

Type 0685P

Surface Mount Fast Acting Chip Fuse

HF  0685P Series – 1206 Size

RoHS 2 Compliant

Features

- Fast Acting, with improved surge withstand performance
- Small size, 1206 SMD
- Current rating from 2A to 50A, fuse marked with ampere code
- 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
- AEC-Q Compliant
- RoHS 2 compliant (MSL = 1)
- Halogen Free
- Lead Free
- Meets Bel automotive qualification*
- * - Largely based on internal AEC-Q test plan

Applications

- Automotive Navigation System
- Thin film transistor LCD flat-panel display screen
- Notebook
- PC computer
- Office electronic equipment
- Industrial equipment
- Medical equipment
- POE, POE+
- LCD / LED monitor
- Power supply
- LCD / LED TV
- DC-DC Converter

LEAD FREE = 
 HALOGEN FREE = 


AEC-Q Compliant

Typical Part Marking

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


Example:

| Current Rating | Marking Code | Current Rating | Marking Code |
|----------------|--------------|----------------|--------------|
| 2A | 2 | 10A | 10 |
| 2.5A | T | 12A | 12 |
| 3A | 3 | 15A | 15 |
| 3.5A | Z | 20A | 20 |
| 4A | 4 | 25A | 25 |
| 5A | 5 | 30A | 30 |
| 6A | 6 | 40A | 40 |
| 7A | 7 | 50A | 50 |
| 8A | 8 | | |

Electrical Characteristics (UL STD. 248-14)



| Amp Rating | Testing Current | Blow Time | |
|------------|-----------------|-----------|---------|
| | | Minimum | Maximum |
| 2A-50A | 100% | 4 Hrs. | N/A |
| 2A-8A | 250% | N/A | 5 Sec |
| 10A-50A | 350% | N/A | 5 Sec |

Safety Agency Approvals

| Safety Agency | Safety Agency Certificate | Voltage Rating (V) | Ampere Range / Volt @ I.R. ability* |
|---|---------------------------|--|---|
|  | E20624 | 2A-8A/50V AC /63V DC >8A-30A/50V DC >30A-50A/32V DC | 2A-8A/50A@50VAC /100A@63V DC >8A-25A/150A@50V DC >25A-30A/250A @50V DC >30A-50A/200A@32V DC |

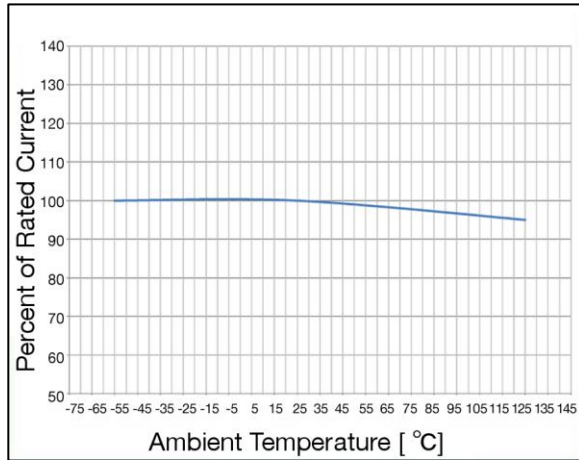
*I.R.= Interrupting Rating = Short Circuit Rating(Amps)

Physical Specifications

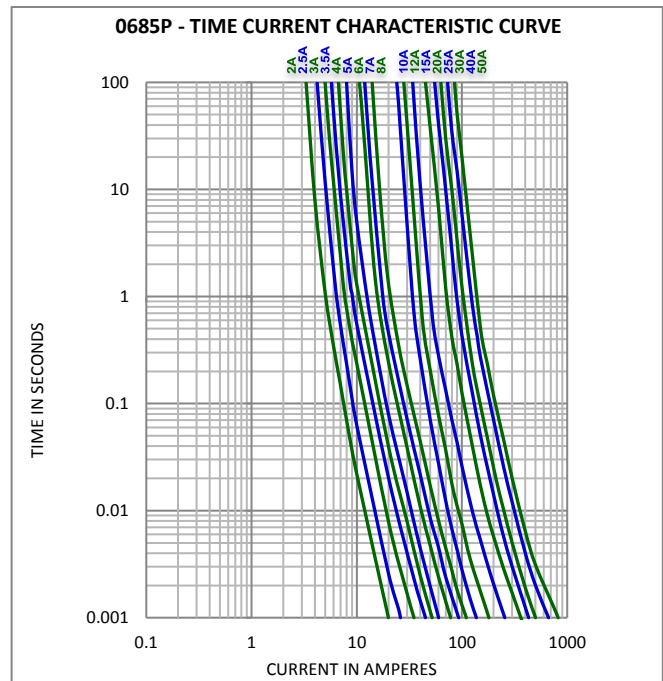
| | |
|-----------|--|
| Materials | Body : Ceramic Substrate |
| | Terminations : Ag / Ni / Sn (100% Lead-free) |
| | Element Cover Coating : Lead-free Glass |
| Marking | On Fuse : |
| | Marking Code |
| | On Label : |
| | "bel", "0685P", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate 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 (mohms) | 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 |
|--------------|-------------------|--------------|---------------------------------|--|---|---|--|------------------|
| | | | | | | | | |
| 0685P2000-01 | 2 | 2 | 131.0 | 0.370 | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.2 | 0.74 | Y |
| 0685P2500-01 | 2.5 | T | 88.0 | 0.305 | | 0.6 | 0.76 | Y |
| 0685P3000-01 | 3 | 3 | 65.0 | 0.270 | | 1.3 | 0.81 | Y |
| 0685P3500-01 | 3.5 | Z | 51.0 | 0.240 | | 2.6 | 0.84 | Y |
| 0685P4000-01 | 4 | 4 | 39.0 | 0.210 | | 4.0 | 0.84 | Y |
| 0685P5000-01 | 5 | 5 | 27.0 | 0.205 | | 4.1 | 1.03 | Y |
| 0685P6000-01 | 6 | 6 | 20.0 | 0.166 | | 8.0 | 1.00 | Y |
| 0685P7000-01 | 7 | 7 | 16.0 | 0.159 | | 12.5 | 1.11 | Y |
| 0685P8000-01 | 8 | 8 | 11.5 | 0.128 | | 19 | 1.02 | Y |
| 0685P9100-01 | 10 | 10 | 5.2 | 0.065 | | 28 | 0.65 | Y |
| 0685P9120-01 | 12 | 12 | 4.0 | 0.065 | | 48 | 0.78 | Y |
| 0685P9150-01 | 15 | 15 | 2.9 | 0.065 | | 110 | 0.98 | Y |
| 0685P9200-01 | 20 | 20 | 1.6 | 0.050 | | 200 | 1.00 | Y |
| 0685P9250-01 | 25 | 25 | 1.3 | 0.050 | | 320 | 1.25 | Y |
| 0685P9300-01 | 30 | 30 | 1.0 | 0.050 | | 450 | 1.50 | Y |
| 0685P9400-01 | 40 | 40 | 0.7 | 0.054 | | 680 | 2.16 | Y |
| 0685P9500-01 | 50 | 50 | 0.55 | 0.072 | | 750 | 3.60 | Y |

Consult manufacturer for other ratings

NOTES: Test Conditions

All test were conducted with the fuses soldered to a PCB with a nominal thickness of 1.6mm with copper traces measuring 100mm overall length. Copper trace/width as described below. 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.

| Fuse Rating | Test Board Trace Dimension |
|------------------|----------------------------|
| 2A – 5.0 A | 1 oz. copper, 5.0 mm wide |
| >5.0 A – 8.0 A | 2 oz. copper, 7.5 mm wide |
| >8.0 A – 30.0 A | 3 oz. copper, 10.0mm wide |
| >30.0 A – 40.0 A | 3 oz. copper, 15.0 mm wide |
| >40.0 A – 50.0 A | 3 oz. copper, 25.0 mm wide |



Specifications subject to change without notice

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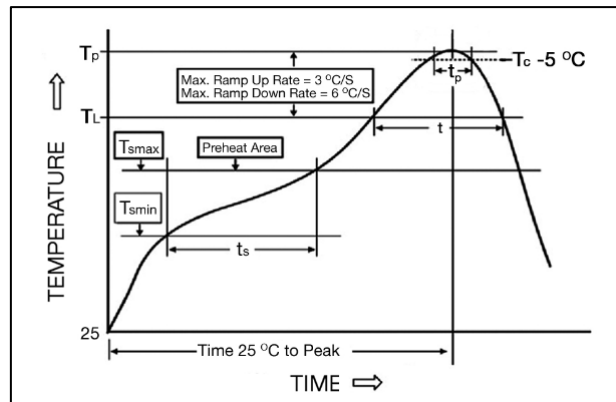
Environmental Specifications

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

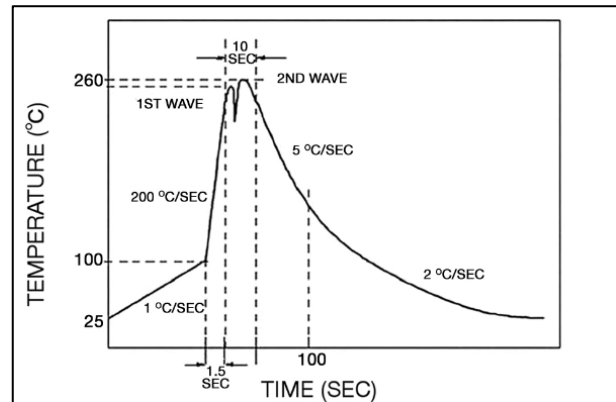
| | |
|------------------------------|---|
| High temperature storage | MIL-STD-202 Method 108 |
| Temperature cycling | JESD22 Method JA-104, Test Condition B |
| Biased humidity | MIL-STD-202 Method 103, 85C/85% RH with 10% operating power for 1000 hrs. |
| Operational life | MIL-STD-202 Method 108, 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

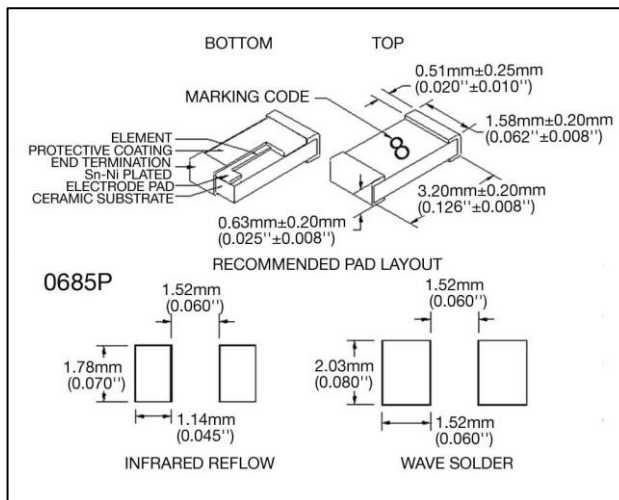
0685 P [XXXX] -XX

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

| Amps | Bel FGNO[XXXX] |
|------|----------------|
| 2 | 2000 |
| 2.5 | 2500 |
| 3 | 3000 |
| 3.5 | 3500 |
| 4 | 4000 |
| 5 | 5000 |
| 6 | 6000 |
| 7 | 7000 |
| 8 | 8000 |

| Amps | Bel FGNO[XXXX] |
|------|----------------|
| 10 | 9100 |
| 12 | 9120 |
| 15 | 9150 |
| 20 | 9200 |
| 25 | 9250 |
| 30 | 9300 |
| 40 | 9400 |
| 50 | 9500 |

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 | 0685PXXXX-01 |

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
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- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
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- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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