

## Features

- Wide terminal type
- Excellent heat dissipation
- Low inductance <5 nH
- Low thermal EMF <40  $\mu\text{V}/^\circ\text{C}$
- 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 m $\Omega$ , 3 m $\Omega$ , 5 m $\Omega$ , 10 m $\Omega$	3 m $\Omega$ , 4 m $\Omega$ , 5 m $\Omega$ , 10 m $\Omega$
Operation Temperature Range	-55 °C ~ +170 °C	
Temperature Coefficient of Resistance	$\pm 50$ ppm/°C	
Tolerance	$\pm 1$ %, 5 %	
Insulation Resistance	Over 100 M $\Omega$	
Maximum Working Voltage (V)	$(P \cdot R)^{1/2}$	

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

### Additional Information

Click these links for more information:



### 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"	< $\pm 1$ %
Short Time Overload	IEC60115-1-4.13 JIS-C5201-4.13	5 X rated power for 5 s	< $\pm 0.5$ %
Moisture no Load	IEC60115-1- 4.24.2.1a) JIS-C5201- 4.24.2.1a)	85 °C, 85 %RH, 1000 hrs	< $\pm 0.5$ %
Temperature Cycle	IEC60115-1-4.19 JIS-C5201-4.19	-55 °C & +155 °C, 100 cycle, 15 min per extreme condition	< $\pm 0.5$ %
Resistance to Soldering Heat	IEC60115-1-4.18 JIS-C5201-4.18	260 $\pm 5$ °C for 10 $\pm 1$ sec	< $\pm 0.5$ %
Solderability	IEC60115-1-4.17 JIS-C5201-4.17	245 $\pm 5$ °C, 2 $\pm 0.5$ 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	< $\pm 0.5$ %
Low Temperature Storage	EC60115-1- 4.23.4 JIS-C5201-4.23.4	-55 °C, 1000 hrs	< $\pm 0.5$ %
Substrate Bending	IEC60115-1-4.33 JIS-C5201-4.33	Bending width 2 mm	< $\pm 1$ %
Insulation Resistance	IEC60115-1-4.6 JIS-C5201-4.6	100 V DC for 1 minute	>100 M $\Omega$



**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.

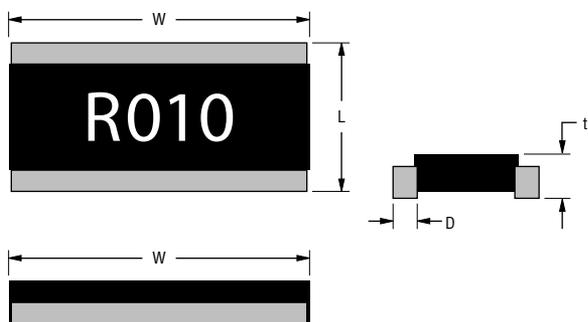
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# CRK Series Metal Strip, Wide Terminal Current Sense Resistor



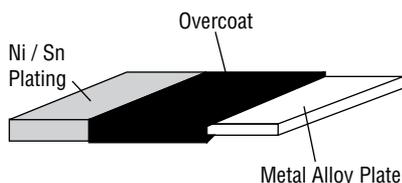
## Product Dimensions



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

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

## Construction



## 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

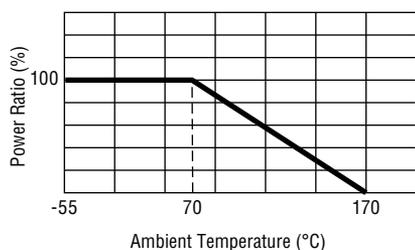
## Rated Voltage

The rated voltage is calculated by the following formula:

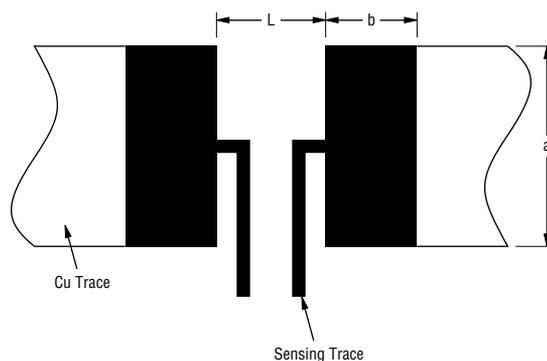
$$V = \sqrt{P \times R}$$

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

## Derating Curve



## Recommended Solder Pad Dimensions



	a	b	L
CRK0612	$\frac{3.80}{(0.15)}$	$\frac{0.70}{(0.03)}$	$\frac{0.85}{(0.033)}$
CRK0815	$\frac{4.20}{(0.17)}$	$\frac{0.80}{(0.03)}$	$\frac{1.20}{(0.05)}$

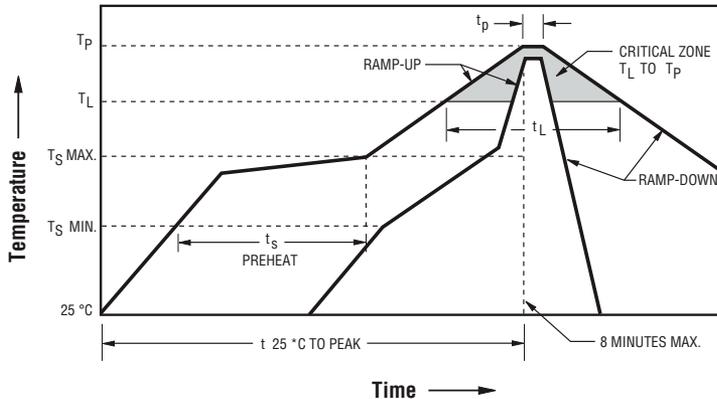
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## Solder Reflow Recommendations



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
R003	3
R005	5
R010	10

### CRK0815 Resistance Values Available

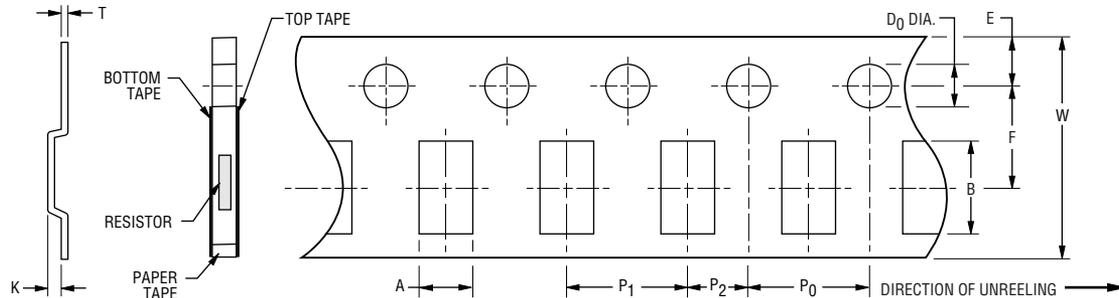
Code	Resistance Value (milliohms)
R003	3
R004	4
R005	5
R010	10

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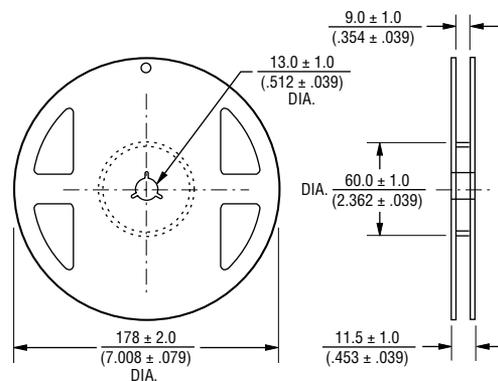
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## Packaging Dimensions (Conforms to EIA RS-481A)



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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