

12 110 Series



Description

12 110 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.



| Rated Current | Electrical Characteristics | | | | | |
|---------------|----------------------------|--------------|------------|---------------|------------|--------------|
| | 1.0In | 2.0In | 2.5In | 3.0In | 3.5In | 10.0In |
| 0.63A~3A | 4 hour min. | 1sec – 60sec | 5 sec max. | 0.1sec – 3sec | - | 0.2ms – 20ms |
| 3.5~5A | 4 hour min. | - | 5 sec max. | 0.1sec – 3sec | - | 0.2ms – 20ms |
| 6A~30A | 4 hour min. | - | - | - | 5 sec max. | 0.2ms – 20ms |

Features

- High inrush current withstanding capability
- AEC-Q200 Automotive Grade Certified
- Compatible with reflow and wave solder
- Ceramic and glass construction
- Excellent environmental integrity
- One time positive disconnect
- Lead Free and Halogen free material

Specifications

| Specification | | | | | | | | |
|---------------|---------|-----|-------------------|------------------------------------|--|---------------------------|---|------------|
| Part No. | Rated | | Rated Current (A) | Breaking Capacity (A) ¹ | Typical Cold Resistance (mOhms) ² | Typical Voltage Drop (mV) | Typical Pre-Arcing I ² t (A ² Sec) ³ | Alpha Mark |
| | Voltage | | | | | | | |
| | DC | | | | | | | |
| 12.110.0.63 | 72V | 63V | 0.63 | 50A | 1080 | 950 | 0.009 | B |
| 12.110.0.75 | | | 0.75 | 50A | 850 | 900 | 0.01 | .75 |
| 12 110.1 | | | 1 | 50A | 480 | 510 | 0.11 | H |
| 12 110.1.25 | | | 1.25 | 50A | 330 | 500 | 0.15 | H |
| 12 110.1.5 | | | 1.5 | 50A | 230 | 465 | 0.17 | K |
| 12 110.1.75 | | | 1.75 | 50A | 180 | 450 | 0.20 | E |
| 12 110.2 | | | 2 | 50A | 135 | 316 | 0.41 | N |
| 12 110.2.5 | | | 2.5 | 50A | 75 | 240 | 0.68 | O |
| 12 110.3 | | | 3 | 50A | 47 | 187 | 1.5 | P |
| 12 110.3.5 | | | 3.5 | 50A | 38 | 180 | 2 | R |
| 12 110.4 | | | 4 | 50A | 34 | 173 | 2.5 | S |
| 12 110.4.5 | 32V | 24V | 4.5 | 50A@32Vdc 300A@24Vdc | 29 | 164 | 2.65 | X |



ADVANCED SURGETECH MATERIALS

1206 Slow Blow SMD Fuses

12 110 Series

Rev.: July, 2021



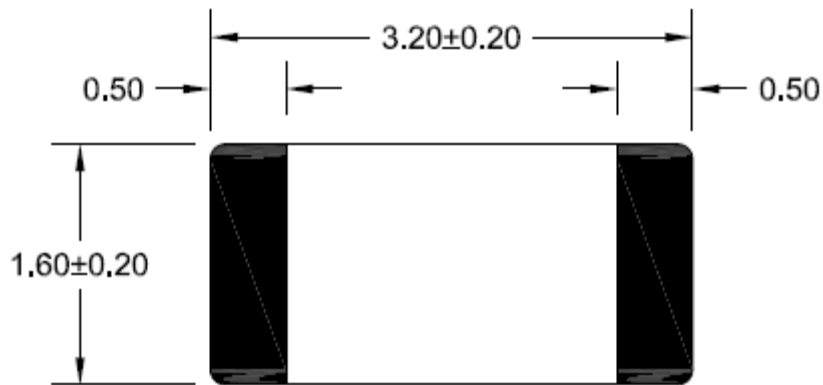
| | | | | | | | | |
|-------------------------|-----|-----|----|--------------------------|------|-----|------|----|
| 12 110.5 | | | 5 | 50A@32Vdc 300A@24Vdc | 24 | 145 | 4 | T |
| 12 110.6 | | | 6 | 50A@32Vdc 300A@24Vdc | 16 | 140 | 12 | F |
| 12 110.7 | | | 7 | 50A@32Vdc 300A@24Vdc | 12.3 | 130 | 14 | 7 |
| 12 110.8 | 32V | 24V | 8 | 300A@24Vdc 150A@32Vdc | 8.3 | 123 | 16 | M |
| 12 110.10 | | | 10 | 300A@24Vdc 150A@32Vdc | 6.5 | 110 | 22 | U |
| 12 110.12 | | | 12 | 300A@24Vdc 150A@32Vdc | 5 | 85 | 11.5 | 12 |
| 12 110.12A ⁴ | | | 12 | 300A@24Vdc 150A@32Vdc | 5.3 | 80 | 40 | W |
| 12 110.15 | | | 15 | 300A@24Vdc 150A@32Vdc | 3.7 | 78 | 16.5 | 15 |
| 12 110.15A ⁴ | | | 15 | 300A@24Vdc 150A@32Vdc | 4.5 | 85 | 45 | Y |
| 12 110.20 | | | 20 | 300A@24Vdc 150A@32Vdc | 3.4 | 80 | 50 | Q |
| 12 110.25 | | | 25 | 300A@24Vdc 150A@32Vdc | 1.6 | 90 | 60 | L |
| 12 110.30 | | | 30 | 300A@24Vdc 150A@32Vdc | 1.3 | 90 | 100 | Z |

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°C
 3. Typical Pre-arcing I²t are measured at 10In Current
Choice fuse for surge application (USB charger etc.), make sure the I²t of fuse is 4 times than surge.
 4. 12 110.12A&15A are higher I²t version than 12 110.12&15.
- Specifications are subject to change without notice. Application testing is strongly recommended.

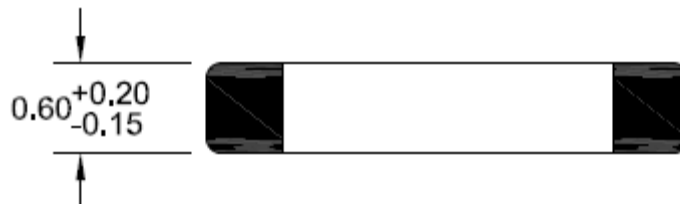
Dimension

Drawing not to scale (Unit: mm)

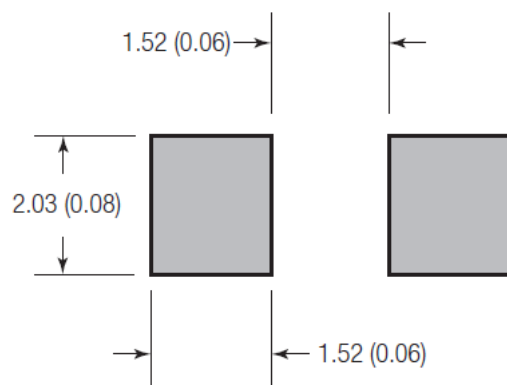
Top view



Side view



Recommended land pattern



Unit: mm(inch)

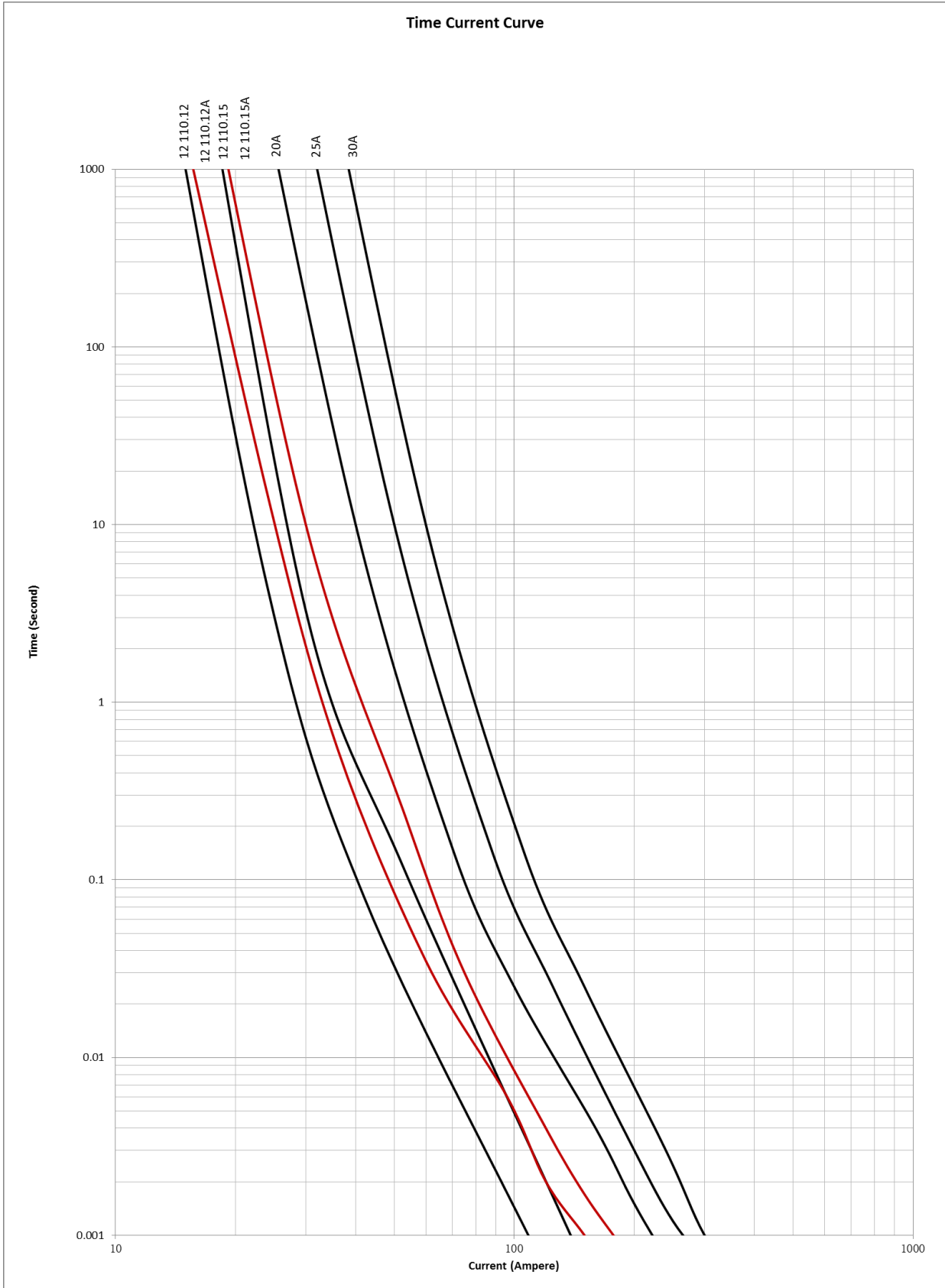
Recommended stencil thickness is 0.15mm (10A-30A)



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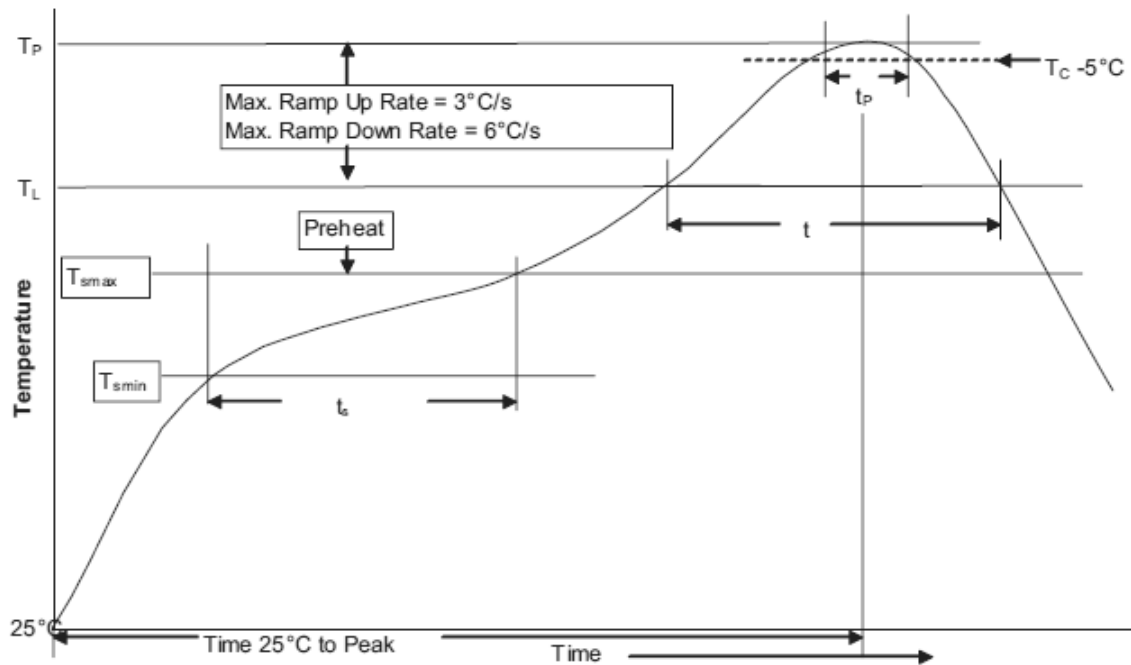
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Soldering method

- 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_{smin}) | 150°C |
| | • Temperature max. (T_{smax}) | 200°C |
| | • Time (T_{smin} to T_{smax}) (t_s) | 60 - 120 Seconds |
| Average ramp up rate T_{smax} to T_P | | 3°C / Second Max. |
| 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. |



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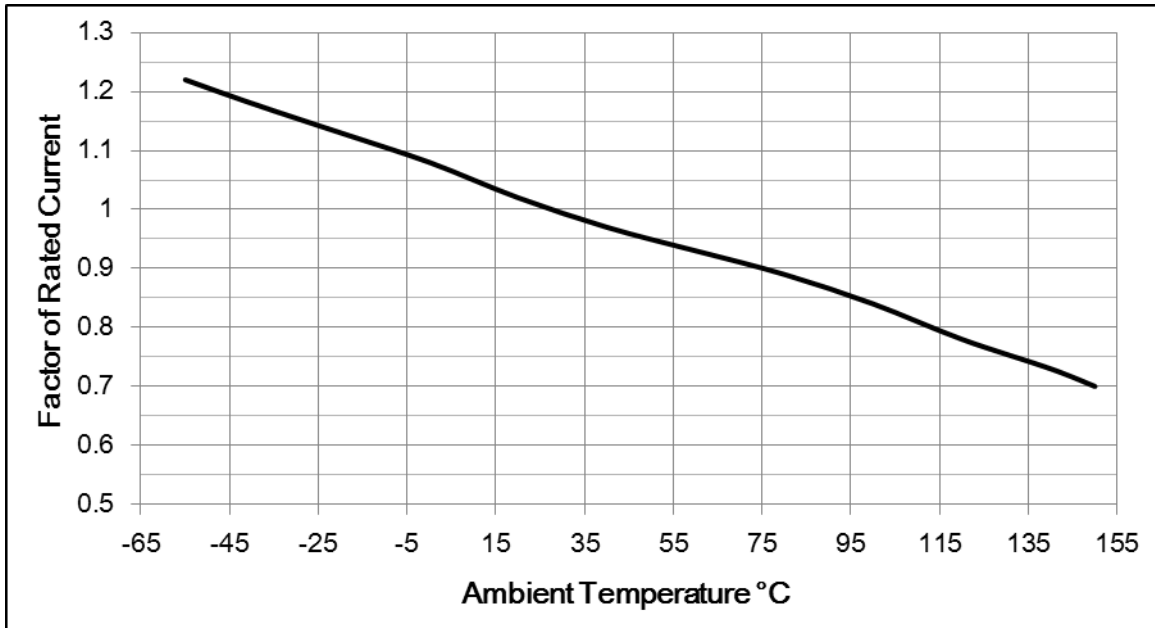
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Temperature Derating Curve

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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