



# Current Sensing Resistor

## RLT0816-3 Series Current Sensing Resistor (Lead / Halogen Free)

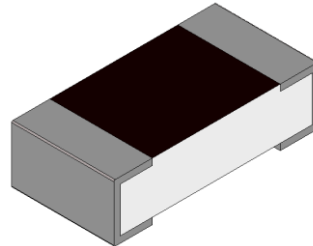
### Reversion History :

| Date       | Revision | Changes               |
|------------|----------|-----------------------|
| 2019/09/25 | A1       | New Approval Standard |

## RLT0816-3 Series Current Sensing Resistor (Lead / Halogen Free)

### Features / Applications :

- High power rating is up to 1/4W
- RoHS compliant
- Suitable for reflow soldering



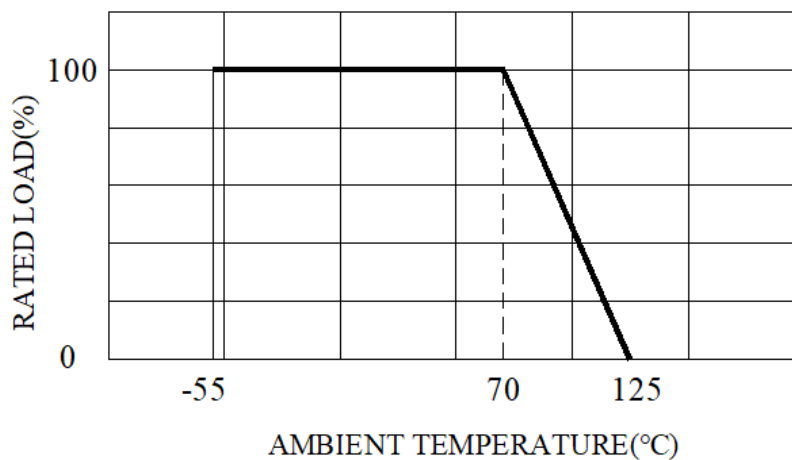
### Electrical Specifications :

| Characteristics                               | Feature                |             |
|---|------------------------|-------------|
| Power Rating*                                 | 1/4 W                  |             |
| Resistance Range                              | 0.05Ω ~ <0.1Ω          | 0.1Ω ~ <10Ω |
| Temperature Coefficient of Resistance(ppm/°C) | ±300                   | ±200        |
| Resistance Tolerance                          | ±1%(F), ±2%(G), ±5%(J) |             |
| Operation Temperature Range                   | -55°C ~ +125°C         |             |

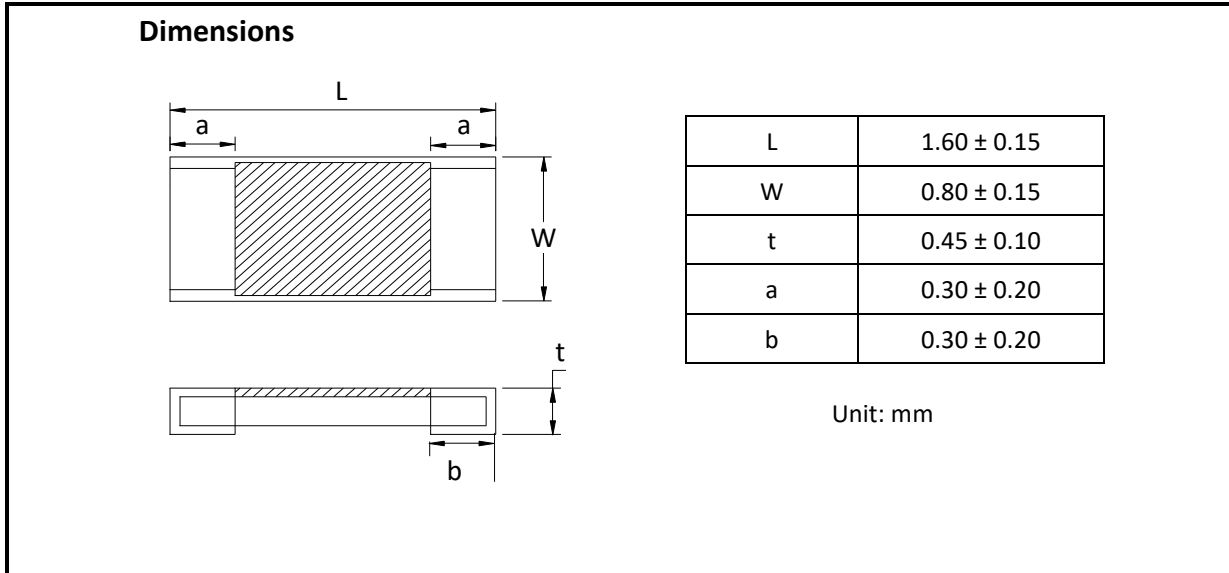
**\*Note :**

Power Rating is based on continuous full load operation at rated ambient temperature of 70°C.

For resistor operated at ambient temperature in excess of 70°C, the maximum load shall be derated in accordance with the following curve.



## Outline Drawing :



## Type Designation :

RLT0816 - 3 - □□□□ - □ NH  
 (1) (2) (3) (4) (5)

**Note:**

- (1) Series No.
- (2) Power Rating: 3 = 1/4W
- (3) Resistance value:  
 The "R" shall be used as a decimal point, For example --  
 R100 = 0.1Ω; 1R00 = 1.0Ω;
- (4) Tolerance (%): F=±1%, G=±2%, J=±5%
- (5) NH= Sn plating (Lead free / Halogen free)

## Characteristics :

### Electrical

| Item  | Specification and Requirement   | Test Method (JIS 5201)  |
|---|---|---|
| Temperature Coefficient of Resistance(ppm/°C) | As electrical specifications  | Room temperature<br>Room temperature +100°C   |
| Short Time Overload                           | $\Delta R: \pm 1.0\%$<br>Without damage by flashover, spark, arcing, burning or breakdown         | 2.5 x rated voltage for 5 seconds   |
| Insulation Resistance                         | Over 100 M $\Omega$ on Overcoat layer face up<br>Over 1,000 M $\Omega$ on Substrate side face up  | (1) Setup as figure 1<br>(2) Test voltage: 100VDC $\pm$ 15VDC<br>(3) Test time: 60 + 10 / - 0 seconds |
| Voltage Proof                                 | Resistance range: $\pm 1.0\%$<br>Without damage by flashover, spark, arcing, burning or breakdown | (1) Setup as figure 1<br>(2) Test voltage: 100VAC(rms.)<br>(3) Test time: 60 + 10 / - 0 seconds       |

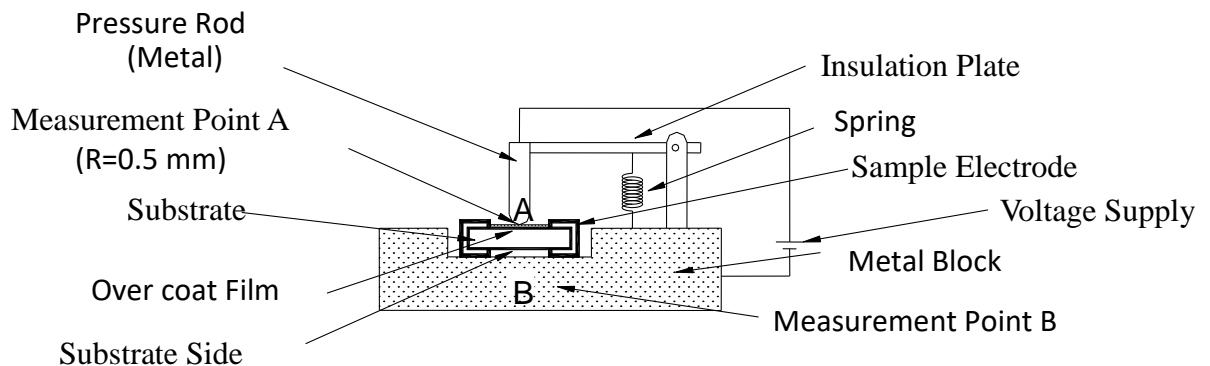


Figure 1 : Measurement Setup

### Mechanical

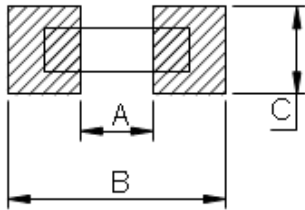
| Item          | Specification and Requirement   | Test Method (JIS 5201)   |
|---------------|---|--|
| Solderability | The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder | Solder bath:<br>After immersing in flux, dip in 245 $\pm$ 5°C molten solder bath for 2 $\pm$ 0.5 seconds |

| Item                      | Specification and Requirement                                       | Test Method (JIS 5201)   |
|---------------------------|---|--|
| Resistance to Solder Heat | $\Delta R: \pm 1.0\%$<br>Without distinct deformation in appearance | (1) Pre-heat: 100~110°C for 30 seconds<br>(2) Immersed at solder bath of 270 ± 5°C for 10 ± 1 seconds            |
| Bending Test              | $\Delta R: \pm 1.0\%$<br>Without mechanical damage such as break    | Bending value: 3 mm for 30 ± 1 seconds   |
| Solvent Resistance        | Without mechanical and distinct damage in appearance                | (1) Solvent: Trichloroethane or Isopropyl alcohol<br>(2) Immersed in solvent at room temperature for 300 seconds |

## Endurance

| Item                        | Specification and Requirement                                  | Test Method (JIS 5201)  |
|-----------------------------|--|---|
| Rapid Change of Temperature | $\Delta R: \pm 1.0\%$<br>Without distinct damage in appearance | -55 ~125°C 5 cycles, 15 min at each extreme condition   |
| Moisture with Load          | $\Delta R: \pm 5.0\%$<br>Without distinct damage in appearance | 40 ± 2°C with relative humidity 90% to 95%. D.C. rated voltage for 1.5 hours ON and 0.5 hours OFF. Cycle repeated 1,000 hours |
| Load Life                   | $\Delta R: \pm 5.0\%$<br>Without distinct damage in appearance | Rated voltage for 1.5 hours followed by a pause 0.5 hour at 70 ± 3°C. Cycle repeated 1000 hours                               |
| Low Temperature Store       | $\Delta R: \pm 5.0\%$<br>Without distinct damage in appearance | Store temperature: -55 ± 3°C for total 1,000 hours  |
| High Temperature Store      | $\Delta R: \pm 5.0\%$<br>Without distinct damage in appearance | Store temperature: 125 ± 2°C for total 1,000 hours  |

Recommend Land Pattern Dimensions :



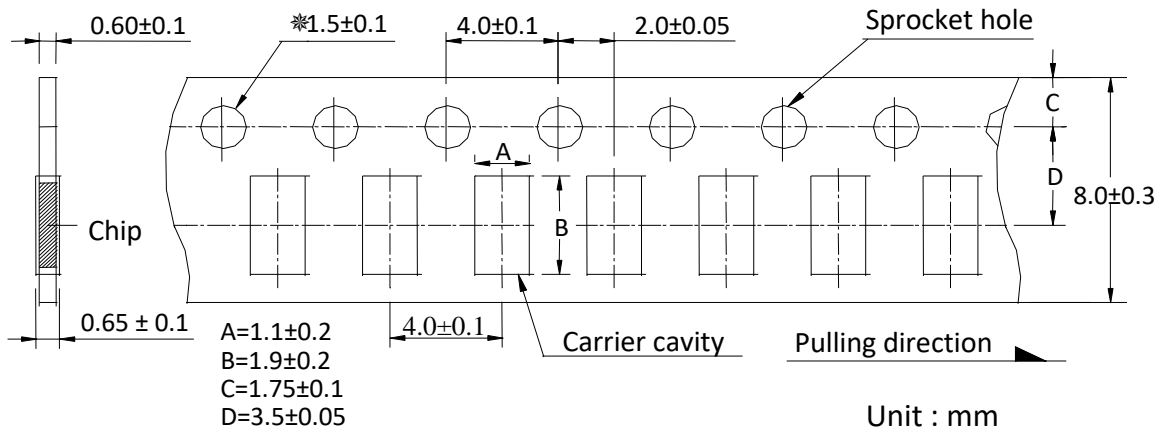
|   |         |
|---|---------|
| A | 0.8~1.0 |
| B | 2.4~2.6 |
| C | 1.0~1.2 |

Unit : mm

Notice: We recommend there is no circuit design between pads to avoid circuit short.

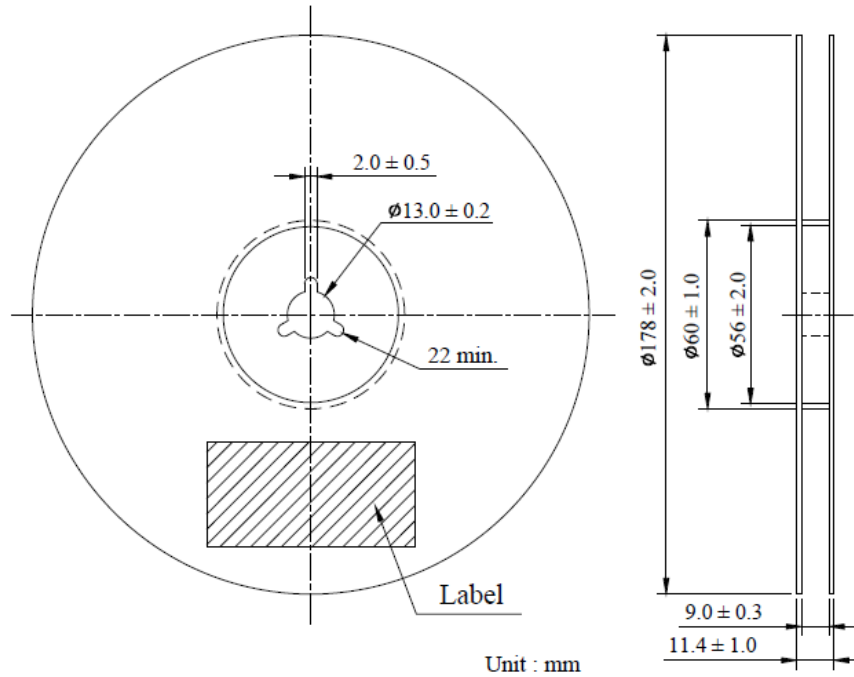
Packaging :

Tape packaging dimensions



Remark: Leader tape length  $\geq 30$  cm ( 150 Hollow carrier cavity)

## Reel dimensions



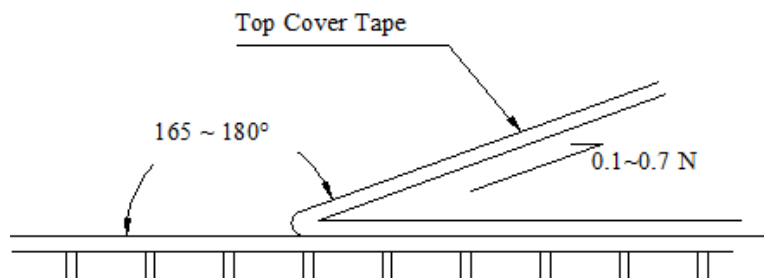
Numbers of Taping : 5,000 pieces /reel

The following items shall be marked on the reel.

- (1) Type designation.
- (2) Quantity
- (3) Manufacturing date code
- (4) Manufacturer's name

Peel force of top cover tape

The peel speed shall be about 300 mm/min. The peel force of top cover tape shall be between 0.1 to 0.7 N.



## Care Note :

### Care note for storage

- (1) Chip resistor shall be stored in a room where temperature and humidity must be controlled.  
(temperature 5 to 35°C, humidity 45 to 85% RH) However, a humidity keep it low, as it is possible.
- (2) Chip resistor shall be stored as direct sunshine doesn't hit on it.
- (3) Chip resistor shall be stored with no moisture, dust, a material that will make solderability inferior, and a harmful gas (Chloridation hydrogen, sulfurous acid gas, and sulfuration hydrogen).

### Care note for operating and handling

- (1) It is necessary to protect the edge and protection coat of resistors from mechanical stress.
- (2) Handle with care when printing circuit board (PCB) is divided or fixed on support body, because bending of printing circuit board (PCB) mounting will make mechanical stress for resistors.
- (3) Resistors shall be used with in rated range shown in specification. Especially, if voltage more than specified value will be loaded to resistor, there is a case it will make damage for machine because of temperature rise depending on generating of heat, and increase resistance value or breaks.
- (4) In case that resistor is loaded a rated voltage, it is necessary to confirms temperature of a resistor and to reduce a load power according to load reduction curve, because a temperature rise of a resistor depends on influence of heat from mounting density and neighboring element.
- (5) Observe Limiting element voltage and maximum overload voltage specified in each specification
- (6) If there is possibility that a large voltage (pulse voltage, shock voltage) charge to resistor, it is necessary that operating condition shall be set up before use.