# 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

3 YEAR Warranty

## 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. (1) [%] | max. Capacitive Load (2) [µF] |
|---|---|---|---|---|---|
| R1SE (3)-0505 (4) | 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


RoHS 2 compliant 10 from 10 — RECOM-CONVERTERS COMPLIANT PRODUCTS

REACH compliant — RECOM-CONVERTERS COMPLIANT PRODUCTS

c UL us E358085

EAC

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

## Model Numbering

R1SE_ -

- Single
- Pinning (3)
- Input Voltage
- Packaging (4)
- Output Voltage

**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:**

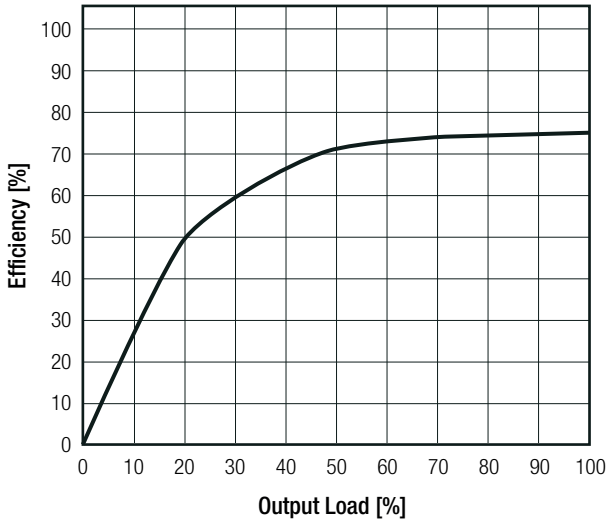
R1SE-0505 = Single Output, 5 pins out of 8 fitted, 5Vin, 5Vout
R1SE-0505-R = Single Output, 5 pins out of 8 fitted, 5Vin, 5Vout Output and tape and reel packaging
R1SE8-0505 = Single Output, 8 pins out of 8 fitted, 5Vin, 5Vout

## 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**



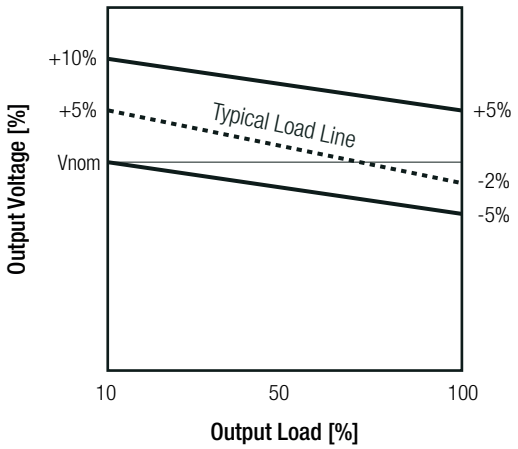

### REGULATIONS

| 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 (5) | 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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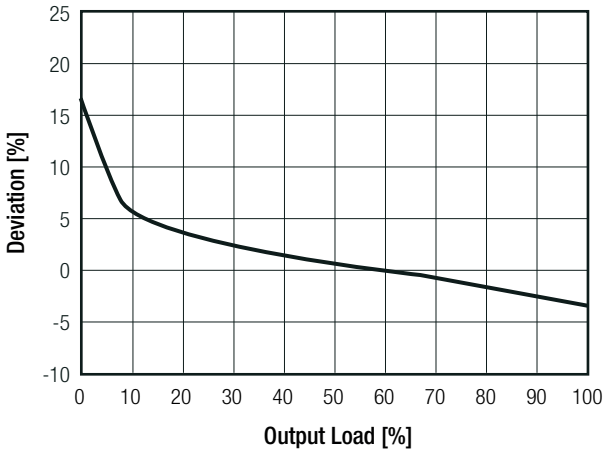
## Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### Deviation vs. Load




| PROTECTIONS | | | |
|---|---|---|---|
| **Parameter** | **Type** | | **Value** |
| Short Circuit Protection (SCP) | below 100mΩ | | 1 second |
| Isolation Voltage (6) | I/P to O/P | tested for 1 second<br>rated for 1 minute | 1kVDC<br>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<br>+85°C | 1022 x $10^3$ hours<br>172 x $10^3$ hours |

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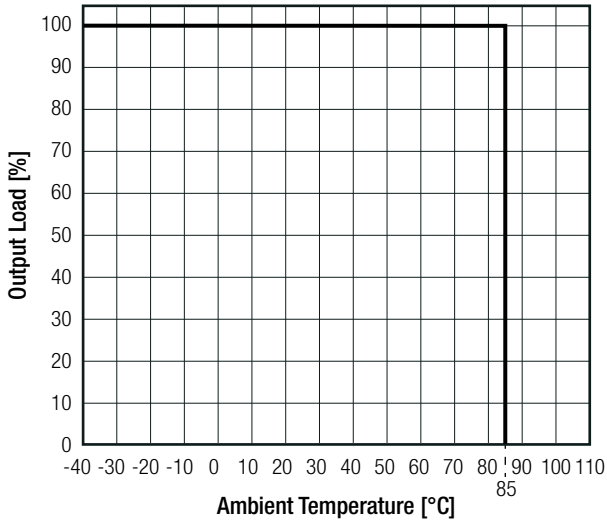
## Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### Derating Graph
(@ free air convection)

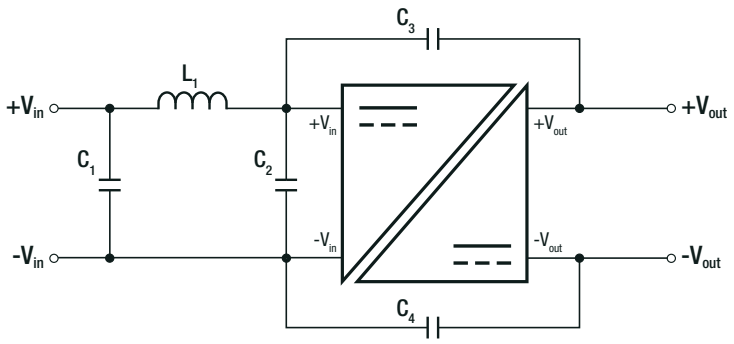



### SAFETY AND CERTIFICATIONS

| Certificate Type (Safety) | Report / File Number | Standard |
|---|---|---|
| Information Technology Equipment, General Requirements for Safety | E358085-A2-UL | UL60950-1, 2nd Edition:2007<br>CAN/CSA C22.2 No. 60950-1-03, 2nd Edition:2007 |
| EAC | RU-AT.49.09571 | TP TC 004/2011 |
| 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<br>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 | 6.8µF 50V MLCC | N/A |

### Component List Class B

| MODEL | C1 | L1 | C3 (safety) | C4 (safety) |
|---|---|---|---|---|
| R1SE-0505 | 10µF 100V MLCC | 12µH choke RLS-126 | 330pF | 330pF |

**Notes:**

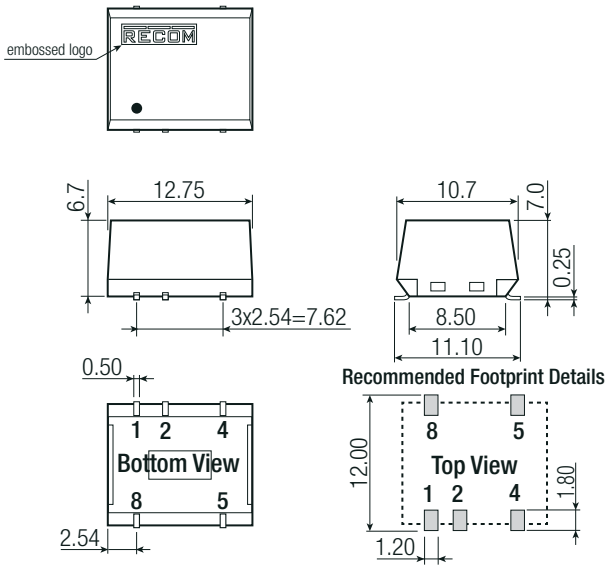
Note8: Filter suggestions are valid for indicated part numbers only. For other part numbers, please contact RECOM tech support for advice

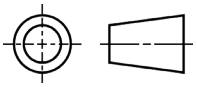
## Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### DIMENSION AND PHYSICAL CHARACTERISTICS

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

**Dimension Drawing (mm)**
**5 Pin Single SMD Package**



**Pinning Information**

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

NC = No Connection
Tolerance:
xx.xx= 0.25mm

### PACKAGING INFORMATION

| | | |
|---|---|---|
| Packaging Dimension (LxWxH) | tube<br>tape and reel (carton) | 530.0 x 17.0 x 14.0mm<br>355.0 x 342.0 x 36.0mm |
| Packaging Quantity | tube<br>tape and reel | 40pcs<br>500pcs |
| Tape Width | | 24.0mm |
| Storage Temperature Range | | -55°C to +125°C |
| Storage Humidity | non-condensing | 95% RH max. |

# Mouser Electronics

Authorized Distributor

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R1SE-0505-R R1SE8-0505-R R1SE-0505 R1SE8-0505