Leader New Energy Technology Co., Ltd.

# High Power

# Shunt Resistor

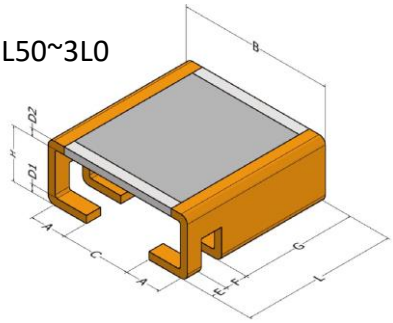
# Current Sensing Shunt Resistor

## Scope

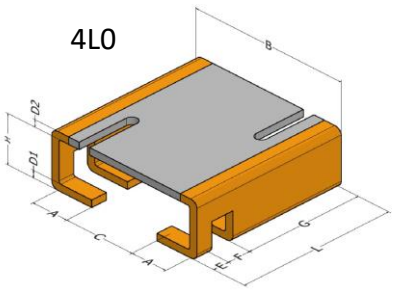
This specification applies for metal type current shunt resistor.

## Dimensions

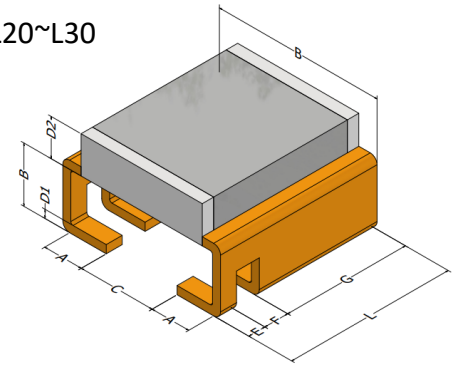
L50~3L0



4L0



L20~L30



| Type | Dimensions(mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inch size) | L | B | H(Ref) | E | F | A | D1 | D2(ref) |
| SR2725 L20 | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.50±0.1 | 1.40 |
| SR2725 L30 | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.50±0.1 | 1.40 |
| SR2725 L50 | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.45±0.1 | 0.45 |
| SR2725 1L0 | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.35±0.1 | 0.35 |
| SR2725 2L0 | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.55±0.1 | 0.55 |
| SR2725 3L0/-L | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.35±0.1 | 0.35 |
| SR2725 4L0/-L | 6.60±0.25 | 6.90±0.25 | 2.40 | 0.7±0.2 | 1.0±0.2 | 1.90±0.2 | 0.35±0.1 | 0.35 |

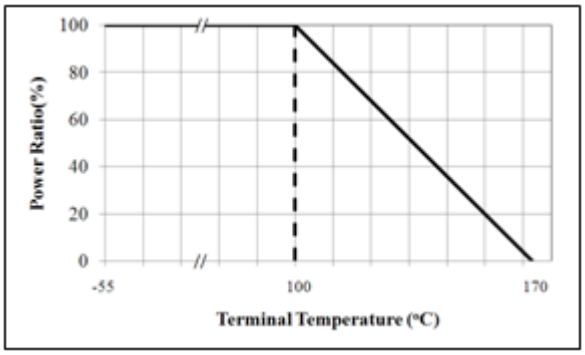
## Features

- 5W permanent power, Inductance<3nH
- Internal heat resistance 15K/W
- Lead free, RoHs compliant for global applications and halogen free

## Application

- Power modules
- Frequency converters
- Current sensor for power hybrid sources
- High current for automotive

## Derating Curve



# Current Sensing Shunt Resistor

## Part Numbers

SR 2725 E F I 1L00 -L

(1) (2) (3) (4) (5) (6)

(1)Series Name: SR ( Shunt Resistor)
(2) Chip size: 2725(inch)
(3)Packaging Material: Emboss
(4)Resistance Tolerance: ±1% (F), ± 5% (J)
(5)Power rating: I=5W, H=3W, E=2W
(6)Resistance Code: Ex: 1L0 means 1.0mΩ, etc.
(7) L: means NiCrAl low inductance material

## Electrical Specification

| Item | Power Rating | Resistance Range(mΩ) | Operation Temp. Range | TCR (PPM/℃) | Resistance Material |
|---|---|---|---|---|---|
| SR2725 | 5W | 0.2 | -55~+170℃ | ±50 | MnCuSn |
| SR2725 | 5W | 0.3 | -55~+170℃ | ±50 | MnCu |
| SR2725 | 5W | 0.5 | -55~+170℃ | ±50 | MnCuSn |
| SR2725 | 5W | 1.0 | -55~+170℃ | ±50 | MnCu |
| SR2725 | 5W | 2.0 | -55~+170℃ | ±50 | FeCrAl |
| SR2725 | 3W | 3.0 | -55~+170℃ | ±50 | FeCrAl |
| SR2725-L | 3W | 3.0 | -55~+170℃ | ±50 | NiCrAl |
| SR2725 | 2W | 4.0~5.0 | -55~+170℃ | ±50 | FeCrAl |
| SR2725-L | 2W | 4.0~5.0 | -55~+170℃ | ±50 | NiCrAl |

## Performances

### Environmental Performance

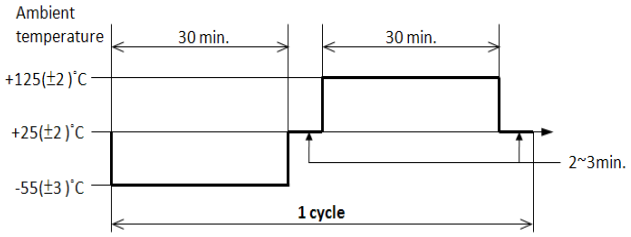
| No. | Item | Test Condition | Specification |
|---|---|---|---|
| 1 | Short Time Overload | Loading 5 times rate power 5sec | ΔR: ±1% |
| 2 | Temperature Coefficient of Resistance (T.C.R.) | -20°C /+125°C. (JIS-C5202-5.2) $TCR\ (\text{ppm}/℃) = \frac{\Delta R}{R \times \Delta t} \times 10^6$ | Refer to electrical specification. |
| 3 | Moisture Resistance | The specimens shall be placed in a chamber and subjected to a relative humidity of 90~98% percent and a temperature of 25°C / 65°C 10 cycles (MIL-STD-202, Method 106) | ΔR: ±1% |

# Current Sensing Shunt Resistor

| | | | |
|---|---|---|---|
| 4 | High Temperature Exposure | The ship (mounted on board) is exposed in the heat chamber 170℃ for 1000 hrs. (JIS-C5202-7.2) | ΔR: ±1% |

## Performances

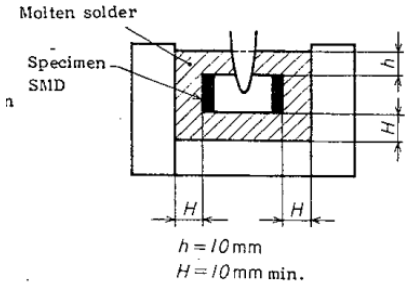
### Environmental Performance

| No. | Item | Test Condition | Specification |
|---|---|---|---|
| 5 | Load Life | Apply rated power for 1000 hours with 1.5 hours ON and 0.5 hour OFF. (JIS-C5202-7.10) | ΔR: ±1% |
| 6 | Rapid change of temperature | The chip (mounted on board) is exposed, -20±3°C (30min.)/+125±2°C (30min.) for 1000 cycles. The following conditions as the following figure. (JIS-C5202-7.4)   | ΔR: ±1% |

**Remark:**

a. The terminal electron temperature of component should below 100°C.

### Function Performance

| No. | Item | Test Condition | Specification |
|---|---|---|---|
| 2 | Solderability | The specimen chip shall be immersed into the flux specified in the solder bath 235±5℃ for 2±0.5 sec. It shall be immersed to a point 10mm from its root. (Sn96.5/Ag3.0/Cu0.5) (JIS-C5 202-6.11)   | Solder shall be covered 95% or more of the electrode area. |

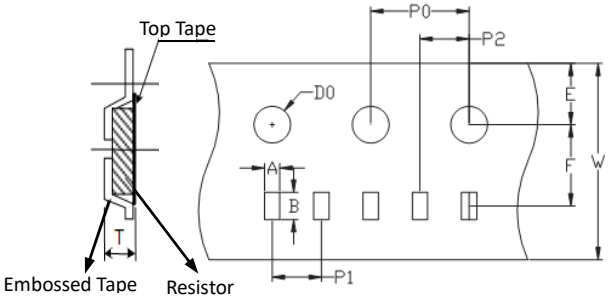
**Remark:**

All Reliability test should follow De-rating curve , terminal temperature of component should be below100℃.

# Current Sensing Shunt Resistor

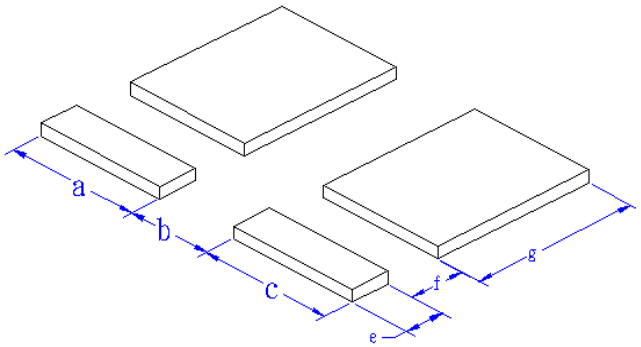
## Tape Packaging Specifications

◆Embossed Plastic Tape Specifications




| Type | Carrier Dimensions (mm) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | E | F | W | P0 | P1 | P2 | D0 | T |
| SR2725-L20 /L30 | 7.0±0.1 | 7.0±0.1 | 1.75±0.1 | 7.5±0.1 | 16.0±0.2 | 4.0±0.1 | 12.0±0.1 | 2.0±01 | 1.5±0.1 | 4.2±0.1 |
| SR2725 | 7.0±0.1 | 7.0±0.1 | 1.75±0.1 | 7.5±0.1 | 16.0±0.2 | 4.0±0.1 | 12.0±0.1 | 2.0±01 | 1.5±0.1 | 3.1±0.1 |

## Recommended Pad Layout




| Type (inch size) | Dimensions(mm) | | | | | |
|---|---|---|---|---|---|---|
| | a | b | c | e | f | g |
| SR2725 | 2.9 | 2 | 2.9 | 0.9 | 1 | 5.6 |

Note. pad size, solder insufficient, excessive solder, solder void and component shifted will affect the resistance accuracy after IR reflow. Circuit calibration is a must to be done by functional test.

## Packaging

# Current Sensing Shunt Resistor

| Size EIA (EIAJ) | 2725 |
|---|---|
| Standard Packing Quantity (pcs /Reel) | 1400 |

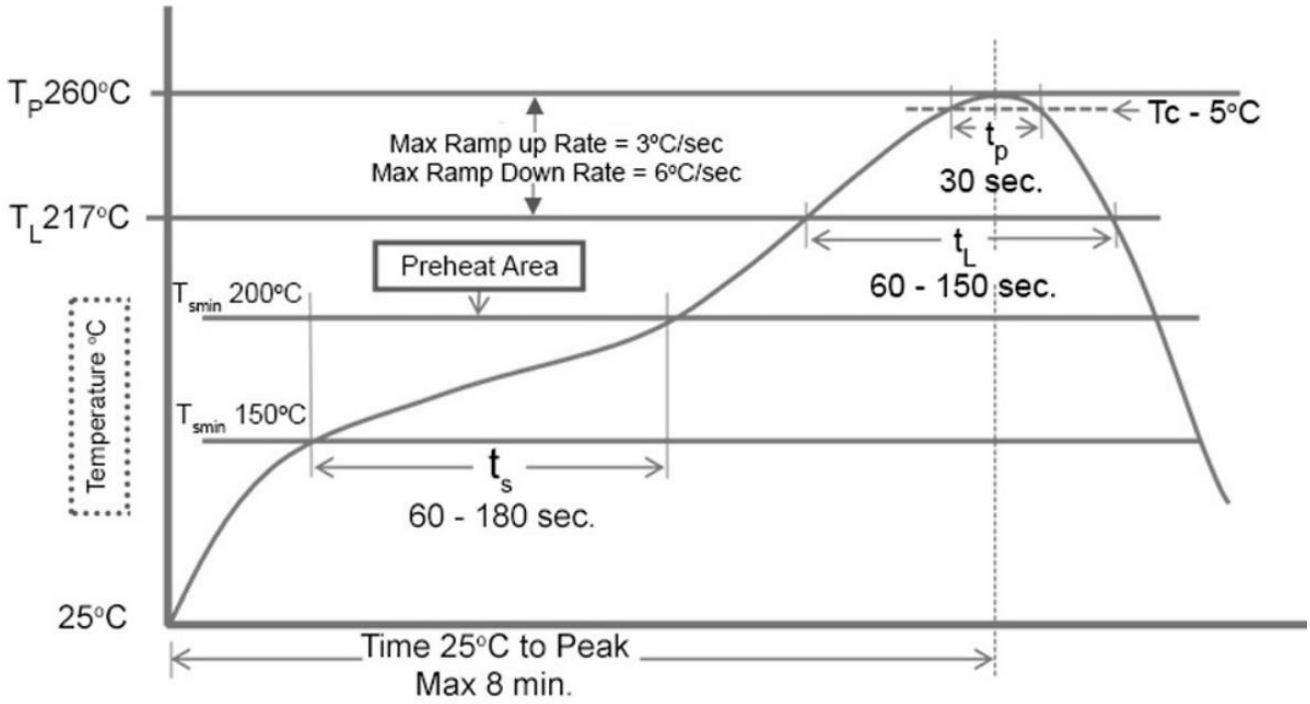
## Storage Conditions

Temperature：22~28℃, Humidity：40~75%

## Soldering Recommendations

◆ Peak reflow temperatures and durations：
- IR Reflow Peak = 260℃ max for 10 sec
- Not suitable for wave soldering

◆ Recommended IR Reflow Profile：




## ECN

Engineering Change Notice：The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.