INDIVIDUAL SPECIFICATION SHEET

Product Name: Current Sensing Resistors

Part Number:SMB Series

Revision: A

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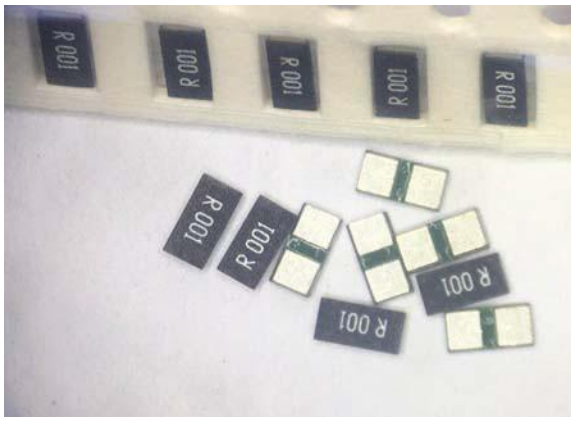
Rev.	Effective Date	Changed Contents
A	2021-6-25	New release

PREPEARED BY	APPROVED BY
杨婷	



General

- Chip size from 0402 to 1206
- Resistance value from 1mΩ to 25mΩ
- 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
0402	0.3	2.5<R≤3	±150	±1%(F),±1.5%(E) ,±2%(G)	-55℃~155℃
		5<R≤25	±100	±1%(F)	
0603	0.3	2≤R≤5	±100		
		6≤R≤20	±75		
0805	0.5	2≤R≤5	±75		
		6≤R≤20	±50		
1206	1.0	1	±75	±1%(F),±1.5%(E)	
		2≤R≤4	±75	±1%(F)	
		5≤R≤20	±50	±1%(F)	

Part Number information

SMB	12	A	1	F	R002	T
【1】	【2】	【3】	【4】	【5】	【6】	【7】

【1】Series Name: SART Metal Foil PCB Type

【2】Chip size: 12:1206 08:0805 06:0603 04:0402

【3】Material Code:A:Alloy

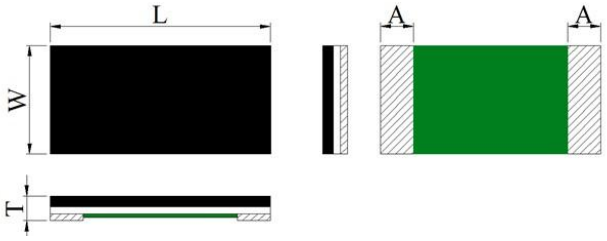
【4】Power Code:1:1W A:0.5W M:0.3W

【5】Resistance Tolerance: F:±1% E: ±1.5% G: ±2%

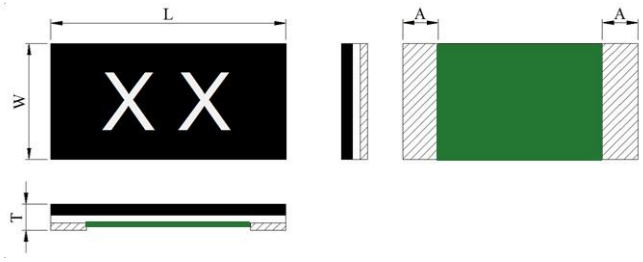
【6】Resistance Code: R002=2mΩ

【7】Packaging Code: T:Tape& Reel B:Bulk Pack

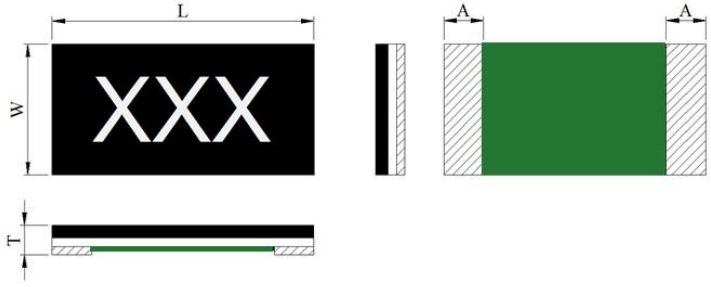
Dimensions



Type	Resistance Range（mΩ）	W （mm）	L (mm)	T （mm）	A （mm）
0402	2.5<R≤3	0.55±0.10	1.00±0.10	0.30±0.05	0.30±0.10
	5<R≤25	0.55±0.10	1.00±0.10	0.30±0.05	0.23±0.10

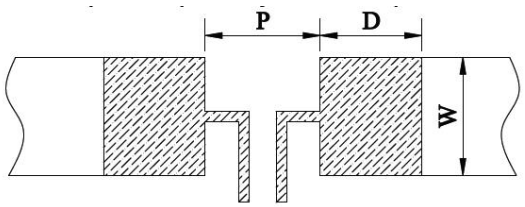


Type	Resistance Range（mΩ）	W （mm）	L (mm)	T （mm）	A （mm）
0603	2	0.80±0.25	1.60±0.25	0.40±0.25	0.45±0.20
	2.5<R≤3	0.80±0.25	1.60±0.25	0.40±0.25	0.35±0.20
	4≤R≤20	0.80±0.25	1.60±0.25	0.40±0.25	0.30±0.20



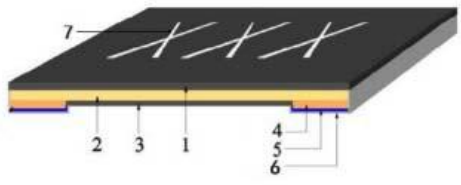
Type	Resistance Range（mΩ）	W （mm）	L (mm)	T （mm）	A （mm）
0805	2	1.25±0.25	2.00±0.25	0.40±0.25	0.60±0.20
	3≤R≤20	1.25±0.25	2.00±0.25	0.40±0.25	0.40±0.20
1206	1	1.60±0.25	3.20±0.25	0.40±0.25	1.25±0.30
	2	1.60±0.25	3.20±0.25	0.40±0.25	1.05±0.30
	3	1.60±0.25	3.20±0.25	0.40±0.25	0.80±0.30
	4≤R≤20	1.60±0.25	3.20±0.25	0.40±0.25	0.60±0.30

Recommended Land Patterns



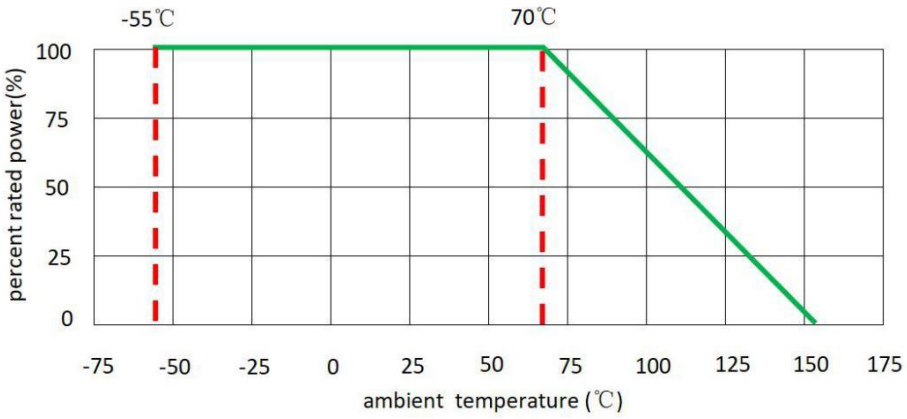
Type	Resistance range（mΩ）	P (mm)	W (mm)	D (mm)
0402	2.5<R≤3	0.35	0.60	0.60
	5<R≤25	0.40	0.60	0.60
0603	2	0.38	0.92	1.41
	2.5≤R≤3	0.50	0.92	1.35
	4≤R≤20	0.60	0.92	1.30
0805	2	0.50	1.44	1.55
	3≤R≤20	0.80	1.44	1.40
1206	1	0.50	1.84	2.15
	2	0.60	1.84	2.10
	3≤R≤20	1.20	1.84	1.80

Materials



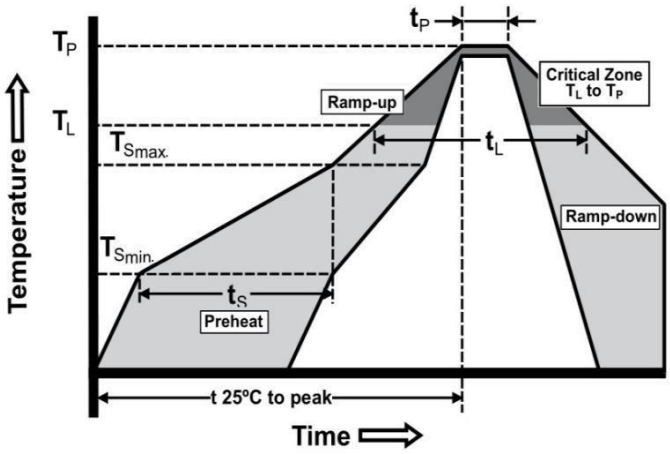
No.	Materials	No.	Materials
1	Epoxy substrate	5	Nickel
2	Alloy	6	Tin
3	Protective coating	7	Marking
4	Copper	/	/

Power Derating Curve



Recommended Solder Curve

1. Infrared Reflow
   - Temperature: 260℃.
   - Time: 10 sec 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	8 min Max.

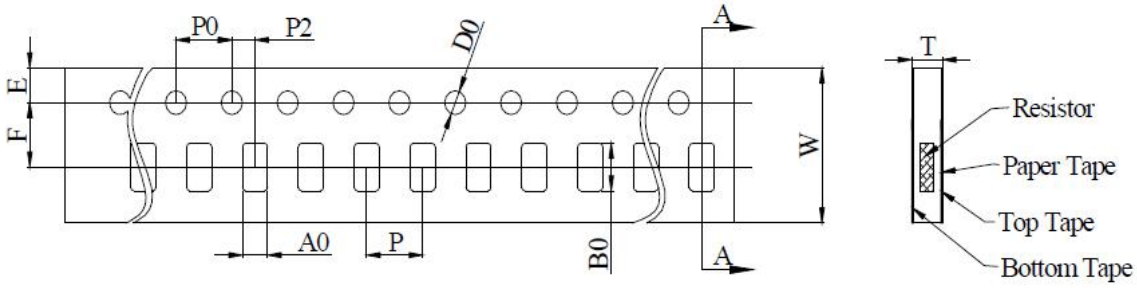
2.Hand Soldering
- Temperature: 350℃
- Time: 5sec Max.

Product Characteristics

Item	Test condition / Methods	Performance	Standard
Short Time Overload	0805 2mΩ≤R≤10mΩ： P= 5*Pr; 1206 1mΩ≤R≤10mΩ： P= 5*Pr; T=25℃±2℃, t = 5sec Rest specifications： P=2.5*Pr; T=25±2℃, t = 5sec	|△R|≤±(1%+0.5 mΩ)	IEC 60115-1 4.13
Temperature Coefficient of Resistance (TCR)	$TCR = (R-R_0)/R_0(T2-T1)X\ 10^6$ T1 T2 Test temperature:+25℃~+125℃	Refer to SART Spec	IEC 60115-1 4.8
Thermal Shock	-55℃(30min)/ +155℃(30min) , 100 cycles	|△R|≤±(1%+0.5 mΩ)	IEC 60115-1 4.19
Resistance to Solder Heat	270℃±5℃, 20sec±1sec	|△R|≤±(1%+0.5mΩ)	IEC 60115-1 4.18
Solderability	245℃±5℃, 3sec±0.5sec	95% coverage Min.	IEC 60115-1 4.17
Load Life	1000 hours at rated power, 70℃±2℃, 1.5hours “ON”, 0.5hours “OFF”	|△R|≤±(2% +0.5 mΩ)	IEC 60115-1 4.25
Moisture Load Life （60℃、95%RH）	T=60℃±2℃ ; RH=95% ; $V_{test} = V_{max}$; t= 1.5hours “ON” , 0.5hours “OFF”, 1000hours	|△R|≤±(2%+0.5 mΩ)	IEC 60115-1 4.24
Bending test	Bending width 2mm, Epoxy thickness 1.6mm, Fulcrums distance 90mm	|△R|≤±(1%+0.5 mΩ)	IEC 60115-1 4.33
High Temp. Exposure	155℃±2℃ ,1000hours	|△R|≤±(1%+0.5 mΩ)	IEC60115-1 4.25
Low Temp. Storage	-55℃±2℃ , 1000hours	|△R|≤±(1%+0.5 mΩ)	IEC60115-1 4.25
Mechanical Shock	a =100G , t =11ms, 5 times shock	|△R|≤±(1%+0.5 mΩ)	IEC60115-1 4.21

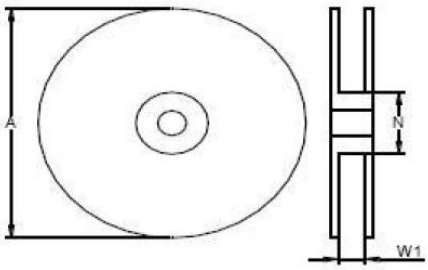
Packaging

1. Embossed Tape Dimensions



Type	A0 (mm)	B0 (mm)	W (mm)	F (mm)	E (mm)
0402	0.65±0.10	1.10±0.10	8.00±0.30	3.50±0.10	1.75±0.10
0603	0.98±0.10	1.85±0.10	8.00±0.30	3.50±0.10	1.75±0.10
0805	1.55±0.10	2.30±0.10	8.00±0.30	3.50±0.10	1.75±0.10
1206	2.05±0.20	3.65±0.20	8.00±0.30	3.50±0.10	1.75±0.10
Type	P (mm)	P2 (mm)	P0 (mm)	D0 (mm)	T (mm)
0402	2.00±0.10	2.00±0.10	4.00±0.10	1.50±0.10	0.42±0.05
0603	4.00±0.10	2.00±0.10	4.00±0.10	1.50±0.10	0.60±0.05
0805	4.00±0.10	2.00±0.10	4.00±0.10	1.50±0.10	0.75±0.10
1206	4.00±0.10	2.00±0.10	4.00±0.10	1.50±0.10	0.75±0.10

2.Reel Dimensions

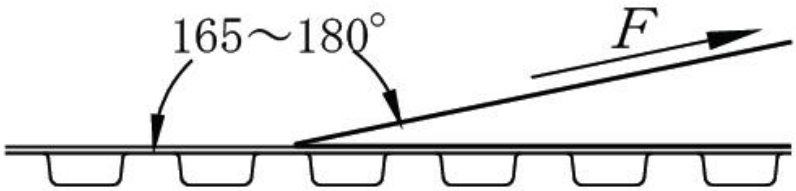


Type	A (mm)	N (mm)	W1 (mm)
0402	178.00±5.00	60.00±2.00	9.00±1.00
0603			
0805			
1206			

3..Quantity of Package

Type	0402	0603	0805	1206
Quantity(pcs)	10000	5000		

4.Peeling Test



F=Peeling Strength:0.1-1.0N(10~100gf)

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.