

## Features

- High-inrush current withstand capability
- EIA 1206 (3216 metric) footprint
- AEC-Q200 compliant\*
- UL 248-14 listed
- RoHS compliant\*\* and halogen free\*\*\*

## SF-1206HIA-M Series - Automotive Grade High-Inrush SMD Fuses

### Clearing Time Characteristics for Series

% of Current Rating	Clearing Time @ 25 °C	
	Min.	Max.
100 %	4 hours	—
200 % (1 - 6 A)	1 second	60 seconds
350 % (0.5 - 0.75 A)	—	5 seconds

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### Electrical Characteristics

Model	Rated Current (A)	Resistance (Ω) Typ.*****	Rated Voltage	Interrupting Rating	Typical I <sup>2</sup> t (A <sup>2</sup> s)*****	Certifications
						cUL: <a href="#">E198545</a>
SF-1206HIA050M-2	0.5	0.98	65 VDC	50 A @ 65 VDC	0.035	✓
SF-1206HIA075M-2	0.75	0.42			0.1	✓
SF-1206HIA100M-2	1.0	0.37			0.112	✓
SF-1206HIA150M-2	1.5	0.165	63 VDC	50 A @ 63 VDC	0.336	✓
SF-1206HIA200M-2	2.0	0.089			0.82	✓
SF-1206HIA300M-2	3.0	0.039			1.36	✓
SF-1206HIA350M-2	3.5	0.03			1.89	✓
SF-1206HIA400M-2	4.0	0.025	32 VDC	50 A @ 32 VDC	2.78	✓
SF-1206HIA450M-2	4.5	0.023			3.25	✓
SF-1206HIA600M-2	6.0	0.013			12.8	✓
			24 VDC	80 A @ 24 VDC		✓

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

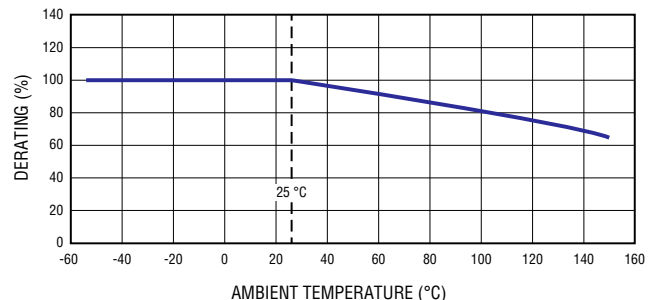
\*\*\*\*\* Melting I<sup>2</sup>t calculated at 1000 % of current rating.

### 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



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://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 (Cl) content is 1500 ppm or less.

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Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

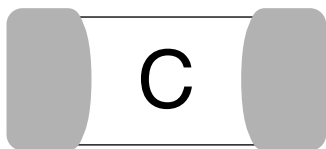
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# SF-1206HIA-M Series – Automotive Grade High-Inrush SMD Fuses



## Typical Part Marking

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



Rated Current	Part Marking	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
1.5 A	G	4.5 A	T
2 A	I	6 A	O

## How to Order

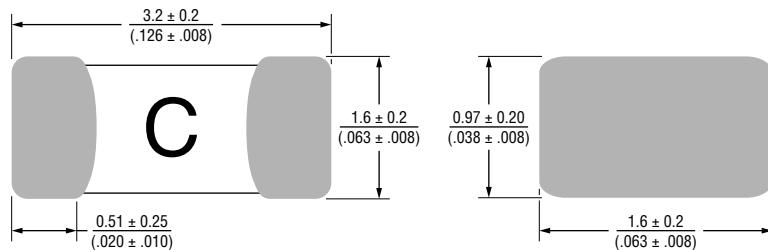
**SF - 1206 HI A 050 M - 2**

SinglFuse™ \_\_\_\_\_  
 Product Designator \_\_\_\_\_  
 SMD Footprint \_\_\_\_\_  
 1206 = EIA 1206  
 (3216 metric) \_\_\_\_\_  
 Fuse Blow Type \_\_\_\_\_  
 HI = High Inrush  
 Current Withstand \_\_\_\_\_  
 Automotive Grade \_\_\_\_\_  
 Rated Current \_\_\_\_\_  
 050 ~ 600 = 0.5 A ~ 6 A \_\_\_\_\_  
 Structure Type \_\_\_\_\_  
 M = Ceramic Multilayer \_\_\_\_\_  
 Packaging Type \_\_\_\_\_  
 - 2 = Tape & Reel \_\_\_\_\_

## Packaging

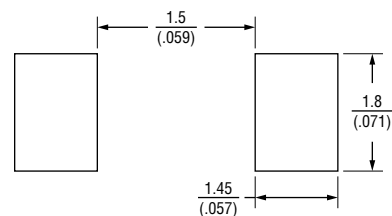
Reel Dimension	7-inch Tape and Reel
Specification	EIA 481-2
Quantity	3,000 pieces
Packaging Code	-2

## Product Dimensions



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

## Recommended Pad Layout



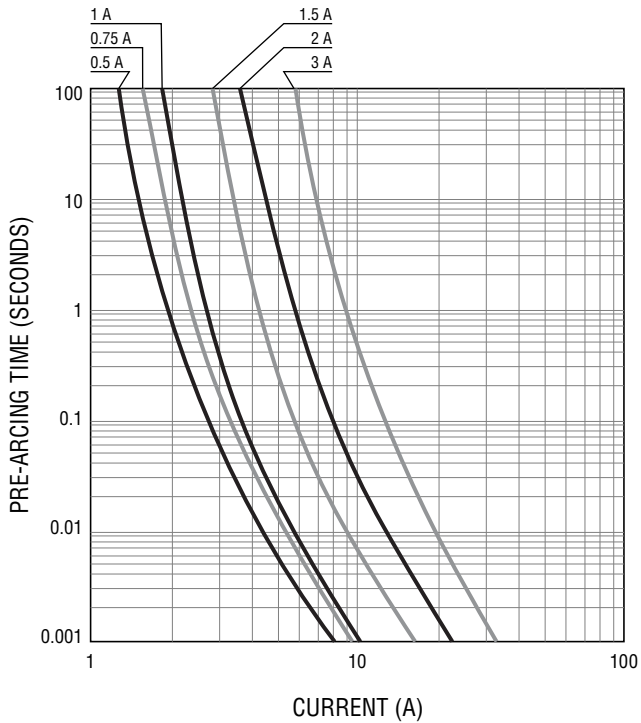
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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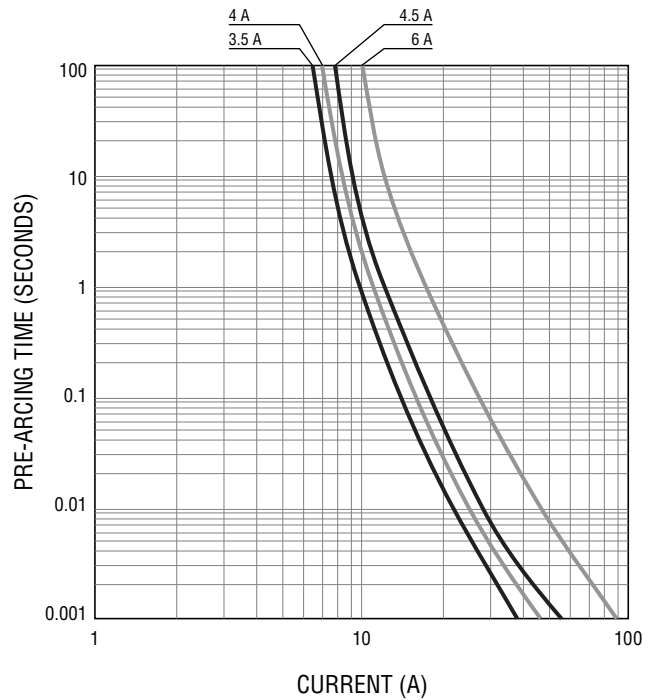
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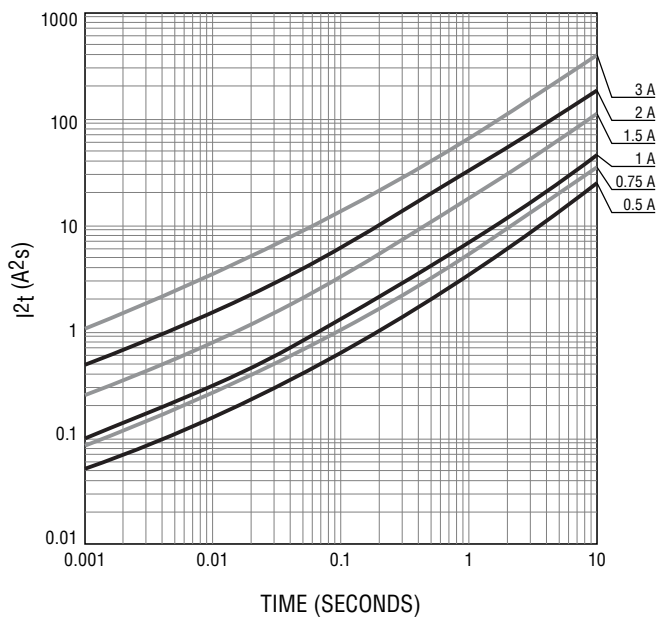
Average Pre-Arcing Time vs. Current Curves (0.5 - 3 A)



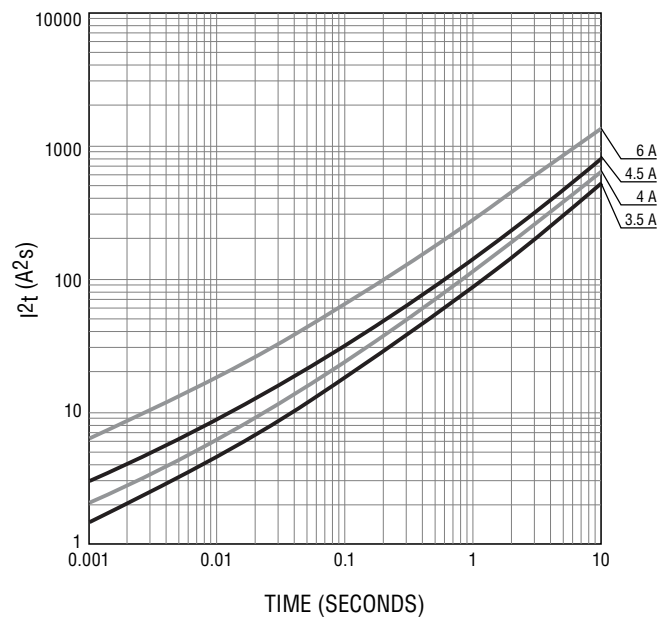
Average Pre-Arcing Time vs. Current Curves (3.5 - 6 A)



Average  $I^2t$  vs.  $t$  Curves (0.5 - 3 A)

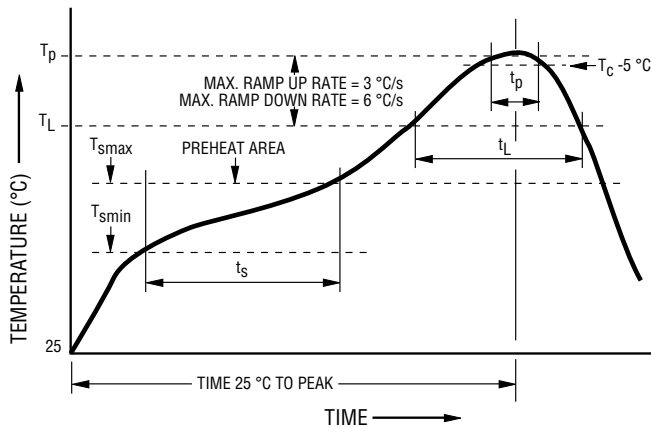


Average  $I^2t$  vs.  $t$  Curves (3.5 - 6 A)



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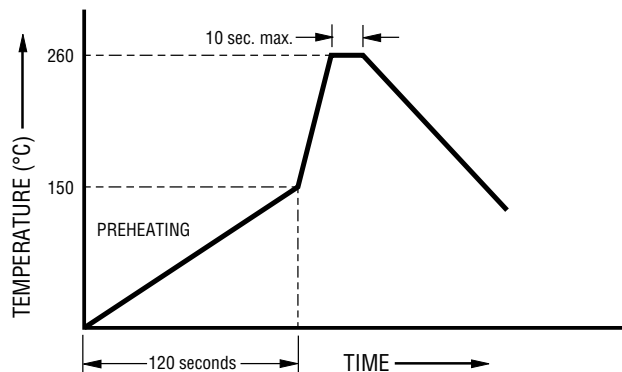
**Solder Reflow Recommendations**



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.

**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
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
Pull Test	MIL-STD-202 Method 211
Electrical Characterization	Bourns Specification



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