

Type 0680H

Enhanced-breaking Capability Brick Fuse

[HF] 0680H Series – 2410 Size

RoHS Compliant



UK
CA  CE
AEC-Q Compliant

Electrical Characteristics

(UL/CSA/STD.248-14)

| Testing Current | Blow Time | |
|-----------------|-----------|---------|
| | Minimum | Maximum |
| 100% | 4 Hrs. | N/A |
| 200% | N/A | 120 Sec |

Features

- Slow Blow, 2410 SMD
- Compatible with 260°C, IR Pb-free solder process
- Wide range of current rating from 500mA to 15A
- Wide operating temperature range, -55°C to 125°C
- Tape & Reel for auto-insert SMD process
- RoHS compliant with exemption 7(a)
- Full compliance with EU Directive 2011/65/EU and amending directive 2015/863
- Halogen Free, (MSL = 1)
- AEC-Q Compliant
- Meets Bel automotive qualification*
- * - Largely based on internal AEC-Q test plan

Applications

| | |
|-------------------------------|---------------------------------------|
| - Notebook | - Storage system |
| - LCD monitor | - Telecom system |
| - PC computer | - Wireless basestation |
| - Office electronic equipment | - White goods |
| - Industrial equipment | - Game console |
| - Medical equipment | - Battery charging circuit protection |
| - POE, POE+ | |
| - LCD / LED monitor | |
| - Power supply | |
| - LCD / LED TV | |

HALOGEN FREE = [HF]

Safety Agency Approvals

| Safety Agency | Safety Agency Certificate | Ampere Rating/ Voltage Rating | Ampere Range / Volt @ I.R. ability* |
|--|---------------------------|--|---|
|  us | E506667 | 500mA-7A/125V AC 125V DC @500A 72V DC @5000A >7A-15A/125V AC 125V DC | 500mA-7A/125V AC @100A 125V DC @500A 72V DC @5000A >7A-15A/100V AC @150A 125V AC @50A 125V DC @500A 72V DC @5000A |

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

Physical Specifications

| | |
|-----------|---|
| Materials | Body : Ceramic |
| | Terminations : Silver Plated Caps /Gold Plated Caps/Palladium Plated Caps |
| Marking | On Fuse : "Current Rating", "S", "H"—laser marked on ceramic tube, "bel" stamped in end caps. |
| | On Label : "bel", "0680H", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and "  ", "  " (China RoHS compliant). |



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Specifications subject to change without notice

belfuse.com/circuit-protection

Environmental Specifications

| | | | |
|----------------------------|--|------------------------------|---|
| Shock Resistance | MIL-STD-202G Method 213, Test condition A (50G's peak for 11 milliseconds : Half-sine waveform) | High temperature storage | MIL-STD-202 Method 108 |
| Vibration Resistance | MIL-STD-202G, Method 201A (10-55 Hz, 0.06 inch, total excursion). | Temperature cycling | JESD22 Method JA-104, Test Condition B |
| Salt Spray Resistance | MIL-STD-202G, Method 101E, Test Condition B (48 hrs.). | Biased humidity | MIL-STD-202 Method 103, 85C/85% RH with 10% operating power for 1000 hrs. |
| Insulation Resistance | MIL-STD-202G, Method 302, Test Condition A (After Opening) 10,000 ohms minimum. | Operational life | MIL-STD-202 Method 108, Test Condition D |
| Thermal Shock | MIL-STD-202G, Method 107G, Test Condition B (-65°C to +125°C). | Resistance to solvents | MIL-STD-202 Method 215 |
| Operating Temperature | -55°C to +125°C | Mechanical shock | MIL-STD-202 Method 213, Test Condition C |
| Moisture Sensitivity Level | 1 (According to IPC J-Std-020) | Vibration | MIL-STD-202G Method 204 Test condition D (10-2k Hz, 20G's for 20minutes) |
| | | Resistance to soldering heat | MIL-STD-202 Method 210, Test condition B |
| | | Thermal shock | MIL-STD-202 Method 107 |
| | | Solderability | J-STD-002 Test B |
| | | Board flex(SMD) | AEC-Q200-005 |
| | | Terminal strength | AEC-Q200-006 |
| | | Electrical characterization | 3 Temperature Electrical |

Electrical Specifications

| Part Number | Ampere Rating | Typical Cold Resistance (ohms) | Nominal Volt-drop @100% In (Volt) | Voltage and Interrupting Ratings | Nominal melting I ² T @10 In (A ² Sec) | Nominal melting I ² T <10ms (A ² Sec) | Nominal Power Dissipation (W) | Agency Approvals |
|--------------|---------------|--------------------------------|-----------------------------------|---|--|---|-------------------------------|---|
| | | | | | | | |  |
| 0680H0500-XX | 500mA | 1.1 | 1.5 | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.13 | 0.10 | 0.75 | Y |
| 0680H0630-XX | 630mA | 0.83 | 1.1 | | 0.20 | 0.13 | 0.69 | Y |
| 0680H0750-XX | 750mA | 0.53 | 0.85 | | 0.28 | 0.29 | 0.64 | Y |
| 0680H1000-XX | 1A | 0.33 | 0.65 | | 0.79 | 0.80 | 0.65 | Y |
| 0680H1500-XX | 1.5A | 0.175 | 0.60 | | 1.7 | 1.8 | 0.90 | Y |
| 0680H2000-XX | 2A | 0.095 | 0.40 | | 3.6 | 3.9 | 0.80 | Y |
| 0680H2500-XX | 2.5A | 0.065 | 0.38 | | 5.9 | 6.1 | 0.95 | Y |
| 0680H3000-XX | 3A | 0.051 | 0.34 | | 8.3 | 8.7 | 1.0 | Y |
| 0680H3500-XX | 3.5A | 0.042 | 0.32 | | 12 | 15 | 1.1 | Y |
| 0680H4000-XX | 4A | 0.032 | 0.31 | | 15 | 18 | 1.2 | Y |
| 0680H5000-XX | 5A | 0.026 | 0.30 | | 24 | 26 | 1.5 | Y |
| 0680H6300-XX | 6.3A | 0.023 | 0.28 | | 32 | 34 | 1.8 | Y |
| 0680H7000-XX | 7A | 0.015 | 0.25 | | 48 | 52 | 1.8 | Y |
| 0680H8000-XX | 8A | 0.012 | 0.23 | | 59 | 65 | 1.8 | Y |
| 0680H9100-XX | 10A | 0.0096 | 0.23 | | 98 | 102 | 2.3 | Y |
| 0680H9120-XX | 12A | 0.0077 | 0.22 | | 141 | 146 | 2.6 | Y |
| 0680H9150-XX | 15A | 0.0066 | 0.20 | | 207 | 213 | 3.0 | Y |

Consult manufacturer for other ratings

XX - Packaging code (see "ordering information")

NOTES 1:

All tests were conducted with the fuses soldered to a printed circuit boards with a nominal thickness of 1.6 mm. The copper test circuit trace was a printed circuit with an overall length of 100 mm, copper thickness/width as described below. The printed circuit boards were mounted by screws to a test fixture having brass blocks for connection of the test leads. All samples were soldered to the test boards by the manufacturer.

NOTES 2:

Conventional (Ambient Pressure) Reflow Process is recommended for this device. The sale and use of product is subject to bel terms and condition of sale, unless otherwise agreed. User should independently evaluate the suitability of and test each product selected for their own application. product are not designed for, and may not be used in, all applications.

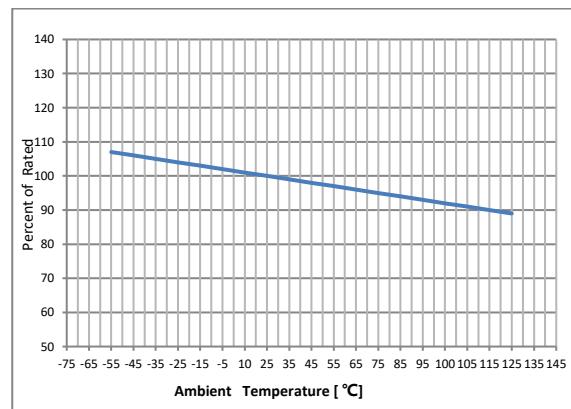
Caution:

- Minimum fusing point:

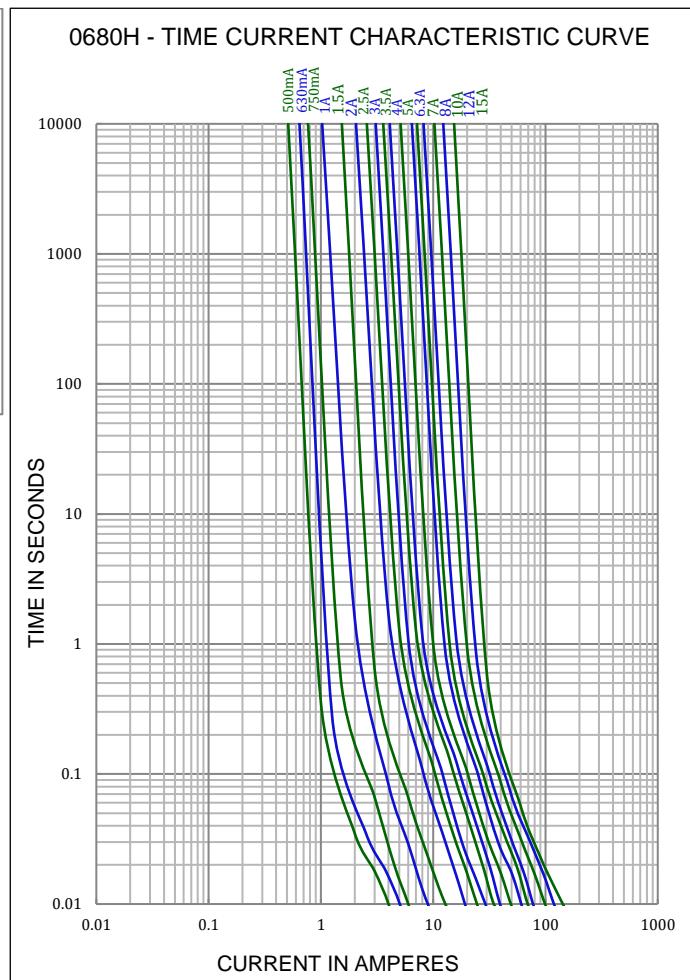
The 0680H Series fuse are NOT intended to be operated at currents between 100% and 200% of ampere rating. Prolonged operation at currents in this range may result in overheating of the fuse and/or desoldering of the fuse caps from the PCB pad.

| Fuse rating | Test Board Trace Dimensions |
|-------------|-----------------------------|
| 500mA-5A | 1 oz. copper, 5mm wide. |
| 6A-15A | 3 oz. copper, 10mm wide. |

Temperature Derating Curve

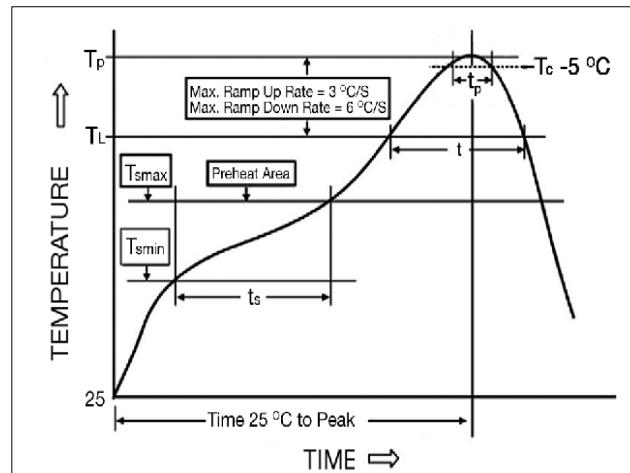


Average Time Current Curve



Soldering Parameters

| IR Reflow Profile (IPC/JEDEC J-STD-020D) | |
|---|-----------------|
| Preheat & Soak | |
| 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. |



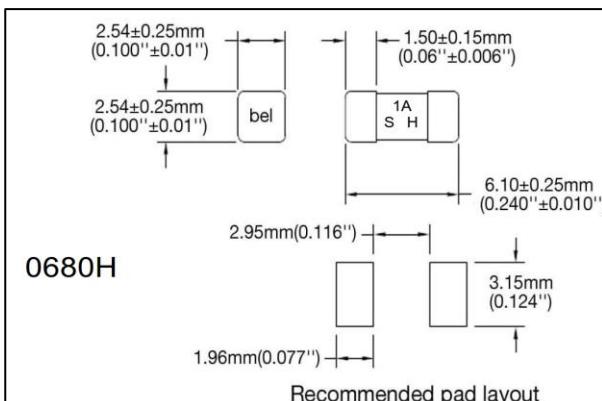
Fuse FGNO Explanation

0680 H [XXXX] -XX

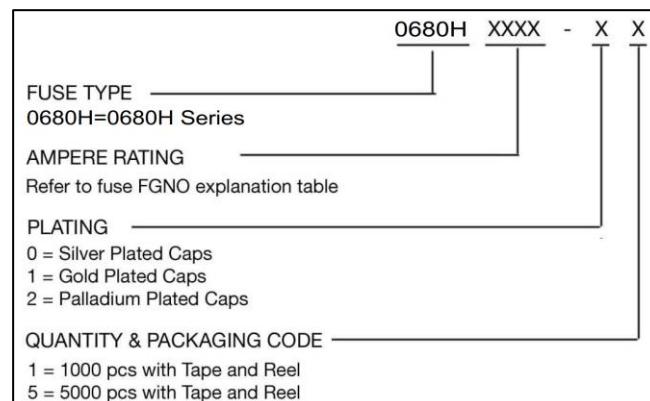
0680H=0680H; [xxxx]=Ampere Rating; XX=See Ordering Information as below

| Fraction | Decimal | Amps | Bel FGNO[XXXX] |
|----------|---------|------|----------------|
| | 1.0 | 1 | 1000 |
| 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 | 5 |
| 12 mm wide tape with 7 inches Diameter reel | EIA Standard 481-E | 1000 | 1 |



Specifications subject to change without notice

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

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