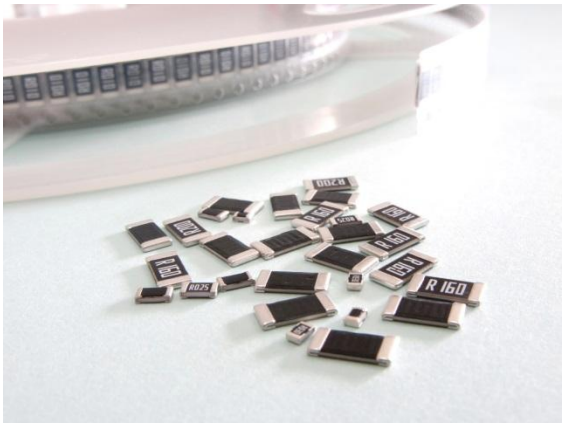

General

- Chip size from 0603 to 2512
- Resistance value from 2mΩ to 200mΩ
- Low thermal EMF
- 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℃(W)	Resistance Range(mΩ)	TCR (ppm/℃)	Resistance tolerance	Operation Temp. Range
0603	1/2	5≤R＜10	±200	±0.5%(D) ±1%(F) ±2%(G) ±5%(J)	-55℃~+170℃
		10≤R≤30	±100		
0805	1/2、3/4	3≤R＜10	±100		
	1/2	10≤R≤47	±50		
1206	1/2、1	3≤R＜10	±100		
		10≤R≤68	±50		
2010	1	3≤R＜10	±100		
		10≤R≤100	±50		
2512	2	2	±200		
		3≤R＜10	±100		
		10≤R≤100	±50		
	1	100≤R≤200	±50		

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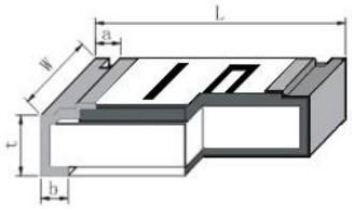
Part Number Information

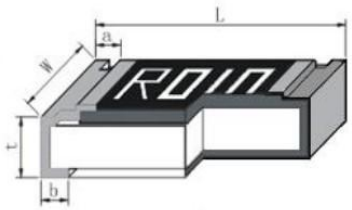
SMF 25 M 2 F R010 T
【1】【2】【3】【4】【5】【6】【7】

【1】Series Name: SART Metal Foil Type
【2】Chip size:06:0603 08:0805 12:1206 20:2010 25:2512
【3】Material Code: M:Mn-Cu
【4】Power Code: A :0.5W C:0.75W 1:1W 2:2W
【5】Resistance Tolerance: D:±0.5% F:±1% G:±2% J:±5%
【6】Resistance Code:R010=10mΩ
【7】Packaging Code: T: Tape& Reel B:Bulk Pack

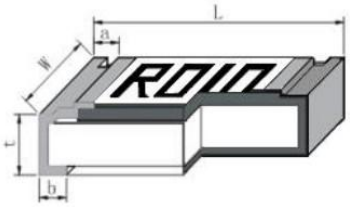
Dimensions



(0603)



(0805≥R010、1206、2512)

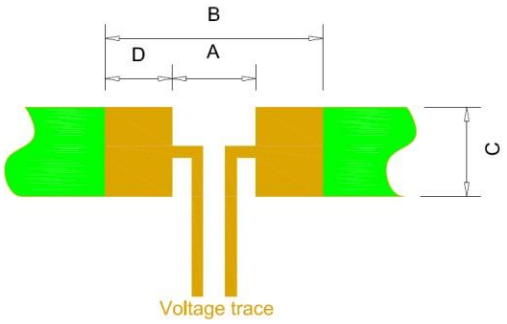


（0805＜R010、2010）

Type	Resistance Range(mΩ)	L (mm)	W (mm)	t (mm)	a (mm)	b (mm)
0603*	≥5	1.60±0.20	0.80±0.20	0.70±0.15	0.35±0.25	0.35±0.20
0805	3~4	2.00±0.20	1.25±0.20	0.70±0.15	0.40±0.25	0.70±0.30
	≥5					0.40±0.30
1206	3~4	3.20±0.20	1.60±0.20	0.75±0.15	0.50±0.30	0.90±0.30
	≥5					0.50±0.30
2010	3	5.00±0.20	2.50±0.20	0.75±0.20	0.60±0.30	1.60±0.30
	4~5					1.30±0.30
	＞5					0.80±0.30
2512	2	6.40±0.20	3.20±0.20	0.75±0.20	0.90±0.30	2.30±0.30
	3					1.90±0.30
	4					1.70±0.30
	5~6					1.20±0.30
	7					1.10±0.30
	＞7					0.90±0.30

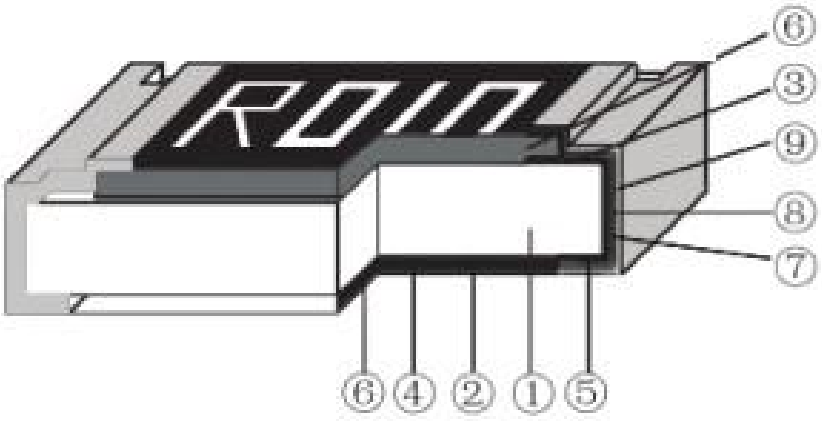
Remark*: 0603 two-digit mark；

Recommended Land Patterns



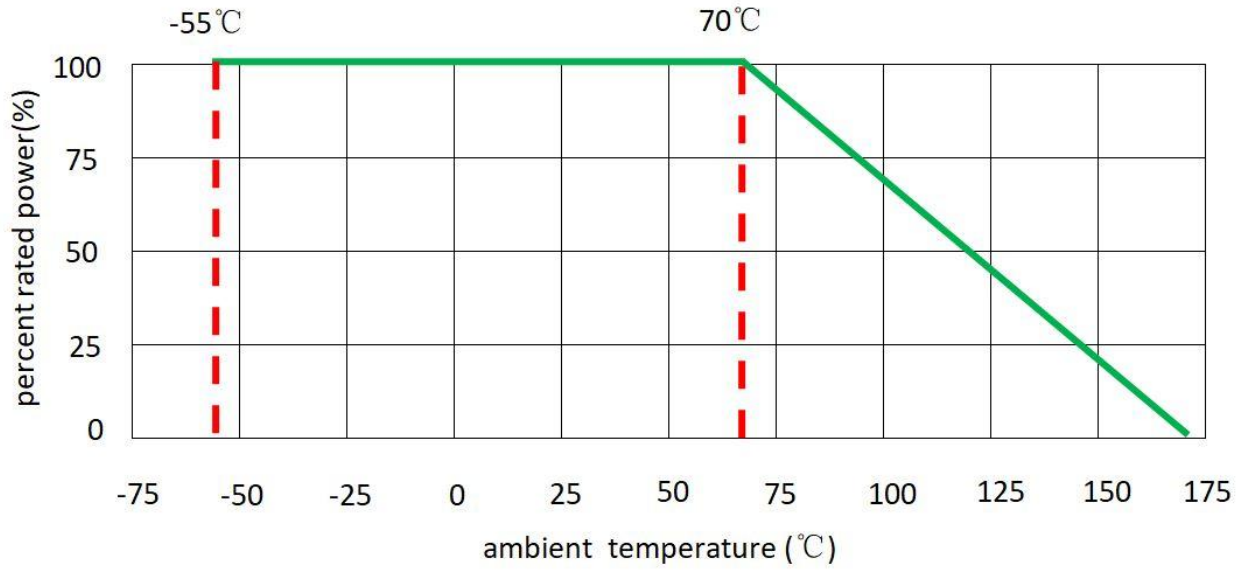
Type	Resistance Range (mΩ)	A (mm)	B (mm)	C (mm)	D (mm)
0603	5~30	0.60	2.80	1.00	1.10
0805	3~4	0.50	3.20	1.40	1.35
	5~47	0.80			1.20
1206	3~4	0.80	4.40	1.80	1.80
	5~68	1.80			1.30
2010	3~9	1.60	6.30	2.90	2.35
	10~100	2.70			1.80
2512	2~4	1.00	8.00	3.40	3.50
	5~200	3.80			2.10

Materials



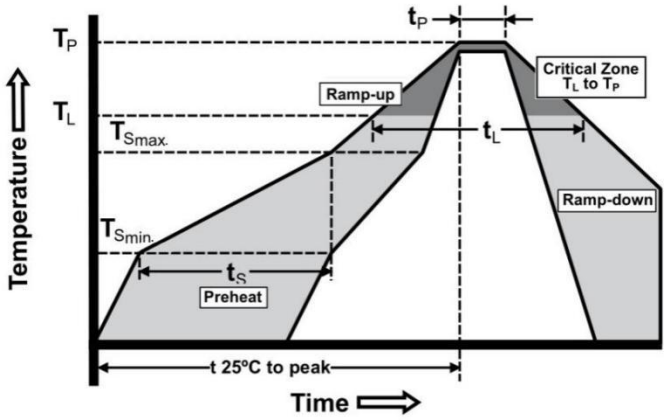
No.	Materials	No.	Materials
1	Ceramic Substrate	6	Secondary Overcoat
2	Alloy Plate	7	Edge Electrode
3	Top Electrode	8	Barrier Layer
4	Primary Overcoat	9	External Electrode
5	Cu Plating	/	/

Power Derating Curve



Recommended Solder Curve

1.Infrared Reflow
Temperature:260℃
Time:5sec Max.
Recommend Reflow profile:



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts_{max} to Tp)	3℃/sec Max.
Preheat Temperature Min(Ts_{min}) Temperature Max(Ts_{max}) Time($Ts_{min}$to Ts_{max})	150℃ 200℃ 60sec~120sec
Peak Temperature(Tp)	260℃
Time within 5℃ of actual Peak Temperature(Tp)	5sec
Melting tin time(T_L)	20sec~30sec
Ramp-Down Rate	6℃/sec Max.
Time 25℃ to Peak Temperature	8min Max.

2. Wave soldering
- Reservoir Temperature: 260℃
- Time in Reservoir:10sec Max.

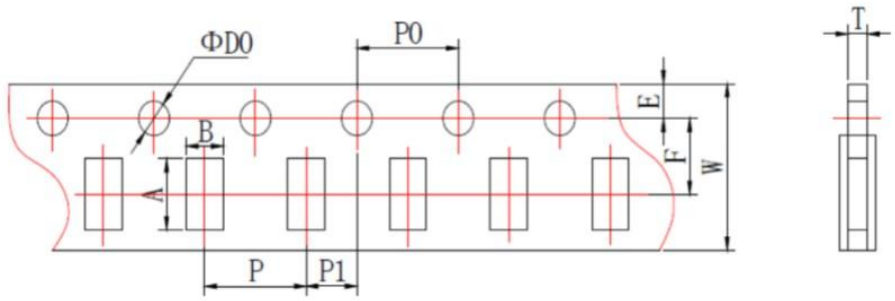
3. Hand Soldering
- Temperature: 350℃
- Time: 5sec Max.

Product Characteristics

Item	Test condition/ Methods	Performance	Standard
Short Time Overload	1/2W、3/4W、1W： 5X rated power for 5 sec 2W：4X rated power for 5 sec	|ΔR|≤ ±1%	IEC60115-1 4.13
Temperature Coefficient of Resistance (T.C.R.)	TCR = $\frac{R-R0}{R0(T2-T1)}$X10 ^{6} T1 T2 Test temperature：+25℃~+125℃	Refer to SART Spec	IEC60115-1 4.8
Endurance at 70℃	70℃±2℃, 1000 hours ,rated current or limiting element current whichever is lower for 1.5hours “ON” / 0.5hours “OFF”	|ΔR|≤±1%	IEC60115-1 4.25.1
Damp Heat Steady State	40℃±2℃,93%±3%RH,1000 hours,rated current or limiting element current whichever is lower for 1.5hours “ON” / 0.5hours “OFF”	|ΔR|≤±1%	IEC60115-1 4.24
Rapid Change of Temperature	-55℃(30min)/normal temperature (5min)/+125℃(30min), 100 cycles	|ΔR|≤±1%	IEC60115-1 4.19
Solder ability	245℃± 5℃，3sec ± 0.3sec	95%coverage Min.	IEC60115-1 4.17
Resistance to Soldering Heat	270℃± 5℃，10sec ±1.0sec	|ΔR|≤±1%	IEC60115-1 4.18
Endurance at Upper Category Temperature	170℃± 2℃ for 1000 hours	|ΔR|≤±1%	IEC60115-1 4.23
Bending test	Epoxy thickness1.6mm, Fulcrums distance 90mm,Bending distance： 0603、0805、1206：3mm； 2010、2512：2mm； Duration：60sec ±5sec	|ΔR|≤±1%	IEC60115-1 4.33
Insulation Resistance	Apply DC 100V±15V between substrate and termination for 1minute,then check the insulation resistance	1000MΩ Min.	IEC 60115-1 4.6
Voltage Proof	Apply max. Overload voltage of AC RMS at a rate of approximately 100V/s between substrate and terminations for 60sec±5sec(1206：400V)	No breakdown or flashover	IEC 60115-1 4.7
Component Solvent Resistance	IPA,23℃±5℃,10hours	|ΔR|≤±1%	IEC 60115-1 4.29

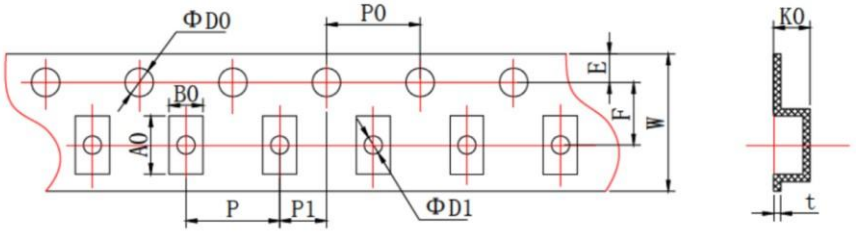
Packaging

1. Paper Tape Dimensions



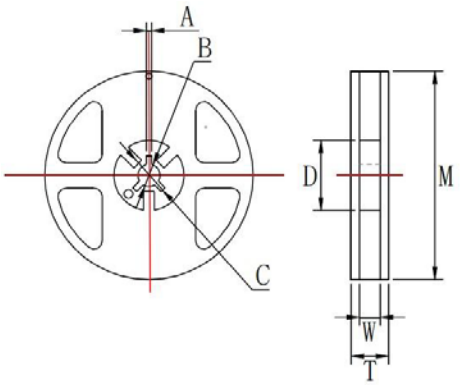
Type	A (mm)	B (mm)	W (mm)	F (mm)	E (mm)
0603	1.85±0.10	1.10±0.10	8.00±0.20	3.50±0.05	1.75±0.10
0805	2.35±0.10	1.65±0.10	8.00±0.20	3.50±0.05	1.75±0.10
1206	3.50±0.20	1.90±0.20	8.00±0.20	3.50±0.05	1.75±0.10
Type	P (mm)	P0 (mm)	P1 (mm)	∅D0 (mm)	T (mm)
0603	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.75±0.10
0805	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.95±0.10
1206	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.95±0.10

2.Embossed Tape Dimensions



Type	A0 (mm)	B0 (mm)	W (mm)	F (mm)	E (mm)	t (mm)
2010	5.50±0.15	2.82±0.15	12.00±0.10	5.50±0.10	1.75±0.10	0.25±0.05
2512	6.78±0.15	3.45±0.15	12.00±0.10	5.50±0.10	1.75±0.10	0.25±0.05
Type	P (mm)	P0 (mm)	P1 (mm)	∅D0 (mm)	∅D1 (mm)	K0 (mm)
2010	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	0.84±0.10
2512	4.00±0.10	4.00±0.10	2.00±0.05	1.50+0.10/-0	1.50±0.10	1.00±0.10

3.Reel Dimensions

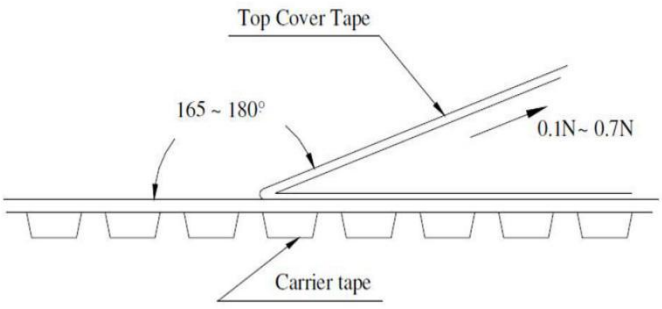


Type	M (mm)	W (mm)	T (mm)	A (mm)	B (mm)	C (mm)	D (mm)
0603 0805 1206	178.00±2.00	9.50±1.00	12.50±1.50	2.00±0.50	13.00±0.50	21.00±0.50	58.00±2.00
2010 2512	178.00±2.00	13.00±0.50	15.50±1.50	2.00±0.50	13.00±0.50	21.00±0.50	57.00±2.00

4. Quantity of Package

Type	Quantities（PCS）
0603/0805/1206	5000
2010/2512	4000

5. Peeling Test



Storage

- The ambient temperature shall between 5℃~30℃.
- The relative humidity recommended for storage is between 25%RH~60%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.