



## SinglFuse™ SF-0603SxxxM Series Features

- Single blow fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Slow blow fuse (Fusing time  $\leq 5$  seconds at 250 % rated current)
- UL 248-14 listed
- Surface mount packaging for automated assembly
- Multilayer SMD design
- RoHS compliant\* and halogen free\*\*

## SF-0603SxxxM Series - Slow Blow Multilayer Surface Mount Fuses

### Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance ( $\Omega$ ) Typ.***	Rated Voltage	Interrupting Rating	Typical $I^2t$ (A <sup>2</sup> s) ****
SF-0603S050M-2	0.50	Open within 5 sec. at 250 % rated current	0.485	DC 63 V	DC 63 V 35 A	0.003
SF-0603S075M-2	0.75		0.254			0.006
SF-0603S100M-2	1.00		0.147			0.013
SF-0603S150M-2	1.50		0.059			0.030
SF-0603S200M-2	2.00		0.044	DC 32 V	DC 32 V 35 A	0.060
SF-0603S250M-2	2.50		0.032			0.100
SF-0603S300M-2	3.00		0.025			0.180
SF-0603S350M-2	3.50		0.024			0.300
SF-0603S400M-2	4.00		0.018			0.500
SF-0603S500M-2	5.00		0.013			0.800
SF-0603S600M-2	6.00	0.010	DC 24 V	DC 24 V 35 A	1.100	

\*\*\* Resistance value measured with  $\leq 10$  % rated current at 25 °C ambient. Tolerance  $\pm 25$  %.

\*\*\*\*Melting  $I^2t$  calculated at 0.001 second pre-arcing time.

### Reliability Testing

No.	Test	Requirement	Test Condition	Test Reference
1	Soldering heat resistance	DCR change $\leq \pm 10$ % No mechanical damage	One dip at 260 °C for 60 seconds	MIL-STD-202 Method 210
2	Solderability	Minimum 95 % coverage	One dip at 245 °C for 5 seconds	MIL-STD-202 Method 208
3	Thermal shock	DCR change $\leq \pm 10$ % No mechanical damage	100 cycles between -65 °C and +125 °C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change $\leq \pm 15$ % No excessive corrosion	10 cycles	MIL-STD-202 Method 106
5	Salt spray	DCR change $\leq \pm 10$ % No excessive corrosion	48 hour exposure, 5 % salt solution	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change $\leq \pm 10$ % No mechanical damage	0.4 inch D.A. or 30 G between 5-3000 Hz	MIL-STD-202 Method 204
7	Mechanical shock	DCR change $\leq \pm 10$ % No mechanical damage	1500 G, 0.5 ms, half-sine shocks	MIL-STD-202 Method 213
8	Life	No electrical "opens" during testing. Voltage drop change shall be less than $\pm 20$ % of initial value.	80 % rated current (75 % for $\leq 1$ A fuses) for 2000 hours at ambient temperature +20 °C ~ +30 °C	Refer to STP document
9	Terminal strength	No mechanical damage	0.5 Kg pushing force	Refer to STP document

### Agency Recognition

UL File Number ..... E198545

### Environmental Characteristics

Operating Temperature..... -55 °C to +125 °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](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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# SingIFuse™ SF-0603SxxxM Series Applications

- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- MP3 players
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set-top boxes
- Industrial controllers
- Battery Management Systems (BMS)
- LED lighting
- Power tools

## SF-0603SxxxM Series - Slow Blow Multilayer Surface Mount Fuses



### Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)

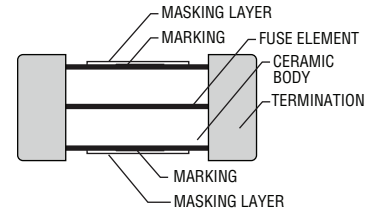
C = 0.50	K = 3.00
D = 0.75	L = 3.50
E = 1.00	M = 4.00
G = 1.50	N = 5.00
I = 2.00	O = 6.00
J = 2.50	

### How to Order

**SF - 0603 S 100 M - 2**

SingIFuse™  
 Product Designator  
 SMD Footprint  
 0603 = 1608 (EIA 0603) size  
 Fuse Blow Type  
 S = Slow blow  
 Rated Current  
 050-600 (0.50 A - 6.00 A)  
 Structure  
 M = Multilayer  
 Packaging Type  
 - 2 = Tape & Reel

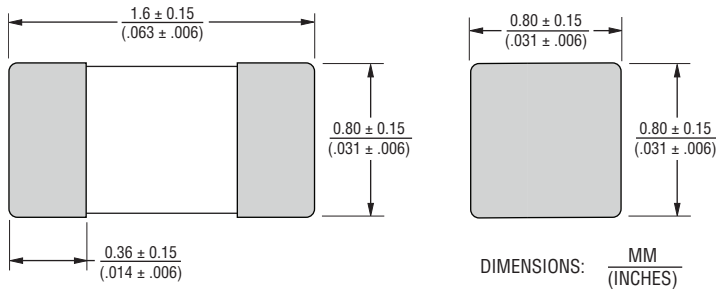
### Construction



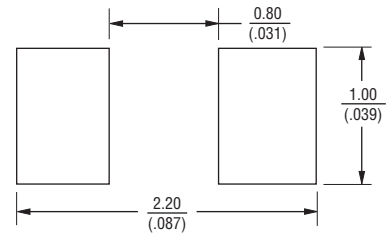
### Packaging Quantity

4,000 pieces per 7 inch reel

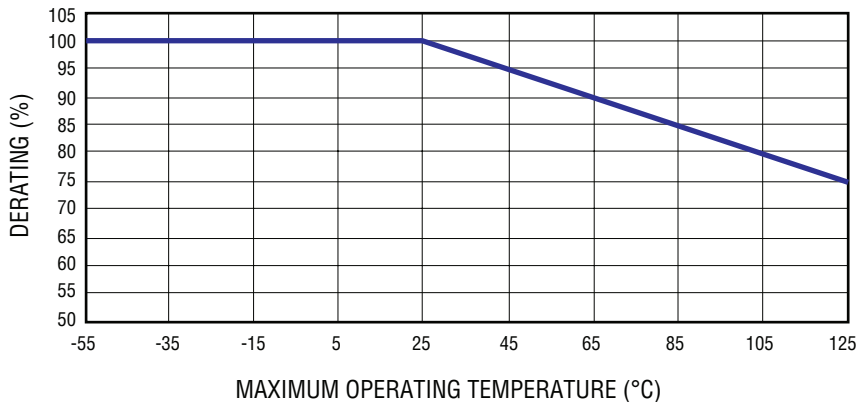
### Product Dimensions



### Recommended Pad Layout

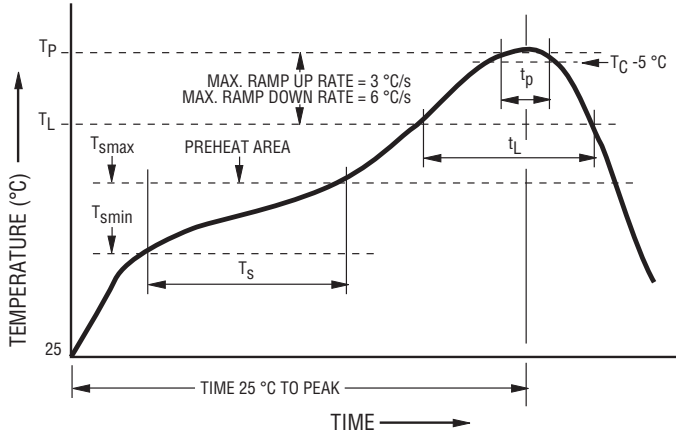


### Current Rating Thermal Derating Curve



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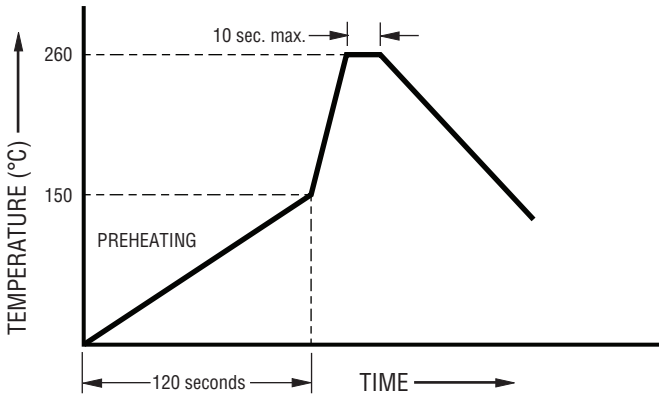
**Solder Reflow Recommendations**



Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. ( $T_{smin}$ ) Temperature Max. ( $T_{smax}$ ) Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	150 °C 200 °C 60~120 seconds
Ramp Up Rate ( $T_L$ to $T_p$ )	3 °C / second max.
Liquidous Temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	217 °C 60~150 seconds
Peak Package Body Temperature ( $T_p$ )	260 °C
Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_C$ )	30 seconds*
Ramp Down Rate ( $T_p$ to $T_L$ )	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

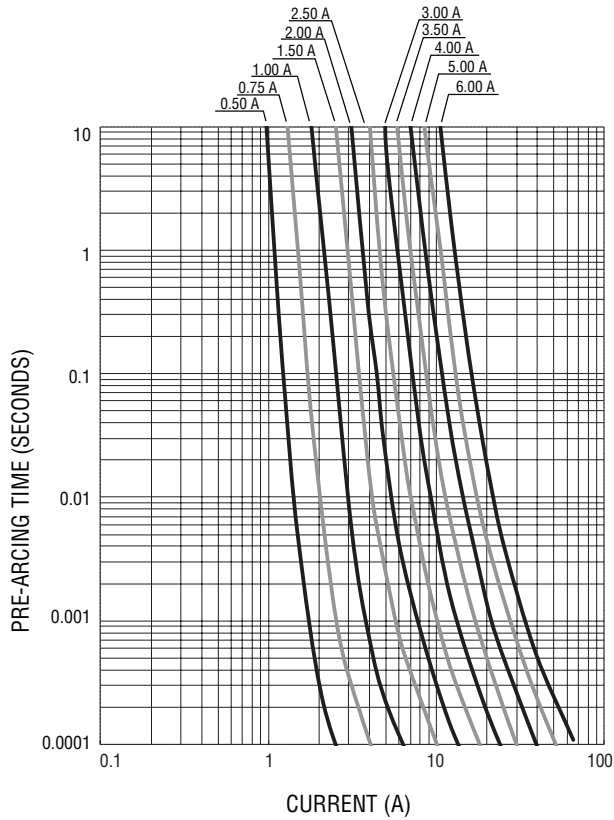
\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

**Recommended Temperature Profile for Wave Soldering**

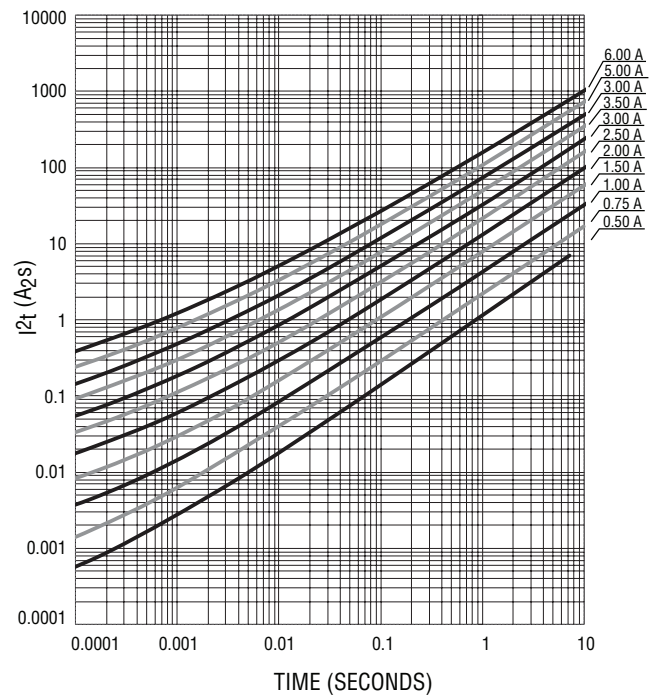


Wave soldering is suitable for 0603 size models.

Average Pre-Arcing Time Curves



Average I<sup>2</sup>t vs. t Curves



REV. C 01/19

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# SF-0603SxxxM Series Tape and Reel Specifications

# BOURNS®

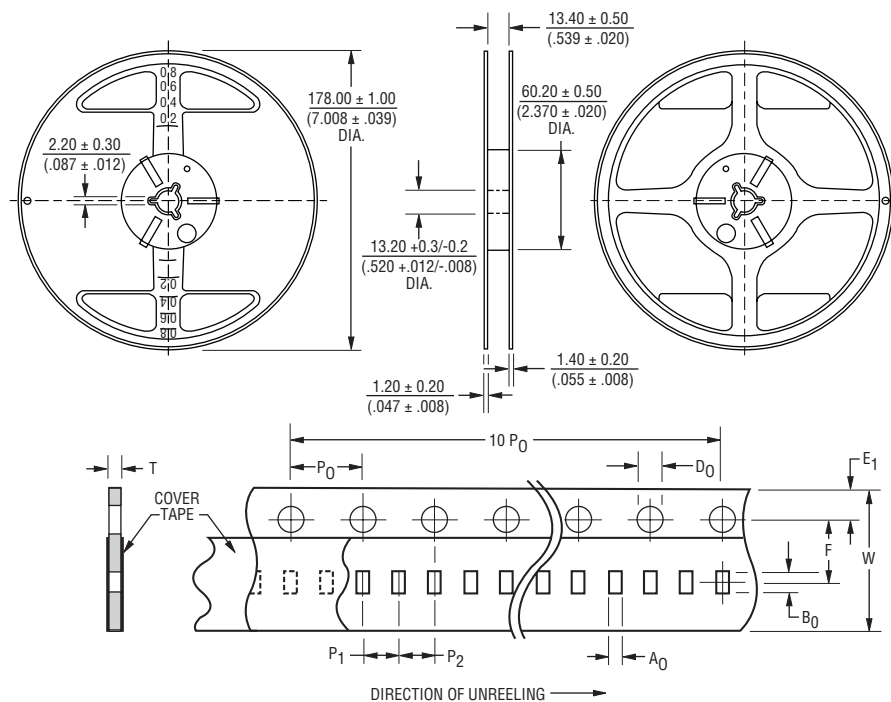
## SF-0603SxxxM Series per EIA 481-2

### Tape Dimensions

W	$\frac{8.00 \pm 0.10}{(.315 \pm .004)}$
P <sub>0</sub>	$\frac{4.0 \pm 0.10}{(.157 \pm .004)}$
P <sub>1</sub>	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
P <sub>2</sub>	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
A <sub>0</sub>	$\frac{1.00 \pm 0.10}{(.039 \pm .004)}$
B <sub>0</sub>	$\frac{1.80 \pm 0.10}{(.071 \pm .004)}$
F	$\frac{3.5 \pm 0.05}{(.138 \pm .002)}$
E <sub>1</sub>	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$
D <sub>0</sub>	$\frac{1.50 \pm 0.10}{(.059 \pm .004)}$
T	$\frac{0.95 \pm 0.08}{(.037 \pm .003)}$

PACKAGING: Paper tape, 4,000 pcs. per reel

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



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