

80mA-160mA EOL – Last Buy Date is Jun 30, 2020  
No replacements for these ratings

## Type 5TT / 5TTP Slow Blow Fuse Series

**HF** **Pb** 5TT/5TTP Series, 5x20mm Glass/Ceramic Tube Slow Blow Fuse RoHS 2 Compliant

### Description

5x20mm Slow Blow, glass / ceramic tube body cartridge fuse designed, approved and complied with UL and CSA standard 248-14.

### Features

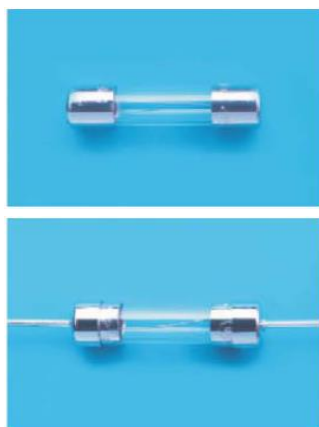
- Meet UL and CSA standard 248-14
- Wide operating temperature range
- Bulk and Tape & Reel packing available
- RoHS 2 compliant
- Halogen Free
- Lead Free

### Applications

Provide individual protection for components or internal circuits.

- Power supplies
- Battery charger
- Monitor
- Adapter

LEAD FREE = **Pb**  
HALOGEN FREE = **HF**



### Physical Specifications

|           |                                                                                                                                                       |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Materials | Body : Glass or Ceramic (see info below)                                                                                                              |
|           | Cap : Nickel Plated Brass Caps                                                                                                                        |
|           | Leads : Matte Tin Plated Copper                                                                                                                       |
| Marking   | On Fuse :                                                                                                                                             |
|           | "bel", "5TT", "Current Rating", "Voltage Rating",                                                                                                     |
|           | "Appropriate Safety Logos", "✓" ( RoHS 2 compliant)                                                                                                   |
|           | On Label :                                                                                                                                            |
|           | "bel", "5TT" or "5TTP", "Current Rating", "Voltage Rating", "Interrupting Rating",<br>"Appropriate Safety Logos" and "✓", "e" (China RoHS compliant). |

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

| Testing Current | Blow Time |         | Amp Range |
|-----------------|-----------|---------|-----------|
|                 | Minimum   | Maximum |           |
| 100%            | 4 hrs.    | N/A     | 80mA-10A  |
| 135%            | N/A       | 1 Hr.   | 80mA-10A  |
| 200%            | 5 sec     | 30 sec  | 80mA-3A   |
|                 | 3 sec     | 30 sec  | 3.1A-10A  |

### Safety Agency Approvals

| Safety Agency | Safety Agency Certificate                                      | Voltage Rating (V)                   | Ampere Range / Volt @ I.R. ability*             |
|---------------|----------------------------------------------------------------|--------------------------------------|-------------------------------------------------|
| <b>UL</b>     | E20624                                                         | 80mA-3A/250V AC<br>3.15A-10A/125V AC | 80mA-3A/250V AC@100A<br>80mA-8A/125V AC@10,000A |
| <b>SP</b>     | LR39772                                                        |                                      |                                                 |
| <b>UL</b>     | E20624                                                         |                                      | 10A/125V AC@1,000A                              |
| <b>SP</b>     | LR39772                                                        |                                      | 1A-5A/125V AC@500A                              |
| <b>PS</b>     | JET1037-31003-1010<br>JET1037-31003-1011<br>JET1037-31003-1007 |                                      | >5A-15A/125V AC@300A                            |

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

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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 B (260+/-5°C, 10+/-1 sec)                              |
| Thermal Shock             | MIL-STD-202G, Method 107G, Test Condition B (-65°C to +125°C).                                   |
| Operating Temperature     | -55°C to +125°C                                                                                  |
| Terminal Strength         | IEC-68-2-21                                                                                      |

## Electrical Specifications

| Catalog Number | Ampere Rating | Typical Cold Resistance (ohms) | Volt-drop @100%In (Volt) max. | Voltage and Interrupting Ratings                                                        | Melting I²T <10 mSec (A² Sec) | Melting I²T @10 In (A² Sec) | Maximum Power Dissipation (W) | Agency Approvals |    |    |    |    |
|----------------|---------------|--------------------------------|-------------------------------|-----------------------------------------------------------------------------------------|-------------------------------|-----------------------------|-------------------------------|------------------|----|----|----|----|
|                |               |                                |                               |                                                                                         |                               |                             |                               | UL               | UL | SP | SP | PS |
| 5TT(P) 80-R    | 80mA          | 29                             | 3.10                          | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.091                         | 0.096                       | 0.42                          | Y                |    |    | Y  |    |
| 5TT(P) 100-R   | 100mA         | 18.8                           | 2.52                          |                                                                                         | 0.137                         | 0.146                       | 0.45                          | Y                |    |    | Y  |    |
| 5TT(P) 125-R   | 125mA         | 12.6                           | 2.22                          |                                                                                         | 0.208                         | 0.221                       | 0.48                          | Y                |    |    | Y  |    |
| 5TT(P) 160-R   | 160mA         | 7.6                            | 1.88                          |                                                                                         | 0.314                         | 0.337                       | 0.51                          | Y                |    |    | Y  |    |
| 5TT(P) 200-R   | 200mA         | 4.98                           | 1.45                          | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.476                         | 0.512                       | 0.55                          | Y                |    |    | Y  |    |
| 5TT(P) 250-R   | 250mA         | 3.39                           | 1.25                          |                                                                                         | 0.719                         | 0.778                       | 0.58                          | Y                |    |    | Y  |    |
| 5TT(P) 300-R   | 300mA         | 2.13                           | 0.97                          |                                                                                         | 0.885                         | 0.959                       | 0.60                          | Y                |    |    | Y  |    |
| 5TT(P) 400-R   | 400mA         | 1.33                           | 0.83                          |                                                                                         | 1.65                          | 1.80                        | 0.66                          | Y                |    |    | Y  |    |
| 5TT(P) 500-R   | 500mA         | 0.865                          | 0.67                          |                                                                                         | 2.5                           | 2.7                         | 0.70                          | Y                |    |    | Y  |    |
| 5TT(P) 600-R   | 600mA         | 0.679                          | 0.64                          |                                                                                         | 3.8                           | 4.2                         | 0.75                          | Y                |    |    | Y  |    |
| 5TT(P) 700-R   | 700mA         | 0.465                          | 0.49                          |                                                                                         | 4.6                           | 5.1                         | 0.78                          | Y                |    |    | Y  |    |
| 5TT(P) 750-R   | 750mA         | 0.438                          | 0.48                          |                                                                                         | 5.3                           | 5.8                         | 0.79                          | Y                |    |    | Y  |    |
| 5TT(P) 1-R     | 1A            | 0.258                          | 0.40                          |                                                                                         | 8.6                           | 9.6                         | 0.85                          | Y                |    |    | Y  | Y  |
| 5TT(P) 1.25-R  | 1.25A         | 0.179                          | 0.34                          |                                                                                         | 13                            | 15                          | 0.91                          | Y                |    |    | Y  | Y  |
| 5TT(P) 1.5-R   | 1.5A          | 0.126                          | 0.30                          |                                                                                         | 18                            | 21                          | 0.96                          | Y                |    |    | Y  | Y  |
| 5TT(P) 1.6-R   | 1.6A          | 0.116                          | 0.30                          |                                                                                         | 20                            | 22                          | 0.97                          | Y                |    |    | Y  | Y  |
| 5TT(P) 2-R     | 2A            | 0.081                          | 0.27                          |                                                                                         | 30                            | 34                          | 1.03                          | Y                |    |    | Y  | Y  |
| 5TT(P) 2.5-R   | 2.5A          | 0.056                          | 0.23                          |                                                                                         | 45                            | 51                          | 1.10                          | Y                |    |    | Y  | Y  |
| 5TT(P) 3-R     | 3A            | 0.043                          | 0.21                          |                                                                                         | 56                            | 63                          | 1.13                          | Y                |    |    | Y  | Y  |
| 5TT(P) 3.15-R  | 3.15A         | 0.040                          | 0.21                          |                                                                                         | 68                            | 78                          | 1.17                          |                  |    |    | Y  | Y  |
| 5TT(P) 4-R     | 4A            | 0.029                          | 0.19                          |                                                                                         | 103                           | 119                         | 1.25                          |                  |    |    | Y  | Y  |
| 5TT(P) 5-R     | 5A            | 0.020                          | 0.17                          |                                                                                         | 157                           | 180                         | 1.33                          |                  |    |    | Y  | Y  |
| 5TT(P) 6-R     | 6A            | 0.015                          | 0.15                          |                                                                                         | 218                           | 317                         | 1.23                          |                  |    |    | Y  | Y  |
| 5TT(P) 6.3-R   | 6.3A          | 0.014                          | 0.12                          |                                                                                         | 230                           | 345                         | 1.25                          |                  |    |    | Y  | Y  |
| 5TT(P) 7-R     | 7A            | 0.012                          | 0.13                          |                                                                                         | 295                           | 459                         | 1.37                          |                  |    |    | Y  | Y  |
| 5TT(P) 8-R     | 8A            | 0.011                          | 0.13                          |                                                                                         | 319                           | 472                         | 1.31                          |                  |    |    | Y  | Y  |
| 5TT(P) 10-R    | 10A           | 0.008                          | 0.13                          |                                                                                         | 467                           | 703                         | 1.40                          |                  | Y  | Y  |    | Y  |

Consult manufacturer for other ratings

EOL—  
Last Buy Date is  
Jun 30, 2020



Bel Fuse Inc.  
206 Van Vorst Street  
Jersey City, NJ 07302 USA

Specifications subject to change without notice  
+1 201.432.0463  
Bel.US.CS@belf.com

[belfuse.com/circuit-protection](http://belfuse.com/circuit-protection)

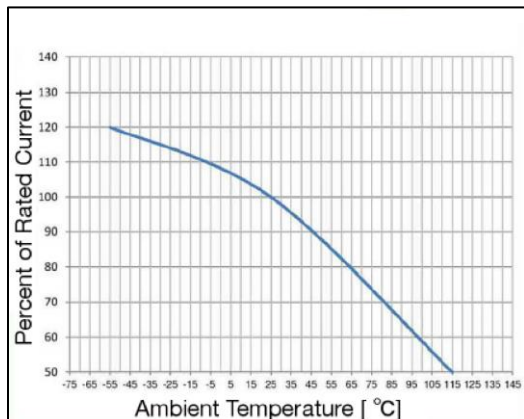
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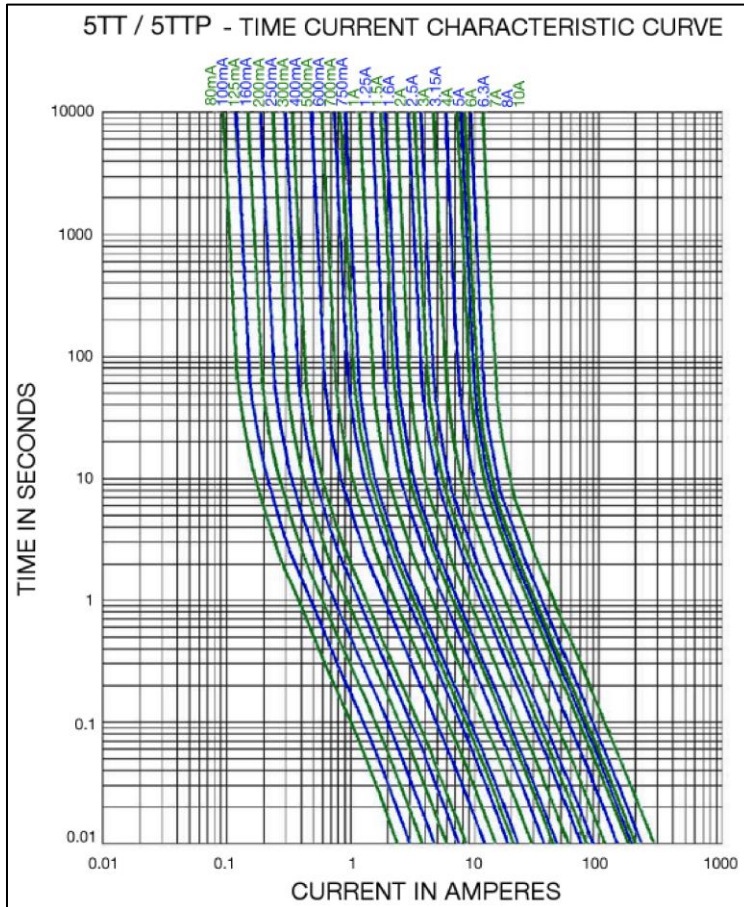
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## Temperature Derating Curve

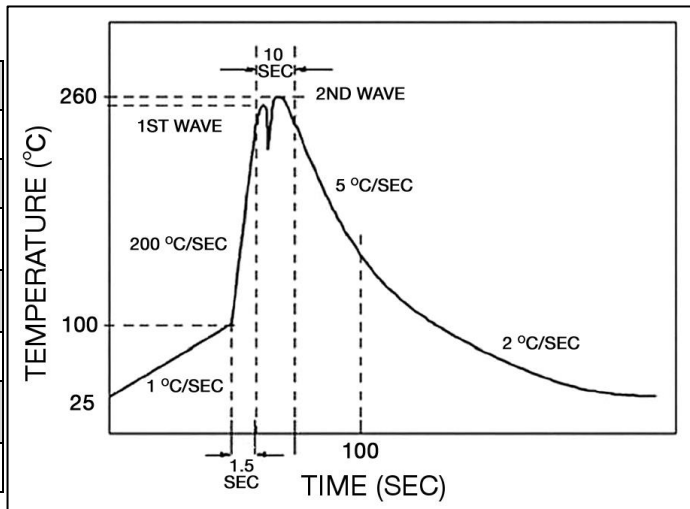


## Average Time Current Curve



## Soldering Parameters

| 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

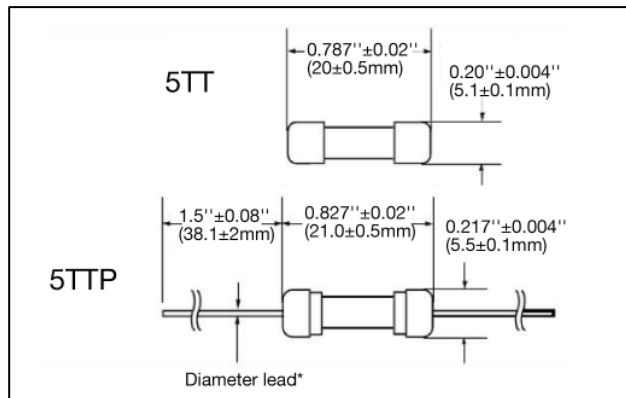
0654 R [XXXX] -XX

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

| Fraction | Decimal | Milliamps | Bel FGNO[XXXX] |
|----------|---------|-----------|----------------|
| 8/100    | 0.080   | 80        | 0080           |
| 1/10     | .100    | 100       | 0100           |
| 1/8      | .125    | 125       | 0125           |
|          | .160    | 160       | 0160           |
| 2/10     | .200    | 200       | 0200           |
| 1/4      | .250    | 250       | 0250           |
| 3/10     | .300    | 300       | 0300           |
| 4/10     | .400    | 400       | 0400           |
| 1/2      | .500    | 500       | 0500           |
| 6/10     | .600    | 600       | 0600           |
| 7/10     | .700    | 700       | 0700           |
| 3/4      | .750    | 750       | 0750           |
|          |         |           |                |
|          |         |           |                |
|          |         |           |                |

| 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           |
| 2-1/2    | 2.5     | 2.5  | 2500           |
|          | 3.0     | 3    | 3000           |
|          | 3.15    | 3.15 | 3150           |
|          | 4.0     | 4    | 4000           |
|          | 5.0     | 5    | 5000           |
|          | 6.0     | 6    | 6000           |
|          | 6.3     | 6.3  | 6300           |
|          | 7.0     | 7    | 7000           |
|          | 8.0     | 8    | 8000           |
|          |         | 10   | 9100           |

## Mechanical Dimensions



\*Ratings 5A and less have 0.032" ± 0.002" diameter lead;  
\*Ratings 6A and above have 0.039" ± 0.002" diameter lead.

## Ordering Information

0654 R XXXX - X X

FUSE TYPE  
0654RXXX-XX = 5TT/5TTP Series [X>1]

R = RoHS Compliant

AMPERE RATING  
Refer to fuse FGNO explanation table

VOLTAGE / MECHANICAL / SAFETY AGENCY  
2 = 125V for > 3A - 10A  
3 = 250V for 80mA - 3A  
5 = Ceramic tube for 6A and above

PACKAGING CODE  
1 = Cartridge version, 1K / box  
3 = Pigtail version, 1K bulk pack  
6 = Pigtail version, Tape and Reel, 1500 / reel

## Packaging

| Packaging Option    | Packaging Specification | Quantity | Packaging Code | Inside Tape Spacing |
|---------------------|-------------------------|----------|----------------|---------------------|
| Bulk                | N/A                     | 1000     | 33 / 21 / 51   | N/A                 |
| Bulk (Pigtail Type) | N/A                     | 1000     | 33 / 23 / 53   | N/A                 |
| Tape & Reel         | EIA-296-F               | 1500     | 36 / 26 / 56   | 10mm Pitch and 63mm |

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

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