

## Features

- Wide terminal type
- Excellent heat dissipation
- High reliability
- Metal foil
- RoHS compliant\* and halogen free\*\*

## Applications

- Current sensing
- Power supplies
- Stepper motor drives
- Input amplifiers

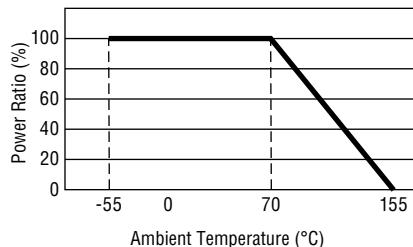
## CFG Series Metal Foil, Wide Terminal Current Sense Resistor

### Electrical Characteristics

Characteristic	CFG0612
Power Rating @ 70 °C	1 W
Resistance Value	5 mΩ, 10 mΩ
Operation Temperature Range	-55 °C ~ +155 °C
Temperature Coefficient of Resistance	±100 ppm/°C
Tolerance	±1 %
Insulation Resistance	Over 100 MΩ
Maximum Working Voltage (V)	(P*R) <sup>1/2</sup>

Note: 1 watt with total solder pad and trace size of 300 mm<sup>2</sup>

### Derating Curve



### Reliability Tests

Test Items	Reference Standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1-4.8 JIS-C5201-4.8	+25 °C ~ +125 °C	—
Load Life	IEC60115-1-4.25.1 JIS-C5201-4.25.1	1000 hours at rated power, 70 °C, 1.5 hours "ON", 0.5 hour "OFF"	< ±2 %
Short Time Overload	IEC60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5 s	< ±1 %
Moisture no Load	IEC60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a)	85 °C, 85 %RH, 1000 hrs	< ±2 %
Temperature Cycle	IEC60115-1-4.19 JIS-C5201-4.19	-55 °C & +125 °C, 100 cycle, 15 min per extreme condition	< ±1 %
Resistance to Soldering Heat	IEC60115-1-4.18 JIS-C5201-4.18	260 ±5 °C for 10 ±1 sec	< ±1 %
Solderability	IEC60115-1-4.17 JIS-C5201-4.17	245 ±5 °C, 2 ±0.5 sec	At least 95 % of surface area of electrode shall be covered with new solder
High Temperature Exposure	IEC60115-1- 4.23.2 JIS-C5201-4.23.2	155 °C, 1000 hrs	< ±2 %
Low Temperature Storage	IEC60115-1- 4.23.4 JIS-C5201-4.23.4	-55 °C, 1000 hrs	< ±2 %
Substrate Bending	IEC60115-1-4.33 JIS-C5201-4.33	Bending width 2 mm	< ±1 %
Insulation Resistance	IEC60115-1-4.6 JIS-C5201-4.6	100 V DC for 1 minute	>100 MΩ



### WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

\*\* Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

Specifications are subject to change without notice.

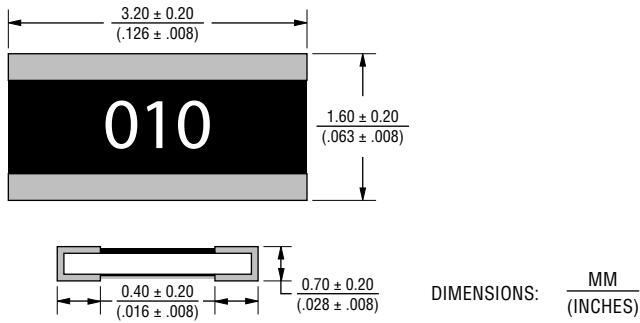
Users should verify actual device performance in their specific applications.

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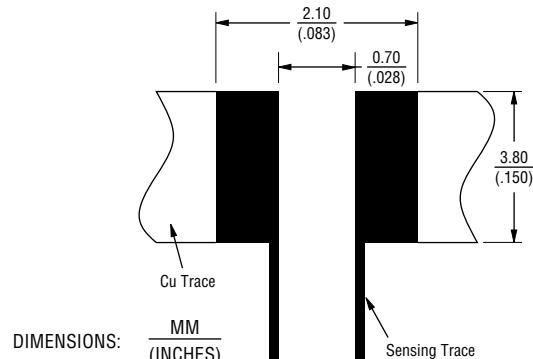
## CFG Series Metal Foil, Wide Terminal Current Sense Resistor

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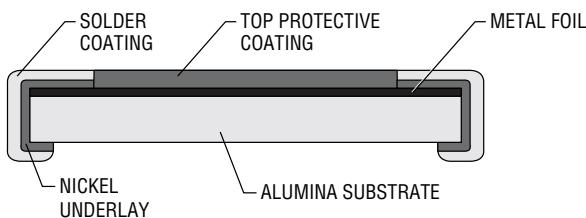
### Product Dimensions



### Recommended Solder Pad Dimensions



### Construction



### Rated Voltage

The rated voltage is calculated by the following formula:

$$V = \sqrt{P \times R}$$

$$I = \sqrt{P \div R}$$

V: Rated Voltage (V)  
I: Rated Current ( $\Omega$ )  
P: Rated Power (W)  
R: Resistance Value ( $\Omega$ )

### Environmental Characteristics

#### Storage Conditions

Temperature .....	+5 °C ~ +35 °C
Humidity .....	40 % ~ 75 %
Shelf Life.....	2 years from manufacturing date
Solder Recommendations.....	Reflow profile (Solder: Sn96.5 / Ag3 / Cu0.5)
Moisture Sensitivity Level.....	1

### Popular Resistance Values\*

Code	Resistance Value (milliohms)
R005	5
R010	10

\*Please consult factory for other resistance values

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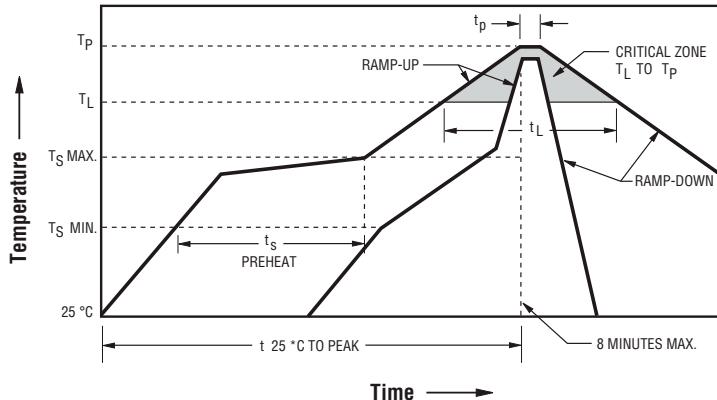
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## CFG Series Metal Foil, Wide Terminal Current Sense Resistor

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### Solder Reflow Recommendations



Solder Profile	Lead Free Assembly
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	$3\text{ }^{\circ}\text{C} / \text{second max.}$
Preheat:	<ul style="list-style-type: none"> <li>- Temperature Min. (<math>T_{smin}</math>)</li> <li>- Temperature Max. (<math>T_{smax}</math>)</li> <li>- Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>
Time maintained above:	<ul style="list-style-type: none"> <li>- Temperature (<math>T_l</math>)</li> <li>- Time (<math>t_L</math>)</li> </ul>
Peak Temperature ( $T_p$ )	$260\text{ }^{\circ}\text{C}$
Time within $+0/-5\text{ }^{\circ}\text{C}$ of actual Peak Temperature ( $T_p$ ) <sup>2</sup>	10 seconds
Ramp-down rate	$6\text{ }^{\circ}\text{C} / \text{second max.}$
Time $25\text{ }^{\circ}\text{C}$ to Peak Temperature	8 minutes max.

### How to Order

CFG 0612 - F X - R005 E LF

Model _____	CFG = Metal Foil, Wide Terminal Current Sense Resistor
Size _____	0612 = 0612 Size
Resistance Tolerance _____	$F = \pm 1\%$
TCR _____	$X = \pm 100 \text{ PPM}/^{\circ}\text{C}$
Resistance Code – (See Popular Resistance Table) _____	"R" (decimal point) followed by three significant digits (example: R005 = 0.005 ohms)
Packaging _____	E = Tape and Reel 4,000 pcs. / 7-inch reel, paper tape
Termination _____	LF = Tin-plated (RoHS Compliant)

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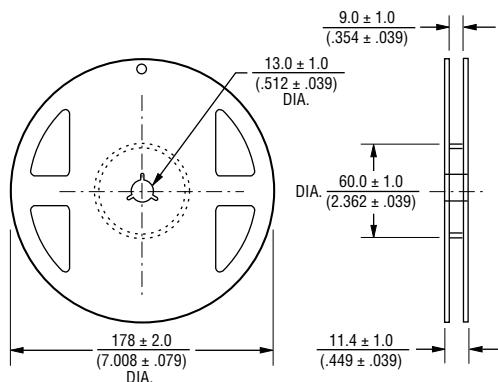
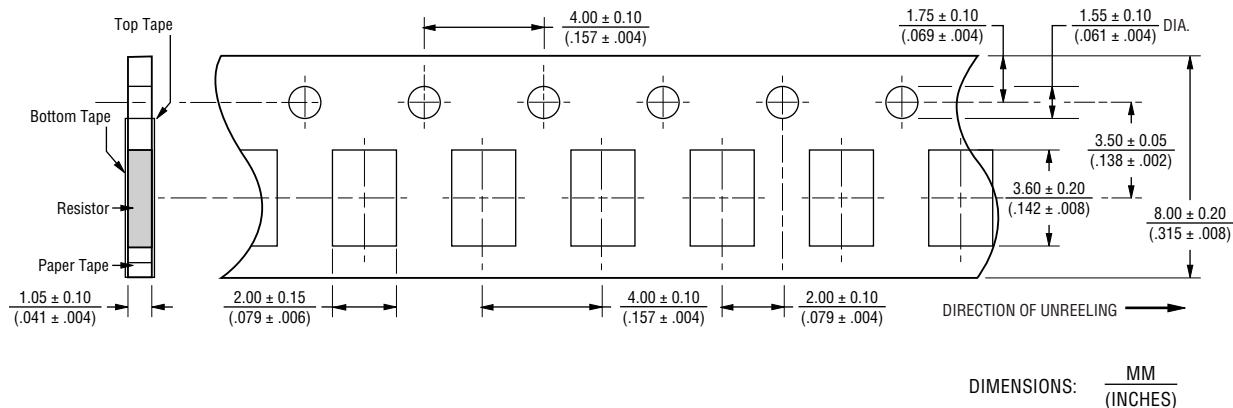
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### Packaging Dimensions (Conforms to EIA RS-481A)



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