

# Features

# Unregulated Converters

- SMD case style
- Tape and reel packaging
- UL60950-1 certified
- High operating temperature range from -40°C to +100°C at full load
- Efficiency up to 76%
- 2kVDC/1s isolation



## R1SE/H2

**1 Watt  
SMD  
Single Output**



### Description

The R1SE/H2 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 still meet the full industrial operating temperature range of -40° to +100°C. All converters are 100% tested in production and carry our 3-year warranty.

### Selection Guide

Part Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. <sup>(1)</sup> [%]	max. Capacitive Load <sup>(2)</sup> [µF]
R1SE-3.305/H2-R	3.3	5	200	75	1000
R1SE-0505/H2-R	5	5	200	75	1000
R1SE-0512/H2-R	5	12	84	76	330
R1SE-0515/H2-R	5	15	66	76	220
R1SE-1205/H2-R	12	5	200	73	1000
R1SE-1505/H2-R	15	5	200	74	1000

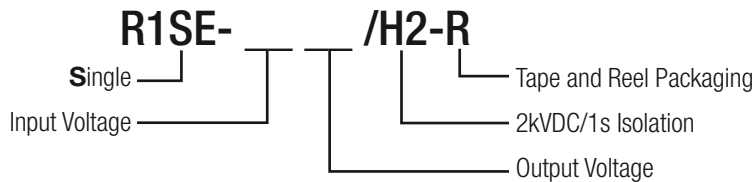
#### Notes:

- Note1: Efficiency is tested at nominal input and full load at +25°C ambient  
 Note2: Max. capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter



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

### Model Numbering



#### Ordering Examples:

R1SE-0505/H2-R: Single Output, 5VDC Input, 5VDC Output, 2kVDC/1s isolation and tape and reel packaging

**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage and rated current unless otherwise specified)

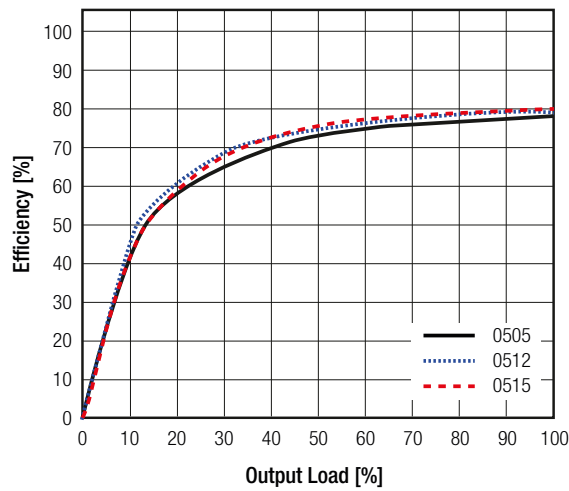
**BASIC CHARACTERISTICS**

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range			$\pm 10\%$	
Internal Operating Frequency		20kHz	60kHz	100kHz
Output Ripple and Noise <sup>(3)</sup>	20MHz BW		50mVp-p	100mVp-p

**Notes:**

Note3: Measurements are made with a 100nF MLCC across output (low ESR)

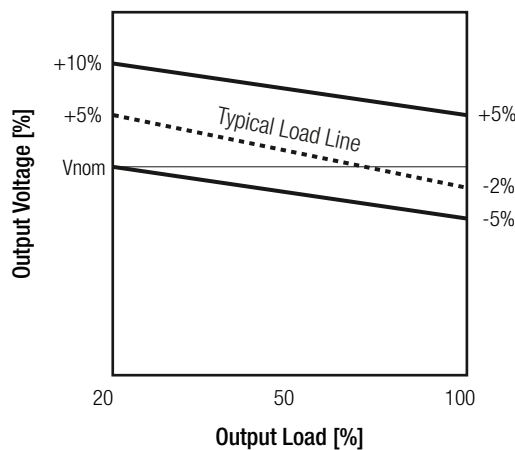
**Efficiency vs. Load**



**REGULATIONS**

Parameter	Condition	Value
Output Accuracy		-2.0% typ. / $\pm 5.0\%$ max.
Line Regulation	low line to high line, full load	$\pm 1.0\%$ typ. / $\pm 1.5\%$ max.
Load Regulation	20% to 100% load	6.0% typ. / 10.0% max.

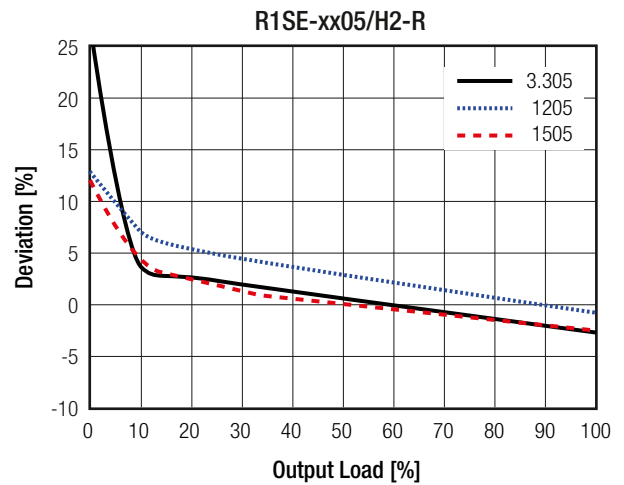
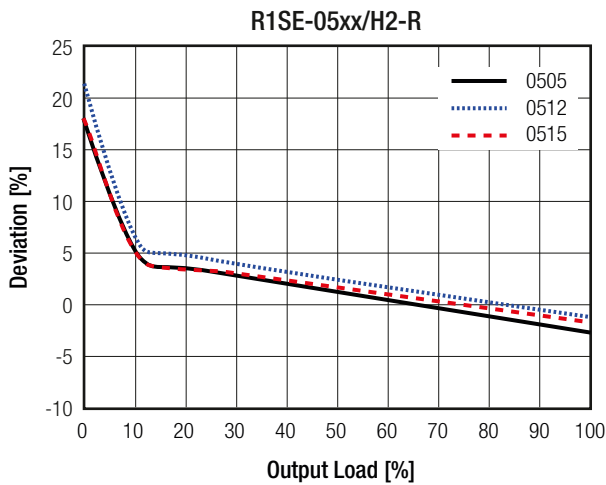
**Tolerance Envelope**



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**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage and rated current unless otherwise specified)

**Deviation vs. Load**



**PROTECTIONS**

Parameter	Type		Value
Isolation Voltage	I/P to O/P	tested for 1 second	2kVDC
Isolation Resistance	Viso = 500V		10GΩ min.
Isolation Capacitance			75pF max.

**Notes:**

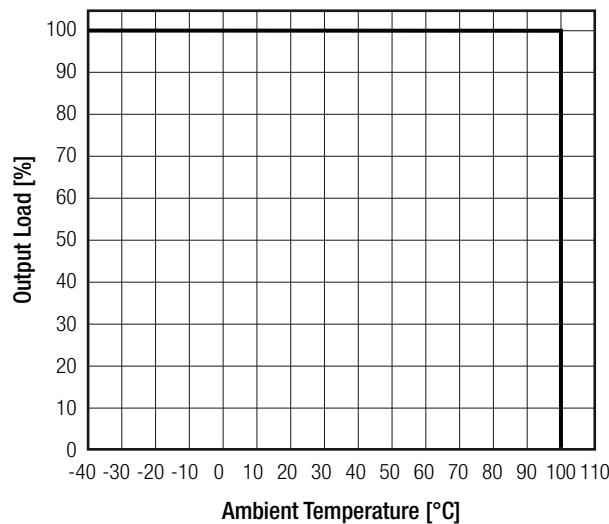
Note4: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

**ENVIRONMENTAL**

Parameter	Condition		Value
Operating Temperature Range	full load @ free air convection		-40°C to +100°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	2992 x 10 <sup>3</sup> hours 955 x 10 <sup>3</sup> hours

**Derating Graph**

(@ free air convection)



**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage and rated current unless otherwise specified)

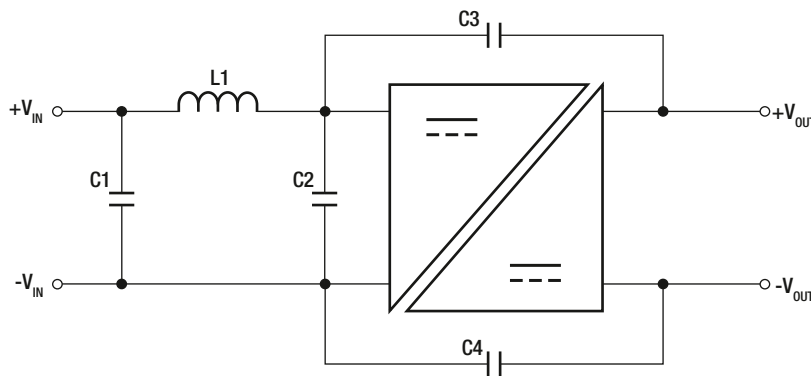
**SAFETY AND CERTIFICATIONS**

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. 60950-1-07, 2nd Edition:2007
EAC	RU-AT.49.09571	TP TC 004/2011
RoHs 2+		RoHS-2011/65/EU + AM-2015/863

**EMC Compliance**

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter	EN55032, Class A and B

**EMC Filtering Suggestions according to EN55032**



**Component List Class A**

MODEL	C1	C2	C3 (safety)	C4 (safety)	L1
R1SE-05xx/H2	N/A	6.8 $\mu\text{F}$ , 50V, MLCC	N/A	N/A	N/A
R1SE-12xx/H2		10 $\mu\text{F}$ , 100V, MLCC			
R1SE-15xx/H2					

**Component List Class B**

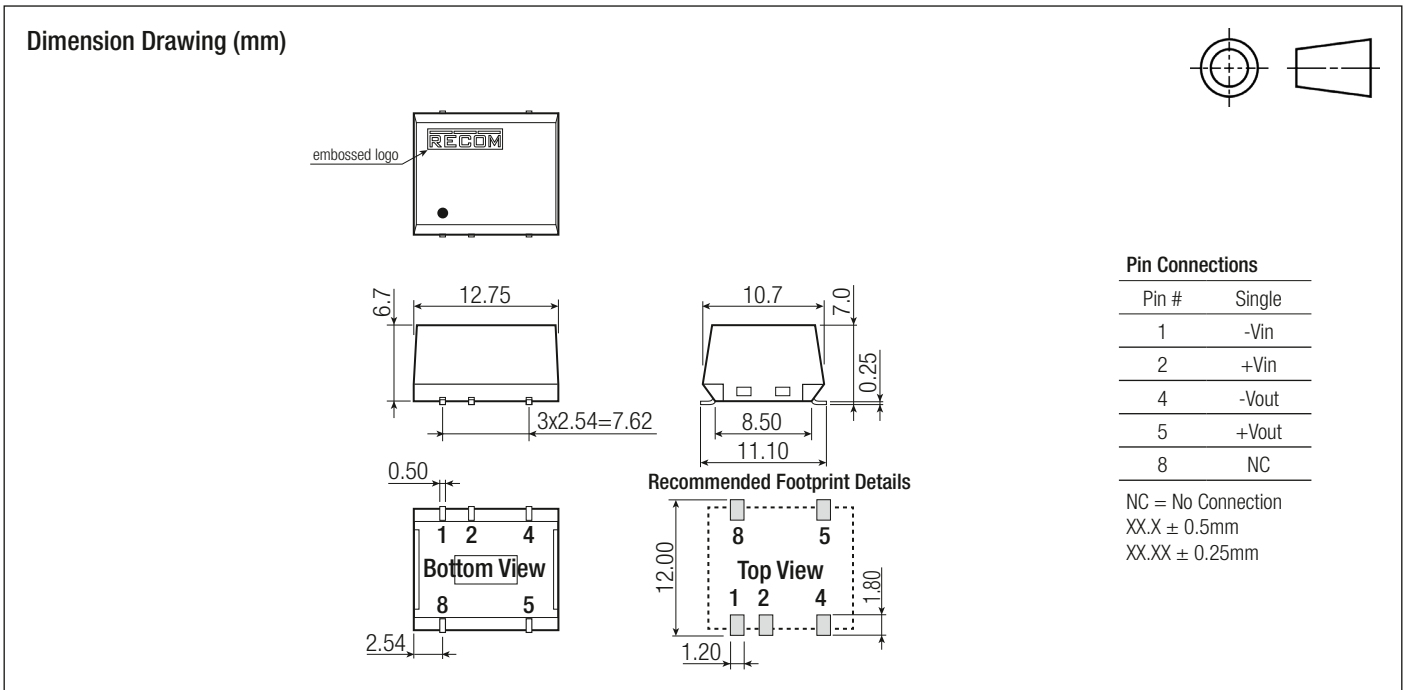
MODEL	C1	C2	C3 (safety)	C4 (safety)	L1
R1SE-05xx/H2	10 $\mu\text{F}$ , 100V, MLCC	N/A	330pF	330pF	12 $\mu\text{H}$ PR4532Z-120M
R1SE-12xx/H2					
R1SE-15xx/H2					

**DIMENSION AND PHYSICAL CHARACTERISTICS**

Parameter	Type	Value
Material	case	non-conductive black plastic (UL94 V-0)
Dimension (LxWxH)		12.75 x 10.7 x 6.7mm
Weight		1.0g typ.

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**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage and rated current unless otherwise specified)



<b>PACKAGING INFORMATION</b>		
Packaging Dimension (LxWxH)	tape and reel (carton)	355.0 x 342.0 x 36.0mm
Packaging Quantity	tape and reel	500pcs.
Tape Width		24.0mm
Storage Temperature Range		-55°C to +125°C
Storage Humidity		95% RH max.

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