



## Features

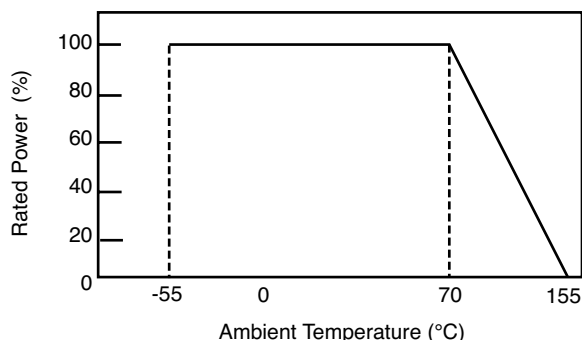
- Small package dimensions
- RoHS compliant\*
- Power rating at 70 °C = 1/16 W
- Tight dimensional tolerances
- Three layer termination process with nickel barrier prevents leaching and provides excellent solderability
- Suitable for most types of soldering processes
- Standard packaging on paper tape and reel

## CR0402 - Chip Resistor

### Electrical Characteristics

Power Rating @ 70 °C .....1/16 W  
 Operating Temperature Range  
 .....-55 °C to +155 °C  
 Derated to 0 Load at.....+155 °C  
 Maximum Working Voltage.....50 V  
 Maximum Overload Voltage .....100 V  
 Resistance Range  
 1 %, E-96  
 and E-24..... 10 ohms to 10 megohms  
 5 %, E-24 ..... 1 ohm to 20 megohms  
 Zero Ohm Jumper.....<0.05 ohms  
 Temperature Coefficient  
 1 % .....  $10 \Omega \leq R \leq 1 \text{ M}\Omega \pm 100 \text{ ppm}/^\circ\text{C}$   
 $1 \text{ M}\Omega < R \leq 10 \text{ M}\Omega \pm 200 \text{ ppm}/^\circ\text{C}$   
 5 % .....  $10 \Omega \leq R \leq 10 \text{ M}\Omega \pm 200 \text{ ppm}/^\circ\text{C}$   
 $10 \text{ M}\Omega < R \leq 20 \text{ M}\Omega \pm 400 \text{ ppm}/^\circ\text{C}$   
 $1 \Omega \leq R < 10 \Omega -200 \text{ to } +500 \text{ ppm}/^\circ\text{C}$   
 AEC-Q200 ..... Contact Bourns  
 to confirm availability

### Derating Curve



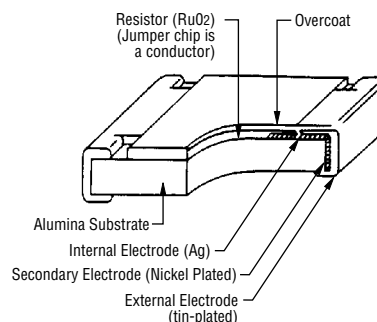
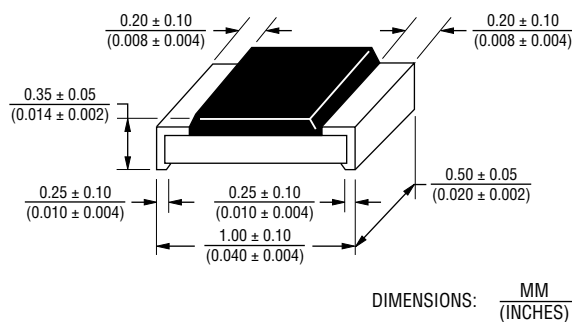
### Standard Values

For Standard Values Used in Capacitors, Inductors, and Resistors, [click here](#).

### Part Marking System

No Marking on the CR0402 Chip Resistors.

### Dimensional Drawings



### Performance Characteristics

| Test                            | Procedure                                                                                | Method            | Test Limits $\Delta R$           |                                |
|---------------------------------|------------------------------------------------------------------------------------------|-------------------|----------------------------------|--------------------------------|
|                                 |                                                                                          |                   | 1 %                              | 5 %                            |
| Thermal Shock                   | -55 °C for 30 minutes, +155 °C for 30 minutes, 5 cycles                                  | IEC60115-1-4.19   | $\leq \pm(0.5 \% + 0.05 \Omega)$ | $\leq \pm(1 \% + 0.05 \Omega)$ |
| Short Time Overload             | 2.5 X rated voltage for 5 seconds                                                        | IEC60115-1-4.13   | $\leq \pm(2 \% + 0.1 \Omega)$    |                                |
| Resistance to Solder Heat       | 270 $\pm$ 5 °C for 10 $\pm$ 1 seconds                                                    | IEC60115-1-4.18   | $\leq \pm(0.5 \% + 0.05 \Omega)$ | $\leq \pm(1 \% + 0.05 \Omega)$ |
| Resistance to Dry Heat          | 125 $\pm$ 5 °C for 96 $\pm$ 4 hours                                                      | IEC60115-1-4.23.2 | $\leq \pm(1 \% + 0.05 \Omega)$   | $\leq \pm(2 \% + 0.1 \Omega)$  |
| Load Life                       | Rated voltage for 1000 hours, 70 °C, 1.5 hours "ON", 0.5 hours "OFF"                     | IEC60115-1-4.25.1 | $\leq \pm(3 \% + 0.1 \Omega)$    |                                |
| Load Life with Humidity         | Rated voltage for 1000 hours, 40 $\pm$ 2 °C, 90~95 % RH, 1.5 hours "ON", 0.5 hours "OFF" | IEC60115-1-4.24   | $\leq \pm(3 \% + 0.1 \Omega)$    |                                |
| Solderability                   | 245 $\pm$ 5 °C, 2 $\pm$ 0.5 seconds                                                      | IEC60115-1-4.17   | $\geq 95 \%$ of area covered     |                                |
| Bending                         | 3 mm                                                                                     | IEC60115-1-4.33   | $\leq \pm(0.5 \% + 0.05 \Omega)$ | $\leq \pm(1 \% + 0.05 \Omega)$ |
| Dielectric Withstanding Voltage | --                                                                                       | IEC60115-1-4.7    | >100 V                           |                                |
| Insulation Resistance           | 100 V                                                                                    | IEC60115-1-4.6    | $\geq 1 \text{ G}\Omega$         |                                |

\*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.

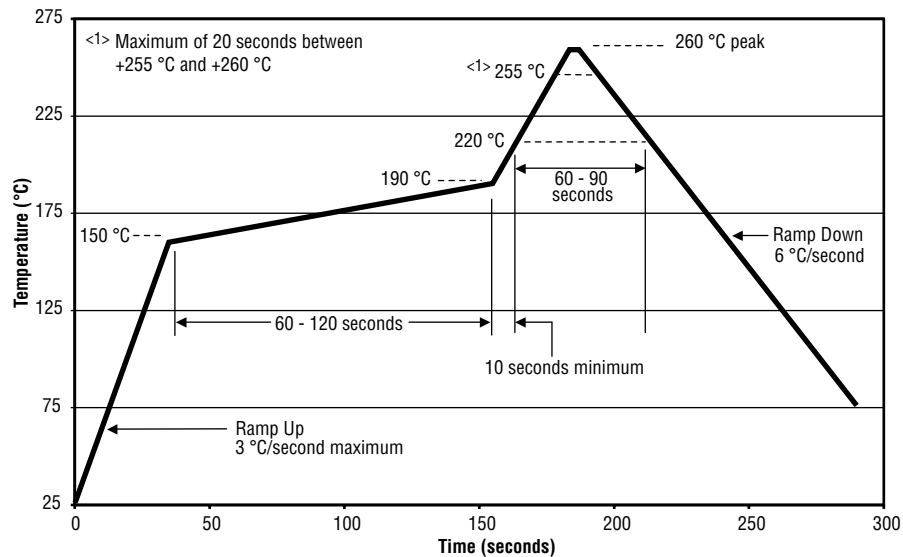
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

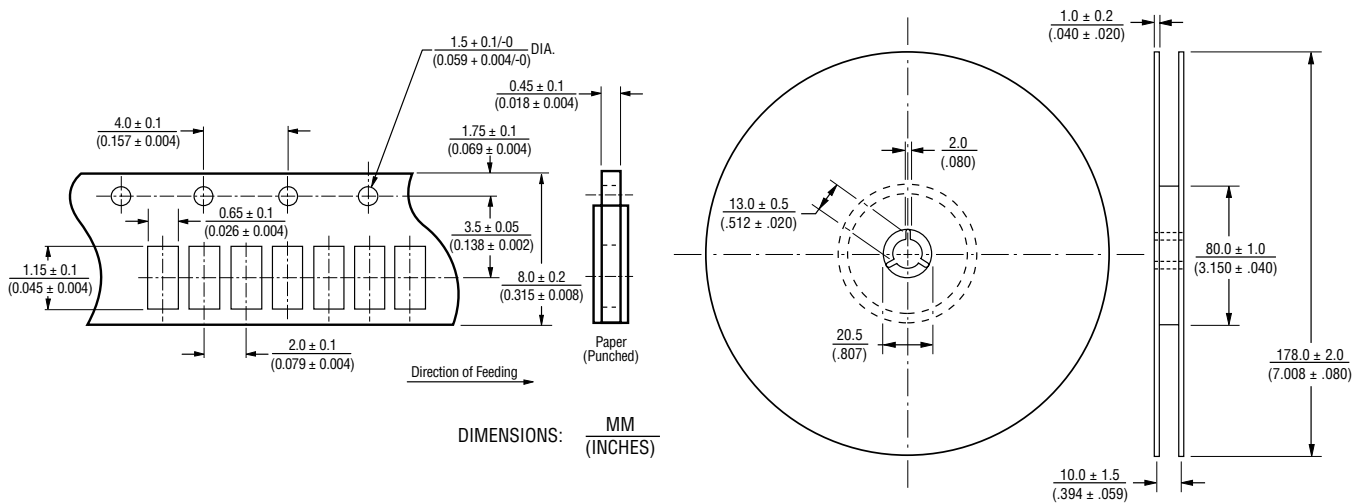
# CR0402 - Chip Resistor

**BOURNS®**

## Soldering Profile for RoHS Compliant Chip Resistors and Arrays



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



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# CR0402 - Chip Resistor

**BOURNS®**

## How to Order

CR 0402 - F X - 8252 G LF

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| Model _____<br>(CR = Chip Resistor)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |
| Size _____<br>• 0402                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |
| Resistance Tolerance _____<br>F = $\pm 1\%$ ..... Used with "X" TCR code only for values from 10 ohms through 1 megohm; and<br>Used with "W" TCR code only for values above 1 megohm. through 10 megohms.<br>J = $\pm 5\%$ ..... Used with "W" TCR code for values from 10 ohms through 10 megohms;<br>Used with "Z" TCR code for values above 10 megohms through 20 megohms;<br>Used with "/" TCR code for zero ohm (jumper); and for values from 1 ohm through 9.1 ohms.                                                              |  |  |  |  |  |
| TCR (ppm/ $^{\circ}$ C) _____<br>X = $\pm 100$<br>W = $\pm 200$<br>Z = $\pm 400$<br>/ = -200 to +500                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |
| Resistance Value _____<br><u>For 1 % Tolerance:</u><br><100 ohms ..... "R" designates decimal point (example: 24R3 = 24.3 ohms)<br>$\geq 100$ ohms ..... First three digits are significant, fourth digit represents number of zeros to follow (example: 8252 = 82.5k ohms).<br><u>For 5 % Tolerance:</u><br><10 ohms ..... "R" designates decimal point (example: 4R7 = 4.7 ohms)<br>$\geq 10$ ohms ..... First two digits are significant, third digit represents number of zeros to follow (example: 474 = 470k ohms; 000 = Jumper). |  |  |  |  |  |
| Packaging _____<br>G = Paper Tape (10,000 pcs.) on 7 " Plastic Reel                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |
| Termination _____<br>LF = Tin-plated (RoHS compliant)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |

REV. 11/16

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