

## 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 <sup>1</sup>	CSS2H-3920C-000 <sup>3</sup>	< 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 <sup>4</sup>	4.0 mΩ / 4 W
CSS2H-3920K-5L00x <sup>4</sup>	5.0 mΩ / 3 W	
Operating Temperature Range	-55 to +170 °C	
TCR - Resistive Alloy <sup>2</sup>	±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 <sup>4</sup>	
	CSS2H-3920K-5L00x <sup>4</sup>	
Inductance	Material type R: < 3 nH Material type K: < 5 nH	
Resistance Tolerance	±1 %, ±5 %	

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

### Additional Information

Click these links for more information:



### 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



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

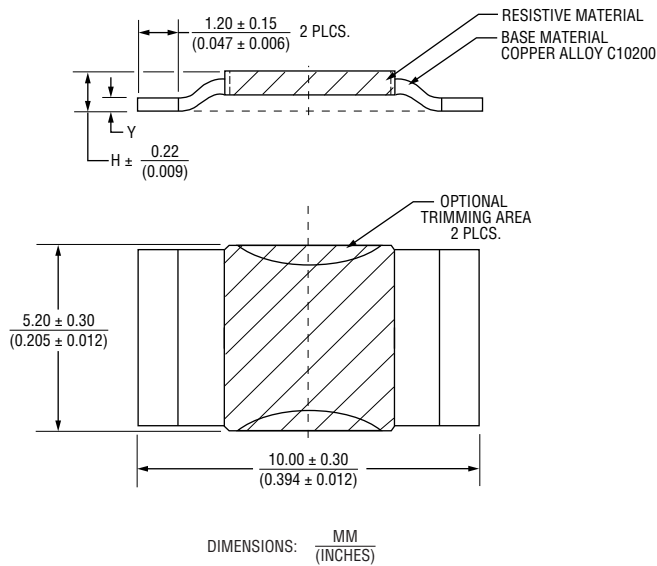
\* RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
 \*\*Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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 Users should verify actual device performance in their specific applications.  
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# Model CSS2H-3920 Series Current Sense Resistor

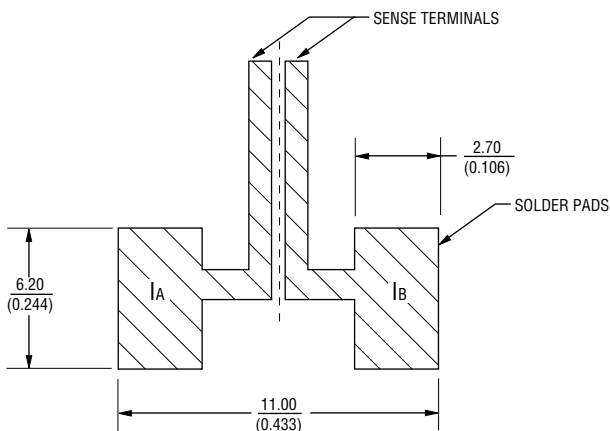


## Product Dimensions



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

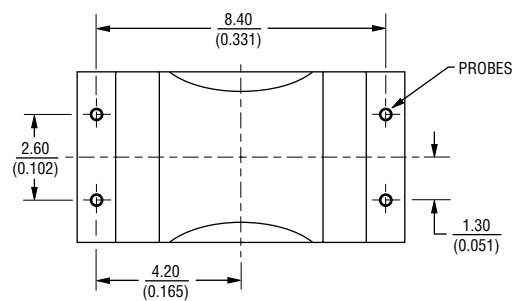
## Recommended Pad Layout



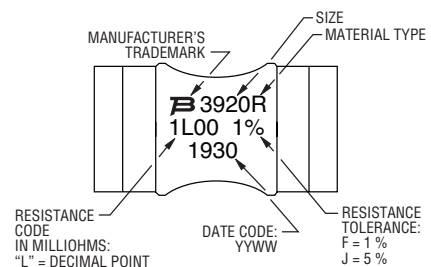
## Electrical Schematic



## Recommended Measurements



## Typical Part Marking



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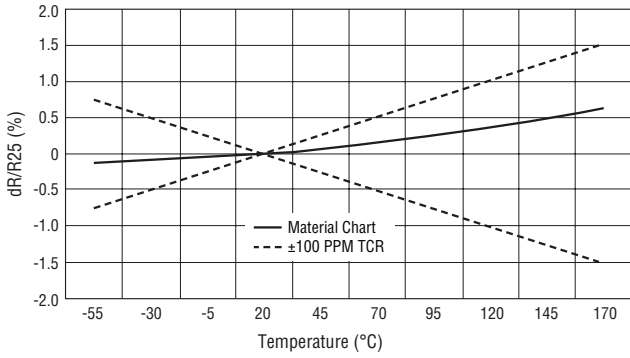
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# Model CSS2H-3920 Series Current Sense Resistor

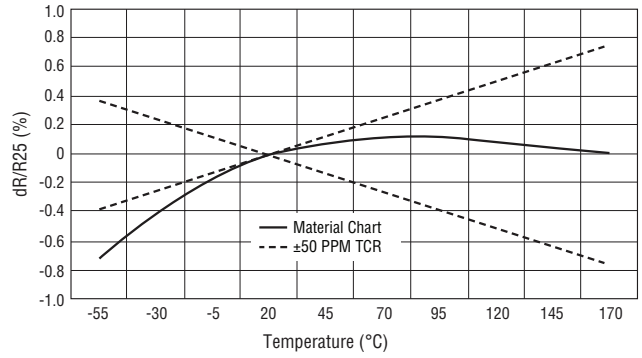


## TCR Curves

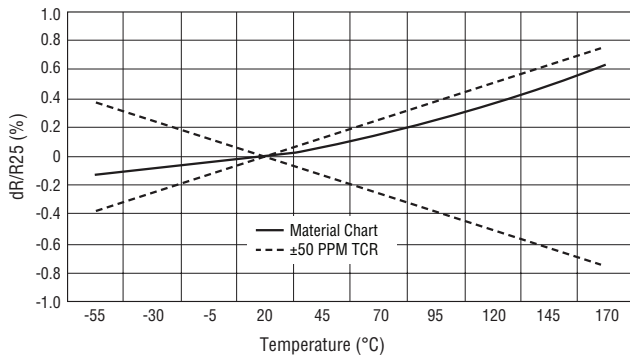
K-Type Resistive Material



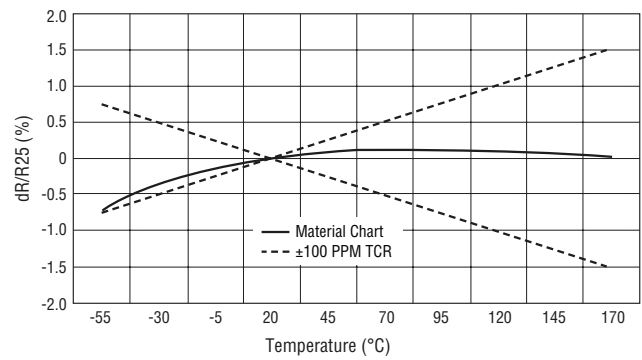
R-Type Resistive Material



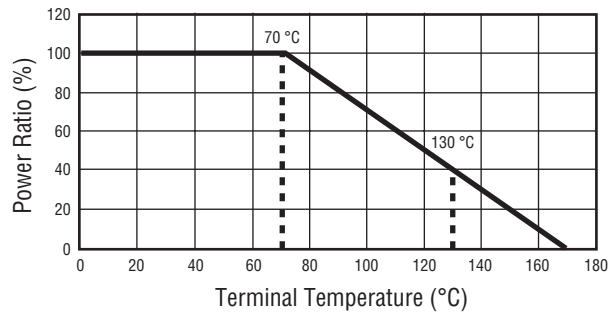
K-Type Resistive Material



R-Type Resistive Material



## Terminal Temperature Derating Curve



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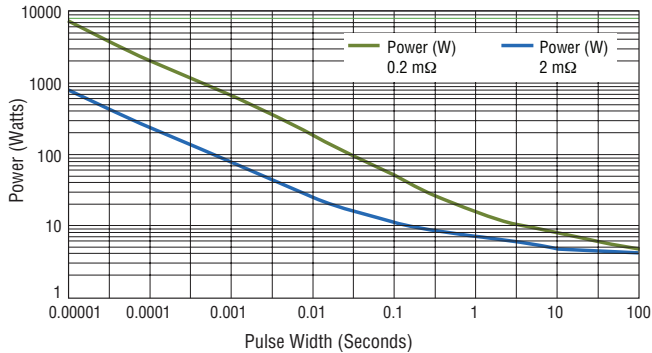
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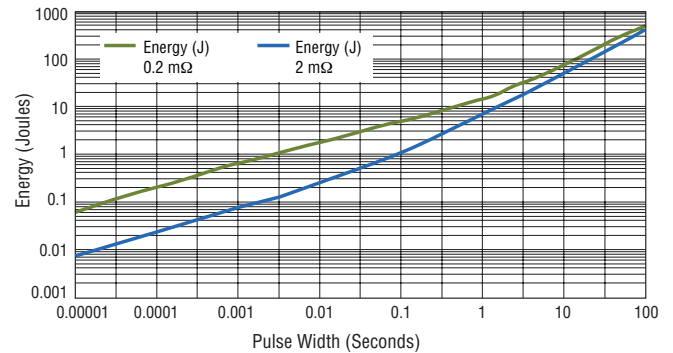
# Model CSS2H-3920 Series Current Sense Resistor

**BOURNS®**

## Maximum Pulse Power



## Maximum Pulse Energy

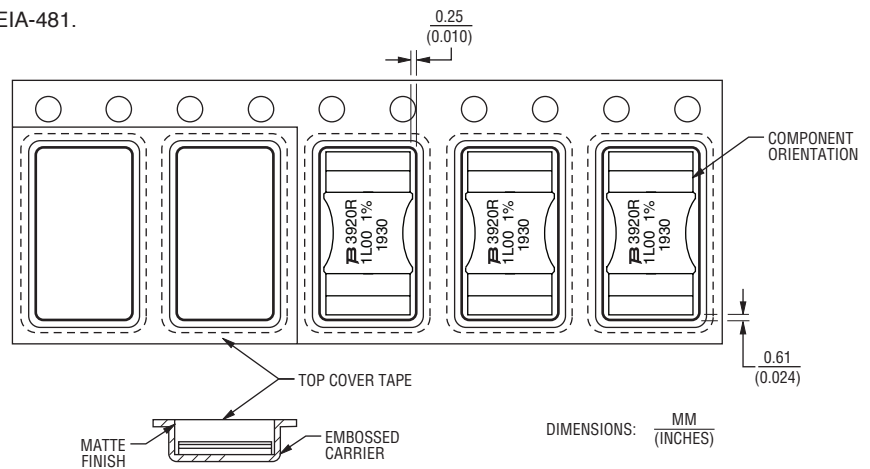


## Packaging Specifications

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



**BOURNS®**

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