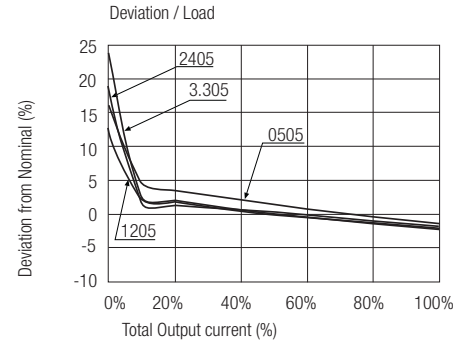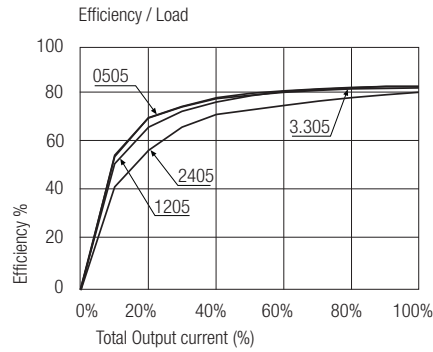Output Power (%) vs Operating Temperature °C
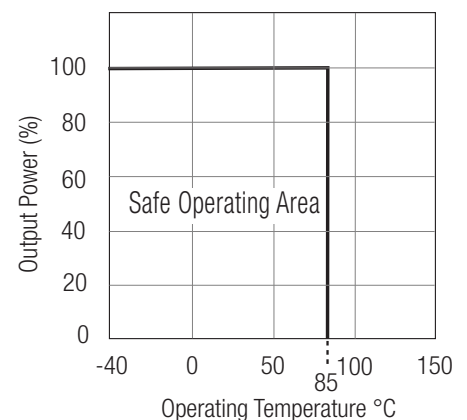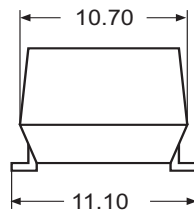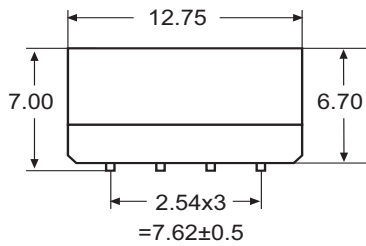
Refer to Application Notes
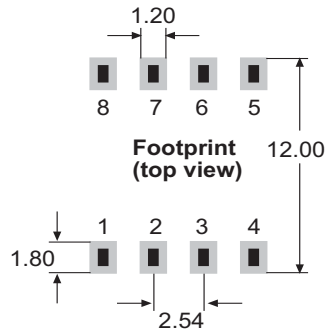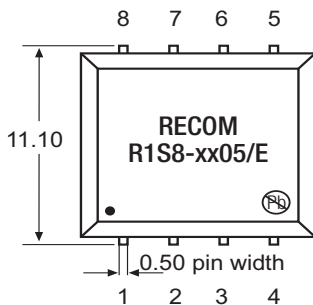
Typical Characteristics

Tolerance Envelope

R1S-xx05/E

Output Voltage vs Output Load Current (%)
+10%
+5%
V Nom.
+5%
− 2%
− 5%
Typical Load Line
10% 50% 100%

Efficiency / Load

0505
3.305
2405
1205
Efficiency %
Total Output current (%)

Deviation / Load

2405
3.305
0505
1205
Deviation from Nominal (%)
Total Output current (%)
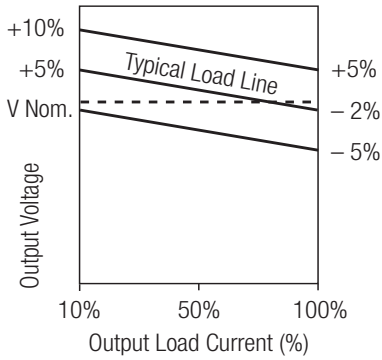
Package Style and Pinning

12.75
7.00
6.70
2.54x3
=7.62±0.5

10.70
11.10

8 Pins:

8 7 6 5
11.10
RECOM
R1S8-xx05/E
0.50 pin width
1 2 3 4

1.20
8 7 6 5
Footprint (top view) 12.00
1.80
1 2 3 4
2.54

5 Pins:

8 5
11.10
RECOM
R1S-xx05/E
0.50 pin width
1 2 4

1.20
8 5
Footprint (top view) 12.00
1.80
1 2 4
2.54
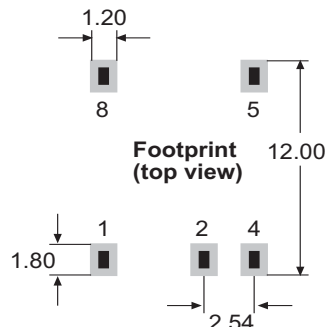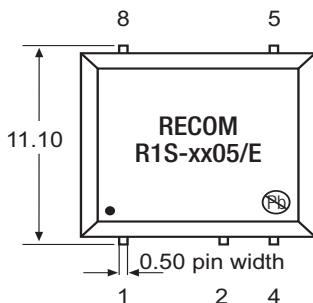
Pin Connections	Function	Function
Pin #	5 Pins	8 Pins
1	-Vin	-Vin
2	+Vin	+Vin
4	-Vout	-Vout
5	+Vout	+Vout
3,6,7	NA	NC
8	NC	NC

NC = No Internal Connection

NA = No Available Connection

Unit: mm
Tolerance: ± 0.25 mm

R1S/E