

Not recommended for new applications. Please see 0679L

# Type SSQ

## Square Ceramic Surface Mount Quick Acting Fuse

HF  SSQ Series – 2410 Size

RoHS 2 Compliant

### Features

- Quick Acting
- Small size, 2410 SMD
- Wide range of current rating from 100mA to 15A
- Wide operating temperature range
- Tape & Reel for auto-insert SMD process
- Compatible with 260°C, IR Pb-free solder process
- RoHS 2 compliant (MSL = 1)
- Halogen Free
- Lead Free

### Applications

- Notebook
- LCD monitor
- PC computer
- Office electronic equipment
- Industrial equipment
- Medical equipment
- POE, POE+
- LCD / LED monitor
- Power supply
- LCD / LED TV



LEAD FREE =   
 HALOGEN FREE = 

### Electrical Characteristics (UL/CSA/STD.248-14)

| Testing Current | Blow Time |         |
|-----------------|-----------|---------|
|                 | Minimum   | Maximum |
| 100%            | 4 Hrs.    | N/A     |
| 200%            | N/A       | 5 Sec   |

### Safety Agency Approvals

| Safety Agency   | Safety Agency Certificate | Voltage Rating (V)  | Ampere Range / Volt @ I.R. ability*   |
|---|---------------------------|---|---|
|  | LR39772                   |   | 100mA-7A/125V @50A AC   |
|  | E20624                    | 100mA-7A/125V AC<br>125V DC<br>7.1A-12A/125V AC<br>86V DC<br>15A/86V DC | 100mA-7A/125V @ 50A AC<br>86V @ 10kA DC<br>125V @ 300A DC<br>7.1A-12A/125V @ 50A AC<br>86V @<br>10kA DC |
|  | E20624                    |   | 15A/86V @ 10kA DC   |

\*I.R.= Interrupting Rating = Short Circuit Rating(Amps)

### Physical Specifications

|           |   |
|-----------|---|
| Materials | Body : Ceramic  |
|           | Terminations : Palladium plated Brass Caps  |
| Marking   | On Fuse :   |
|           | "Current Rating" in black color,<br>"bel" stamped in end caps.  |
|           | On Label :  |
|           | "bel", "SSQ", "Current Rating", "Voltage Rating", "Interrupting Rating",<br>"Appropriate Safety Logos" and "  ", "  " (China RoHS compliant). |

## Temperature Derating Curve



## Average Time Current Curve



## Electrical Specifications

| Catalog Number | Ampere Rating | Typical Cold Resistance (ohms) | Volt-drop @100% In (Volt) max. | Voltage and Interrupting Ratings  | Melting I <sup>2</sup> T <10 m Sec (A <sup>2</sup> Sec) | Melting I <sup>2</sup> T @10 In (A <sup>2</sup> Sec) | Maximum Power Dissipation (W) | Agency Approvals |    |       |
|----------------|---------------|--------------------------------|--------------------------------|---|---|--|-------------------------------|------------------|----|-------|
|                |               |                                |                                |   |   |  |                               | UL US            | SP | CS US |
| SSQ 250        | 250mA         | 0.560                          | 0.30                           | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.02  | 0.01   | 0.07                          | Y                | Y  |       |
| SSQ 375        | 375mA         | 0.335                          | 0.27                           |   | 0.04  | 0.03   | 0.09                          | Y                | Y  |       |
| SSQ 500        | 500mA         | 0.235                          | 0.26                           |   | 0.07  | 0.06   | 0.11                          | Y                | Y  |       |
| SSQ 750        | 750mA         | 0.131                          | 0.19                           |   | 0.11  | 0.07   | 0.13                          | Y                | Y  |       |
| SSQ 1          | 1A            | 0.081                          | 0.14                           |   | 0.19  | 0.14   | 0.17                          | Y                | Y  |       |
| SSQ 1.25       | 1.25A         | 0.065                          | 0.14                           |   | 0.33  | 0.24   | 0.20                          | Y                | Y  |       |
| SSQ 1.5        | 1.5A          | 0.056                          | 0.14                           |   | 0.57  | 0.41   | 0.23                          | Y                | Y  |       |
| SSQ 2          | 2A            | 0.039                          | 0.13                           |   | 1.0   | 0.8  | 0.30                          | Y                | Y  |       |
| SSQ 2.5        | 2.5A          | 0.031                          | 0.13                           |   | 1.7   | 1.4  | 0.36                          | Y                | Y  |       |
| SSQ 3          | 3A            | 0.025                          | 0.13                           |   | 3.0   | 2.4  | 0.43                          | Y                | Y  |       |
| SSQ 3.5        | 3.5A          | 0.024                          | 0.13                           |   | 3.9   | 3.3  | 0.47                          | Y                | Y  |       |
| SSQ 4          | 4A            | 0.019                          | 0.13                           |   | 5.1   | 4.4  | 0.51                          | Y                | Y  |       |
| SSQ 5          | 5A            | 0.013                          | 0.12                           |   | 8.8   | 7.8  | 0.62                          | Y                | Y  |       |
| SSQ 6.3        | 6.3A          | 0.011                          | 0.12                           |   | 15  | 14   | 0.74                          | Y                | Y  |       |
| SSQ 7          | 7A            | 0.009                          | 0.110                          |   | 20  | 19   | 0.81                          | Y                | Y  |       |
| SSQ 8          | 8A            | 0.008                          | 0.110                          |   | 26  | 25   | 0.89                          | Y                |    |       |
| SSQ 10         | 10A           | 0.007                          | 0.110                          |   | 46  | 44   | 1.07                          | Y                |    |       |
| SSQ 12         | 12A           | 0.005                          | 0.100                          | 70  | 69  | 1.24   | Y                             |                  |    |       |
| SSQ 15         | 15A           | 0.004                          | 0.100                          | 121   | 124   | 1.54   |                               |                  | Y  |       |

Consult manufacturer for other ratings



Specifications subject to change without notice

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## Environmental Specifications

|                            |   |
|----------------------------|---|
| Shock Resistance           | MIL-STD-202G, Method 213B, Test Condition 1 (100 G's peak for 6 milliseconds; Sawtooth waveform)  |
| Vibration Resistance       | MIL-STD-202G, Method 201A (10-55 Hz, 0.06 inch, total excursion).   |
| Salt Spray Resistance      | MIL-STD-202G, Method 101E, Test Condition B (48 hrs).   |
| Insulation Resistance      | MIL-STD-202G, Method 302, Test Condition A (After Opening) 10,000 ohms minimum.   |
| Solderability              | MIL-STD-202G, Method 208H   |
| Resistance to solder Heat  | MIL-STD-202G, Method 210F, Test Condition C. Top Side (260°C, 20 sec)<br>MIL-STD-202G, Method 210F, Test Condition D. Bottom Side (260°C, 10 sec) |
| Thermal Shock              | MIL-STD-202G, Method 107G, Test Condition B (-65°C to +125°C).  |
| Operating Temperature      | -55°C to +125°C   |
| Moisture Sensitivity Level | 1 ( According to IPC J-Std-020)   |

## Soldering Parameters

| IR Reflow Profile (IPC/JEDEC J-STD-020D)  |                 |
|---|-----------------|
| <b>Preheat &amp; Soak</b>   |                 |
| Temperature min (T <sub>min</sub> )   | 150°C           |
| Temperature max (T <sub>max</sub> )   | 200°C           |
| Time (T <sub>min</sub> to T <sub>max</sub> ) (ts)   | 60-120 seconds  |
| Average ramp-up rate (T <sub>max</sub> to T <sub>p</sub> )                                      | 3°C/second max. |
| Liquidous temperature (TL)  | 217°C           |
| Time at liquidous (tL)  | 60-150 seconds  |
| Peak temperature (T <sub>p</sub> )  | 260°C max       |
| Time (t <sub>p</sub> ) within 5°C of the specified classification temperature (T <sub>c</sub> ) | 30 seconds      |
| Average ramp-down rate (T <sub>p</sub> to T <sub>max</sub> )                                    | 6°C/second max. |
| Time 25°C to peak temperature   | 8 minutes max.  |



| Lead-free Wave Soldering Profile                   |  |
|--|--|
| Wave Soldering Parameter                           |  |
| Average ramp-up rate                               | 200°C / second                               |
| Heating rate during preheat                        | typical 1 - 2°C / second<br>Max 4°C / second |
| Final preheat temperature                          | within 125°C of soldering temperature        |
| Peak temperature T <sub>p</sub>                    | 260°C  |
| Time within +0°C / -5°C of actual peak temperature | 10 seconds                                   |
| Ramp-down rate                                     | 5°C / second max.                            |



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## Fuse FGNO Explanation

0679 - [XXXX] - XX

0679=SSQ; [XXXX]=Ampere Rating; XX=See Ordering Information as below

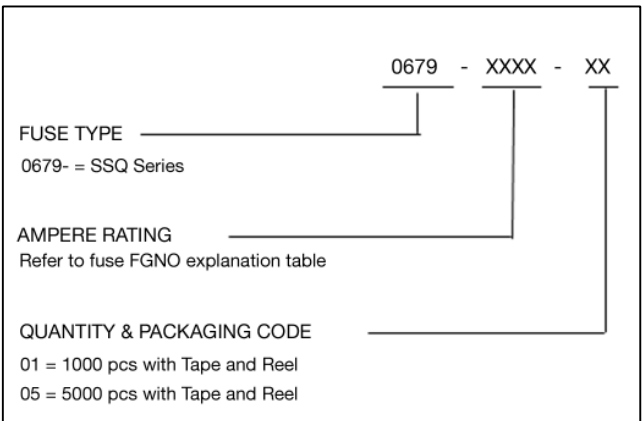
| Fraction | Decimal | Milliamps | Bel FGNO[XXXX] |
|----------|---------|-----------|----------------|
| 1/4      | 0.250   | 250       | 0250           |
| 3/8      | .375    | 375       | 0375           |
| 1/2      | .500    | 500       | 0500           |
| 3/4      | .750    | 750       | 0750           |
|          |         |           |                |
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|          |         |           |                |

| Fraction | Decimal | Amps | Bel FGNO[XXXX] |
|----------|---------|------|----------------|
|          | 1.0     | 1    | 1000           |
| 1-1/4    | 1.25    | 1.25 | 1250           |
| 1-1/2    | 1.5     | 1.5  | 1500           |
|          | 2.0     | 2    | 2000           |
| 2-1/2    | 2.5     | 2.5  | 2500           |
|          | 3.0     | 3    | 3000           |
| 3-1/2    | 3.5     | 3.5  | 3500           |
|          | 4.0     | 4    | 4000           |
|          | 5.0     | 5    | 5000           |
|          | 6.3     | 6.3  | 6300           |
|          | 7.0     | 7    | 7000           |
|          | 8.0     | 8    | 8000           |
|          |         | 10   | 9100           |
|          |         | 12   | 9120           |
|          |         | 15   | 9150           |

## Mechanical Dimensions



## Ordering Information



## Packaging

| Packaging Tape & Reel                        | Packaging Specification | Quantity | Quantity & Packaging Code |
|--|-------------------------|----------|---------------------------|
| 12 mm wide tape with 13 inches Diameter reel | EIA Standard 481-E      | 5000     | 05                        |
| 12 mm wide tape with 7 inches Diameter reel  | EIA Standard 481-E      | 1000     | 01                        |