Effective December 2020 Supersedes July 2020

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



Applications

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

Agency information

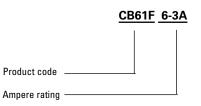
- UL Listed cULus: File E19180, Guide JDYX (2 A 15 A)
- UL Recognized cURus: File E19180, Guide JDYX2 (20 A - 40 A)
- PSE: JET1641-31007-1010 (2 A 5 A), JET1641-31007-1012 (6.3 A - 10 A), JET1641-31007-1011 (12 A - 15 A)

BUSSMANN

• 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)



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

Current rating (A)	Voltage rating (Vac)	Voltage rating (Vdc)			Typical DC cold resistance ³ (mΩ)	Typical melting⁴ I²t (A²s)	Typical voltage drop⁵ (mV)	Part marking	Agency cULus	approval cURus	PSE	COC
2.0	125	125	100	300	39	0.85	100	2	х		Х	Х
3.0	125	125	100	300	25	2.08	100	3	х		Х	Х
4.0	125	125	100	300	17	4.4	93	4	х		Х	Х
5.0	125	125	100	300	13	7.7	90	5	х		Х	Х
6.3	125	125	100	300	10	13.7	90	6.3	х		Х	Х
7.0	125	125	100	300	9	15.6	85	7	х		Х	
8.0	125	125	100	300	8	19.5	90	8	х		Х	Х
10	125	125	100	300	6	36	90	10	х		Х	Х
12	125	125	50	200	5	40	90	12	х		Х	
15	125	125	50	200	4	56	85	15	х		Х	
20	-	72	-	500	2.3	210	60	20		х		
25	-	72	-	500	1.7	400	55	25		х		
30	-	72	-	500	1.2	900	50	30		х		
40	-	63	-	500	0.9	1600	50	40		х		
	rating 2.0 3.0 4.0 5.0 6.3 7.0 8.0 10 12 15 20 25 30	rating (A) rating (Vac) 2.0 125 3.0 125 4.0 125 5.0 125 6.3 125 7.0 125 8.0 125 10 125 12 125 12 125 12 125 12 125 12 125 12 125 15 125 20 - 25 - 30 -	rating (A) rating (Vac) rating (Vdc) 2.0 125 125 3.0 125 125 4.0 125 125 5.0 125 125 6.3 125 125 7.0 125 125 8.0 125 125 10 125 125 12 125 125 12 125 125 12 125 125 12 125 125 12 125 125 12 125 125 12 125 125 15 125 125 20 - 72 25 - 72 30 - 72	rating (A) rating (Vac) rating (Vdc) (A) @ rating (Vac) 2.0 125 125 100 3.0 125 125 100 4.0 125 125 100 5.0 125 125 100 6.3 125 125 100 7.0 125 125 100 7.0 125 125 100 8.0 125 125 100 10 125 125 100 110 125 125 100 12 125 125 50 12 125 125 50 12 125 125 50 20 - 72 - 25 - 72 - 30 - 72 -	rating (A)rating (Vac)(A)@ rated voltage (Vac)2.01251251003003.01251251003004.01251251003005.01251251003006.31251251003007.01251251003008.0125125100300101251251003001101251251003001251255020012612550200151251255020020-72-50030-72-500	Current ratingVoltage ratingVoltage ratingInterrupting rating1*2 (Vdc)cold resistance3 (mΩ)2.0125125100300393.0125125100300254.0125125100300175.0125125100300136.3125125100300107.012512510030098.012512510030081012512510030061212512510030041212512550200420-72-5001.730-72-5001.2	Current rating (Å)Voltage rating (Vac)Voltage (Vac)Interrupting rating '2 (Vac)cold resistance3Typical melting4 Pt (A2s)2.0125125100300390.853.0125125100300252.084.0125125100300174.45.0125125100300137.76.31251251003001013.77.0125125100300915.68.0125125100300819.5101251251003006361251251003006361251251003006361251251003006361012512550200540151251255020045620-72-5001.740025-72-5001.2900	Current ratingVoltage ratingVoltage ratingInterrupting rating'' (A)@ rated voltage (Vac)cold resistance3Typical melting' Pt (A2s)Typical voltage drop5 (mV)2.0125125100300390.851003.0125125100300252.081004.0125125100300174.4935.0125125100300137.7906.31251251003001013.7907.0125125100300915.6858.0125125100300819.5901012512510030063690111251251003006369012125125100300456858.01251251003006369012125125502005409015125125502004568520-72-5001.74005530-72-5001.290050	Current ratingVoltage ratingInterrupting rating (A) @ rated voltage (A) @ rated voltage (A) @ rated voltage (MC)rypical redistance3Typical welting t (A's)Typical voltage voltage totop' (MV)Part marking2.0125125100300390.8510023.0125125100300252.0810034.0125125100300174.49345.0125125100300137.79056.31251251003001013.7906.37.0125125100300915.68578.0125125100300636901012512510030063690121012512510030063690121251251003006369012121251255020054090121512512550200456851520-72-5001.7400552530-72-5001.29005030	Current ratingVoltage ratingInterrupting rating ^{1,2} (A) e ² cold resistance ³ Typical resistance ³ Typical reling ⁴ Typical voltage voltage voltage voltage voltage voltage voltage voltageAgency culus2.0125125100300390.851002x3.0125125100300252.081003xx4.0125125100300174.4934x5.0125125100300137.7905x6.31251251003001013.7906.3x7.0125125100300819.5908x101251251003006.3xx7.0125125100300819.5908x101251251003006369010x111251251003005409012x12125125502004568515x15125125502001.74005525120-72-5001.740050301	Current (A)Voltage vating (Vac)Interrupting rating '' (Vac)cold resistances'Typical melting' tr(A's)Typical voltage vdrop' (mV)ParkingAgency approval cULus2.0125125100300390.851002x3.0125125100300252.0810030x-4.0125125100300174.4934x-5.0125125100300137.7905.3x-6.31251251003001013.7906.3x-7.0125125100300819.5908x-7.01251251003006369010x-101251251003006369010x-101251251003006369010x-11125125502004568515x-1212512550202.32106020xx1212512550201.74005525xx13125125501.74005030xxx141512550<	Current (A)Voltage (Vac)hterrupting rating '2 (Vac)cold residencesTypical residencesTypical voltage drop' (nV)Part markingAgency approval cULusPSE2.0125125100300390.851002xx3.0125125100300252.081003xxx4.0125125100300174.4934xxx5.0125125100300137.7905.3xxx6.31251251003001013.7906.3xxx7.01251251003001013.7906.3xxx7.0125125100300915.6857xxx7.0125125100300915.6857xxx7.01251251003006369010xxx101251251003006369010xxx111251251003006369010xxx12125125502005409012xxx1512550202.

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

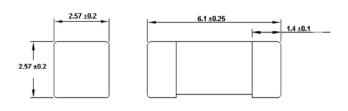
3. Typical DC cold resistance: Measured at 10% of rated current

4. Typical Pre-arcing I²t are measured at 10In Current

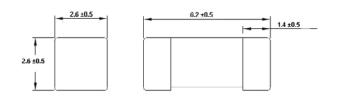
5. Typical voltage drop: Measured at rated current after temperature stabilizes

Dimensions-mm

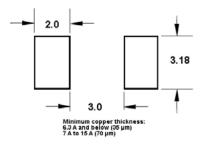
2 A to 15 A



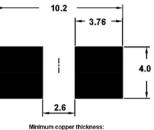
20 A to 40 A



Recommended pad layout



Recommended pad layout

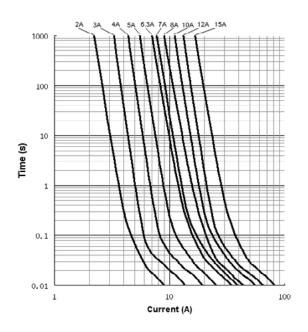


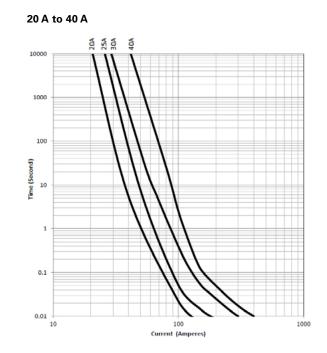
Minimum copper thickness: 20 A to 40 A (100 µm)

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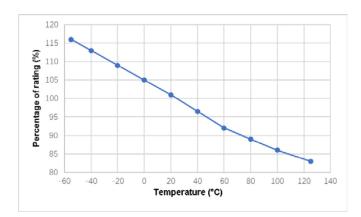
Time current curve

2 A to 15 A





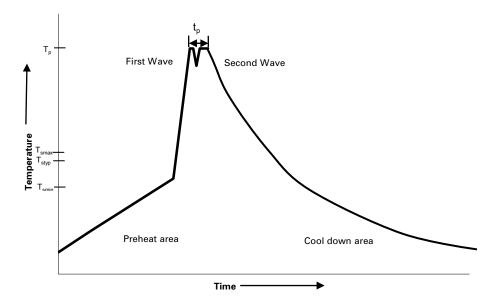
Temperature derating curve



General specifications

Operating temperatu	re: -55 °C to +125 °C (with derating)
Storage temperature	: -55 °C to +125 °C
Thermal shock: 2 A t 20 A	o 15 A - MIL-STD-202, Method 107G, -65 °C/+125 °C, number of cycles :10 to 40 A - MIL-STD-202, Method 107G -55 °C/+125 °C, number of cycles: 100
Bias humidity: 2 A to 20 A t	15 A - MIL-STD-202, Method 103 +85 °C/85%RH. ,100 hours o 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
	: 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 rs), 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 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	
Δ preheat to	max Temperature	150 °C max.	150 °C max.	
Peak temperat	ture (Tp)*	235 °C – 260 °C	250 °C – 260 °C	
Time at peak 1	temperature (t _p)	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave	
Ramp-down ra	ate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~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

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Solder reflow profile

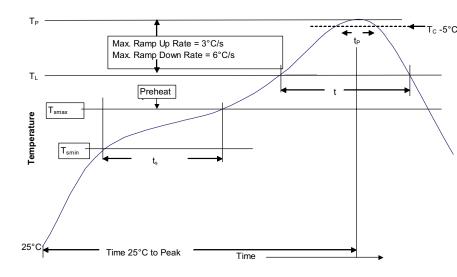


Table 1 - Standard SnPb solder (T_c)

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 mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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

Powering Business Worldwide

Profile feature	Standard SnPb solder	Lead (Pb) free solder 150 °C	
Preheat and soak • Temperature min. (T _{smin})	100 °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 (TL) Time (tL) maintained above $T_{\!L}$	183 °C 60-150 seconds	217 °C 60-150 seconds	
Peak package body temperature (Tp)*	Table 1	Table 2	
Time $(t_p)^*$ within 5 °C of the specified classification temperature (T_c)	20 seconds*	30 seconds*	
Ramp-down rate (Tp to TL)	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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