Data Sheet No.: E05001 Version: V1 Date: 2023/10/30



ECSR2512

Metal SMD Current Sensing Resistor

Resistance	0.5mΩ-50mΩ
Tolerance	±1%
TCR	±50ppm/°C
Rated Power	2W-3W

Applications

Automotive Electronics Precision Power Supply Instrumentation Battery Sorting & Formation Medical Equipment

Better Solution for Sustainable High End Manufacturing



Metal SMD Current Sensing Resistor, High Power with Small Size Strong Overload Capacity, Low Thermal EMF, RoHS Compliant

Introduction



Resi Mall. For more information of Resi Mall, please see on www.resistor.today .

Electrical Parameters

Series	Power (+70°C) W	Resistance Ω	Tolerance %	TCR ppm/K	Max. Current A	Overcurrent A
ECSR2512	3	R0005	±1	±100 (K)	77	192
ECSR2512	3	R0005 < -R004	±1	±50 (Q) * ±100 (K)	77	192
ECSR2512	3	R005-R010	±1	±50 (Q) ±100 (K)	24	60
ECSR2512	2	R011-R050	±1	±50 (Q) ±100 (K)	16	40

*±50ppm/°C is only suitable for resistance $\ge 3m\Omega$

If you need the resistance value or size which are not included in this datasheet, please contact us;

of ECSR2512 and are available in Resi Mall. Futures orders can be placed in the



Dimensions

Resistor						Unit: mm
	т		L W	, 7		
Resistance	L	w	т	D	Packaging	Quantity Per Reel
R0005	6.40±0.2	3.2±0.2	0.75±0.2	2.3±0.2	Tape&Reel	4000pcs
R0005<-R004	6.40±0.2	3.2±0.2	0.75±0.2	1.7±0.2	Tape&Reel	4000pcs
R005-R010	6.40±0.2	3.2±0.2	0.75±0.2	0.8±0.2	Tape&Reel	4000pcs
R011-R050	6.40±0.2	3.2±0.2	0.75±0.2	0.8±0.2	Tape&Reel	4000pcs
Solder Pad		B C	В	Α		Unit: mm
Resistance	А		I	В		с
0.5mΩ~1mΩ	3.7		:	3.0		1.3
1mΩ~4mΩ	3.7			2.3		2.8
5mΩ~50mΩ	3.7			1.9		3.6



Part Number Information

Example: ECSR2512FR005K9 (ECSR2512 \pm 1% 5m Ω \pm 100ppm Standard)



1. If you need the resistance value which are not included in this datasheet, please contact us;

2. The standard tolerance is $\pm 1\%$. If you need $\pm 2\%$ or $\pm 5\%$, please contact us.

Performance

Test	Test Method	Standards	Test Results
High Temperature Storage	1000h@+170°C, unpowered	IEC 60115-1 4.25.3	△R±1% Maximum No visible damage
Temperature Cycling	-55°C, 30min ~ambient temperature<5min~+155°C, 30min, 300 cycles	IEC 60115-1 4.19	△R±1% Maximum No visible damage
Load Life	1000h @ +70°C, rated power, 90min on, 30min off	IEC 60115-1 4.25.1	△R±1% Maximum No visible damage
Resistance to Solvent	lsopropanol (IPA), 23°C, immersion for 10h	IEC 60115-1 4.29	Clear marking. No visible damage
Resistance to Solder Heat	+270°C tin bath for 10s	IEC 60115-1 4.18	△R±1% Max No visible damage
Solderability	+245°C tin bath for 3s	IEC 60115-1 4.17	No visible damage 95% minimum coverage
TCR	-55°C and +125°C, +20°C Ref.	IEC 60115-1 4.8	Within the nominal value range
Flammability	Flame the sample for 10 seconds, twice	UL-94 V-0 or V-1 is acceptable and does not require electrical testing	Incomplete burnout, thin pad paper not ignited, pine board not charred
Substrate Bending	2mm, duration: 60s	IEC 60115-1 4.33	△R±1% Max No visible damage
Insulation Resistance	Apply a DC voltage of 100V between the electrode and the substrate for 60s	IEC 60115 -1 4.6	1000M, Min
Withstand Voltage	Apply a AC voltage with an effective maximum overload voltage between the electrode and the substrate at a speed of approximately 100V/s for 60s	IEC 60115-1 4.7	No breakdown or flashover
Short Time Overload	2.5x rated voltage, 5s	IEC 60115-1 4.13	△R±1% Max No visible damage
Low Temperature Operation	-55°C,Unpowered for 1h, powered rated voltage for 45min, Unpowered for 15min	IEC 60115-1 4.36	△R±1% Max No visible damage

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Derating Curve





Construction



Marking

Four-digit marking. "R" is used as a decimal point of Ω . "m" is used as a decimal point of m Ω .

Resistance	Illustration	Demonstration
R0005	0m50	0m50=0.5mΩ
R0005 < -R004	7007	R001=1mΩ
R005-R050	R050	R050=50mΩ

Storage Instructions

(1) Resistors should be stored at a temperature of 5 to 30 ℃, with a humidity of 30%-70% RH. The humidity should be kept as low as possible.

- (2) Resistors should be stored in a clean and dry environment free of harmful gases (HCl, Sulfuric acid, H₂S, etc.)
- (3) Do not move the resistor from the packaging unless use it.
- (4) Under the above storage conditions, the resistor can be stored for at least 1 year.

Usage Suggestions

- (1) Please protect the surface of the resistor during use. Prevent defects such as scratches, bumps, and oil stains on the surface.
- (2) Do not use sharp tweezers to move the resistor. Scratches on the surface can cause resistance drift and resistor failure.
- (3) When installing and using resistors, avoid the impact of mechanical stress on the resistor.
- (4) The long-term operating power of resistors should be \leq rated power to avoid resistance drift caused by long-term overload.
- (5) Please refer to the derating curve when operating under high temperature conditions or poor heat dissipation environment.
- (6) If the operating conditions exceed the pulse specified in the pulse curve, a systematic evaluation is required.

(7) If the resistor is not used after being moved from the packaging, it should be stored under vacuum to avoid risks such as poor welding caused by oxidation of the resistor.



Packaging

Tape Specifications

Unit: mm



Μ

Φ178±2.0

W

12.3±0.5

В

Φ13.5±0.5

D

Φ60.0±1.0

w

Α

2.0±0.5

Size

2512



Revision

Version	Revised Content	Date	Approver
 V0-V1	 1.Change the datasheet template 2.Add resistor construction diagram and materials information 3.Add storage instructions 4.Add packaging dimension information 5.Add marking information 	2023/10/30	LFY



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