

## Features

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

## Applications

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

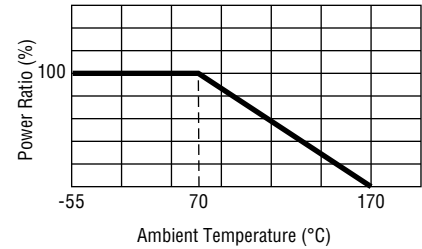
# CRK Series Metal Strip, Wide Terminal Current Sense Resistor

### Electrical Characteristics

Characteristic	Model	
	CRK0612	CRK0815
Power Rating @ 70 °C	1 W	
Resistance Value	1 mΩ, 5 mΩ, 10 mΩ	4 mΩ, 5 mΩ, 10 mΩ
Operation Temperature Range	-55 °C ~ +170 °C	
Temperature Coefficient of Resistance	±50 ppm/°C	
Tolerance	±1 %, 5 %	
Insulation Resistance	Over 100 MΩ	
Maximum Working Voltage (V)	(P*R) <sup>1/2</sup>	

Note: 1 Watts 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"	< ±1 %
Short Time Overload	IEC60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5 s	< ±0.5 %
Moisture no Load	IEC60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a)	85 °C, 85 %RH, 1000 hrs	< ±0.5 %
Temperature Cycle	IEC60115-1-4.19 JIS-C5201-4.19	-55 °C & +155 °C, 100 cycle, 15 min per extreme condition	< ±0.5 %
Resistance to Soldering Heat	IEC60115-1-4.18 JIS-C5201-4.18	260 ±5 °C for 10 ±1 sec	< ±0.5 %
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	< ±0.5 %
Low Temperature Storage	EC60115-1- 4.23.4 JIS-C5201-4.23.4	-55 °C, 1000 hrs	< ±0.5 %
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.

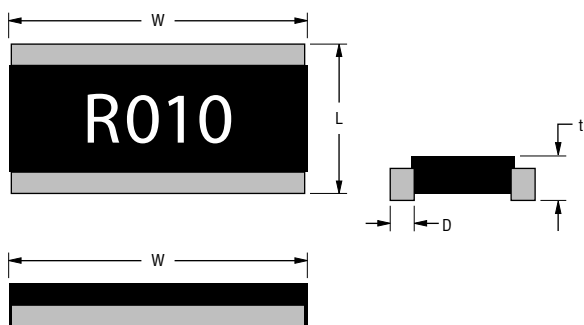
Users should verify actual device performance in their specific applications.

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# CRK Series Metal Strip, Wide Terminal Current Sense Resistor



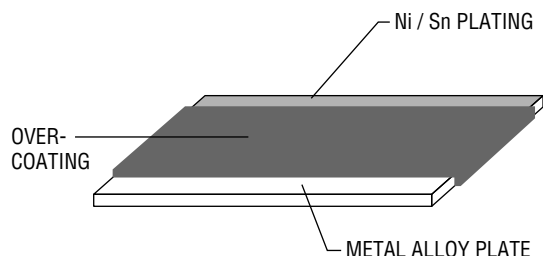
## Product Dimensions



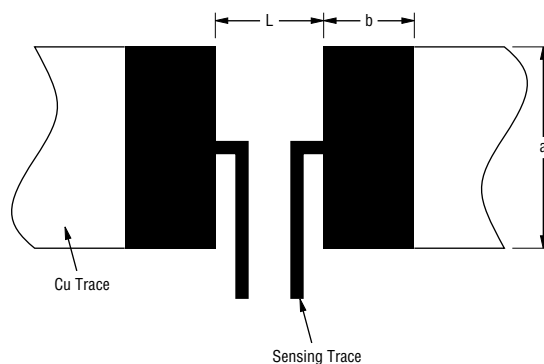
	W	L	D	t
<b>CRK0612</b>	$\frac{3.20 \pm 0.2}{(.126 \pm .008)}$	$\frac{1.70 \pm 0.2}{(.067 \pm .008)}$	$\frac{0.40 \pm 0.2}{(.016 \pm .008)}$	$\frac{0.60 \pm 0.2}{(.027 \pm .008)}$
<b>CRK0815</b>	$\frac{3.75 \pm 0.3}{(.148 \pm .012)}$	$\frac{2.30 \pm 0.2}{(.091 \pm .008)}$	$\frac{0.50 \pm 0.2}{(.020 \pm .008)}$	$\frac{0.70 \pm 0.2}{(.028 \pm .008)}$

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Construction



## Recommended Solder Pad Dimensions



	a	b	L
<b>CRK0612</b>	$\frac{3.80}{(0.15)}$	$\frac{0.70}{(0.03)}$	$\frac{0.70}{(0.03)}$
<b>CRK0815</b>	$\frac{4.20}{(0.17)}$	$\frac{0.80}{(0.03)}$	$\frac{1.20}{(0.05)}$

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## 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

## Rated Voltage

The rated voltage is calculated by the following formula:

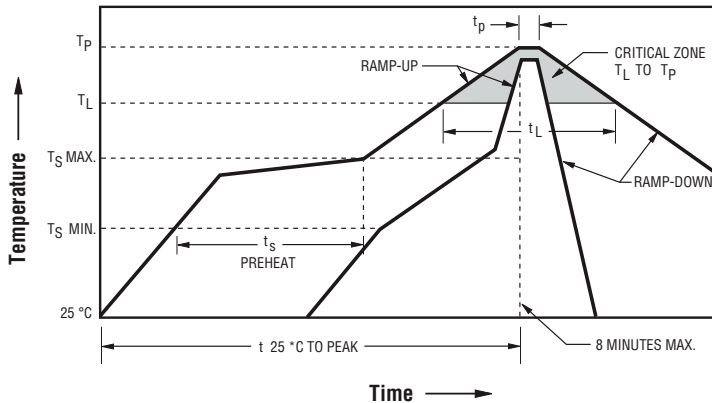
$$V = \sqrt{P \times R}$$

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

# CRK Series Metal Strip, Wide Terminal Current Sense Resistor



## Solder Reflow Recommendations



Solder Profile	Lead Free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C / second max.
Preheat: - Temperature Min. (T <sub>smin</sub> ) - Temperature Max. (T <sub>smax</sub> ) - Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	150 °C 200 °C 60~150 seconds
Time maintained above: - Temperature (T <sub>L</sub> ) - Time (T <sub>L</sub> )	217 °C 60~120 seconds
Peak Temperature (T <sub>p</sub> )	260 °C
Time within +0/-5 °C of actual Peak Temperature (T <sub>p</sub> ) <sup>2</sup>	10 seconds
Ramp-down rate	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

## How to Order

**CRK 0612 - F Z - R005 E**

Model \_\_\_\_\_  
 CRK = Metal Strip, Wide Terminal Current Sense Resistor

Size \_\_\_\_\_  
 0612 = 0612 Size  
 0815 = 0815 Size

Resistance Tolerance \_\_\_\_\_  
 F = ±1 %  
 J = ±5 %

TCR \_\_\_\_\_  
 Z = ±50 PPM/°C

Resistance Code – (See Standard Resistance Values Table) \_\_\_\_\_  
 “R” (decimal point) followed by three significant digits (example: R004 = 0.0040 ohms)

Packaging \_\_\_\_\_  
 E = Tape and Reel  
 CRK0612: 5,000 pcs. / 7-inch reel;  
 CRK0815: 4,000 pcs. / 7-inch reel

### CRK0612 Resistance Values Available

Code	Resistance Value (milliohms)
R001	1
R005	5
R010	10

### CRK0815 Resistance Values Available

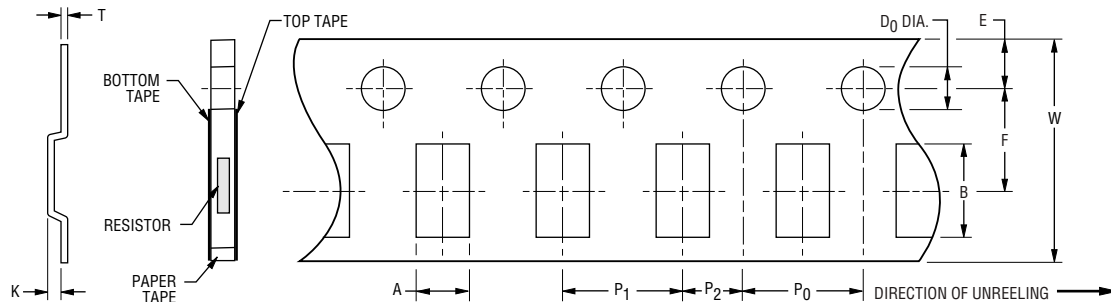
Code	Resistance Value (milliohms)
R004	4
R005	5
R010	10

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# CRK Series Metal Strip, Wide Terminal Current Sense Resistor

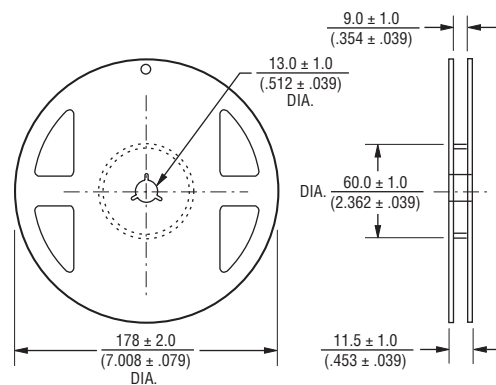
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## Packaging Dimensions (Conforms to EIA RS-481A)



Model	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T	K
CRK0612 (paper tape)	$\frac{2.00 \pm 0.15}{(.079 \pm .006)}$	$\frac{3.60 \pm 0.20}{(.142 \pm .008)}$	$\frac{8.00 \pm 0.20}{(.315 \pm .008)}$	$\frac{3.50 \pm 0.05}{(.138 \pm .002)}$	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{2.00 \pm 0.10}{(.079 \pm .004)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{1.55 \pm 0.10}{(.061 \pm .004)}$	$\frac{0.84 \pm 0.10}{(.033 \pm .004)}$	—
CRK0815 (embossed)	$\frac{2.60 \pm 0.15}{(.102 \pm .006)}$	$\frac{4.50 \pm 0.20}{(.177 \pm .008)}$	$\frac{12.00 \pm 0.20}{(.472 \pm .008)}$	$\frac{5.50 \pm 0.05}{(.217 \pm .002)}$	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{2.00 \pm 0.10}{(.079 \pm .004)}$	$\frac{4.00 \pm 0.10}{(.157 \pm .004)}$	$\frac{1.55 \pm 0.10}{(.061 \pm .004)}$	$\frac{0.30 \pm 0.10}{(.012 \pm .004)}$	$\frac{1.10 \pm 0.10}{(.043 \pm .004)}$

DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$



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