

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)</p>
- 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 ¹	Feature
Power Rating ²	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) ^{1/2}

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



Outline Drawing :



Type Designation :

Note :

- (1) Series No.
- (2) Size(T4F = 4 terminal)
- (3) Resistance value : 0R5m = 0.5m Ω ; R002 = 2m Ω ; R010 = 10m Ω
- (4) Tolerance : ±0.1%(B), ±0.5%(D), ±1%(F), ±2%(G)



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.



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	$\Delta R:\pm 2.0\%$	
	Refer to JIS C 5201-1 4.23.4		
High Temperature Exposure	Kept at 125°C for 1,000 hours	ΔR : ± 2.0%	
	Refer to JIS C 5201-1 4.23.2		
Solderability	Temperature of Solder : 245 \pm 5°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	ΔR : ± 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	ΔR : ± 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	ΔR : ± 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	$\Delta R:\pm 1.0\%$	
	Refer to JIS C 5201-1 4.13		

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



Recommend Solder Pad Dimensions :



Dimensions (mm)	а	b	с	d	е
10 to 250 m Ω	1.0	3.5	0.8	0.38	0.75

Packaging :

Tape packaging dimensions :



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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



Recommend Soldering Conditions:



Meet JEDEC-020D

(1) Reflow Soldering Method :

Reflow Soldering	Tp:255 to 260 $^\circ C$ Max.30 seconds (Tp)	
	217°C 60 to 150 seconds	
Pre-Heat	150 to 200°C 60 to 120 seconds	
Time 25° \mathbb{C} to peak temperature	8 minutes max	

(2) Soldering Iron Method : $350\pm 5^{\circ}C$ max.3 seconds



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.