

# Type SSQ

## Square Ceramic Surface Mount Quick Acting Fuse

**HF** **Pb** SSQ Series - 2410 Size

RoHS 6 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
- RoHS 6 compliant (MSL = 1)
- Halogen Free
- Leadfree

### 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 = **Pb**  
HALOGEN FREE = **HF**



### 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*                                                                                |
|---------------|---------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>SP</b>     | LR39772                   | 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                                                                                          |
| <b>UL</b>     | E20624                    |                                                                                   | 100mA - 7A / 125V @ 50A AC<br>86V @ 10,000A DC<br>125V @ 300A DC<br>7.1A - 12A / 125V @ 50A AC<br>86V @ 10,000A DC |
| <b>C</b>      | E20624                    |                                                                                   | 15A / 86V @ 10,000A 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). |

Specifications subject to change without notice



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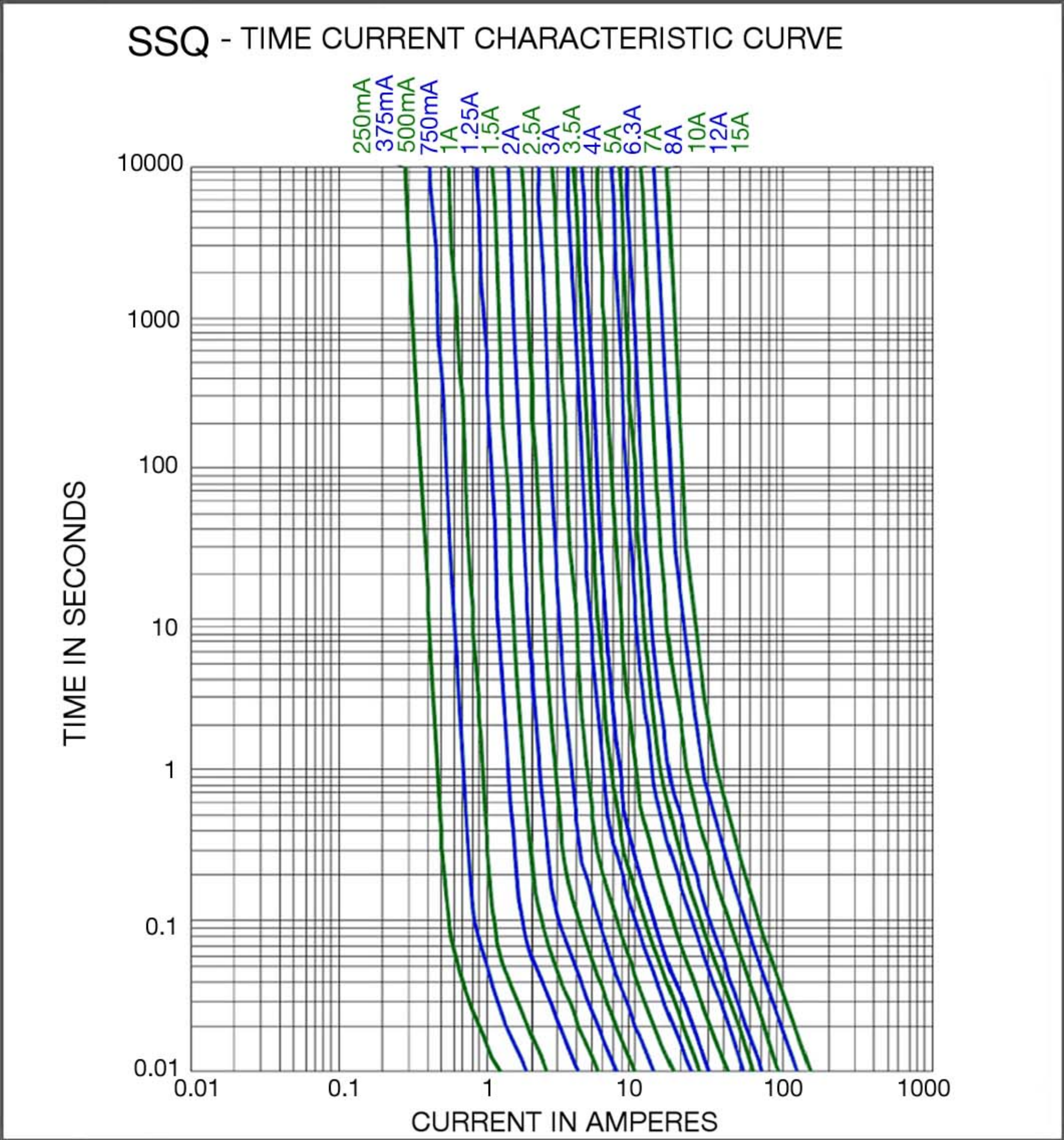
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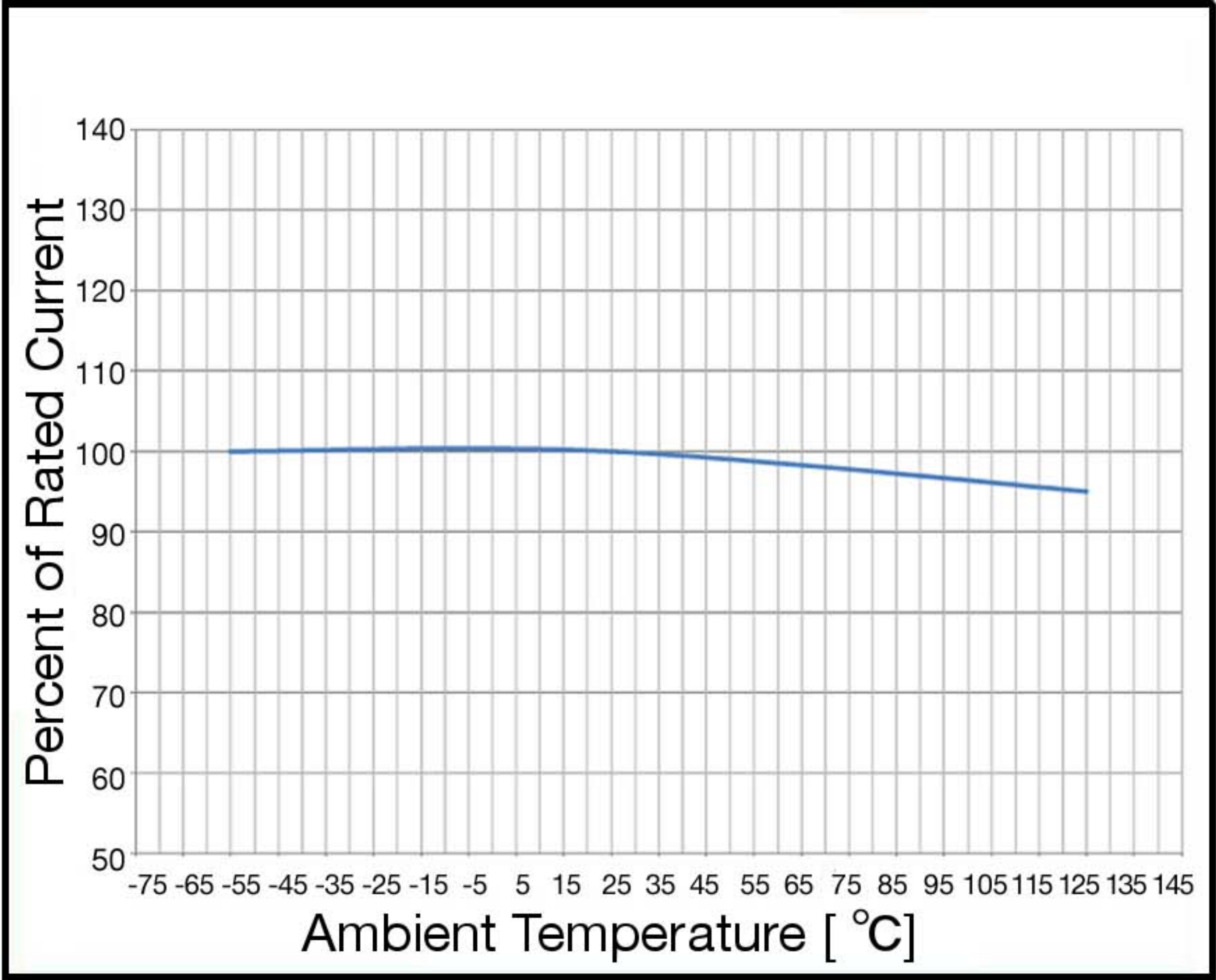
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Average Time Current Curve



Temperature Derating Curve



### Electrical Specifications

| Catalog Number | Ampere Rating (A) | Typical Cold Resistance (ohm) | Volt-drop @100% In (Volt) max. | Voltage and Interrupting Ratings                                                        | Melting I²T <10 m Sec (A² Sec) | Melting I²T @10 In (A² Sec) | Maximum Power Dissipation (W) | Agency Approvals                                                                      |                                                                                       |                                                                                       |
|----------------|-------------------|-------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|--------------------------------|-----------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                |                   |                               |                                |                                                                                         |                                |                             |                               |  |  |  |
| 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                                                                                     |                                                                                       |                                                                                       |
| SSQ15          | 15A               | 0.004                         | 0.100                          |                                                                                         | 121                            | 124                         | 1.54                          |                                                                                       |                                                                                       | Y                                                                                     |

Consult manufacturer for other ratings

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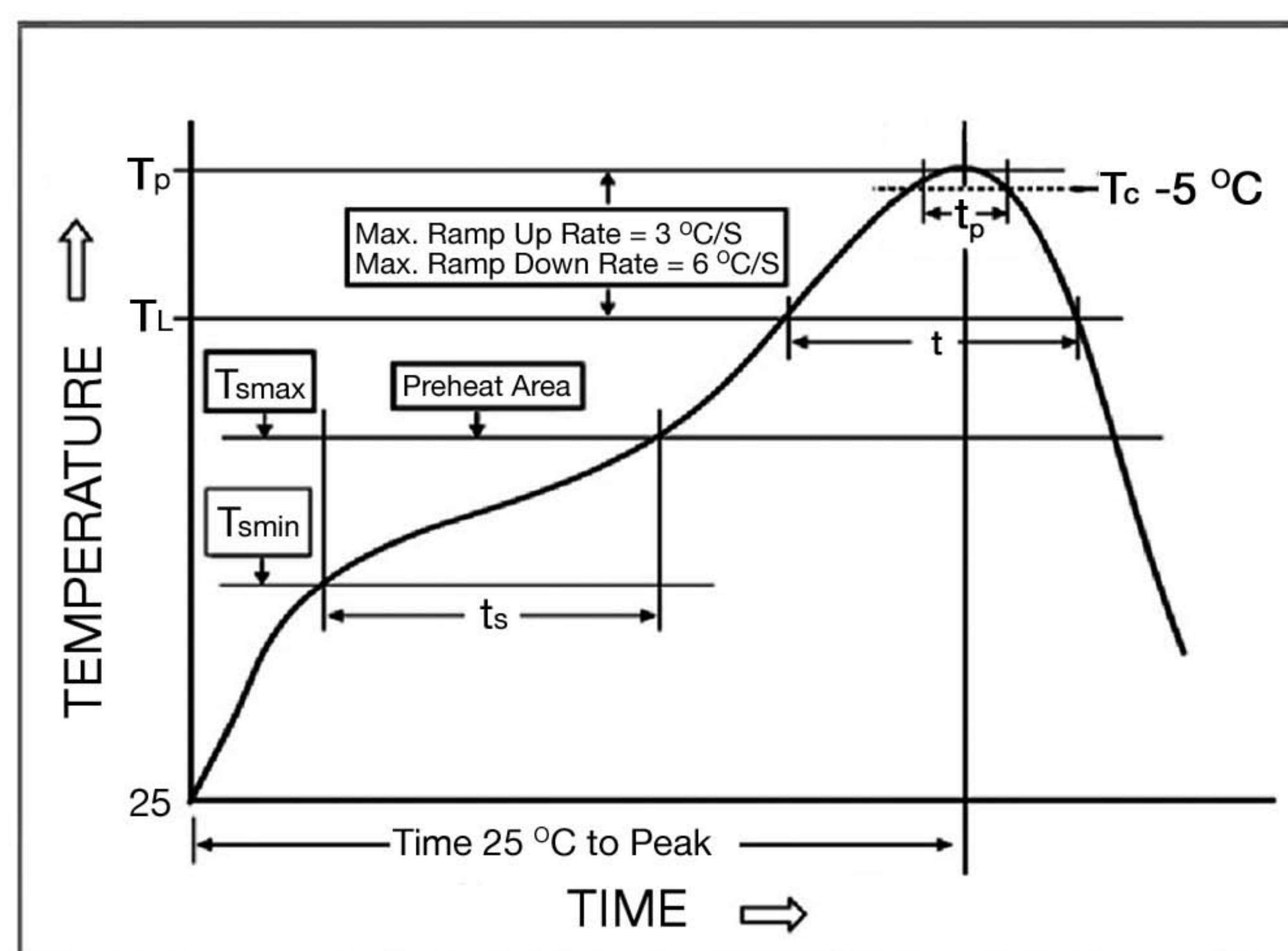
RoHS 6 Compliant

### Environmental Specifications

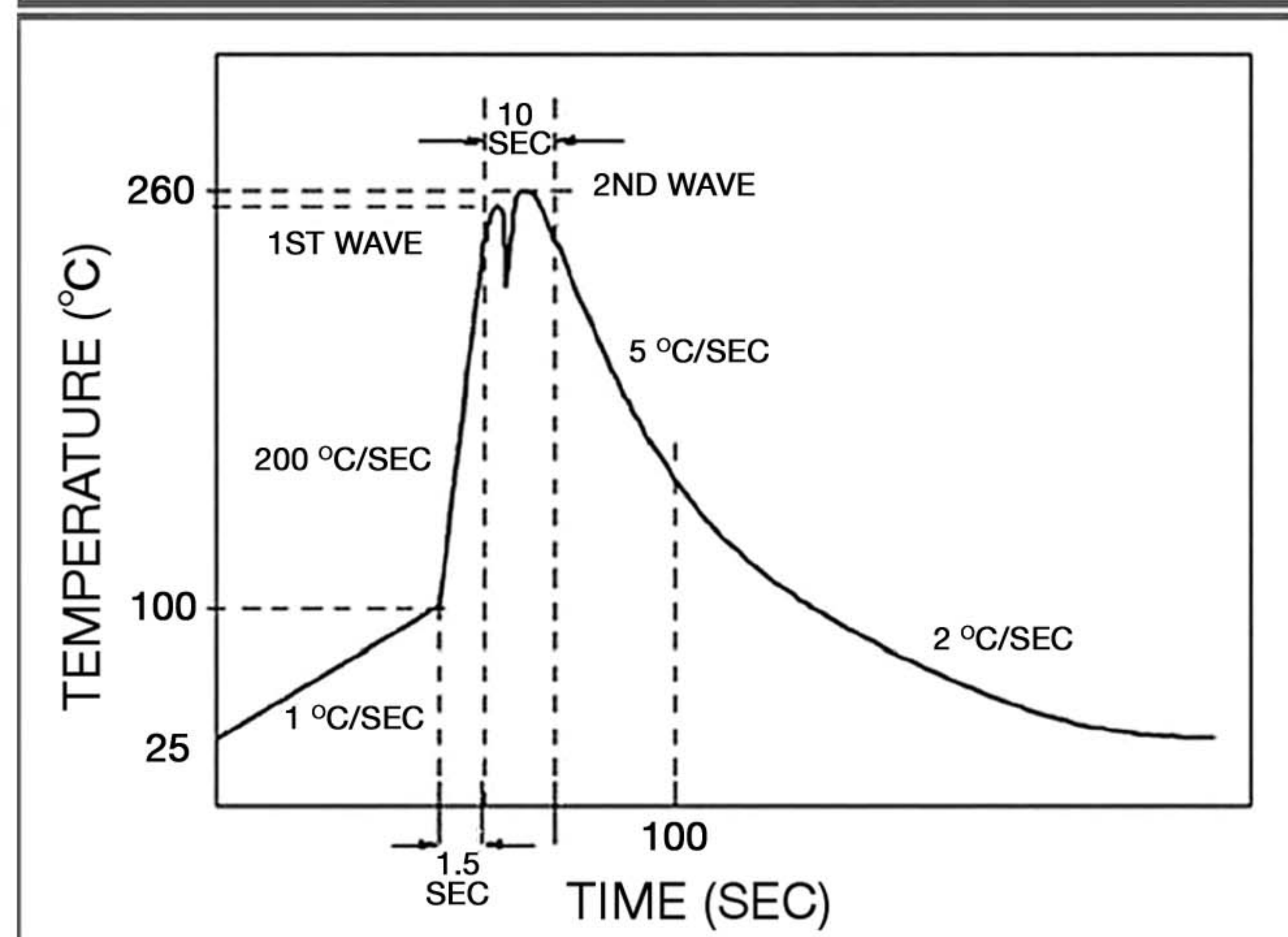
|                            |                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 ( $T_{smin}$ )                                                   | 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 temperature ( $T_p$ )                                                       | 260 °C max       |
| 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.   |



| 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 $T_p$                               | 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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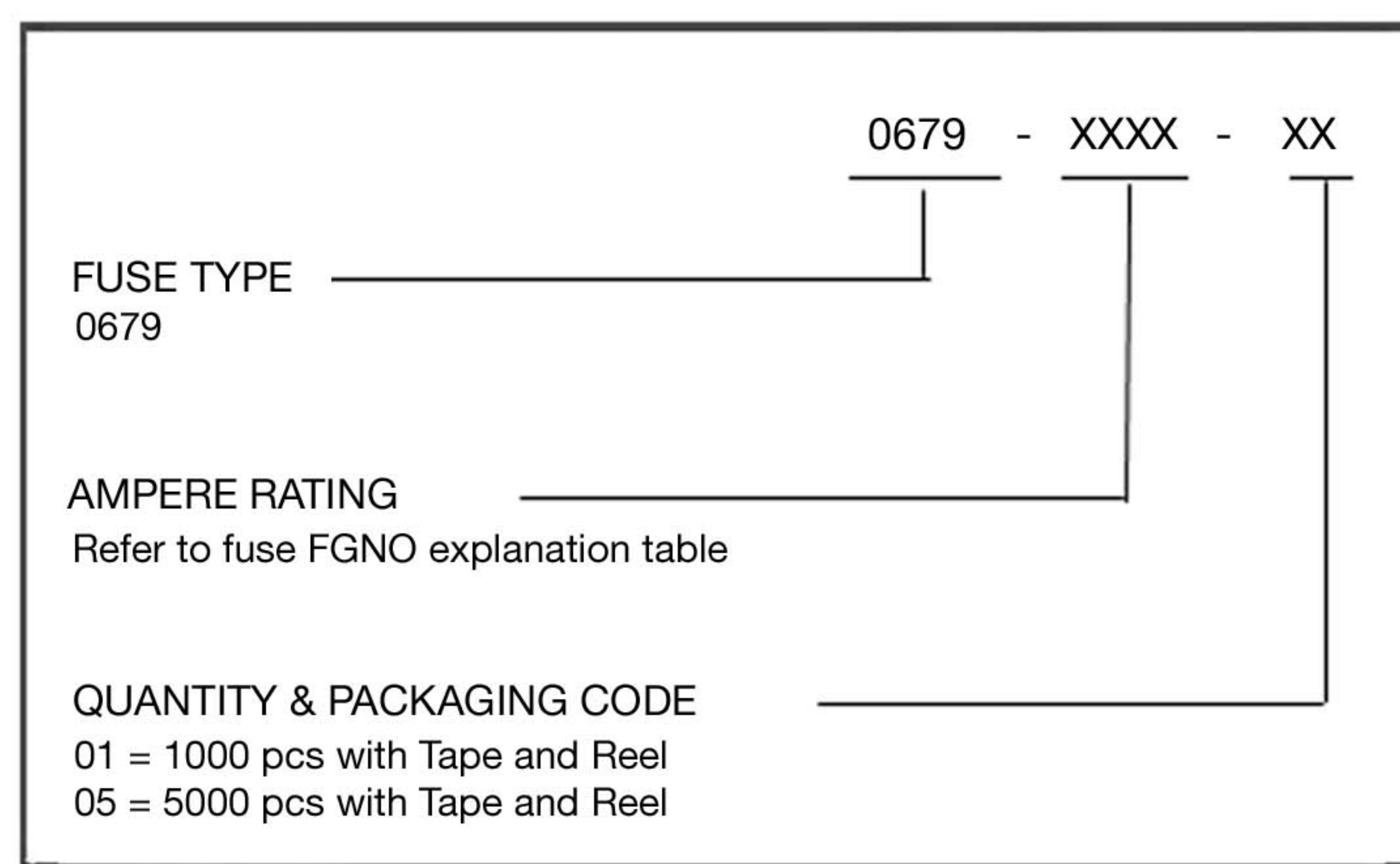
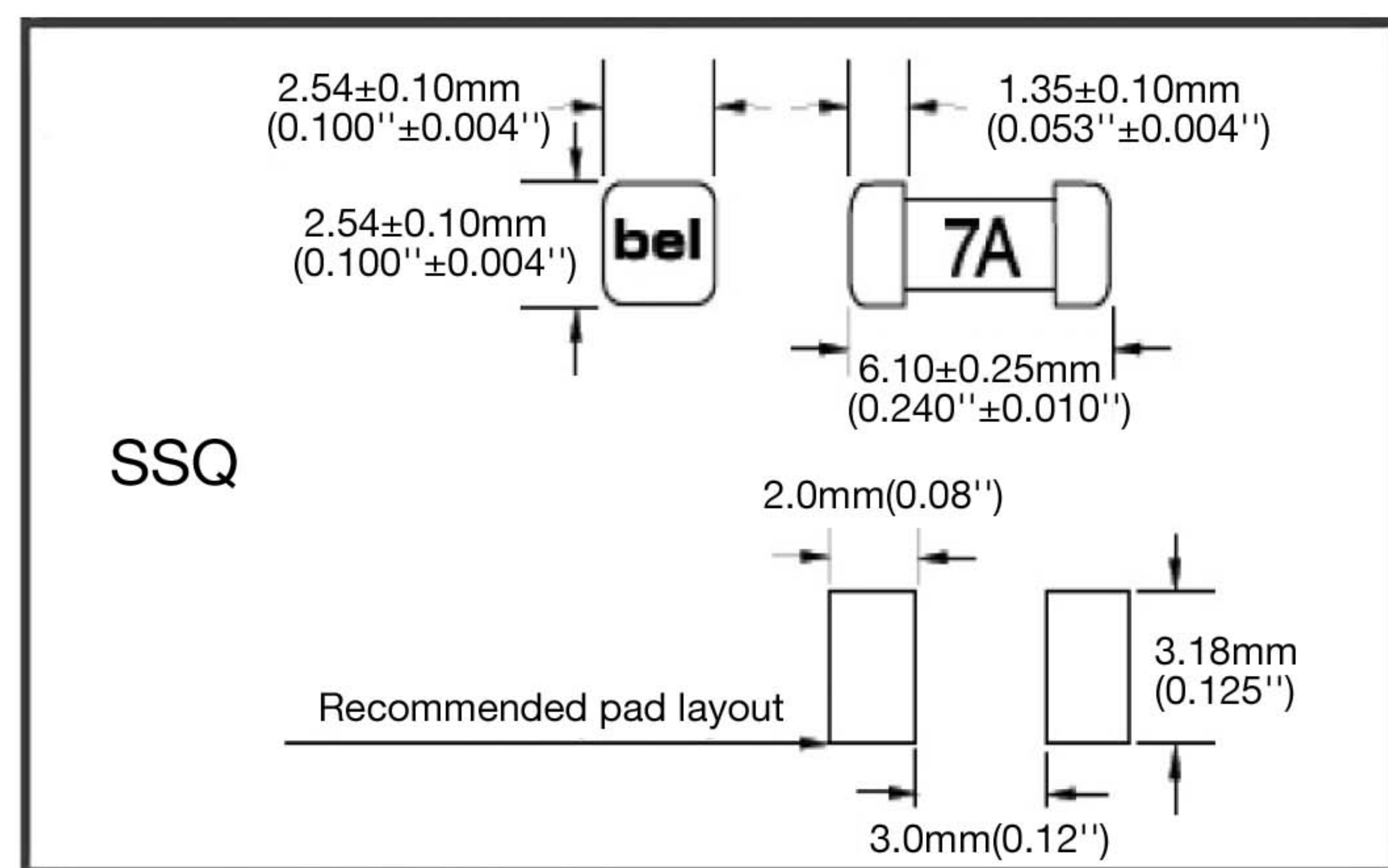
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| Fraction | Decimal | Milliamps | Bel FGNO[XXXX] |
|----------|---------|-----------|----------------|
| 1/32     | 0.032   | 32        | 0032           |
| 1/25     | .040    | 40        | 0040           |
| 1/20     | .050    | 50        | 0050           |
| 1/16     | .063    | 63        | 0063           |
| 8/100    | .080    | 80        | 0080           |
| 1/10     | .100    | 100       | 0100           |
| 1/8      | .125    | 125       | 0125           |
| 15/100   | .150    | 150       | 0150           |
|          | .160    | 160       | 0160           |
| 2/10     | .200    | 200       | 0200           |
| 1/4      | .250    | 250       | 0250           |
| 3/10     | .300    | 300       | 0300           |
|          | .315    | 315       | 0315           |
| 3/8      | .375    | 375       | 0375           |
| 4/10     | .400    | 400       | 0400           |
| 1/2      | .500    | 500       | 0500           |
| 6/10     | .600    | 600       | 0600           |
|          | .630    | 630       | 0630           |
| 7/10     | .700    | 700       | 0700           |
| 3/4      | .750    | 750       | 0750           |
| 8/10     | .800    | 800       | 0800           |
|          |         |           |                |
|          |         |           |                |

| Fraction | Decimal | Amps | Bel FGNO[XXXX] |
|----------|---------|------|----------------|
|          | 1.0     | 1    | 1000           |
| 1-1/4    | 1.25    | 1.25 | 1250           |
| 1-1/2    | 1.50    | 1.5  | 1500           |
|          | 1.60    | 1.6  | 1600           |
|          | 2.0     | 2    | 2000           |
| 2-1/4    | 2.25    | 2.25 | 2250           |
| 2-1/2    | 2.5     | 2.5  | 2500           |
|          | 3.0     | 3    | 3000           |
|          | 3.15    | 3.15 | 3150           |
| 3-1/2    | 3.5     | 3.5  | 3500           |
|          | 4.0     | 4    | 4000           |
|          | 5.0     | 5    | 5000           |
|          | 6.0     | 6    | 6000           |
|          | 6.3     | 6.3  | 6300           |
|          | 7.0     | 7    | 7000           |
| 7-1/2    | 7.5     | 7.5  | 7500           |
|          | 8.0     | 8    | 8000           |
|          |         | 10   | 9100           |
|          |         | 12   | 9120           |
|          |         | 15   | 9150           |
|          |         | 20   | 9200           |
|          |         | 25   | 9250           |
|          |         | 30   | 9300           |

## Ordering Information



| 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                        |



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