

# Features

## Unregulated Converters

- 1:1 input range
- SMD package
- Efficiency up to 75%
- 1kVDC/1s isolation
- Wide operating temperature range from -40°C to +85°C at full load
- UL/EAC certified

**RECOM**  
DC/DC Converter

## R1SE

**1 Watt  
SMD  
Single Output**



### Description

The R1SE series are 1W unregulated DC/DC converters that are lower cost than equivalent converters. The benefits of high volume production and semi-automatic assembly allow for a lower selling price without sacrificing our high quality standards. They are UL certified for safety, offer reasonable efficiency and operating temperature range of -40° to +85°C.

### Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. <sup>(1)</sup> [%]	max. Capacitive Load <sup>(2)</sup> [μF]
R1SE <sup>(3)</sup> -0505 <sup>(4)</sup>	5	5	200	75	1000

#### Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

Note2: Max Cap Load is tested at nominal input and full resistive load and is defined as the capacitive load that will allow start up in under 1s without damage to the converter



**UL**  
E358085

### Model Numbering



#### Notes:

Note3: without marking denotes 5 pins out of 8 fitted  
with marking "8" denotes 8 pins out of 8 fitted

Note4: add suffix „-R“ for tape and reel packaging

#### Ordering Examples:

R1SE-0505 = Single Output, 5 pins out of 8 fitted, 5Vin, 5Vout

R1SE-0505-R = Single Output, 5 pins out of 8 fitted, 5Vin, 5Vout Output and tape and reel packaging

R1SE8-0505 = Single Output, 8 pins out of 8 fitted, 5Vin, 5Vout

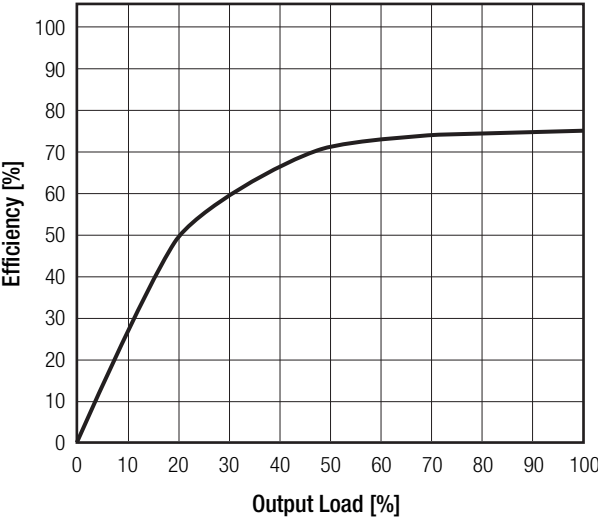
UL60950-1 certified  
CAN/CSA-C22.2 No. 60950-1-07 certified

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range			±10%	
Internal Operating Frequency		20kHz		70kHz
Output Ripple and Noise	20MHz BW		68mVp-p	100mVp-p

Efficiency vs. Load

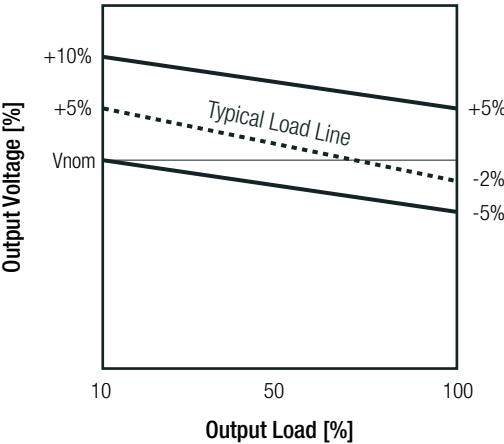


REGULATIONS

Parameter	Condition	Value
Output Accuracy		-2.0% typ. / ±5.0% max.
Line Regulation	low line to high line, full load	±1.2% typ.
Load Regulation <sup>(5)</sup>	10% to 100% load	10.0% typ. / 15.0% max.

Notes:  
Note5: Operation below 10% load will not harm the converter, but specifications may not be met

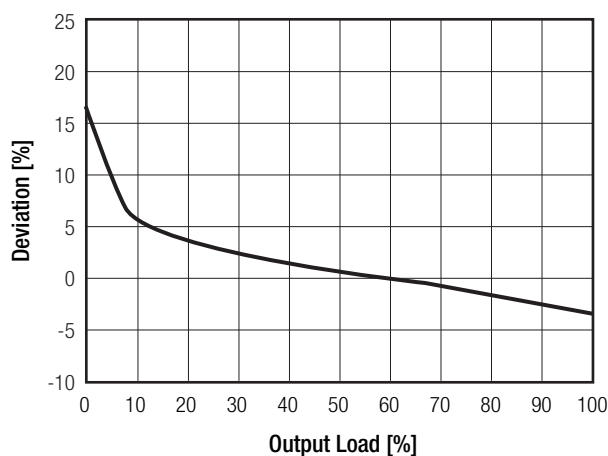
Tolerance Envelope



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**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

**Deviation vs. Load**



**PROTECTIONS**

Parameter	Type		Value
Short Circuit Protection (SCP)	below 100mΩ		1 second
Isolation Voltage <sup>(6)</sup>	I/P to O/P	tested for 1 second rated for 1 minute	1kVDC 500VAC/60Hz
Isolation Resistance	Viso = 500V		10GΩ min.
Isolation Capacitance			75pF max.
Insulation Grade			functional

**Notes:**

Note6: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note7: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

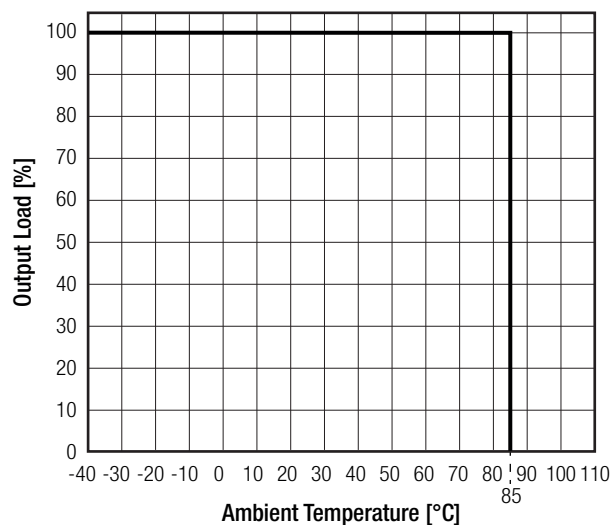
**ENVIRONMENTAL**

Parameter	Condition		Value
Operating Temperature Range	full load @ free air convection		-40°C to +85°C
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	1022 x 10 <sup>3</sup> hours 172 x 10 <sup>3</sup> hours

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**Specifications** (measured @  $T_a = 25^\circ\text{C}$ , nom.  $V_{in}$ , full load and after warm-up unless otherwise stated)

**Derating Graph**  
(@ free air convection)

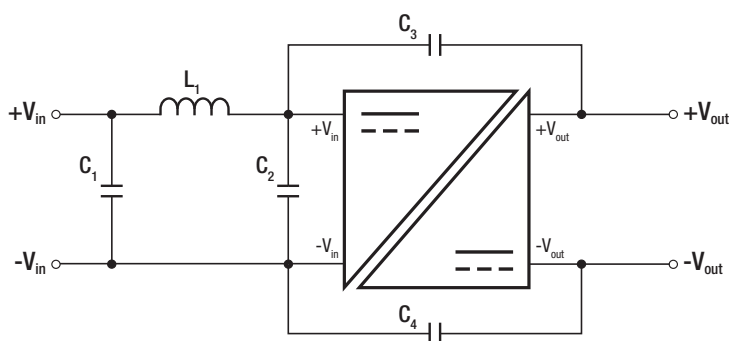


**SAFETY AND CERTIFICATIONS**

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E358085-A2-UL	UL60950-1, 2nd Edition:2007 CAN/CSA C22.2 No. 60950-1-03, 2nd Edition:2007
RoHS 2		RoHS-2011/65/EU + AM-2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter (see filter suggestion below)	EN55032, Class B EN55032, Class A

**EMC Filter Suggestion according to EN55032**



**Component List Class A**

MODEL	C1	L1	C2	C3 and C4
R1SE-0505	N/A	N/A	6.8 $\mu\text{F}$ 50V MLCC	N/A

**Component List Class B**

MODEL	C1	L1	C3 (safety)	C4 (safety)
R1SE-0505	10 $\mu\text{F}$ 100V MLCC	<a href="#">12<math>\mu\text{H}</math> choke</a> <a href="#">RLS-126</a>	330pF	330pF

**Notes:**

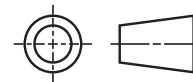
Note8: Filter suggestions are valid for indicated part numbers only. For other part numbers, please contact RECOM tech support for advice

**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

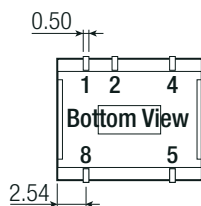
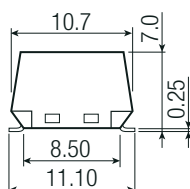
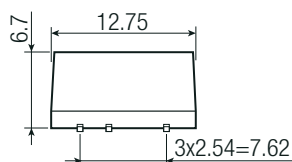
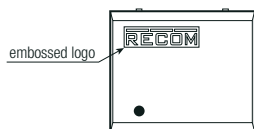
**DIMENSION AND PHYSICAL CHARACTERISTICS**

Parameter	Type	Value
Material	case	non-conductive black plastic, (UL94 V-0)
Dimension (LxWxH)		12.75 x 10.7 x 7.0mm
Weight		1.0g typ.

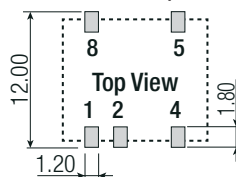
**Dimension Drawing (mm)**



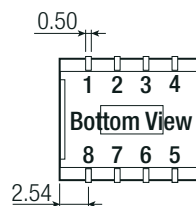
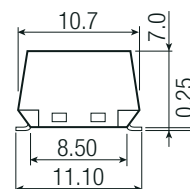
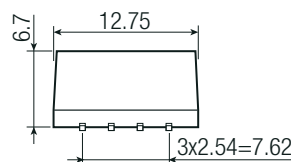
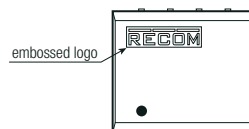
**5 Pin Single SMD Package**



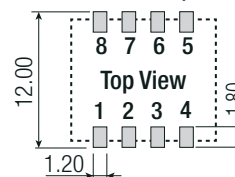
**Recommended Footprint Details**



**8 Pin Single SMD Package**



**Recommended Footprint Details**



**Pinning Information**

Pin #	Single
1	-Vin
2	+Vin
4	-Vout
5	+Vout
8	NC

NC = No Connection

Tolerance:

xx.xx= 0.25mm

**Pinning Information**

Pin #	Single
1	-Vin
2	+Vin
4	-Vout
5	+Vout
3,6,7,8	NC

NC = No Connection

Tolerance:

xx.xx= 0.25mm

**PACKAGING INFORMATION**

Packaging Dimension (LxWxH)	tube tape and reel (carton)	530.0 x 17.0 x 14.0mm 355.0 x 340.0 x 35.0mm
Packaging Quantity	tube tape and reel	40pcs 500pcs
Tape Width		24.0mm
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	95% RH max.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.

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