

## SinglFuse™ SF-2923HC-C Series Features

- Single blow fuse for overcurrent protection
- EIA 2923 (7358 metric) footprint
- High current ceramic housing design
- UL 248-14 listed
- Surface mount packaging for automated assembly
- RoHS compliant\* and halogen free\*\*

## SF-2923HC-C Series – High Current SMD Fuses

### Electrical Characteristics

| Model          | Rated Current (Amps) | Fusing Time                                | Resistance (Ω) Typ.*** | Rated Voltage | Interrupting Rating | Typical I <sup>2</sup> t (A <sup>2</sup> s) **** |
|----------------|----------------------|--|------------------------|---------------|---------------------|--|
| SF-2923HC20C-2 | 20                   | Open within 60 sec. at 250 % rated current | 0.0020                 | 60 VDC        | 300 A @ 60 VDC      | 108  |
| SF-2923HC30C-2 | 30                   |  | 0.0012                 |               |                     | 270  |
| SF-2923HC40C-2 | 40                   |  | 0.0010                 |               |                     | 416  |
| SF-2923HC50C-2 | 50                   |  | 0.0007                 |               |                     | 1750   |

\*\*\* Resistance value measured with ≤10 % rated current at 25 °C ambient. Tolerance ±30 %.

\*\*\*\* Melting I<sup>2</sup>t calculated at 10 times rated current.

### Reliability Testing

| No. | Test                         | Test Condition   | Requirement  | Test Reference                                  |
|-----|------------------------------|--|--|---|
| 1   | Solderability                | Temperature setup: 235 +0 / -5 °C<br>Time setup: 10 sec.   | After test terminal electrode wetting area must be greater than 95 % | IEC 68-2-58                                     |
| 2   | Resistance to soldering heat | Temperature setup: 235 ±5 °C<br>Time setup: 30 sec.  | DCR change ≤ ±15 %   | IEC 68-2-58                                     |
| 3   | Thermal shock                | Temperature setup:<br>25 °C ~ -65 °C ~ 25 °C ~ 125 °C<br>Time setup: -65 °C (30 min)<br>~ 25 °C (5 min) ~ 125 °C (30 min)<br>~ 25 °C (5 min), 5 cycles | DCR change ≤ ±15 %<br>No mechanical damage                           | MIL-STD-202G<br>Method 107G<br>Test Condition B |
| 4   | Humidity unload              | Heat (85 ±0.5 °C)<br>High Humidity (85 ±1 % RH)<br>240 hours   | DCR change ≤ ±15 %<br>No mechanical damage                           | MIL-STD-202G<br>Method 103B<br>Test Condition A |
| 5   | Salt spray                   | Salt spray concentration: 5 ±1 %<br>Test liquid temperature: 35 ±0.5 °C<br>96 hours  | DCR change ≤ ±15 %<br>No mechanical damage                           | MIL-STD-202G<br>Method 101E<br>Test Condition A |
| 6   | Bending                      | The board shall be bent by 1 mm at a rate of 1 mm/sec.   | DCR change ≤ ±15 %   | IEC 60127-4                                     |
| 7   | Vibration                    | Frequency setup: 10 ~ 55 ~ 10 Hz<br>Time setup: 1 Minute/cycle<br>(X-Y-Z, 120 cycles, 6 hours)   | DCR change ≤ ±15 %<br>No mechanical damage                           | MIL-STD-202G<br>Method 201A                     |

### Agency Recognition

UL File Number .....E198545

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

\* 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.

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Users should verify actual device performance in their specific applications.

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# SinglFuse™ SF-2923HC-C Series Applications

- Li-ion Battery Packs
- Energy Storage Systems (ESS)
- Power Tools
- Electric Assist Bicycles
- Servers and Routers
- Uninterruptible Power Supplies (UPS)
- Power Distribution Units (PDUs)
- Power Factor Correction (PFC)

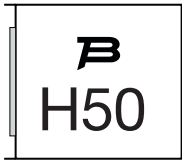
## SF-2923HC-C Series – High Current SMD Fuses BOURNS®

### Environmental Characteristics

Operating Temperature..... -55 °C to +125 °C  
 Storage Conditions  
   Temperature ..... +15 °C to +30 °C  
   Humidity..... 20 % to 70 %  
   Shelf Life..... 2 years from manufacturing date  
 Moisture Sensitivity Level..... 1  
 ESD Classification (HBM)..... Class 6

### Typical Part Marking

Represents total content. Layout may vary.



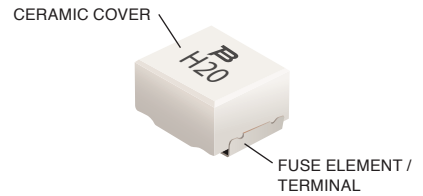
| Rated Current | Part Marking |
|---------------|--------------|
| 20 A          | H20          |
| 30 A          | H30          |
| 40 A          | H40          |
| 50 A          | H50          |

### How to Order

**SF - 2923 HC 20 C - 2**

SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
   2923 = EIA 2923  
   (7358 metric) \_\_\_\_\_  
 Fuse Blow Type \_\_\_\_\_  
   HC = High Current \_\_\_\_\_  
 Rated Current \_\_\_\_\_  
   20 ~ 50 (20 A ~ 50 A) \_\_\_\_\_  
 Structure Type \_\_\_\_\_  
   C = Ceramic Cube Housing \_\_\_\_\_  
 Packaging Type \_\_\_\_\_  
   - 2 = Tape & Reel \_\_\_\_\_

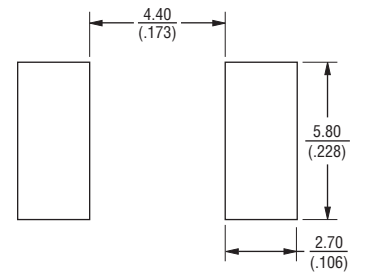
### Construction



### Packaging Quantity

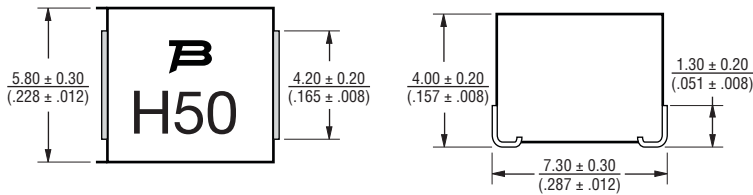
1,000 pieces per 13-inch reel

### Recommended Pad Layout



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

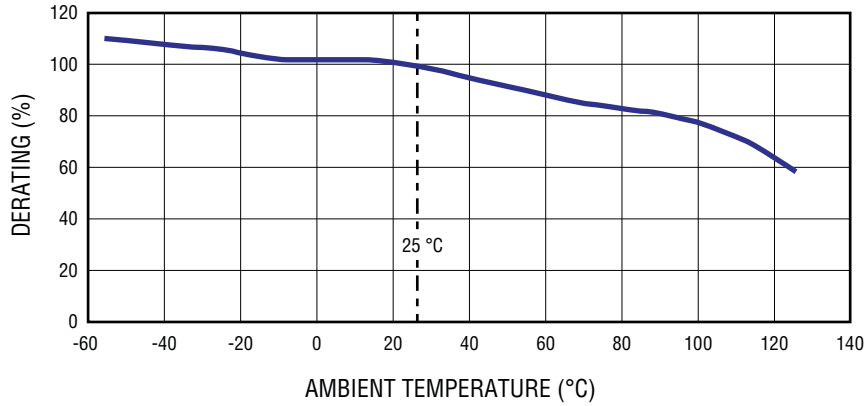
### Product Dimensions



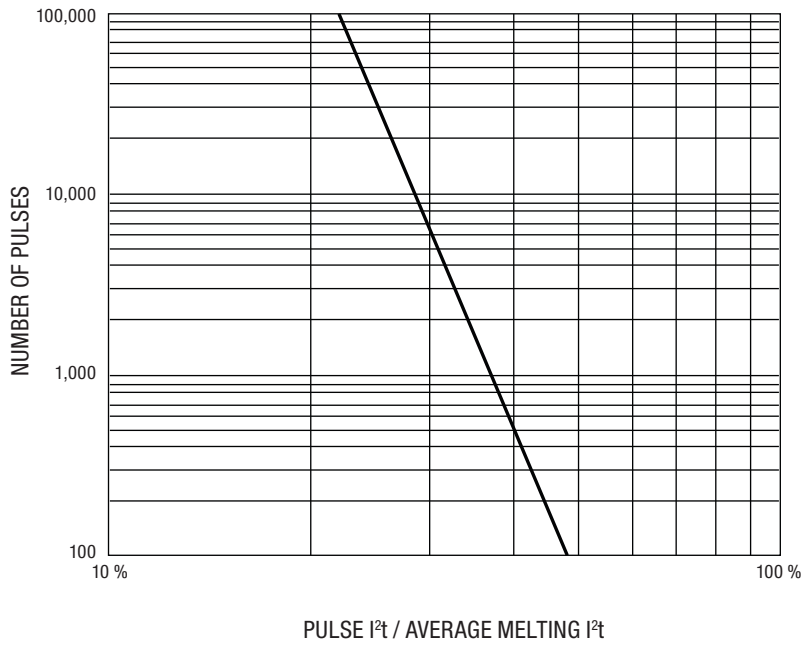
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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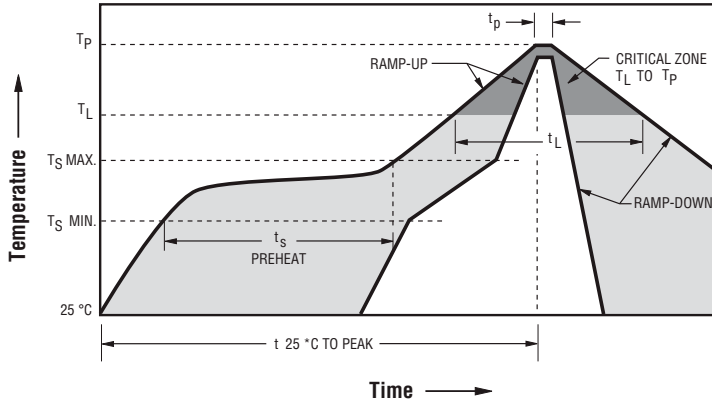
Current Rating Thermal Derating Curve



Pulse Cycle Withstand Capability



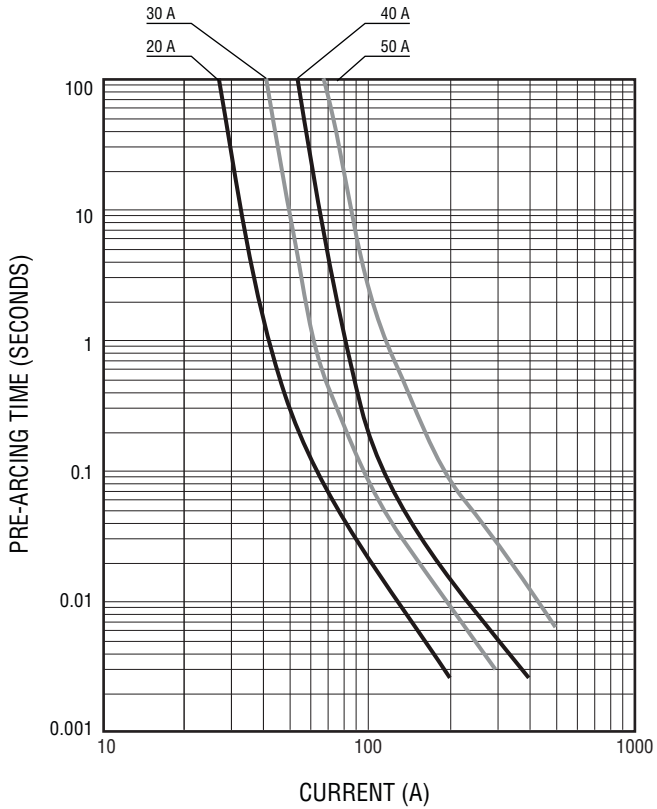
**Solder Reflow Recommendations**



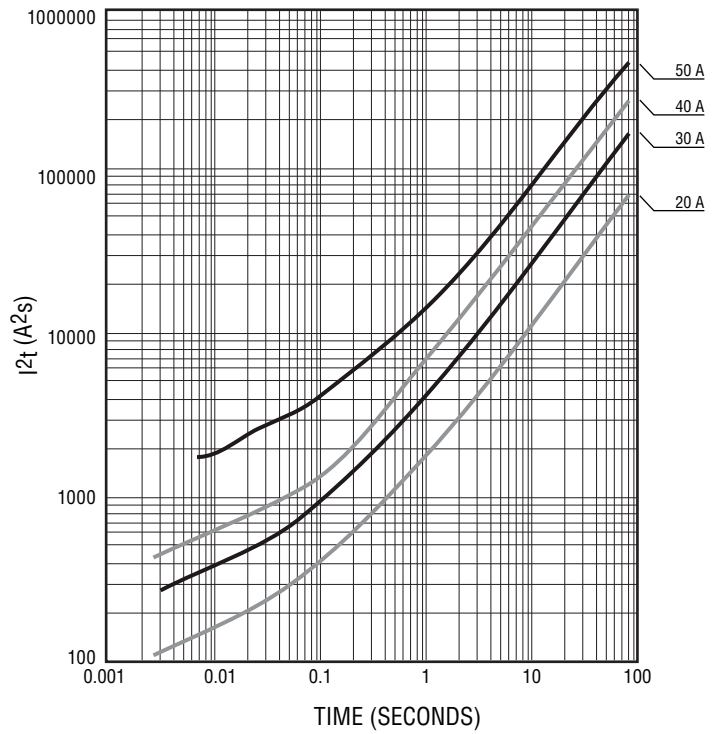
| Profile Feature  | Pb-Free Assembly                   |
|--|------------------------------------|
| Preheat / Soak:<br>Temperature Min. (T <sub>smin</sub> )<br>Temperature Max. (T <sub>smax</sub> )<br>Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> ) | 150 °C<br>200 °C<br>60~180 seconds |
| Ramp Up Rate (T <sub>L</sub> to T <sub>p</sub> )   | 3 °C / second max.                 |
| Ramp Up Rate (T <sub>smax</sub> to T <sub>L</sub> )  | 5 °C / second max.                 |
| Liquidous Temperature (T <sub>L</sub> )<br>Time (t <sub>L</sub> ) maintained above T <sub>L</sub>  | 217 °C<br>60~90 seconds            |
| Peak Package Body Temperature (T <sub>p</sub> )  | 235 °C ± 5 °C                      |
| Time within 5 °C of actual peak temperature (T <sub>p</sub> )  | 20~30 seconds*                     |
| Ramp Down Rate (T <sub>p</sub> to T <sub>L</sub> )   | 6 °C / second max.                 |
| Time 25 °C to Peak Temperature   | 8 minutes max.                     |
| Do not exceed  | 240 °C                             |

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

Average Pre-Arcing Time vs. Current Curves



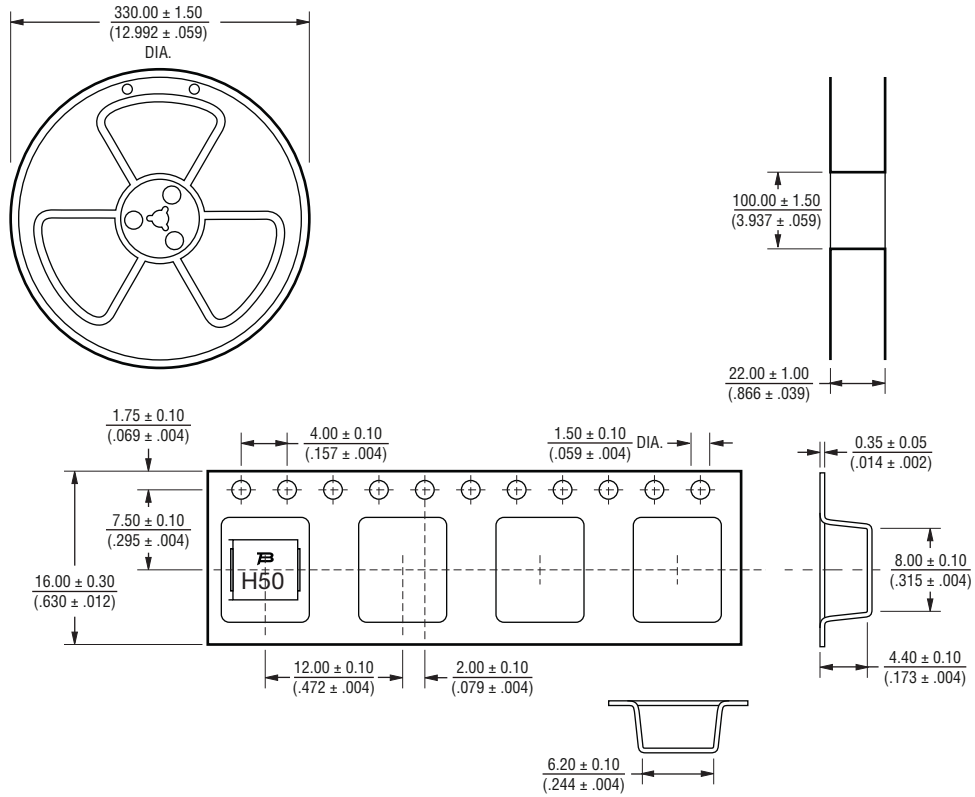
Average  $I^2t$  vs. t Curves



# SF-2923HC-C Series – High Current SMD Fuses

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## Packaging Specifications



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

REV. 01/19

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