

Low-Resistance Metal Film Chip Resistor

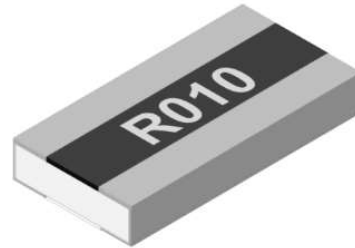
AMFR Series

PROSEMI offers AEC-Q200 qualified Current Sensing Resistor



Applications

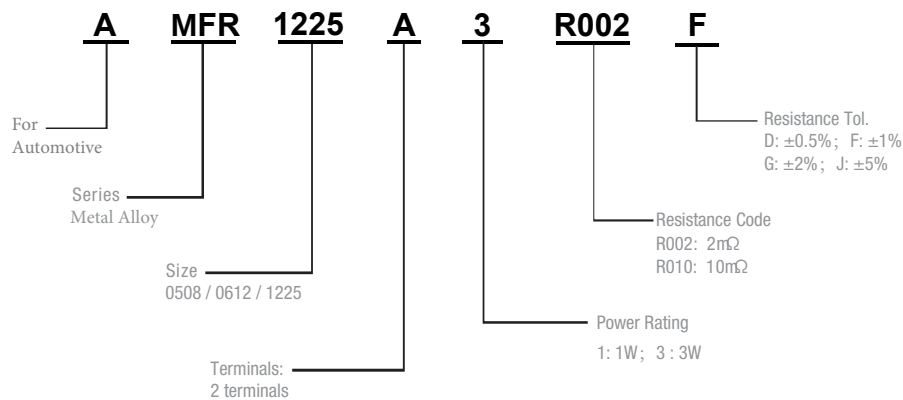
- Consumer electronics
- Computer & relative products
- Communication devices
- Measuring instrument
- Industrial / Power supply
- Battery management system



Features

- Low Resistance / TCR / Inductance($\leq 5\text{NH}$)
- Excellent long-term stability
- High precision current sensing
- High power capability
- Halogen free and lead free
- RoHS compliant
- AEC-Q200 compliant

Part Numbering System

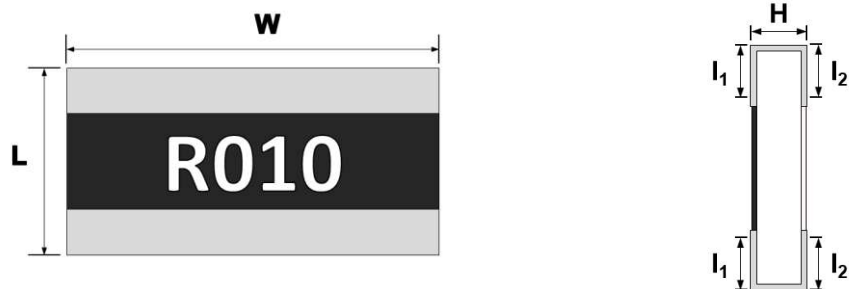


Type	Rating Power at 70°C	T.C.R. (ppm/°C)	Resistance Range(mΩ)		Material	Operating Temperature(°C)
			D: 0.5%	F: 1.0%, G: 2.0% J: 5.0%		
0508	1W	±100	100mΩ ≤ R ≤ 2Ω	10mΩ ≤ R ≤ 2Ω	Metal Alloy	-55~+155°C
0612						
1225	3W	±100				

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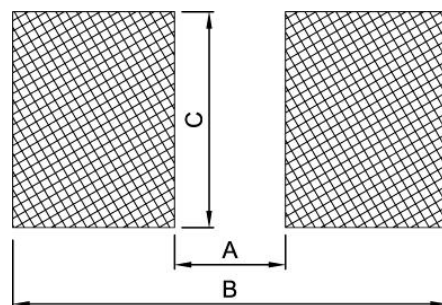
Construction



Unit: mm

Type	L	W	H	l_1	l_2
0508	1.25 ± 0.10	2.00 ± 0.10	0.55 ± 0.15	0.25 ± 0.15	0.35 ± 0.15
0612	1.60 ± 0.15	3.20 ± 0.20	0.55 ± 0.15	0.30 ± 0.20	0.50 ± 0.20
1225	3.20 ± 0.20	6.30 ± 0.20	0.55 ± 0.15	0.60 ± 0.25	0.80 ± 0.25

Recommended land pattern



Unit: mm

Type	A	B	C
0508	0.4	1.8	2.0
0612	0.5	2.6	3.2
1225	1.2	5.2	7.0

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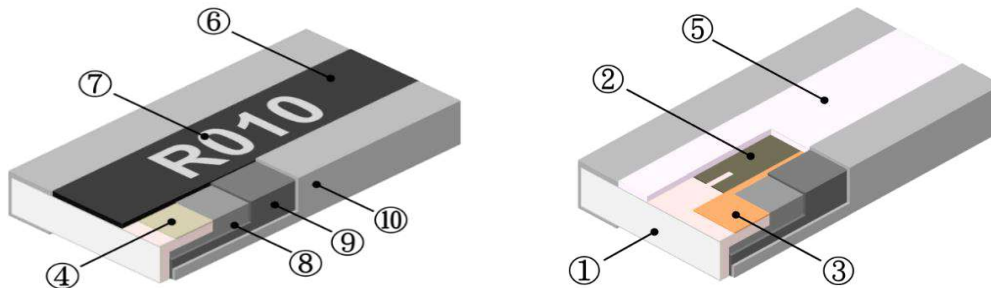
Product Characteristics

Item	Test condition/ Methods	Limited
Temperature coefficient of resistance	$TCR = (R - R_0) / R_0 (T_2 - T_1) \times 10^6$ R_0 : resistance of room temperature R : resistance of 125 °C T_1 : Room temperature T_2 : Temperature at 125 °C	Refer to Spec
Short time Overload	Standard power: 6.25 times rated power whichever is less for 5 seconds. High power (2X/4X) and wide terminal type: 5 times rated power whichever is less for 5 seconds.	$\pm(1.0\% + 0.001\Omega)$
Resistance to Soldering Heat	260 $\pm$ 5 °C for 10 seconds.	$\pm(1.0\% + 0.001\Omega)$ No Visual damage
Temperature Cycling	-55 °C to +155 °C, 300 cycles	$\pm(1.0\% + 0.001\Omega)$ No Visual damage
High Temperature Exposure	At 155 $\pm$ 5 °C for 1000 hours.	$\pm(1.0\% + 0.001\Omega)$
Bias Humidity	1,000 hours; 85 °C / 85% RH, 10% of operating power. Measurement at 24 $\pm$ 4 hours after test conclusion.	$\pm(0.5\% + 0.05\Omega)$
Leaching	260 $\pm$ 5 °C for 30 seconds.	>95% Coverage No Visual damage
Insulation Resistance	Apply 100VDC for 1 minute.	$\geq 10G\Omega$
Damp Heat with Load	40 $\pm$ 2 °C, 90~95% R.H. RCWV or Max. working current whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"	$\pm(1.0\% + 0.001\Omega)$
Solderability	245 $\pm$ 5 °C for 3 seconds.	>95% Coverage No Visual damage
Load Life (Endurance)	70 $\pm$ 2 °C, Rated power, or Max. working current whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	$\pm(0.5\% + 0.05\Omega)$
Resistance to Solvent	The tested resistor be immersed into isopropyl alcohol of 20~25 °C for 60 secs. Then the resistor is left in the room for 48 hrs.	$\pm(1.0\% + 0.001\Omega)$ No Visual damage
Bending Strength	Bending once for 5 seconds D: 0508/0612 = 3mm 1225 = 2mm	$\pm(1.0\% + 0.001\Omega)$ No Visual damage

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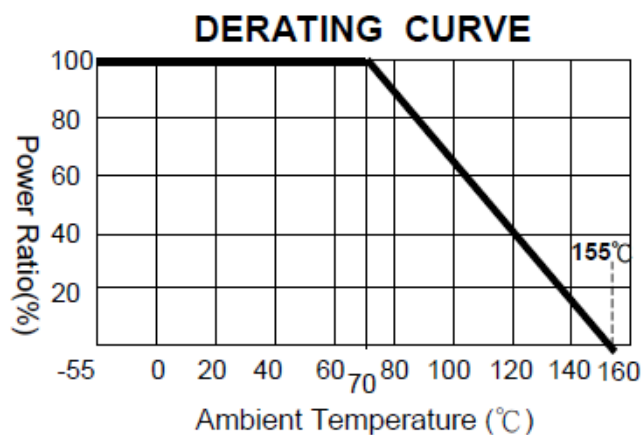


1	Alumina Substrate
2	Resistive Layer
3	Bottom Inner Electrode (Cu)
4	Top Inner Electrode
5	Bottom Protective Overcoat (White)
6	Top Protective Overcoat
7	Marking
8	Side Inner Electrode
9	Barrier Layer (Ni)
10	Solder coating (Sn)

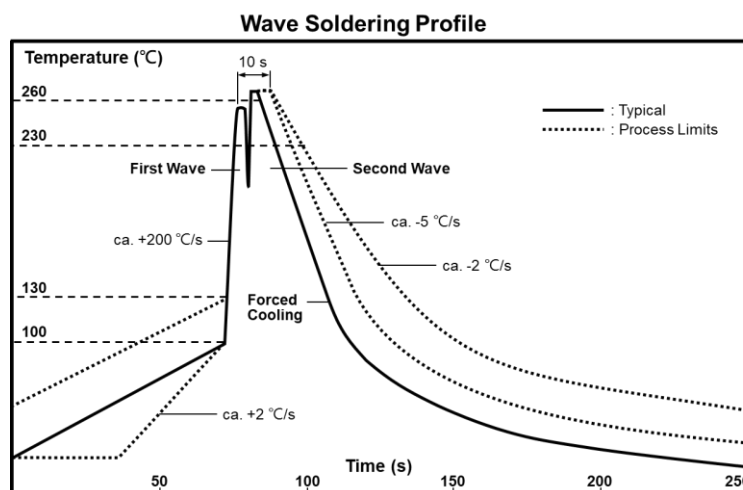
Power Derating Curve

The Operating Temperature Range: $-55^{\circ}\text{C} \sim +155^{\circ}\text{C}$.

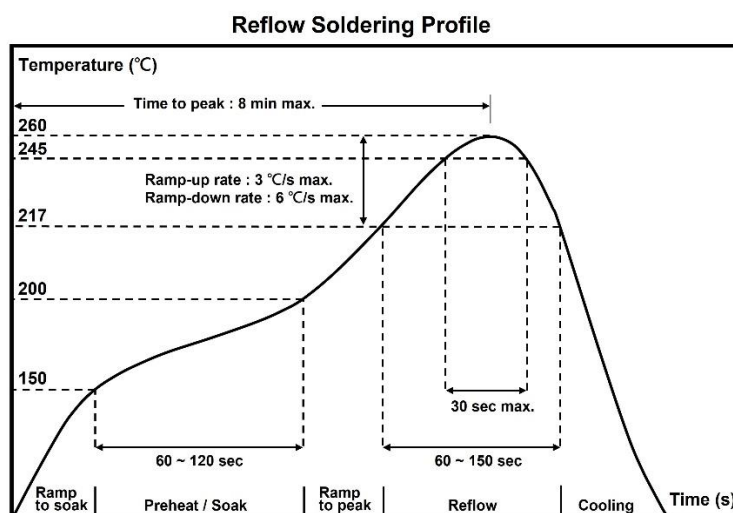
Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70°C . For operation at ambient temperature in excess of 70°C , the load should be derated in accordance with figure of derating Curve.



Wave solder Temperature condition



Solder reflow Temperature condition



- **Rework temperature (hot air equipment) : 350°C, 3~5seconds**
- **Recommended reflow methods**

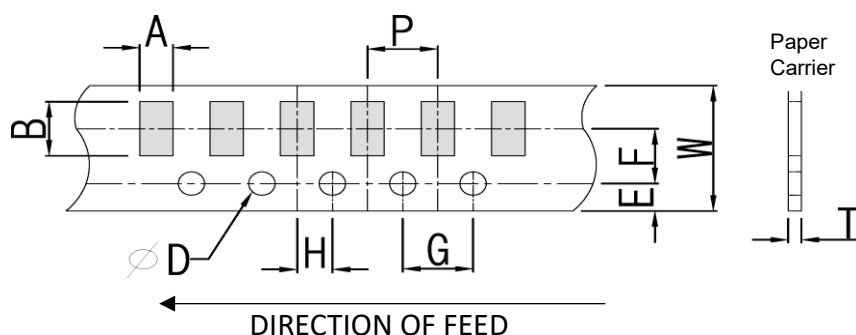
IR, vapor phase oven, hot air oven

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

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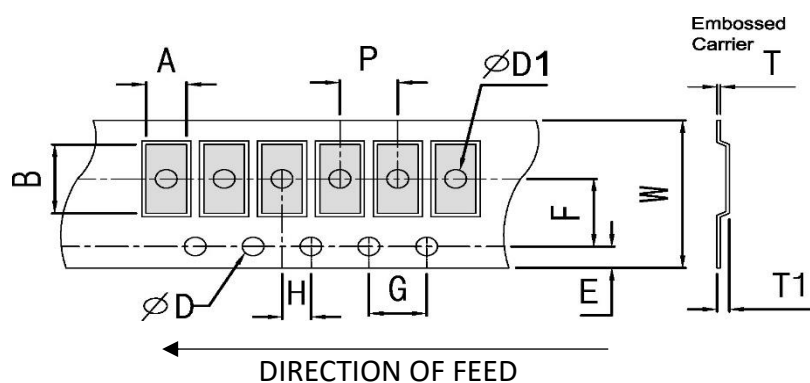
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Tapping & Package



Unit: mm

Type	A ±0.2	B ±0.2	W +0.2	E ±0.1	F ±0.05	G ±0.1	H ±0.05	T ±0.1	D	P ±0.1
0508	1.55	2.3	8.0	1.75	3.5	4.0	2.0	0.75	1.50 ^{+0.1} ₋₀	4.0
0612	1.9	3.05								



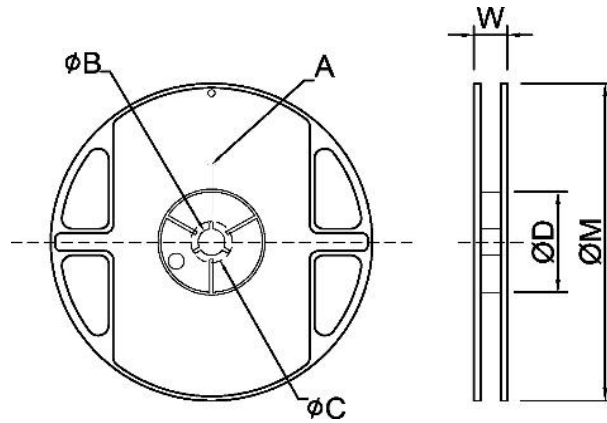
Unit: mm

Type	A ±0.2	B ±0.2	W +0.1	E ±0.1	F ±0.05	G ±0.1	H ±0.05	T ±0.1	D	D1 ±0.1	T1 ±0.15	P ±0.1
1225	3.4	6.7	12.0	1.75	5.5	4.0	2.0	0.23	1.50 ^{+0.1} ₋₀	1.5	0.85	4.0

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Reel Specification



Unit: mm

Type	Quantity (pcs)	A	B	C	D	W	M
0508	5, 000	2.0±0.5	13.5±1	21±1	60±1	11.5±2	178±2
0612	5, 000					16.0±2	
1225	4, 000					16.0±2	

- Storage Data :**

Storage time at the environment temp: 25±5°C& humidity: 60±20% is valid for one year from the date of delivery.