

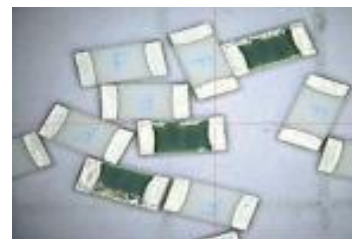
## Slow blow SMD Fuses

### 12 111 Series



#### Description

12 111 Series are the fuses set the industry standard for performance, reliability and quality. The solder-free design provides excellent on-off and temperature cycling characteristics during use and also makes our SMD fuses more heat and shock tolerant than typical subminiature fuses.



SMD-1206

| Rated Current | Electrical Characteristics |            |               |            |              |
|---------------|----------------------------|------------|---------------|------------|--------------|
|               | 1.0In                      | 2.5In      | 3.0In         | 3.5In      | 10.0In       |
| 4.5A~5A       | 4 hour min.                | 5 sec max. | 0.1sec - 3sec | -          | 0.2ms - 20ms |
| 6A~40A        | 4 hour min.                | -          | -             | 5 sec max. | 0.2ms - 20ms |

#### Features

- AEC-Q200 Automotive Grade Certified
- Rapid interruption of excessive current
- Compatible with reflow and wave solder
- Ceramic and glass construction
- One time positive disconnect
- Lead Free and Halogen free material

| Part No.   | Rated Voltage |     | Rated Current | Breaking Capacity (A) <sup>1</sup>     | Typical Cold Resistance (mOhms) <sup>2</sup> | Typical Voltage Drop (mV) | Typical Pre-Arcing I <sup>2</sup> t (A <sup>2</sup> Sec) <sup>3</sup> |
|------------|---------------|-----|---------------|--|--|---------------------------|---|
|            | DC            |     | (A)           |  |  |                           |   |
| 12 111.4.5 | 72V<br>63V    | 32V | 4.5           | 50A@72Vdc<br>50A@63Vdc<br>50A@32Vdc    | 27   | 164                       | 2.65  |
| 12 111.5   |               |     | 5             |  | 22   | 145                       | 4   |
| 12 111.6   |               |     | 6             |  | 14.5   | 140                       | 12  |
| 12 111.7   |               |     | 7             |  | 10.5   | 130                       | 14  |
| 12 111.8   | 48V<br>36V    | 32V | 8             | 200A@48Vdc<br>200A@36Vdc<br>200A@32Vdc | 7  | 123                       | 16  |
| 12 111.10  |               |     | 10            |  | 5  | 110                       | 22  |
| 12 111.12  |               |     | 12            |  | 4.3  | 80                        | 40  |
| 12 111.15  |               |     | 15            |  | 3.5  | 85                        | 45  |
| 12 111.20  |               |     | 20            |  | 2.2  | 80                        | 50  |
| 12 111.25  |               |     | 25            |  | 1.55   | 90                        | 58  |
| 12 111.30  |               |     | 30            |  | 1.32   | 90                        | 95  |
| 12 111.40  | 36V           | 32V | 40            | 200A@32Vdc<br>200A@36Vdc               | 0.85   | 95                        | 240   |

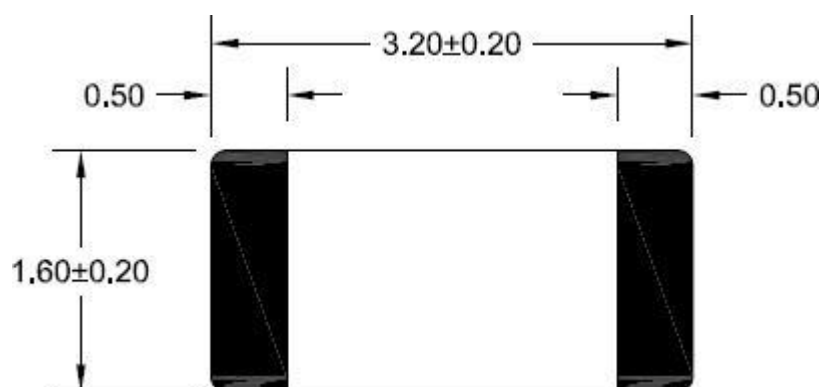
#### Specifications

- 1、DC Interrupting Rating (Measured at rated voltage, time constant of less than 50 microseconds, battery source)
  - 2、DC Cold Resistance are measured at <10% of rated current in ambient temperature of 25℃
  - 3、Typical Pre-arcing I<sup>2</sup>t are measured at 10In Current
- Specifications are subject to change without notice. Application testing is strongly recommended.**

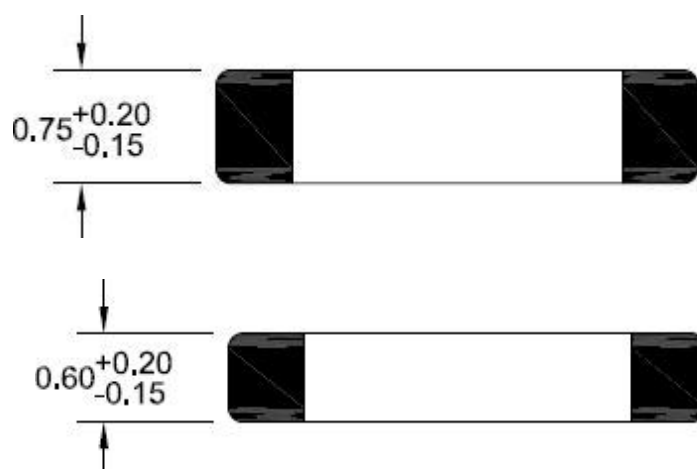
## Dimension

Drawing not to scale (Unit: mm) SMD1206

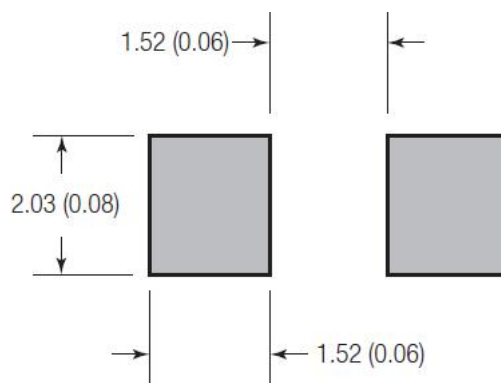
Top view

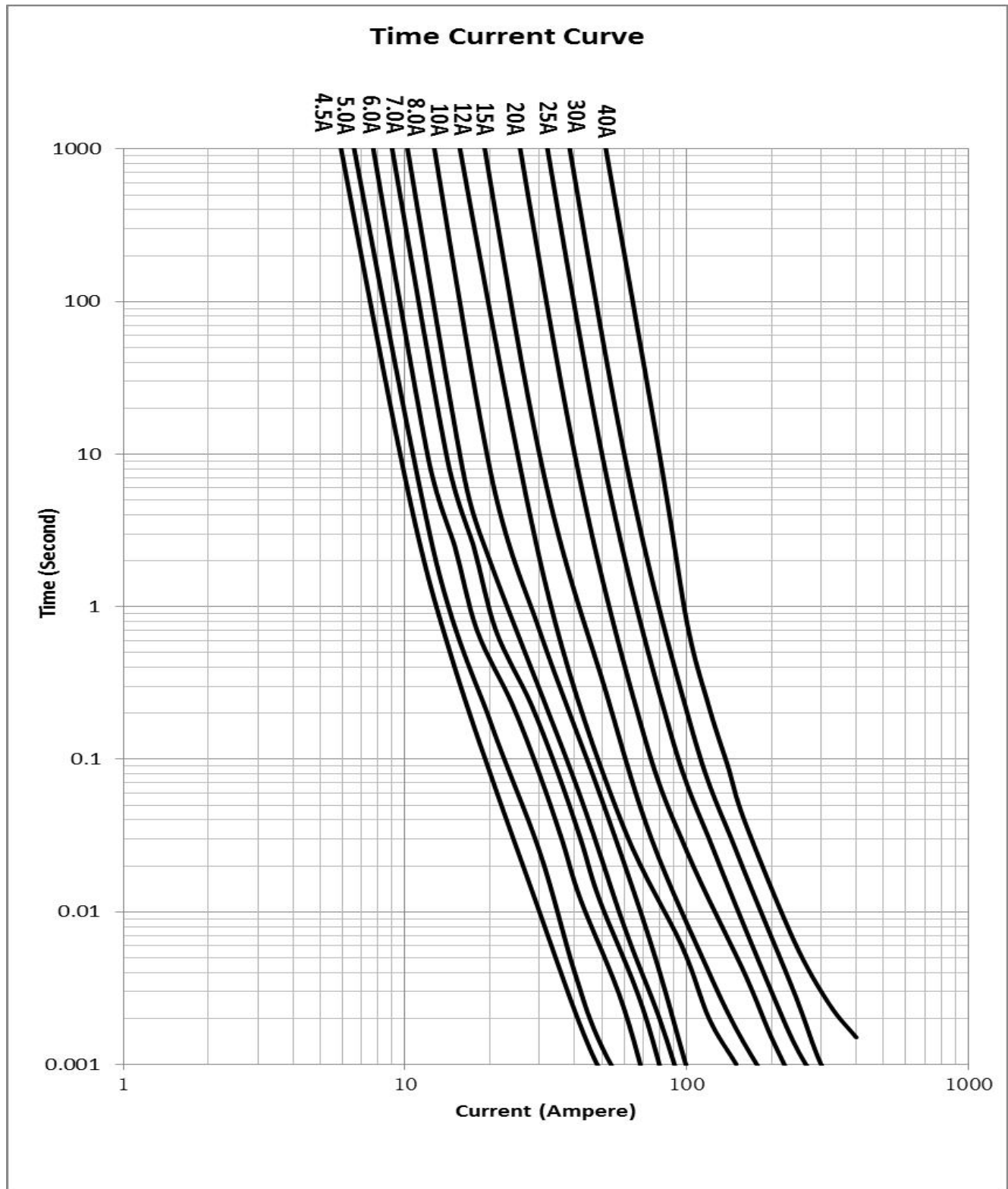


Side view:



Recommended landpattern  
Unit: mm(inch)





## Slow blow SMD Fuses

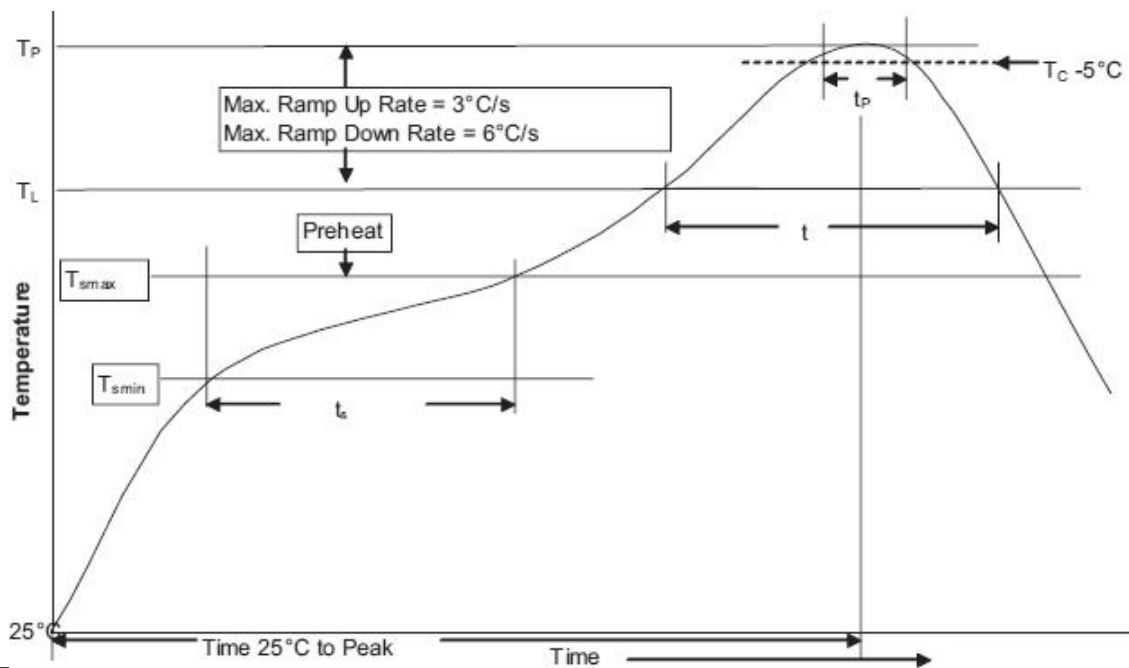
### 12 111 Series



### Soldering method

- Wave solder
  - Reservoir temperature: 260°C
  - Time in reservoir: 10 seconds maximum
- Infrared reflow
  - Temperature: 260°C
  - Time: 30 seconds maximum

### Solder reflow profile



| Profile Feature  |  | Lead(Pb) free solder |
|--|--|----------------------|
| Preheat and soak   | • Temperature min.(T <sub>smin</sub> )                             | 150°C                |
|  | • Temperature max. (T <sub>smax</sub> )                            | 200°C                |
|  | • Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> ) | 60 - 120 Seconds     |
| Average ramp up rate T <sub>smax</sub> to T <sub>p</sub> |  | 3°C / Second Max.    |

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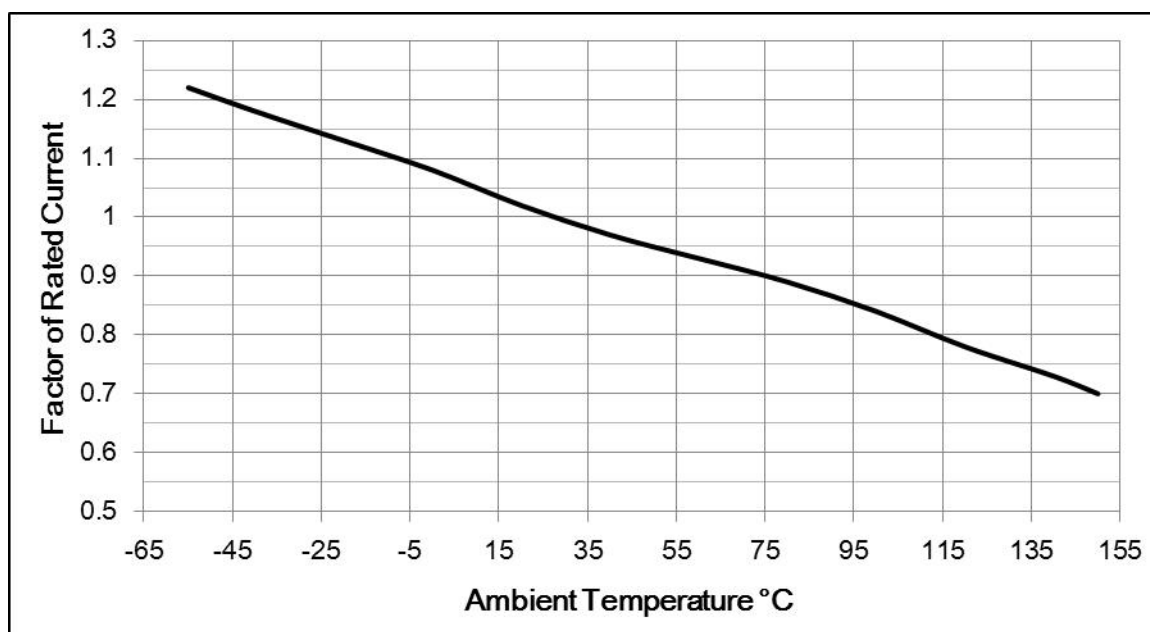


|   |                   |
|---|-------------------|
| Liquidous temperature ( $T_L$ )   | 217°C             |
| Time at liquidous ( $t_L$ )   | 60 - 150 Seconds  |
| Peak package body temperature ( $T_P$ )   | 260°C             |
| Time ( $t_P$ ) within 5°C of the specified classification temperature ( $T_C$ ) | 30 Seconds        |
| Average ramp-down rate ( $T_P$ to $T_{smax}$ )                                  | 6°C / Second Max. |
| Time (25°C to Peak Temperature)   | 8 Minutes Max.    |

### Temperature Derating Curve

Normal ambient temperature: 23+/-3°C

Operating temperature: -55 ~ 150°C, with proper correction factor applied



### Package

3000 fuses on 8mm tape-and-reel on a 7 inch (178mm) reel per EIA Standard 481.

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