

SingIFuse™ SF-0603SP-M Series Features

- Single blow fuse for overcurrent protection
- 1608 (EIA 0603) miniature footprint
- Time Lag fuse
- UL 248-14 compliant
- RoHS compliant* and halogen free**
- Multilayer SMD design
- Surface mount packaging for automated assembly

SF-0603SP-M Series - Time Lag Multilayer Surface Mount Fuses

Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
200 %	1 second	120 seconds
300 %	0.1 seconds	3 seconds
800 % (1 A - 1.5 A)	0.0005 seconds	0.05 seconds
800 % (2 A - 8 A)	0.001 seconds	0.05 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-0603SP100M-2	1.00	0.1990	32 VDC	50 A @ 32 VDC	0.0944	✓
SF-0603SP150M-2	1.50	0.0995			0.182	✓
SF-0603SP200M-2	2.00	0.0517			0.323	✓
SF-0603SP250M-2	2.50	0.0408			0.636	✓
SF-0603SP300M-2	3.00	0.0308			0.879	✓
SF-0603SP350M-2	3.50	0.0209			1.21	✓
SF-0603SP400M-2	4.00	0.0169			2.32	✓
SF-0603SP450M-2	4.50	0.0149			2.73	✓
SF-0603SP500M-2	5.00	0.0129			3.23	✓
SF-0603SP600M-2	6.00	0.0100		80 A @ 32 VDC	4.0	✓
SF-0603SP700M-2	7.00	0.0080			5.1	✓
SF-0603SP800M-2	8.00	0.0060			7.1	✓

*** 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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Asia-Pacific: Tel: +886-2 2562-4117 • Email: asiacus@bourns.com
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The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com
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CALIFORNIA WARNING: Can expose you to lead, a carcinogen and reproductive toxicant.
See 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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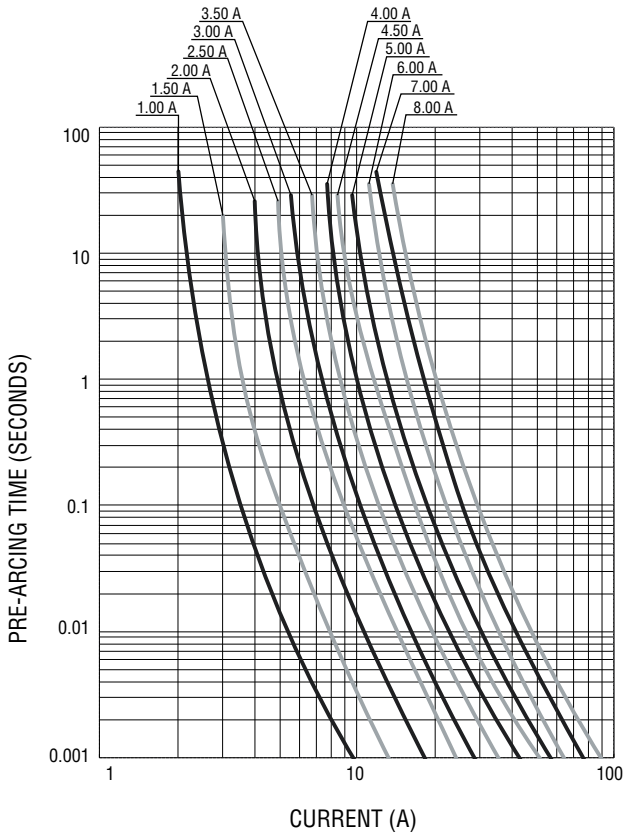
SingIFuse™ SF-0603SP-M Series Applications

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

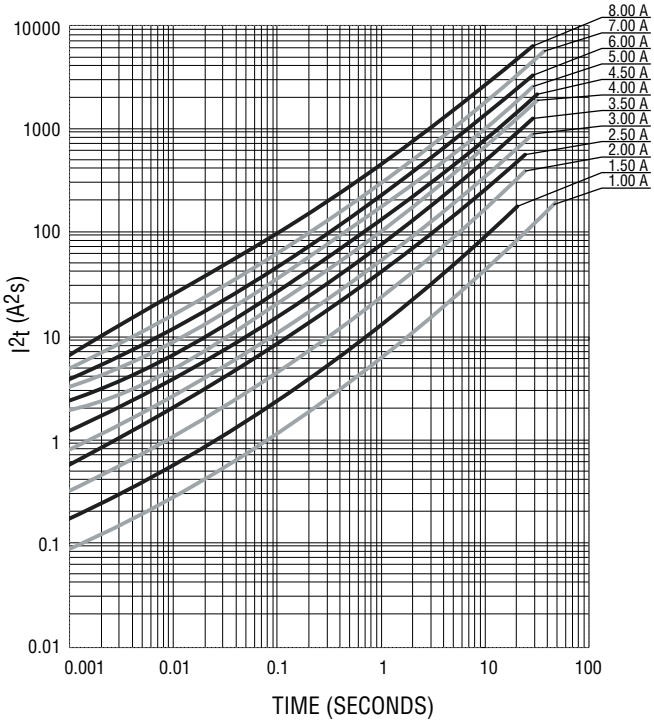
SF-0603SP-M Series - Time Lag Multilayer Surface Mount Fuses

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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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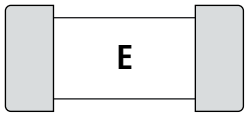
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SF-0603SP-M Series - Time Lag Multilayer Surface Mount Fuses

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Typical Part Marking

Represents total content. Layout may vary.



RATED CURRENT (A)

E = 1.00	M = 4.00
G = 1.50	T = 4.50
I = 2.00	N = 5.00
J = 2.50	O = 6.00
K = 3.00	P = 7.00
L = 3.50	R = 8.00

How to Order

SF - 0603 SP 100 M - 2

SinglFuse™ Product Designator

SMD Footprint
0603 = 1608 (EIA 0603) size

Fuse Blow Type
SP = Time Lag

Rated Current
100 ~ 800 (1.00 A ~ 8.00 A)

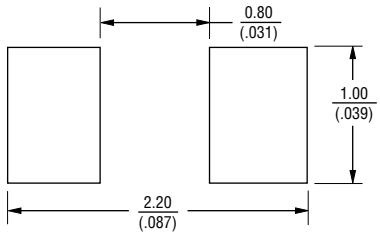
Structure Type
M = Multilayer

Packaging Type
- 2 = Tape & Reel

Packaging

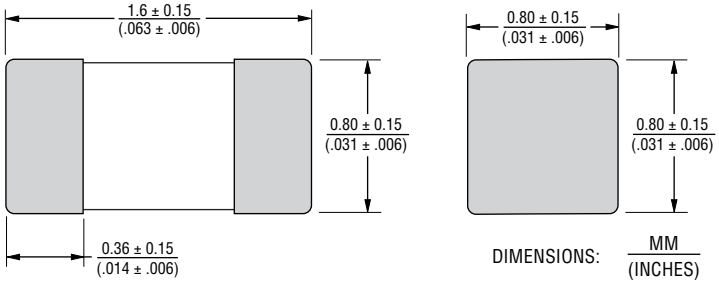
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	4,000 pieces
Packaging Code	-2

Recommended Pad Layout



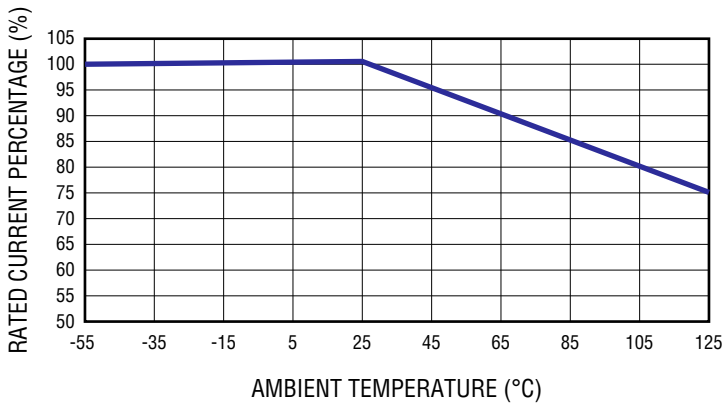
DIMENSIONS: MM / (INCHES)

Product Dimensions



DIMENSIONS: MM / (INCHES)

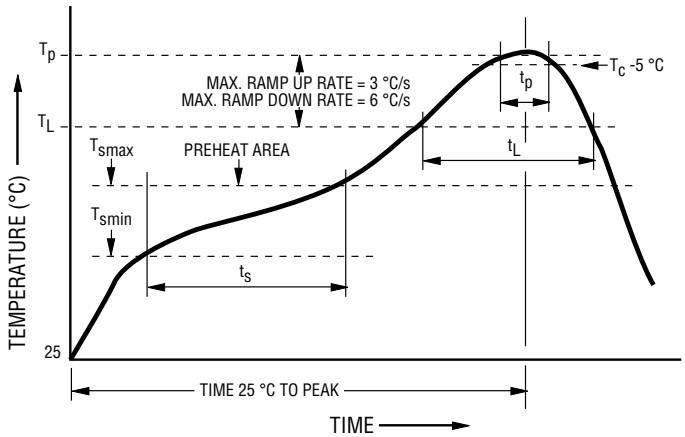
Current Rating Thermal Derating Curve



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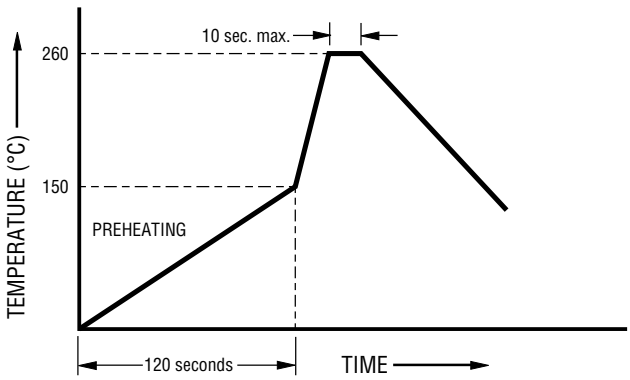
Solder Reflow Recommendations



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 (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.

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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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