

### **Features**

- High-inrush current withstand capability
- EIA 0603 (1608 metric) footprint
- AEC-Q200 compliant\*
- UL 248-14 compliant
- RoHS compliant\*\* and halogen free\*\*\*

### SF-0603HIA-M Series - Automotive Grade High-Inrush SMD Fuses

#### **Clearing Time Characteristics for Series**

% of Current	Clearing Time @ 25 °C		
Rating	Min.	Max.	
100 %	4 hours	_	
200 %	1 second	60 seconds	

#### **Additional Information**

Click these links for more information:











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#### **Electrical Characteristics**

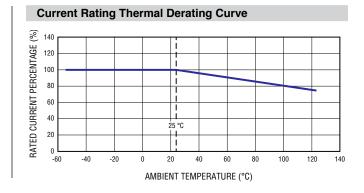
Model	Rated Current	Resistance (Ω) Typ.****	Rated Voltage	Interrupting Rating	Typical I <sup>2</sup> t (A <sup>2</sup> s) ******	Certifications	
	(A)	(32) Typ.	voltage	nauiig	(A 5)	cUL: <u>E198545</u>	
SF-0603HIA100M-2	1.0	0.24			0.082	✓	
SF-0603HIA150M-2	1.5	0.115	32 VDC		0.112	<b>✓</b>	
SF-0603HIA200M-2	2.0	0.06		32 VDC		0.245	1
SF-0603HIA300M-2	3.0	0.032			50 A @ 32 VDC	0.74	<b>✓</b>
SF-0603HIA350M-2	3.5	0.022			50 A @ 32 VDC	1.12	1
SF-0603HIA400M-2	4.0	0.018				2.1	1
SF-0603HIA450M-2	4.5	0.015				2.68	<b>✓</b>
SF-0603HIA500M-2	5.0	0.013			3.3	1	

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

<sup>\*\*\*\*\*\*</sup> Melting I<sup>2</sup>t calculated at 1000 % of current rating.

Environmental Characteristics			
Operating Temperature	-55 °C to + 125 °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





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

- Meets Bourns' internal AEC-Q200 equivalent test plan.
- 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 (CI) content is 1500 ppm or less.

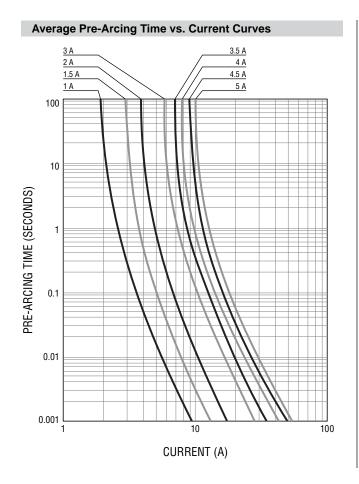
"SinglFuse" is a trademark of Bourns, Inc.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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## SF-0603HIA-M Series – Automotive Grade High-Inrush SMD Fuses



# 10000 1000 4.5 A 4 A 3.5 A 3 A 2 A 100 12t (A<sup>2</sup>s) 10 0.1 0.01 0.001

TIME (SECONDS)

Average I2t vs. t Curves

## SF-0603HIA-M Series – Automotive Grade High-Inrush SMD Fuses

#### **Typical Part Marking**

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



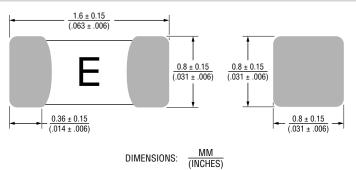
Rated Current	Part Marking
1 A	E
1.5 A	G
2 A	I
3 A	K

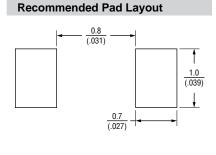
Rated Current	Part Marking
3.5 A	L
4 A	М
4.5 A	Т
5 A	N

How to Order					
SF - 06	03 H	ΙA	100	М-:	2
SinglFuse <sup>TM</sup> Product Designator  SMD Footprint  0603 = EIA 0603 (1608 metric)					
Fuse Blow Type ————————————————————————————————————					
Automotive Grade ———					
Rated Current — 100 ~ 500 = 1 A ~ 5 A					
Structure Type ————————————————————————————————————					
Packaging Type ————————————————————————————————————					]

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

### **Product Dimensions**



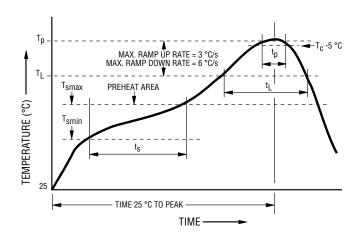


DIMENSIONS:

### SF-0603HIA-M Series – Automotive Grade High-Inrush SMD Fuses

### BOURNS

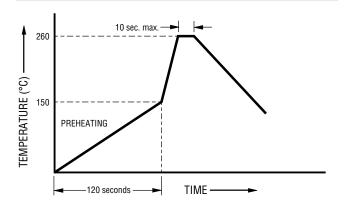
#### **Solder Reflow Recommendations**



Profile Feature	Pb-Free Assembly
Preheat / Soak:	
Temperature Min. (T <sub>smin</sub> )	150 °C
Temperature Max. (T <sub>smax</sub> )	200 °C
Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> )	60~120 seconds
Ramp Up Rate (T <sub>L</sub> to T <sub>p</sub> )	3 °C / second max.
Liquidous Temperature (T <sub>I</sub> )	217 °C
Time (t <sub>L</sub> ) maintained above T <sub>L</sub>	60~150 seconds
Peak Package Body Temperature (T <sub>p</sub> )	260 °C
Time $(t_p)^*$ within 5 °C of the specified classification temperature $(T_c)$	30 seconds*
Ramp Down Rate (T <sub>p</sub> to T <sub>L</sub> )	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

<sup>\*</sup> Tolerance for peak profile temperature (Tp ) is defined as a supplier minimum and a user maximum.

### **Solder Wave Recommendations**



# 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
NA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Mechanical Vibration	MIL-STD-202 Method 204
Mechanical Shock	MIL-STD-202
Wechanical Shock	Method 213
Resistance to Soldering Heat	MII -STD-202
resistance to soldering fleat	Method 210
Salt Spray	MIL-STD-202
San Spray	Method 101
Solderability	MIL-STD-202
•	Method 208
Terminal Strength	AEC-Q200-006
Board Flex	AEC-Q200-005
Pull Test	MIL-STD-202
	Method 211
Electrical Characterization	Bourns Specification

### **BOURNS®**

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REV. B 03/21

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