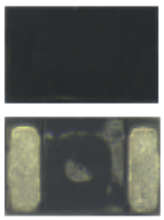
Thin Film Technology Corp.

Product Family: Current Sensing Power Resistor

Part Number Series: MPC 0402 (Short Side Electrode- Black, 2-Terminal)



Construction:

- Metal Strip Construction
- Epoxy-resin overcoat
- Non-Wrapped Terminations
- Pre-tinned (Sn100, matte) terminations over Ni barrier is standard (RoHS compliant and Pb Free)

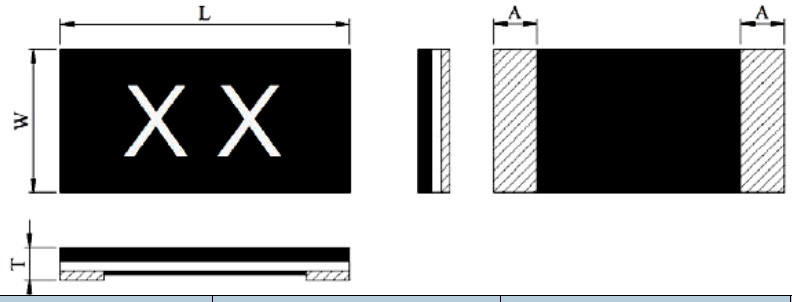
Features:

- Resistances of 5mΩ to 10mΩ
- Power rating of 0.3 watts
- TCR = ±100 ppm/°C
- High volume production suitable for commercial and special applications

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.

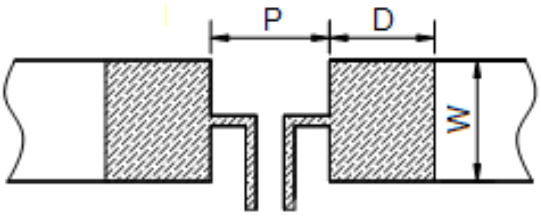
Product Dimensions:



Dimensions Inch (mm)	L	W	T	A
0402 (1005)	0.039±0.004 (1.00±0.10)	0.019±0.004 (0.50±0.10)	0.016±0.004 (0.40±0.10)	0.008±0.004 (0.20±0.10)

All dimensions are shown in inches. Metric case sizes are shown in parenthesis.

Land Pattern:



Dimensions mm	P	W	D	t (min)
1005	0.35	0.575	0.575	105µm

Part Numbering: MPC0402RR010FF-T10

Product Designator	English Size (Metric Size)	Temp. Coefficient of Resistance (TCR)	Resistance Value	Tolerance	Serial Code	T&R Qty
MPC	**0402** (1005)	**R** = ±100ppm/°C	4 digits with the first 3 being significant. The last digit specifies the number of zeros. "R" denotes decimal position as necessary Ex. **R005** = 0.005Ω (4 digits)	**F** = ±1.0%	**F=**Face Down	**T10** = 10,000

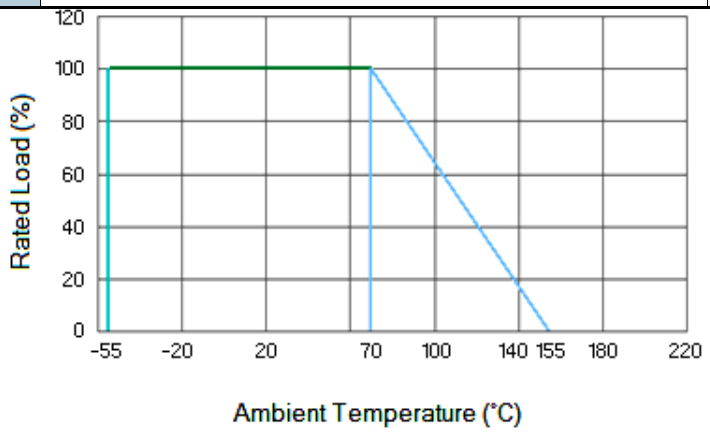
Electrical Specifications:

Type	MPC0402
English Size	0402
Metric Size	1005
Power	0.3 Watt
Rated Voltage	√Power x Resistance
Resistance Tolerance	±1.0 (F)
Standard Resistance Values	5~10mΩ
TCR ppm/°C (code)	±100 (R)
Operating Temperature	-55°C ~ +155°C
Packaging (code)	10,000 pcs/reel (-T10)

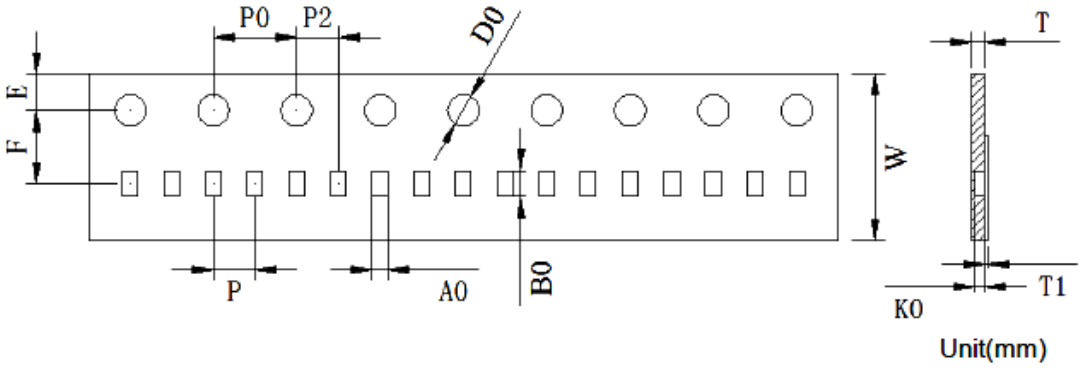
Reliability Specifications:

Parameter	Conditions	Requirements
Short Time Over Load IEC60115-1 4.13	P= 2.5Pr; T=25±2°C, t= 5sec.	±(1.0%+0.5mΩ)
High Temp. Exposure IEC60115-1 4.25	T = +170±2°C ; t = 1000h	±(1.0%+0.5mΩ)
Low Temp. Storage IEC60115-1 4.25	T = -55±2°C ; t = 1000h	±(1.0%+0.5mΩ)
Moisture Load Life IEC60115-1 4.25	Vtest = Vmax ; T=60±2°C ; RH=95% ; t= 90min ON , 30min OFF , 1000h	±(2.0%+0.5mΩ)
Thermal Shock IEC60115-1 4.19	[-55°C 30min. → R.T. 3min. → +150°C 30min. → R.T. 3min], 100 Cycles	±(1.0%+0.5mΩ)
Load Life at 70°C IEC60115-1 4.25	Vtest = Vmax ; T=70±2°C ;t= 90min ON , 30min OFF,1000h	±(2%+0.5mΩ)
Solderability IEC60115-1 4.17	Dip into solder at T = 245±5°C , t = 3±0.5sec.	>95% coverage with new solder
Resistance to Solder Heat IEC60115-1 4.18	Through Reflow T= 275±5°C , t =20±1sec.	±(1.0%+0.5mΩ)
Mechanical Shock IEC60115-1 4.21	a=100G , t =11ms, 5 times shock	±(1.0%+0.5mΩ)
Substrate Bending IEC60115-1 4.33	Span between fulcrums = 90mm Bend Width = 2mm Test board = Glass-Epoxy Board Thickness =1.6mm	±(1.0%+0.5mΩ)

Derating Curve:



Taping Diagrams:



Symbol	MPC0603
W	8.00±0.30
A0	0.75±0.20
E	1.75±0.10
P0	4.00±0.10
B0	1.25±0.20
T	0.60±0.05
P	2.00±0.10
D0	1.50±0.10
T1	Max. 0.1
P2	2.00±0.10
F	3.50±0.10
K0	0.50±0.05

Recommended Soldering Profile:

SOLDERING PROFILE

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts_{max} to Tp)	3 °C/second max.
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (ts_{min} to ts_{max})	 150 °C 200 °C 60-180 seconds
Time maintained above: - Temperature (T_L) - Time (t_L)	 217 °C 60-150 seconds
Peak Temperature (T_p)	260 +0 °C
Time within 5 °C of actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	6 °C/second max.
Time 25 °C to Peak Temperature	8 minutes max.