


Product Family: 2-Terminal, Current Sensing Power Resistor

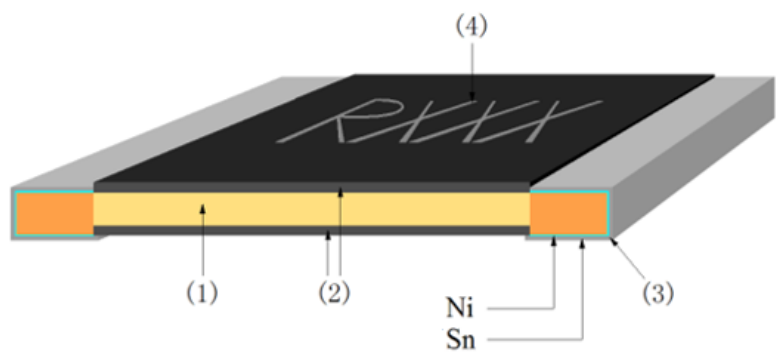
Part Number Series: MPA Series


	Construction: <ul style="list-style-type: none"> • Metal plate construction • Epoxy-resin overcoat • 100% matte tin over Ni terminations • Halogen free • RoHS compliant and Pb free • Inherently anti-sulfur 	Features: <ul style="list-style-type: none"> • 1206 & 2512 English case sizes • Power up to 3W • Resistance from 0.5mΩ~56mΩ • TCR down to ±50ppm/°C • Tolerance down to ±0.5% • Moisture Sensitivity Level (MSL) = 1
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Description:

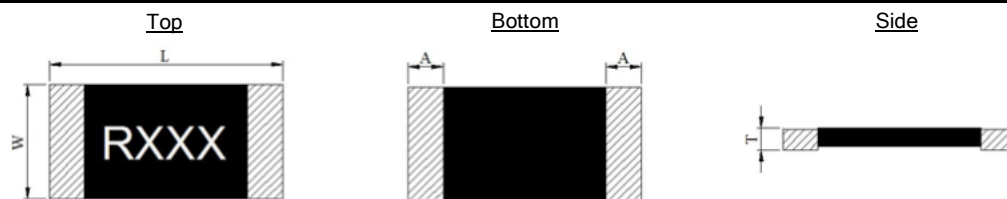
These low resistance, metal strip, current sensing chip resistors exhibit excellent performance with high temperature capabilities. They are useful in many current sensing applications. High volume production suitable for commercial and special applications.

Product Construction:

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Number	Description										
1	Resistive Element										
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Part Numbering: MPAB2512RR001FA-T4

Series Name	Power Rating	English Size (Metric Size)	Temp. Coefficient of Resistance (TCR)	Resistance Value	Resistance Tolerance	Internal Code	T&R Packaging Quantity
MPA	A = 1W B = 2W C = 3W	1206 (3216) 2512 (6432)	Q = ±50ppm/°C D = ±75ppm/°C R = ±100ppm/°C G = ±150ppm/°C (Refer to electrical tables)	For all case sizes, use 4 digit code for all values. "R" denotes decimal position as necessary. Ex. R001 = 0.001Ω 0M50 = 0.50mΩ (Refer to electrical tables)	D = ±0.5% F = ±1.0% (Refer to electrical tables)	A = Wrapped Electrodes	-T3 = 3,000 pcs/reel -T4 = 4,000 pcs/reel (Refer to electrical tables)

Product Dimensions:

All dimensions shown are in inches, mm are in parentheses.

Dimension (Metric)	Resistance Range	L	W	T	A
MPAA1206 (3216)	1m Ω	0.130 \pm 0.008 (3.30 \pm 0.20)	0.063 \pm 0.008 (1.60 \pm 0.20)	0.035 \pm 0.008 (0.90 \pm 0.20)	0.028 \pm 0.012 (0.70 \pm 0.30)
	2m Ω ~15m Ω			0.031 \pm 0.008 (0.80 \pm 0.20)	
MPAB2512 (6432)	0.50m Ω , 0.75m Ω	0.252 \pm 0.012 (6.40 \pm 0.30)	0.126 \pm 0.012 (3.20 \pm 0.30)	0.041 \pm 0.008 (1.05 \pm 0.20)	0.075 \pm 0.010 (1.90 \pm 0.25)
	1m Ω , 1.5m Ω			0.035 \pm 0.008 (0.90 \pm 0.20)	
	2m Ω ~56m Ω				0.031 \pm 0.010 (0.80 \pm 0.25)
MPAC2512 (6432)	0.50m Ω , 0.75m Ω	0.252 \pm 0.012 (6.40 \pm 0.30)	0.126 \pm 0.012 (3.20 \pm 0.30)	0.041 \pm 0.008 (1.05 \pm 0.20)	0.075 \pm 0.010 (1.90 \pm 0.25)
	1m Ω ~4m Ω			0.043 \pm 0.008 (1.10 \pm 0.20)	
	5m Ω ~56m Ω			0.035 \pm 0.008 (0.90 \pm 0.20)	0.031 \pm 0.010 (0.80 \pm 0.25)

Electrical Specifications:

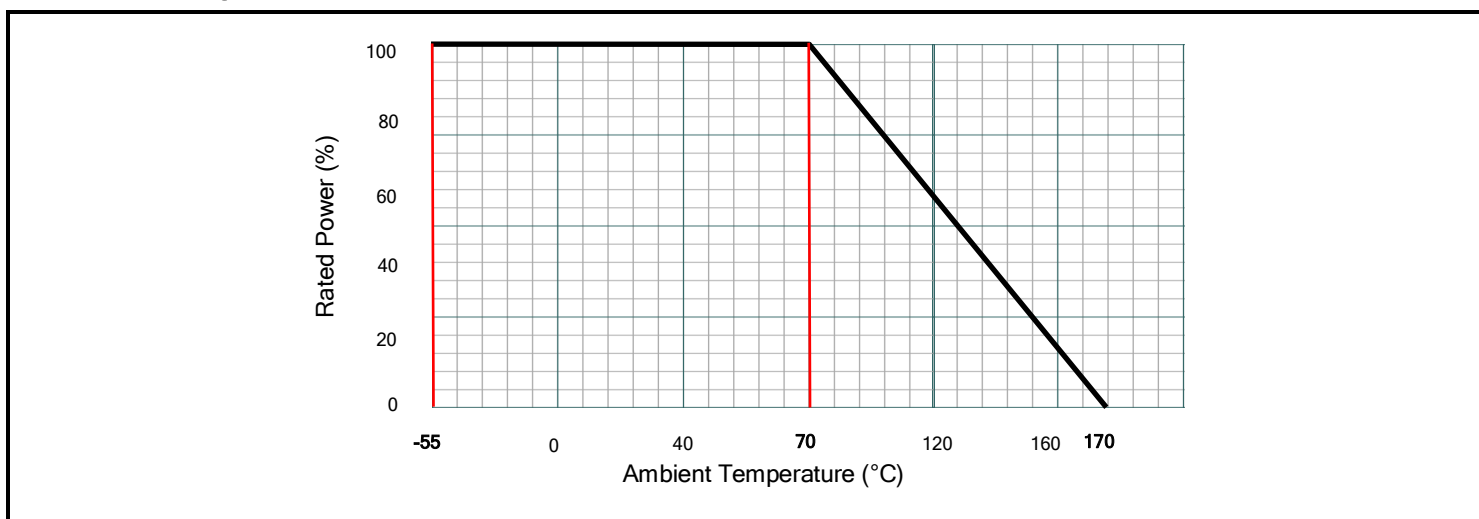
Type	MPAA1206	
Metric Size	3216	
Power Rating	1W	
Resistance Range	1m Ω ~3m Ω	4m Ω ~15m Ω
Resistance Tolerance % (code)	\pm 1%(F)	\pm 0.5%(D)*, \pm 1%(F)
TCR ppm/ $^{\circ}$ C (code)	\pm 150(G)	\pm 75(D)
Rated Voltage	$\sqrt{(\text{Power} \times \text{Resistance})}$	
Operating Temp. Range	-55 $^{\circ}$ C~+170 $^{\circ}$ C	
Packaging (code)	4,000pcs/reel (-T4)	

Note* The option of the \pm 0.5% Resistance Tolerance is only available for 5m Ω .

Type	MPAB2512		
Metric Size	6432		
Power Rating	2W		
Resistance Range	0.50m Ω m, 0.75m Ω	1m Ω , 1.5m Ω	2m Ω ~56m Ω
Resistance Tolerance % (code)	\pm 1%(F)	\pm 0.5%(D), \pm 1%(F)	
TCR ppm/ $^{\circ}$ C (code)	\pm 150(G)	\pm 100(R)	\pm 50(Q)
Rated Voltage	$\sqrt{(\text{Power} \times \text{Resistance})}$		
Operating Temp. Range	-55 $^{\circ}$ C~+170 $^{\circ}$ C		
Packaging (code)	3,000pcs/reel (-T3)	4,000pcs/reel (-T4)	

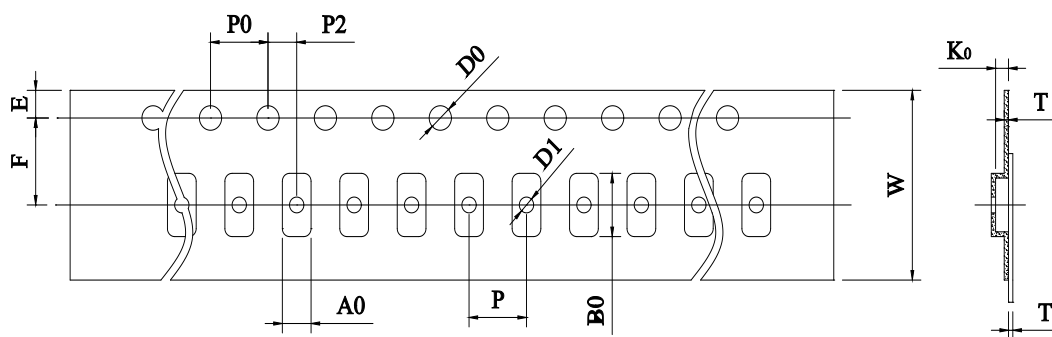
Electrical Specification Cont.:

Type	MPAC2512			
Metric Size	6432			
Power Rating	3W			
Resistance Range	0.50mΩ, 0.75mΩ	1mΩ	2mΩ~4mΩ	5mΩ~56mΩ
Resistance Tolerance %(code)	±1%(F)	±0.5%(D), ±1%(F)		
TCR ppm/°C (code)	±150(G)	±100(R)	±50(Q)	
Rated Voltage	$\sqrt{(\text{Power} \times \text{Resistance})}$			
Operating Temp. Range	-55°C ~ +170°C			
Packaging (code)	3,000pcs/reel (-T3)			4,000pcs/reel (-T4)

Power Derating Curve:**Reliability Specifications:**

Test	Procedure	Specifications
Short Time Over Load IEC60115-1 Clause 4.13	P = 5Pr; T = 25 ±2°C, t = 5sec.	±(1.0%+0.5mΩ)
High Temp. Exposure IEC60115-1 Clause 4.25	T = +170 ±2°C; t = 1000h	±(1.0%+0.5mΩ)
Low Temp. Storage IEC60115-1 Clause 4.25	T = -55 ±2°C; t = 1000h	±(1.0%+0.5mΩ)
Moisture Load Life IEC60115-1 Clause 4.25	V _{test} = V _{max} ; T = 60 ±2°C; RH = 95%; t = 90min ON, 30min OFF, 1000h	±(2.0%+0.5mΩ)
Thermal Shock IEC60115-1 Clause 4.19	[-55°C 30min. → R.T. 3min. → +155°C 30min. → R.T. 3min], 100Cycles	±(1.0%+0.5mΩ)
Load Life IEC60115-1 Clause 4.25	V _{test} = V _{max} ; T = 70 ±2°C; t = 90min ON, 30min OFF, 1000h	±(2.0%+0.5mΩ)
Solderability IEC60115-1 Clause 4.17	Dip into solder at T = 245 ±5°C, t = 3 ±0.5sec.	>95% coverage
Resistance to Solder Heat IEC60115-1 Clause 4.18	Through Reflow 3x T = 260 ±5°C, t = 20 ±1sec.	±(1.0%+0.5mΩ)
Mechanical Shock IEC60115-1 Clause 4.21	a = 100G, t = 6ms	±(1.0%+0.5mΩ)
Substrate Bending IEC60115-1 Clause 4.33	Span between fulcrums = 90mm Bend Width = 2mm Test board = Glass-Epoxy Board Thickness = 1.6mm	±(1.0%+0.5mΩ)

Paper Tape Dimensions:



All dimensions are in mm.

Type	Resistance Ranges	W	P0	P	P2	A0	B0	D0	F	E	T	T1	K0
MPAA1206	1mΩ~15mΩ	8.00 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	2.10 ±0.10	3.70 ±0.10	1.50 ±0.10	3.50 ±0.10	1.75 ±0.10	1.12 ±0.10	-	-
MPAB2512	0.5mΩ, 0.75mΩ	12.00 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	3.40 ±0.20	6.75 ±0.20	1.55 ±0.10	5.50 ±0.10	1.75 ±0.10	0.20 ±0.10	Max. 0.10	1.30 +0.2-0.1
	1mΩ, 1.5mΩ, 2~4mΩ	12.00 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	3.40 ±0.20	6.75 ±0.20	1.55 ±0.10	5.50 ±0.10	1.75 ±0.10	0.20 ±0.10	Max. 0.10	1.00 ±0.20
MPAC2512	0.5mΩ, 0.75mΩ	12.00 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	3.40 ±0.20	6.75 ±0.20	1.55 ±0.10	5.50 ±0.10	1.75 ±0.10	0.20 ±0.10	Max. 0.10	1.30 +0.2-0.1
	1mΩ~4mΩ	12.00 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	3.40 ±0.20	6.75 ±0.20	1.55 ±0.10	5.50 ±0.10	1.75 ±0.10	0.20 ±0.10	Max. 0.10	1.30 ±0.20
	5mΩ~56mΩ	12.00 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	3.40 ±0.20	6.75 ±0.20	1.55 ±0.10	5.50 ±0.10	1.75 ±0.10	0.20 ±0.10	Max. 0.10	1.00 ±0.20

Reel Dimensions:

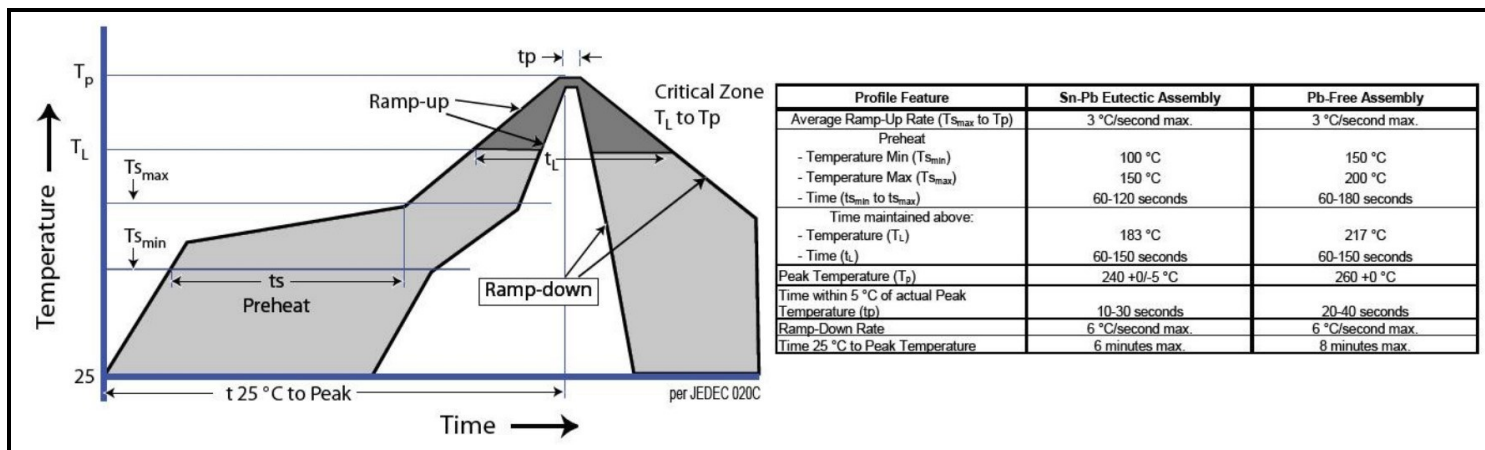
Type	A	N	W1
MPAA1206	178 ±5.00	60.0 ±2.00	9.00 ±1.00
MPAB2512			13.0 ±1.00
MPAC2512			

All dimensions are in mm.

Recommended Land Pattern:

Type	Resistance Range	P	W	D
MPAA1206	1mΩ~15mΩ	1.20	1.84	1.80
MPAB2512	0.50mΩ, 0.75mΩ, 1mΩ, 1.5mΩ	1.50	3.57	2.95
	2mΩ~56mΩ	3.18		2.11
MPAC2512	0.50mΩ, 0.75mΩ	1.50		2.95
	1mΩ~56mΩ	3.18	2.11	

All dimensions are in mm.

Recommended Soldering Profile:**Storage Conditions:****Environmental Conditions:**

Products should be stored under the following environmental conditions:

- Temperature: +5 to +35°C
- Humidity: 45 to 85% relative humidity
- Do not keep products in environments where they may be subject to particulate contamination or harmful gases such as sulfuric acid or hydrogen chloride as it may cause oxidization on electrodes, resulting in poor solderability.
- Products should be stored in a space that does not expose it to high temperatures, vibration, or direct sunlight.
- Products should be stored in the original airtight packaging until use.