



SinglFuse™ SF-0603FPxxxF Series Features

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

SF-0603FPxxxF Series - Fast Acting Precision Surface Mount Fuses

Electrical Characteristics

Model	Rated Current (Amps)	Fusing Time	Resistance (Ω) Typ.***	Rated Voltage	Interrupting Rating	Typical I ² t (A ² s) ****
SF-0603FP015F-2	0.15	Open within 5 sec. at 200 % rated current	2.20	DC 65 V	AC/DC 35 V 50 A DC 65 V 13 A	0.0006
SF-0603FP020F-2	0.20		1.30			0.0014
SF-0603FP025F-2	0.25		1.10			0.0016
SF-0603FP0375F-2	0.375		0.48			0.0040
SF-0603FP050F-2	0.50		0.185			0.0120
SF-0603FP075F-2	0.75		0.112			0.0210
SF-0603FP100F-2	1.00		0.069			0.0420
SF-0603FP125F-2	1.25		0.048			0.0520
SF-0603FP150F-2	1.50		0.037	0.0710		
SF-0603FP175F-2	1.75		0.031	DC 35 V	AC/DC 35 V 35 A AC/DC 24 V 50 A	0.10
SF-0603FP200F-2	2.00		0.026			0.14
SF-0603FP250F-2	2.50		0.021			0.24
SF-0603FP300F-2	3.00		0.0176			0.33
SF-0603FP350F-2	3.50		0.0148			0.49
SF-0603FP400F-2	4.00		0.0125			0.63
SF-0603FP500F-2	5.00		0.0095			1.10

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

**** Melting I²t calculated at 0.001 second pre-arcing time.

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

Agency Recognition

UL File Number E198545



WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

* RoHS Directive 2002/95/EC Jan. 27, 2003 incl. annex & 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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 Users should verify actual device performance in their specific applications.
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SingIFuse™ SF-0603FPxxxF 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-0603FPxxxF Series - Fast Acting Precision Surface Mount Fuses BOURNS®

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

Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)	
· = 0.150	II = 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

SingIFuse™
 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

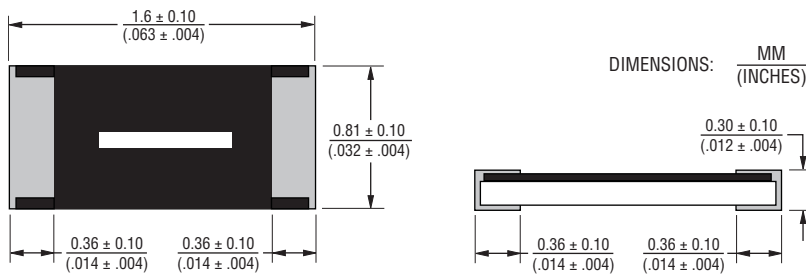
Construction



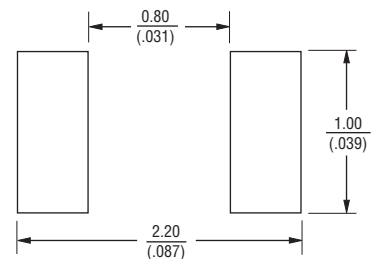
Packaging Quantity

8,000 pieces per 7-inch reel

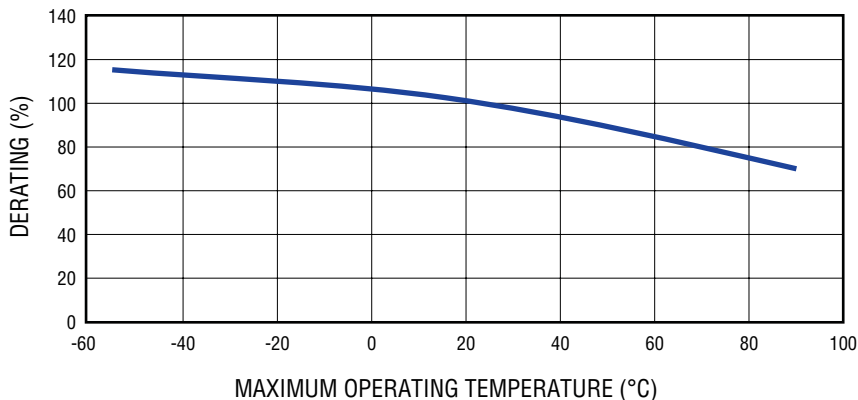
Product Dimensions



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_d)	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_d)	260 °C
Time (t_p)* within 5 °C of the specified classification temperature (T_c)	30 seconds*
Ramp Down Rate (T_d to T_l)	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

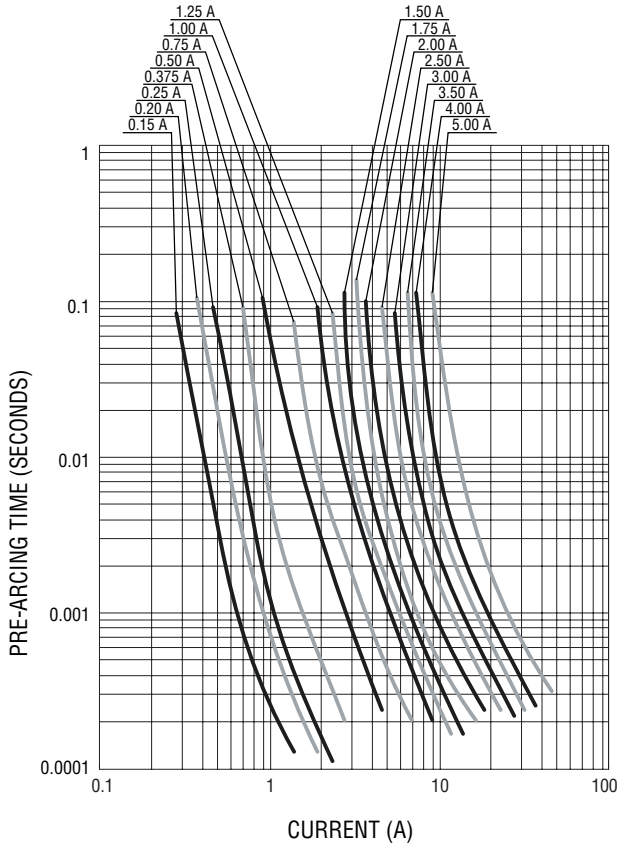
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

Recommended Temperature Profile for Wave Soldering

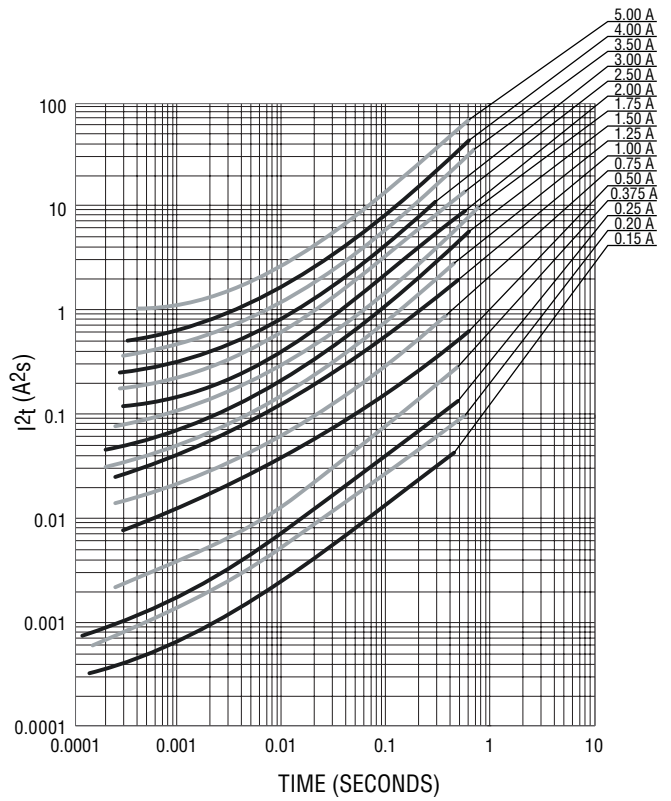


Wave soldering is suitable for 0603 size models.

Average Pre-Arcing Time vs. Current Curves



Average I²t vs. t Curves



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SF-0603FPxxxF Series Tape and Reel Packaging Specifications

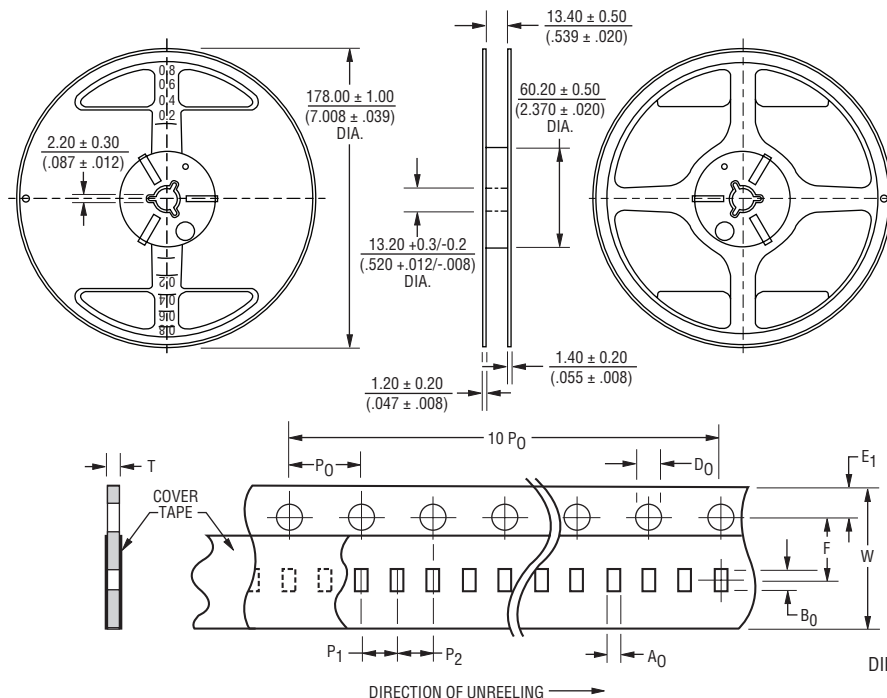


SF-0603FPxxxF Series
per EIA 481-2

Tape Dimensions

W	$\frac{8.10 \pm 0.20}{(.319 \pm .008)}$
P ₀	$\frac{4.0 \pm 0.10}{(.157 \pm .004)}$
P ₁	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
P ₂	$\frac{2.0 \pm 0.05}{(.079 \pm .002)}$
A ₀	$\frac{1.00 \pm 0.10}{(.039 \pm .004)}$
B ₀	$\frac{1.80 \pm 0.10}{(.071 \pm .004)}$
F	$\frac{3.50 \pm 0.05}{(.138 \pm .002)}$
E ₁	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$
D ₀	$\frac{1.55 \pm 0.05}{(.061 \pm .002)}$
T	$\frac{0.60 \pm 0.08}{(.024 \pm .003)}$

PACKAGING: Paper tape, 8,000 pcs. per reel



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