

## Metal Alloy Short Terminal Resistor

### Description

- Metal Alloy Short Terminal Low-Resistance Resistor
- Low thermal EMF
- Low TCR
- Low inductance
- AEC-Q200 qualified available.

### Applications

- Battery pack
- Inverter/Converter
- Consumer electronics
- Laptops

### Part number

**AMSR 08 A 1 R020 F 1**  
**【1】 【2】 【3】 【4】 【5】 【6】 【7】**

【1】 Series Name: Metal alloy Short terminal Resistor for Automotive

【2】 Chip Size: 08:0805

【3】 Terminals: A:2 terminals , B:4 terminals

【4】 Power Rating: D=0.75W

【5】 Resistance Code: R020: 20mΩ

【6】 Resistance Precision: D:±0.5%, F:±1%, G:±2%, J: ±5%

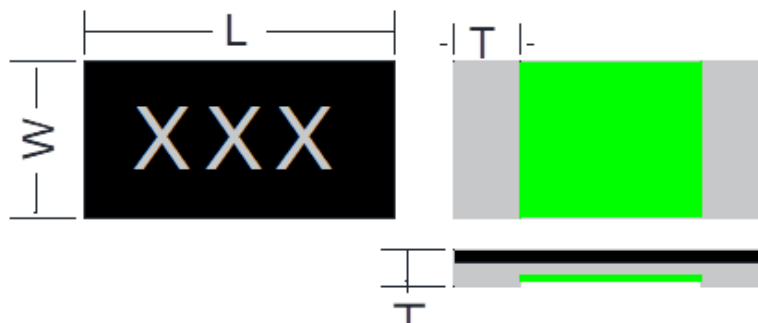
【7】 Marking Code: 1:No marking 2: Marking

### Electrical Characteristics

Part number	Power Rating at 70℃(W)	Resistance Range (mΩ)	TCR (ppm/℃)	Resistance Tolerance (%)	Rating Current	Operation Temperature Range
AMSR08A	0.75	20	±50	±1.0	(P/R) <sup>1/2</sup>	-55℃~+150℃

Note: P=Rating Power ; R=Resistance Value

### Physical Dimensions



Unit: mm

Part number	L	W	H	T
AMSR08ADR020F	$2.06 \pm 0.20$	$1.26 \pm 0.20$	Max 0.35	$0.43 \pm 0.15$

### Marking Instructions

AMSR08A is marked with three digit. We have two different ways of marking:

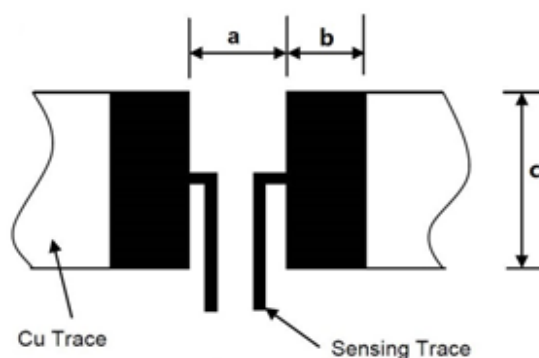
a. "R" designates the decimal location in ohms

e.g.  $2\text{m}\Omega$  : 002;  $20\text{m}\Omega$  : 020

b. "m" designates the decimal location in milliohms

e.g.  $2.5\text{m}\Omega$  : 2m5;  $5.5\text{m}\Omega$  : 5m5

### Recommended Solder Pad Layout



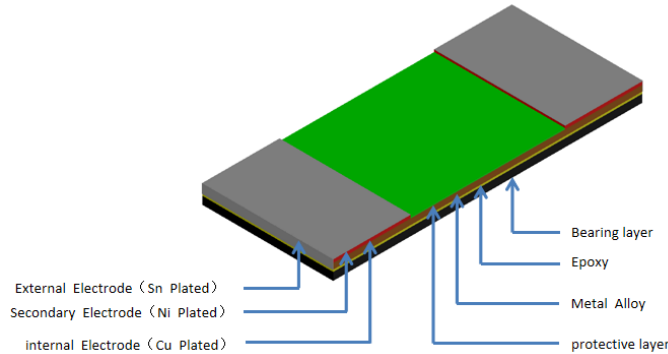
Unit: mm

Part number	a	b	c
AMSR08ADR020F	0.80	1.45	1.52

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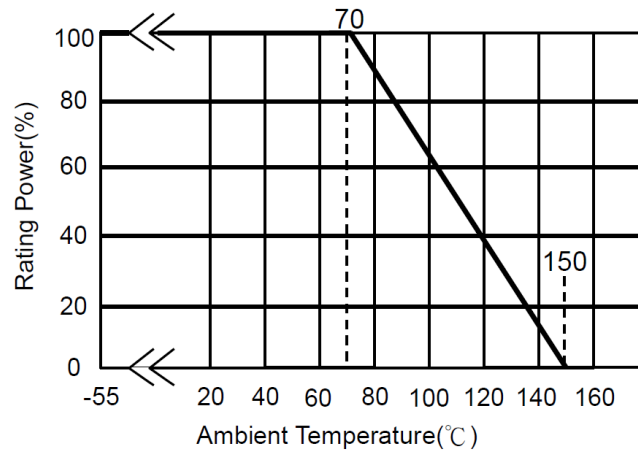
## AMSR ~Series

### Construction

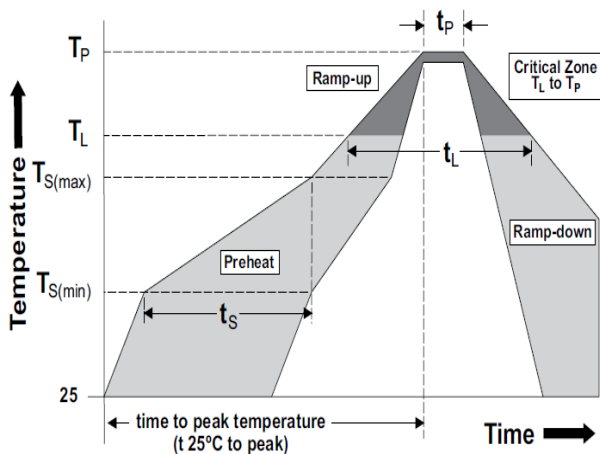


### Power Derating Curve

For resistors operated in ambient temperatures 70°C, power rating shall be derated in according with the curve below:



### Recommended Solder Curve



Reflow Condition		Pb – Free assembly
Pre heat	- Temperature Min ( $T_{S(min)}$ )	150°C
	- Temperature Max ( $T_{S(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 120 secs
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak		5°C/second max
$T_{S(max)}$ to $T_L$ - Ramp-up Rate		5°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_P$ )		260°C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max.
Wave Soldering		Not applicable
Hand Soldering		350°C, 5 seconds max.

## Metal Alloy Short Terminal Resistor

## AMSR ~Series

### Product Characteristics

Item	Test condition/ Methods	Limited	Standard
Resistance	Measuring resistance value at room temperature 25°C±5°C	Refer to Spec	IEC60115-1 4.5
External Visual	There is no need for electrical test, check the device structure, identification and process quality, and electrical test is not required.	Refer to Spec	MIL-STD-883 Method 2009
Physical Dimension	Verify physical dimensions according to device specifications.	Refer to Spec	JESD22-B100
Temperature Coefficient of Resistance	TCR (ppm/°C) = (R2-R1/R1*(T2-T1))X 10 <sup>6</sup> R1: resistance value measured at room temperature (Ω) R2: Resistance measured at 125 ° C (Ω) T1: room temperature (° C) T2: 125 °C	Refer to Spec	IEC 60115-1 4.8
Short Time Overload	3 times the rated power for 5 seconds	≤±1%	IEC 60115-1 4.13
High Temperature Storage	150°C for 1000hours, No power.	≤±1%	MIL-STD-202 Method 108
Temperature Cycling	Pre-treatments with 3X reflow, -55°C (15min)/+125°C (15min), 1000 cycles, transition time less than 1 minute	≤±1%	MIL-STD-202 Method107G
Bias Humidity	Pre-treatments with 3X reflow, +85°C, 85% RH, 10% of operating power, 1000hours	≤±3%	MIL-STD-202 Method103
Operational life	Pre-treatments with 3X reflow, 70°C± 2°C, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF".	≤±3%	MIL-STD-202 Method 108
Mechanical shock	Condition C ,100 g's ,6 msec, 3 mutually perpendicular axes, in 6 directions, three impacts each for a total of 18 times 18 shocks.	≤±0.5%	MIL-STD-202 Method 213
Vibration	5g's for 20 minutes 12 cycles each of 3 orientations. Test from 10 Hz - 2000 Hz	≤±0.5%	MIL-STD-202 Method 204
Resistance to Soldering Heat	Condition K, time above 217°C, 60s – 150s	≤±0.5%	MIL-STD-202 Method 210
ESD	Direct Contact Discharge 8KV, Air Discharge 25KV	≤±1%	AEC-Q200-002
Solderability	245±5°C time: 5sec+0/-0.5sec.	≥95%	J-STD-002
Board Flex	Bend the board (D) x = 2 mm minimum, the duration of the applied forces shall be 60 (+ 5) Sec.	≤±1%	AEC-Q200-005
Terminal Strength	Apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for 60 +1 seconds.	≤±1%	AEC-Q200-006
Moisture resistance	MIL-STD-202,method106, No power, 7b not required	≤±0.5%	MIL-STD-202 Method 106

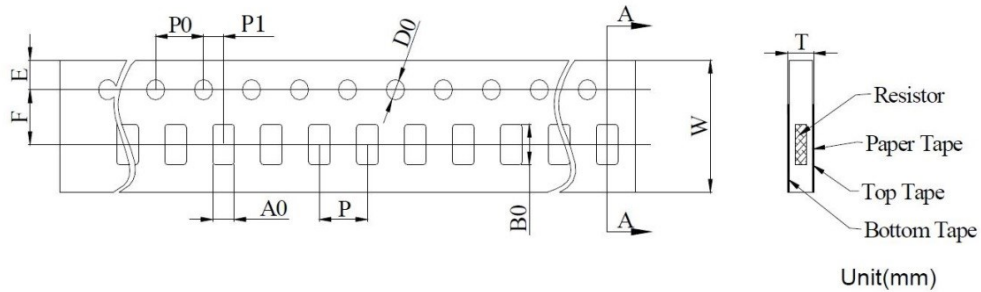
Note : Measurement at 24±4 hours after test conclusion for all reliability tests-parts.

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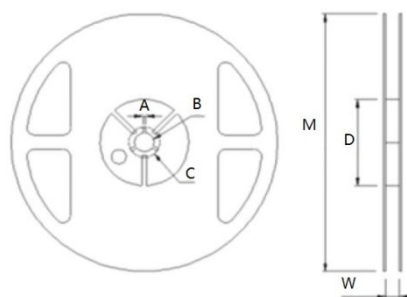
### Packaging

#### Tape Dimensions



Type	AMSR08A
A0	1.66±0.20
B0	2.46±0.20
E	1.75±0.10
F	3.50±0.05
W	8.00±0.20
P0	4.00±0.10
P	4.00±0.10
P1	2.00±0.05
D0	1.50±0.10
T	0.55±0.20

#### Reel Dimensions



Unit: mm

Type	M	W	A	B	C	D
7 inch reel	178.0±2.0	8.4+0.5/-0	2.0±0.5	13.2±0.5	17.70±0.5	60.0±1.0

#### Quantity of Package

Type	AMSR08A
Quantity(pcs)	5000

## **Storage**

The temperature condition must be controlled less than 40°C, The R.H. must be controlled less than 75%. Store in accordance with this requirement, and the validity period is two years after the date of manufacture.

Please avoid the mentioned harsh environment below when storing to ensure product performance and its' weldability. Places exposed to sea breeze or other corrosive gas, such as Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub> and NO<sub>2</sub>.

When the product is moved and stored, please ensure the correct orientation of the box. Do not drop or squeeze the box. Otherwise, the electrode or the body of the product may be damaged.