



**THE DATASHEET OF  
CST0612-FC-R0005-E**





## Features

- Four terminal design
- Low inductance <5 nH
- Low thermal EMF <3 μV/°C
- Metal alloy strip
- RoHS compliant\* and halogen free\*\*
- AEC-Q200 compliant

## Applications

- Current sense
- Precision circuits
- Medical equipment\*\*\*
- Printers
- Automation equipment
- Navigation equipment

# Model CST0612 Current Sense Resistor

### Electrical Characteristics

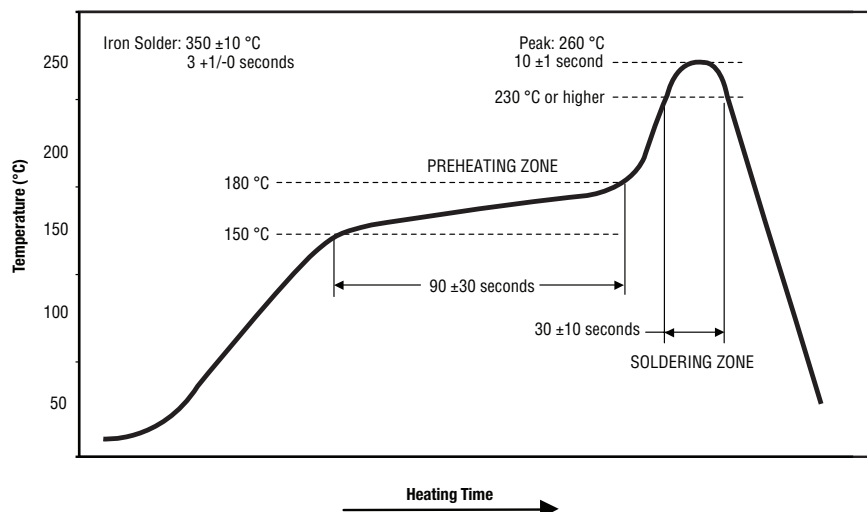
| Characteristic                        | Model CST0612              |
|---------------------------------------|----------------------------|
| Power Rating @ 70 °C                  | 1 W (NOTE 1)               |
| Resistance Range                      | 0.5 - 5 milliohms          |
| Operating Temperature Range           | -55 °C to +170 °C          |
| Temperature Coefficient of Resistance | ±100 PPM/°C<br>±200 PPM/°C |
| Resistance Tolerance                  | ±1 %                       |
| Insulation Resistance                 | > 100 megohms              |
| Derated to Zero Load at               | +170 °C                    |
| Maximum Working Voltage (V)           | (P*R) <sup>1/2</sup>       |

(Note 1) 1 watt with total solder pad and trace size of 300 mm<sup>2</sup>.

### Environmental Characteristics

| Specification                                  | Model CST0612                     |
|--|-----------------------------------|
| Shelf Life                                     | Two years from manufacturing date |
| Storage Conditions:<br>Temperature<br>Humidity | +5 °C ~ +35 °C<br>40 % ~ 75 %     |
| Recommended Solder                             | Sn96.5 / Ag3 / Cu0.5              |
| Material:<br>Strip<br>Overcoating<br>Compound  | Alloy<br>Molding<br>UL 94V0 Grade |

### Soldering Profile



### Additional Information

Click these links for more information:



### Popular Resistance Table

| Resistance Value (Milliohms) | Resistance Code |
|------------------------------|-----------------|
| 0.50                         | R0005           |
| 0.75                         | R00075          |
| 1.00                         | R001            |
| 1.50                         | R0015           |
| 2.00                         | R002            |
| 3.00                         | R003            |
| 5.00                         | R005            |

### 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)

\* 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.

\*\*\* Bourns® products have not been specifically designed and tested for FDA Class III applications and equivalent applications covered by other regulatory authority such as the European Council, and their use in such applications is neither recommended nor supported.

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

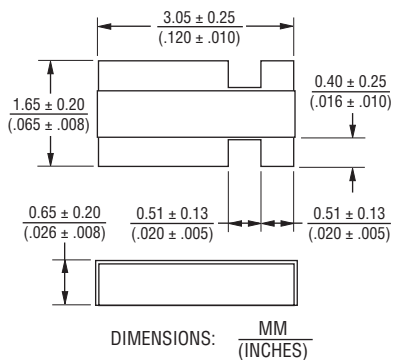
# Model CST0612 Current Sense Resistor

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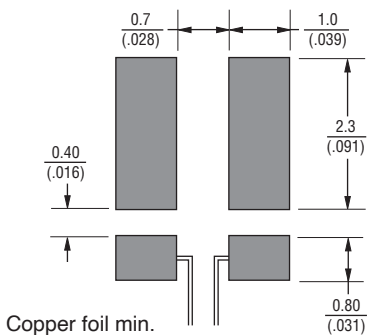
## Reliability Tests

| Test Item                             | Reference Standard                          | Test Conditions  | Test Limits   |
|---------------------------------------|---|--|---|
| Temperature Coefficient of Resistance | IEC 60115-1-4.8<br>JIS-C5201-4.8            | +25 °C ~ +125 °C   | Refer 4.0   |
| Load Life                             | IEC 60115-1-4.25.1<br>JIS-C5201-4.25.1      | 1000 hours at rated power, 70 °C,<br>1.5 hours "ON", 0.5 hours "OFF" | < ±2 %  |
| Short Time Overload                   | IEC 60115-1-4.13<br>JIS-C5201-4.13          | 5 times rated power<br>for 10 seconds                                | < ±0.5 %  |
| Moisture No Load                      | IEC60115-1-4.24.2.1a<br>JIS-C5201-4.24.2.1a | 85 °C, 85 %RH, 1000 hours  | < ±0.5 %  |
| Temperature Cycle                     | IEC60115-1-4.19<br>JIS-C5201-4.19           | -55 °C and +155 °C, 300 cycles,<br>15 minutes per extreme condition  | < ±0.5 %  |
| Resistance to Soldering Heat          | IEC60115-1-4.18<br>JIS-C5201-4.18           | 260 ° ±5 °C for 10 ±1 seconds,<br>2 cycles                           | < ±0.5 %  |
| Solderability                         | IEC60115-1-4.17<br>JIS-C5201-4.17           | 245 ±5 °C, 2 ±0.5 seconds  | At least 95 % of surface area of<br>electrode shall be covered with<br>new solder |
| High Temperature Exposure             | IEC60115-1-4.23.2<br>JIS-C5201-4.23.2       | 170 °C, 1000 hours   | < ±2 %  |
| Low Temperature Storage               | IEC60115-1-4.23.4<br>JIS-C5201-4.23.4       | -55 °C, 1000 hours   | < ±0.5 %  |
| Substrate Bending                     | IEC60115-1-4.33<br>JIS-C5201-4.33           | 2 mm bending width   | < ±0.5 %  |
| Insulation Resistance                 | IEC60115-1-4.6<br>JIS-C5201-4.6             | 100 V DC for 1 minute  | > 100 megohms   |

## Product Dimensions



## Recommended Solder Pad Layout



## How to Order

**CST 0612 - F C - R001 E**

Model \_\_\_\_\_  
(CST = Current Sense Terminal Type)

Size \_\_\_\_\_  
0612

Resistance Tolerance \_\_\_\_\_  
F = ±1 %

TCR (See Electrical Characteristics chart) \_\_\_\_\_  
X = ±100 PPM/°C  
C = ±200 PPM/°C

Resistance Code \_\_\_\_\_  
See Popular Resistance Table

Packaging Code (NOTE 2) \_\_\_\_\_  
E = Embossed Tape (4,000 pcs. per 7" reel)

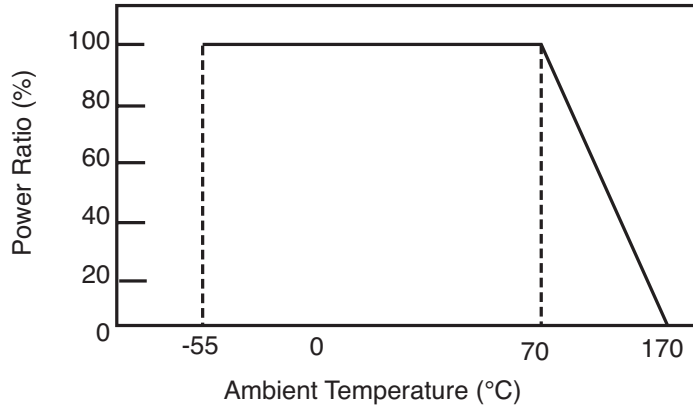
(NOTE 2) Part Number CST0612-FC-R0005-E requires a hyphen before the Packaging Code.

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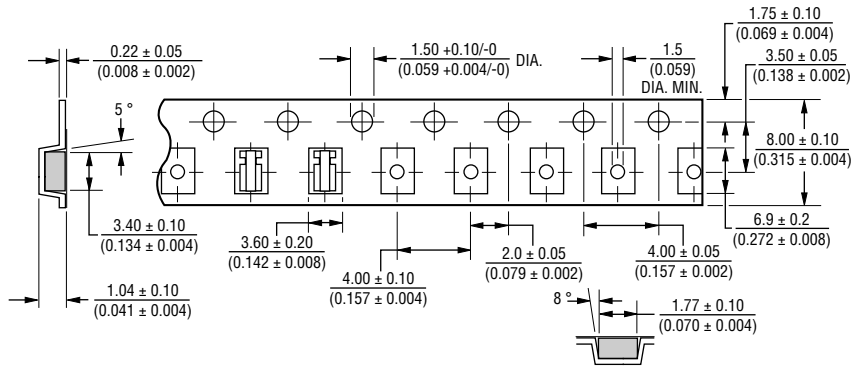
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## Derating Curve

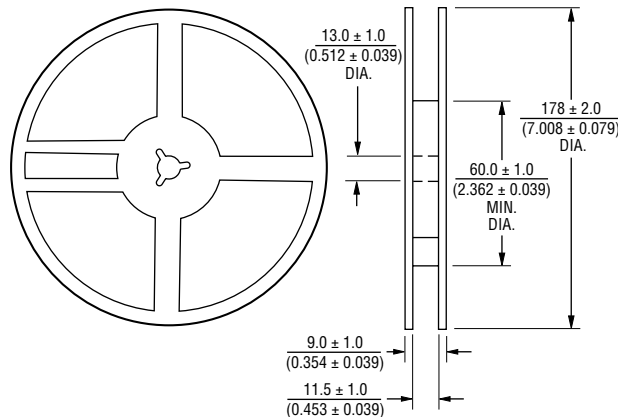


## Packaging Specifications



USER DIRECTION OF FEED

4,000 PIECES PER REEL



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

REV. 01/23

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