



SinglFuse™ SF-0603F Series Features

- Fast acting thin film chip fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Surface mount packaging for automated assembly
- UL listed (UL 248-14)
- RoHS compliant* and halogen free**

SF-0603F Series - Fast Acting Surface Mount Fuses

Electrical Characteristics

| Model | Rated Current (Amps) | Fusing Time | Resistance (mΩ) *** | Rated Voltage | Breaking Capacity | Typical I ² t (A ² s) **** |
|-------------|----------------------|---|---------------------|---------------|-------------------|--|
| SF-0603F040 | 0.40 | Open within 1 min. at 200 % rated current | 496 | DC 50 V | DC 50 V 50 A | 0.004 |
| SF-0603F050 | 0.50 | | 290 | | | 0.005 |
| SF-0603F063 | 0.63 | | 205 | | | 0.007 |
| SF-0603F080 | 0.80 | | 132 | DC 32 V | DC 32 V 50 A | 0.014 |
| SF-0603F100 | 1.00 | | 84 | | | 0.016 |
| SF-0603F125 | 1.25 | | 63 | | | 0.027 |
| SF-0603F150 | 1.50 | | 50.5 | | | 0.037 |
| SF-0603F160 | 1.60 | | 45 | | | 0.041 |
| SF-0603F200 | 2.00 | | 34 | | | 0.044 |
| SF-0603F250 | 2.50 | | 24.5 | | | 0.055 |
| SF-0603F300 | 3.00 | | 20 | | | 0.082 |
| SF-0603F315 | 3.15 | | 19 | | | 0.089 |
| SF-0603F400 | 4.00 | | 13 | | | 0.239 |
| SF-0603F500 | 5.00 | | 11 | | | 0.433 |

*** Resistance value was measured with less than 10 % of rated current. Tolerance ±25 %.

****Typical I²t value is measured at 10x rated current.

Reliability Testing

| No. | Test | Requirement | Test Condition |
|-----|---------------------------|---|---|
| 1 | Carrying Capacity | No fusing | Rated current, 4 hours |
| 2 | Fusing Time | Within 1 minute | 200 % of its rated current |
| 3 | Interrupting Ability | No mechanical damages | After the fuse is interrupted, rated voltage applied for 30 seconds again |
| 4 | Bending Test | No mechanical damages | Distance between holding points: 90 mm, Bending: 3 mm, 1 time, 30 seconds |
| 5 | Resistance to Solder Heat | ±20 % | 260 °C ±5 °C, 10 seconds ±1 second |
| 6 | Solderability | 95 % coverage minimum | 235 °C ±5 °C, 2 ±0.5 second 245 °C ±5 °C, 2 ±0.5 second (lead free) |
| 7 | Temperature Rise | <75 °C | 100 % of its rated current, measure of surface temperature |
| 8 | Resistance to Dry Heat | ±20 % | 105 °C ±5 °C, 1000 hours |
| 9 | Resistance to Solvent | No evident damage on protective coating and marking | 23 °C ±5 °C of isopropyl alcohol, 90 seconds |
| 10 | Residual Resistance | 10k ohms or more | Measure DC resistance after fusing |
| 11 | Thermal Shock | ΔR < 10 % | -20 °C / +25 °C / +125 °C / +25 °C, 10 cycles |

Agency Recognition

UL File Number E198545

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



WARNING Cancer and Reproductive Harm
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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Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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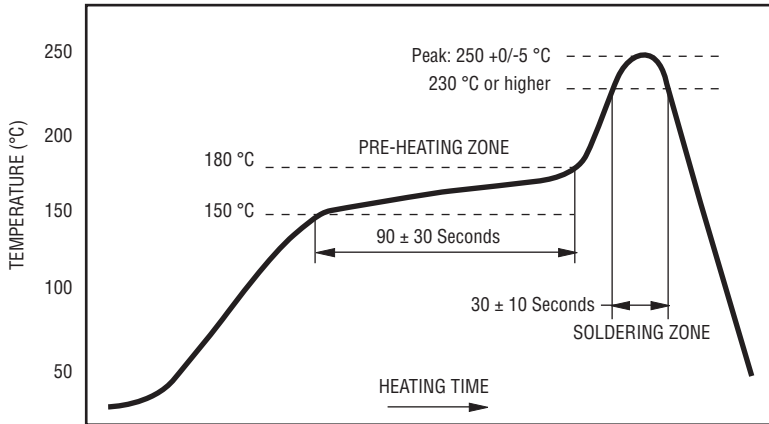
SinglFuse™ SF-0603F Series Applications

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

SF-0603F Series - Fast Acting Surface Mount Fuses

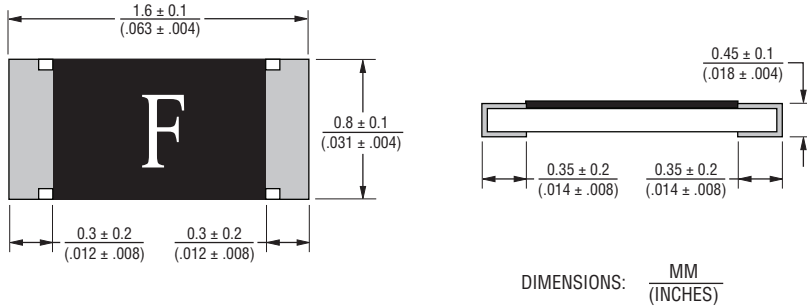
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Solder Reflow Recommendations

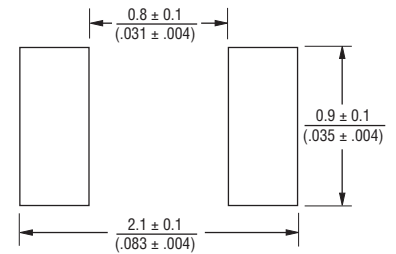


PEAK: 250 +0/-5 °C, 5 seconds
PRE-HEATING ZONE: 150 to 180 °C, 90 ± 30 seconds
SOLDERING ZONE: 230 °C or higher, 30 ± 10 seconds

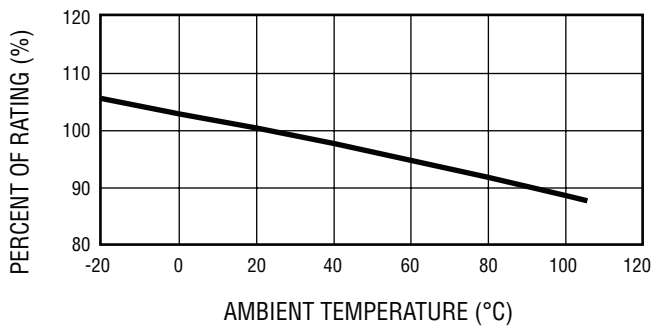
Product Dimensions



Recommended Pad Layout



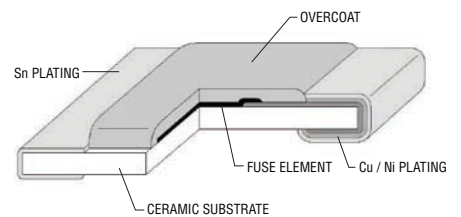
Thermal Derating Curve



Packaging Quantity

5,000 pieces per 7-inch reel

Construction & Material Content



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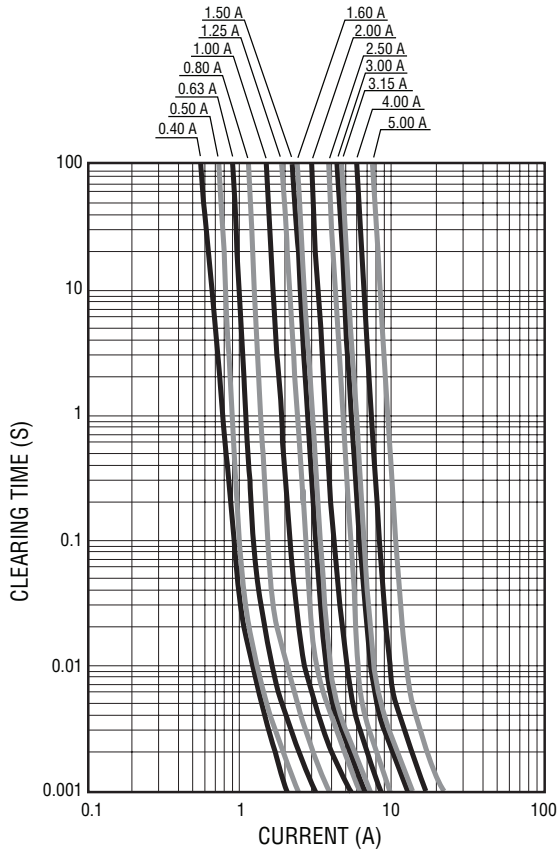
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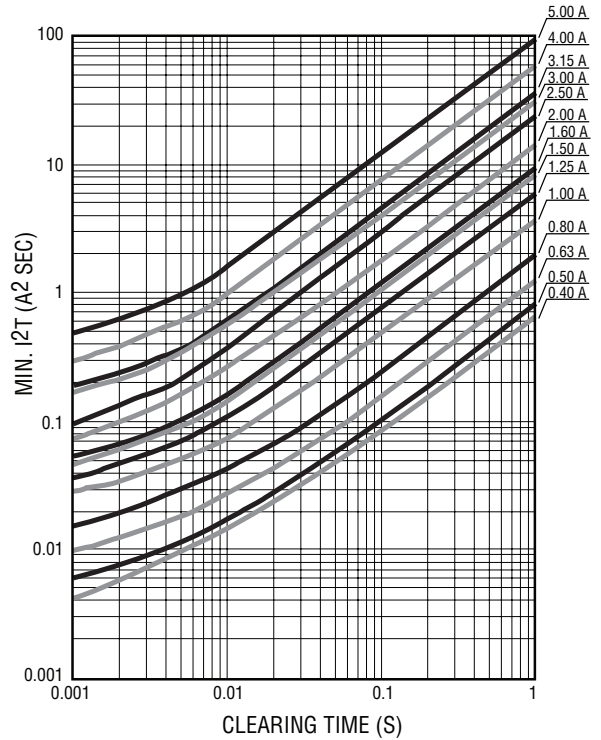
SF-0603F Series - Fast Acting Surface Mount Fuses



Average Time Current Curves



Minimum I²T V Clear Time Curves



Typical Part Marking

Represents total content. Layout may vary.



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

How to Order

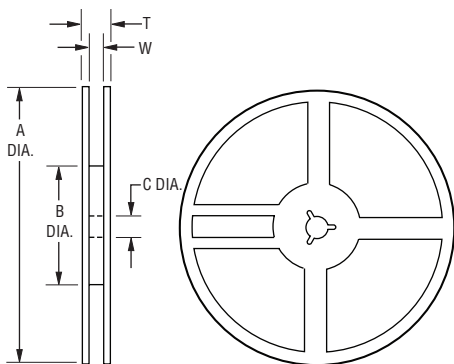
SF - 0603 F 040 - 2

SinglFuse™
 Product Designator _____
 SMD Footprint _____
 1608 (EIA 0603) size
 Fuse Blow Type _____
 F = Fast acting
 S = Slow blow
 Rated Current _____
 040-500 (400 mA - 5.00 A)
 Packaging Type _____
 - 2 = Tape & Reel (5,000 pcs./reel)

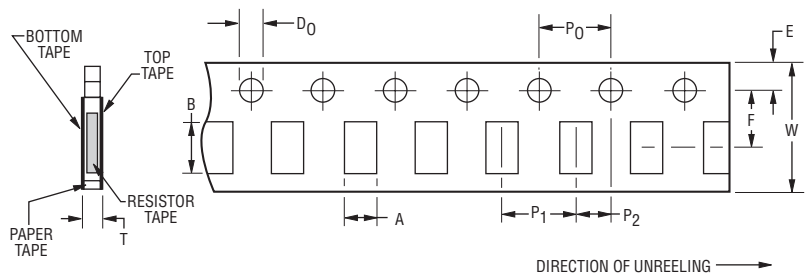
SF-0603F Series Tape and Reel Specifications

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| Tape Dimensions | SF-0603F Series per EIA 481-2 |
|------------------------|---|
| W | $\frac{8.0 \pm 0.2}{(.315 \pm .008)}$ |
| P ₀ | $\frac{4.0 \pm 0.1}{(.157 \pm .004)}$ |
| P ₁ | $\frac{4.0 \pm 0.1}{(.157 \pm .004)}$ |
| P ₂ | $\frac{2.0 \pm 0.05}{(.079 \pm .002)}$ |
| 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 ₀ | $\frac{1.5 + 0.1/-0}{(.059 + .004/-0)}$ |
| T | $\frac{0.64 \pm 0.1}{(.025 \pm .004)}$ |
| Reel Dimensions | |
| 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 | $\frac{11.4 \pm 2.0}{(.449 \pm .079)}$ |



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



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