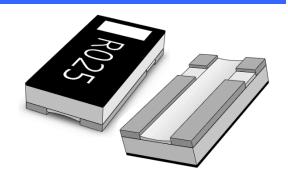
## **RL1632T4F Series Current Sensor Resistor (Lead / Halogen Free)**

### **Features / Applications:**

- Power rating is up to 1W
- Low TCR current sensor
- Low thermal EMF (< 3 µV/°C)
- Resistors are ideal for all types of current sensing
- Metal film construction; Excellent long-term stability
- Moisture sensitivity level: MSL 1
- RoHS compliant



## **Electrical Specifications:**

Characteristics <sup>1</sup>	Feature	
Power Rating <sup>2</sup>	1 W	
Resistance Value(mΩ)	10 to 250	
Temperature Coefficient of Resistance(ppm/°C)	± 200	
Operation Temperature Range	-55°C to +125°C	
Maximum Working Voltage (V)	( P*R) <sup>1/2</sup>	

### Note:

- 1. For detailed information see table on page 3
- 2. For sensors operated at ambient temperature in excess of 70°C, the maximum load shall be derated in accordance with the following curve.

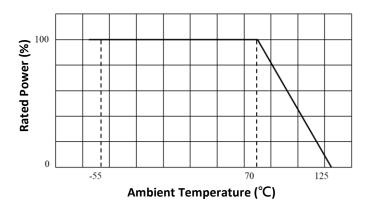


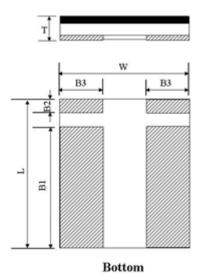
Figure 1. : Power Temperature Derating Curve

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### **Outline Drawing:**

### Dimensions and schematic:



Resistance Range(mΩ)	L	W	B1	B2	В3	Т
10 to 250	3.20 ± 0.25	1.60 ± 0.25	2.05 ± 0.20	0.65 ± 0.20	0.45 ± 0.20	0.50 ± 0.20

(Unit:mm)

## **Type Designation:**

RL 1632T4F- \_\_\_\_\_ - \_\_NH

(1) (2) (3) (4)

Note:

(1) Series No.

(2) Size(T4F = 4 - terminal)

(3) Resistance value :  $0R5m = 0.5m\Omega$  ;  $R002 = 2m\Omega$  ;  $R010 = 10m\Omega$ 

(4) Tolerance:  $\pm 0.1\%(B)$ ,  $\pm 0.5\%(D)$ ,  $\pm 1\%(F)$ ,  $\pm 2\%(G)$ 

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## **Available standard resistance values:**

Resistance Values	Tolerance				
	±0.1%	±0.5%	±1.0%	±2.0%	
R010		✓	✓	✓	
R014		✓	✓	✓	
R015		✓	✓	✓	
R020		✓	✓	✓	
R025		✓	✓	✓	
R030		✓	✓	✓	
R040		✓	✓	✓	
R050		✓	✓	✓	
R060		✓	✓	✓	
R075		✓	✓	✓	
R100	✓	✓	✓	✓	
R200		✓	✓	✓	
R250		✓	✓	✓	

√ = available

Further values and tolerances on request.

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## **Reliability Performance:**

Test Item	Condition of Test	Requirements	
Short Time Overload	2.5 * rated power for 5 seconds	ΔR:±1.0%	
	Refer to JIS C 5201-1 4.13		
Thermal Shock	-55 ~125°C 5 cycles, 15 min at each extreme	ΔR:±2.0%	
	condition		
	Refer to JIS C 5201-1 4.19		
Low Temperature Storage	Kept at -55°C, 1,000 hours	∆R:±2.0%	
	Refer to JIS C 5201-1 4.23.4		
High Temperature Exposure	Kept at 125°C for 1,000 hours	$\Delta R: \pm 2.0\%$	
	Refer to JIS C 5201-1 4.23.2		
Solderability	Temperature of Solder : $245 \pm 5^{\circ}$ C	Uniform coating of solder	
	Immersion Duration : $3 \pm 0.5$ seconds	cover minimum of 95%	
	Refer to JIS C 5201-1 4.17	surface being immersed	
Load Life	Rated voltage for 1.5hours followed by a	$\Delta R: \pm 2.0\%$	
	pause 0.5hour at 70 $\pm$ 3°C.		
	Cycle repeated 1000 hours		
	Refer to JIS C 5201-1 4.25		
Damp Heat with Load	$40 \pm 2$ °C with relative humidity 90% to	$\Delta R: \pm 2.0\%$	
	95%. Cycle repeated 1,000 hours		
	Refer to JIS C 5201-1 4.24		
Mechanical Shock	100 G's for 6milliseconds. 5 pulses	$\Delta R: \pm 0.5\%$	
	Refer to JIS C 5201-1 4.21		
Bending Test	Glass-Epoxy board thickness: 1.6mm	$\Delta R:\pm 0.5\%$	
	Bending width : 2mm		
	Between the fulcrums : 90mm		
	Refer to JIS C 5201-1 4.33		
Short Time Overload	2.5 * rated power for 5 seconds	∆R:±1.0%	
	Refer to JIS C 5201-1 4.13		

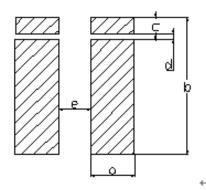
Note: Measurement at 24±4 hours after test conclusion for all reliability tests-parts.

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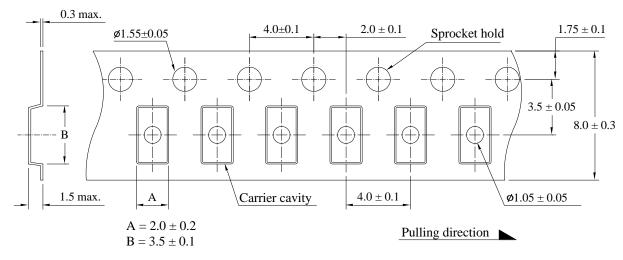
### **Recommend Solder Pad Dimensions:**



Dimensions (mm)	а	b	С	d	е
10 to 250 m $\Omega$	1.0	3.5	0.8	0.38	0.75

## Packaging:

### Tape packaging dimensions:



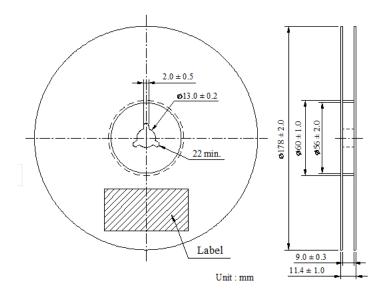
Unit: mm

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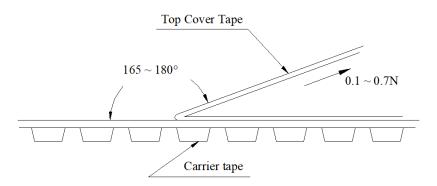
### Reel dimensions:



### Peel Strength of Top Cover Tape:

The peel speed shall be about 300mm/min.

The peel force of top cover tape shall between 0.1 to 0.7N



### Number of Taping:

4,000 pieces / reel

### **Label Marking:**

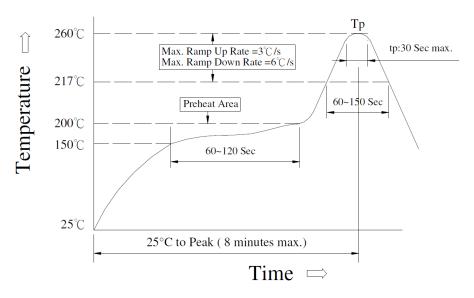
The following items shall be marked on the reel.

- (1) Type designation
- (2) Quantity
- (3) Manufacturing date code
- (4) Manufacturer's name
- (5) The country of origin

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## **Recommend Soldering Conditions:**



### Meet JEDEC-020D

### (1) Reflow Soldering Method:

Reflow Soldering	Tp:255 to 260℃ Max.30 seconds ( Tp )
	217°C 60 to 150 seconds
Pre-Heat	150 to 200℃ 60 to 120 seconds
Time 25℃ to peak temperature	8 minutes max

(2) Soldering Iron Method: 350± 5°C max.3 seconds

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### **Care Note:**

#### Care note for storage

- (1) Current sensor shall be stored in a environment where temperature and humidity must be controlled (temperature 5 to 40°C, humidity 30 to 80% RH). However, the humidity should be maintained as low as possible.
- (2) Current sensor shall not be stored under direct sunlight.
- (3) Current sensor shall be stored in condition without moisture, dust, any material defect solderability, or hazardous gas (i.e. Chlorination hydrogen, sulfurous acid gas, and sulfuration hydrogen)
- (4) The sensor can be stored for at least one year under the condition mentioned above.

#### 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.

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