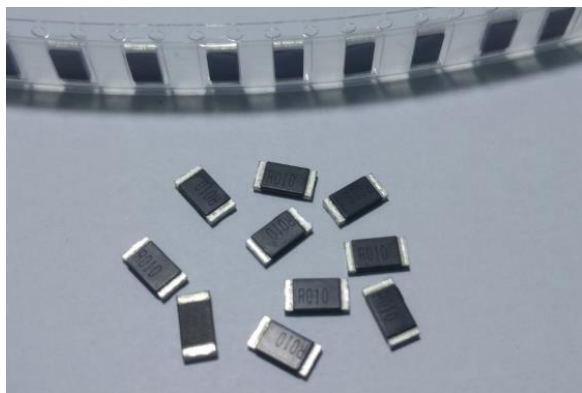




General

- Chip size 2512
- Resistance value from 0.5mΩ to 50mΩ
- High power rating
- Low inductance 0.5nH to 5nH
- Low TCR
- Compatible with RoHS & Halogen free
- Compliant with AEC-Q200 standard

Application

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

Electrical Specifications

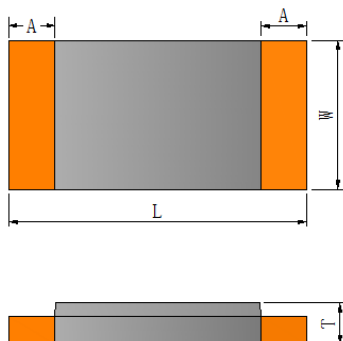
Type	Power Rating at 70°C(W)	Resistance Range (mΩ)	TCR (ppm/°C)	Resistance Tolerance	Operation Temp. Range
2512	2、3	0.5	±160	±1%(F)	-55°C~+170°C
		1	±100		
		2~50	±50		

Part Number Information

<u>SMAA</u>	<u>25</u>	<u>A</u>	<u>3</u>	<u>E</u>	<u>R001</u>	<u>T</u>
【1】	【2】	【3】	【4】	【5】	【6】	【7】
【1】 Series Name: Sart Metal Strip Type Automotive grade						
【2】 Chip size: 25: 2512						
【3】 Material Code: A:Alloy						
【4】 Power Code: 2: 2W 3: 3W						
【5】 Resistance Tolerance: F: ±1%						
【6】 Resistance Code: R001 = 1 mΩ ; 0M50 = 0.5 mΩ						
【7】 Packaging Code: T:Tape& Reel B: Bulk Pack						

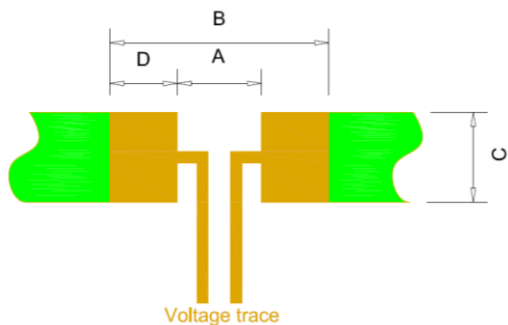
Type	Application	Resistance Range (mΩ)
2512	Wide electrode	0.5
	narrow electrode	1~50

Dimensions



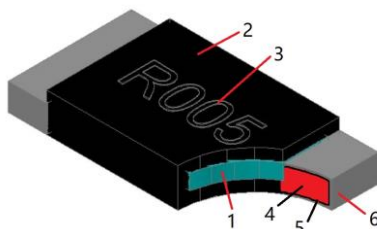
Type	Resistance Range (mΩ)	L (mm)	W (mm)	T (mm)	A (mm)
2512	0.5	6.40 ± 0.30	3.20 ± 0.30	1.05 ± 0.20	1.90 ± 0.25
	1~4	6.40 ± 0.30	3.20 ± 0.30	1.10 ± 0.20	0.90 ± 0.30
	5~50	6.40 ± 0.30	3.20 ± 0.30	0.90 ± 0.20	0.90 ± 0.30

Recommended Land Patterns



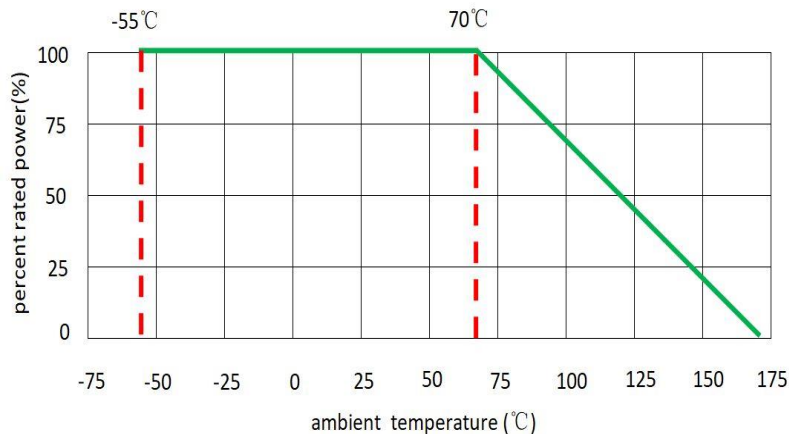
Type	Resistance Range (mΩ)	A (mm)	B (mm)	C (mm)	D (mm)
2512	0.5	1.50	7.40	3.57	2.95
	1~50	3.18	7.40	3.57	2.11

Materials



No.	Materials	No.	Materials
1	Alloy	4	Copper
2	Epoxy molding compounds	5	Nickel
3	Marking	6	Tin

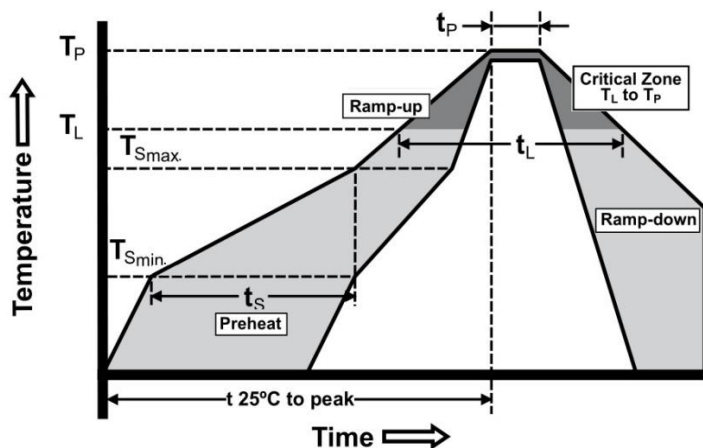
Power Derating Curve



Recommended Solder Curve

1. Infrared Reflow

- Temperature: 260°C
- Time: 5sec Max.
- Recommend Reflow profile:



Profile Feature	Pb-Free Assembly
Average Ramp-up Rate (T _{Smax} to T _P)	3°C/sec Max.
Preheat Temperature Min.(T _{Smin})	150°C
Temperature Max.(T _{Smax})	200°C
Time(T _{Smin} to T _{Smax})	60sec~120sec
Peak Temperature(T _P)	260°C
Time within 5°C of actual Peak Temperature(T _P)	5sec
Melting tin time(T _L)	20sec~30sec
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: 5sec Max.

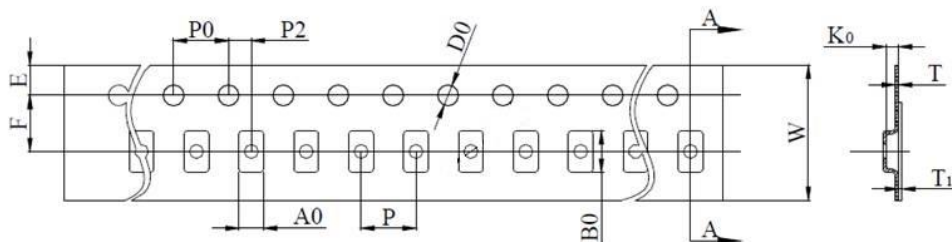
Product Characteristics

Item	Test condition / Methods	Performance	Standard
Temperature Coefficient of Resistance (TCR)	$TCR = (R - R_0) / R_0 (T_2 - T_1) \times 10^6$ $T_1 \quad T_2$ Test temperature: +25℃~+125℃	Refer to SART Spec	MIL-STD-202 Method 304
Short Time Overload	$P = 5P_r$; $T = 25^\circ\text{C} \pm 2^\circ\text{C}$, $t = 5\text{sec}$	$ \Delta R \leq \pm 1\%R$	IEC 60115-1 4.13
High Temp. Exposure	$T = +170^\circ\text{C} \pm 2^\circ\text{C}$; $t = 1000\text{hours}$ Unpowered	$ \Delta R \leq \pm 1\%R$	MIL-STD-202 Method 108
Temperature Cycling	-55℃(30min)/+155℃(30 min),1000 cycles	$ \Delta R \leq \pm 1\%R$	JESD22 Method JA-104
Biased humidity (85℃、85%RH)	1000hours $T = 85^\circ\text{C} \pm 2^\circ\text{C}$; RH=85%; 10% of Operating power; $t = 1.5\text{hours}$ "ON", 0.5hours "OFF"	$ \Delta R \leq \pm 1\%R$	MIL-STD-202 Method 103
Operational Life	1000 hours at rated power, $125^\circ\text{C} \pm 2^\circ\text{C}$, 1.5hours "ON", 0.5hours "OFF"	$ \Delta R \leq \pm 1\%R$	MIL-STD-202 Method 108
External Visual	Electrical test not required. Inspect device construction, marking and workmanship	Refer to SART Spec	MIL-STD-883 Method 2009
Physical Dimension	Verify physical dimensions to the applicable device detail specification. Electrical test not required	Refer to SART Spec	JESD22 Method JB-100
Mechanical Shock	Positive half-sine wave, peak acceleration: 100 g's, pulse duration: 6ms, six direction, each direction 3cycle, total 18cycles	$ \Delta R \leq \pm 1\%R$	MIL-STD-202 Method 213
Vibration	Frequency: 10Hz ~2000Hz acceleration: 5g's for 20 min, 12 cycles each of 3 orientations	$ \Delta R \leq \pm 1\%R$	MIL-STD-202 Method 204
Resistance to Soldering Heat	$260^\circ\text{C} \pm 5^\circ\text{C}$, 10sec $\pm 1\text{sec}$	$ \Delta R \leq \pm 1\%R$	MIL-STD-202 Method 210
Solderability	Lead-free solder bath at $245^\circ\text{C} \pm 5^\circ\text{C}$ for 3sec $\pm 0.5\text{sec}$	95% coverage Min.	STD-002 IEC 60115-1 4.17
Flammability	V-0 or V-1 are acceptable. Electrical test not required	-	UL-94
Bending test (Board Flex)	Bending width 2mm, Epoxy thickness 1.6mm, Fulcrums distance 90mm	$ \Delta R \leq \pm 1\%R$	ACE-Q200-005
Terminal Strength	Applying force 17.7N for 60sec	$ \Delta R \leq \pm 1\%R$	AEC-Q200-006

Operation at Low Temperature	T= -55℃±5℃, 1hour without load, rated current or limiting element current whichever is lower for 45min , 15min without load	$ \Delta R \leq \pm 1\%R$	IEC-60115-1 4.36
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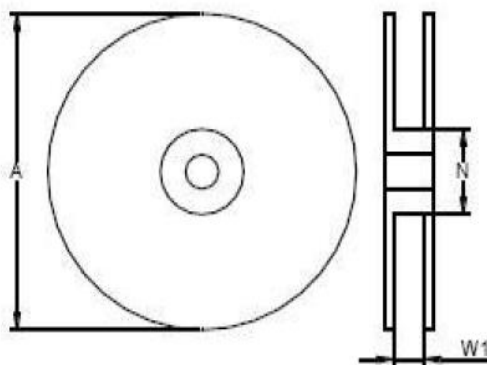
Packaging

1. Tape Packaging Dimensions



Type	Power (W)	Resistance (mΩ)	A0 (mm)	B0 (mm)	W (mm)	F (mm)	E (mm)	T (mm)
2512	2	0.5~4	3.40±0.20	6.75±0.20	12.00±0.30	5.50±0.10	1.75±0.10	0.20±0.10
		5~50	3.40±0.20	6.75±0.20	12.00±0.30	5.50±0.10	1.75±0.10	0.20±0.10
	3	0.5~50	3.40±0.20	6.75±0.20	12.00±0.30	5.50±0.10	1.75±0.10	0.20±0.10
Type	Power (W)	Resistance (mΩ)	P (mm)	P0 (mm)	P2 (mm)	D0 (mm)	T1 (mm)	K0 (mm)
2512	2	0.5~4	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.10	Max. 0.10	1.3 ^{+0.20} _{-0.10}
		5~50	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.10	Max. 0.10	1.00±0.20
	3	0.5~50	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.10	Max. 0.10	1.3 ^{+0.20} _{-0.10}

2. Reel Dimensions

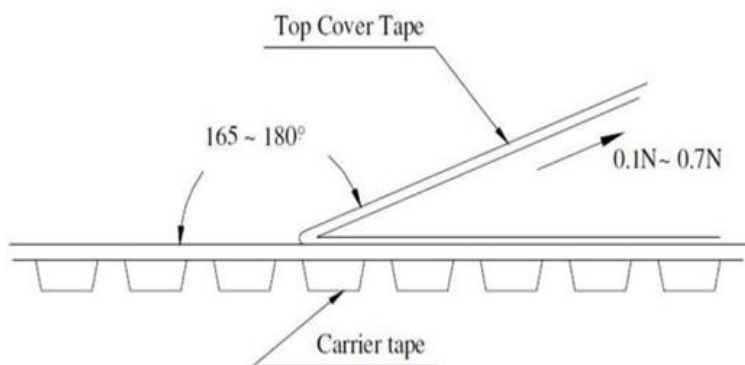


Type	A (mm)	N (mm)	W1 (mm)
2512	178.00±5.00	60.00±2.00	13.00±1.00

3.Quantity of Package

Type	Power (W)	Resistance Range (mΩ)	Quantity (pcs)
2512	2	0.5~4	3000
		5~50	4000
	3	0.5~50	3000

4.Peeling Test



Storage

- The ambient temperature shall between 5°C~30°C.
- 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.