



## Features

- RoHS compliant\*
- Power rating at 70 °C: CR2010 - 1/2 W, CR2512 - 1 W
- Tight tolerances of bottom electrode width
- Three layer termination process with nickel barrier prevents leaching and provides excellent solderability
- Suitable for most types of soldering processes
- Standard packaging on tape and reel
- AEC-Q200 approval upon request

## CR2010/CR2512 - Chip Resistors

### Electrical Characteristics

| Characteristic                                  | Model CR2010   | Model CR2512 |
|---|--|--------------|
| Power Rating @ 70 °C                            | 1/2 W  | 1 W          |
| Operating Temperature Range                     | -55 °C to +155 °C  |              |
| Derated to 0 Load at                            | +155 °C  |              |
| Maximum Working Voltage                         | 200 V  |              |
| Maximum Overload Voltage                        | 400 V  |              |
| Resistance Range: 1 % E-96 + E-24               | 10 ohms ≤ R ≤ 1M ohms<br>±100 PPM/°C<br>1M ohms < R ≤ 10M ohms<br>±200 PPM/°C                          |              |
| Resistance Range: 5 % E-24                      | 10 ohms ≤ R ≤ 10M ohms<br>±200 PPM/°C<br>1 ohm ≤ R < 10 ohms<br>10M ohms < R ≤ 20M ohms<br>±400 PPM/°C |              |
| Zero Ohm Jumper <0.05 ohm Rated/Maximum Current | 2 A/5 A  | 2 A/5 A      |

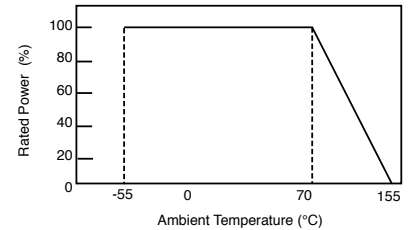
### Chip Dimensions

| Dimension | Model CR2010                              | Model CR2512                              |
|-----------|---|---|
| L         | $\frac{5.00 \pm 0.20}{(0.197 \pm 0.008)}$ | $\frac{6.30 \pm 0.20}{(0.248 \pm 0.008)}$ |
| W         | $\frac{2.50 \pm 0.20}{(0.098 \pm 0.008)}$ | $\frac{3.10 \pm 0.20}{(0.122 \pm 0.008)}$ |
| H         | $\frac{0.60 \pm 0.10}{(0.024 \pm 0.004)}$ | $\frac{0.60 \pm 0.15}{(0.024 \pm 0.006)}$ |
| l1        | $\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$ | $\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$ |
| l2        | $\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$ | $\frac{0.60 \pm 0.25}{(0.024 \pm 0.010)}$ |

### Performance Characteristics

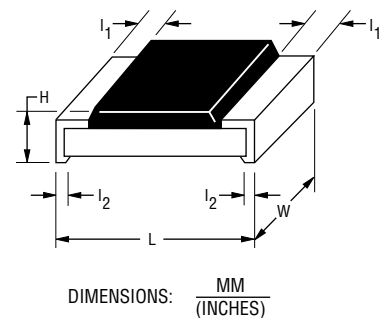
| Test                            | Procedure   | Method            | Test Limits ΔR        |                  |
|---------------------------------|---|-------------------|-----------------------|------------------|
|                                 |   |                   | 1 %                   | 5 %              |
| Thermal Shock                   | -55 °C for 30 minutes, +155 °C for 30 minutes, 5 cycles                             | IEC60115-1-4.19   | ≤±(0.5 % + 0.05 Ω)    | ≤±(1 % + 0.05 Ω) |
| Short Time Overload             | 2.5 X rated voltage for 5 seconds   | IEC60115-1-4.13   | ≤±(1 % + 0.05 Ω)      |                  |
| Resistance to Solder Heat       | 270 ±5 °C for 10 ±1 seconds   | IEC60115-1-4.18   | ≤±(0.5 % + 0.05 Ω)    | ≤±(1 % + 0.05 Ω) |
| Resistance to Dry Heat          | 125 ±5 °C for 96 ±4 hours   | IEC60115-1-4.23.2 | ≤±(1 % + 0.05 Ω)      | ≤±(2 % + 0.1 Ω)  |
| Load Life                       | Rated voltage for 1000 hours, 70 °C, 1.5 hours "ON", 0.5 hours "OFF"                | IEC60115-1-4.25.1 | ≤±(1 % + 0.05 Ω)      | ≤±(3 % + 0.1 Ω)  |
| Load Life with Humidity         | Rated voltage for 1000 hours, 40 ±2 °C, 90-95 % RH, 1.5 hours "ON", 0.5 hours "OFF" | IEC60115-1-4.24   | ≤±(1 % + 0.05 Ω)      | ≤±(3 % + 0.1 Ω)  |
| Solderability                   | 245 ±5 °C, 2 ±0.5 seconds   | IEC60115-1-4.17   | ≥95 % of area covered |                  |
| Bending                         | 3 mm  | IEC60115-1-4.33   | ≤±(0.5 % + 0.05 Ω)    | ≤±(1 % + 0.05 Ω) |
| Dielectric Withstanding Voltage | --  | IEC60115-1-4.7    | >500 V                |                  |
| Insulation Resistance           | 100 V   | IEC60115-1-4.6    | ≥1 GΩ                 |                  |

### Derating Curve



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

### Dimensional Drawing



**WARNING**  
Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

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# CR2010/CR2512 - Chip Resistors

**BOURNS®**

## How to Order

CR 2010 - F X - 8252 E LF

Model \_\_\_\_\_ (CR = Chip Resistor)

Size \_\_\_\_\_

- 2010
- 2512

Resistance Tolerance \_\_\_\_\_

F = ±1 % ..... Use with "X" TCR code only for values from 10 ohms through 1 megohm;  
Use with "W" TCR code only for values from 1 megohm through 10 megohms

J = ±5 % ..... Use with "W" TCR code for values from 10 ohms through 10 megohms;  
Use with "Z" TCR code for values above 10 megohms through 20 megohms;  
Use with "/" TCR code for zero ohm (jumper) and values from 1 ohm through 9.1 ohms.

TCR (ppm/°C) \_\_\_\_\_

X = ±100  
W = ±200  
Z = ±400  
/ = Used with "J" Resistance Tolerance code for zero ohm (jumper) and values from 1 ohm through 9.1 ohms.

Resistance Value \_\_\_\_\_

For 1 % Tolerance:  
<100 ohms....."R" represents decimal point (example: 24R3 = 24.3 ohms)  
≥100 ohms.....First three digits are significant, fourth digit represents number of zeros to follow (example: 8252 = 82.5k W)

For 5 % Tolerance:  
<10 ohms ..... "R" represents decimal point (example: 4R7 = 4.7 ohms)  
≥10 ohms..... First two digits are significant, third digit represents number of zeros to follow (example: 474 = 470k ohms; 000 = Jumper)

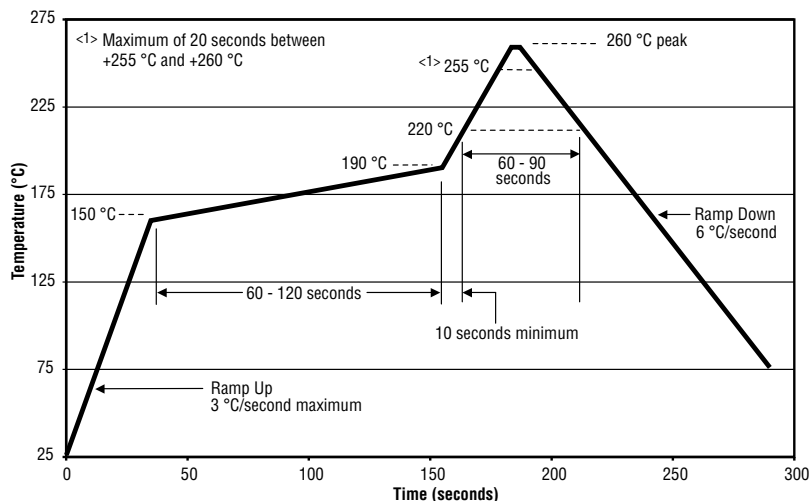
Packaging \_\_\_\_\_

E = Embossed Plastic Tape (4,000 pcs.) on 7" Plastic Reel

Termination \_\_\_\_\_

LF = Tin-plated (RoHS compliant)

## Soldering Profile for RoHS Compliant Chip Resistors and Arrays



## Marking Explanation

Resistors with 5 % tolerance may have a 3-digit or 4-digit resistance code. Complete information about resistance value and tolerance is found on the label of the reel of chip resistors.

- 5 %: 3 digits, first two digits are significant, third digit is number of zeros to follow. Letter R is decimal point for values from 1 to 9.9 ohms.
- 5 %: 4 digits, first three digits are significant, fourth digit is number of zeros to follow. Letter R is decimal point for values from 1 to 99.9 ohms.
- 1 %: 4 digits, first three digits are significant, fourth digit is number of zeros to follow. Letter R is decimal for values from 1 to 99.9 ohms.

Specifications are subject to change without notice.

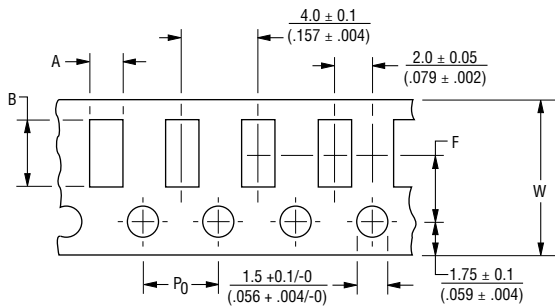
Users should verify actual device performance in their specific applications.

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# CR2010/CR2512 - Chip Resistors

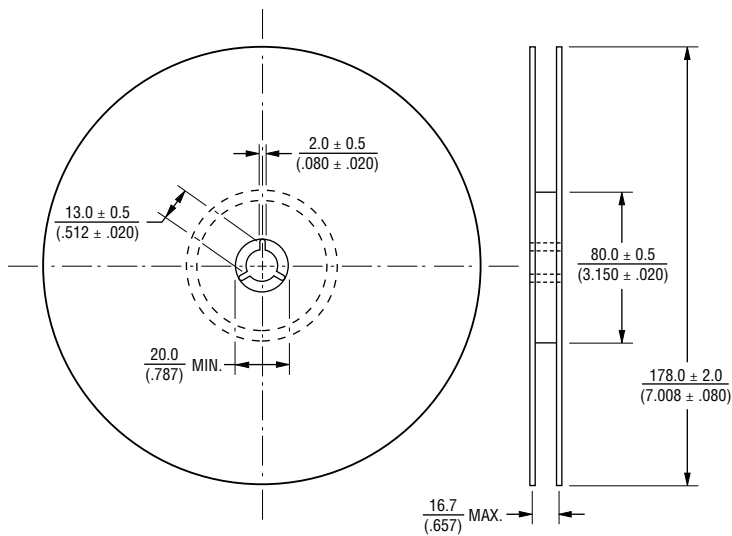
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## Packaging Dimensions



| Dimension | Model CR2010                             | Model CR2512                             |
|-----------|--|--|
| A         | $\frac{2.8 \pm 0.2}{(0.110 \pm 0.008)}$  | $\frac{3.5 \pm 0.2}{(0.138 \pm 0.008)}$  |
| B         | $\frac{5.5 \pm 0.2}{(0.217 \pm 0.008)}$  | $\frac{6.7 \pm 0.2}{(0.264 \pm 0.008)}$  |
| W         | $\frac{12.0 \pm 0.3}{(0.472 \pm 0.012)}$ | $\frac{12.0 \pm 0.3}{(0.472 \pm 0.012)}$ |
| F         | $\frac{5.5 \pm 0.05}{(0.217 \pm 0.002)}$ | $\frac{5.5 \pm 0.05}{(0.217 \pm 0.002)}$ |
| P0        | $\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$  | $\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$  |

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



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