# 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* |
|---|---|---|---|
| SP | 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 |
| c UL us | 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 |
| c TÜV us | 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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Bel Fuse Inc.
206 Van Vorst Street
Jersey City, NJ 07302 USA

+1 201.432.0463
techhelp@belf.com
belfuse.com

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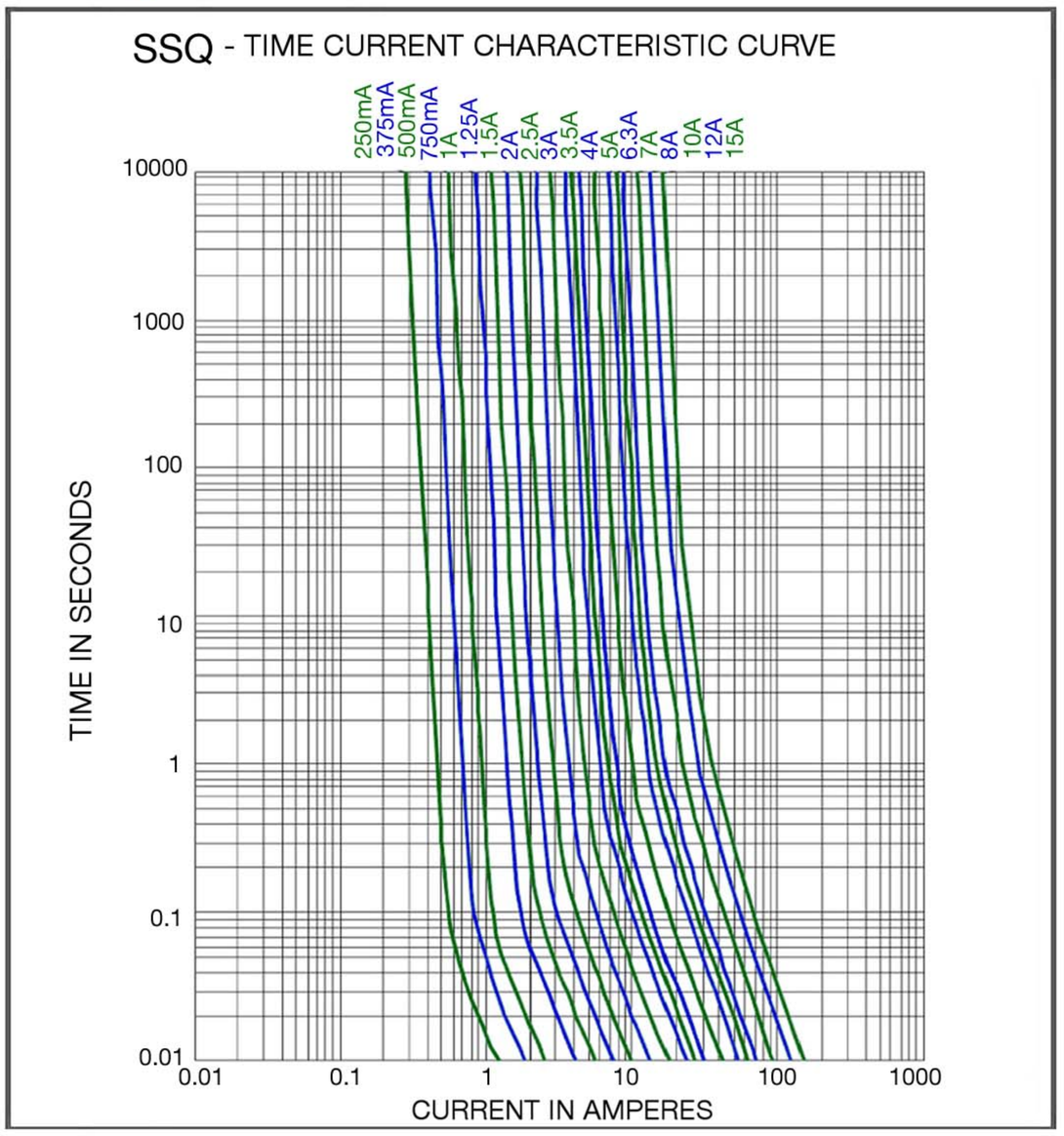
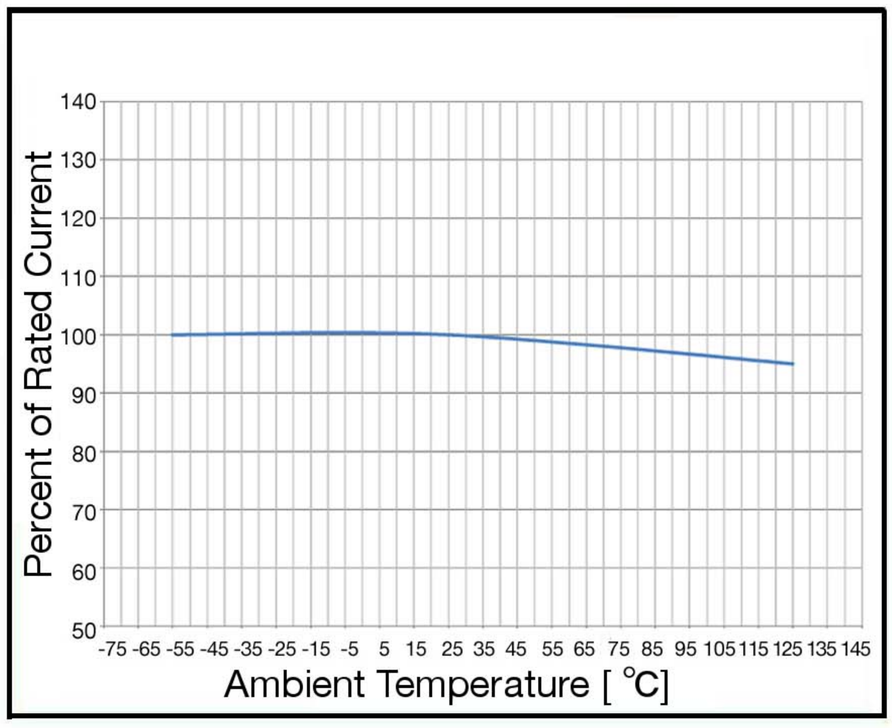
### Average Time Current Curve




### 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 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | c UL us | | c TÜV 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 | | |
| SSQ15 | 15A | 0.004 | 0.100 | | 121 | 124 | 1.54 | | | Y |

Consult manufacturer for other ratings

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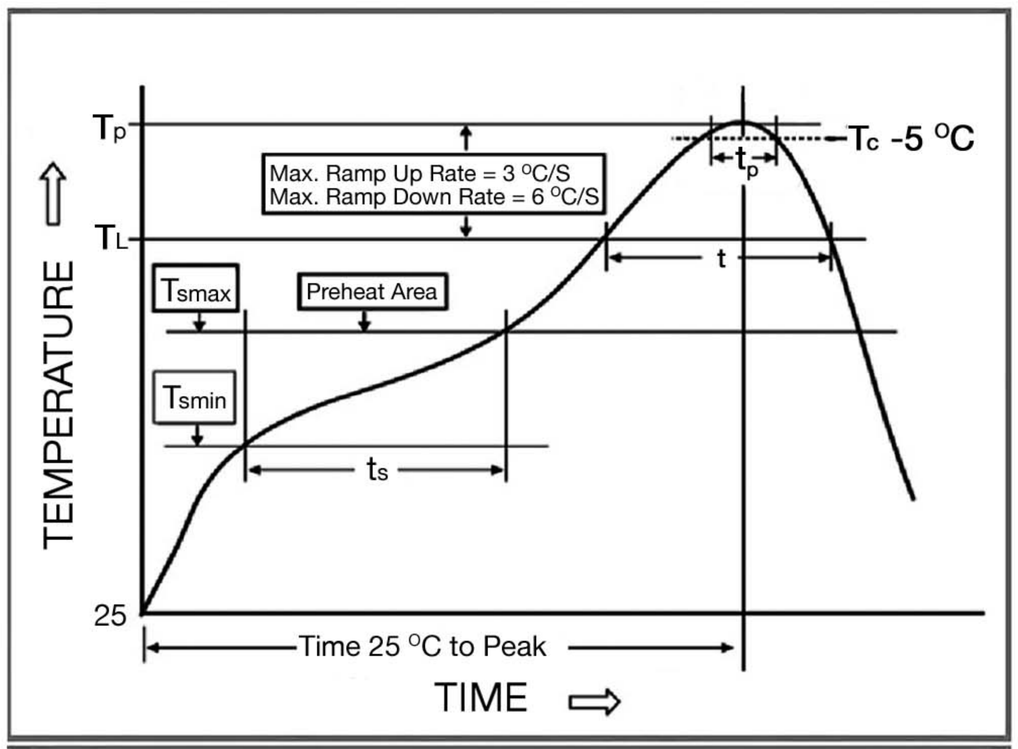
## Environmental Specifications

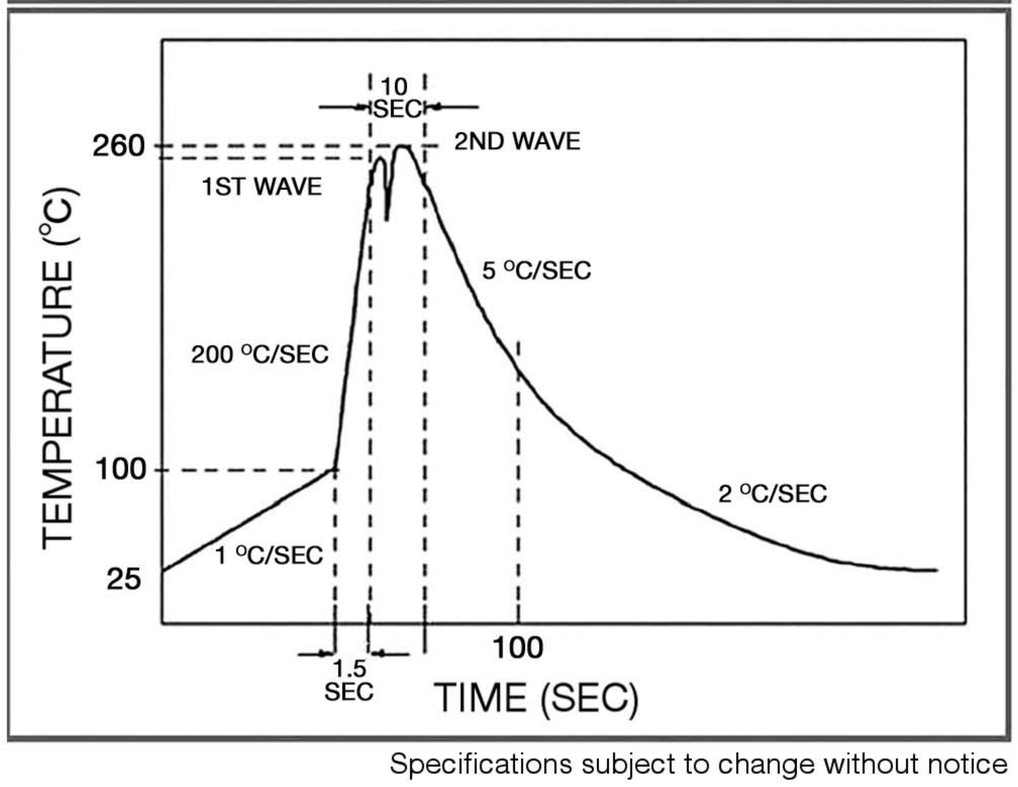
| | |
|---|---|
| Shock Resistance | MIL-STD-202G, Method 213B, Test Condition 1<br>(100 G's peak for 6 milliseconds; Sawtooth waveform) |
| Vibration Resistance | MIL-STD-202G, Method 201A(10-55 Hz,0.06 inch, total excursion). |
| Salt Spray Resistance | MIL-STD-202G, Method 101E, Test Condition B(48 hrs). |
| Insulation Resistance | MIL-STD-202G, Method 302, Test Condition A<br>(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<br>(-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) | |
|---|---|
| **Preheat & Soak**<br>Temperature min ($T_{smin}$)<br>Temperature max ($T_{smax}$)<br>Time ($T_{smin}$ to $T_{smax}$) ($t_s$) | <br>150 °C<br>200 °C<br>60 -120 seconds |
| Average ramp-up rate ($T_{smax}$ to $T_p$) | 3 °C/second max. |
| Liquidous temperature ($T_L$)<br>Time at liquidous ($t_L$) | 217 °C<br>60 - 150 seconds |
| Peak temperature ($T_p$) | 260 °C max |
| Time (tp) within 5 °C of the specified classification temperture ($T_c$) | 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 Tp | 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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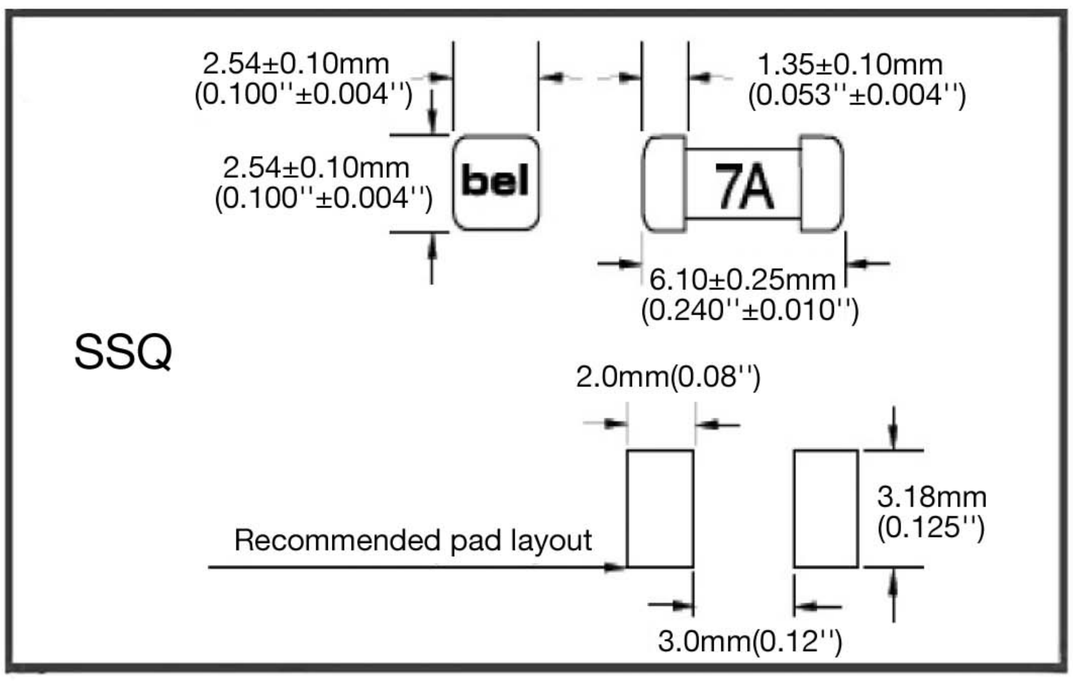
### Fuse FGNO Explanation
### 06XX X [XXXX] X XX, [XXXX]=Ampere Rating

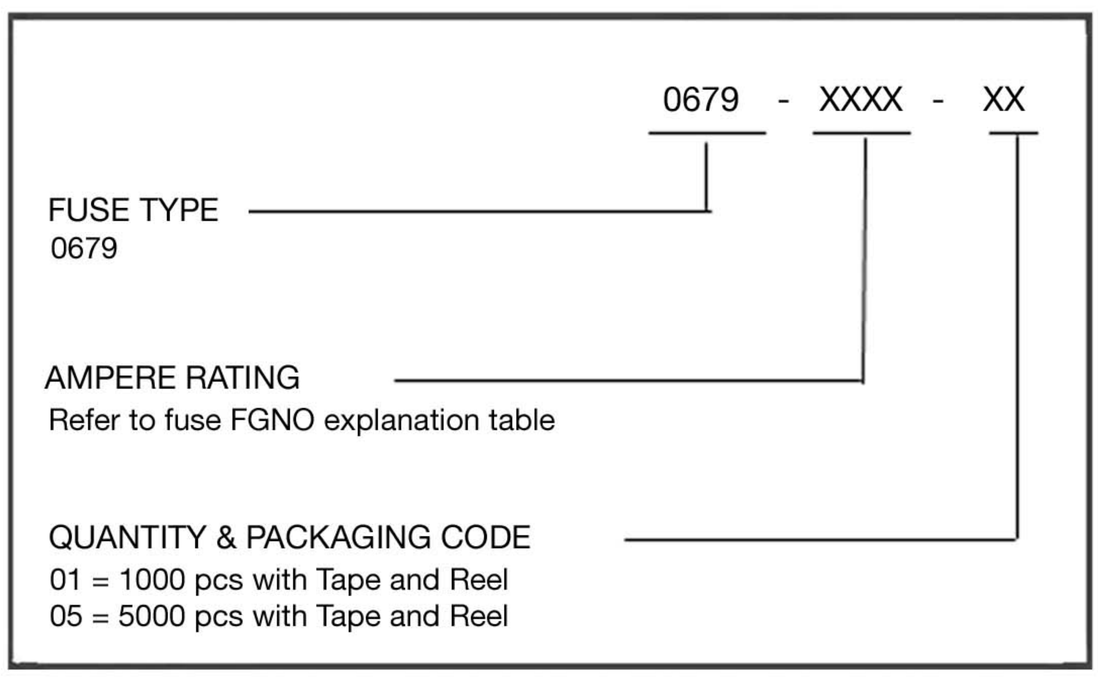
| Fraction | Decimal | Milliamps | Bel FGNO[XXXX] |
|---|---|---|---|
| 1/32 | 0.032 | 32 | 0032 |
| 1/25 | .040 | 40 | 0040 |
| 1/20 | .050 | 50 | 0050 |
| 1/16 | .063 | 63 | 0063 |
| 8/100 | .080 | 80 | 0080 |
| 1/10 | .100 | 100 | 0100 |
| 1/8 | .125 | 125 | 0125 |
| 15/100 | .150 | 150 | 0150 |
| | .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 |

## 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 |

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