# CB61F

## Fast-acting surface mount Brick™ fuses


### Product features

- Fast-acting
- 2410 (6125 metric) compact footprint
- Designed to UL 248
- High interrupting ratings
- Current ratings from 2 A to 40 A
- Reflow and wave solder compatible
- Wire-in-air design
- Moisture sensitivity level (MSL): 1

### Environmental compliance

RoHS HALOGEN HF FREE Pb

### Applications

Primary circuit protection

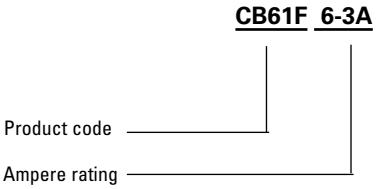
- Power supplies
- Servers
- Medical equipment
- White goods
- Battery chargers
- Consumer electronics
- Test equipment
- Battery pack protection

### Agency information

- UL Listed cULus: File E19180, Guide JDYX (2 A - 15 A)
- UL Recognized cURus: File E19180, Guide JDYX2 (20 A - 40 A)
- CQC: CQC09012040316 (2 A - 6.3 A & 8 A - 10 A)

### Ordering code

The ordering code is the part number replacing the "" with a "-" plus adding the packaging suffix.




### Packaging suffix

- **-TR1** 1000 fuses on a 7" diameter tape and reel
- **-TR2** 5000 fuses on a 13" diameter tape and reel (2 A to 15 A only)

Powering Business Worldwide

## Electrical characteristics

| Amp Rating | % of Amp Rating | Opening Time |
|---|---|---|
| 2 A – 40 A | 100% | 4 hours minimum |
| 2 A – 15 A | 200% | 5 seconds maximum |
| 20 A – 40 A | 200% | 60 seconds maximum |

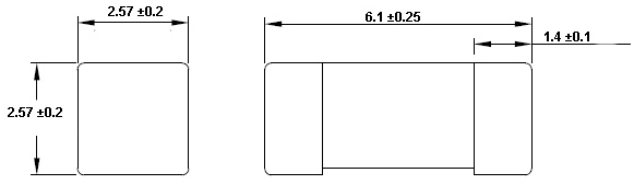
## Product specifications

| Part Number | Current rating (A) | Voltage rating (Vac) | Voltage rating (Vdc) | Interrupting rating[1,2] (A) @ rated voltage (Vac) | (Vdc) | Typical DC cold resistance[3] (mΩ) | Typical melting[4] $I^2t$ ($A^2s$) | Typical voltage drop[5] (mV) | Part marking | Agency approval cULus | cURus | CQC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CB61F2A | 2.0 | 125 | 125 | 100 | 300 | 39 | 0.85 | 100 | 2 | x | | x |
| CB61F3A | 3.0 | 125 | 125 | 100 | 300 | 25 | 2.08 | 100 | 3 | x | | x |
| CB61F4A | 4.0 | 125 | 125 | 100 | 300 | 17 | 4.4 | 93 | 4 | x | | x |
| CB61F5A | 5.0 | 125 | 125 | 100 | 300 | 13 | 7.7 | 90 | 5 | x | | x |
| CB61F6.3A | 6.3 | 125 | 125 | 100 | 300 | 10 | 13.7 | 90 | 6.3 | x | | x |
| CB61F7A | 7.0 | 125 | 125 | 100 | 300 | 9 | 15.6 | 85 | 7 | x | | |
| CB61F8A | 8.0 | 125 | 125 | 100 | 300 | 8 | 19.5 | 90 | 8 | x | | x |
| CB61F10A | 10 | 125 | 125 | 100 | 300 | 6 | 36 | 90 | 10 | x | | x |
| CB61F12A | 12 | 125 | 125 | 50 | 200 | 5 | 40 | 90 | 12 | x | | |
| CB61F15A | 15 | 125 | 125 | 50 | 200 | 4 | 56 | 85 | 15 | x | | |
| CB61F20A | 20 | - | 72 | - | 500 | 2.3 | 210 | 60 | 20 | | x | |
| CB61F25A | 25 | - | 72 | - | 500 | 1.7 | 400 | 55 | 25 | | x | |
| CB61F30A | 30 | - | 72 | - | 500 | 1.2 | 900 | 50 | 30 | | x | |
| CB61F40A | 40 | - | 63 | - | 500 | 0.9 | 1600 | 50 | 40 | | x | |

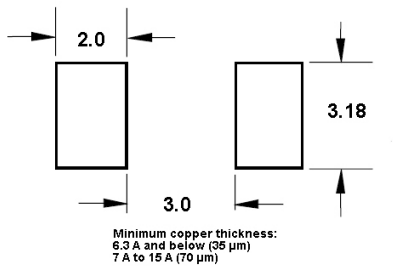
1. AC Interrupting rating: Measured at rated voltage, 100% power factor
2. DC Interrupting rating: Measured at rated voltage, time constant of less than 50 microseconds, battery source
3. Typical DC cold resistance: Measured at 10% of rated current
4. Typical Pre-arcing $I^2t$ are measured at 10In Current
5. Typical voltage drop: Measured at rated current after temperature stabilizes

## Dimensions–mm

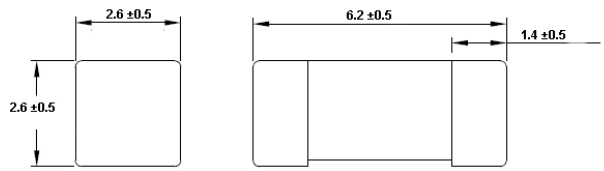
### 2 A to 15 A



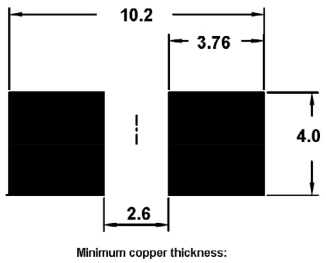

### Recommended pad layout




### 20 A to 40 A

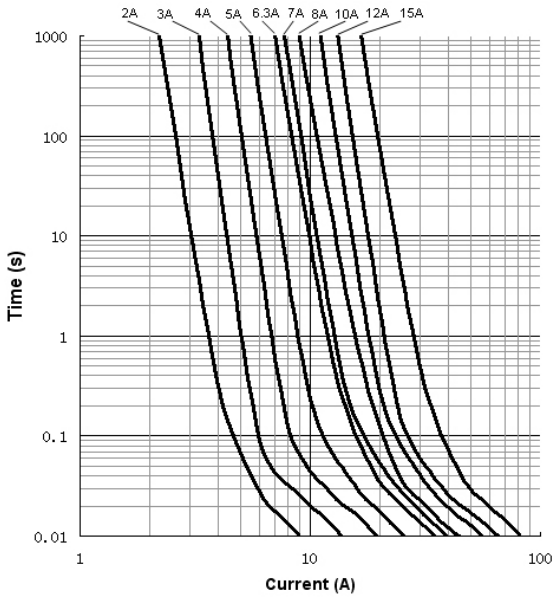



### Recommended pad layout

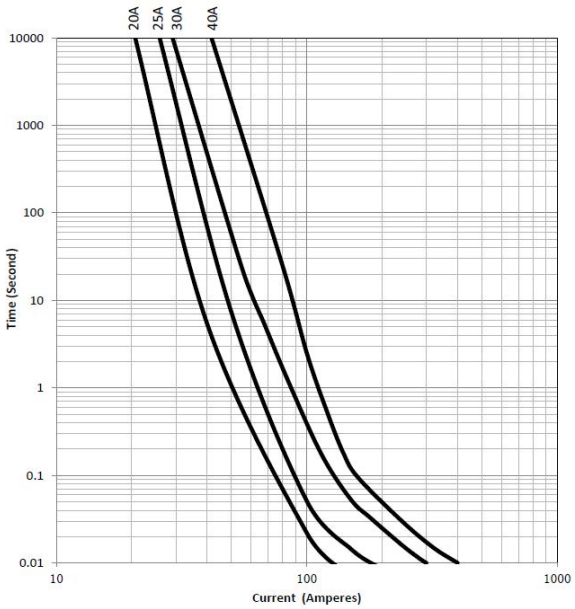


## Time current curve

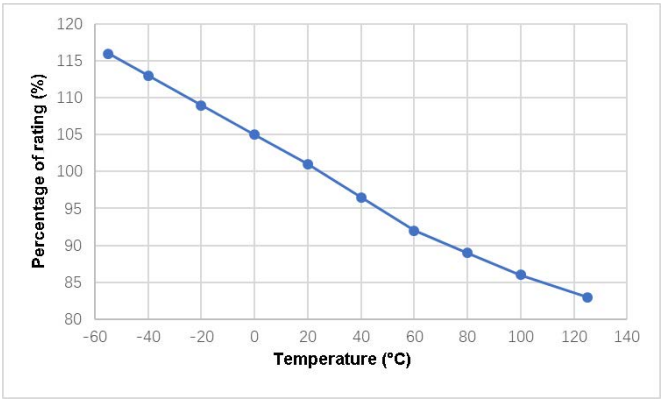
### 2 A to 15 A




### 20 A to 40 A



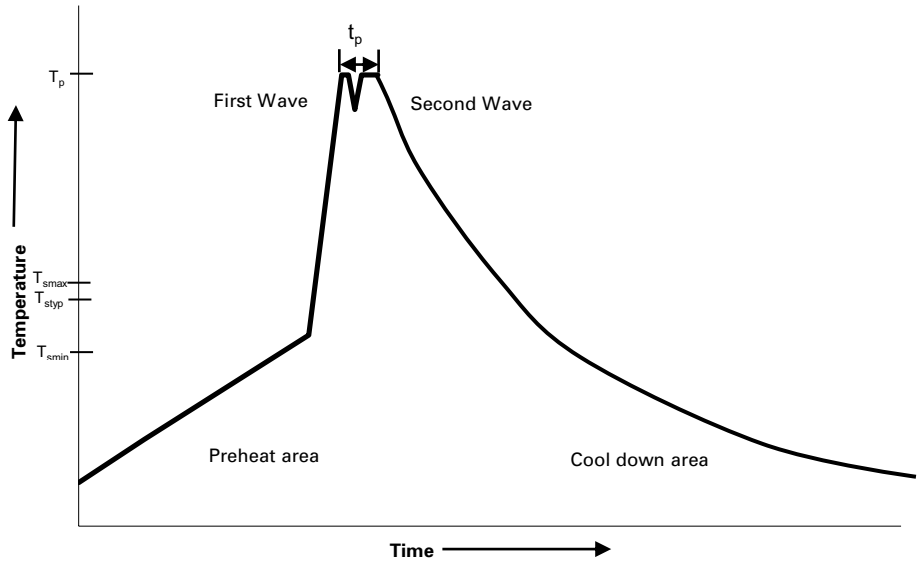

## Temperature derating curve




## General specifications

| |
|---|
| Operating temperature: -55 °C to +125 °C (with derating) |
| Storage temperature: -55 °C to +125 °C |
| Thermal shock: 2 A to 15 A - MIL-STD-202, Method 107G, -65 °C/+125 °C, number of cycles :10<br>20 A to 40 A - MIL-STD-202, Method 107G -55 °C/+125 °C, number of cycles: 100 |
| Bias humidity: 2 A to 15 A - MIL-STD-202, Method 103 +85 °C/85%RH. ,100 hours<br>20 A to 40 A - MIL-STD-202, Method 103 +85 °C/85%RH. ,1000 hours |
| Mechanical shock: 2 A to 40 A - MIL-STD-202G, Method 213B, Test condition C, 100 g's peak for 6 ms; Half-sine waveform |
| Mechanical vibration: 2 A to 15 A - MIL-STD-202G, Method 201, Test condition A (10 - 55 Hz, 0.06 inch, 2 hours each of 3 mutually perpendicular direction, total 6 hours), high Freguency: 20 g's for 20 min., 12 cycles each of 3orientations. ,10 - 2000 Hz.10 to 55 Hz, 0.06 inch, total excursion<br>20 A to 40 A - MIL-STD-202G, Method 201, 2 hours each of 3 orientations. Test from 10 -5 5 Hz in 1 minute |
| Resistance to solder heat: 2 A to 40 A - MIL-STD-202G, Method 210F , condition D (+260 °C, 10s) |

### Wave solder profile




### Reference EN 61760-1:2006

| Profile feature | | Standard SnPb solder | Lead (Pb) free solder |
|---|---|---|---|
| Preheat | • Temperature min. ($T_{smin}$) | 100 °C | 100 °C |
| | • Temperature typ. ($T_{styp}$) | 120 °C | 120 °C |
| | • Temperature max. ($T_{smax}$) | 130 °C | 130 °C |
| | • Time ($T_{smin}$ to $T_{smax}$) ($t_s$) | 70 seconds | 70 seconds |
| $\Delta$ preheat to max Temperature | | 150 °C max. | 150 °C max. |
| Peak temperature ($T_P$)* | | 235 °C – 260 °C | 250 °C – 260 °C |
| Time at peak temperature ($t_p$) | | 10 seconds max<br>5 seconds max each wave | 10 seconds max<br>5 seconds max each wave |
| Ramp-down rate | | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max |
| Time 25 °C to 25 °C | | 4 minutes | 4 minutes |

### Manual solder

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended

## Solder reflow profile

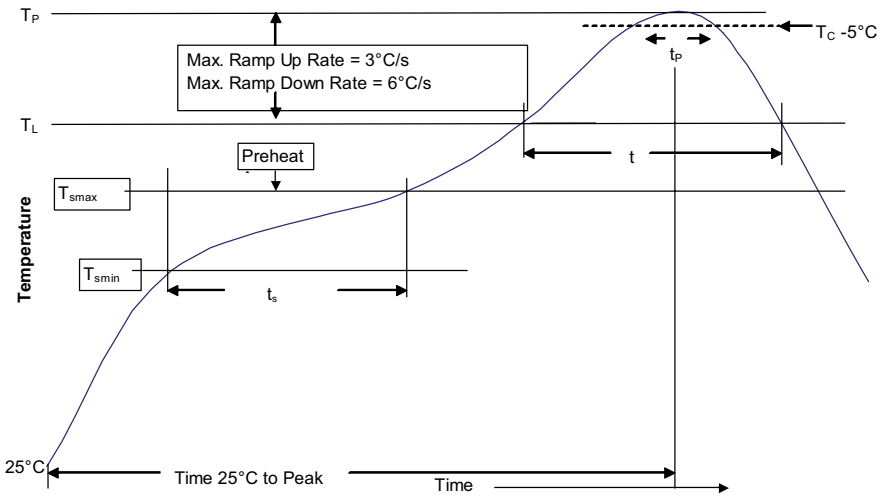



**Table 1 - Standard SnPb solder ($T_C$)**

| Package thickness | Volume mm3 <350 | Volume mm3 ≥350 |
|---|---|---|
| <2.5 mm) | 235 °C | 220 °C |
| ≥2.5 mm | 220 °C | 220 °C |

**Table 2 - Lead (Pb) free solder ($T_C$)**

| Package thickness | Volume mm³ <350 | Volume mm³ 350 - 2000 | Volume mm³ >2000 |
|---|---|---|---|
| <1.6 mm | 260 °C | 260 °C | 260 °C |
| 1.6 – 2.5 mm | 260 °C | 250 °C | 245 °C |
| >2.5 mm | 250 °C | 245 °C | 245 °C |

## Reference J-STD-020

| Profile feature | | Standard SnPb solder | Lead (Pb) free solder |
|---|---|---|---|
| Preheat and soak | • Temperature min. ($T_{smin}$) | 100 °C | 150 °C |
| | • Temperature max. ($T_{smax}$) | 150 °C | 200 °C |
| | • Time ($T_{smin}$ to $T_{smax}$) ($t_s$) | 60-120 seconds | 60-120 seconds |
| Ramp up rate $T_L$ to $T_p$ | | 3 °C/ second max. | 3 °C/ second max. |
| Liquidous temperature ($T_L$)<br>Time ($t_L$) maintained above $T_L$ | | 183 °C<br>60-150 seconds | 217 °C<br>60-150 seconds |
| Peak package body temperature ($T_P$)* | | Table 1 | Table 2 |
| Time ($t_p$)* within 5 °C of the specified classification temperature ($T_C$) | | 20 seconds* | 30 seconds* |
| Ramp-down rate ($T_p$ to $T_L$) | | 6 °C/ second max. | 6 °C/ second max. |
| Time 25 °C to peak temperature | | 6 minutes max. | 8 minutes max. |

* Tolerance for peak profile temperature ($T_p$) is defined as a supplier minimum and a user maximum.



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