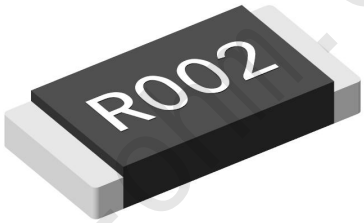
https://holly-ohm.com SMD Chip E-beam Welding Alloy Resistor

Epoxy SMD Chip E-Beam Welding Alloy Resistor

current sensing ,high power,ultra-low TCR, AEC-Q200 compliant



Features:

- Electron-beam welding craf , pure copper electrode , Ideal solution for current detection applications.
- high reliability and stability ,superb pulse load capability
- full metal structure, coating with heat-resistant epoxy resin,excellent weather resistance
- Ultra-low thermal EMF and parasitic inductance
- High frequency AC current sensing
- RoHS compliant
- customization

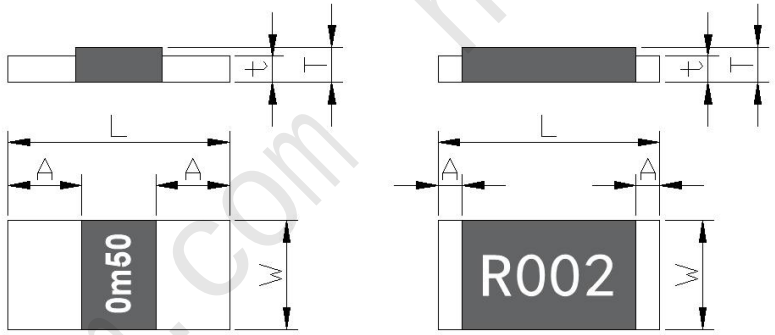
parameter:	
resistance value	0.5~200mΩ
tolerance	±1%(F),±5%(J)
TCR	Min. ±50ppm/℃
temperature range	-55℃~+170℃
inductance	<5nH
thermal EMF (0-100°C)	<3 μV/°C
rated power (70°C)	Max. 2W

Type Designation: WSM2010MR002FT0 WSM2010 Manganese copper2mohm 1% package with tape and reel

W	S	M	2	0	1	0	M	R	0	0	2	F	T	0

- WSM: epoxy SMD chip alloy resistor
- size: 2010
- material: M:Manganese copper; K: Karma
- resistance value: R002= 2mΩ
- tolerance: F=±1%; J=±5%
- code: T0: package with tape and reel; B0: without tape and

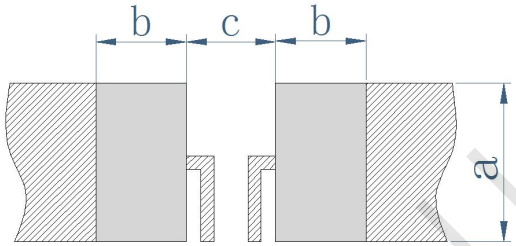
Dimensions(mm):



R0. 5–R1 R002–R200

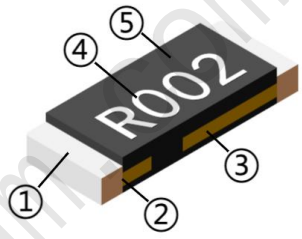
series	power	material	resistance value	tolerance	TCR	L(mm)	W(mm)	A(mm)	t(mm)	T(mm)
WSM2010	2W	M	0.5~1mΩ	±1% (F) ±5% (J)	±175ppm	5.1±0.2	2.5±0.2	1.7±0.2	0.6±0.1	0.8±0.15
		M	2~7mΩ		±100ppm	5.1±0.2	2.5±0.2	0.55±0.2	0.6±0.1	0.8±0.15
		K	8~200mΩ		±75ppm	5.1±0.2	2.5±0.2	0.55±0.2	0.6±0.1	0.8±0.15

Recommended pad and size(mm):



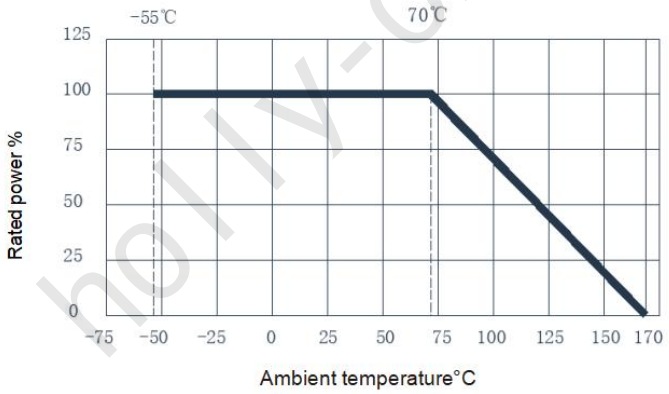
series	resistance value	a(mm)	b(mm)	c(mm)
WSM2010	0.5~1mΩ	3	2.4	1.4
	2~200mΩ	3	1.6	3

construction:



1.Ni and Sn plating on the surface of red copper
2.electron-beam welding
3.copper/Karma
4.resistance value markings
5.epoxy resin

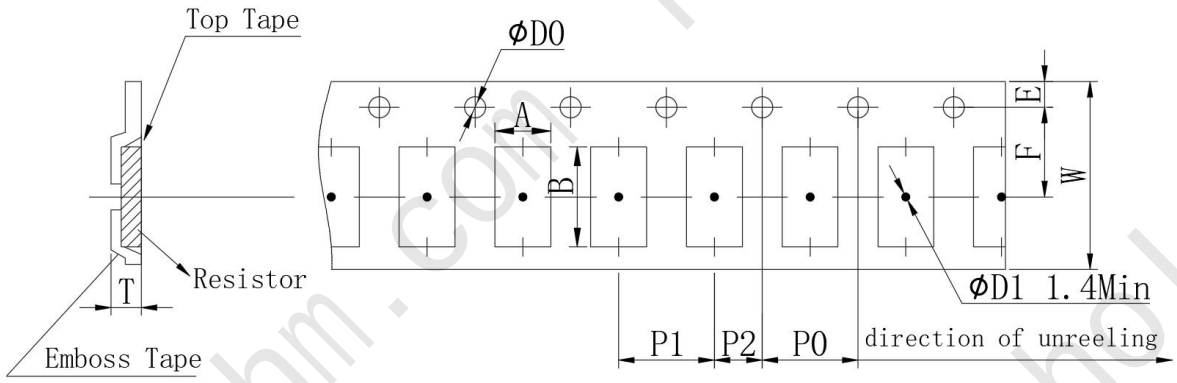
Derating Curve:



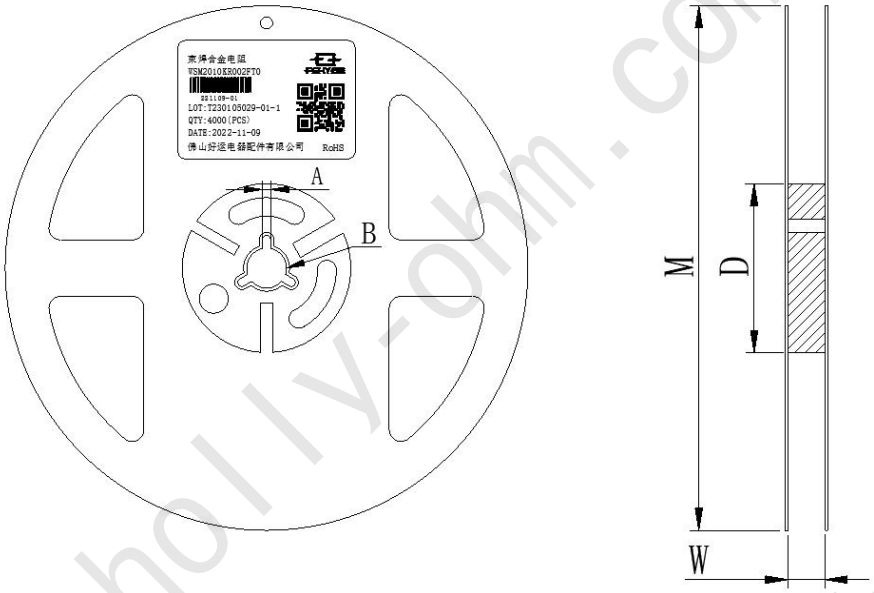
Performance:

Test Item	standard	Test method
TCR	Within specified TCR	IEC60115-1 4.8，measured point 20°C～+130°C，reference point +20°C
Solderability	No visible damage 95%covered	IEC60115-1 4.17，245°C tin bath，3s
Short-time overload	No visible damage △R±1% Maximum	IEC60115-1 4.13，five times rated power，5s
Resistance to soldering heat	No visible damage △R±0.5% Maximum	IEC60115-1 4.18，260°C tin bath，10s
Base plate bending test	Within specified value	IEC60115-1 4.33，2mm， maintaining 60+5s
Flammability	Incomplete combustion, with the shim unignited and the pine wood board not charred	UL-94 V-0 OR V- 1 is acceptable ， no need to do electrical test
Insulation resistance	1000MΩ, Minimum	IEC60115-1 4.6，Applying a direct current voltage of 100 V between the electrode and the substrate., maintaining 60s，then test insulation resistance value
Withstand voltage	without breaking down or arc flash	IEC60115-1 4.7，Applying an AC VOLTS which the effective value is the maximum load voltage to the electrode and substrate at a rate of approximately 100 V/s, maintaining it for 60 ± 5 s.
Solvent resistance	signage intact	IEC60115-1之4.29，IPA，temperature of a solvent：23±5°C，maintaining 5±0.5min
High temp. & high humidity	No visible damage△R±1% Maximum	Applying 10% of the rated power (current) or the maximum current of the component (whichever is lower) for a duration of 1000 hours in a temperature of 85°C and a humidity of 85% according to MIL-STD-202 method 103
High temperature storage	No visible damage△R±1% Maximum	IEC60115-1 4.25.3，1000hours@170°C，without loading current and voltage
Low temperature load	No visible damage △R±0.5%Maximum	IEC60115-1 4.36，cooled from room temperature to -55°C ,no load for 1.5 hours,applying rated power,continuously flowing for 45 minutes,cool for 15 minutes，then recover to room temperature for testing again.
temperature cycle	No visible damage △R±1% Maximum	IEC60115-1 4.19，-55°C@30mins～+155°C@30mins；1000 cycles
load life	No visible damage △R±1.0% Maximum	IEC 60115-1 4.25.1，1000hrs.， 70℃±2℃，rated current, or the maximum current rating of the component (whichever is lower) is applied for 1.5 hours/0.5 hour interruption

Packing specifications and size (Units:mm):



Type	A	B	W	E	F	P0	P1	P2	ΦD0	T	Quantity
2010	2.8	5.4	12	1.75	5.5	4	4	2	1.5	1.2	4000



Reel Type	W	M	A	B	D
7"reel for12mm tape	12.3±0.5	Φ178±2.0	2.0±0.5	Φ13.5±0.5	Φ60.0±1.0

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version update record

Version NO.	update record	person in charge	Issue date
A0	Update specification release	Shegung Zhu	15,Nov,2022
A1	Markings change to silk-screen	Qingke Zeng	05,Aug,2023
A2	Update performance metrics	Qingke Zeng	7th,Oct,2023