

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

|                      |                                             |
|----------------------|---------------------------------------------|
| <b>Part Number:</b>  | 0683G1600-01                                |
| <b>Manufacturer:</b> | Bel Fuse Inc.                               |
| <b>Package:</b>      | Tape & Reel (TR), Cut Tape (CT), Digi-Reel® |
| <b>Availability:</b> | Please confirm with sales                   |

**Product Page:**

<https://antrexco.com/product/details/bel-fuse-inc/0683g1600-01.html>

**Request a Quote:**

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### Quality & Trust

New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

# Type 0683G

## Square Ceramic Surface Mount Slow Blow Fuse

**HF** 0683G Series - 4818 Size

RoHS Compliant

### Features

- Slow Blow, 4818 SMD
- Compatible with 260°C, IR Pb-free solder process
- 1.6A-30A 350VAC, 1.6A-30A 125VDC, Voltage Rating
- Wide range of current rating from 1.6A to 30A
- Wide operating temperature range -55°C to 125°C
- Tape & Reel for auto-insert SMD process
- RoHS compliant with exemption 7(a)  
Fully compliance with EU Directive 2011/65/EU and amending directive 2015/863
- Halogen Free
- Meets Bel automotive qualification\*
- \* - Largely based on internal AEC-Q test plan



**AEC-Q Compliant**

### Applications

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

HALOGEN FREE = **HF**

### Physical Specifications

|           |                                                                                                                                                                                                                                                                                                                          |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Materials | Body : Ceramic                                                                                                                                                                                                                                                                                                           |
|           | Terminations : Silver Plated Caps /Gold Plated Caps/Palladium Plated Caps                                                                                                                                                                                                                                                |
| Marking   | On Fuse :                                                                                                                                                                                                                                                                                                                |
|           | "Current Rating", "S", "G" – laser marked on ceramic tube<br>"bel" stamped in end caps.                                                                                                                                                                                                                                  |
|           | On Label :                                                                                                                                                                                                                                                                                                               |
|           | "bel", "0683G", "Current Rating", "Voltage Rating", "Interrupting Rating",<br>"Appropriate Safety Logos" and "  ", "  "(China RoHS compliant). |

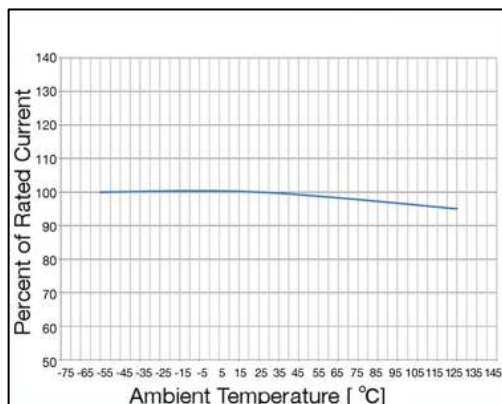
### Electrical Characteristics (Per IEC 60127-7) Safety Agency Approvals

| Testing Current | Blow Time |          |
|-----------------|-----------|----------|
|                 | Minimum   | Maximum  |
| 100%            | 4 hr.     | N/A      |
| 210%            | N/A       | 120 sec. |
| 1000%           | 0.01 sec  | 0.1 sec  |

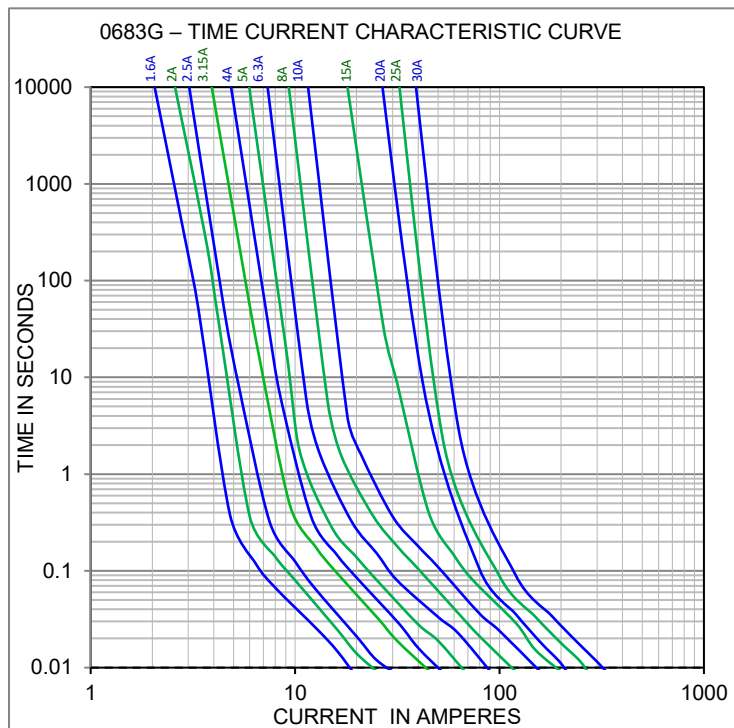
| Safety Agency                                                                       | Safety Agency Certificate                                                             | Ampere Rating/ Voltage Rating | Ampere Range / Volt @ I.R. ability*                                                                  |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------|
|  | E506667                                                                               | 1.6A-30A/350VAC               | 1.6A-30A/125V @2000A DC<br>1.6A-5A/250V @1500A AC<br>>5A-30A/250V @500A AC<br>1.6A-30A/350V @100A AC |
|  | R 50529162<br>Tested according to<br>EN 60127-1: 2006+A1+A2<br>EN 60127-4: 2005+A1+A2 | 1.6A/350VAC                   | 1.6A/250V @1500A AC<br>1.6A/350V @100A AC<br>1.6A/125V @2000A DC                                     |

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

## Temperature Derating Curve



## Average Time Current Curve



## Electrical Specifications

| Part Number  | Ampere Rating | Typical Cold Resistance (ohms) | Volt-drop @100%In (Volt) max. | Voltage and Interrupting Ratings                                                        | Nominal Melting I <sup>2</sup> T @10 In (A <sup>2</sup> Sec) | Maximum Power Dissipation (W) | Agency Approvals |   |
|--------------|---------------|--------------------------------|-------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------|------------------|---|
| 0683G1600-01 | 1.6A          | 0.065                          | 0.18                          | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 3.6                                                          | 0.29                          |                  |   |
| 0683G1600-11 |               |                                |                               |                                                                                         |                                                              |                               |                  |   |
| 0683G1600-21 |               |                                |                               |                                                                                         |                                                              |                               |                  |   |
| 0683G2000-X1 | 2A            | 0.049                          | 0.17                          |                                                                                         | 5.6                                                          | 0.34                          | Y                | Y |
| 0683G2500-X1 | 2.5A          | 0.038                          | 0.17                          |                                                                                         | 7.5                                                          | 0.43                          | Y                |   |
| 0683G3150-X1 | 3.15A         | 0.028                          | 0.16                          |                                                                                         | 16.9                                                         | 0.50                          | Y                |   |
| 0683G4000-X1 | 4A            | 0.023                          | 0.16                          |                                                                                         | 25                                                           | 0.64                          | Y                |   |
| 0683G5000-X1 | 5A            | 0.017                          | 0.16                          |                                                                                         | 47                                                           | 0.80                          | Y                |   |
| 0683G6300-X1 | 6.3A          | 0.013                          | 0.16                          |                                                                                         | 67                                                           | 1.0                           | Y                |   |
| 0683G8000-X1 | 8A            | 0.010                          | 0.16                          |                                                                                         | 122                                                          | 1.3                           | Y                |   |
| 0683G9100-X1 | 10A           | 0.0079                         | 0.15                          |                                                                                         | 210                                                          | 1.5                           | Y                |   |
| 0683G9150-X1 | 15A           | 0.0035                         | 0.10                          |                                                                                         | 270                                                          | 1.5                           | Y                |   |
| 0683G9200-X1 | 20A           | 0.0028                         | 0.10                          |                                                                                         | 410                                                          | 2.0                           | Y                |   |
| 0683G9250-X1 | 25A           | 0.0023                         | 0.10                          |                                                                                         | 700                                                          | 2.5                           | Y                |   |
| 0683G9300-X1 | 30A           | 0.0019                         | 0.10                          |                                                                                         | 1000                                                         | 3.0                           | Y                |   |

Consult manufacturer for other ratings

### 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. Recommended solder paste thickness is 0.15mm.

### 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.

| Fuse rating | Test Board Trace Dimensions |
|-------------|-----------------------------|
| 1.6A-5A     | 1 oz. copper, 5.0mm wide.   |
| >5A-10A     | 2 oz. copper, 7.5mm wide.   |
| >10A-30A    | 3 oz. copper, 15mm wide.    |

### Caution

- Minimum fusing point:

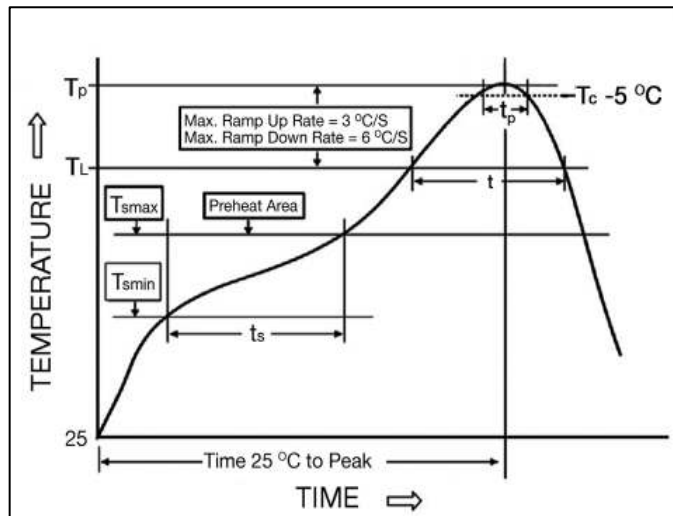
The 0683G Series fuse are NOT intended to be operated at currents between 100% and 210% of ampere rating. Prolonged operation at currents in this range may result in overheating of the fuse and/or desoldering of the fuse caps from the PCB pad.

## Environmental Specifications

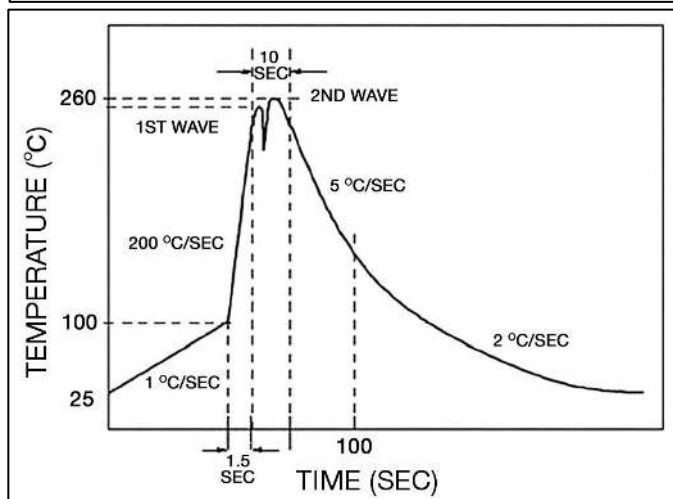
|                            |                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------|
| Shock Resistance           | MIL-STD-202G, 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) 10,000 ohms minimum.                  |
| Solderability              | J-STD-002 Test B                                                                                 |
| Resistance to solder Heat  | MIL-STD-202G, Method 210, Test Condition B                                                       |
| 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)                                                                   |

## Soldering Parameters

| IR Reflow Profile (IPC/JEDEC J-STD-020D)                                        |                   |
|---------------------------------------------------------------------------------|-------------------|
| <b>Preheat &amp; Soak</b>                                                       |                   |
| 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<br>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.                            |



# Type 0683G

4 / 4

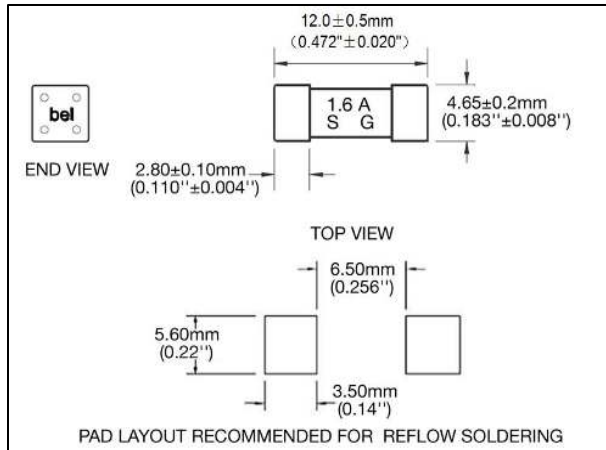
## Fuse FGNO Explanation

0683G [XXXX] -X1

0683G=0683G Series; [XXXX]=Ampere Rating; XX=See Ordering Information as below

| Fraction | Decimal | Amps | Bel FGNO[XXXX] |
|----------|---------|------|----------------|
|          | 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      | 10   | 9100           |
|          | 15      | 15   | 9150           |
|          | 20      | 20   | 9200           |
|          | 25      | 25   | 9250           |
|          | 30      | 30   | 9300           |

## Mechanical Dimensions



## Ordering Information

0683G XXXX - X X

FUSE TYPE \_\_\_\_\_  
0683G = 0683G

AMPERE RATING \_\_\_\_\_  
Refer to fuse FGNO explanation table

PLATING \_\_\_\_\_  
0 = Silver Plated Caps  
1 = Gold Plated Caps  
2 = Palladium Plated Caps

QUANTITY & PACKAGING CODE \_\_\_\_\_  
1 = 1500 pcs with Tape and Reel

## Packaging

| Packaging Tape & Reel                       | Packaging Specification | Quantity | Quantity & Packaging Code |
|---------------------------------------------|-------------------------|----------|---------------------------|
| 24mm wide tape with 13 inches Diameter reel | EIA Standard 481-E      | 1500     | 1                         |



Specifications subject to change without notice

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Rev.0683G July2026