

LMJ20 Series

# **Automotive Current Sensing Resistors**

#### Description

- Thick copper conductor metallized material.
- Ultra long term stability.
- Halogen-free and lead-free RoHS compliant.
- Stable materials.
- Excellent trustworthiness.
- High power rating.
- Ultra-low temperature drift (good TCR).

#### Part Numbering System



Parameter	Standard
Power Rating	1 &1.5 W
Resistance Value	1~100mΩ
Operating Temperature Range	-55 to +170°C

Rated Current = (P / R)<sup>1/2</sup>;

P=Power Rating,R=Resistance Value.

#### **Standard Electrical Specifications**

Туре	Rating Power at 70℃	T.C.R. (ppm/c)	Resistance Range(mΩ) 0.5% (D) 1.0% (F) 2.0% (G) 5.0% (J)	Meterial	Operating Temperature(℃)
LMJ20	1&1.5 W	±50	1~4mΩ:S 1~100mΩ	CuMn	-55~+170°C



## LMJ20 Series

#### Construction



Unit: mm

Туре	Resistance (mΩ)	L	W	С	Т
LMJ 20-S	1~4	5.0±0.2	2.5±0.2	1.5±0.3	0.6±0.2





Unit: mm

Туре	Resistance (mΩ )	L	W	С	Т
LMJ 20	1~100	5.0±0.2	2.5±0.2	0.6±0.3	0.6±0.2

#### Recommended land pattern



Unit: mm

Туре	Resistance (mΩ )	а	b	L
LMJ 20	1~100	3.4±0.2	1.5±0.2	3.5±0.2
LMJ 20 - S	1~4	3.4±0.3	3.5±0.2	2.0±0.2



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## **Power Derating Curve**

For resistors operated in ambient temperatures 70°C, power rating shall be derated inaccording with the curve below:



## **IR Reflow-Soldering Profile**



## Wave- Soldering Profile





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## **Product Characteristics**

ltem	Test condition/ Methods	Limited	Standard			
Temperature coefficient of resistance	TCR =(R-R0)/R0(T2-T1)X 10 <sup>6</sup> R0: resistance of room temperature R: resistance of 125℃; T1: Room temperature T2: Temperature at 125℃	(R-R0)/R0(T2-T1)X 10 <sup>6</sup> sistance of room temperature stance of 125°C; Refer to Spec om temperature mperature at 125°C				
Short time Overload	5 X rated power for 5s	≤±0.5%	JIS-C5201-1 4.13			
Temperature Cycling	1000 Cycle (-55 ℃ to 125 ℃),30 min at each extreme	≤±0.5%	JESD22 Method JA-104			
Low temperature Storage	-55 $^\circ\!\!\mathrm{C}$ for 1000 hours, No power	≤±0.5%	JIS C 5201			
High Temperature Storage	1000 hours at 125℃,No power	1000 hours at 125℃,No power ≤±1%				
Biased Humidity	85°C±5°C, 85±5% RH 10% bias, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF", after standing 24±4 hours to measure the resistance change rate.	MIL-STD-202 Method 103				
Operational life	Apply the rated current to the $125\pm3$ °C incubator for 1000 hours, and stand for $24\pm4$ hours after removal to measure the resistance change rate.	MIL-STD-202 Method 108				
Load Life	d Life 70°C ± 2°C, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF", after taking it out and standing for more than 1 hour, the resistance change rate is measured.		JIS-C5201			
Resistance to Solder Heat	$260 \degree C \pm 5 \degree C$ , time: 10 ±1 sec, 1000 hours, aftertaking out and standing for more than 1 hour,measure the resistance change rate.		MIL-STD-202 Method 210			
Solderability	SolderabilitySoak in the furnace at 245±5 °C for 3±1 sec .Take out and observe the solder area under a magnifying alass.Solder coverage ove 95%No Visual damage		J-STD-002			
loint Strength of	<ul> <li>Test item (Bendability test)</li> <li>Weld in the bending test plate, place on the bending test machine, press in the center of the test plate, and measure under load.</li> </ul>	≤±0.5%	JIS-C5201-1 4.32			
Solder	• Experiment item 2 (Fixation test) Weld the resistance in the rigidity test plate, place it on the end electrode test machine, apply the force in the direction of the force with the test probe with the radius of R0.5, and maintain 10 sec, and measure the resistance change rate under the load.	≤±0.5%	JIS-C5201-1 4.32			



## **LMJ20 Series**

## Tapping & Package



Unit: mm

Туре	Pack	<b>A</b> ±0.2	<b>B</b> ±0.2	<b>D0</b> 0.05+/-0	<b>E</b> ±0.1	<b>F</b> ±0.05	<b>P0</b> ±0.1	<b>P1</b> ±0.1	<b>P2</b> ±0.1	<b>W</b> ±0. <b>2</b>	<b>D1</b> ±0.05	<b>T</b> ±0.15
2010	Emboss	2.80	5.30	1.50	1.75	5.50	4.00	4.00	2.00	12.00	1.50	0.85

#### **Reel Specification**



Unit: mm

Туре	А	В	С	D	М	w
2010	2.00±0.5	13.5±0.5	21.00±0.5	60.00±1.0	178.00±2.0	13.80±0.5

## Packaging

Quantity: 4, 000pcs