



### General

- Slow Blow
- 1.6mm× 0.8mm physical size
- Thick film manufacturing method, ceramic substrate, silver fusing element
- -55℃~125℃ operating temperature
- Excellent environmental integrity
- RoHS compliant
- Halogen-free
- Lead free

### Agency / Certificate Information

| Agency  | File Number | Ampere Range |
|---|-------------|--------------|
|   | E319512     | 0.5A~8A      |
|  | J 50479538  | 0.5A~8A      |

### Application

- Battery pack
- PC related equipment and peripherals (Hard driver, Printer, etc.)
- Digital camera (Digital still camera)
- Game equipment
- LCD monitor, LCD modules
- Wireless base station
- Power supply
- Medical device

### Electrical Specifications

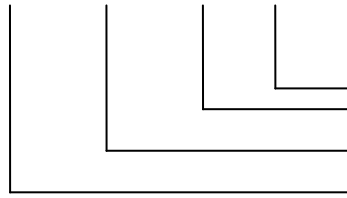
| Part Number   | Marking | Current Rating (A) | Voltage Rating (V) | Interrupting Rating (V)  | Typical Cold DCR* (mΩ) | Typical I <sup>2</sup> T** (A <sup>2</sup> sec) |
|---------------|---------|--------------------|--------------------|--------------------------|------------------------|---|
| S0603-S-0.5A  | F       | 0.5                | 32                 | UL/TUV:<br>50A<br>32V DC | 870                    | 0.0068  |
| S0603-S-0.75A | G       | 0.75               | 32                 |                          | 389                    | 0.0177  |
| S0603-S-1.0A  | H       | 1.0                | 32                 |                          | 235                    | 0.0746  |
| S0603-S-1.5A  | K       | 1.5                | 32                 |                          | 93                     | 0.1125  |
| S0603-S-2.0A  | N       | 2.0                | 32                 |                          | 47                     | 0.1752  |
| S0603-S-2.5A  | O       | 2.5                | 32                 |                          | 31                     | 0.4001  |
| S0603-S-3.0A  | P       | 3.0                | 32                 |                          | 23                     | 0.7329  |
| S0603-S-3.5A  | R       | 3.5                | 32                 |                          | 19                     | 0.9758  |
| S0603-S-4.0A  | S       | 4.0                | 32                 | UL/TUV:<br>35A<br>32V DC | 13                     | 2.1722  |
| S0603-S-5.0A  | T       | 5.0                | 32                 |                          | 8.7                    | 3.3128  |
| S0603-S-6.0A  | 6       | 6.0                | 32                 | UL/TUV:<br>50A<br>32V DC | 6.3                    | 7.8480  |
| S0603-S-7.0A  | U       | 7.0                | 32                 |                          | 5.8                    | 8.5120  |
| S0603-S-8.0A  | 8       | 8.0                | 32                 |                          | 5.2                    | 10.5388   |

\* Measured at ≤10% rated current and 25℃; Resistance test on side electrode of protective coating

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

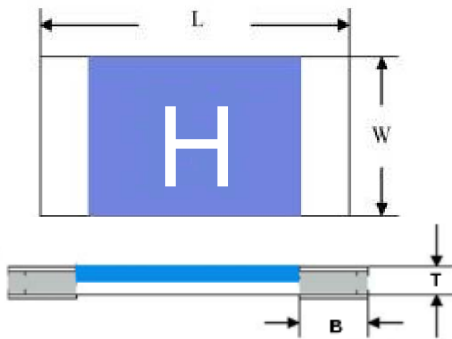
### Part Number Information

**S 0603-S-1.0A**



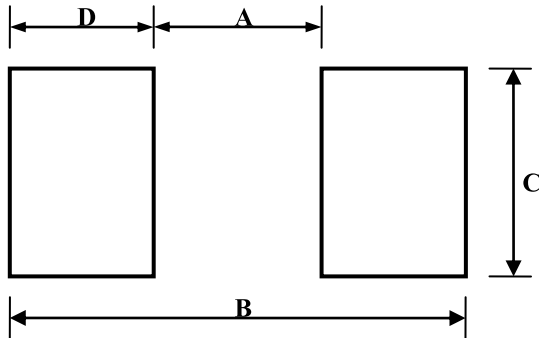
- “1.0A” Ampere Rating: 1A
- “ S ” Electrical Characteristic: S = Slow blow
- “0603” Size Number
- “ S ” Symbol of SART

### Dimensions



| Type    | L (mm)    | W (mm)    | T (mm)    | B (mm)    |
|---------|-----------|-----------|-----------|-----------|
| S0603-S | 1.60±0.15 | 0.80±0.15 | 0.40±0.10 | 0.30±0.20 |

### Recommended Land Patterns



| Type    | A(mm)     | B(mm)      | C(mm)     | D(mm)     |
|---------|-----------|------------|-----------|-----------|
| S0603-S | 0.85±0.05 | 2.05±0.050 | 1.20±0.10 | 0.60±0.10 |

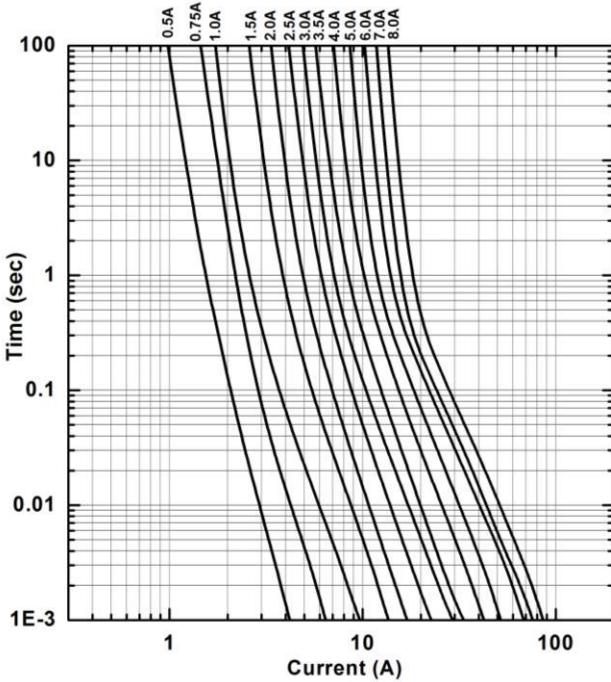
### Materials

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

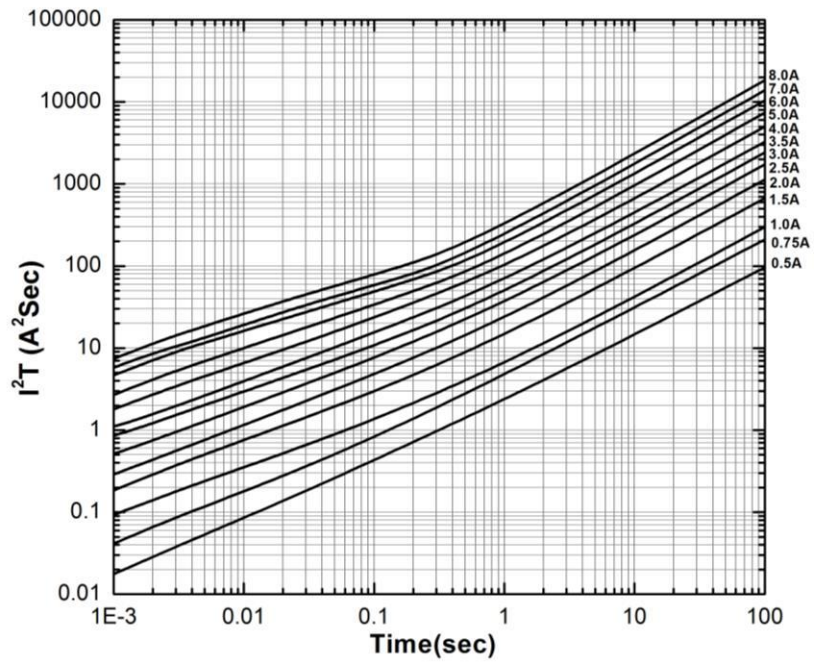
### Dimensions of Standard Test Board

| Type    | Ampere Rating | Board Thickness (mm) | Copper Layer Thickness (mm) | Copper Trace Width (mm) |
|---------|---------------|----------------------|-----------------------------|-------------------------|
| S0603-S | 0.5A~6.0A     | 1.6                  | 0.035                       | 5.0                     |
|         | 7.0A~8.0A     | 1.6                  | 0.070                       | 7.5                     |

### Time Current Curve



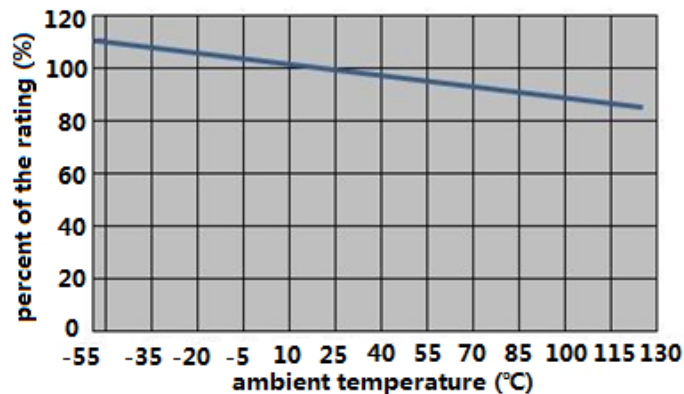
### I<sup>2</sup>T VS Time Curve



### Electrical Characteristics

| Type    | Ampere Rating | % of Current Rating | Opening Time |
|---------|---------------|---------------------|--------------|
| S0603-S | 0.5A~8.0A     | 100                 | 4hours Min.  |
|         | 1.0A~8.0A     | 200                 | 60sec Max.   |
|         | 0.5A~0.75A    | 250                 | 20sec Max.   |
|         | 0.5A~0.75A    | 1000                | 0.1ms Min.   |
|         | 1.0A~3.0A     | 1000                | 0.3ms Min.   |
|         | 3.5A~8.0A     | 1000                | 0.6ms Min.   |

### Temperature Derating Curve



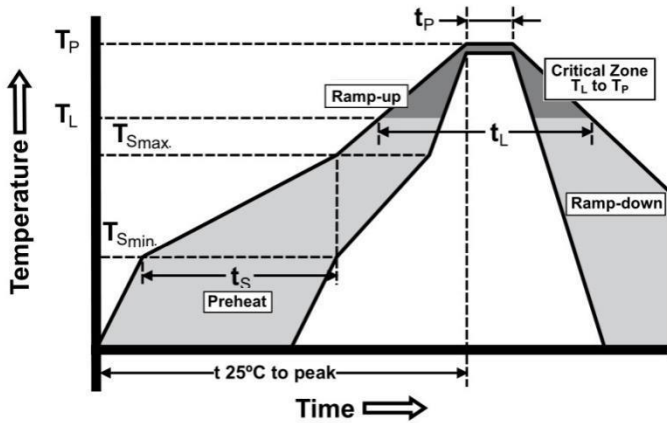
## Product Characteristics

| Item                            | Test condition/ Methods   | Performance  | Standard                                |
|---------------------------------|---|--|---|
| Time/Current                    | 100% of current rating  | No Fusing, 4hours Min.   | UL248-14                                |
|                                 | 200% of current rating  | 1.0A~8.0A: ≤60sec  | SART SPEC.                              |
|                                 | 250% of current rating  | 0.5A~0.75A: ≤20sec   |   |
|                                 | 1000% of current rating   | 0.5A~0.75A: >0.1msec<br>1.0A~3.0A: >0.3msec<br>3.5A~8.0A: >0.6msec |   |
| Voltage Drop                    | 100% of current rating  | Deviation between the mean value: <15%                             | IEC60127-4                              |
| Temperature Rise                | 100% of current rating  | $\Delta T < 75^{\circ}\text{C}$                                    | IEC60127-4                              |
| Endurance Test                  | 100 cycles of 1In for 1h "ON", for 15min "OFF", then following by 1h at 125%In            | $ \Delta R  < 10\%$  | IEC60127-4                              |
| Interrupting Ability            | 0.5A~3.5A: 50A 32V DC<br>4.0A~6.0A: 35A 32V DC<br>7.0A~8.0A: 50A 32V DC                   | without permanent arcing, ignition and bursting of fuse link       | UL248-14<br>IEC60127-4                  |
| Solderability                   | $240^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , 3sec $\pm 0.5$ sec                          | 95% coverage Min.  | IEC60127-4<br>MIL-STD-202<br>Method 208 |
| Resistance to Soldering         | $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , 10sec $\pm 0.5$ sec                         | $ \Delta R  < 10\%$<br>Legible appearance                          | MIL-STD-202<br>Method 210               |
| Bending Test                    | Distance between holding points: 90mm<br>Bending: 1mm, time: 10sec                        | $ \Delta R  < 10\%$<br>No mechanical damages                       | IEC60127-4                              |
| High Temperature Operating Life | $T = 70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 60%In, 96hours                           | $ \Delta R  < 10\%$ ; No fusing                                    | MIL-STD-202<br>Method 108               |
| Humidity (Steady State)         | $T = 40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 90%~95%RH, 1000hours                     | $ \Delta R  < 10\%$  | MIL-STD-202<br>Method 103               |
| Low Temperature Storage         | $T = -55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , 96hours                                 | $ \Delta R  < 10\%$  | IEC60068-2-1                            |
| High Temperature Storage        | $T = 125^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 96hours                                 | $ \Delta R  < 10\%$  | IEC60068-2-2                            |
| Salt Spray                      | 5% salt solution, 48hours   | $ \Delta R  < 10\%$<br>Legible appearance                          | MIL-STD-202<br>Method 101               |
| Thermal Shock                   | 100 cycles between $-65^{\circ}\text{C}/+125^{\circ}\text{C}$<br>60 minutes, each extreme | $ \Delta R  < 10\%$<br>No mechanical damages                       | MIL-STD-202<br>Method 107               |

## Recommended Solder Curve

### 1. Infrared Reflow:

- Temperature: 260°C
- Time: 20sec Max.
- Recommend Reflow profile



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

### 2. Wave soldering

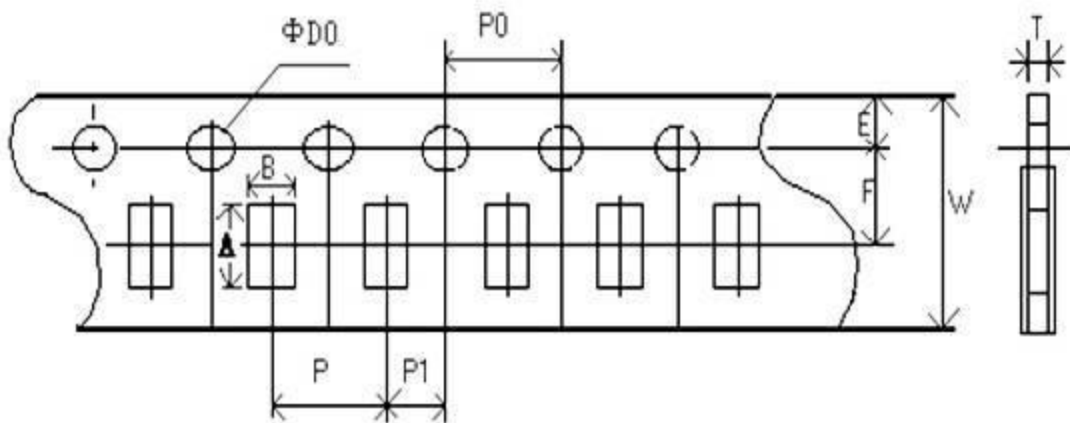
- Reservoir Temperature: 260°C
- Time in Reservoir: 10secMax.

### 3. Hand Soldering

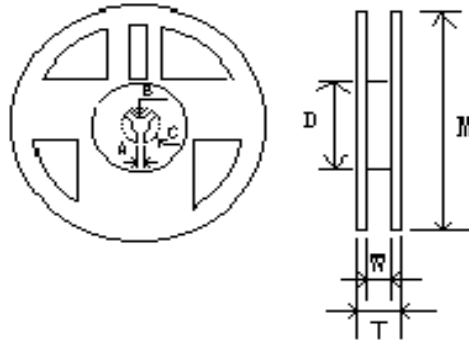
- Temperature: 350°C
- Time: 5secMax.

## Packaging

- 5000 pieces of fuses in emboss taper and reeled on a 178mm(7 inch) reel.



| Type    | A(mm)     | B(mm)     | W(mm)     | E(mm)     | F(mm)     |
|---------|-----------|-----------|-----------|-----------|-----------|
| S0603-S | 1.85±0.10 | 1.10±0.10 | 8.00±0.20 | 1.75±0.10 | 3.50±0.05 |
| Type    | P(mm)     | P0(mm)    | P1(mm)    | D0(mm)    | T(mm)     |
| S0603-S | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50±0.10 | 0.60±0.10 |



| Type    | M(mm)       | W(mm)     | T(mm)      | A(mm)     | B(mm)      | C(mm)      | D(mm)      |
|---------|-------------|-----------|------------|-----------|------------|------------|------------|
| S0603-S | 178.00±2.00 | 9.50±1.00 | 12.50±1.50 | 2.00±0.50 | 13.00±0.50 | 21.00±0.50 | 58.00±2.00 |

### Storage

- The ambient temperature recommended for storage shall be between 5°C~30°C
- The relative humidity recommended for storage shall be between 25%RH~60%RH
- 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