




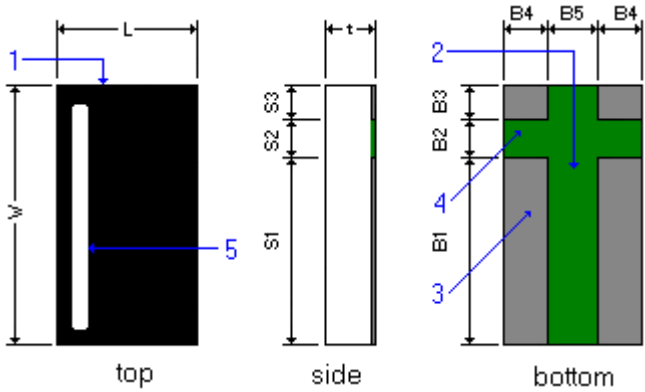
**Product Family:** [Current Sensing Power Resistor](#)  
**Part Number Series:** [CPA0612-FF Series \(Face Down - Black Marked\)](#)

	<p><b>Construction:</b></p> <ul style="list-style-type: none"> <li>• High purity alumina substrate</li> <li>• Nickel alloy resistive element</li> <li>• Epoxy-resin overcoat</li> <li>• Pre-tinned (Sn100, matte) terminations over Ni barrier is standard (RoHS compliant and Pb Free)</li> </ul>	<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• Resistance to 1 milliohm</li> <li>• TCR = ±50 or 100 ppm/°C</li> <li>• Power up to 1 watt</li> <li>• RoHS compliant (Pb Free) and Halogen Free</li> <li>• High volume production suitable for commercial and special applications</li> </ul>
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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.

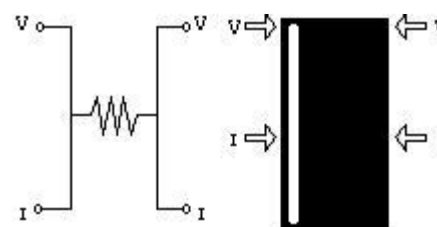
**Product Dimensions:**

	<table border="1"> <thead> <tr> <th>Dimension</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>0.063 ±0.008 (1.60 ±0.20)</td> </tr> <tr> <td>W</td> <td>0.126 ±0.008 (3.20 ±0.20)</td> </tr> <tr> <td>t</td> <td>0.020 ±0.008 (0.50 ±0.20)</td> </tr> <tr> <td>S1</td> <td>0.086 ±0.008 (2.20 ±0.20)</td> </tr> <tr> <td>S2</td> <td>0.020 ±0.008 (0.50 ±0.20)</td> </tr> <tr> <td>S3</td> <td>0.020 ±0.008 (0.50 ±0.20)</td> </tr> </tbody> </table>	Dimension	Specification	L	0.063 ±0.008 (1.60 ±0.20)	W	0.126 ±0.008 (3.20 ±0.20)	t	0.020 ±0.008 (0.50 ±0.20)	S1	0.086 ±0.008 (2.20 ±0.20)	S2	0.020 ±0.008 (0.50 ±0.20)	S3	0.020 ±0.008 (0.50 ±0.20)	<table border="1"> <thead> <tr> <th>Dimension</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td>B1</td> <td>0.086 ±0.008 (2.20 ±0.20)</td> </tr> <tr> <td>B2</td> <td>0.020 ±0.008 (0.50 ±0.20)</td> </tr> <tr> <td>B3</td> <td>0.020 ±0.008 (0.50 ±0.20)</td> </tr> <tr> <td>B4</td> <td>0.018 ±0.008 (0.45 ±0.20)</td> </tr> <tr> <td>B5</td> <td>0.028 ±0.008 (0.70 ±0.20)</td> </tr> </tbody> </table>	Dimension	Specification	B1	0.086 ±0.008 (2.20 ±0.20)	B2	0.020 ±0.008 (0.50 ±0.20)	B3	0.020 ±0.008 (0.50 ±0.20)	B4	0.018 ±0.008 (0.45 ±0.20)	B5	0.028 ±0.008 (0.70 ±0.20)
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<p>Note: Dimensions in inches (mm)</p>																												

**Product Construction & Marking:** (refer to callouts in diagram above)

- 1 = Substrate (96% Alumina)
  - 2 = Resistor Film (Ni Alloy)
  - 3 = Terminals (100% Matte Sn)
  - 4 = Protection Coating (Epoxy Resin)
  - 5 = Marking
- Marking will consist of a black marked top surface with an orientation marker in white or dark gray color

**Schematic:**



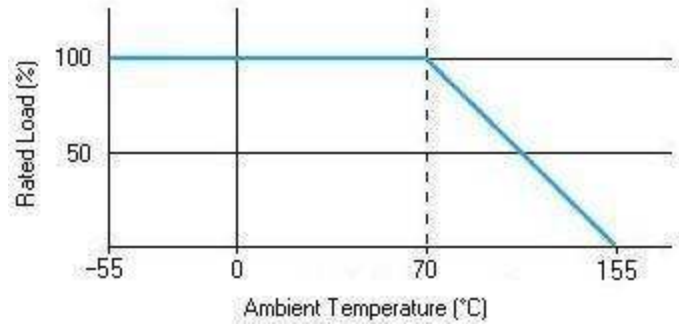
**Part Numbering:** CPA0612RR001FF\* (\*Note: T&R package quantity (-T50) will be appended by us to the end of the part number)

Product Designator	Ceramic Type	English Size (Metric Size)	Temp. Coefficient of Resistance (TCR)	Resistance Value **	Tolerance	Serial Code
CP	A = Alumina	0612 (1632)	Q = ±50ppm/°C R = ±100ppm/°C	Ex. R001 = 0.001Ω	F = ±1% J = ±5%	F = Face Down

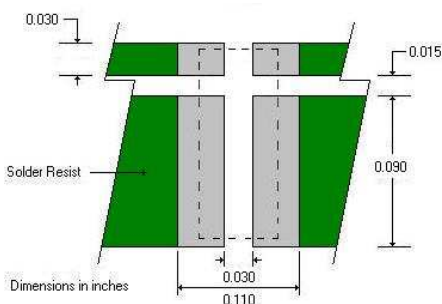
\*\*Note: For resistance values with single milliohm increments, use "R" to specify the decimal point (i.e. R001=0.001Ω).

**Electrical Specifications:**

Type	CPA0612-FF	
English Size	0612	
Metric Size	1632	
Power	Up to 1 watt	
Rated Voltage	$\sqrt{\text{Power} \times \text{Resistance}}$	
Resistance Tolerance	±1.0% (F) ±5.0% (J)	
Standard Resistance Values	0.001Ω, 0.002Ω, 0.003Ω,	0.005Ω
TCR ppm/°C (code)	±100ppm/°C (R)	±50ppm/°C (Q) ±100ppm/°C (R)
Operating Temperature	-55°C ~ +155°C	
Maximum Over Current	45A, 10msec, 10 times Interval of 60 seconds minimum	
Packaging	5,000 pcs/reel	

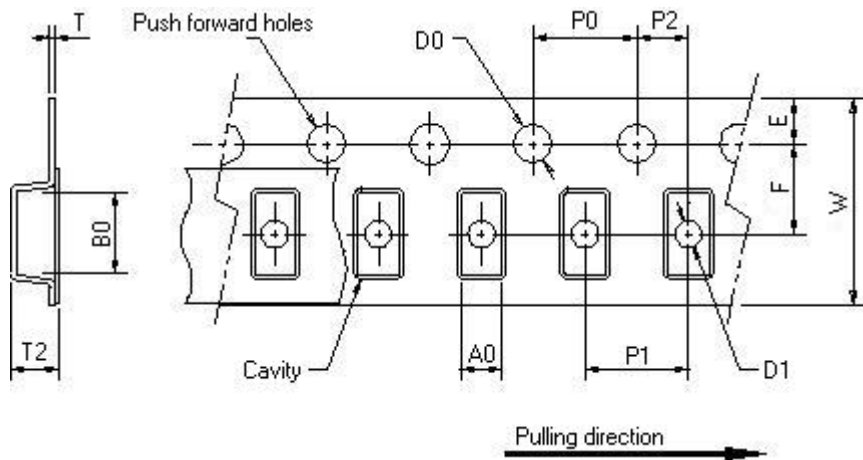
**CPA0612 Derating Curve:****Reliability Specifications:**

Test	Test Method	Specification
Short Time Overload	Applied voltage: 1.5X rated voltage. Test duration: 5 seconds	±1.0%
Load Life	Test Temperature: 70°C ± 3°C Applied voltage: rated voltage Test period: 1000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF,	±1.0%
Moisture Load Life	Test Condition: 40°C/90% RH Applied voltage: rated voltage Test period: 1000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF	±2.0%
Temperature Cycle (Thermal Shock) MIL-STD-202 - Method 107B	Repeat 100 cycles as follows: -65°C(30 min.) / Room temp (3 min) / +125°C(30 min.) / Room temp (3 min)	±1.0%
Resistance To Solder Heat	Parts are immersed into a molten solder bath with a temperature of 260 ±5°C for a period of 30 ±1 seconds. Repeat for a total of 2 cycles.	Part must meet initial specifications following testing.
High Temperature Exposure	Test Temperature: 125°C ± 2°C Test period: 1000 hours No electrical load	±1.0%
HAST (Highly Accelerated Stress Test - Autoclave)	Test Temperature: 121°C ± 2°C Test Pressure: 30 PSIA Test period: 48 hours No electrical load	±2.0%
Terminal Strength AEC-Q200-006	Test Force: 17.7N Duration: 60 ±1 seconds	±0.5%
Vibration MIL-STD-202 - Method 204D	Frequency: 10 - 2,000Hz Acceleration: 5G Test Duration: 20 mins / 12 Cycles	±1.0%
Mechanical Shock MIL-STD-202 - Method 213	Force: 100G peak Test Duration: 6 milliseconds	±1.0%
Solderability	Dipped into molten solder for 3 ±1 seconds at 245 ± 5°C	New solder coverage of 90% minimum

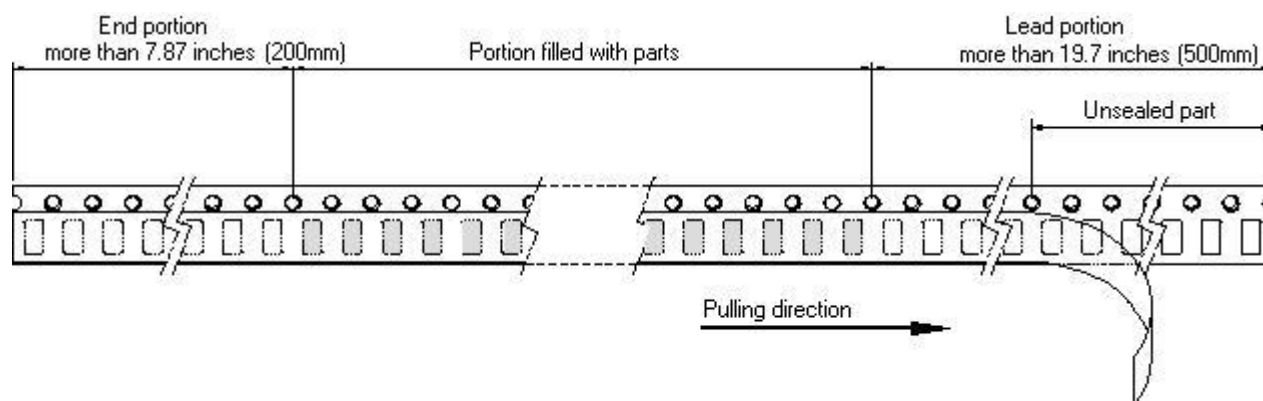
**Recommended Land Pattern for Current Sensing:****Note:**

- 1) Board surface temperature shall not exceed 100°C when applying rated wattage

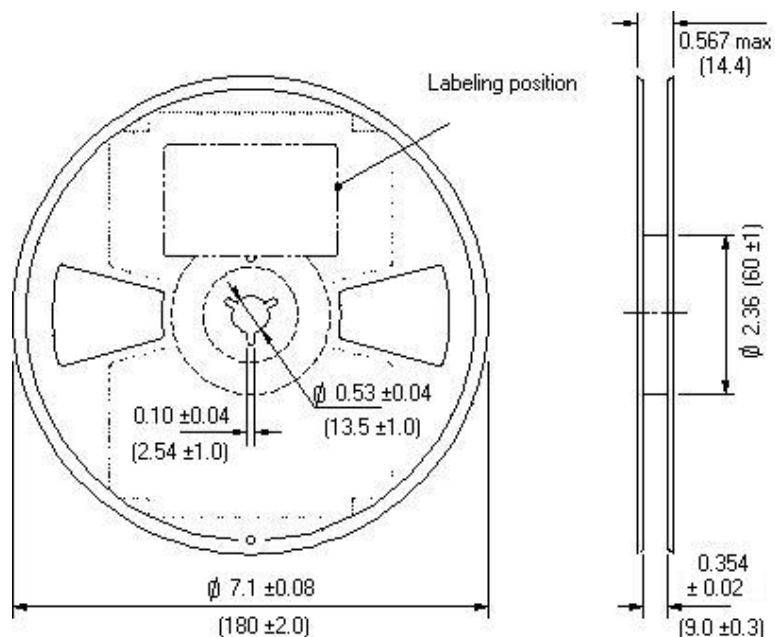
**Taping Diagrams:**



Symbol	Dimensions: inch (mm)
A0	0.075 ±0.004 (1.90 ±0.1)
B0	0.138 ±0.004 (3.50 ±0.1)
W	0.315 ±0.008 (8.00 ±0.2)
F	0.138 ±0.002 (3.50 ±0.05)
E	0.069 ±0.004 (1.75 ±0.1)
P0	0.157 ±0.004 (4.00 ±0.1)
P1	0.157 ±0.004 (4.00 ±0.1)
P2	0.079 ±0.002 (2.00 ±0.05)
D0	0.061 ±0.002 (1.50 ±0.05)
D1	0.041 ±0.002 (1.00 ±0.05)
T	0.008 ±0.002 (0.20 ±0.05)
T2	0.039 ±0.008 (1.00 ±0.2)

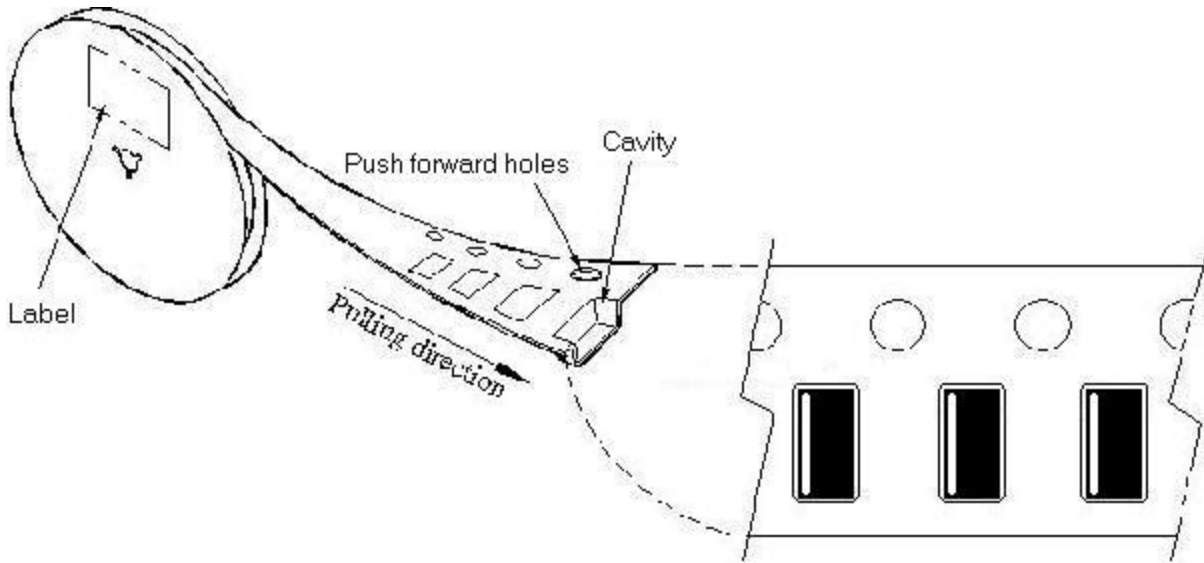


**Reel - Labeling Position:**



Unit = inches (mm) / Material = Plastic

**Taping Direction:**



**Recommended Soldering Profile:**

