

SingIFuse™ SF-0603FP-M 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**
- Multilayer SMD design
- Surface mount packaging for automated assembly

SF-0603FP-M 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 %	0.01 seconds	5 seconds
300 %	0.001 seconds	0.2 seconds

Additional Information

Click these links for more information:

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Electrical Characteristics

Model	Rated Current (A)	Resistance (Ω) Typ.***	Rated Voltage	Interrupting Rating	Typical I^2t (A^2s)****	Certifications cUL: E198545
SF-0603FP050M-2	0.50	0.995	32 VDC	50 A @ 32 VDC	0.0094	✓
SF-0603FP075M-2	0.75	0.448			0.0194	✓
SF-0603FP100M-2	1.00	0.2786			0.0365	✓
SF-0603FP125M-2	1.25	0.2040		35 A @ 32 VDC	0.0636	✓
SF-0603FP150M-2	1.50	0.1423			0.0960	✓
SF-0603FP175M-2	1.75	0.0945			0.141	✓
SF-0603FP200M-2	2.00	0.0726			0.212	✓
SF-0603FP250M-2	2.50	0.0458			0.303	✓
SF-0603FP300M-2	3.00	0.0388			0.465	✓
SF-0603FP350M-2	3.50	0.0279			0.737	✓
SF-0603FP400M-2	4.00	0.0229			1.162	✓
SF-0603FP450M-2	4.50	0.0189			1.697	✓
SF-0603FP500M-2	5.00	0.0149			2.646	✓

*** Resistance value measured with ≤10 % rated current at 25 °C ambient. Tolerance ±30 %.
**** Melting I^2t calculated at 0.001 second pre-arcing time.

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

*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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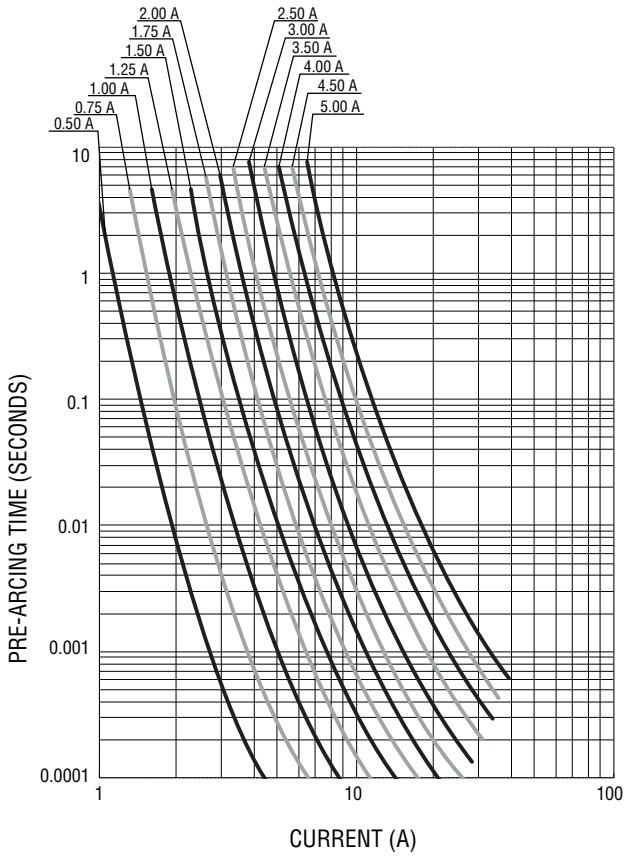
SingIFuse™ SF-0603FP-M Series Applications

- 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

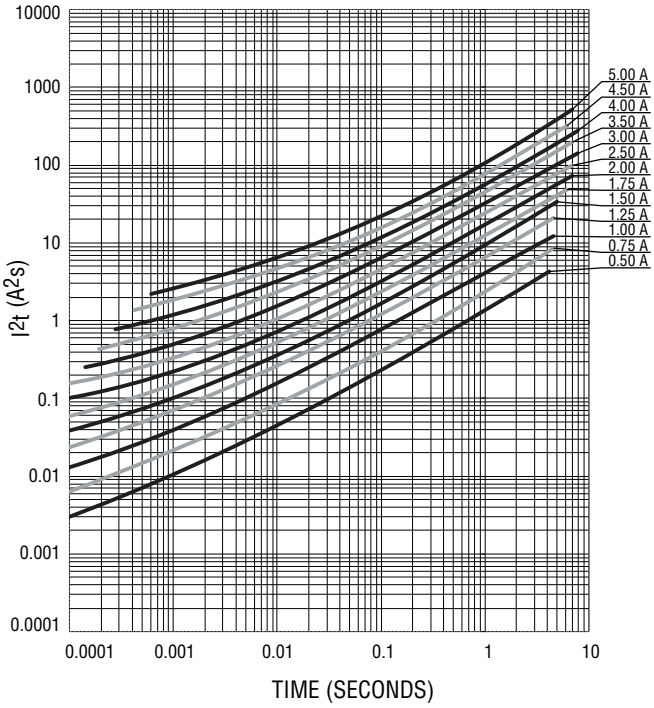
SF-0603FP-M Series - Fast Acting Precision Surface Mount Fuses

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Average Pre-Arcing Time vs. Current Curves



Average I^2t vs. t Curves



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

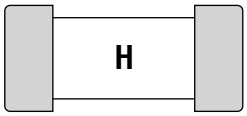
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Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)

C = 0.50	J = 2.50
D = 0.75	K = 3.00
E = 1.00	L = 3.50
F = 1.25	M = 4.00
G = 1.50	T = 4.50
H = 1.75	N = 5.00
I = 2.00	

How to Order

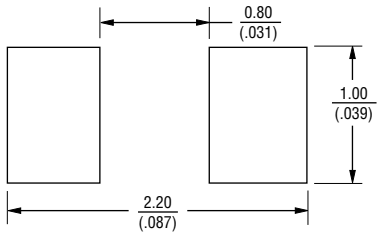
SF - 0603 FP 050 M - 2

- SinglFuse™ Product Designator
- SMD Footprint
  - 0603 = 1608 (EIA 0603) size
- Fuse Blow Type
  - FP = Fast acting precision
- Rated Current
  - 050 ~ 500 (500 mA ~ 5.00 A)
- Structure Type
  - M = Multilayer
- Packaging Type
  - - 2 = Tape & Reel

Packaging

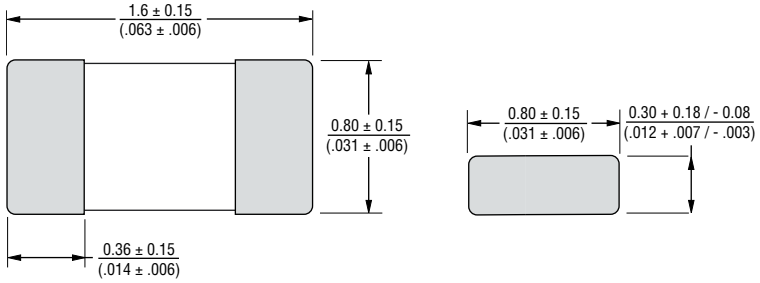
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	6,000 pieces
Packaging Code	-2

Recommended Pad Layout



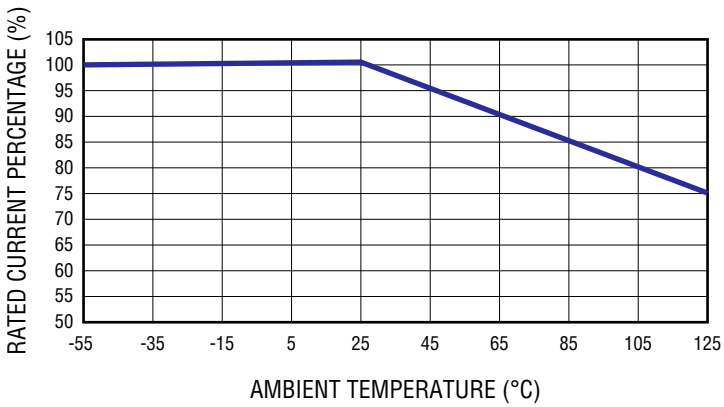
DIMENSIONS: MM / (INCHES)

Product Dimensions



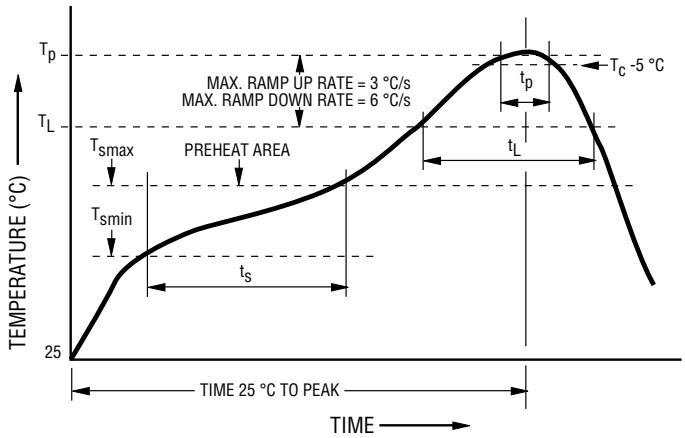
DIMENSIONS: MM / (INCHES)

Current Rating Thermal Derating Curve



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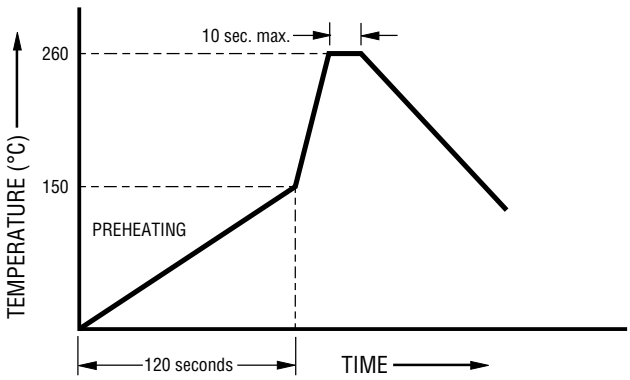
Solder Reflow Recommendations



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 (Tp) is defined as a supplier minimum and a user maximum.

Recommended Temperature Profile for Wave Soldering



Wave soldering is suitable for 0603 size models.

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Reliability Testing

No.	Test	Requirement	Test Condition	Test Reference
1	Soldering heat resistance	DCR change ≤ ±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 ≤ ±10 % No mechanical damage	100 cycles between -65 °C and +125 °C	MIL-STD-202 Method 107
4	Moisture resistance	DCR change ≤ ±15 % 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 ±20 % of initial value	80 % rated current (75 % for < 1 A fuses) for 2000 hours at ambient temperature between +20 °C and +30 °C	Refer to STP document

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