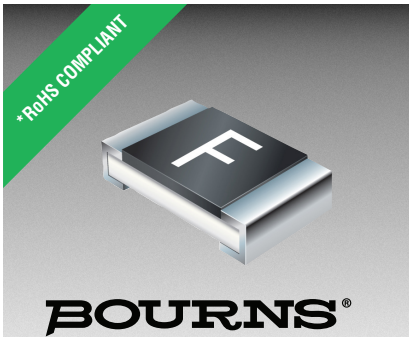


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## SinglFuse™ SF-0603S Series Features

- 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                     |               |                        | 0.017  |
| SF-0603S070 | 0.70                 |   | 148                     | DC 32 V       | DC 32 V / AC 35 V 50 A | 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                         |

\* 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.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

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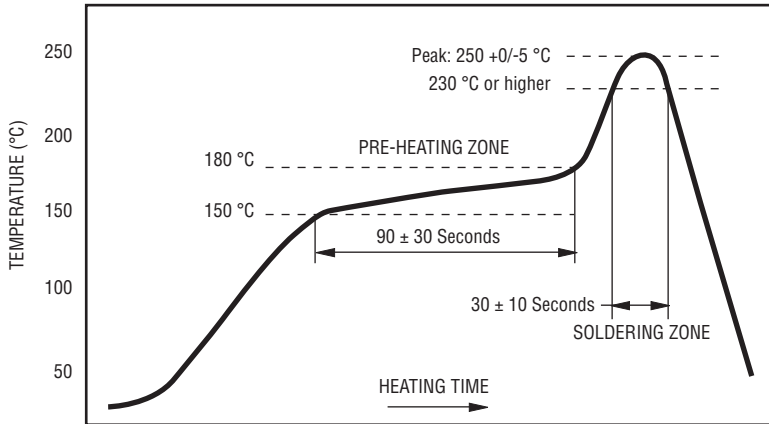
## SinglFuse™ SF-0603S Series Applications

- 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

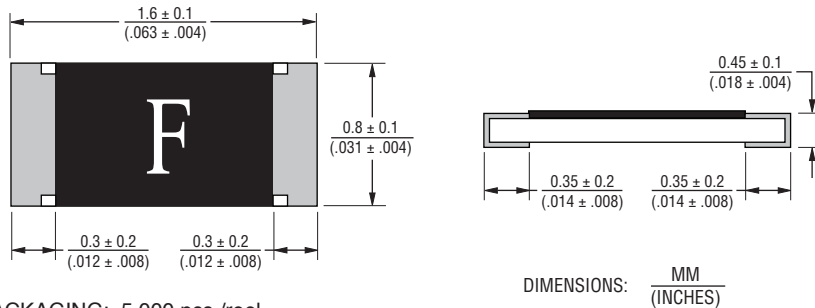
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### Solder Reflow Recommendations



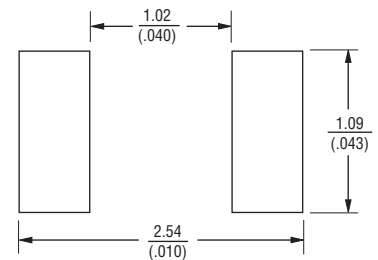
PEAK: 250 +0/-5 °C, 5 seconds  
 PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds  
 SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

### Product Dimensions

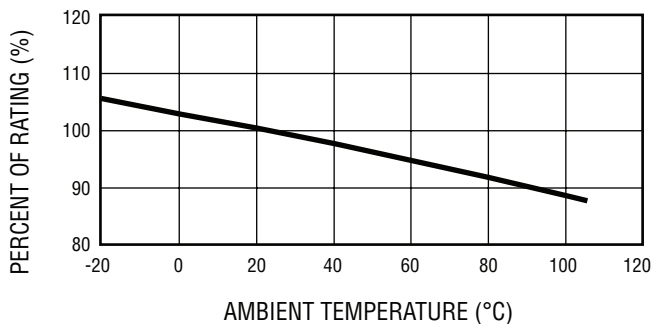


PACKAGING: 5,000 pcs./reel

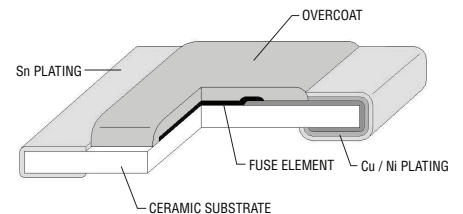
### Recommended Pad Layout



### Thermal Derating Curve



### Construction & Material Content

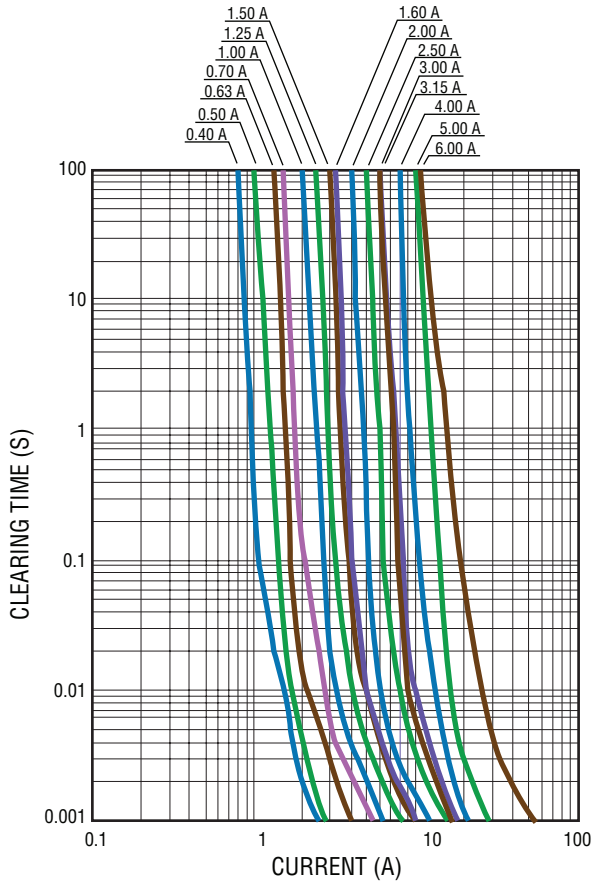


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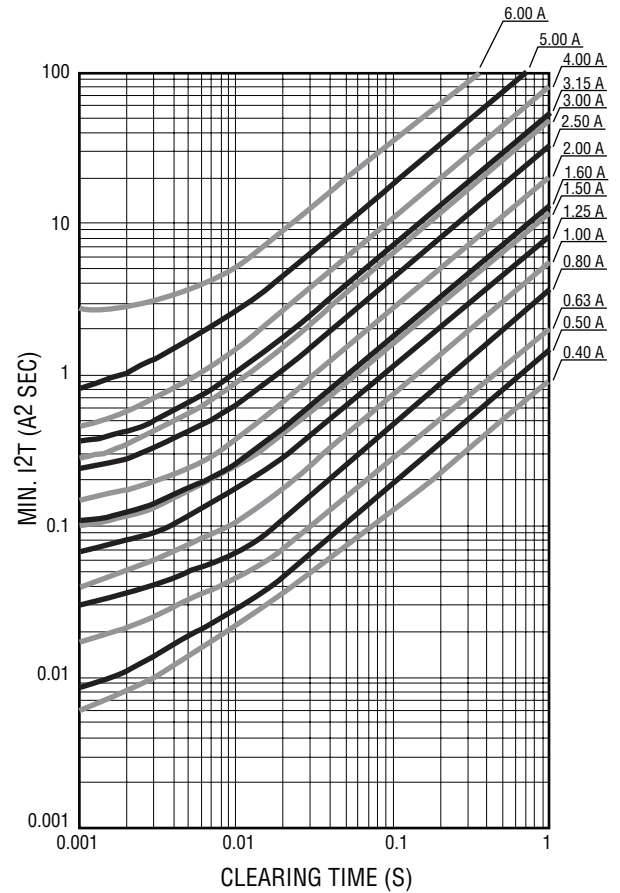
# SF-0603S Series - Slow Blow Surface Mount Fuses



## 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

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

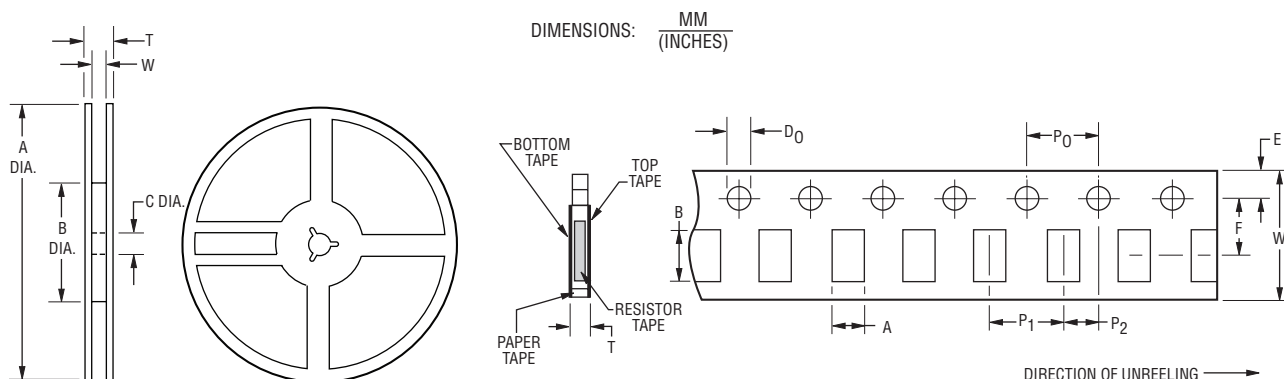
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# SF-0603S Series Tape and Reel Specifications

# 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>         | $\frac{1.5 + 0.1/-0}{(.059 + .004/-0)}$ |
| T                      | $\frac{0.64 \pm 0.1}{(.025 \pm .004)}$  |
| <b>Reel Dimensions</b> |   |
| A                      | $\frac{180 +0/-3.0}{(7.087 +0/- .118)}$ |
| 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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