

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

|                      |                                             |
|----------------------|---------------------------------------------|
| <b>Part Number:</b>  | 0680L7000-05                                |
| <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/0680L7000-05.html>

#### Request a Quote:

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### Contact Information

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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 0680L

## Square Ceramic Surface Mount Slow Blow Fuse

**HF** 0680L Series – 2410 Size

RoHS Compliant

### Features

- Slow Blow, 2410 SMD
- Compatible with 260°C, IR Pb-free solder process
- Wide range of current rating from 375mA to 12A
- 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
- LCD monitor
- PC computer
- Office electronic equipment
- Industrial equipment
- Medical equipment
- POE, POE+
- LCD / LED monitor
- Power supply
- LCD / LED TV
- Storage system
- Telecom system
- Wireless basestation
- White goods
- Game console
- Battery charging circuit protection



UK  
CA TÜV c UL US 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 |
| 300%            | 0.15 Sec  | 3 Sec   |
| 800%            | 0.01 Sec  | 0.1 Sec |

### Safety Agency Approvals

| Safety Agency                                                                       | Safety Agency Certificate                                          | Ampere Rating / Voltage Rating                          | Ampere Range / Volt @ I.R. ability*                                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------|
|  | E506667                                                            | 375mA-7A/125V AC<br>125V DC<br>>7A-12A/50V AC<br>75V DC | 375mA-7A/125V AC @50A<br>125V DC @100A<br>75V DC @500A<br>>7A-12A/50V AC @100A<br>75V DC @500A |
|  | 50448043<br>EN 60127-1:<br>2006+A1+A2<br>EN 60127-4:<br>2005+A1+A2 | 375mA-7A/125V AC<br>125V DC<br>>7A-12A/50V AC<br>75V DC | 375mA-7A/125V AC @50A<br>125V DC @100A<br>75V DC @500A<br>>7A-12A/50V AC @100A<br>75V DC @500A |

\*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", "T", "L"—laser marked on ceramic tube, "bel" stamped in end caps.                                                                                                                                                                                                                                   |
|           | On Label :                                                                                                                                                                                                                                                                                                            |
|           | "bel", "0680L", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and "  ", "  "(China RoHS compliant). |

Specifications subject to change without notice

## 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) | Volt-drop @100% In (Volt) max. | Voltage and Interrupting Ratings                                                        | Melting I <sup>2</sup> T @10 In (A <sup>2</sup> Sec) | Melting I <sup>2</sup> T <10ms (A <sup>2</sup> Sec) | Maximum Power Dissipation (W) | Agency Approvals                                                                    |                                                                                     |
|--------------|---------------|--------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|              |               |                                |                                |                                                                                         |                                                      |                                                     |                               |  |  |
| 0680L0375-XX | 375mA         | 0.93                           | 1.20                           | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.14                                                 | 0.10                                                | 0.45                          | Y                                                                                   | Y                                                                                   |
| 0680L0500-XX | 500mA         | 0.58                           | 0.90                           |                                                                                         | 0.27                                                 | 0.35                                                | 0.45                          | Y                                                                                   | Y                                                                                   |
| 0680L0630-XX | 630mA         | 0.41                           | 0.80                           |                                                                                         | 0.43                                                 | 0.42                                                | 0.50                          | Y                                                                                   | Y                                                                                   |
| 0680L0750-XX | 750mA         | 0.33                           | 0.75                           |                                                                                         | 0.62                                                 | 0.61                                                | 0.56                          | Y                                                                                   | Y                                                                                   |
| 0680L1000-XX | 1A            | 0.175                          | 0.60                           |                                                                                         | 1.5                                                  | 1.3                                                 | 0.60                          | Y                                                                                   | Y                                                                                   |
| 0680L1500-XX | 1.5A          | 0.095                          | 0.40                           |                                                                                         | 3.3                                                  | 3.2                                                 | 0.60                          | Y                                                                                   | Y                                                                                   |
| 0680L2000-XX | 2A            | 0.068                          | 0.35                           |                                                                                         | 6                                                    | 5                                                   | 0.70                          | Y                                                                                   | Y                                                                                   |
| 0680L2500-XX | 2.5A          | 0.048                          | 0.34                           |                                                                                         | 9                                                    | 7                                                   | 0.85                          | Y                                                                                   | Y                                                                                   |
| 0680L3000-XX | 3A            | 0.037                          | 0.27                           |                                                                                         | 13                                                   | 12                                                  | 0.81                          | Y                                                                                   | Y                                                                                   |
| 0680L3500-XX | 3.5A          | 0.030                          | 0.26                           |                                                                                         | 18                                                   | 17                                                  | 0.91                          | Y                                                                                   | Y                                                                                   |
| 0680L4000-XX | 4A            | 0.026                          | 0.25                           |                                                                                         | 24                                                   | 22                                                  | 1.00                          | Y                                                                                   | Y                                                                                   |
| 0680L5000-XX | 5A            | 0.019                          | 0.23                           |                                                                                         | 37                                                   | 36                                                  | 1.15                          | Y                                                                                   | Y                                                                                   |
| 0680L6300-XX | 6.3A          | 0.015                          | 0.22                           |                                                                                         | 43                                                   | 50                                                  | 1.39                          | Y                                                                                   | Y                                                                                   |
| 0680L7000-XX | 7A            | 0.012                          | 0.21                           |                                                                                         | 68                                                   | 77                                                  | 1.47                          | Y                                                                                   | Y                                                                                   |
| 0680L8000-XX | 8A            | 0.0099                         | 0.20                           |                                                                                         | 108                                                  | 105                                                 | 1.60                          | Y                                                                                   | Y                                                                                   |
| 0680L9100-XX | 10A           | 0.0084                         | 0.19                           |                                                                                         | 170                                                  | 150                                                 | 1.90                          | Y                                                                                   | Y                                                                                   |
| 0680L9120-XX | 12A           | 0.0063                         | 0.18                           |                                                                                         | 244                                                  | 180                                                 | 2.16                          | Y                                                                                   | 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.

| Fuse rating | Test Board Trace Dimensions |
|-------------|-----------------------------|
| 375mA-5A    | 1 oz. copper, 5mm wide.     |
| 6A-12A      | 3 oz. copper, 10mm wide.    |

### 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.



Specifications subject to change without notice

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## Temperature Derating Curve



## Average Time Current Curve



## 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.  |



## Fuse FGNO Explanation

0680 L [XXXX] -XX

**0680L=0680L; [XXX]=Ampere Rating; XX=See Ordering Information as below**

[illegible]

| 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           |

## 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                         |