




Thin Film Technology Corp.

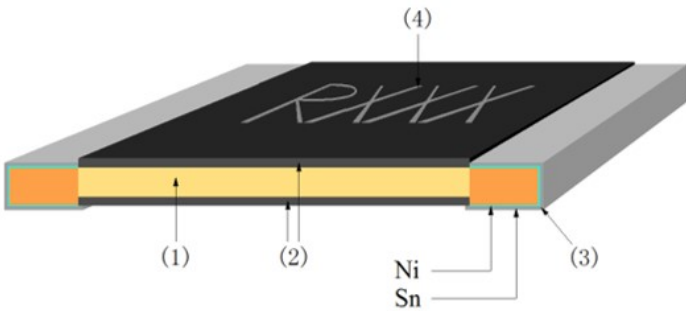
**Product Family:** 2-Terminal, Current Sensing Power Resistor**Part Number Series:** D1MPA\*2512 Series

	<p><b>Construction:</b></p> <ul style="list-style-type: none"> <li>• Metal strip construction</li> <li>• Molded epoxy cover</li> <li>• 100% matte tin over Ni terminations</li> <li>• RoHS compliant and Pb Free</li> <li>• Inherently anti-sulfur</li> </ul>	<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• 2512 English case size</li> <li>• Resistance from 0.5mΩ~56mΩ</li> <li>• Power rating up to 3W</li> <li>• Tolerance down to ±0.5%</li> <li>• TCR down to ±50ppm/°C</li> <li>• Low profile of 0.20in max.</li> </ul>
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**Description:**

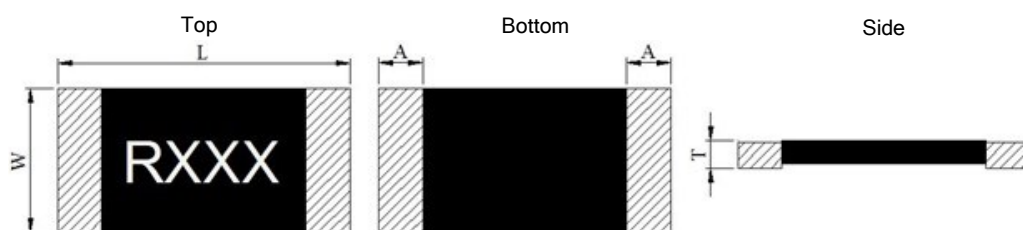
These low resistance, metal strip, current sensing chip resistors exhibit excellent performance with a very low height profile. They are useful in many current sensing applications. High volume production suitable for commercial and special applications.

**Product Construction:**

	<table border="1"> <thead> <tr> <th>Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Complex alloy (MnCu, Cu)</td> </tr> <tr> <td>2</td> <td>Protective coating (UL-94-V0, flame retardant epoxy)</td> </tr> <tr> <td>3</td> <td>Plating layer (Ni, Sn)</td> </tr> <tr> <td>4</td> <td>Marking</td> </tr> </tbody> </table>	Number	Description	1	Complex alloy (MnCu, Cu)	2	Protective coating (UL-94-V0, flame retardant epoxy)	3	Plating layer (Ni, Sn)	4	Marking	<table border="1"> <thead> <tr> <th>Number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Complex alloy (MnCu, Cu)</td> </tr> <tr> <td>2</td> <td>Protective coating (UL-94-V0, flame retardant epoxy)</td> </tr> <tr> <td>3</td> <td>Plating layer (Ni, Sn)</td> </tr> <tr> <td>4</td> <td>Marking</td> </tr> </tbody> </table>	Number	Description	1	Complex alloy (MnCu, Cu)	2	Protective coating (UL-94-V0, flame retardant epoxy)	3	Plating layer (Ni, Sn)	4	Marking
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**Part Numbering:** Ex: D1MPAB2512RR001FA-T4

Series Name	Power Rating	English Size (Metric Size)	Temp. Coefficient of Resistance (TCR)	Resistance Value	Resistance Tolerance	Internal Code	T&R Packaging Quantity
D1MPA	B = 2W C = 3W	2512 (6432)	Q = ±50ppm/°C R = ±100ppm/°C G = ±150ppm/°C (refer to tables)	For all sizes, use 4 digit code for all values. "R" denotes decimal position as necessary. Ex. R001 = 0.001Ω 0M50 = 0.50mΩ (4 digits)	D = ±0.5% F = ±1.0% (refer to tables)	A = Wrapped Electrodes	-T3 = 3,000 -T4 = 4,000 (refer to tables)

**Product Dimensions:**

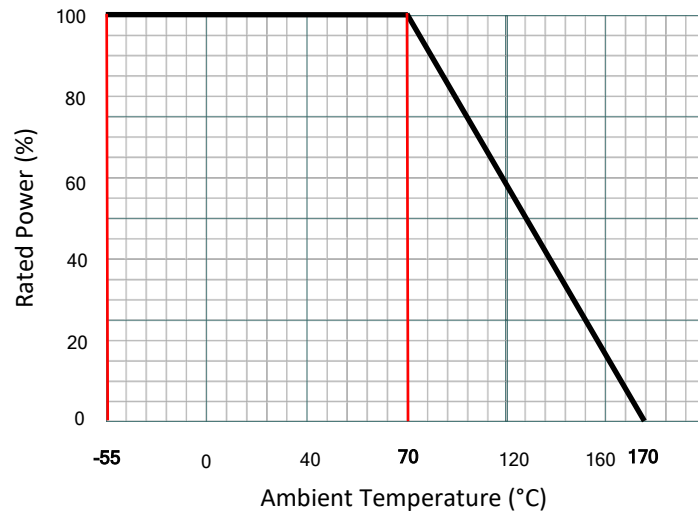
All dimensions shown in inches, mm in parentheses.

Dimension (Metric)	Resistance Range	W	L	T	A		
D1MPAB2512 (6432)	0.50mΩ, 0.75mΩ	0.126 ±0.012 (3.20 ±0.30)	0.252 ±0.012 (6.40 ±0.30)	0.041 ±0.008 (1.05 ±0.20)	0.075 ±0.010 (1.90 ±0.25)		
	1mΩ, 1.5mΩ			0.035 ±0.008 (0.90 ±0.20)	0.031 ±0.010 (0.80 ±0.25)		
	2mΩ~56mΩ						
D1MPAC2512 (6432)	0.50mΩ, 0.75mΩ			0.041 ±0.008 (1.05 ±0.20)	0.075 ±0.010 (1.90 ±0.25)		
	1mΩ~4mΩ					0.043 ±0.008 (1.10 ±0.20)	0.031 ±0.010 (0.80 ±0.25)
	5mΩ~56mΩ					0.035 ±0.008 (0.90 ±0.20)	

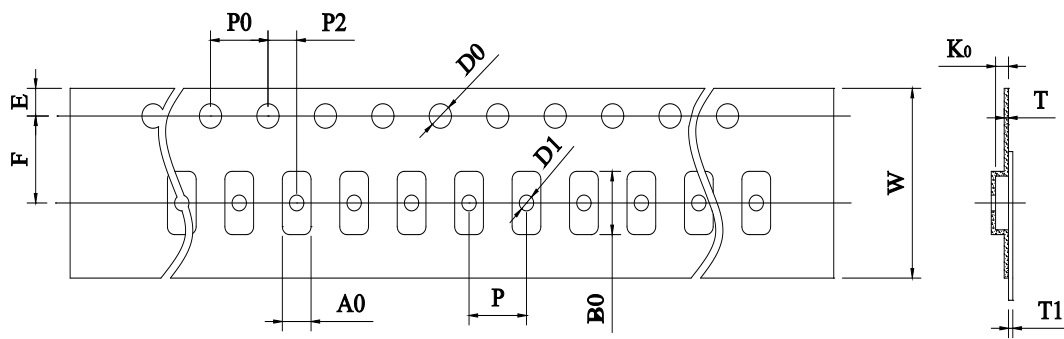
**Electrical Specifications:**

Type	D1MPAB2512		
Metric Size	6432		
Power Rating	2W		
Resistance Range	0.50mΩ, 0.75mΩ	1mΩ, 1.5mΩ	2mΩ~56mΩ
Resistance Tolerance (code)	±1.0% (F)	±0.5% (D), ±1.0% (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)	3,000 pcs/reel (-T3)	4,000 pcs/reel (-T4)	

Type	D1MPAC2512			
Metric Size	6432			
Power Rating	3W			
Resistance Range	0.50mΩ, 0.75mΩ	1mΩ	2mΩ~4mΩ	5mΩ~56mΩ
Resistance Tolerance (code)	±1.0% (F)	±0.5% (D), ±1.0% (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)	3,000 pcs/reel (-T3)			4,000 pcs/reel (-T4)

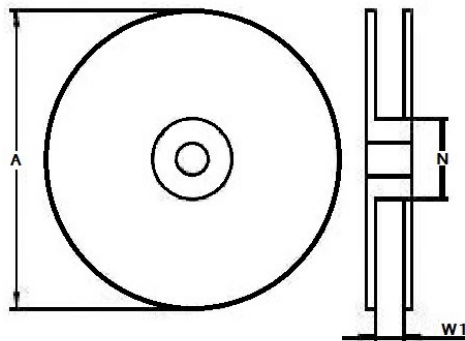
**Power Derating Curve:****Reliability Specifications:**

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

**Plastic Tape Dimensions:**

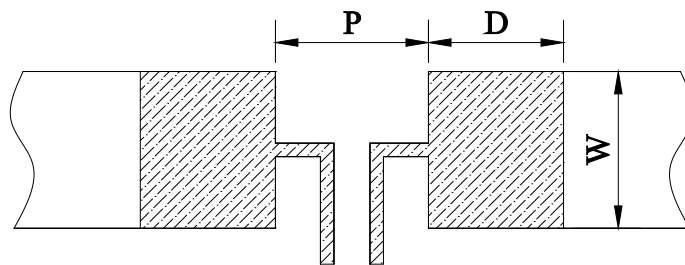
All dimensions in mm.

Size	Resistance Range	W	P0	P	P2	A0	B0	D0	F	E	T	T1	K0
D1MPAB2512	0.5mΩ, 0.75mΩ	12.0 ±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 +0.20-0.10
	1mΩ, 1.5mΩ, 2~4mΩ												1.00 ±0.20
D1MPAC2512	0.5mΩ, 0.75mΩ	12.0 ±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 +0.20-0.10
	1mΩ~4mΩ												1.30 ±0.20
	5mΩ~56mΩ												1.00 ±0.20

**Reel Dimensions:**

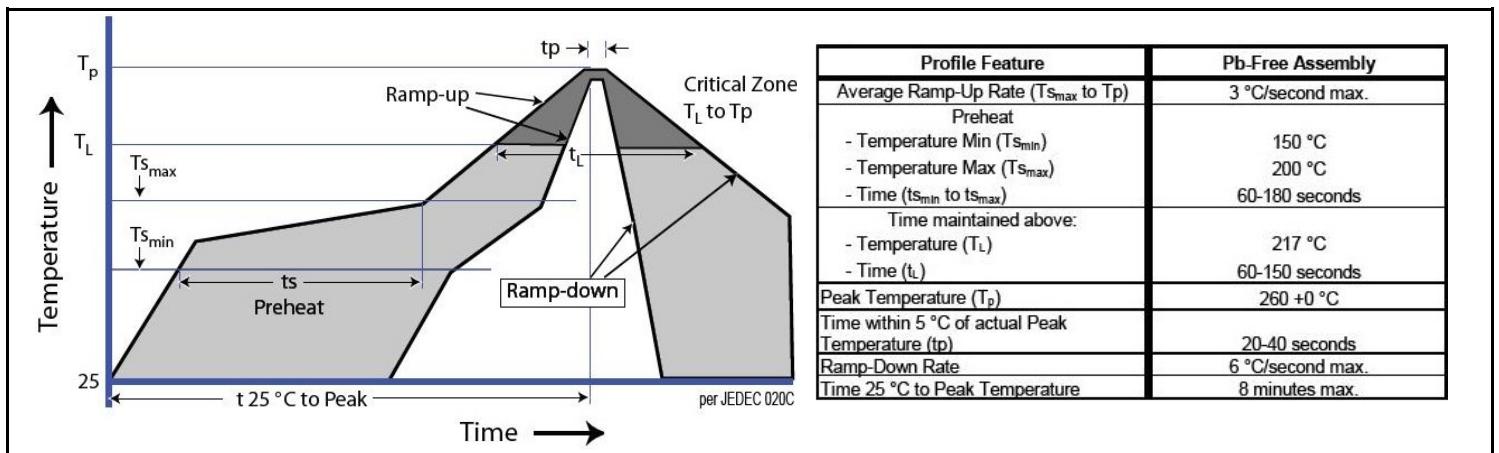
All dimensions in mm.

Size	Quantity	A	N	W1
D1MPAB2512 (0M50, 0M75)	3,000 pcs/reel	178 ±5.00	60.0 ±2.00	13.0 ±1.00
D1MPAB2512 (1M50, R001~R056)	4,000 pcs/reel			
D1MPAC2512 (0M50, 0M75, R001~R004)	3,000 pcs/reel			
D1MPAC2512 (1M50, R001, R005~R056)	4,000 pcs/reel			

**Recommended Land Pattern:**

All dimensions are in mm.

Dimension (Metric)	Resistance Range	P	W	D
D1MPAB2512 (6432)	0.50mΩ, 0.75mΩ, 1mΩ, 1.5mΩ	1.50	2.95	3.57
	2mΩ~56mΩ	3.18	2.11	
D1MPAC2512 (6432)	0.50mΩ, 0.75mΩ	1.50	2.95	
	1mΩ~56mΩ	3.18	2.11	

**Soldering Profile:****Marking Information:**

2512: 4 digit code

**Examples of 4 Digit Resistance Codes for 0805 ~ 2512**

R-Value	0.50mΩ	0.75mΩ	1mΩ	1.5mΩ	5Ω	10Ω	20Ω	56Ω
Code	0M50	0M75	R001	1M50	R005	R010	R020	R056

**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.