


## SingIFuse™ SF-1206S-M Series Features

- Single blow fuse for overcurrent protection
- 3216 (EIA 1206) miniature footprint
- Slow blow fuse (Fusing time ≤5 seconds at 250 % rated current)
- UL 248-14 compliant
- Surface mount packaging for automated assembly
- Multilayer SMD design
- RoHS compliant* and halogen free**

# SF-1206S-M Series - Slow Blow Multilayer Surface Mount Fuses

### Clearing Time Characteristics for Series

| % of Current Rating | Clearing Time at 25 °C | |
|---|---|---|
| | Min. | Max. |
| 100 % | 4 hours | — |
| 250 % | — | 5 seconds |
| 400 % | — | 0.05 seconds |

### Additional Information

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

### Electrical Characteristics

| Model | Rated Current (A) | Resistance (Ω) Typ.*** | Rated Voltage | Interrupting Rating (Ω) | Typical $I^2t$ ($A^2s$)**** | Certifications |
|---|---|---|---|---|---|---|
| | | | | | | cUL: E198545 |
| SF-1206S050M-2 | 0.50 | 0.726 | 63 VDC | 50 A @ 63 VDC | 0.0020 | ✓ |
| SF-1206S075M-2 | 0.75 | 0.510 | | | 0.0051 | ✓ |
| SF-1206S100M-2 | 1.00 | 0.2189 | | | 0.0112 | ✓ |
| SF-1206S150M-2 | 1.50 | 0.1194 | | | 0.024 | ✓ |
| SF-1206S175M-2 | 1.75 | 0.0995 | | | 0.0455 | ✓ |
| SF-1206S200M-2 | 2.00 | 0.0498 | | | 0.0758 | ✓ |
| SF-1206S250M-2 | 2.50 | 0.0348 | 32 VDC | 50 A @ 32 VDC | 0.111 | ✓ |
| SF-1206S300M-2 | 3.00 | 0.0308 | | | 0.21 | ✓ |
| SF-1206S400M-2 | 4.00 | 0.0219 | | 45 A @ 32 VDC | 0.354 | ✓ |
| SF-1206S500M-2 | 5.00 | 0.0149 | | | 0.61 | ✓ |
| SF-1206S600M-2 | 6.00 | 0.0129 | | | 1.01 | ✓ |
| SF-1206S700M-2 | 7.00 | 0.0109 | | | 1.62 | ✓ |
| SF-1206S800M-2 | 8.00 | 0.0080 | | | 2.32 | ✓ |

*** 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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**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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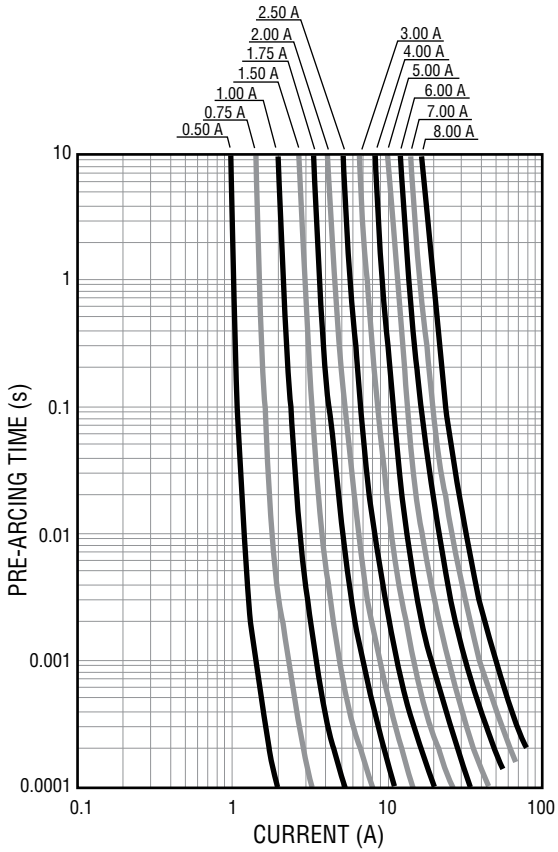
## SingIFuse™ SF-1206S-M Series Applications

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

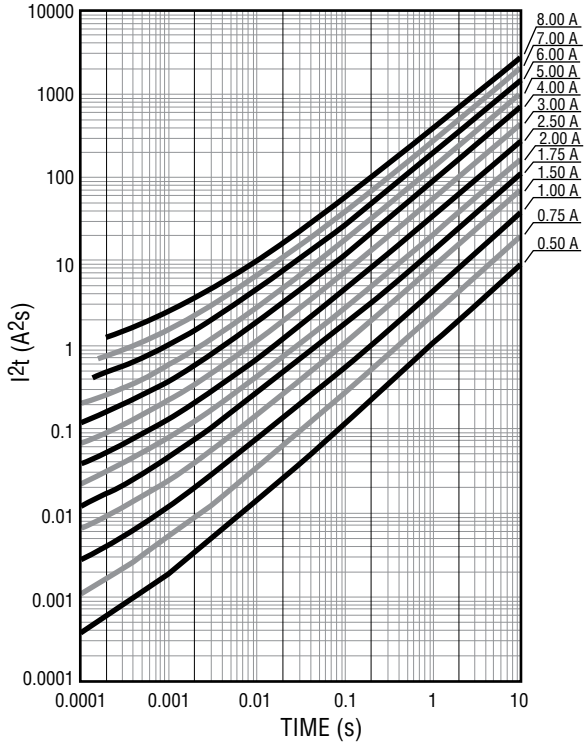
## SF-1206S-M Series – Slow Blow Multilayer Surface Mount Fuses

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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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# SF-1206S-M Series – Slow Blow Multilayer Surface Mount Fuses

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## Typical Part Marking

Represents total content. Layout may vary.




RATED CURRENT (A)

| | |
|---|---|
| C = 0.50 | K = 3.00 |
| D = 0.75 | M = 4.00 |
| E = 1.00 | N = 5.00 |
| G = 1.50 | + = 6.00 |
| H = 1.75 | – = 7.00 |
| I = 2.00 | = = 8.00 |
| J = 2.50 | |

## How to Order

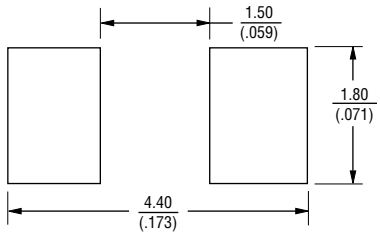
**SF - 1206 S 100 M - 2**

- SinglFuse™ Product Designator
- SMD Footprint
  1206 = 3216 (EIA 1206) size
- Fuse Blow Type
  S = Slow blow
- Rated Current
  050 ~ 800 (0.50 A - 8.00 A)
- Structure Type
  M = Multilayer
- Packaging Type
  - 2 = Tape & Reel

## Packaging

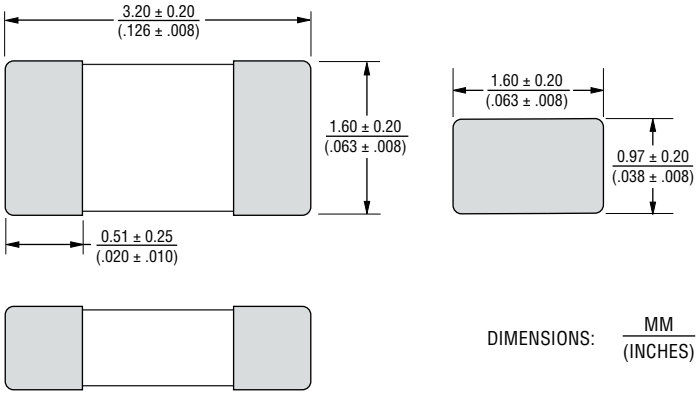
| | |
|---|---|
| **Reel Dimension** | 7-inch Tape and Reel |
| **Specification** | EIA 481-2 |
| **Quantity** | 3,000 pieces |
| **Packaging Code** | -2 |

## Recommended Pad Layout



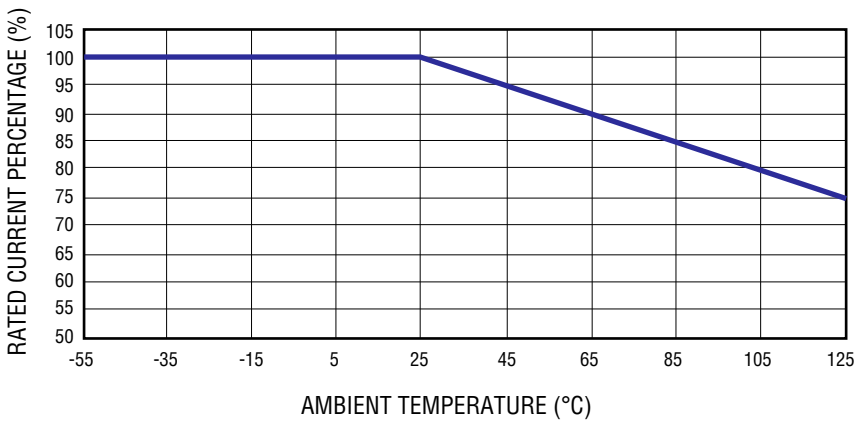

DIMENSIONS: MM / (INCHES)

## Product Dimensions




DIMENSIONS: MM / (INCHES)

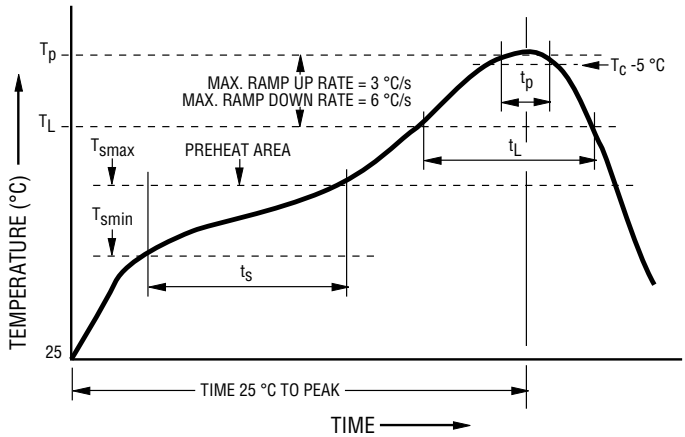
## Current Rating Thermal Derating Curve




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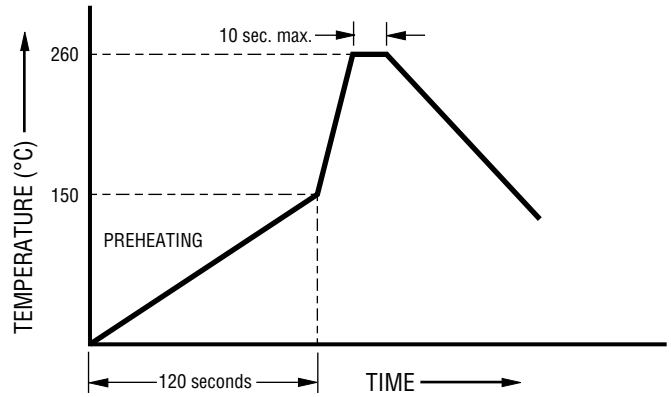
## Solder Reflow Recommendations




| Profile Feature | Pb-Free Assembly |
|---|---|
| Preheat / Soak:<br>Temperature Min. ($T_{smin}$)<br>Temperature Max. ($T_{smax}$)<br>Time ($t_s$) from ($T_{smin}$ to $T_{smax}$) | <br>150 °C<br>200 °C<br>60~120 seconds |
| Ramp Up Rate ($T_L$ to $T_p$) | 3 °C / second max. |
| Liquidous Temperature ($T_L$)<br>Time ($t_L$) maintained above $T_L$ | 217 °C<br>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 1206 size models.

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## Reliability Testing

| No. | Test | Requirement | Test Condition | Test Reference |
|---|---|---|---|---|
| 1 | Soldering heat resistance | DCR change ≤ ±10 %<br>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 %<br>No mechanical damage | 100 cycles between -65 °C and +125 °C | MIL-STD-202 Method 107 |
| 4 | Moisture resistance | DCR change ≤ ±15 %<br>No excessive corrosion | 10 cycles | MIL-STD-202 Method 106 |
| 5 | Salt spray | DCR change ≤ ±10 %<br>No excessive corrosion | 48 hour exposure, 5 % salt solution | MIL-STD-202 Method 101 |
| 6 | Mechanical vibration | DCR change ≤ ±10 %<br>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 %<br>No mechanical damage | 1500 G, 0.5 ms, half-sine shocks | MIL-STD-202 Method 213 |
| 8 | Life | No electrical “opens” during testing.<br>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 +20 °C ~ +30 °C | Refer to STP document |



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