

Type C1H

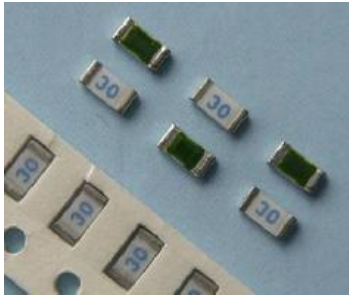
High Current Rated Fast Acting Chip Fuse

HF  C1H Series – 1206 Size

RoHS Compliant

Features



- Quick Acting
- Small size, 1206 SMD
- Current rating from 10A to 30A
- Wide operating temperature range from -55°C to 125°C
- Tape and Reel for automatic SMD placement
- Compatible with 260°C IR Pb-free and wave soldering process
- Full compliance with EU Directive 2011/65/EU and amending directive 2015/863 (MSL = 1)
- Halogen Free and Lead Free
- AEC-Q Compliant
- Meets Bel automotive qualification*
- * - Largely based on internal AEC-Q test plan



UK CA  US 
AEC-Q Compliant

Applications

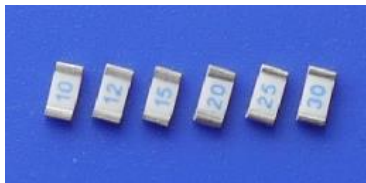
- Notebook
- PC computer
- Office electronic equipment
- Industrial equipment
- Medical equipment
- POE, POE+
- LCD / LED monitor and LCD / LED TV
- Power supply
- DC-DC Converter

LEAD FREE = 
 HALOGEN FREE = 

Typical Part Marking

Fuse body (ceramic white side) marked with marking code.

Example:




| Current Rating | Marking Code | Current Rating | Marking Code |
|----------------|--------------|----------------|--------------|
| 10A | 10 | 20A | 20 |
| 12A | 12 | 25A | 25 |
| 15A | 15 | 30A | 30 |

Electrical Characteristics (UL STD. 248-14)



| Testing Current | Blow Time | |
|-----------------|-----------|---------|
| | Minimum | Maximum |
| 100% | 4 Hrs. | N/A |
| 350% | N/A | 5 Sec |

Safety Agency Approvals

| Safety Agency | Safety Agency Certificate | Ampere Rating/ Voltage Rating | Ampere Range / Volt @ I.R. ability* |
|---|---------------------------|-------------------------------|---|
|  | E20624 | 10A - 30A / 32V DC 125V AC | 10A - 15A / 32V @150A DC 125V @150A AC |
| | | | 20A - 30A / 32V @300A DC 125V @150A AC |

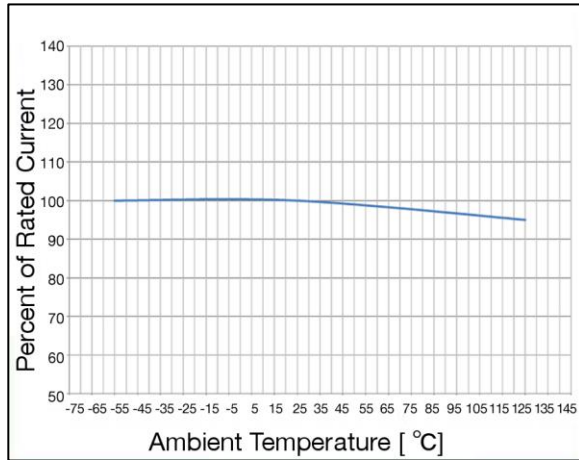
*I.R.= Interrupting Rating = Short Circuit Rating(Amps)

Physical Specifications

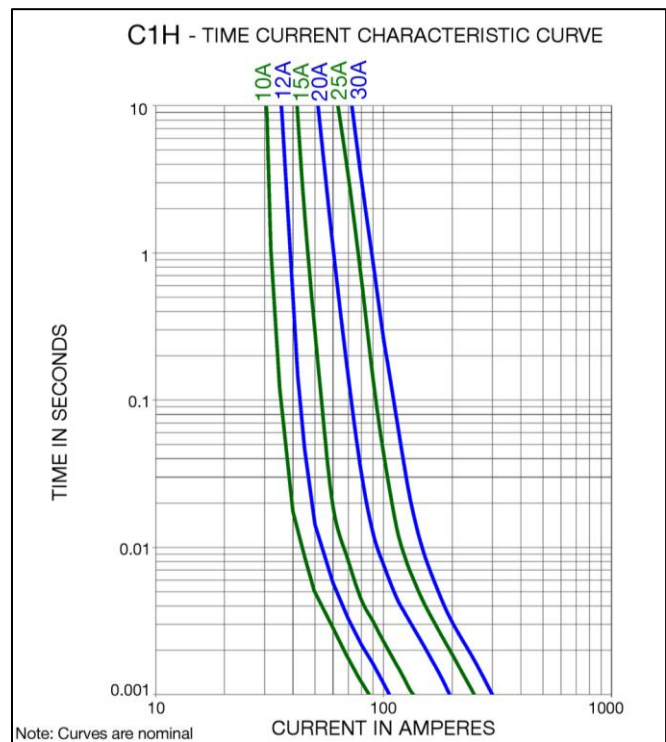
| | |
|-----------|---|
| Materials | Body : Ceramic Substrate |
| | Terminations : Ag / Ni / Sn (100% Lead-free) |
| | Element Cover Coating : Lead-free Glass |
| Marking | On Fuse : "Marking Code" in blue color |
| | On Label : "bel", "C1H", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and "  ", "  " (China RoHS compliant). |

Specifications subject to change without notice

Temperature Derating Curve



Average Time Current Curve



Electrical Specifications

| Part Number | Ampere Rating (A) | Marking Code | Nominal Cold Resistance (ohms) | Maximum Volt-drop @ 100% In (Volt) max. | Voltage and Interrupting Ratings | Nominal Melting I ² T @ 10 In (A ² Sec) | Maximum Power Dissipation @ 100% In (W) | Agency Approvals |
|--------------|-------------------|--------------|--------------------------------|---|---|---|---|------------------|
| | | | | | | | | |
| 0685H9100-XX | 10A | 10 | 0.0039 | 0.047 | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 5.9 | 0.47 | Y |
| 0685H9120-XX | 12A | 12 | 0.0032 | 0.047 | | 8.0 | 0.56 | Y |
| 0685H9150-XX | 15A | 15 | 0.0026 | 0.050 | | 13.5 | 0.75 | Y |
| 0685H9200-XX | 20A | 20 | 0.0019 | 0.052 | | 28.5 | 1.04 | Y |
| 0685H9250-XX | 25A | 25 | 0.0014 | 0.050 | | 53.4 | 1.25 | Y |
| 0685H9300-XX | 30A | 30 | 0.0011 | 0.053 | | 80.5 | 1.59 | Y |

Consult manufacturer for other ratings

NOTES: Test Conditions

All C1H test, as well as the UL Component investigation, were conducted with fuse samples soldered on a PCB (1.6mm thick) test board with copper traces measuring 0.1 mm (100µm) nominal thickness (3 oz.clad), 10mm wide and 100 mm overall length.

Device designed to be mounted with marking facing up.

Device designed to carry rated current for 4 hours minimum. It is recommended that device be operated continuously at no more than 80% of rated current when in a +25°C ambient, with further derating at elevated ambient temperatures.

Caution

Minimum fusing point

C1H Series fuses are NOT intended to be operated at currents between 100% and 350% of ampere rating. Prolonged operation at currents in this range may result in overheating of the fuse and/or desoldering of the fuse from the PCB pad.



Specifications subject to change without notice

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

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

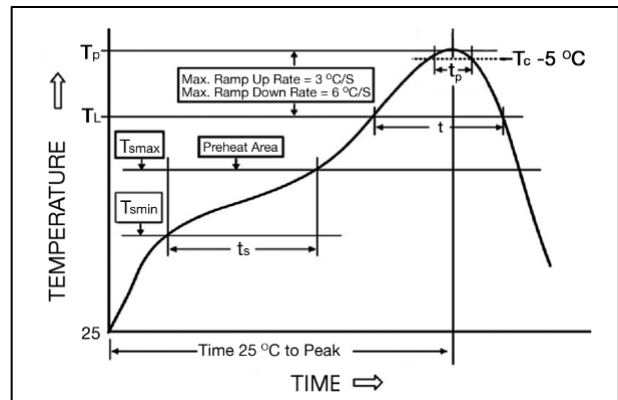
Environmental Specifications

| | |
|----------------------------|---|
| 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) 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) |

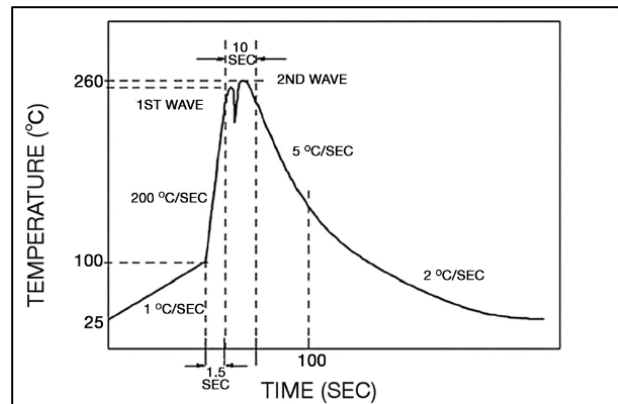
| | |
|------------------------------|---|
| High temperature storage | MIL-STD-202 Method 108 |
| Temperature cycling | JESD22 Method JA-104, Test Condition B |
| Biased humidity | MIL-STD-202 Method 103, 85C/85% RH with 10% operating power for 1000 hrs. |
| Operational life | MIL-STD-202 Method 108, Test Condition D |
| Resistance to solvents | MIL-STD-202 Method 215 |
| Mechanical shock | MIL-STD-202 Method 213, Test Condition C |
| Vibration | MIL-STD-202 Method 204 |
| Resistance to soldering heat | MIL-STD-202 Method 210, Test condition B |
| Thermal shock | MIL-STD-202 Method 107 |
| Solderability | J-STD-002 |
| Board flex(SMD) | AEC-Q200-005 |
| Terminal strength | AEC-Q200-006 |
| Electrical characterization | 3 temperature electrical |

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. |



| 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 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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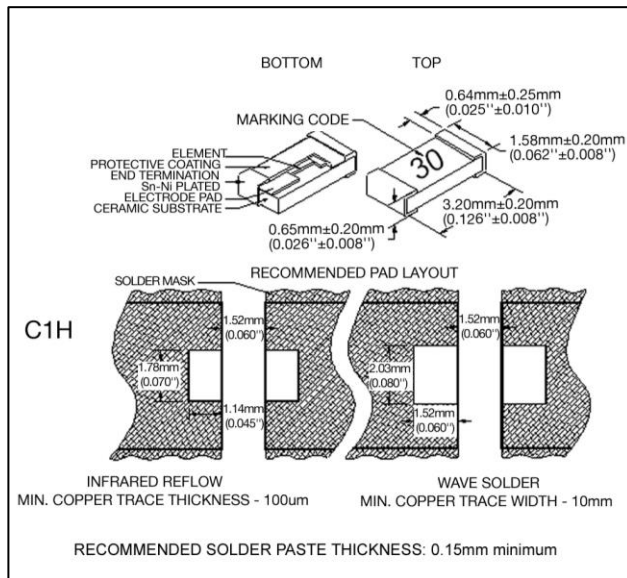
Fuse FGNO Explanation

0685 H [XXXX] -XX

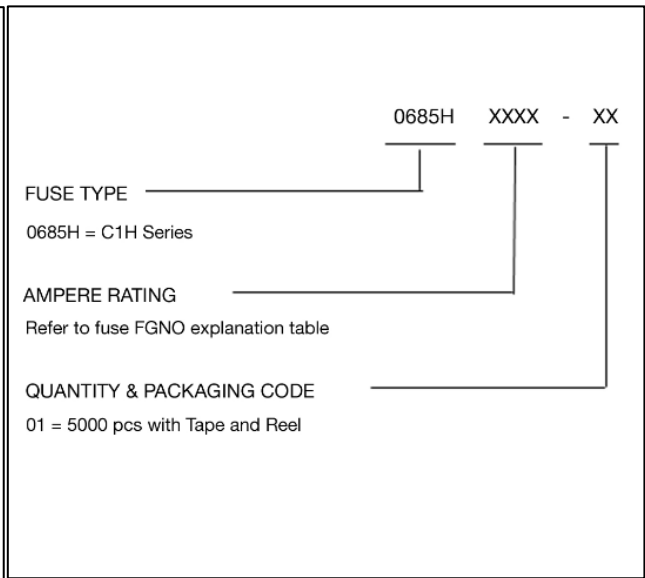
0685H=C1H; [XXXX]=Ampere Rating; XX=See Ordering Information as below

| Amps | Bel FGNO[XXXX] |
|------|----------------|
| 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 |
|--|-------------------------|----------|---------------------------|
| 8 mm wide tape with 7 inches Diameter reel | EIA Standard 481-E | 5000 | 0685HXXXX-01 |