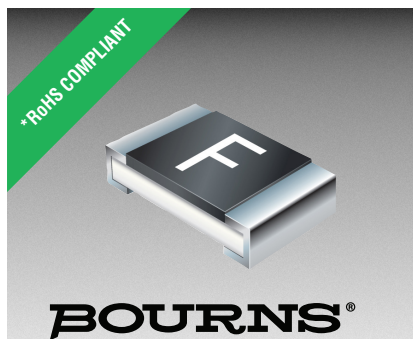




## SinglFuse™ SF-0603S Series Features

- Single blow fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Slow blow fuse
- UL listed
- RoHS compliant\* and halogen free\*\*
- Thin film chip fuse
- Surface mount packaging for automated assembly

## SF-0603S Series - Slow Blow Surface Mount Fuses

### Electrical Characteristics

| Model       | Rated Current (Amps) | Fusing Time                               | Resistance (mΩ) Typ.*** | Rated Voltage | Breaking Capacity      | Typical I <sup>2</sup> t (A <sup>2</sup> s) **** |
|-------------|----------------------|-------------------------------------------|-------------------------|---------------|------------------------|--------------------------------------------------|
| SF-0603S040 | 0.40                 | Open within 5 sec. at 250 % rated current | 350                     | DC 50 V       | DC 50 V / AC 35 V 50 A | 0.004                                            |
| SF-0603S050 | 0.50                 |                                           | 232                     |               |                        | 0.009                                            |
| SF-0603S063 | 0.63                 |                                           | 150                     | DC 32 V       | DC 32 V / AC 35 V 50 A | 0.017                                            |
| SF-0603S070 | 0.70                 |                                           | 148                     |               |                        | 0.023                                            |
| SF-0603S080 | 0.80                 |                                           | 113                     |               |                        | 0.024                                            |
| SF-0603S100 | 1.00                 |                                           | 67                      |               |                        | 0.026                                            |
| SF-0603S125 | 1.25                 |                                           | 50                      |               |                        | 0.057                                            |
| SF-0603S150 | 1.50                 |                                           | 42                      |               |                        | 0.081                                            |
| SF-0603S160 | 1.60                 |                                           | 40                      |               |                        | 0.086                                            |
| SF-0603S200 | 2.00                 |                                           | 27                      |               |                        | 0.115                                            |
| SF-0603S250 | 2.50                 |                                           | 19.5                    |               |                        | 0.200                                            |
| SF-0603S300 | 3.00                 |                                           | 16                      |               |                        | 0.210                                            |
| SF-0603S315 | 3.15                 |                                           | 15                      |               |                        | 0.279                                            |
| SF-0603S400 | 4.00                 |                                           | 11                      |               |                        | 0.326                                            |
| SF-0603S500 | 5.00                 |                                           | 8                       |               |                        | 0.622                                            |
| SF-0603S600 | 6.00                 |                                           | 6                       |               |                        | 2.700                                            |

\*\*\* Resistance value was measured with less than 10 % of rated current.

\*\*\*\*Typical I<sup>2</sup>t value is measured at 10x rated current.

### Reliability Testing

| Parameter                       | Requirement                                               | Test Method                                                               |
|---------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------|
| Carrying Capacity .....         | No fusing .....                                           | Rated current, 4 hours                                                    |
| Fusing Time .....               | Within 5 seconds .....                                    | 250 % of its rated current                                                |
| Interrupting Ability .....      | No mechanical damages .....                               | After the fuse is interrupted, rated voltage applied for 30 seconds again |
| Bending Test .....              | No mechanical damages .....                               | Distance between holding points: 90 mm, Bending: 3 mm, 1 time, 30 seconds |
| Resistance to Solder Heat ..... | ±20 % .....                                               | 260 °C ±5 °C, 10 seconds ±1 second                                        |
| Solderability .....             | 95 % coverage minimum .....                               | 235 °C ±5 °C, 2 ±0.5 second<br>245 °C ±5 °C, 2 ±0.5 second (lead free)    |
| Temperature Rise .....          | <75 ° .....                                               | 100 % of its rated current, measure of surface temperature                |
| Resistance to Dry Heat .....    | ±20 % .....                                               | 105 °C ±5 °C, 1000 hours                                                  |
| Resistance to Solvent .....     | No evident damage on protective coating and marking ..... | 23 °C ±5 °C of isopropyl alcohol, 90 seconds                              |
| Residual Resistance .....       | 10k ohms or more .....                                    | Measure DC resistance after fusing                                        |
| Thermal Shock .....             | ΔR < 10 % .....                                           | -20 °C / +25 °C / +125 °C / +25 °C, 10 cycles                             |

### Environmental Characteristics

|                                  |                                 |
|----------------------------------|---------------------------------|
| Operating Temperature .....      | -20 °C to +105 °C               |
| Storage Conditions               |                                 |
| Temperature .....                | +5 °C to +35 °C                 |
| Humidity .....                   | 40 % to 75 %                    |
| Shelf Life .....                 | 2 years from manufacturing date |
| Moisture Sensitivity Level ..... | 1                               |
| ESD Classification (HBM) .....   | Class 6                         |

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\* RoHS Directive 2002/95/EC Jan 27 2003 including 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.

"SinglFuse" is a trademark of Bourns, Inc.

Specifications are subject to change without notice.

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Users should verify actual device performance in their specific applications.

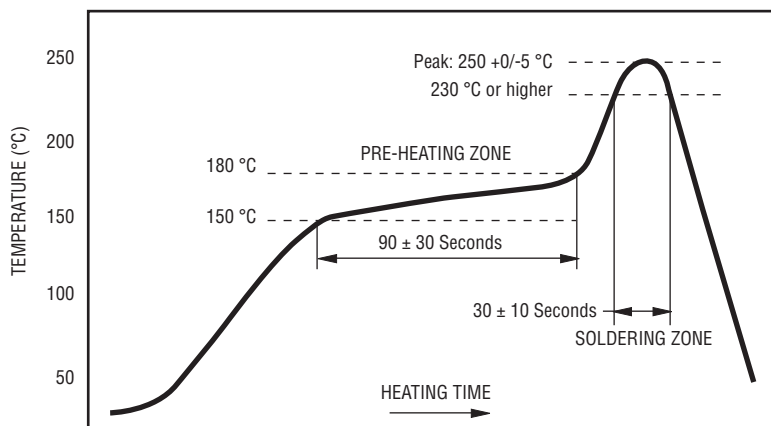
## SinglFuse™ SF-0603S Series Applications

- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- DVDs
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set top boxes
- Industrial controllers

## SF-0603S Series - Slow Blow Surface Mount Fuses

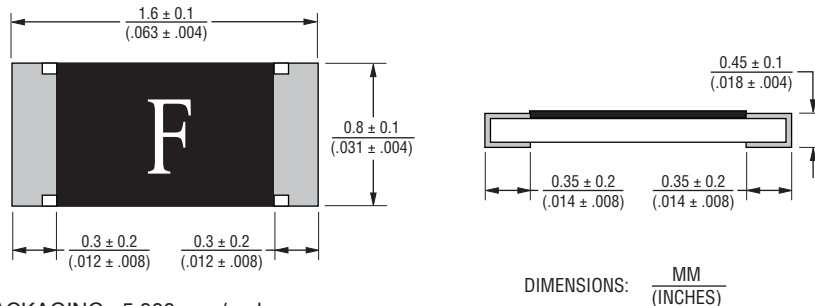
**BOURNS®**

### Solder Reflow Recommendations



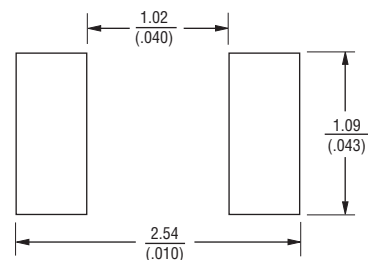
PEAK: 250 ± 0/-5 °C, 5 seconds  
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

### Product Dimensions

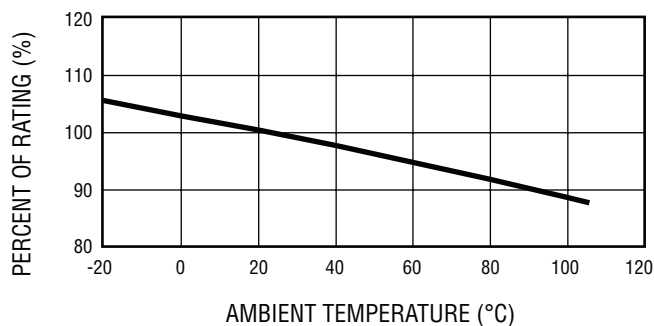


PACKAGING: 5,000 pcs./reel

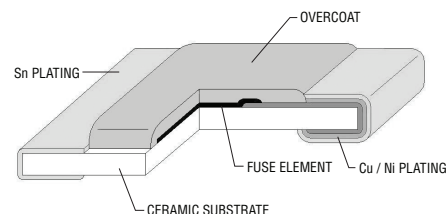
### Recommended Pad Layout



### Thermal Derating Curve



### Construction & Material Content

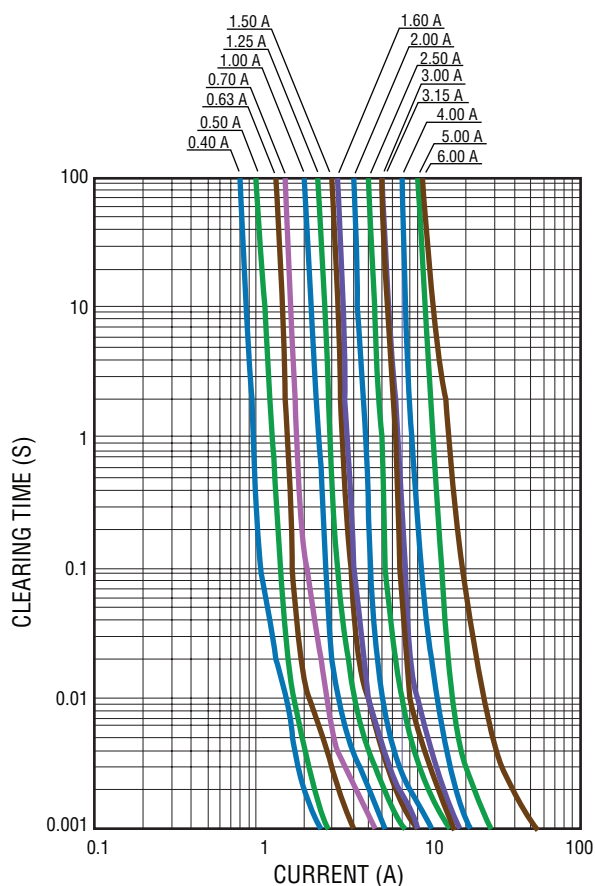


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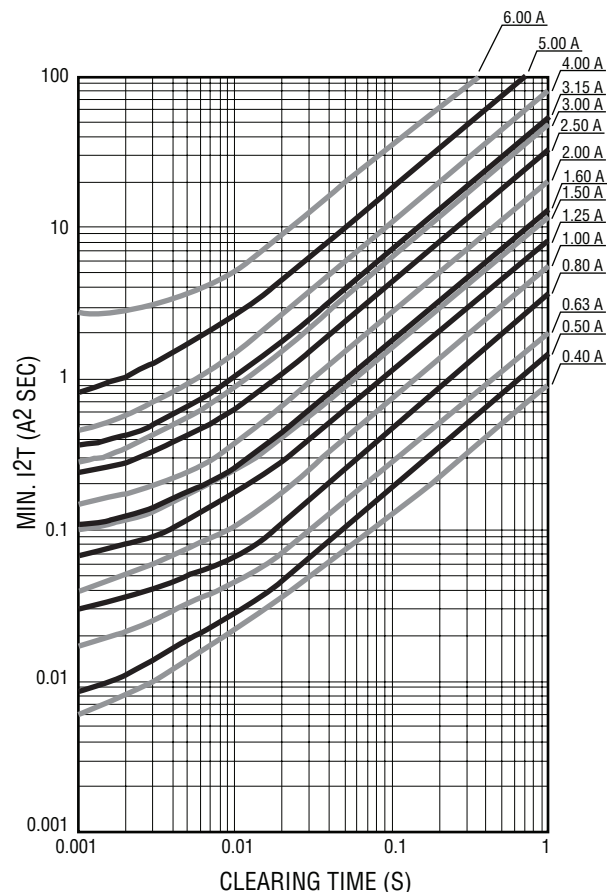
# SF-0603S Series - Slow Blow Surface Mount Fuses

**BOURNS®**

**Average Time Current Curves**



**Minimum I<sup>2</sup>T V Clear Time Curves**



## Typical Part Marking

Represents total content. Layout may vary.



| RATING CURRENT (A) |          |
|--------------------|----------|
| E = 0.40           | N = 1.60 |
| F = 0.50           | S = 2.00 |
| I = 0.63           | T = 2.50 |
| J = 0.70           | 3 = 3.00 |
| K = 0.80           | U = 3.15 |
| L = 1.00           | W = 4.00 |
| M = 1.25           | Y = 5.00 |
| P = 1.50           | 6 = 6.00 |

## How to Order

**SF - 0603 S 040 - 2**

SinglFuse™  
 Product Designator  
 SMD Footprint  
 1608 (EIA 0603) size  
 Fuse Blow Type  
 F = Fast acting  
 S = Slow blow  
 Rated Current  
 040-600 (400 mA - 6.00 A)  
 Packaging Type  
 - 2 = Tape & Reel (5,000 pcs./reel)

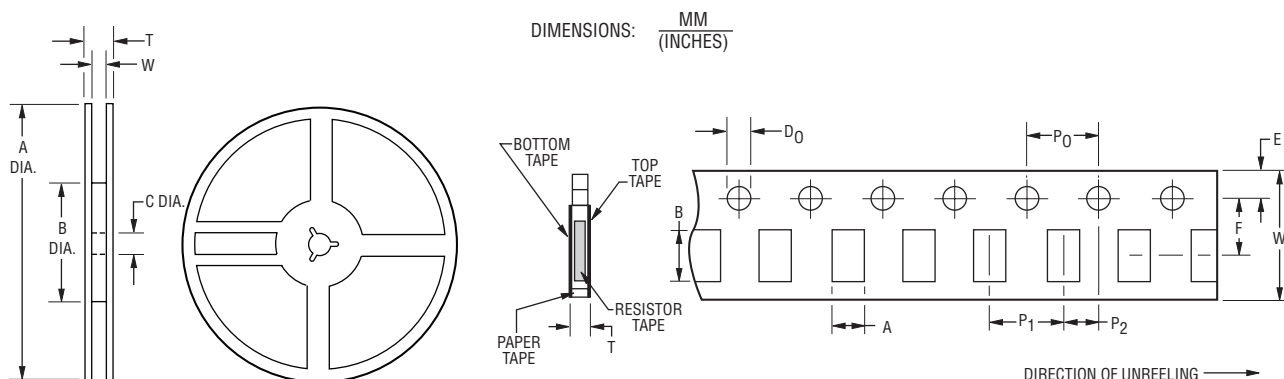
REV. F 07/17

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# SF-0603S Series Tape and Reel Specifications

**BOURNS®**

| Tape Dimensions        | SF-0603S Series<br>per EIA 481-2             |
|------------------------|----------------------------------------------|
| W                      | $\frac{8.0 \pm 0.2}{(.315 \pm .008)}$        |
| P <sub>0</sub>         | $\frac{4.0 \pm 0.1}{(.157 \pm .004)}$        |
| P <sub>1</sub>         | $\frac{4.0 \pm 0.1}{(.157 \pm .004)}$        |
| P <sub>2</sub>         | $\frac{2.0 \pm 0.05}{(.079 \pm .002)}$       |
| A                      | $\frac{1.1 \pm 0.1}{(.043 \pm .004)}$        |
| B                      | $\frac{1.9 \pm 0.1}{(.075 \pm .004)}$        |
| F                      | $\frac{3.5 \pm 0.05}{(.138 \pm .002)}$       |
| E                      | $\frac{1.75 \pm 0.1}{(.069 \pm .004)}$       |
| D <sub>0</sub>         | $\frac{1.5 \pm 0.1/-0}{(.059 \pm .004/-0)}$  |
| T                      | $\frac{0.64 \pm 0.1}{(.025 \pm .004)}$       |
| <b>Reel Dimensions</b> |                                              |
| A                      | $\frac{180 \pm 0/-3.0}{(7.087 \pm 0/-1.18)}$ |
| B Min.                 | $\frac{60.0}{(2.362)}$                       |
| C                      | $\frac{13.0 \pm 1.0}{(.512 \pm .039)}$       |
| W                      | $\frac{9.0 \pm 1.0}{(.354 \pm .039)}$        |
| T                      | $\frac{11.4 \pm 2.0}{(.449 \pm .079)}$       |



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