

## SinglFuse™ SF-1206HVxxM Series Features

- Single blow fuse for overcurrent protection
- 3216 (EIA 1206) footprint
- High voltage rating applications
- High current rating applications
- UL 248-14 listed
- RoHS compliant\* and halogen free\*\*
- Multilayer SMD design
- Surface mount packaging for automated assembly

### SF-1206HVxxM Series - High Voltage & High Current Multilayer Surface Mount Fuses

#### Electrical Characteristics

| Model          | Rated Current (Amps) | Fusing Time                               | Resistance (Ω) Typ.*** | Rated Voltage | Interrupting Rating | Typical I <sup>2</sup> t (A <sup>2</sup> s) **** |
|----------------|----------------------|---|------------------------|---------------|---------------------|--|
| SF-1206HV10M-2 | 10.0                 | Open within 5 sec. at 350 % rated current | 0.0055                 | DC 35 V       | DC 35 V 150 A       | 15.0   |
| SF-1206HV12M-2 | 12.0                 |   | 0.0045                 |               |                     | 20.0   |
| SF-1206HV15M-2 | 15.0                 |   | 0.0032                 |               |                     | 35.0   |
| SF-1206HV20M-2 | 20.0                 |   | 0.0023                 |               |                     | 80.0   |
| SF-1206HV25M-2 | 25.0                 |   | 0.0016                 |               | DC 35 V 200A        | 120.0  |
| SF-1206HV30M-2 | 30.0                 |   | 0.0012                 |               | DC 35 V 200 A       | 180.0  |
| SF-1206HV40M-2 | 40.0                 |   | 0.0009                 |               | DC 26 V 300 A       | 240.0  |

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

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

#### Reliability Testing

| No. | Test                      | Requirement   | Test Condition  | Test Reference         |
|-----|---------------------------|---|---|------------------------|
| 1   | Solderability             | Minimum 95 % coverage   | One dip at 245 °C for 5 seconds   | MIL-STD-202 Method 208 |
| 2   | Soldering heat resistance | DCR change ≤ 10 %<br>No mechanical damage   | One dip at 260 °C for 60 seconds  | MIL-STD-202 Method 210 |
| 3   | Moisture resistance       | DCR change ≤ ±15 %<br>No excessive corrosion  | 10 cycles   | MIL-STD-202 Method 106 |
| 4   | Salt spray                | DCR change ≤ ±10 %<br>No excessive corrosion  | 48 hour exposure, 5 % salt solution   | MIL-STD-202 Method 101 |
| 5   | 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 |
| 6   | Mechanical shock          | DCR change ≤ ±10 %<br>No mechanical damage  | 1500 G, 0.5 ms, half-sine shocks  | MIL-STD-202 Method 213 |
| 7   | Thermal Shock             | DCR change ≤ ±10 %<br>No mechanical damage  | 100 cycles between -65 °C and +125 °C   | MIL-STD-202 Method 107 |
| 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 between +20 °C and +30 °C | Refer to STP document  |

#### Agency Recognition

UL File Number ..... E198545

<http://www.ul.com/> Follow link to Online Certificates Directory, then enter UL File No. E198545, or [click here](#)

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\* RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

\*\* 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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## SinglFuse™ SF-1206HVxxM 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-1206HVxxM Series - High Voltage & High Current Multilayer Surface Mount Fuses

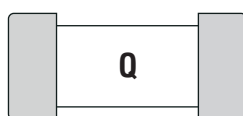
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#### Environmental Characteristics

|                                  |                                 |
|----------------------------------|---------------------------------|
| Operating Temperature.....       | -55 °C to +150 °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                         |

#### Typical Part Marking

Represents total content. Layout may vary.



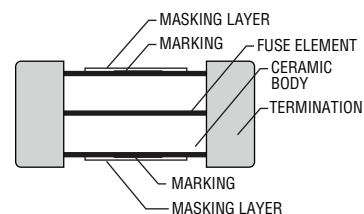
RATED CURRENT (A)  
 Q = 10.0    S = 25.0  
 X = 12.0    V = 30.0  
 Y = 15.0    O = 40.0  
 Z = 20.0

#### How to Order

**SF - 1206 HV 10 M - 2**

SinglFuse™  
 Product Designator  
 SMD Footprint  
 1206 = 3216 (EIA 1206) size  
 Fuse Blow Type  
 HV = High Voltage & High Current  
 Rated Current  
 10 ~ 40 (10.0 A ~ 40.0 A)  
 Structure Type  
 M = Multilayer  
 Packaging Type  
 - 2 = Tape & Reel

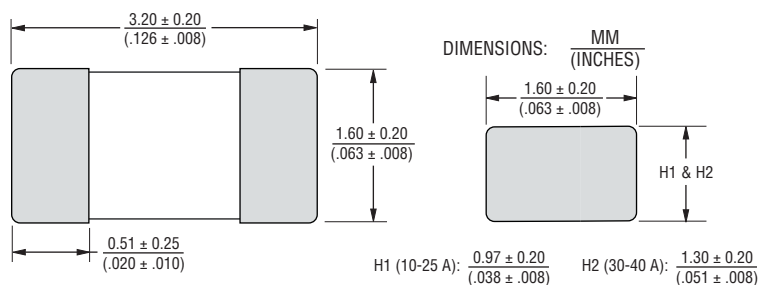
#### Construction



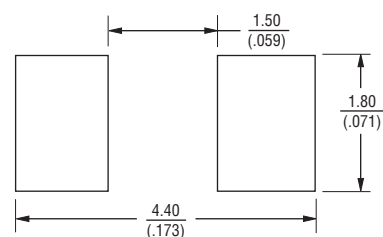
#### Packaging Quantity

3,000 pieces per 7-inch reel

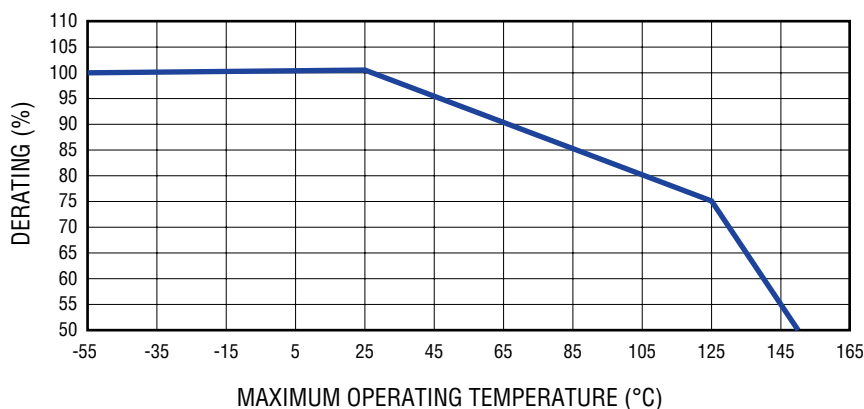
#### Product Dimensions



#### Recommended Pad Layout



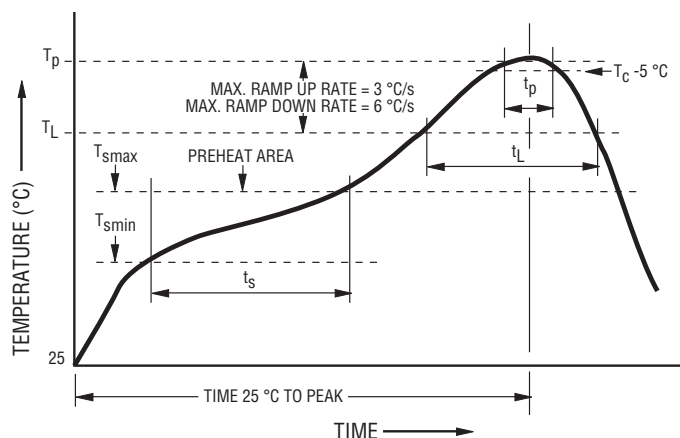
#### Current Rating Thermal Derating Curve



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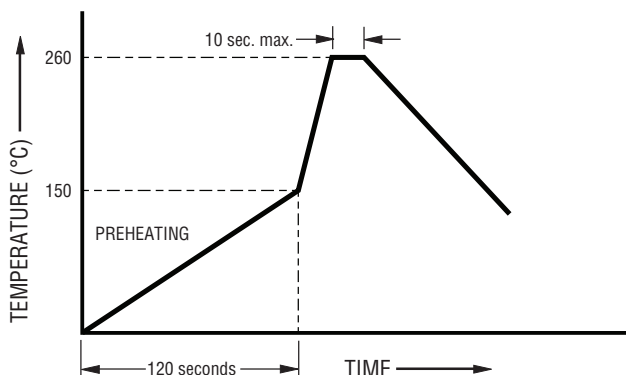
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**Solder Reflow Recommendations**

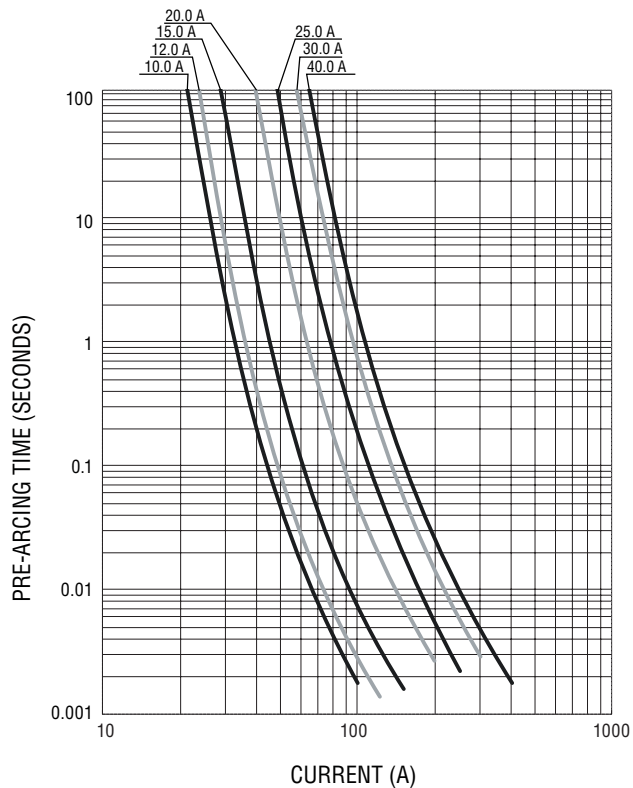
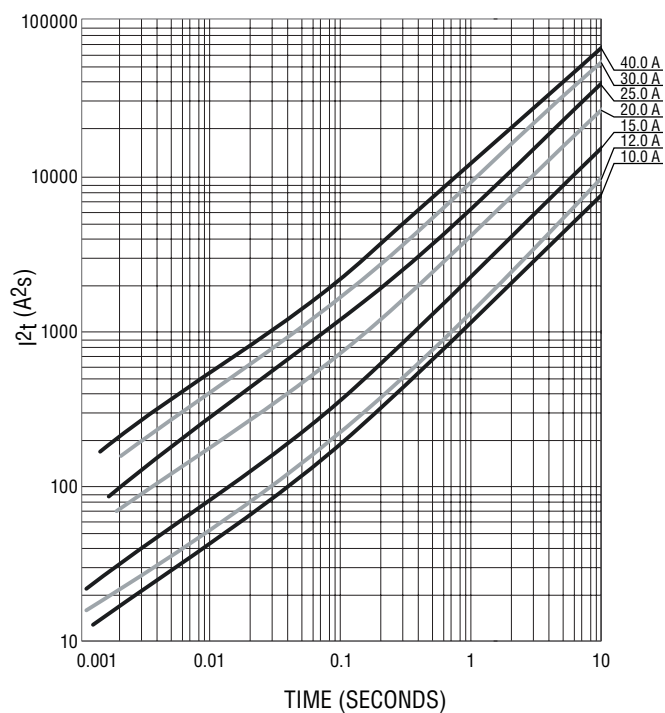
| Profile Feature   | Pb-Free Assembly   |
|---|--------------------|
| Preheat / Soak:   |                    |
| Temperature Min. ( $T_{smin}$ )   | 150 °C             |
| Temperature Max. ( $T_{smax}$ )   | 200 °C             |
| Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )                   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

Average Pre-Arcing Time vs. Current Curves

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

REV. A 06/18

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# SF-1206HVxxM Series Tape and Reel Packaging Specifications

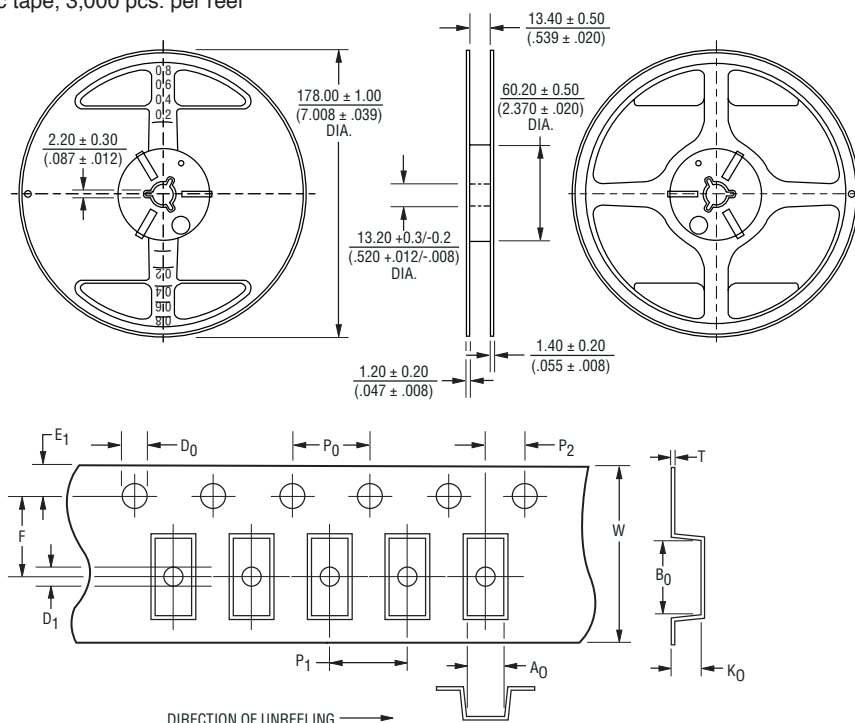
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## Tape Dimensions

## SF-1206HVxxM Series per EIA 481-2

|  |                                  |
|--|----------------------------------|
| W  | $8.00 \pm 0.10$<br>(.315 ± .004) |
| P <sub>0</sub>                               | $4.00 \pm 0.10$<br>(.157 ± .004) |
| P <sub>1</sub>                               | $4.00 \pm 0.10$<br>(.157 ± .004) |
| P <sub>2</sub>                               | $2.00 \pm 0.05$<br>(.079 ± .002) |
| A <sub>0</sub>                               | $1.80 \pm 0.20$<br>(.071 ± .008) |
| B <sub>0</sub>                               | $3.50 \pm 0.20$<br>(.138 ± .008) |
| F  | $3.50 \pm 0.05$<br>(.138 ± .002) |
| E <sub>1</sub>                               | $1.75 \pm 0.10$<br>(.069 ± .004) |
| D <sub>0</sub>                               | $1.50 \pm 0.10$<br>(.059 ± .004) |
| K <sub>0</sub> (SF-1206HV10M ~ SF-1206HV25M) | $1.27 \pm 0.20$<br>(.050 ± .008) |
| K <sub>0</sub> (SF-1206HV30M ~ SF-1206HV40M) | $1.40 \pm 0.20$<br>(.055 ± .008) |
| T  | $0.23 \pm 0.02$<br>(.009 ± .001) |

PACKAGING: Plastic tape, 3,000 pcs. per reel



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

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