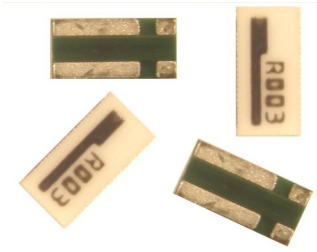
Thin Film Technology Corp.

Product Family: 4 Terminal Current Sensing Power Resistor

Part Number Series: CPA1225-*W Series (Face Down - White Top)

RoHS COMPLIANT 2011/65/EU

HF HALOGEN-FREE



Construction:

- High purity alumina substrate
- MnCu alloy resistive element
- Epoxy-resin overcoat
- Non=wrapped terminations
- 100% matte tin over Ni terminations
- Halogen free
- RoHS compliant and Pb Free
- Inherently Anti-Sulfur

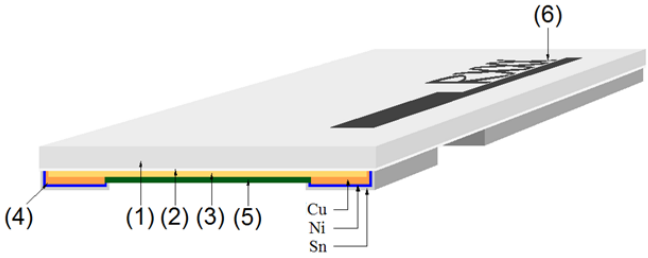
Features:

- 1225 English case size
- Power of 2W
- Resistance from 0.5mΩ~25mΩ
- TCR down to ±50ppm/°C
- Tolerance down to ±0.5%
- Moisture Sensitivity Level (MSL) = 1
- High volume production suitable for commercial and special applications

Description:

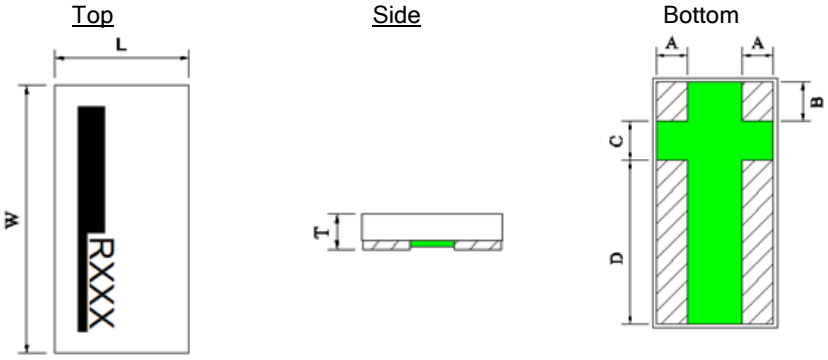
These metal foil, low resistance, high power chip resistors exhibit excellent performance in resistance, noise performance, surface heat distribution and have a lower surface temperature. They are designed and produced with a face (pattern) down construction. They are useful in many current sensing applications.

Product Construction:



Number	Description
1	Substrate (Alumina Ceramic)
2	Adhesive (Epoxy Resin)
3	Resistive Element (MnCu Alloy)
4	Terminal Electrodes (Sn, Ni, Cu)
5	Protective Coating (Epoxy Resin)
6	Marking Coating

Product Dimensions:



All dimensions shown in inches, mm in parentheses.

Dimension (Metric)	W	L	A	B	C	D	T
CPA1225-*W	0.248 ±0.008 (6.30 ±0.20)	0.122 ±0.008 (3.10 ±0.20)	0.020 ±0.008 (0.50 ±0.20)	0.024 ±0.008 (0.62 ±0.20)	0.020 ±0.008 (0.50 ±0.20)	0.202 ±0.008 (5.12 ±0.20)	0.024 ±0.008 (0.60 ±0.20)

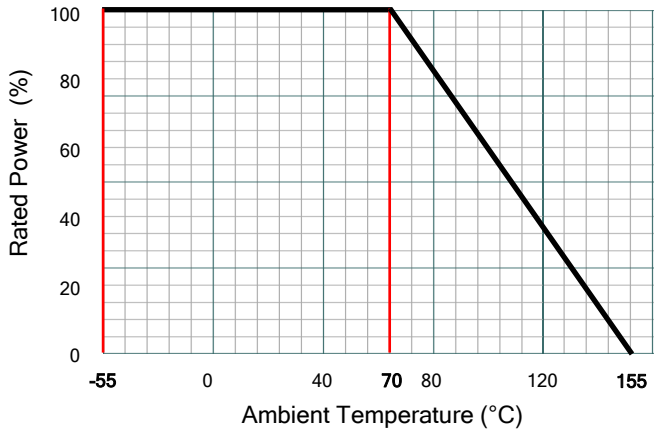
Part Numbering: Ex. CPA1225R0M50FW-T4

Series Name	Ceramic Type	English Size (Metric Size)	Temp. Coefficient of Resistance (TCR)	Resistance Value	Resistance Tolerance	Orientation	T&R Packaging Quantity
CP	**A** = Alumina	**1225** (3264)	**Q** = ±50ppm/°C **R** = ±100ppm/°C	Ex. **R001** = 1mΩ **0M50** = 0.5mΩ (4 digits)	**D** = ±0.5% **F** = ±1.0%	**W** = Face Down construction with white topside	**-T4** = 4,000pcs/ reel

Electrical Specifications:

Type	CPA1225-*W	
Metric Size	3264	
Power Rating	2 W	
Resistance Range (mΩ)	0.5~4	5~25
Resistance Tolerance (code)	±1.0% (F)	±0.5% (D), ±1.0% (F)
TCR (code)	100ppm/°C (R)	50ppm/°C (Q)
Rated Voltage	√Power x Resistance	
Operating Temp Range	-55°C ~ +155°C	
Packaging (code)	4,000 pcs/reel (-T4)	

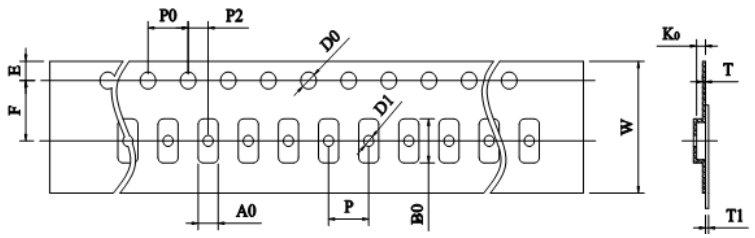
Power Derating Curve



Reliability Specifications:

Test	Procedure	Specifications
Short Time Over Load IEC60115-1 4.13	P= 2.5Pr; T=25 ±2°C, t= 5sec.	±1.0%
High Temp. Exposure MIL-STD-202, Method 108	T = +170 ±2°C ; t = 1000h	±1.0%
Low Temp. Storage IEC60115-1 4.25	T = -55 ±2°C ; t = 1000h	±1.0%
Moisture Resistance JIS C 5201-1 4.24	Vtest = Vmax ; T = 60 ±2°C ; RH = 95% ; t = 90min ON, 30min OFF, 1000h	±2.0%
Thermal Shock JESD22-A-104	-55 ±3°C 30min. → R.T. 1min. → +155 ±3°C 30min. → R.T. 1min., 100 Cycles	±1.0%
Load Life at 70°C IEC60115-1 4.25	Vtest = Vmax ; T=70 ±2°C ; t = 90min ON , 30min OFF,1000h	±2.0%
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 JEDEC J-STD-20	Through Reflow T= 275 ±5°C , t =20 ±1sec.	±1.0%
Mechanical Shock MIL-STD-202, Method 213, Condition A	a = 100G, t = 11ms, 5 times shock	±1.0%
Substrate Bending IEC60115-1 4.33	Span between fulcrums = 90mm Bend width = 2mm Test board = Glass-epoxy board Thickness = 1.6mm Duration = 10 sec.	±1.0%

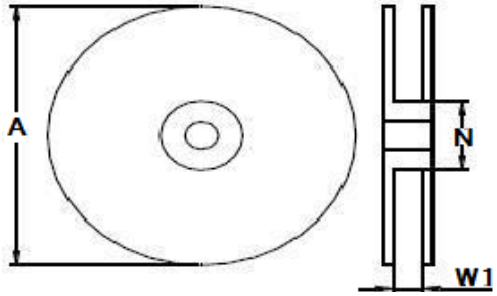
Plastic Tape Dimensions:



All dimensions in mm.

Type	W	P0	P	P2	A0	B0	D0	F	E	T	T1	K0
CPA1225-*W	12.0 ±0.30	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	3.40 ±0.20	6.75 ±0.20	1.50 ±0.10	5.50 ±0.10	1.75 ±0.10	0.25 ±0.10	Max. 0.10	1.00 ±0.20

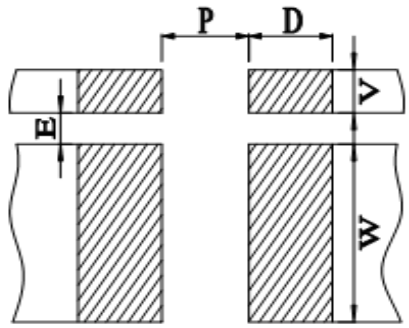
Reel Dimensions:



All dimensions in mm.

Type	A	N	W1
CPA1225-*W	178 ±5.00	60.0 ±2.00	13.0 ±1.00

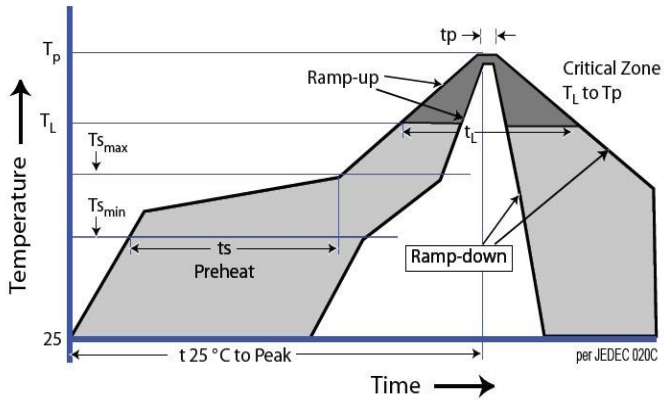
Recommended Land Pattern and Dimensions:



All dimensions in mm.

Type	P	W	D	V	E	Loading
CPA1225-*W	2.00	5.10	1.00	0.70	0.50	2W

Soldering Profile:



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (Ts_{max} to Tp)	3 °C/second max.	3 °C/second max.
Preheat		
- Temperature Min (Ts_{min})	100 °C	150 °C
- Temperature Max (Ts_{max})	150 °C	200 °C
- Time (ts_{min} to ts_{max})	60-120 seconds	60-180 seconds
Time maintained above:		
- Temperature (T_L)	183 °C	217 °C
- Time (t_L)	60-150 seconds	60-150 seconds
Peak Temperature (T_p)	240 +0/-5 °C	260 +0 °C
Time within 5 °C of actual Peak Temperature (tp)	10-30 seconds	20-40 seconds
Ramp-Down Rate	6 °C/second max.	6 °C/second max.
Time 25 °C to Peak Temperature	6 minutes max.	8 minutes max.

Storage Conditions:

Environment 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.