

## Features

- Slow blow fusing speed
- EIA 0603 (1608 metric) footprint
- Designed to UL 248-14
- RoHS\* compliant and halogen free\*\*
- AEC-Q200-equivalent compliant\*\*\*

## SF-0603SA-M Series - Automotive Grade Slow Blow SMD Fuses

### Clearing Time Characteristics for Series

% of Current Rating	Clearing Time at 25 °C	
	Min.	Max.
100 %	4 hours	—
250 %	—	5 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)*****	Agency Recognition
						cUL: <a href="#">E198545</a>
SF-0603SA050M-2	0.50	0.827	65 VDC	50 A @ 65 VDC	0.0040	✓
SF-0603SA075M-2	0.75	0.374			0.0121	✓
SF-0603SA100M-2	1.00	0.238			0.0303	✓
SF-0603SA125M-2	1.25	0.154			0.0657	✓
SF-0603SA150M-2	1.50	0.116			0.101	✓
SF-0603SA200M-2	2.00	0.067	35 VDC	50 A @ 35 VDC	0.182	✓
SF-0603SA250M-2	2.50	0.039			0.222	✓
SF-0603SA300M-2	3.00	0.030			0.343	✓
SF-0603SA350M-2	3.50	0.024			0.394	✓
SF-0603SA400M-2	4.00	0.020			0.535	✓
SF-0603SA500M-2	5.00	0.012			0.889	✓
SF-0603SA600M-2	6.00	0.011			1.101	✓
SF-0603SA700M-2	7.00	0.008	24 VDC	80 A @ 24 VDC	1.879	✓
SF-0603SA800M-2	8.00	0.007			2.727	✓

\*\*\*\* 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.

# **BOURNS®**

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

\*\*\*Meets Bourns' internal AEC-Q200-equivalent test plan.

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Specifications are subject to change without notice.

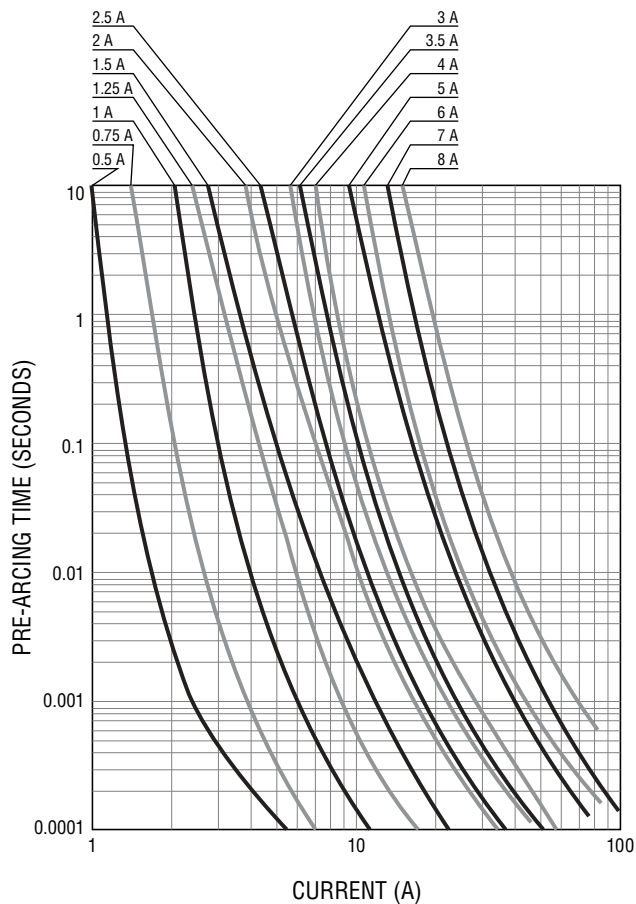
Users should verify actual device performance in their specific applications.

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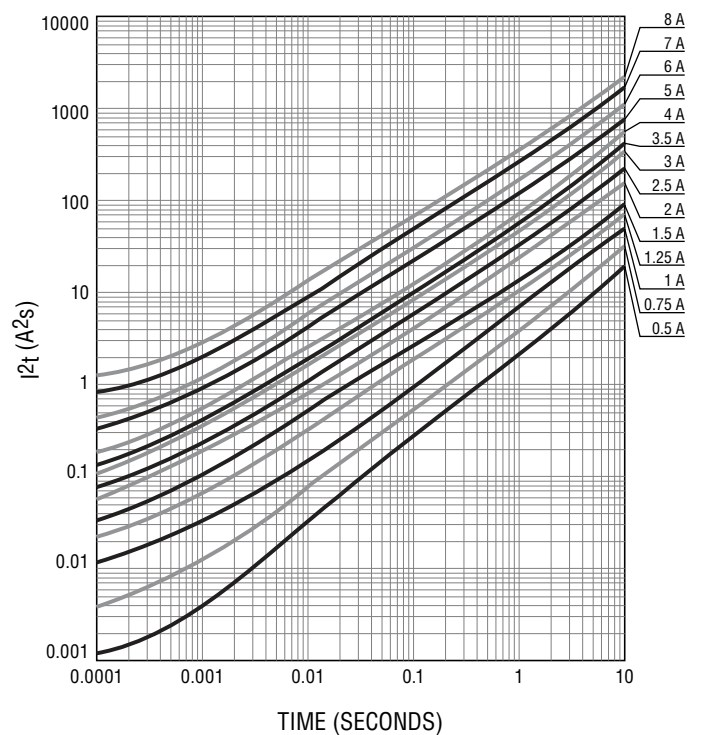
# SF-0603SA-M Series - Automotive Grade Slow Blow SMD Fuses

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



**Average  $I^2t$  vs.  $t$  Curves**

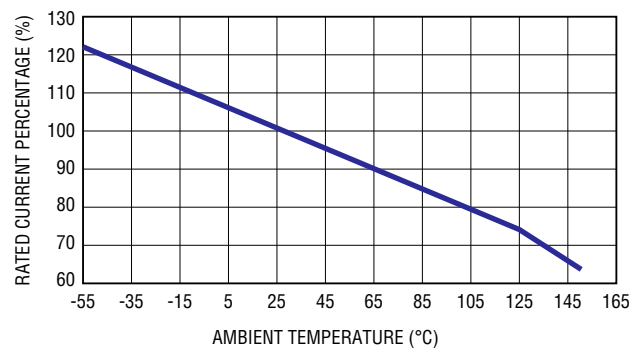


**Environmental Characteristics**

Operating Temperature	-55 °C to +150 °C
Storage Conditions	
Temperature	+5 °C to +35 °C
Humidity	40 % to 75 %
Moisture Sensitivity Level	1
ESD Classification <sup>1</sup>	Class 6

<sup>1</sup>per AEC-Q200-2, HBM

**Current Rating Thermal Derating Curve**



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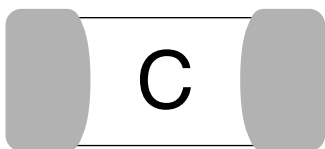
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## SF-0603SA-M Series - Automotive Grade Slow Blow SMD Fuses

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### Typical Part Marking

Represents total content. Layout may vary.  
Markings in cyan color.



Rated Current	Part Marking	Rated Current	Part Marking
0.5 A	C	3 A	K
0.75 A	D	3.5 A	L
1 A	E	4 A	M
1.25 A	F	5 A	N
1.5 A	G	6 A	O
2 A	I	7 A	P
2.5 A	J	8 A	R

### How to Order

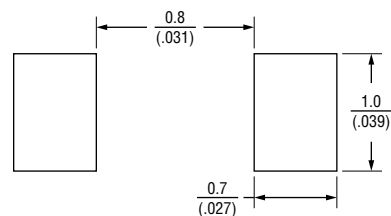
**SF - 0603 S A 050 M - 2**

SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 0603 = EIA 0603  
 (1608 metric) \_\_\_\_\_  
 Fuse Blow Type \_\_\_\_\_  
 S = Slow Blow \_\_\_\_\_  
 Automotive Grade \_\_\_\_\_  
 Rated Current \_\_\_\_\_  
 050 ~ 800 = 0.5 A ~ 8 A \_\_\_\_\_  
 Structure Type \_\_\_\_\_  
 M = Ceramic Multilayer \_\_\_\_\_  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel \_\_\_\_\_

### Packaging

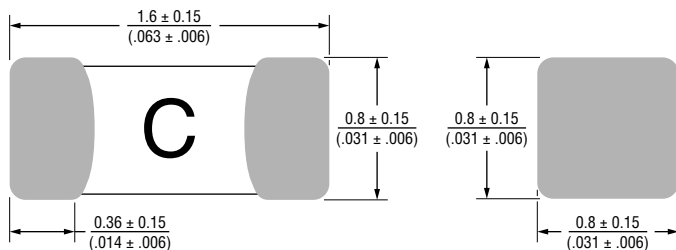
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	4,000 pieces
Packaging Code	-2

### Recommended Pad Layout



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

### Product Dimensions

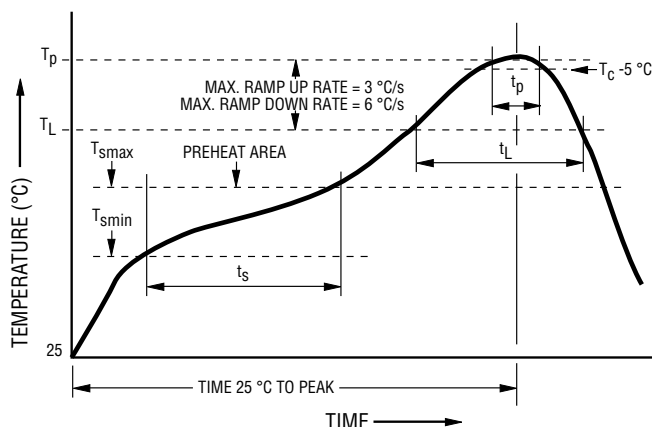


DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

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**Solder Reflow Recommendations**

Profile Feature	Pb-Free Assembly
Preheat / Soak: Temperature Min. ( $T_{sm}$ ) Temperature Max. ( $T_{smx}$ ) Time ( $t_s$ ) from ( $T_{sm}$ to $T_{smx}$ )	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.

**Reliability Tests**

Test Items	Reference Standard
Visual Inspection	MIL-STD-883 Method 2009
High Temperature Storage	MIL-STD-202 Method 108
Low Temperature Storage	IEC 60068-2-1
Temperature Cycling	JESD22 Method JA-104
Biased Humidity	MIL-STD-202 Method 103
High Temperature Operating Life	MIL-STD-202 Method 108
Physical Dimension	JESD22 Method JB-100
Mechanical Vibration	MIL-STD-202 Method 204
Mechanical Shock	MIL-STD-202 Method 213
Resistance to Soldering Heat	MIL-STD-202 Method 210
Salt Spray	MIL-STD-202 Method 101
Solderability	MIL-STD-202 Method 208
Terminal Strength	AEC-Q200-006
Board Flex	AEC-Q200-005
Electrical Characterization	Bourns Specification

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