



Features

- High-inrush current withstand capability
- EIA 1206 (3216 metric) footprint
- AEC-Q200 compliant*
- UL 248-14 compliant
- 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 |

Additional Information

Click these links for more information:



Electrical Characteristics

| Model | Rated Current (A) | Resistance (Ω) Typ.***** | Rated Voltage | Interrupting Rating | Typical I ² t (A ² s)***** | Certifications |
|------------------|-------------------|--------------------------|---------------|---------------------|--|------------------------------|
| | | | | | | cUL: E198545 |
| 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 | 63 VDC | 50 A @ 63 VDC | 0.112 | ✓ |
| SF-1206HIA150M-2 | 1.5 | 0.165 | | | 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 | 32 VDC | 50 A @ 32 VDC | 1.89 | ✓ |
| SF-1206HIA400M-2 | 4.0 | 0.025 | | | 2.78 | ✓ |
| SF-1206HIA450M-2 | 4.5 | 0.023 | | | 3.25 | ✓ |
| SF-1206HIA600M-2 | 6.0 | 0.013 | 24 VDC | 80 A @ 24 VDC | 12.8 | ✓ |

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

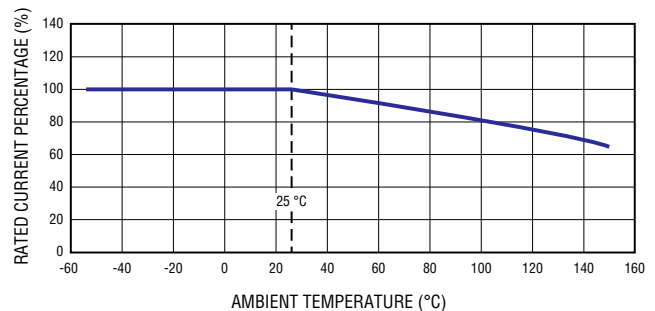
***** Melting I²t calculated at 1000 % of current rating.

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 ¹ | Class 6 |

¹per AEC-Q200-2, HBM

Current Rating Thermal Derating Curve



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 (Cl) content is 1500 ppm or less.

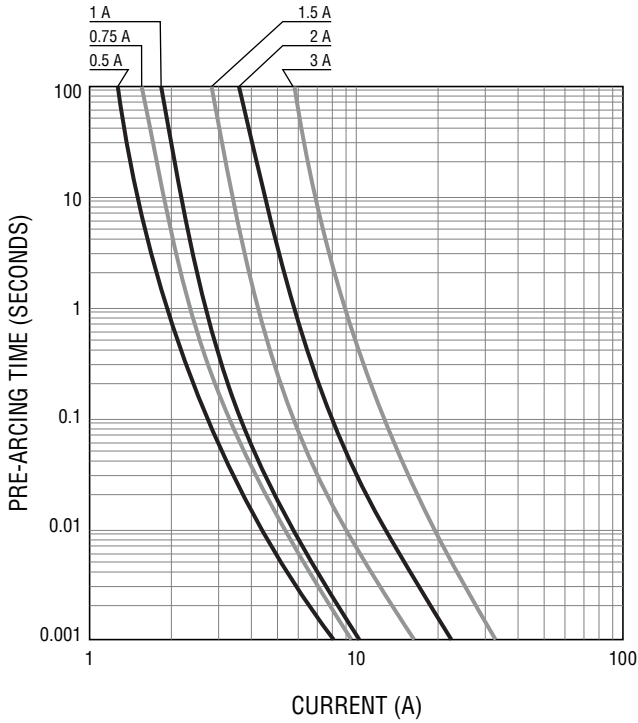
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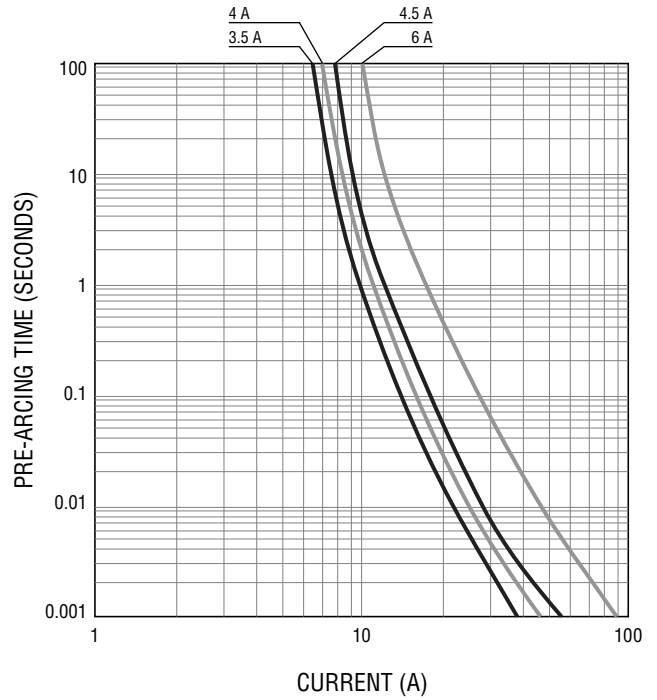
Users should verify actual device performance in their specific applications.

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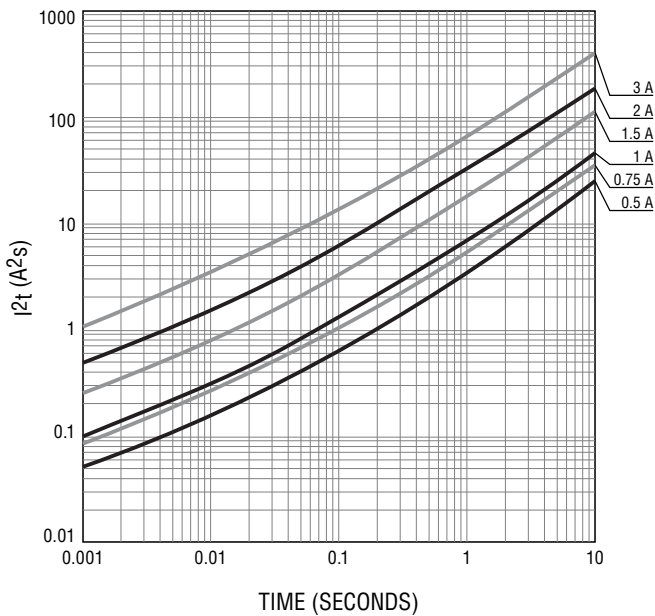
Average Pre-Arcing Time vs. Current Curves (0.5 - 3 A)



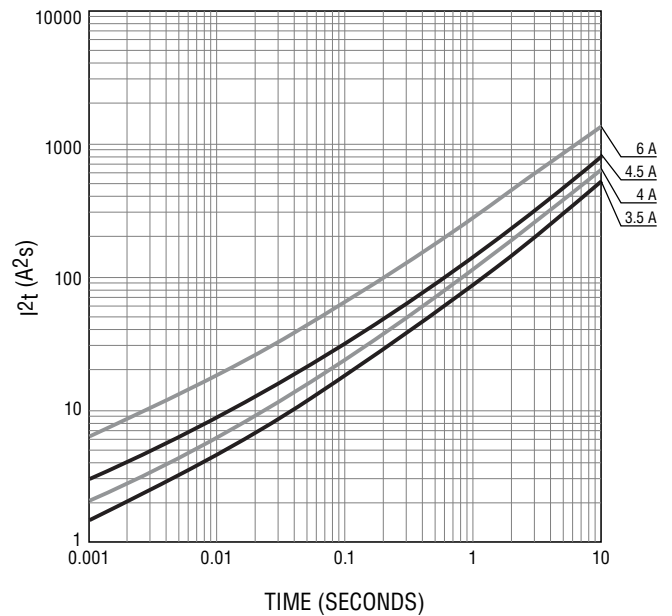
Average Pre-Arcing Time vs. Current Curves (3.5 - 6 A)



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



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



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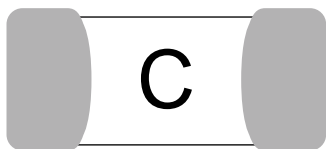
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SF-1206HIA-M Series – Automotive Grade High-Inrush SMD Fuses



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

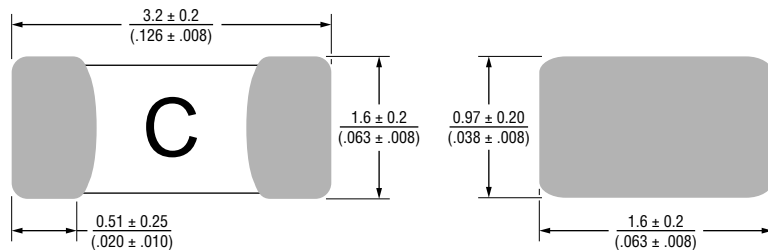
SF - 1206 HI A 050 M - 2

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

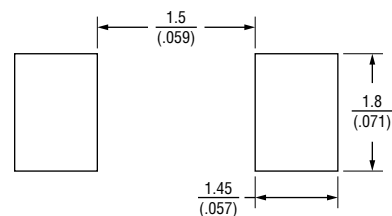
| | |
|----------------|----------------------|
| Reel Dimension | 7-inch Tape and Reel |
| Specification | EIA 481-2 |
| Quantity | 3,000 pieces |
| Packaging Code | -2 |

Product Dimensions



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

Recommended Pad Layout



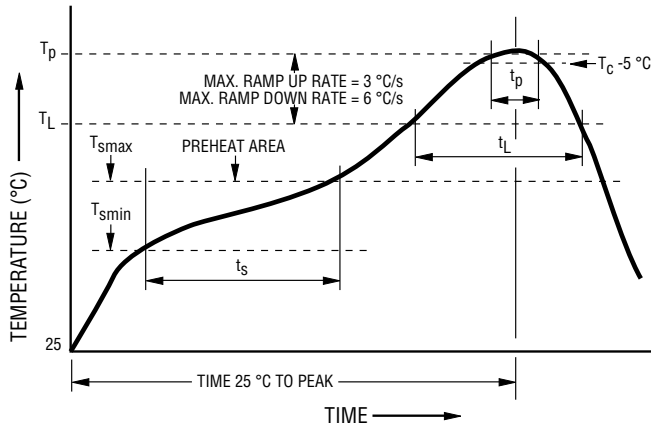
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

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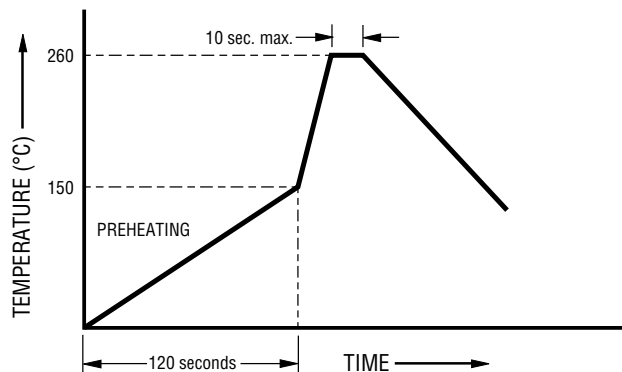
Solder Reflow Recommendations



| 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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