



Thin Film Technology Corp.

Product Family: Current Sensing Power Resistor

Part Number Series: D1CPC0306-FF Series

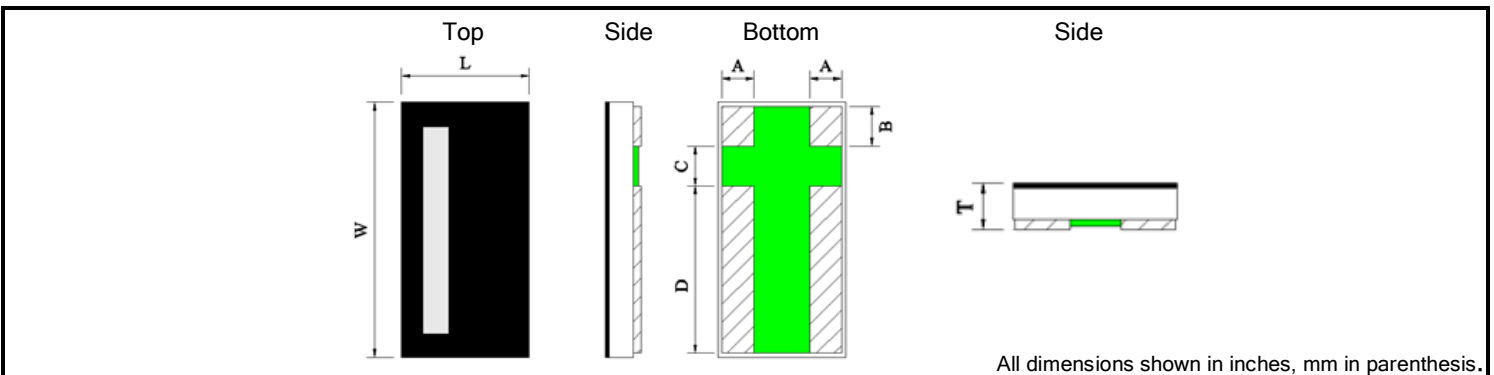


	<p>Construction:</p> <ul style="list-style-type: none"> • High purity alumina substrate • Manganese alloy resistive element • Inherently Anti-Sulfur • 100% matte tin over Ni terminations. Beryllium free • RoHS compliant and Pb free 	<p>Features:</p> <ul style="list-style-type: none"> • Resistances from 1mΩ~50mΩ • TCR down to ±50ppm/°C • Power up to 1/3 Watt • High volume production suitable for commercial and special applications
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Description:

These 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.

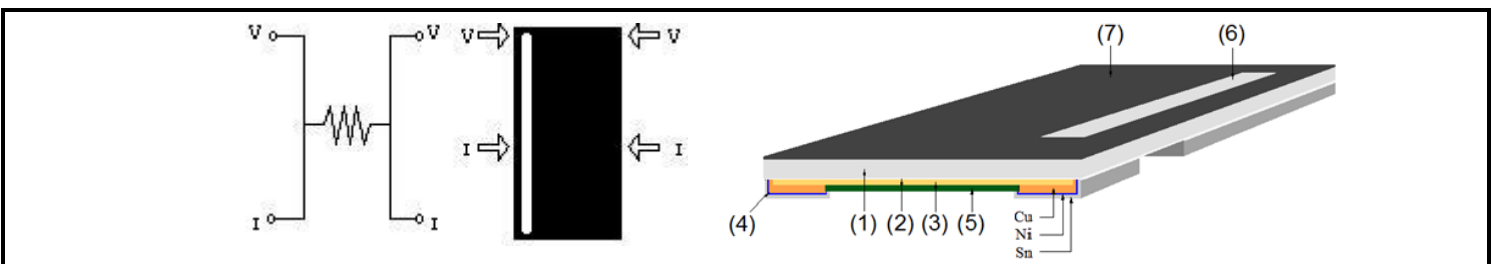
Product Dimensions:



All dimensions shown in inches, mm in parenthesis.

Dimensions (Metric)	L	W	T	A	B	C	D
D1CPC0306 (0816)	0.031 ±0.006 (0.80 ±0.15)	0.063 ±0.008 (1.60 ±0.20)	0.022 ±0.004 (0.55 ±0.10)	0.007 ±0.004 (0.18 ±0.10)	0.009 ±0.004 (0.23 ±0.10)	0.016 ±0.004 (0.40 ±0.10)	0.037 ±0.008 (0.93 ±0.20)

Product Construction:



Number	Description
1	Substrate (alumina ceramic)
2	Adhesion layer (epoxy)
3	Resistive element (Cu alloy)
4	Terminal electrode (Cu, Ni, Sn)
5	Protective coating
6	Marking* (flame retardant epoxy, white)
7	Marking (flame retardant epoxy, black)

*Note: Marking will consist of a black marked top surface with an orientation marker in white or dark gray color.

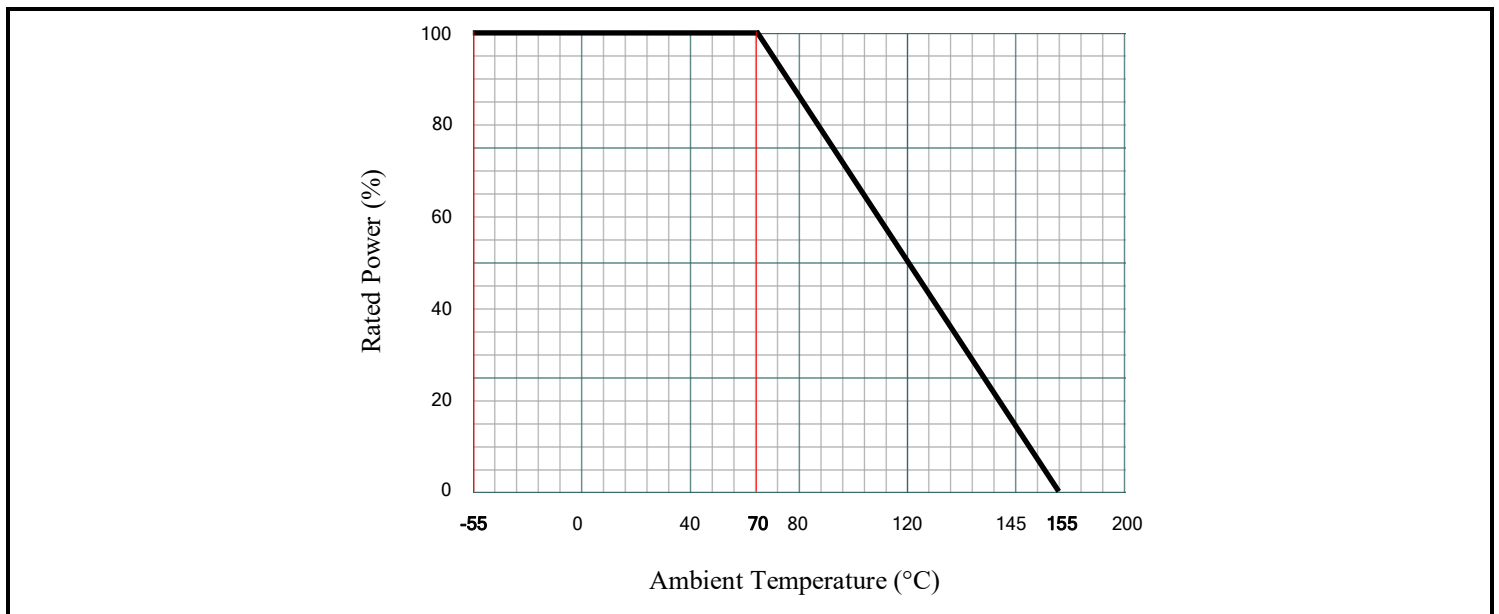
Part Numbering: Ex: D1CPC0306QR010FF-T50

Series Name	English Size (Metric Size)	Temp. Coefficient of Resistance (TCR)	Resistance Value*	Resistance Tolerance	Internal Code	T&R Packaging Quantity
D1CPC	0306 (0816)	Q = $\pm 50\text{ppm}/^\circ\text{C}$ R = $\pm 100\text{ppm}/^\circ\text{C}$ G = $\pm 150\text{ppm}/^\circ\text{C}$ (refer to electrical table for offerings)	Ex. R010 = 0.010Ω	F = $\pm 1.0\%$	F = Face Down	-T50 = 5,000pcs/reel

*Note: For resistance values of one milliohm or greater, use "R" to specify the decimal point (i.e. R005=0.005 Ω). For resistance values less than one milliohm or those with 1/2 milliohm increments, use "M" to specify the decimal point (i.e. 0M50=0.0005 Ω and 7M50 = 7.50m Ω).

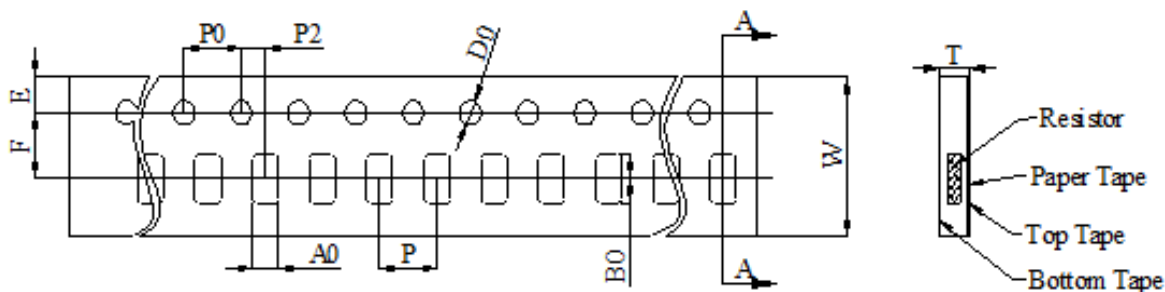
Electrical Specifications:

Type	D1CPC0306	
Metric Size	0816	
Power Rating	1/3W	
Resistance Tolerance (code)	$\pm 1.0\%$ (F)	
Resistance Range	1m Ω ~4m Ω	5m Ω ~50m Ω
TCR ppm/ $^\circ\text{C}$ (code)	100ppm/ $^\circ\text{C}$ (R)	50ppm/ $^\circ\text{C}$ (Q) 100ppm/ $^\circ\text{C}$ (R) 150ppm/ $^\circ\text{C}$ (G)
Operating Temp. Range	-55 $^\circ\text{C}$ ~+155 $^\circ\text{C}$	
Maximum Over Current	$\sqrt{\text{Power} \times \text{Resistance}}$	
Packaging (code)	5,000 pcs/reel (-T50)	

Power Derating Curve:

Reliability Specifications:

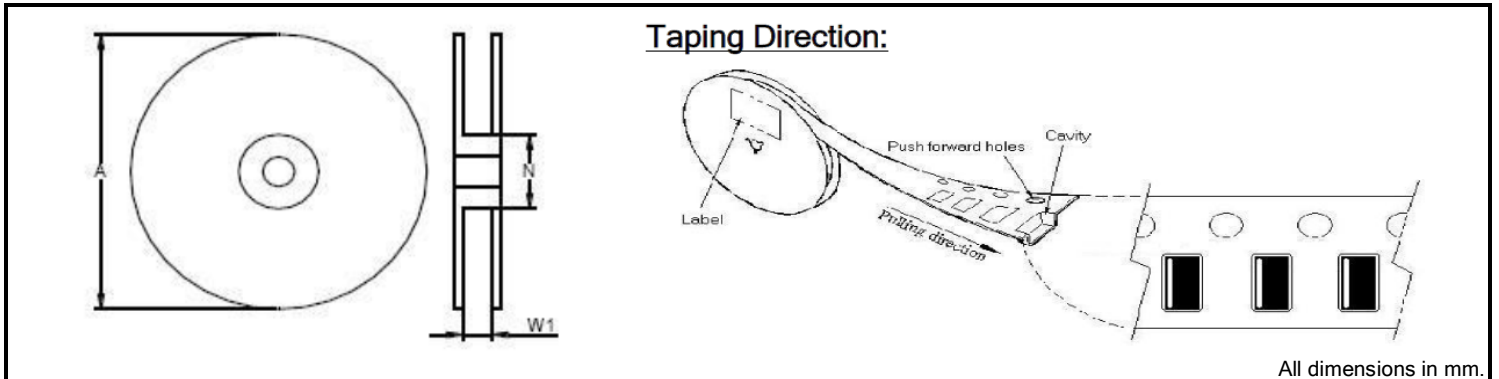
Test	Procedure	Specification
Short Term Overload IEC60115-1 4.13	Applied voltage: 1.5X rated voltage. Test duration: 5 seconds; T= 25 ±2°C	±1.0%
Load Life IEC60115-1 4.25	Test Temperature: 70°C ±2°C Applied voltage: rated voltage Test period: 1000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF,	±1.0%
Thermal Shock JESD22-A-104	Repeat 1,000 cycles as follows: -55 ±3°C(30 min.) / +125 ±3°C(30 min.) Maximum transition time of 1 minute	±1.0%
Resistance To Solder Heat JEDEC-J-STD-020	Once reflow cycle according to JEDEC J-STD-020 followed by dip with T= 260°C, t= 10 sec	Part must meet initial specifications following testing.
High Temperature Exposure IEC60115-1 4.13	Test Temperature: 125°C ±2°C Test period: 1000 hours No electrical load	±2.0%
Moisture Resistance IEC60115-1 4.24	T= 40 ±2°C; RH= 90~95%; 1000h	2.0%
Mechanical Shock MIL-STD-202 Method 213, Condition A	Force: 50G Test Duration: 11 milliseconds	±1.0%
Solderability IEC60115-1 4.13	Dipped into molten solder for 3 ±1 seconds at 245 ±5°C	New solder coverage of 90% minimum
Substrate Bending IEC60115-1 4.33	Span between fulcrums: 90mm Bend width: 2mm Test board: glass-epoxy Board thickness: 1.6mm	±1.0%

Plastic Tape Dimensions:

All dimensions in mm.

Size	Resistance Range	A0	B0	W	F	E	P0	P	P2	D0	T
D1CPC0306	1mΩ~25mΩ	0.98 ±0.03	1.85 ±0.20	8.00 ±0.30	3.50 ±0.10	1.75 ±0.10	4.00 ±0.10	4.00 ±0.10	2.00 ±0.10	1.50 ±0.10	0.75 ±0.20
	50mΩ	1.18 ±0.20	1.98 ±0.20								

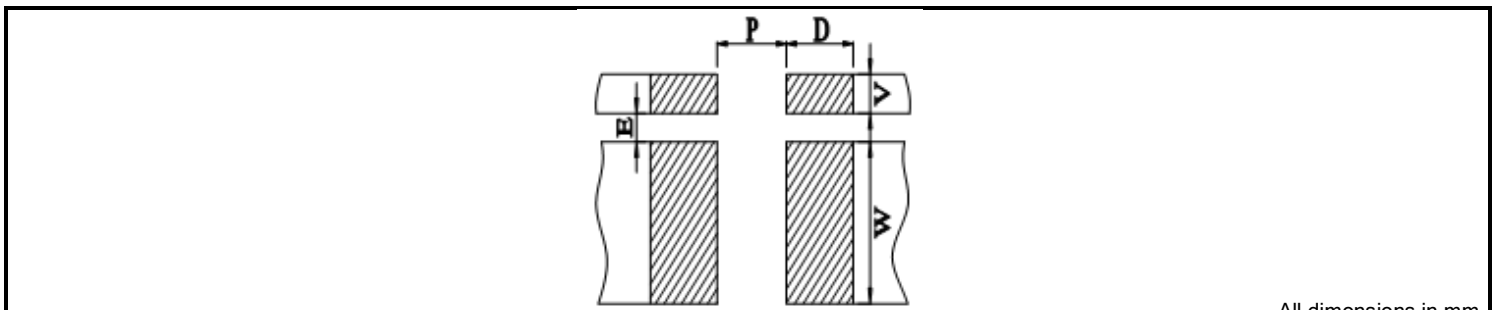
Reel Dimensions:



All dimensions in mm.

Size	Quantity	A	N	W1
D1CPC0306	5,000 pcs/reel	178 ±5.00	60.0 ±2.00	9.00 ±1.00

Recommended Land Pattern:

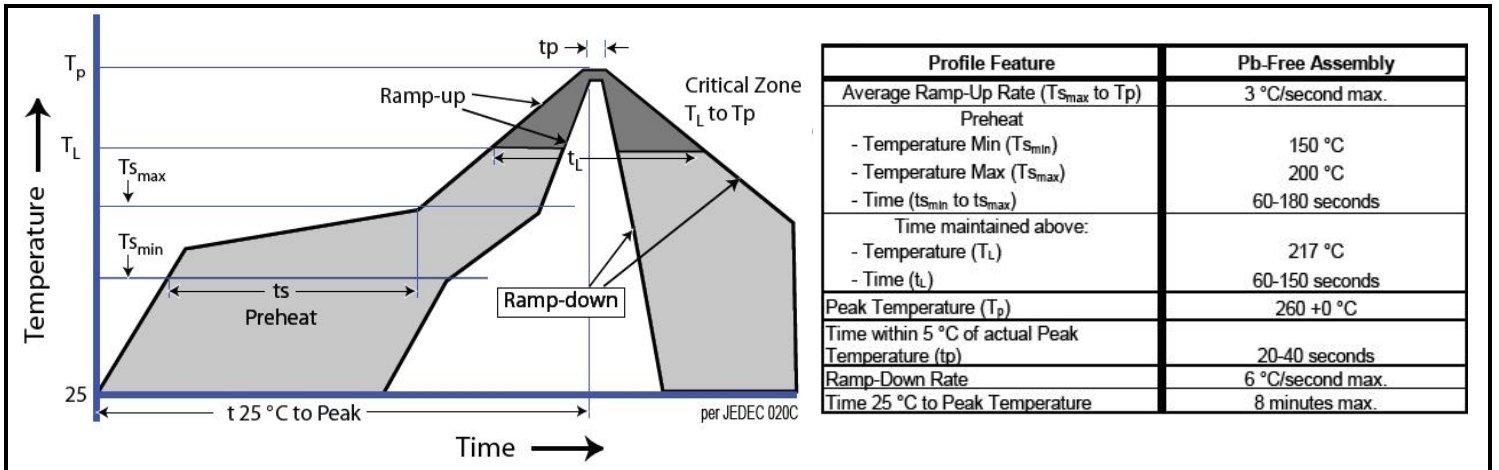


All dimensions in mm.

Size	P	W	D	V	E
D1CPC0306*	0.35	1.30	0.40	0.40	0.20

*Note: FR4 board material, 1.10mm thickness. 1 oz copper on resistor electrode pads.

Soldering Profile:



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.