

Type 5HF / 5HFP

Quick-acting Fuse Series (High -Breaking Capacity)

HF **Pb** 5HF/5HFP Series, 5x20mm Ceramic Tube Quick-acting Fuse

RoHS Compliant

Description

5x20mm quick-acting, high breaking capacity, ceramic body cartridge fuse designed, approved and complied with IEC 60127-2, standard sheet 1.

Features

- High breaking capacity (250V ac @ 1500A)
- Meet IEC standard 60127-2, sheet 1
- Wide operating temperature range
- Bulk and Tape & Reel packing available
- Full compliance with EU Directive 2011/65/EU and amending directive 2015/863
- 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 : Ceramic |
| | Cap : Nickel Plated Brass Caps |
| | Leads : Matte Tin Plated Copper |
| Marking | On Fuse : |
| | "bel", "F", "Current Rating", "H", "250V", |
| | "Appropriate Safety Logos", "✓" (RoHS compliant) |
| | On Label : |
| | "bel", "5HF" or "5HFP", "F", "Current Rating", "H", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and "✓", "RoHS" (China RoHS compliant). |

Electrical Characteristics (IEC-127-2 STANDARD SHEET 1) Safety Agency Approvals

| Rated Current | 1.5 In | | 2.1 In | | 2.75 In | | 4 In | | 10 In |
|----------------|--------|------|--------|-----|---------|------|------|-----|-------|
| | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MAX |
| 400mA to 3.15A | 1 | 30 | 10 | 2 | 3 | 300 | 20 | | |
| 4A to 6.3A | 1 | 30 | 10 | 3 | 3 | 300 | 20 | | |
| 8A to 12A | 1 | 30 | 40 | 20 | 10 | 1000 | 30 | | |
| | hr. | min. | ms | sec | ms | ms | ms | | |

In clause 9.2, the test voltage for 5HFP ratings from 1A to 6.3A is 63VDC.





| Safety Agency | Safety Agency Certificate | Ampere Rating / Voltage Rating | Ampere Range / Volt @ I.R. ability* |
|---------------|---------------------------------------|--------------------------------|-------------------------------------|
| | 40000506 | 400mA-10A /250V AC | 1A-6.3A / 250V AC@1500A |
| | E20624 | | 400mA-10A/250V AC@1500A |
| | LR39772 | | 400mA-10A/250V AC@1500A |
| | Self-declaration No: 2020970207000019 | | 400mA-10A/250V AC@1500A |

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

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 B (After Opening) 100,000 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 I ² T <10 mSec (A ² Sec) | Melting I ² T @ 10 In (A ² Sec) | Maximum Power Dissipation (W) | Agency Approvals | | | |
|----------------|---------------|--------------------------------|-------------------------------|---|--|---|-------------------------------|---|---|---|---|
| | | | | | | | |  |  |  |  |
| 5HF(P) 400-R | 400mA | 0.46 | 0.34 | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.09 | 0.08 | 0.92 | Y | Y | Y | |
| 5HF(P) 500-R | 500mA | 0.34 | 0.32 | | 0.16 | 0.15 | 1.11 | Y | Y | Y | |
| 5HF(P) 630-R | 630mA | 0.225 | 0.29 | | 0.29 | 0.27 | 1.35 | Y | Y | Y | |
| 5HF(P) 800-R | 800mA | 0.192 | 0.23 | | 0.36 | 0.35 | 0.58 | Y | Y | Y | |
| 5HF(P) 1-R | 1A | 0.139 | 0.19 | | 0.65 | 0.63 | 0.69 | Y | Y | Y | Y |
| 5HF(P) 1.25-R | 1.25A | 0.097 | 0.17 | | 1.2 | 1.2 | 0.81 | Y | Y | Y | Y |
| 5HF(P) 1.6-R | 1.6A | 0.072 | 0.16 | | 2.1 | 2.1 | 0.96 | Y | Y | Y | Y |
| 5HF(P) 2-R | 2A | 0.052 | 0.14 | | 3.8 | 3.8 | 1.1 | Y | Y | Y | Y |
| 5HF(P) 2.5-R | 2.5A | 0.039 | 0.13 | | 6.8 | 6.8 | 1.3 | Y | Y | Y | Y |
| 5HF(P) 3.15-R | 3.15A | 0.029 | 0.13 | | 12 | 12 | 1.6 | Y | Y | Y | Y |
| 5HF(P) 4-R | 4A | 0.022 | 0.13 | | 22 | 22 | 1.9 | Y | Y | Y | Y |
| 5HF(P) 5-R | 5A | 0.016 | 0.13 | | 39 | 40 | 2.2 | Y | Y | Y | Y |
| 5HF(P) 6.3-R | 6.3A | 0.011 | 0.10 | | 70 | 73 | 2.7 | Y | Y | Y | Y |
| 5HF(P) 8-R | 8A | 0.010 | 0.11 | | 126 | 131 | 3.1 | Y | Y | Y | |
| 5HF(P) 10-R | 10A | 0.007 | 0.10 | | 227 | 238 | 3.7 | Y | Y | Y | |
| 5HF(P) 12-R | 12A | 0.005 | 0.09 | | 408 | 430 | 4.4 | | | | |

Consult manufacturer for other ratings

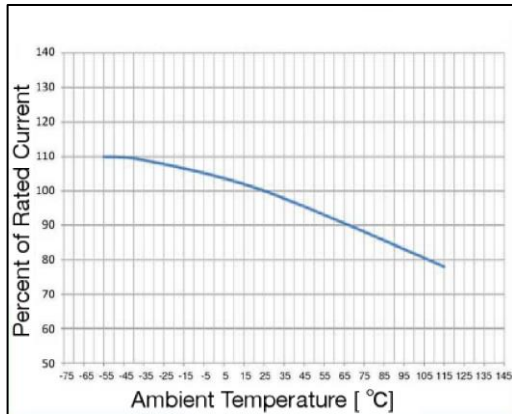


Specifications subject to change without notice

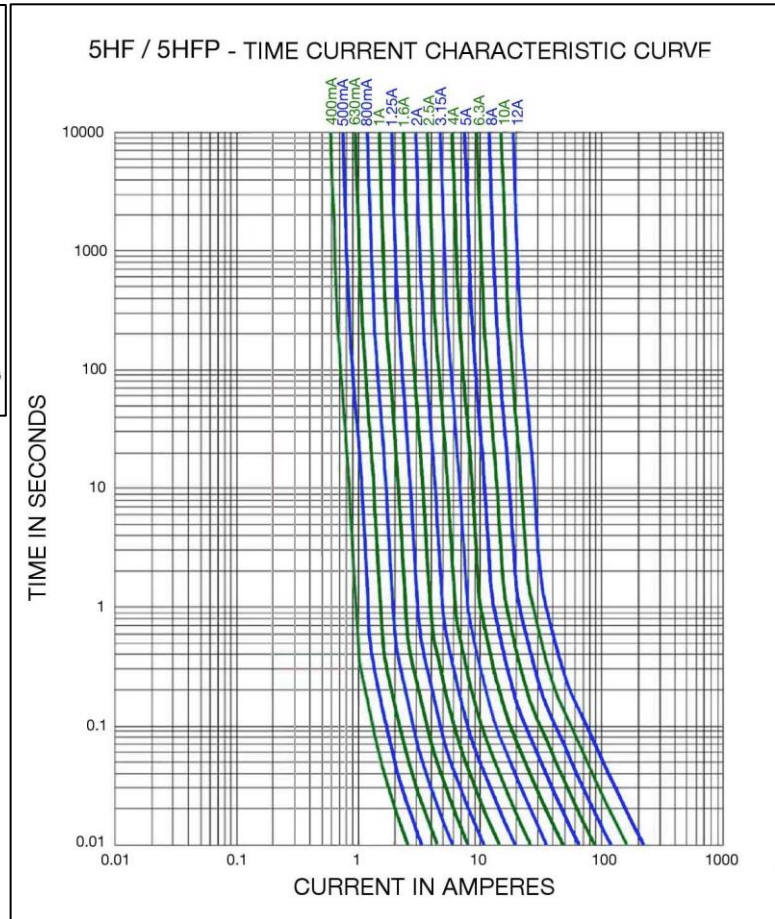
Bel Fuse Inc.
300 Executive Drive, Suite 300,
West Orange, NJ 07052 USA

+1 201.432.0463
Bel.US.CS@belf.com
belfuse.com/circuit-protection

Temperature Derating Curve

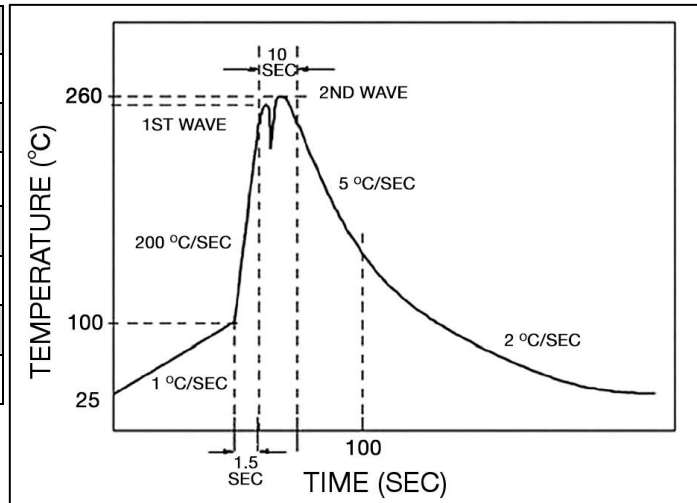


Average Time Current Curve



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 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. |



Fuse FGNO Explanation

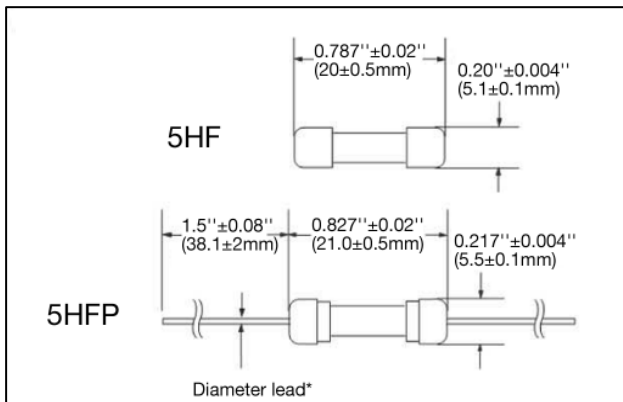
0650 R [XXXX] -XX

0650R=5HF/5HFP; [XXXX]=Ampere Rating; XX=See Ordering Information as below

| Fraction | Decimal | Milliamps | Bel FGNO[XXXX] |
|----------|---------|-----------|----------------|
| 4/10 | .400 | 400 | 0400 |
| 1/2 | .500 | 500 | 0500 |
| | .630 | 630 | 0630 |
| 8/10 | .800 | 800 | 0800 |

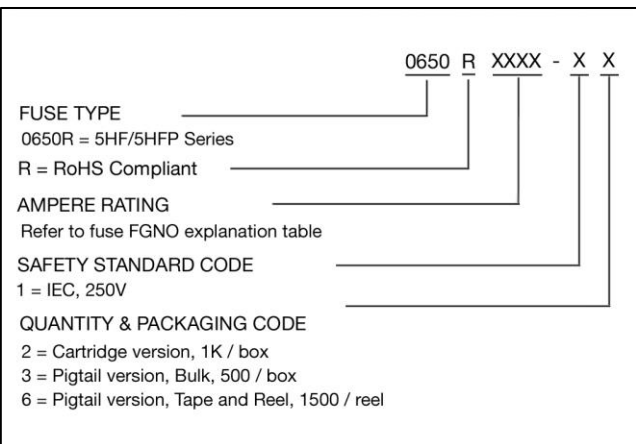
| Fraction | Decimal | Amps | Bel FGNO[XXXX] |
|----------|---------|------|----------------|
| | 1.0 | 1 | 1000 |
| 1-1/4 | 1.25 | 1.25 | 1250 |
| | 1.60 | 1.6 | 1600 |
| | 2.0 | 2 | 2000 |
| 2-1/2 | 2.5 | 2.5 | 2500 |
| | 3.15 | 3.15 | 3150 |
| | 4.0 | 4 | 4000 |
| | 5.0 | 5 | 5000 |
| | 6.3 | 6.3 | 6300 |
| | 8.0 | 8 | 8000 |
| | | 10 | 9100 |
| | | 12 | 9120 |

Mechanical Dimensions



*Ratings 6.3A and less have 0.032" ± 0.002" diameter lead;
 *Ratings 8A and above have 0.039" ± 0.002" diameter lead.

Ordering Information



Packaging

| Packaging Option | Packaging Specification | Quantity | Packaging Code | Inside Tape Spacing |
|---------------------|-------------------------|----------|----------------|---------------------|
| Bulk | N/A | 1000 | 12 | N/A |
| Bulk (Pigtail Type) | N/A | 500 | 13 | N/A |
| Tape & Reel | EIA-296-F | 1500 | 16 | 10mm Pitch and 63mm |



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Bel Fuse Inc.
 300 Executive Drive, Suite 300,
 West Orange, NJ 07052 USA

+1 201.432.0463
 Bel.US.CS@belf.com
belfuse.com/circuit-protection