

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

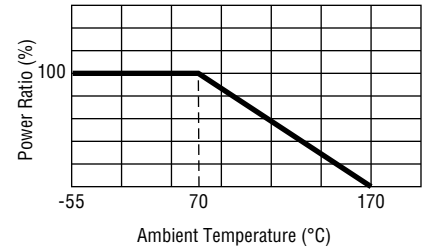
CRK Series Metal Strip, Wide Terminal Current Sense Resistor

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) ^{1/2} | |

Note: 1 Watts with total solder pad and trace size of 300 mm²

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

* 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.

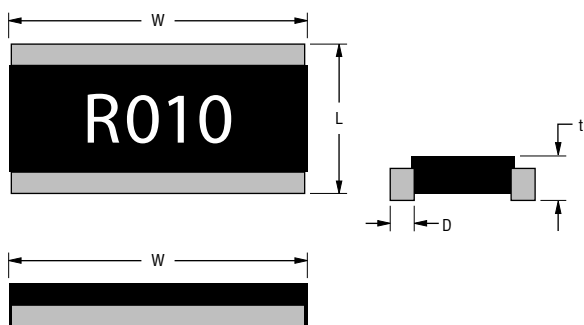
Users should verify actual device performance in their specific applications.

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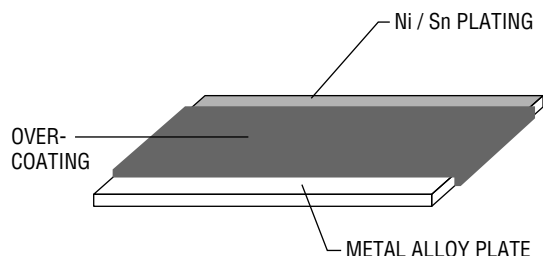
Product Dimensions



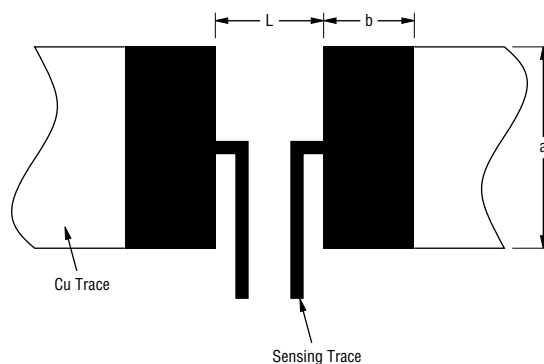
| | W | L | D | t |
|----------------|--|--|--|--|
| CRK0612 | $\frac{3.20 \pm 0.2}{(.126 \pm .008)}$ | $\frac{1.70 \pm 0.2}{(.067 \pm .008)}$ | $\frac{0.40 \pm 0.2}{(.016 \pm .008)}$ | $\frac{0.60 \pm 0.2}{(.027 \pm .008)}$ |
| CRK0815 | $\frac{3.75 \pm 0.3}{(.148 \pm .012)}$ | $\frac{2.30 \pm 0.2}{(.091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

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

Construction



Recommended Solder Pad Dimensions



Environmental Characteristics

Storage Conditions
 Temperature+5 °C ~ +35 °C
 Humidity40 % ~ 75 %
 Shelf Life.....2 years from manufacturing date
 Solder Recommendations..... Reflow profile
 (Solder: Sn96.5 / Ag3 / Cu0.5)
 Moisture Sensitivity Level..... 1

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

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

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 (Ω)

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Solder Reflow Recommendations



| Solder Profile | Lead Free Assembly |
|--|------------------------------------|
| Average ramp-up rate (T _{smax} to T _p) | 3 °C / second max. |
| Preheat: - Temperature Min. (T _{smin}) - Temperature Max. (T _{smax}) - Time (T _{smin} to T _{smax}) (t _s) | 150 °C 200 °C 60~150 seconds |
| Time maintained above: - Temperature (T _L) - Time (T _L) | 217 °C 60~120 seconds |
| Peak Temperature (T _p) | 260 °C |
| Time within +0/-5 °C of actual Peak Temperature (T _p) ² | 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

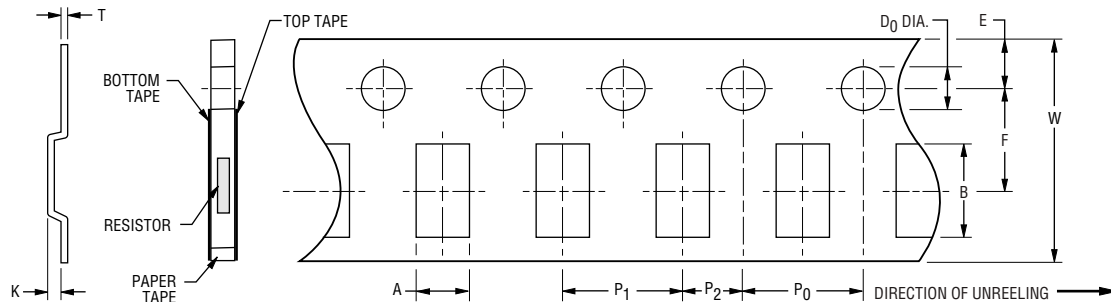
| Code | Resistance Value (milliohms) |
|------|------------------------------|
| R004 | 4 |
| R005 | 5 |
| R010 | 10 |

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Packaging Dimensions (Conforms to EIA RS-481A)



| Model | A | B | W | F | E | P ₁ | P ₂ | P ₀ | D ₀ | 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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