



General

- Chip size from 1206 to 2512
- Resistance value from 1mΩ to 500mΩ
- Low thermal EMF
- Low inductance 0.5nH to 5nH
- Low TCR
- Lead free, RoHS compliant for global
- Applications and halogen free

Application

- Switching model power supply
- Battery pack
- Notebook, personal computer
- Test Instrument
- Power Amplifier

Electrical Specifications

Type	Power Rating at 70°C(W)	Resistance Range (mΩ)	TCR (ppm/°C)	Resistance tolerance	Operation Temp. Range
2512	2、3	1	±100	±0.5%(D) ±1%(F) ±5%(J)	-55°C~+170°C
	2	1.5~500	±50		
	3	1.5~10	±50		
2512 (Long Electrode)	3	3~4	±50	±1%(F)、±2%(G) ±5%(J)	
1206	1	2~30	±50	±0.5%(D) ±1%(F)	

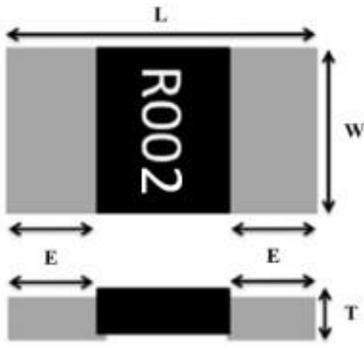
Part Number information

SMR 25 M 2 F R010 T 00

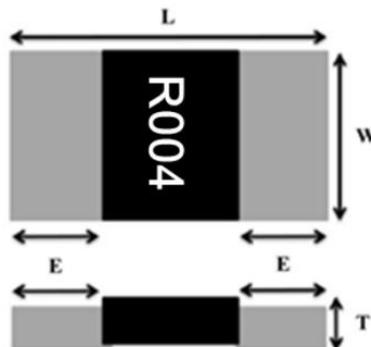
【1】 【2】 【3】 【4】 【5】 【6】 【7】 【8】

- 【1】 Series Name: SART Metal Current Sensing Chip Resistors
 【2】 Chip size: 12:1206 25:2512
 【3】 Material Code: M:MnCu N:NiCu S:CuMnSn
 【4】 Power Code: 1:1W 2:2W 3:3W
 【5】 Resistance Tolerance: D:±0.5% F:±1% G:±2% J:±5%
 【6】 Resistance Code: R002=2mΩ、R010=10mΩ、2L50=2.5mΩ
 【7】 Packaging Code: T: Tape & Reel、B: Bulk Pack
 【8】 Remarks: 00: Only For 2512-3W Long Electrode(R003~R004)

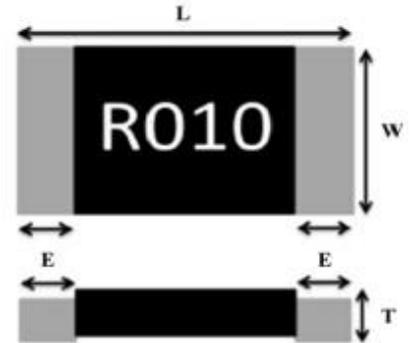
Dimensions



2512 (1~2mΩ)

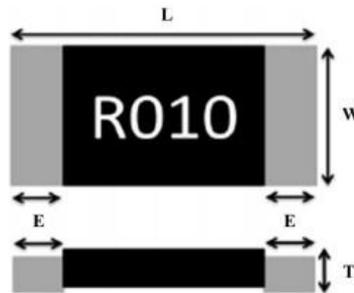


2512 Long Electrode (3~4mΩ)



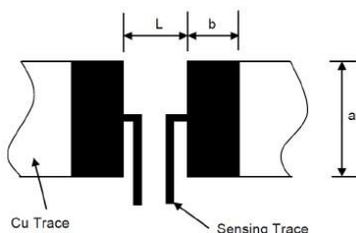
2512 (3~500mΩ)

Type	Resistance Range (mΩ)	L (mm)	W (mm)	T (mm)	E (mm)
2512	1~2	6.40±0.20	3.20±0.20	0.80±0.20	2.00±0.20
	3~500				1.00±0.30
2512(Long Electrode)	3~4	6.40±0.20	3.20±0.20	0.60±0.20	2.00±0.20



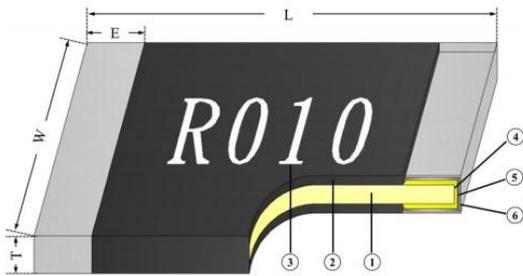
Type	Resistance Range (mΩ)	L (mm)	W (mm)	T (mm)	E (mm)
1206	2~30	3.20±0.20	1.60±0.20	0.70±0.20	0.5±0.30

Recommended Land Patterns



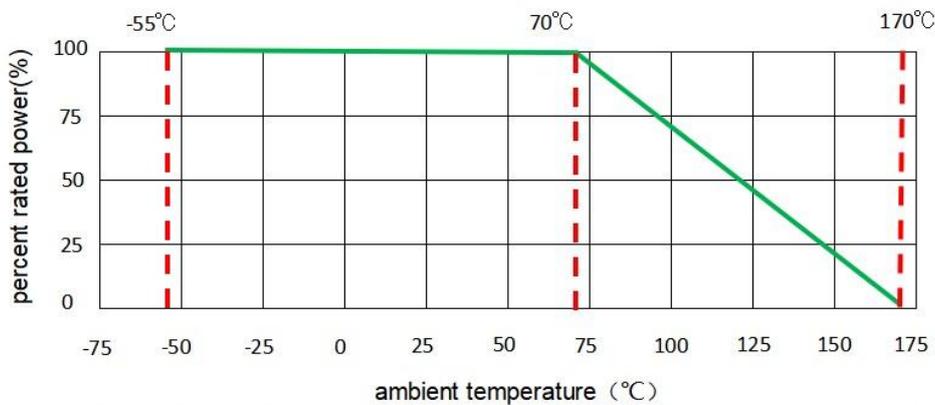
Type	Resistance Range (mΩ)	a (mm)	b (mm)	L (mm)
2512	1~2	4.00	3.10	1.80
	3~500	4.00	2.10	4.10
2512(Long Electrode)	3~4	4.00	3.10	1.80
1206	2~30	1.80	1.70	1.60

Materials



No.	Materials
1	Metal Alloy
2	Epoxy
3	Epoxy
4	Cu
5	Ni
6	Sn

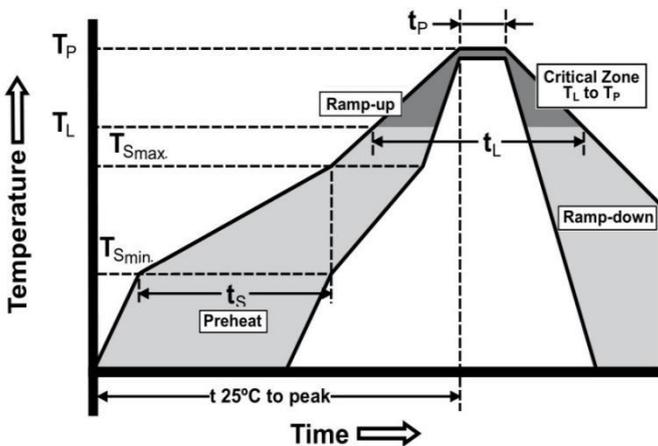
Power Derating Curve



Recommended Solder Curve

1. Infrared Reflow

- Temperature: 260°C.
- Time: 10 sec Max.
- Recommend Reflow profile:



Profile Feature	Pb-Free Assembly
Average Ramp-up Rate (Tsmax to Tp)	3°C/sec Max.
Preheat Temperature Min.(Tsmin) Temperature Max.(Tsmax) Time(ts)(Tsmin to Tsmax)	150°C 200°C 60sec~120sec
Peak Temperature(Tp)	260°C
Time (tp) within 5°C of actual Peak Temperature(Tp)	10sec Max
Liquidous temperature (TL)	217°C
Time at liquidous (TL)	60sec~150sec
Ramp-down Rate	6°C/sec Max.
Time 25°C to peak Temperature	8 min Max.

2. Wave soldering

- Reservoir Temperature: 260°C
- Time in Reservoir: 10sec Max.

3. Hand Soldering

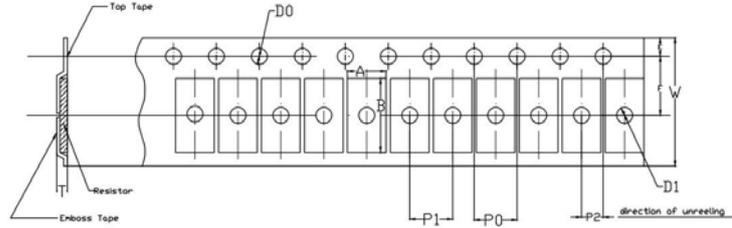
- Temperature: 350°C
- Time: 3sec Max.

Product Characteristics

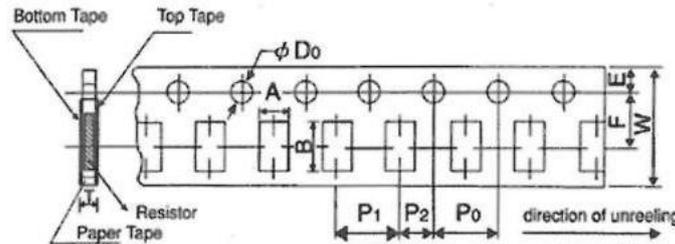
Item	Test condition/ Methods	Performance	Standard
Resistance	Measuring resistance value at room temperature 25°C ±5°C	Refer to SART Spec	IEC60115-1 4.5
Temperature coefficient of resistance	$TCR = \frac{R-R_0}{R_0(T_2-T_1)} \times 10^6$ Test temperature: +25°C~+125°C	Refer to SART Spec	IEC60115-1 4.8
Short time Overload	5 times the rated power for 5 sec	\Delta R ≤1.0%	IEC 60115-1 4.13
Resistance to Soldering Heat	260°C±5°C, time: 10 sec±1 sec	\Delta R ≤0.5%	MIL-STD-202 Method 210
Solderability	Dip the terminal in a flux and then dip into a soldering bath at 245°C±5°C for 2sec~3sec	Min 95% coverage	J-STD-002B Test B
Thermal shock	-55°C(30min)/+125°C(30min), 1000 cycles	\Delta R ≤1.0%	MIL-STD-202 Method107G
Low temperature storage	-55°C±2°C,1000hours	\Delta R ≤1.0%	IEC60115-1 4.23.4
High Temperature storage	125°C±2°C,1000hours	\Delta R ≤1.0%	MIL-STD-202 Method 108
Moisture with load	+85°C, 85% RH, 1000hours,at 10% rated power 1.5 hours "ON", 0.5 hours "OFF"	\Delta R ≤1.0%	MIL-STD-202 Method106G
Vibration	5g's for 20min,12 cycles,10-2000Hz	\Delta R ≤0.5%	MIL-STD-202 Method 204
Load life	70°C±2°C, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF"	2512(Long Electrode): \Delta R ≤2.0% Others: \Delta R ≤1.0%	MIL-STD-202 Method 108
Board Flex	Epoxy thickness 1.6mm, Fulcrums distance 90mm,Bending width : 2mm; Duration: 60sec ± 5sec	\Delta R ≤0.5%	IEC 60115-1 4.33

Packaging

1. Embossed Tape Dimensions

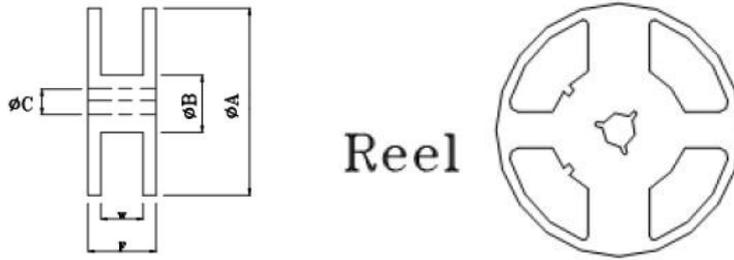


Type	A (mm)	B (mm)	W (mm)	F (mm)	E (mm)
2512	$3.60 \pm_{0.18}^{0.20}$	6.90 ± 0.20	12.00 ± 0.20	5.50 ± 0.05	1.75 ± 0.10
Type	P1 (mm)	P2 (mm)	P0 (mm)	D0/D1 (mm)	T (mm)
2512	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.05	$1.50 \pm_0^{0.10}$	1.00 ± 0.15



Type	A (mm)	B (mm)	W (mm)	F (mm)	E (mm)
1206	2.00 ± 0.15	3.60 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10
Type	P1 (mm)	P2 (mm)	P0 (mm)	D0 (mm)	T (mm)
1206	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	$1.50 \pm_0^{0.10}$	0.84 ± 0.10

2. Reel Dimensions

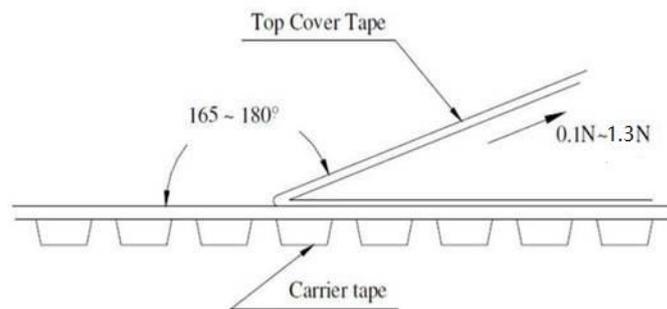


Type	φ A (mm)	φ B (mm)	φ C (mm)	F (mm)	W (mm)
2512	178.00±2.00	60.00±1.00	13.50±0.50	15.40±1.00	13.00±0.30
1206	178.00±2.00	60.00±1.00	13.50±0.50	11.40±0.10	9.00±0.30

3. Quantity of Package

Type	Quantity(pcs)
2512	4000
1206	5000

4. Peeling Test



Storage

- The ambient temperature shall be between 5°C~35°C.
- The relative humidity recommended for storage is between 25%RH~75%RH.
- Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use.
- The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.