## 1. Description, Features and Applications

This product is suitable for the overcurrent protection of the primary and secondary circuit boards of various electronic equipment circuits, and is widely used in solid-state lighting, battery charging, LED AC/DC power supplies, network communications, medical instruments and Industrial controllers etc.

STE/STS series slow-blow square Surface Mount fuses are ceramic tube/end cap constructions, RoHS compliant, Halogen Free and lead(Pb) exempts of the requirements of RoHS Directive(2002/95/EC), with U.S. (UL/CSA) safety agency approvals. Provide board level primary and secondary circuit protection in a wide variety of applications. With excellent inrush current withstanding capability, excellent reliability for thermal and mechanic shock, also have a high reliability and stable solder ability, end caps are available in gold/silver/nickel plated.

### Features:

- Time-Lag (Slow-Blow)
- Wide range of current rating available
- Low temperature de-rating
- Tape and Reel for automatic placement
- Small size(6.1mm*2.5mm)
- Wide operating temperature range
- RoHS compliant
- Conflict free metals

### Applications:

- LED lighting
- LCD backlight inverter
- PC server
- Wireless base station
- Digital camera
- Notebook PC
- Portable Devices
- Cooling fan system
- White goods
- Industrial equipment
- Battery devices
- Power supply
- Storage system
- Game console
- Medical equipment
- LCD/PDP devices
- Networking devices
- Telecom system
- Office equipment
- Automotive devices

2 Catalogue No.，● Approved / ○ Pending

| Catalog No. | Ampere Rating | Voltage Rating | Breaking Capacity | Nominal Cold Resistance (Ohms) | $I^2T$Melting Integral($A^2.S$) | Agency Approvals | |
|---|---|---|---|---|---|---|---|
| STE0160 | 160mA | | | 2.300 | 0.058 | ● | ● |
| STE0200 | 200mA | | | 1.650 | 0.062 | ● | ● |
| STE0250 | 250mA | | | 1.450 | 0.065 | ● | ● |
| STE0300 | 300mA | | | 0.850 | 0.191 | ● | ● |
| STE0315 | 315mA | | | 0.650 | 0.202 | ● | ● |
| STE0375 | 375mA | | | 0.610 | 0.330 | ● | ● |
| STE0400 | 400mA | | | 0.580 | 0.338 | ● | ● |
| STE0500 | 500mA | | | 0.320 | 0.475 | ● | ● |
| STE0600 | 600mA | | | 0.265 | 0.775 | ● | ● |
| STE0630 | 630mA | | | 0.256 | 0.986 | ● | ● |
| STE0700 | 700mA | | | 0.230 | 2.105 | ● | ● |
| STE0750 | 750mA | | | 0.225 | 2.240 | ● | ● |
| STE0800 | 800mA | | | 0.203 | 2.380 | ● | ● |
| STE1100 | 1A | | | 0.128 | 3.690 | ● | ● |
| STE1125 | 1.25A | | 50A@300VAC | 0.092 | 3.760 | ● | ● |
| STE1150 | 1.5A | 125VAC/DC | 50A@250VAC | 0.085 | 6.765 | ● | ● |
| STE1160 | 1.6A | | 200A@125VAC | 0.075 | 6.805 | ● | ● |
| STE1200 | 2A | | | 0.038 | 12.150 | ● | ● |
| STE1250 | 2.5A | | | 0.035 | 16.025 | ● | ● |
| STE1300 | 3A | | | 0.026 | 21.560 | ● | ● |
| STE1315 | 3.15A | | | 0.025 | 25.750 | ● | ● |
| STE1350 | 3.5A | | | 0.023 | 30.050 | ● | ● |
| STE1400 | 4A | | | 0.019 | 43.208 | ● | ● |
| STE1500 | 5A | | | 0.013 | 55.250 | ● | ● |
| STE1600 | 6A | | | 0.011 | 75.245 | ● | ● |
| STE1630 | 6.3A | | | 0.010 | 93.550 | ● | ● |
| STE1700 | 7A | | | 0.009 | 97.120 | ● | ● |
| STE1800 | 8A | | | 0.0078 | 108.750 | ● | ● |
| STE2100 | 10A | | | 0.0066 | 118.380 | ● | ● |
| STE2120 | 12A | | | 0.0045 | 140.080 | ● | ● |
| STE2150 | 15A | | | 0.0030 | 210.680 | ● | ● |
| STS2160 | 16A | 72VDC | 500A@72VDC | 0.0028 | 215.250 | ● | ● |
| STS2200 | 20A | 72VDC | 500A@72VDC | 0.0020 | 358.080 | ● | ● |
| STS2250 | 25A | 72VDC | 500A@72VDC | 0.00158 | 465.170 | ● | ● |
| STS2300 | 30A | 72VDC | 500A@72VDC | 0.00145 | 989.650 | ● | ● |
| STS2400 | 40A | 63VDC | 500A@63VDC | 0.00120 | 1050.780 | ● | ● |

- *: These catalog no. cold resistance and I2t value are pending due to fuse elements shall be customized;
- DC Cold Resistance are measured at <10% of rated current in ambient temperature of 25℃;
- Typical Pre-arching I2t are calculated at 10*In Current or 8ms;
- Min Interrupting Rating: 1.35*In.

## 3. Product Marking

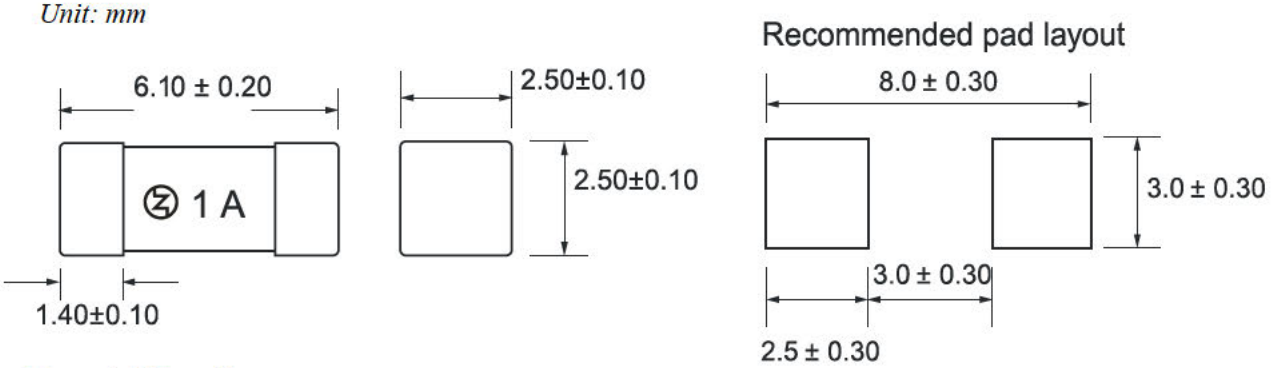
The fuses shall have the following markings, Example:

**1A** Rated Current (A): **A** or **mA**

*Note: Size and position of the markings shall not be provided.*

## 4. Dimensions and Structure

*Unit: mm*




## 5. Material Details

| NO. | Part Name | Material |
|---|---|---|
| ① | End caps | Au Plated Brass Cap |
| ② | Body | Non-Transparent Square Ceramic Tube |
| ③ | Fuse element | Cu-Ag Alloy wire |

## 6. Product Characteristics

| NO. | Item | Content | Reference standards |
|---|---|---|---|
| 1 | Product Marking | Brand, Ampere Rating | |
| 2 | Operating Temperature | -55°C to 125°C | IEC60068-2-1/2 |
| 3 | Solderability | T=240°C±5°C , t=3sec±0.5sec, Coverage≥95% | MIL-STD-202, Method 208 |
| 4 | Resistance to Soldering Heat | 10 sec at 260°C | MIL-STD-202, Method 210, Test condition B |
| 5 | Insulation Resistance (after Opening) | 10,000 ohms minimum | MIL-STD-202, Method 302, Test Condition A |
| 6 | Thermal Shock | 5 cycles, -65°C / +125°C, 15 minutes at each extreme | MIL-STD-202, Method 107, Test Condition B |
| 7 | Mechanical Shock | 100G's peak for 6 milliseconds, 3cycles | MIL-STD-202, Method 213, Test I |
| 8 | Vibration | 0.03"amplitude, 10-55 Hz in 1 min. 2hrs each XYZ=6hrs | MIL-STD-202, Method 201 |
| 9 | Moisture Resistance | 10 cycles | MIL-STD-202, Method 106 |
| 10 | Salt Spray | 5% salt solution, 48hrs | MIL-STD-202, Method 101, Test Condition B |

## 7. Electrical Characteristics

### 7.1 Test Condition

All electrical test is to be conducted with the ambient air at a temperature of 25±5℃.

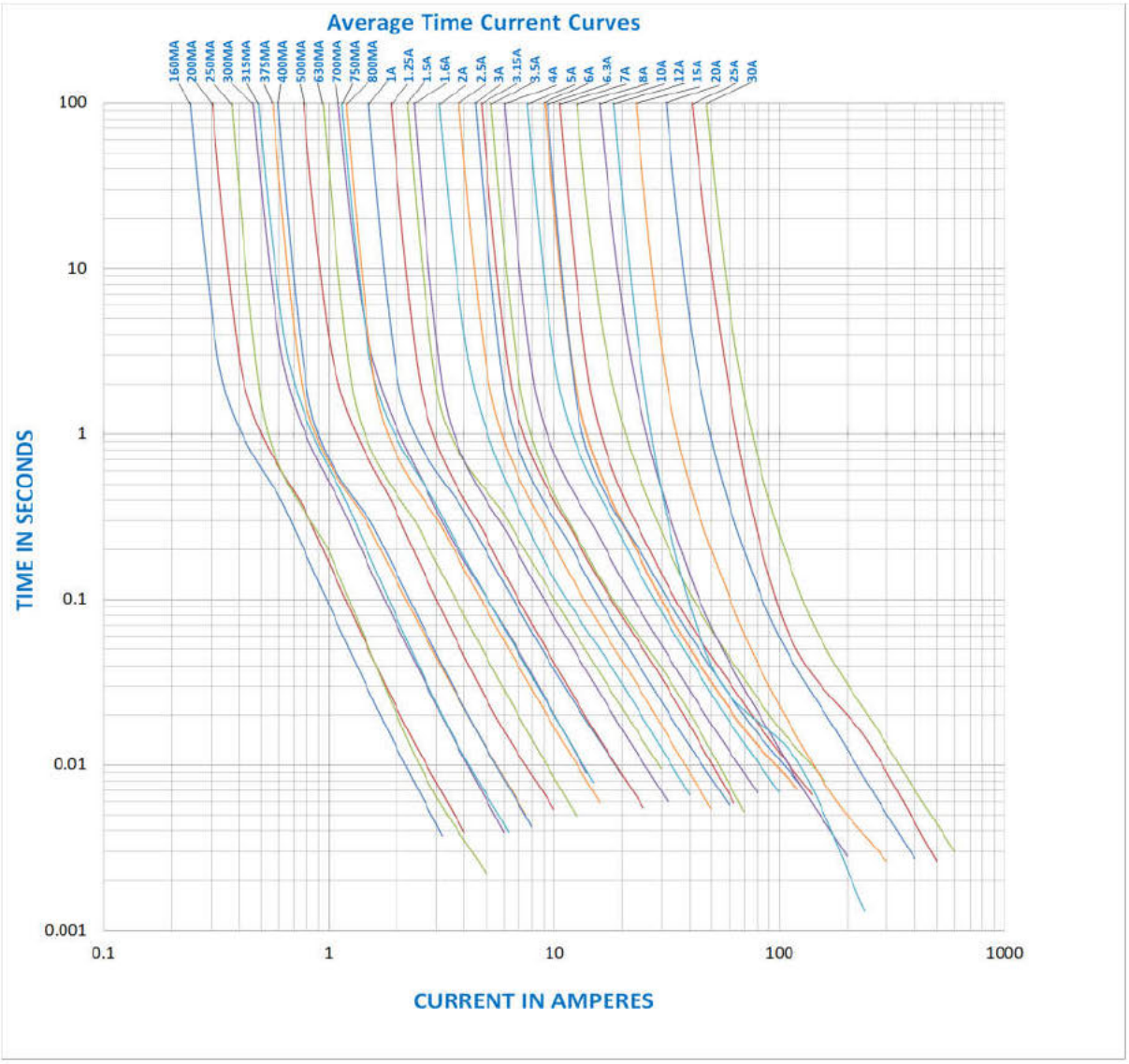
### 7.2 Interrupting Rating:

Breaking Capacity: 50A@250Vac，200A@125Vac.

7.3 Operating Characteristics

| % of Ampere Rating(In) | Blowing Time |
|---|---|
| 100% * In | (4 hours Min) |
| 200% * In | (120 sec Max) |

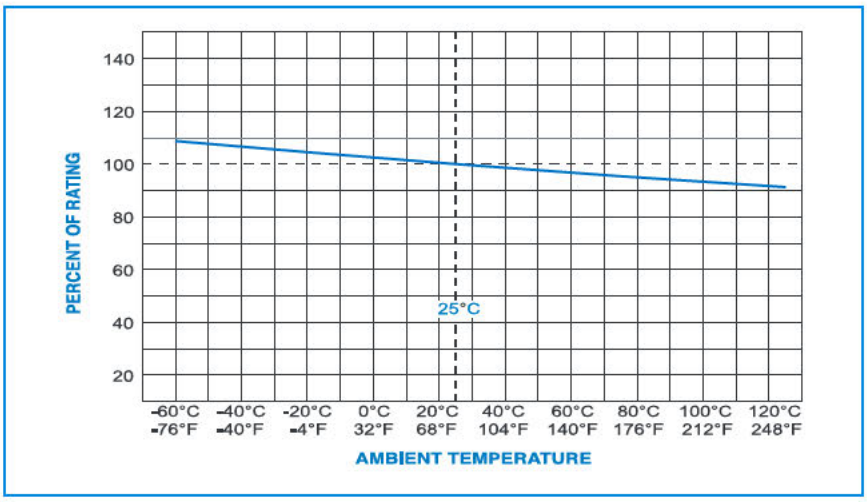
7.4 Average Time Current Curves




## 8. Environmental Characteristic

When choosing the fuse's specification, if the operating environmental temperature beyond the scope from 20~30℃, engineer should consider the environmental temperature's affection to fuses.

Please refer: Temperature Rerating Curve:




## 9. Recommended Soldering Parameters

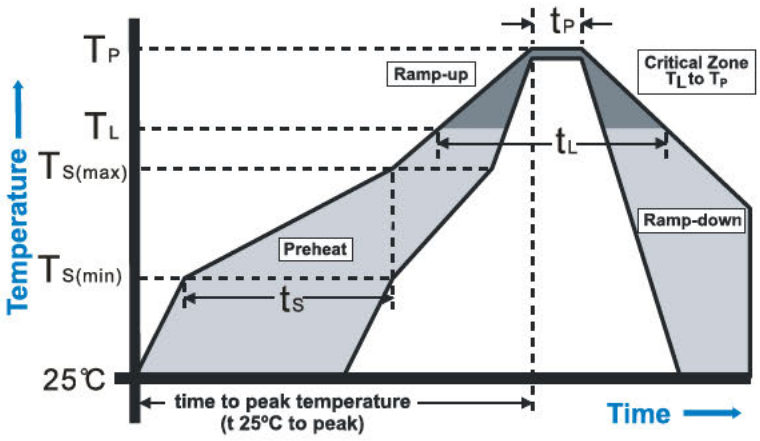
A. Wave /Reflow Soldering Parameters:

Solder paste process.

Solder Pot Temperature: 260°C Max;

Solder Dwell Time: 5 seconds max

| Reflow Condition | | Pb-Free assembly |
|---|---|---|
| Average ramp-up rate (Ts(max)to Tp) | | 5°C /second max. |
| Preheat | Temperature Min (Ts(min)) | 150°C |
| | Temperature Max (Ts(max)) | 200°C |
| | Time (Min to Max) (ts) | 60-120 seconds |
| Reflow | Temperature ($T_L$) | 220°C |
| | Time Max ($t_L$) | 60 seconds |
| Peak Temperature(Tp) | | 260°C max |
| Ramp-down Rate | | 5°C/second max |
| Time 25°C to peak Temperature (Tp) | | 8 minutes max |




B. Hand-Solder Parameters:

Solder Iron Temperature: 300±5℃

Heating Time: 1~2 s Max