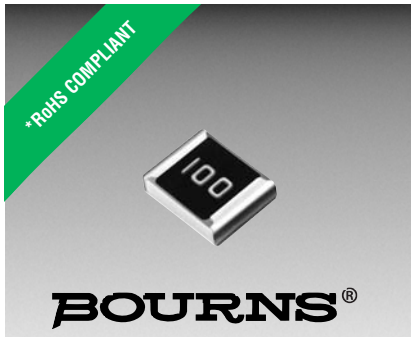




## Features

- Special alloy resistor
- Power rating at 70 °C: CRA2010 - 1 W, CRA2512 - 3 W
- Inductance less than 5 nH
- RoHS compliant\*



Model CRA2010 is currently available but not recommended for new designs.

## CRA2010/CRA2512 - High Power Current Sense Chip Resistor

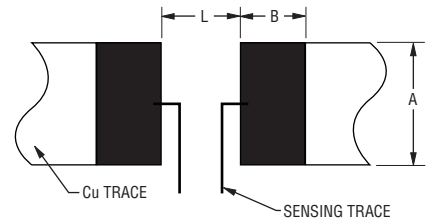
### Electrical Characteristics

| Characteristic              | CRA2010                | CRA2512                |
|-----------------------------|------------------------|------------------------|
| Power Rating @ 70 °C        | 1 W                    | 3 W                    |
| Operating Temperature Range | -55 °C to +170 °C      |                        |
| Derated to Zero Load at     | +170 °C                |                        |
| Maximum Working Voltage     | $(P \times R)^{1/2}$   |                        |
| Insulation Resistance       | > 100 megohms          |                        |
| Resistance Range            | 0.005 - 0.020 $\Omega$ | 0.010 - 0.100 $\Omega$ |
| Resistance Tolerance        | $\pm 1\%$ , $\pm 5\%$  |                        |
| Temperature Coefficient     | $\pm 75$ PPM/°C        |                        |

### Performance Characteristics

| Test                      | Conditions                                                            | Specification                          |
|---------------------------|-----------------------------------------------------------------------|----------------------------------------|
| Thermal Shock             | -55 °C to + 150 °C, 1000 Cycles, 15 minutes                           | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| Short Time Overload       | 5 X Rated Power for 5 seconds                                         | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| Low Temperature Storage   | -55 °C for 24 hours                                                   | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| High Temperature Exposure | 1000 hours @ + 170 °C                                                 | $\Delta R \pm(1.0\% + 0.0005\ \Omega)$ |
| Bias Humidity             | + 85 °C, 85 % RH, 10 % Bias, 1000 hours                               | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| Mechanical Shock          | 100 g's for 6 milliseconds, 5 pulses                                  | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| Vibration                 | Frequency varied 10 to 2000 KHz in one minute, 3 directions, 12 hours | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| Load Life                 | 1000 hours at rated power at +70 °C, 1.5 hours on, 0.5 hours off      | $\Delta R \pm(1.0\% + 0.0005\ \Omega)$ |
| Resistance to Solder Heat | +260 °C Solder, 10-12 second dwell, 25 mm/second emergence            | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |
| Moisture Resistance       | MIL-STD-202 Method 106, 0 % power (7a and 7b not required)            | $\Delta R \pm(0.5\% + 0.0005\ \Omega)$ |

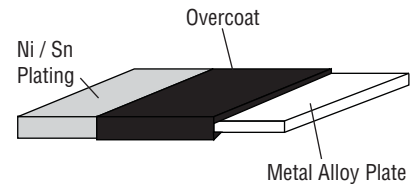
### Recommended Solder Pad Layout



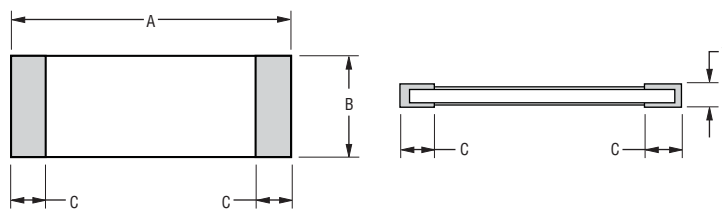
| Model   | A                     | B                     | L                     |
|---------|-----------------------|-----------------------|-----------------------|
| CRA2010 | $\frac{3.1}{(0.122)}$ | $\frac{2.7}{(0.106)}$ | $\frac{3.1}{(0.122)}$ |
| CRA2512 | $\frac{4.0}{(0.157)}$ | $\frac{2.1}{(0.083)}$ | $\frac{4.1}{(0.161)}$ |

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

### Construction



### Product Dimensions



| Model   | A                                         | B                                         | C                                          | T                                         | Resistor Material       |
|---------|-------------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------------|-------------------------|
| CRA2010 | $\frac{5.0 \pm 0.20}{(0.1962 \pm 0.008)}$ | $\frac{2.5 \pm 0.20}{(0.0984 \pm 0.008)}$ | $\frac{0.65 \pm 0.20}{(0.0256 \pm 0.008)}$ | $\frac{0.6 \pm 0.20}{(0.0236 \pm 0.008)}$ | Resistor Cu-Ni or Cu-Mn |
| CRA2512 | $\frac{6.45 \pm 0.20}{(0.254 \pm 0.008)}$ | $\frac{3.35 \pm 0.20}{(0.131 \pm 0.008)}$ | $\frac{0.95 \pm 0.10}{(0.037 \pm 0.004)}$  | $\frac{0.7 \pm 0.20}{(0.0276 \pm 0.008)}$ | Resistor Cu-Ni or Cu-Mn |

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

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

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

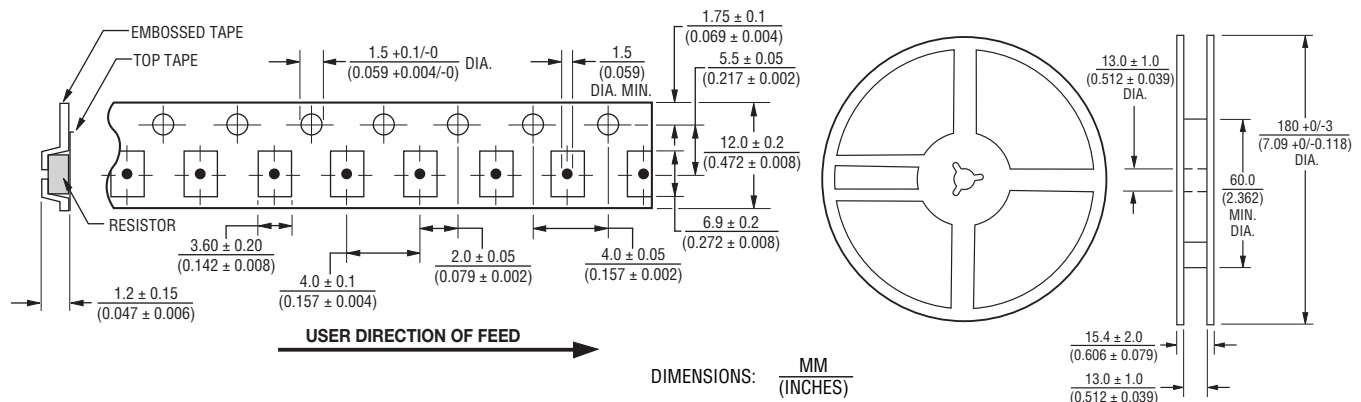
## Applications

- Power supplies
- Stepper motor drives

## CRA2010/CRA2512 - High Power Current Sense Chip Resistor

**BOURNS®**

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



### CRA2010 Resistance Values Available

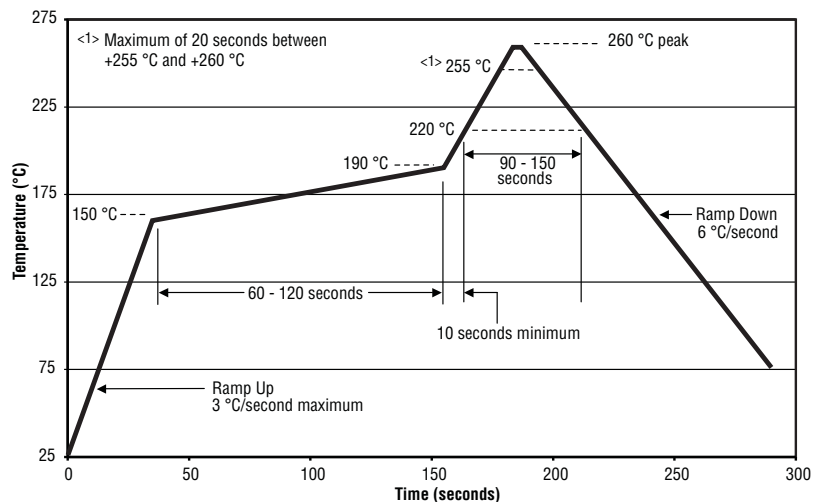
| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R005 | 0.005   | R015 | 0.015   |
| R010 | 0.010   | R020 | 0.020   |

### CRA2512 Resistance Values Available

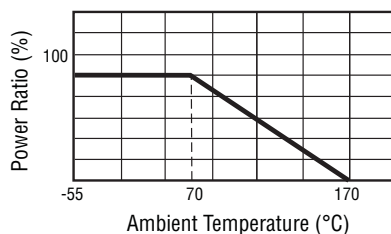
| Code | R Value | Code | R Value |
|------|---------|------|---------|
| R010 | 0.010   | R050 | 0.050   |
| R015 | 0.015   | R060 | 0.060   |
| R020 | 0.020   | R070 | 0.070   |
| R025 | 0.025   | R075 | 0.075   |
| R030 | 0.030   | R080 | 0.080   |
| R040 | 0.040   | R100 | 0.100   |

Consult factory for other resistance values.

### Soldering Profile



### Derating Curve



### How to Order

**CRA 2512 - F Z - R020 E LF**

Model \_\_\_\_\_  
(CRA = Precision Chip Resistor)

Size \_\_\_\_\_  
2010 = 2010 Size  
2512 = 2512 Size

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

TCR (PPM/°C) \_\_\_\_\_  
• Z = ±75 PPM/°C

Resistance Value \_\_\_\_\_  
"R" (decimal point) followed by three significant digits (example: R025 = 0.025 ohm)

Packaging \_\_\_\_\_  
• E = 4000 pieces on 180 mm (7 inch) reel

Termination \_\_\_\_\_  
• LF = Tin-plated (RoHS compliant)

REV. 12/13

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