

SCMM2512S5 Series, Current Sensor Resistor (Lead / Halogen Free)

Features / Applications :

- High power rating is up to 5W
- Welding construction; excellent long-term stability
- Automotive applications & Current Sensor Resistor
- Suited for mounting on DBC / IMS substrate
- RoHS compliant



Electrical Specifications :

Characteristics ¹	Feature
Power Rating ²	5 W
Resistance Value	0.3 to 2 m Ω
Temperature Coefficient of Resistance (25/125 $^\circ$ C)	From 50 ppm/°C
Operation Temperature Range	-65°C~ +170°C
Resistance Tolerance	\pm 1%
Maximum Working Voltage (V)	(P*R) ^{1/2}

1. For detail information refer to the table on page 3 P/N list

2. For resistors are operated at terminal temperature in excess of 100°C (0.3-2.0m Ω), the maximum load shall be derated in accordance with the following curve.





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Outline Drawing :



Recommended Solder Pad Dimensions



Resistance RangeDimensionsmΩW (mm)D (mm)L (mm)0.3 to 23.73.27.35

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Type Designation :

SCMM	2512	S	5	_		
(1)	(2)	(3)	(4)		(5)	(6)

Note :

- (1) Series No.
- (2) Size
- (3) Terminal Type : S = Short terminal
- (4) Power Rating : 5 = 5W
- (5) Resistance value : R002 = 0.002Ω , 0M50 = 0.0005Ω
- (6) Tolerance : F = ±1%, G = ±2%, J = ±5%

P/N list :

D/N	R value	TCR	Power Rating		Tolerance	
P/N	(mΩ)	(ppm/K)	(W)	1%	2%	5%
SCMM2512S5-0M30*	0.3	±125	5	✓		
SCMM2512S5-0M50*	0.5	±100	5	✓		
SCMM2512S5-0M75*	0.75	±100	5	✓		
SCMM2512S5-0M80*	0.8	±100	5	✓		
SCMM2512S5-R001*	1.0	±75	5	✓		
SCMM2512S5-R002*	2.0	±75	5	~		

* Note : Other values and tolerance would be available, please contact Cyntec.



Characteristics :

Electrical

Item	Specification and Requirement	Test Method
Temperature Coefficient (TCR)	As follow specification	JIS-C-5201 +25°C/ +125°C.
Short Time Overload	$ riangle R:\pm$ 0.5% Without damage by flashover, spark, arcing, burning or breakdown	JIS-C-5201-1 4.13 2.5 x rated power for 5 seconds.
ESD	$ riangle R:\pm$ 1% Without damage by flashover, spark, arcing, burning or breakdown	AEC-Q200-002 Human body, 8KV.
Insulation Resistance	Over 100 M Ω on Overcoat layer face up	JIS-C-5201-1 4.6 100V _{DC} for 60 +10/-0 seconds
Voltage Proof	$ riangle { m R}:\pm$ 1% Without damage by flashover, spark, arcing, burning or breakdown	JIS-C-5201-1 4.7 400V _{AC} (rms.) for 60 +10/ -0 seconds

Mechanical

Item	Specification and Requirement	Test Method
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	J-STD-002 Method B category 3 245±5℃ for 5±0.5 seconds.
Resistance to Solder Heat	$\Delta R:\pm$ 0.5% Without distinct damage in appearance	MIL-STD-202 Method 210 $260 \pm 5^{\circ}$ C for 10 ± 1 seconds.
Board Flex	$ riangle {\sf R}:\pm 1.0\%$ Without mechanical damage such as break.	AEC-Q200-005 Bending value: 2 mm for 60 ± 1 seconds.



Vibration	$ riangle R:\pm 0.5\%$ Without distinct damage in appearance	MIL-STD-202 Method 204 5G's for 20 minutes, 12 cycles each of 3 orientations. Test from 10- 2000Hz.
Mechanical Shock	$ riangle R:\pm$ 0.5% Without distinct damage in appearance	MIL-STD-202 Method 213 100G's peak value, 6ms, Half-sine waveform, 12.3ft/sec.
Terminal Strength (SMD)	$ riangle R:\pm$ 1% Without mechanical damage such as break.	AEC-Q200-006 Force of 1.8Kg for 60 seconds.

Endurance

Item	Specification and Requirement	Test Method
Temperature Cycling	$ riangle R:\pm$ 0.5% Without distinct damage in appearance	JESD22 Method JA-104 -55°C to 150°C /1000cycle 30 min maximum dwell time at each temperature.
Biased Humidity	$\triangle R: \pm 0.5\%$ Without distinct damage in appearance	MIL-STD-202 Method 103 1000 hours, 85°C/85%R.H, applied for 10% rated power.
Operational Life	$ riangle { m R}:\pm$ 1.0% Without distinct damage in appearance	MIL-STD-202 Method 108 70°C, 100% rated power 1.5 hours ON, 0.5 hours Off For total 1000 hours
High Temperature Storage	$ riangle { m R}:\pm$ 1.0% Without distinct damage in appearance	MIL-STD-202 Method 108 170°C for 1000 hours.
Moisture Resistance	$ riangle R:\pm$ 0.5% Without distinct damage in appearance	MIL-STD-202 Method 106 65°C /90-100%RH, unpowered, 7b not required

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



PACKAGING DESCRIPTIONS :

Dimensions :



Reel dimensions :



Unit	:mm
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Symbol	1	2	3	4	5	6	7	8	9
Cine	178.0	60.2	13.0	2.5	3.0	4.0	5.0	13.0	16.0
Size	±1	±0.5	±0.5	+0.5/-0	+0.5/-0	+0.5/-0	+0.5/-0	±0.5	±0.15

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Peel Strength of Top Cover Tape :

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



Number of Taping :

2,000 pieces / reel

Label Marking :

The following items shall be marked on tray

(1) Description

(2) Quantity

(3) Part No.

(4) Tapping No.



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 < 60% RH) However, a humidity keep it low, as it is possible.

- (3) Chip resistor shall be stored as direct sunshine doesn't hit on it.
- (4) 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) Protect the edge and coating of the sensors from mechanical stress.
- (2) Avoid bending of printing circuit board (PCB) when cutting and fixing it on support body to reduce mechanical stress on sensors.
- (3) Sensor should be used within the condition of specification.
 Note: When a voltage higher than specified value is loaded to the sensor, this may damage the sensor material due to temperature rise.
- (4) The loaded voltage should consult terminal temperature of the sensor according to the derating curve.
- (5) When applying a high current exceeding suggested specification (pulse current, shock current) to the sensor, it is necessary to re-evaluate the operating condition before using it in the system.



Reflow profile :

Recommended Reflow Profile



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

(1) <u>Reflow Soldering Method :</u>

Reference : JEDEC J-STD-020D