


## Features

- EB welded metal strip
- Very high power
- Excellent long term stability
- Low resistance, low TCR
- Low thermal EMF
- RoHS compliant* and halogen free**
- AEC-Q200 compliant

## Applications

- Current sensing
- Voltage division
- Battery management systems
- Power modules
- Frequency converters
- Industrial

# Model CSS2H-3920 Series Current Sense Resistor

## Electrical Characteristics

| Characteristic | Model CSS2H-3920 Series | |
|---|---|---|
| Resistance Range / Power Rating @70 °C[1] | CSS2H-3920C-000[3] | < 0.2 mΩ / 160 A |
| | CSS2H-3920R-L200x | 0.2 mΩ / 12 W |
| | CSS2H-3920R-L300x | 0.3 mΩ / 10 W |
| | CSS2H-3920R-L500x | 0.5 mΩ / 9 W |
| | CSS2H-3920R-L700x | 0.7 mΩ / 8 W |
| | CSS2H-3920R-1L00x | 1.0 mΩ / 8 W |
| | CSS2H-3920K-2L00x | 2.0 mΩ / 6 W |
| | CSS2H-3920K-2L50x | 2.5 mΩ / 5 W |
| | CSS2H-3920K-3L00x | 3.0 mΩ / 5 W |
| | CSS2H-3920K-4L00x[4] | 4.0 mΩ / 4 W |
| | CSS2H-3920K-5L00x[4] | 5.0 mΩ / 3 W |
| Operating Temperature Range | -55 to +170 °C | |
| TCR - Resistive Alloy [2] | ±50 PPM/°C (20~60 °C) | |
| Temperature Coefficient including Copper Terminals | CSS2H-3920R-L200x | ±100 PPM/°C |
| | CSS2H-3920R-L300x | |
| | CSS2H-3920R-L500x | |
| | CSS2H-3920R-L700x | |
| | CSS2H-3920R-1L00x | |
| | CSS2H-3920K-2L00x | ±75 PPM/°C |
| | CSS2H-3920K-2L50x | |
| | CSS2H-3920K-3L00x | |
| | CSS2H-3920K-4L00x[4] | |
| | CSS2H-3920K-5L00x[4] | |
| Inductance | Material type R: < 3 nH<br>Material type K: < 5 nH | |
| Resistance Tolerance | ±1 %, ±5 % | |

[1] Terminal temperature [2] For full TCR range, refer to TCR curve
[3] Tinned copper [4] CSS2H-3920K-4L00x and -5L00x are available upon request - contact factory

## Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES
FOLLOW | SHUNT PULSE CALCULATOR | CONTACT

## How to Order

**CSS 2H - 3920 R - 1L00 F** ___

- Model
- No. of Terminals & Style
- Size
- Material Type (See Part Number Table)
- Resistance Code (milliohms)
  "L" represents decimal point
  *(examples: L500 = .500 milliohms; 1L00 = 1.00 milliohms)*
- Resistance Tolerance
  F = ±1 %
  J = ±5 %
- Packaging size
  Blank = Standard 13 ″ reel
  E = Mini 7 ″ reel

## Environmental Characteristics

| Characteristic | Test Condition | ΔR Max. |
|---|---|---|
| Thermal Shock | -55 to +150 °C / 2000 Cycles | 0.50 % |
| Short Time Overload | 5 Times Rated Power for 5 Second Duration | 0.50 % |
| Resistance to Soldering Heat | +260 °C / 10 Seconds | 0.50 % |
| High Temperature Exposure | +170 °C / 2000 Hours | 1.00 % |
| Low Temperature Storage | -65 °C / 24 Hours | 0.10 % |
| Biased Humidity Test | +85 °C, 85 % R.H., 1000 Hours | 0.50 % |
| Moisture Resistance | 10 Days with Cold Shock, No Load | 0.20 % |
| Mechanical Shock | 100 g, 6 ms half sine | 0.20 % |
| Vibration, High Frequency | 20 g, 10-2000 Hz | 0.20 % |
| Load Life | 2000 Hours, Max. Load, Terminal Temperature 130 °C | 1.00 % |
| Solderability | J-STD-002 | 95 % Coverage Min. |
| ESD | AEC-Q200-002, 25 kV | 0.25 % |
| Board Flex | 60 Sec. Min. Holding Time | 0.25 % |
| Moisture Sensitivity Level | | Level 1 |

**CALIFORNIA WARNING:** Can expose you to lead, a carcinogen and reproductive toxicant.See www.P65Warnings.ca.gov

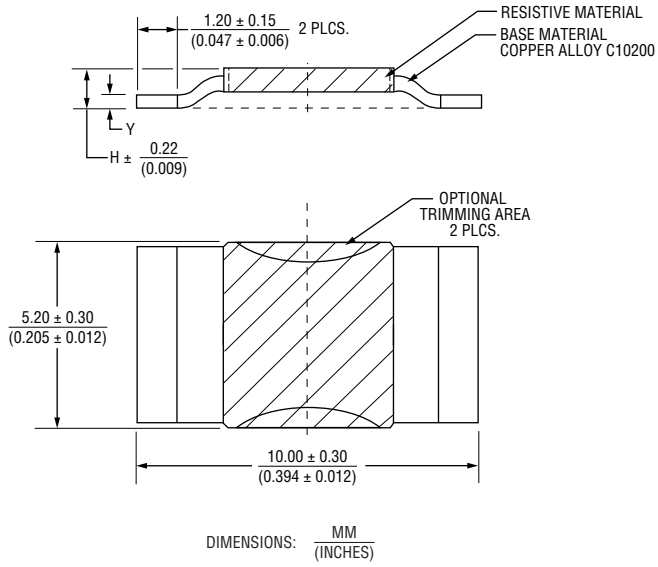
* RoHS Directive 2015/863, Mar 31, 2015 and Annex.
** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

Specifications are subject to change without notice.
Users should verify actual device performance in their specific applications.
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# Model CSS2H-3920 Series Current Sense Resistor

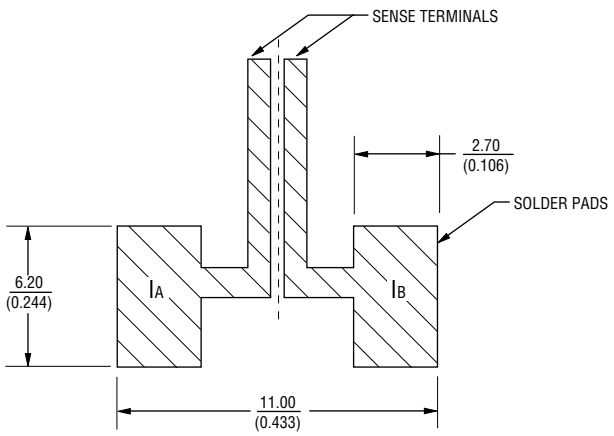
BOURNS®

## Product Dimensions

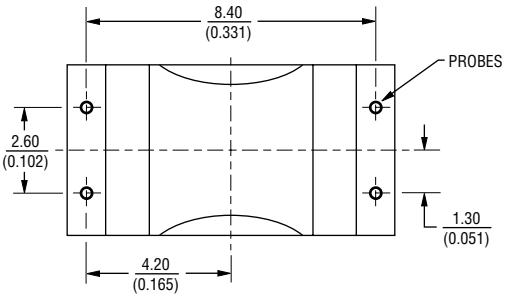



| Part Number | Dimension H max. | Dimension Y max | Alloy |
|---|---|---|---|
| CSS2H-3920C-000 | 0.93 (0.037) | 0.43 (0.017) | Cu/Tin |
| CSS2H-3920R-L200x | 2.51 (0.099) | 1.20 (0.047) | Cu-Mn |
| CSS2H-3920R-L300x | 1.82 (0.072) | 1.20 (0.047) | Cu-Mn |
| CSS2H-3920R-L500x | 1.29 (0.051) | 0.76 (0.030) | Cu-Mn |
| CSS2H-3920R-L700x | 1.05 (0.041) | 0.43 (0.017) | Cu-Mn |
| CSS2H-3920R-1L00x | 0.93 (0.037) | 0.43 (0.017) | Cu-Mn |
| CSS2H-3920K-2L00x | 1.17 (0.046) | 0.60 (0.024) | Fe-Cr |
| CSS2H-3920K-2L50x | 1.04 (0.041) | 0.50 (0.020) | Fe-Cr |
| CSS2H-3920K-3L00x | 0.99 (0.039) | 0.49 (0.019) | Fe-Cr |
| CSS2H-3920K-4L00x | 0.85 (0.033) | 0.43 (0.017) | Fe-Cr |
| CSS2H-3920K-5L00x | 0.78 (0.031) | 0.43 (0.017) | Fe-Cr |

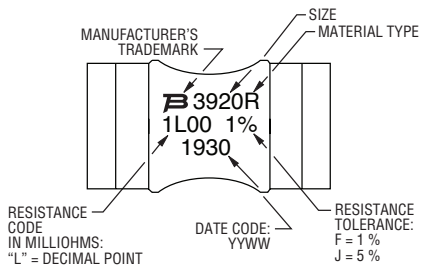
## Recommended Pad Layout




## Recommended Measurements




## Typical Part Marking



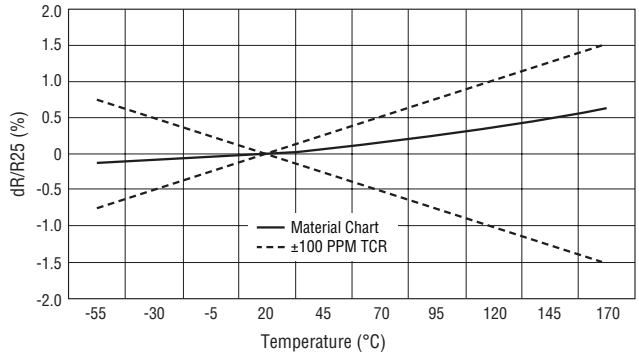

## Electrical Schematic



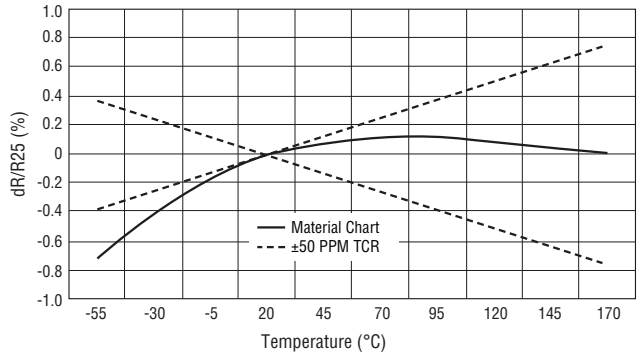

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## TCR Curves

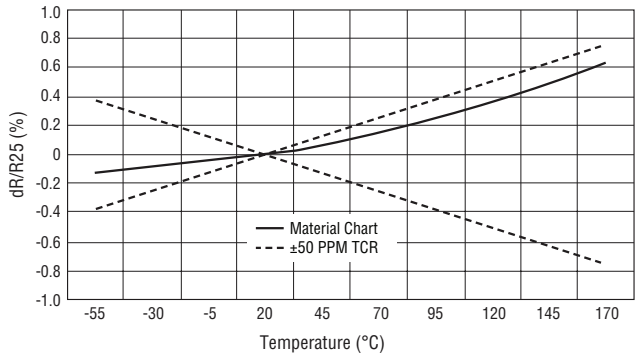
K-Type Resistive Material



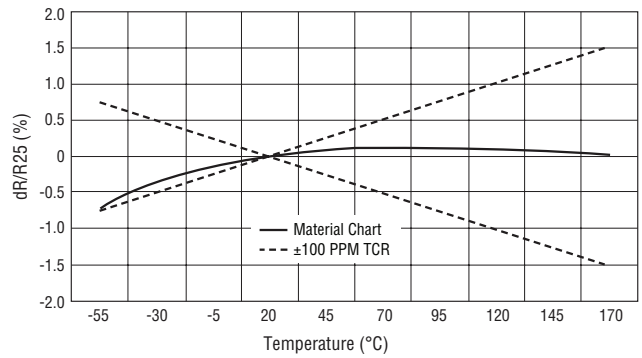

R-Type Resistive Material



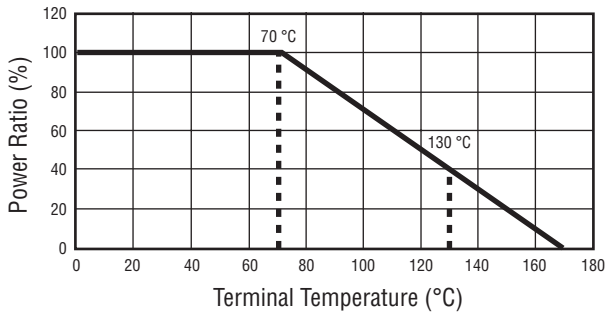

K-Type Resistive Material




R-Type Resistive Material

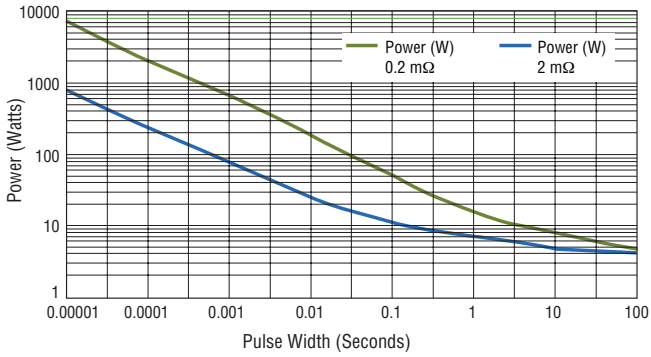



## Terminal Temperature Derating Curve

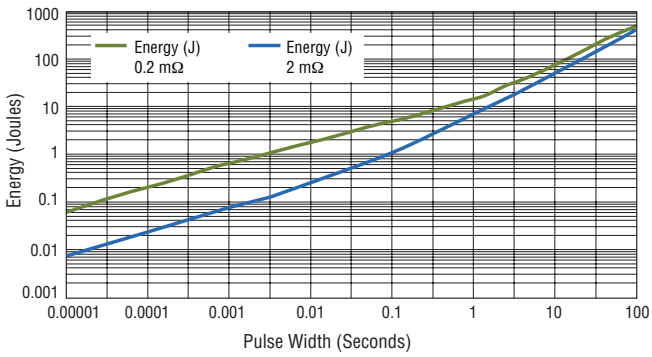



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## Maximum Pulse Power



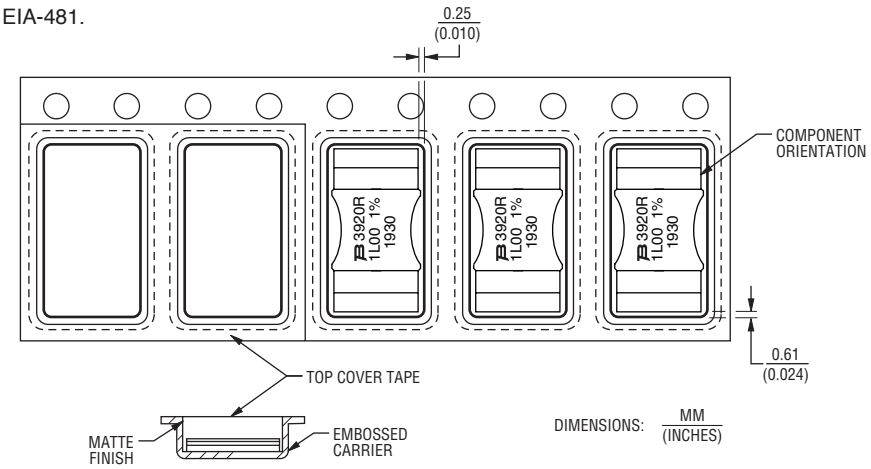

## Maximum Pulse Energy




## Packaging Specifications

Components packaged on plastic tape & reel per EIA-481.

| | |
|---|---|
| Standard Reel Size: | 13 inches |
| Tape Width: | 16 mm |
| Quantity: | 3,000 pcs. per reel |
| Mini-Reel Size: | 7 inches |
| Tape Width: | 16 mm |
| Quantity: | 1000 pcs. per reel |




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