



## General

- Slow Blow
- 1.6mm×0.8mm physical size
- Thick film manufacturing method, ceramic substrate, silver fusing element
- -50°C~125 °C operating temperature
- Excellent environmental integrity
- RoHS compliant
- Halogen-free

## Agency / Certificate Information

| Agency                                                                            | File Number   | Ampere Range |
|-----------------------------------------------------------------------------------|---------------|--------------|
|  | JDYX2.E319540 | 0.5A~6A      |
|                                                                                   | JDYX8.E319540 | 0.5A~6A      |

| Certificate      | File Number  |
|------------------|--------------|
| ISO9001:2008     | J10Q20600R0S |
| ISO14001:2004    | J10E20601R0S |
| ISO/TS16949:2009 | 0117251      |

## Application

- Battery pack
- PC related equipment and peripherals (Hard driver, Printer, etc.)
- Portable devices (Mobile phone, PDA battery charger, etc.)
- Digital camera (Digital still camera)
- Game equipment
- LCD monitor, LCD modules
- Wireless basestation

## Ordering Information

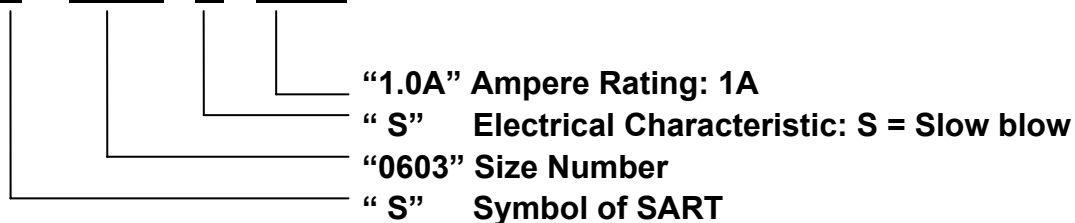
| Part Number   | Marking | Current Rating (A) | Voltage Rating | Interrupting Rating | Max Cold DCR* (Ω) | Typical I <sup>2</sup> T** (A <sup>2</sup> S) |
|---------------|---------|--------------------|----------------|---------------------|-------------------|-----------------------------------------------|
| S0603-S-0.5A  | F       | 0.5                | 32V DC         | 50A/32V DC          | 1.148             | 0.0072                                        |
| S0603-S-0.75A | G       | 0.75               |                |                     | 0.582             | 0.0113                                        |
| S0603-S-1.0A  | H       | 1.0                |                |                     | 0.260             | 0.0746                                        |
| S0603-S-1.5A  | K       | 1.5                |                |                     | 0.104             | 0.1125                                        |
| S0603-S-2.0A  | N       | 2.0                |                |                     | 0.054             | 0.1752                                        |
| S0603-S-2.5A  | O       | 2.5                |                |                     | 0.036             | 0.4001                                        |
| S0603-S-3.0A  | P       | 3.0                |                |                     | 0.027             | 0.7329                                        |
| S0603-S-3.5A  | R       | 3.5                |                |                     | 0.022             | 0.9758                                        |
| S0603-S-4.0A  | S       | 4.0                | 32V DC         | 35A/32V DC          | 0.016             | 2.1722                                        |
| S0603-S-5.0A  | T       | 5.0                |                |                     | 0.0105            | 2.9022                                        |
| S0603-S-6.0A  | 6       | 6.0                |                |                     | 0.0075            | 8.4692                                        |

\* Measured at ≤10% rated current and 25 °C

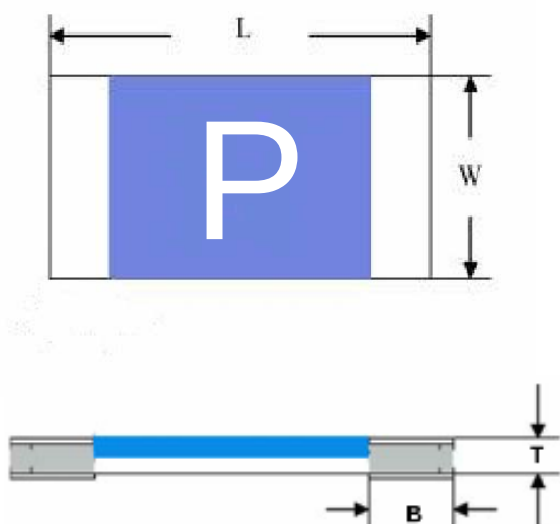
\*\* Melting I<sup>2</sup>T at 10 times of rated current

## Catalog Symbol

**S 0603-S-1.0A**



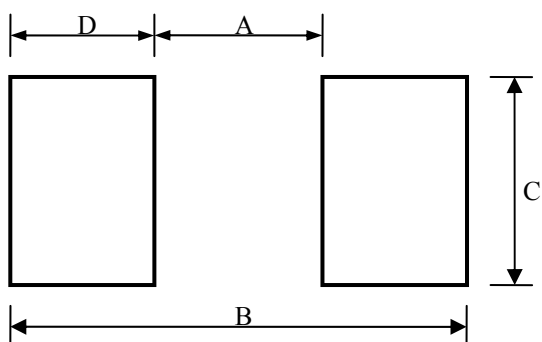
## Dimensions



Unit:mm

| Dimensions | Size      |
|------------|-----------|
| L          | 1.60±0.15 |
| W          | 0.80±0.15 |
| T          | 0.40±0.10 |
| B          | 0.30±0.20 |

## Recommended Land Patterns



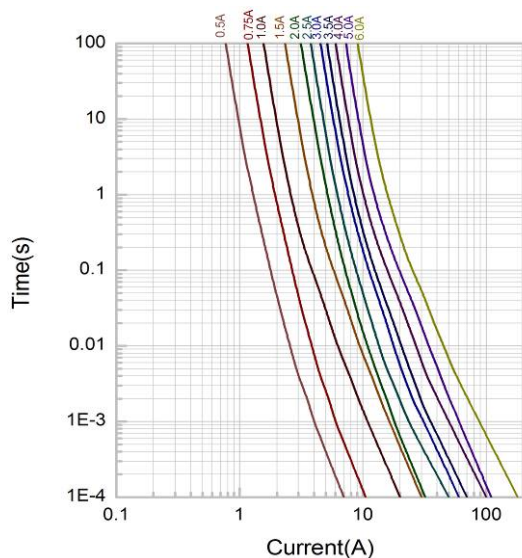
## Materials

| Components   | Material                           |
|--------------|------------------------------------|
| Substrate    | Ceramic                            |
| Terminations | Silver over-plated with tin (100%) |
| Element      | Silver or Silver / Palladium       |

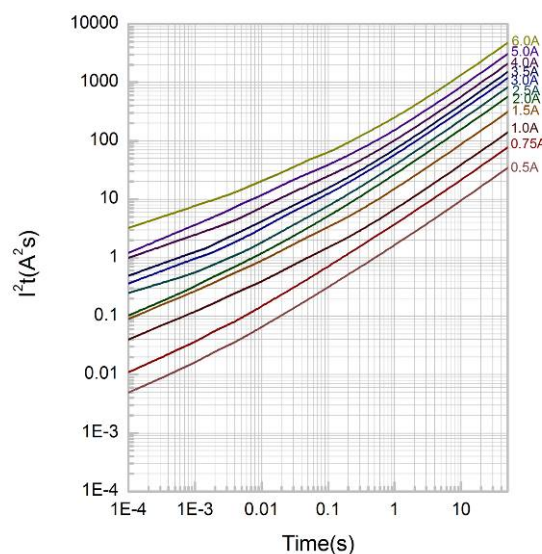
| Dimensions | A       | B       | C       | D       |
|------------|---------|---------|---------|---------|
| Spec       | 1.0±0.2 | 3.0±0.5 | 1.4±0.2 | 1.0±0.3 |

Unit:mm

## Time Current Curve



## I<sup>2</sup>T vs Time Curve



## Electrical Characteristics

| Ampere Rating | % of Current Rating | Opening Time |
|---------------|---------------------|--------------|
| 500mA-6A      | 100%                | >4 h         |
| 500mA-6A      | 200%                | ≤60 s        |
| 500mA-750mA   | 1000%               | >0.1ms       |
| 1A-3A         | 1000%               | >0.3ms       |
| 3.5A-6A       | 1000%               | >0.6ms       |

## Temperature Derating Curve

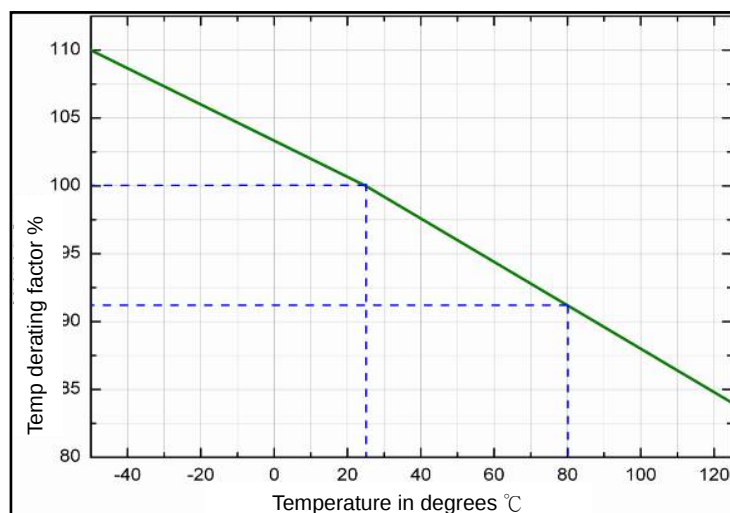
- The current carrying capacity will be affected by ambient temperature which was showed in the figure.
- This current derating curve is for fusing characteristics.

Example,

Work Temp:80℃,

Temp derating factor = 91%

$I_{\text{actual}} = I_{\text{normal}} / 0.91$



## Reliability Test

| Characteristics                 | Test condition / Methods                                          | Requirement                                                        | Test Reference                             |
|---------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------|
| Voltage Drop                    | 100% In; Temperature in fuse was stabilized                       | Deviation between the mean value:<15%                              | IEC 60127-1                                |
| Time/Current                    | 100% In                                                           | No Fusing;4h min.                                                  | SART File                                  |
|                                 | 200% In                                                           | ≤60 s                                                              |                                            |
|                                 | 1000% In(500mA-750mA)<br>1000% In(1A-3A)<br>1000% In(3.5A-6A)     | >0.1ms<br>>0.3ms<br>>0.6ms                                         |                                            |
| Endurance Test                  | 100% In, 1h on,15min off, 100 cycles;<br>followed by 1h at 125%In | $ \Delta R  < 10\%$<br>Legible appearance                          | IEC 60127-1                                |
| Maximum Sustained Dissipation   | 125%In, during the last 10min of the endurance test               | changed with current rating                                        | IEC 60127-1                                |
| Temperature Rise                | 100%In                                                            | $\Delta T < 75^{\circ}\text{C}$                                    | UL248-14                                   |
| Interrupting Ability            | 50A /32V DC(500mA-3.5A)<br>35A/32V DC(4A-6A)                      | Without permanent arcing,<br>ignition and bursting of<br>fuse link | UL248-14                                   |
| Solderability                   | 240°C±5 °C,3s±0.5s                                                | 95% coverage min.                                                  | IEC60127-4<br>IEC60068-2-20<br>MIL-STD-202 |
| Resistance to Soldering         | 260°C±5°C,10s±0.5s                                                | $ \Delta R  < 10\%$<br>Legible appearance                          | MIL-STD-202<br>IEC60127-4                  |
| Bending Test                    | Distance between holding points: 90mm<br>Bending: 1mm ; time:10s  | $ \Delta R  < 10\%$<br>No mechanical damages                       | IEC 60127-4                                |
| High Temperature Operating Life | 70°C±2 °C, 96h, at 60% In                                         | $ \Delta R  < 10\%$ ; no fusing                                    | MIL-STD-202<br>Method 108                  |
| Low Temperature Storage         | -55°C±2 °C, 96h                                                   | $ \Delta R  < 10\%$                                                | IEC60068-2-1                               |
| High Temperature Storage        | 125°C±2 °C, 96h                                                   | $ \Delta R  < 10\%$                                                | IEC60068-2-2                               |
| Humidity (steady state)         | 40±2°C, 90~95%RH, 1000h                                           | $ \Delta R  < 10\%$                                                | MIL-STD-202<br>Method 103                  |
| Salt Spray                      | 5% salt solution, 48h exposure                                    | $ \Delta R  < 10\%$<br>Legible appearance                          | MIL-STD-202<br>Method 101                  |
| Thermal Shock                   | 5 cycles between -55°C/+125°C,<br>60 minutes ; each extreme       | $ \Delta R  < 10\%$<br>No mechanical damages                       | IEC 60068-2-14                             |

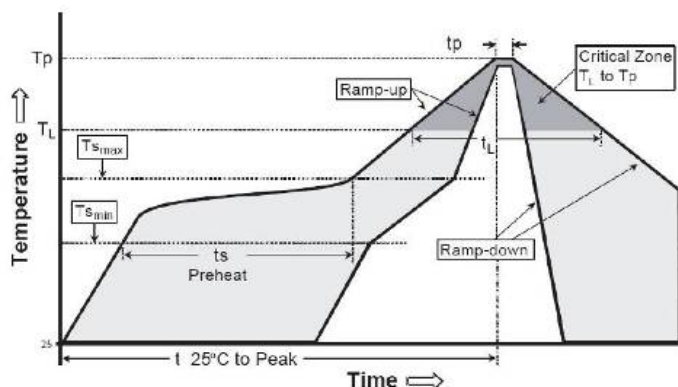
## Recommended Solder Curve

### 1.Infrared Reflow:

Temperature : 260℃

Time : 5s max.

Recommend Reflow profile



| Profile Feature                                    | Pb-Free Assembly |
|----------------------------------------------------|------------------|
| Average Ramp-Up Rate( $T_{s_{max}}$ to $T_p$ )     | 3℃/s max.        |
| Preheat Temperature Min( $T_{s_{min}}$ )           | 150℃             |
| Temperature Max( $T_{s_{max}}$ )                   | 200℃             |
| Time( $T_{s_{min}}$ to $T_{s_{max}}$ )             | 60-120s          |
| Peak Temperature( $T_p$ )                          | 260℃             |
| Time within 5℃ of actual Peak Temperature( $T_p$ ) | 5s               |
| Melting tin time( $t_L$ )                          | 20~30s           |
| Ramp-Down Rate                                     | 6℃/s max.        |
| Time 25℃ to Peak Temperature                       | 8 minutes max.   |

### 2.Wave soldering

Reservoir Temperature : 260℃

Time in Reservoir : 10s max.

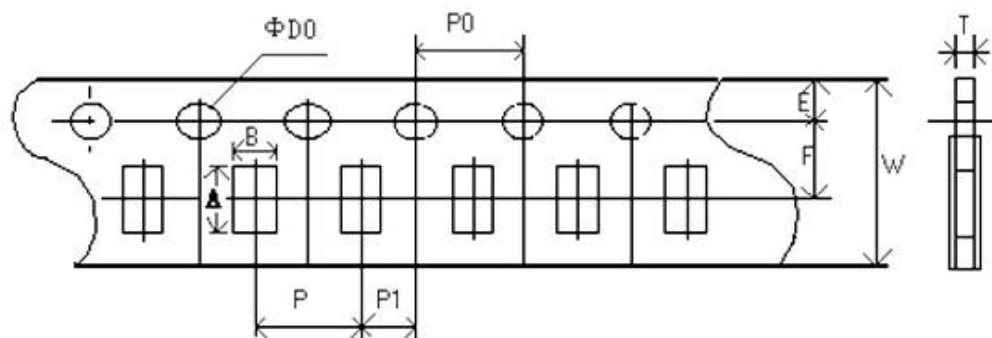
### 3.Hand Soldering

Temperature : 350℃

Time : 5s max.

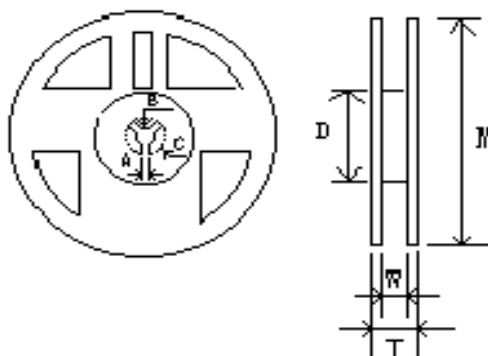
## Packaging

5,000 pieces of fuses in paper taper and reeled on a 178mm(7 inch) reel



| Type | A         | B         | W         | F         | E         |
|------|-----------|-----------|-----------|-----------|-----------|
| Spec | 1.85±0.10 | 1.10±0.10 | 8.00±0.20 | 3.50±0.05 | 1.75±0.10 |
| Type | P         | P0        | P1        | D0        | T         |
| Spec | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50±0.10 | 0.60±0.10 |

Unit:mm



| Type | M       | W       | T        | A       | B        | C        | D        |
|------|---------|---------|----------|---------|----------|----------|----------|
| Spec | 178±2.0 | 9.5±1.0 | 12.5±1.5 | 2.0±0.5 | 13.0±0.5 | 21.0±0.5 | 58.0±2.0 |

Unit:mm

## Storage

- The ambient temperature shall between 5~30℃.
- The relative humidity recommended for storage is between 25~ 60%.
- Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.