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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Model</th>
<th>CRK0612</th>
<th>CRK0815</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Rating @ 70 °C</td>
<td>1 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance Value</td>
<td>1 mΩ, 3 mΩ, 5 mΩ, 10 mΩ</td>
<td></td>
<td>3 mΩ, 4 mΩ, 5 mΩ, 10 mΩ</td>
</tr>
<tr>
<td>Operation Temperature Range</td>
<td>-55 °C ~ +170 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Coefficient of Resistance</td>
<td>±50 ppm/°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolerance</td>
<td>±1 %, 5 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Over 100 MΩ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Working Voltage (V)</td>
<td>(P*R)1/2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Reliability Tests

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

Derating Curve

** 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.

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WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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CRK Series Metal Strip, Wide Terminal Current Sense Resistor

Product Dimensions

<table>
<thead>
<tr>
<th></th>
<th>W</th>
<th>L</th>
<th>D</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRK0612</td>
<td>3.20 ± 0.2 (.126 ± .008)</td>
<td>1.70 ± 0.2 (.067 ± .008)</td>
<td>0.40 ± 0.2 (.016 ± .008)</td>
<td>0.60 ± 0.2 (.027 ± .008)</td>
</tr>
<tr>
<td>CRK0815</td>
<td>3.75 ± 0.3 (.148 ± .012)</td>
<td>2.30 ± 0.2 (.091 ± .008)</td>
<td>0.50 ± 0.2 (.020 ± .008)</td>
<td>0.70 ± 0.2 (.028 ± .008)</td>
</tr>
</tbody>
</table>

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:

\[ V = \frac{P \times R}{R} \]

- V: Rated Voltage (V)
- P: Rated Power (W)
- R: Resistance Value (Ω)

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CRK Series Metal Strip, Wide Terminal Current Sense Resistor

Solder Reflow Recommendations

![Solder Profile Diagram]

<table>
<thead>
<tr>
<th>Solder Profile</th>
<th>Lead Free Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ramp-up rate (T_{S_{max}} to T_{P})</td>
<td>3 °C / second max.</td>
</tr>
<tr>
<td>Preheat:</td>
<td></td>
</tr>
<tr>
<td>- Temperature Min. (T_{S_{min}})</td>
<td>150 °C</td>
</tr>
<tr>
<td>- Temperature Max. (T_{S_{max}})</td>
<td>200 °C</td>
</tr>
<tr>
<td>- Time (T_{S_{min}} to T_{S_{max}}) (t_{S})</td>
<td>60~120 seconds</td>
</tr>
<tr>
<td>Time maintained above:</td>
<td></td>
</tr>
<tr>
<td>- Temperature (T_{L})</td>
<td>217 °C</td>
</tr>
<tr>
<td>- Time (T_{L})</td>
<td>60~120 seconds</td>
</tr>
<tr>
<td>Peak Temperature (T_{P})</td>
<td>260 °C</td>
</tr>
<tr>
<td>Time within +0/-5 °C of actual Peak Temperature (T_{P})^2</td>
<td>10 seconds</td>
</tr>
<tr>
<td>Ramp-down rate</td>
<td>6 °C / second max.</td>
</tr>
<tr>
<td>Time 25 °C to Peak Temperature</td>
<td>8 minutes max.</td>
</tr>
</tbody>
</table>

How to Order

<table>
<thead>
<tr>
<th>CRK Series Metal Strip, Wide Terminal Current Sense Resistor</th>
</tr>
</thead>
<tbody>
<tr>
<td>\text{Model} = \text{Metal Strip, Wide Terminal Current Sense Resistor}</td>
</tr>
<tr>
<td>\text{Size}</td>
</tr>
<tr>
<td>0612 = 0612 Size</td>
</tr>
<tr>
<td>0815 = 0815 Size</td>
</tr>
<tr>
<td>\text{Resistance Tolerance}</td>
</tr>
<tr>
<td>F = \pm 1 %</td>
</tr>
<tr>
<td>J = \pm 5 %</td>
</tr>
<tr>
<td>\text{TCR}</td>
</tr>
<tr>
<td>Z = \pm 50 \text{ PPM/°C}</td>
</tr>
<tr>
<td>Resistance Code – (See Standard Resistance Values Table)</td>
</tr>
<tr>
<td>\text{“R” (decimal point) followed by three significant digits (example: R004 = 0.0040 ohms)}</td>
</tr>
<tr>
<td>Packaging</td>
</tr>
<tr>
<td>E = \text{Tape and Reel}</td>
</tr>
<tr>
<td>CRK0612: 5,000 pcs. / 7-inch reel;</td>
</tr>
<tr>
<td>CRK0815: 4,000 pcs. / 7-inch reel</td>
</tr>
</tbody>
</table>

CRK0612 Resistance Values Available

<table>
<thead>
<tr>
<th>Code</th>
<th>Resistance Value (milliohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R001</td>
<td>1</td>
</tr>
<tr>
<td>R003</td>
<td>3</td>
</tr>
<tr>
<td>R005</td>
<td>5</td>
</tr>
<tr>
<td>R010</td>
<td>10</td>
</tr>
</tbody>
</table>

CRK0815 Resistance Values Available

<table>
<thead>
<tr>
<th>Code</th>
<th>Resistance Value (milliohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R003</td>
<td>3</td>
</tr>
<tr>
<td>R004</td>
<td>4</td>
</tr>
<tr>
<td>R005</td>
<td>5</td>
</tr>
<tr>
<td>R010</td>
<td>10</td>
</tr>
</tbody>
</table>

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# CRK Series Metal Strip, Wide Terminal Current Sense Resistor

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

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>W</th>
<th>F</th>
<th>E</th>
<th>P₁</th>
<th>P₂</th>
<th>P₀</th>
<th>D₀</th>
<th>T</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRK0612 (paper tape)</td>
<td>2.00 ± 0.15</td>
<td>3.60 ± 0.20</td>
<td>8.00 ± 0.20</td>
<td>3.50 ± 0.05</td>
<td>1.75 ± 0.10</td>
<td>4.00 ± 0.10</td>
<td>2.00 ± 0.10</td>
<td>4.00 ± 0.10</td>
<td>1.55 ± 0.10</td>
<td>0.84 ± 0.10</td>
<td>—</td>
</tr>
<tr>
<td>CRK0815 (embossed)</td>
<td>2.60 ± 0.15</td>
<td>4.50 ± 0.20</td>
<td>12.00 ± 0.20</td>
<td>5.50 ± 0.05</td>
<td>1.069 ± 0.004</td>
<td>1.57 ± 0.004</td>
<td>0.079 ± 0.004</td>
<td>1.57 ± 0.004</td>
<td>0.061 ± 0.004</td>
<td>0.30 ± 0.10</td>
<td>1.19 ± 0.19</td>
</tr>
</tbody>
</table>

**DIMENSIONS:**

- **MM (INCHES):**
  - A: 2.00 ± 0.15 (.079 ± .006)
  - B: 3.60 ± 0.20 (.142 ± .008)
  - W: 8.00 ± 0.20 (.315 ± .008)
  - F: 3.50 ± 0.05 (.138 ± .002)
  - E: 1.75 ± 0.10 (.069 ± .004)
  - P₁: 4.00 ± 0.10 (.157 ± .004)
  - P₂: 2.00 ± 0.10 (.079 ± .004)
  - P₀: 4.00 ± 0.10 (.157 ± .004)
  - D₀: 1.55 ± 0.10 (.061 ± .004)
  - T: 0.84 ± 0.10 (.033 ± .004)
  - K: —

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**Rev. 09/19**

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