



**THE DATASHEET OF  
SF-0603FP500F-2**





## SinglFuse™ SF-0603FP-F Series Features

- Single blow fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Fast-acting precision fuse
- UL 248-14 compliant
- RoHS compliant\* and halogen free\*\*
- Thin film chip design
- Surface mount packaging for automated assembly

## SF-0603FP-F Series - Fast Acting Precision Surface Mount Fuses

### Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
200 %	—	5 seconds
300 %	—	0.2 seconds

### Additional Information

Click these links for more information:



### Electrical Characteristics

Model	Rated Current (A)	Resistance (Ω) Typ.***	Rated Voltage	Interrupting Rating	Typical I <sup>2</sup> t (A <sup>2</sup> s) ****	Certifications
						cUL: <a href="#">E198545</a>
SF-0603FP015F-2	0.15	2.189	65 VDC	50 A @ 35 VAC 13 A @ 65 VDC 50 A @ 35 VDC	0.00061	✓
SF-0603FP020F-2	0.20	1.294			0.00142	✓
SF-0603FP025F-2	0.25	1.095			0.00162	✓
SF-0603FP0375F-2	0.375	0.478			0.0041	✓
SF-0603FP050F-2	0.50	0.184			0.0122	✓
SF-0603FP075F-2	0.75	0.111			0.0213	✓
SF-0603FP100F-2	1.00	0.0687			0.0426	✓
SF-0603FP125F-2	1.25	0.0478	35 VDC	35 A @ 35 VAC 13 A @ 65 VDC 35 A @ 35 VDC 50 A @ 24 VDC 50 A @ 24 VDC	0.0525	✓
SF-0603FP150F-2	1.50	0.0368			0.0717	✓
SF-0603FP175F-2	1.75	0.0308			0.101	✓
SF-0603FP200F-2	2.00	0.0259			0.141	✓
SF-0603FP250F-2	2.50	0.0209			0.242	✓
SF-0603FP300F-2	3.00	0.0175			0.333	✓
SF-0603FP350F-2	3.50	0.0147			0.495	✓
SF-0603FP400F-2	4.00	0.0124	0.636	✓		
SF-0603FP500F-2	5.00	0.0095	1.11	✓		

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

\*\*\*\* Melting I<sup>2</sup>t calculated at 0.001 second pre-arcing time.

\*RoHS Directive 2015/863, Mar 31, 2015 and 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.

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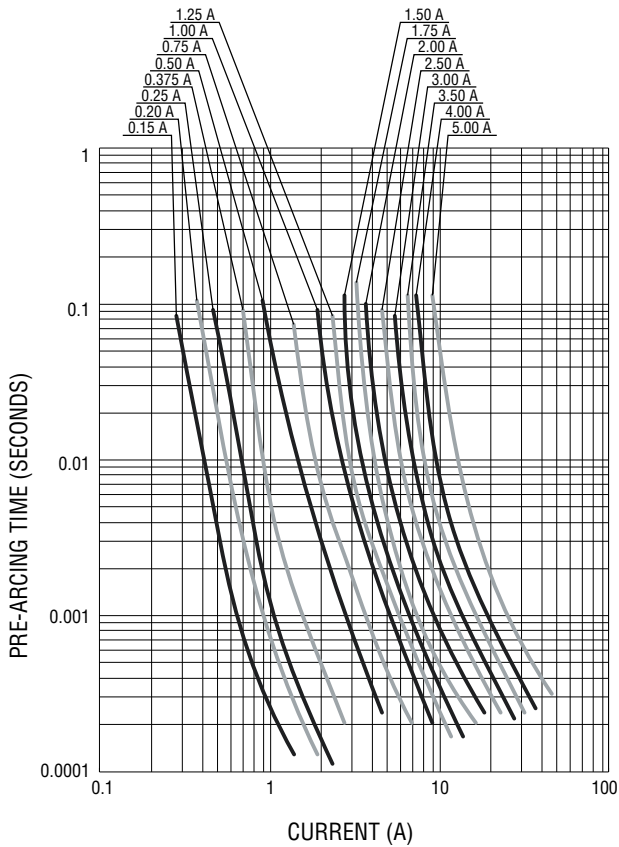
**WARNING Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# SinglFuse™ SF-0603FP-F Series Applications

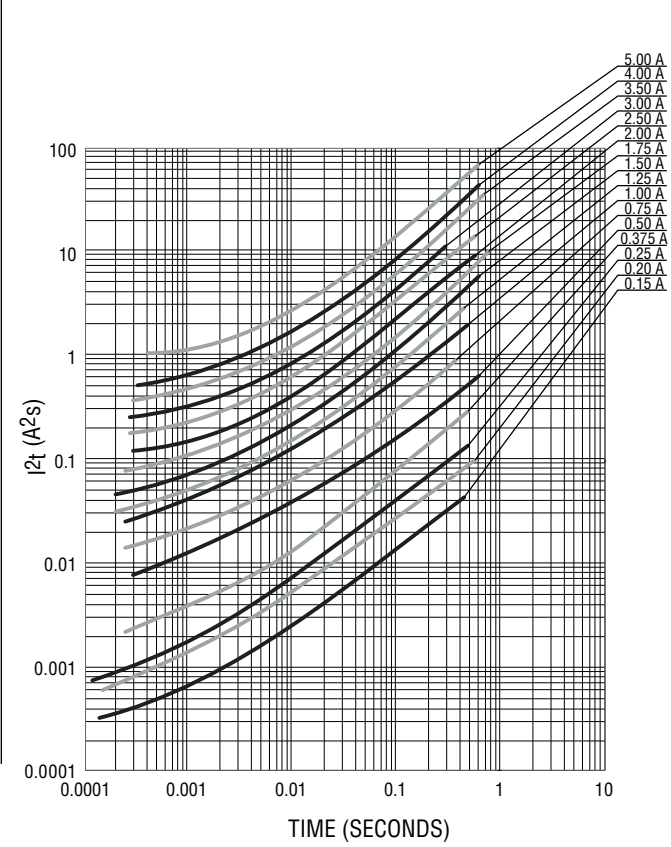
- Portable memory
- LCD monitors
- Disk drives
- PDAs
- Digital cameras
- MP3 players
- Cell phones
- Rechargeable battery packs
- Battery chargers
- Set-top boxes
- Industrial controllers
- Battery Management Systems (BMS)
- LED lighting
- Power tools

## SF-0603FP-F Series - Fast Acting Precision Surface Mount Fuses BOURNS®

**Average Pre-Arcing Time vs. Current Curves**



**Average I²t vs. t Curves**



### Environmental Characteristics

Operating Temperature.....	-55 °C to +90 °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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# SF-0603FP-F Series - Fast Acting Precision Surface Mount Fuses



## Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)

• = 0.150	= 1.500
•• = 0.200	= = 1.750
∴ = 0.250	≡ = 2.000
••• = 0.375	H = 2.500
I = 0.500	III = 3.000
— = 0.750	HH = 3.500
+ = 1.000	□ = 4.000
x = 1.250	○ = 5.000

## How to Order

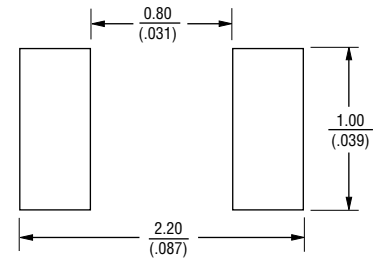
**SF - 0603 FP 015 F - 2**

SinglFuse™  
 Product Designator  
 SMD Footprint  
 1608 = (EIA 0603) size  
 Fuse Blow Type  
 FP = Fast acting precision  
 Rated Current  
 015 ~ 500 (150 mA ~ 5.0 A)  
 Structure Type  
 F = Thin film  
 Packaging Type  
 - 2 = Tape & Reel

## Packaging

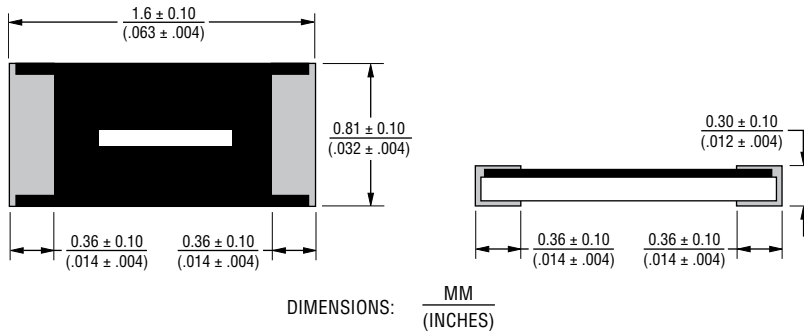
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	8,000 pieces
Packaging Code	-2

## Recommended Pad Layout

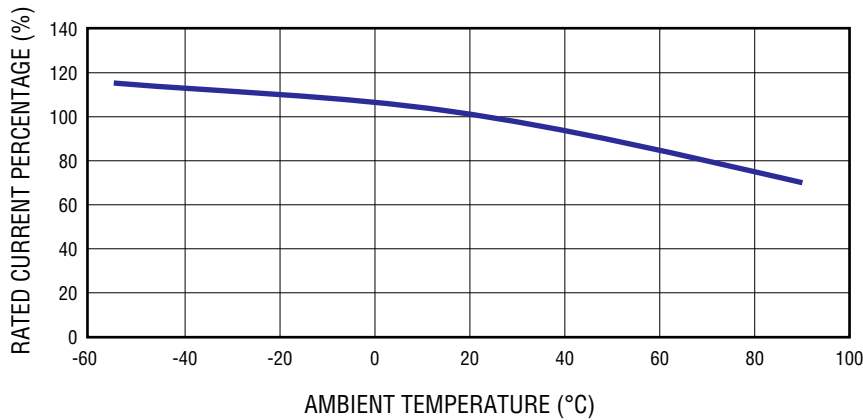


DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Product Dimensions



## Current Rating Thermal Derating Curve

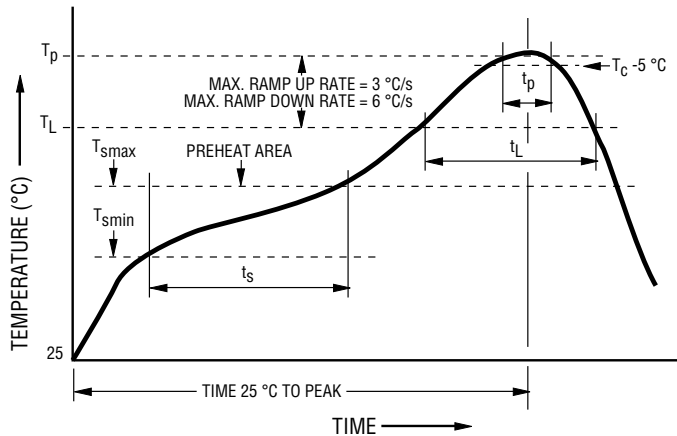


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**Solder Reflow Recommendations**



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.

## Reliability Testing

No.	Test	Requirement	Test Condition	Test Reference
1	Bending	≤1 A: DCR change ≤ ±10 % >1 A: DCR change ≤ ±20 %	2 mm	Refer to STP document
2	Solderability	Minimum 95 % coverage	One dip at 255 °C for 5 seconds	MIL-STD-202 Method 208
3	Thermal shock	DCR change ≤ ±10 % No mechanical damage	100 cycles between -55 °C and +125 °C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change ≤ ±10 % No excessive corrosion	10 cycles	MIL-STD-202 Method 106
5	Salt spray	DCR change ≤ ±10 % No excessive corrosion	48 hour exposure, 5 % salt solution	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change ≤ ±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 ≤ ±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 ±10 % of initial value	75 % rated current for 2000 hours at ambient temperature between +20 °C and +30 °C	Refer to STP document

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