

# UL Class CF branch circuit time-delay CUBEFuse



### Catalog symbols

- TCF\_ (indicating fuse, 6-400 A)
- TCF\_RN (non-indicating fuse, 1-400 A)

### Description

The Bussmann™ series Low-Peak™ CUBEFuse™ is a UL® Class CF current-limiting, dual-element, time-delay branch circuit fuse with Class J electrical performance. Available in indicating and non-indicating versions, this finger-safe fuse has a very compact, space-saving size and is easily applied using the CUBEFuse holder (TCFH\_N), UL 98 Compact Circuit Protector switch (CCP2\_CF) or Compact Circuit Protector Base (CCP2B up to 100 A) used in the Quik-Spec™ Coordination Panelboard).

### Ratings

- Volts
  - 600 Vac
  - 300 Vdc
- Amps
  - 6-400 A (indicating)
  - 1-400 A (non-indicating)
- Interrupting rating
  - 300 kA RMS Sym. (Up to 100 A UL)
  - 200 kA RMS Sym. (110 to 400 A UL)
  - 200 kA RMS Sym. (Up to 100 A CSA)
  - 100 kA DC (Up to 400 A UL and up to 100 A CSA)

### Electrical characteristics

- 10 seconds minimum operating time at 500% rated current

### Agency information

- UL Listed Class CF fuse: Guide JDDZ, File E4273 (up to 400 A)
- CSA® Certified fuse: Class 1422-02, File 053787\_C\_000 (up to 100 A)
- CE (100 A and below)
- RoHS compliant

### Watts loss at rated current

Fuse amps	Watts
30	3.99
60	6.23
100	9.51
200	18.6
225	17.6
400	35.2

### Operating and storage temperature range

- -40 to 80°C (-40°F to 176°F)

Catalog numbers (amps)			
Indicating CUBEFuse			
TCF6	TCF35	TCF90	TCF225
TCF10	TCF40	TCF100	TCF250
TCF15	TCF45	TCF110	TCF300
TCF17-1/2	TCF50	TCF125	TCF350
TCF20	TCF60	TCF150	TCF400
TCF25	TCF70	TCF175	
TCF30	TCF80	TCF200	
Non-Indicating CUBEFuse			
TCF1RN	TCF25RN	TCF70RN	TCF175RN
TCF3RN	TCF30RN	TCF80RN	TCF200RN
TCF6RN	TCF35RN	TCF90RN	TCF225RN
TCF10RN	TCF40RN	TCF100RN	TCF250RN
TCF15RN	TCF45RN	TCF110RN	TCF300RN
TCF17-1/2RN	TCF50RN	TCF125RN	TCF350RN
TCF20RN	TCF60RN	TCF150RN	TCF400RN



Powering Business Worldwide

# Technical Data 9000

Effective March 2019

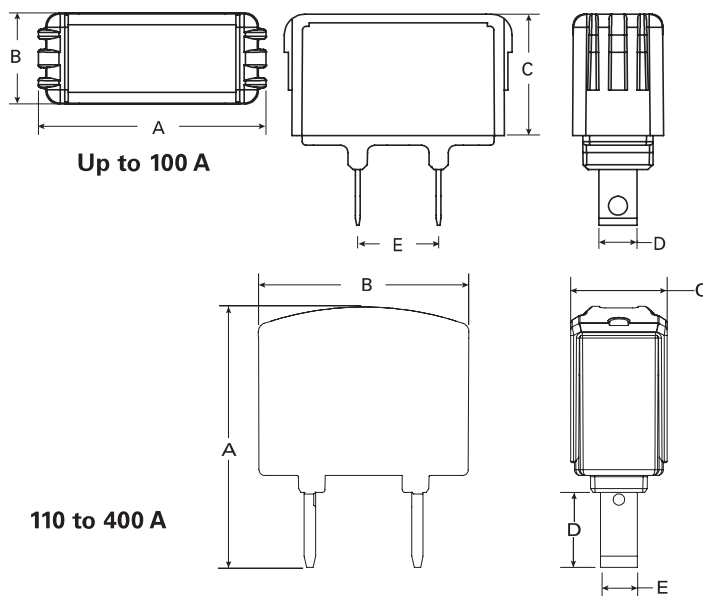
## Features

- Smallest installed footprint of any UL Class CC, J, or R fuse solution
- Easy application using CUBEFuse holders (TCFH\_N), UL 98 Compact Circuit Protector (CCP2) switches and Compact Circuit Protector Base (CCP2B up to 100 A). See data sheet 9007 for details on the CUBEFuse holder, 10801 for details on the CCP2\_C switch and 1161 for the CCP2B.
- Holders and switches have an amp rating rejection feature to help prevent overfusing; 30, 60 and 100 A switches and holders will hold any CUBEFuse up to its rating, 200 and 400 A switches and 200, 225 and 400 A holders will hold any CUBEFuse 110 A and above up to its rating
- UL Class CF with Class J time-delay electrical performance
- Available in indicating and non-indicating versions
- The indicating version features local *easyID™* open fuse technology for faster troubleshooting and reduced downtime
- Faster response to damaging faults helps reduce destructive thermal and magnetic forces
- True dual-element fuse construction with a minimum 10 seconds time-delay at 500% of rating
- Long time-delay minimizes nuisance openings caused by temporary overloads and transient surges
- Up to 300 kA interrupting rating safely interrupts virtually any fault
- Robust cycling and inrush current withstand
- Low let-through currents under fault conditions
- Provides Type 2 “No Damage” protection for IEC motor starters when properly sized
- Easy selective coordination with any other Bussmann series Low-Peak Class CC, J, L or RK1 fuse with simple 2:1 amp ratio between upstream and downstream fuses

\* Finger-safe status depends on final, installed application, and will require using accessory shrouds for 110 to 400 A ratings.

# UL Class CF branch circuit time-delay CUBEFuse

## Dimensions – in (mm)



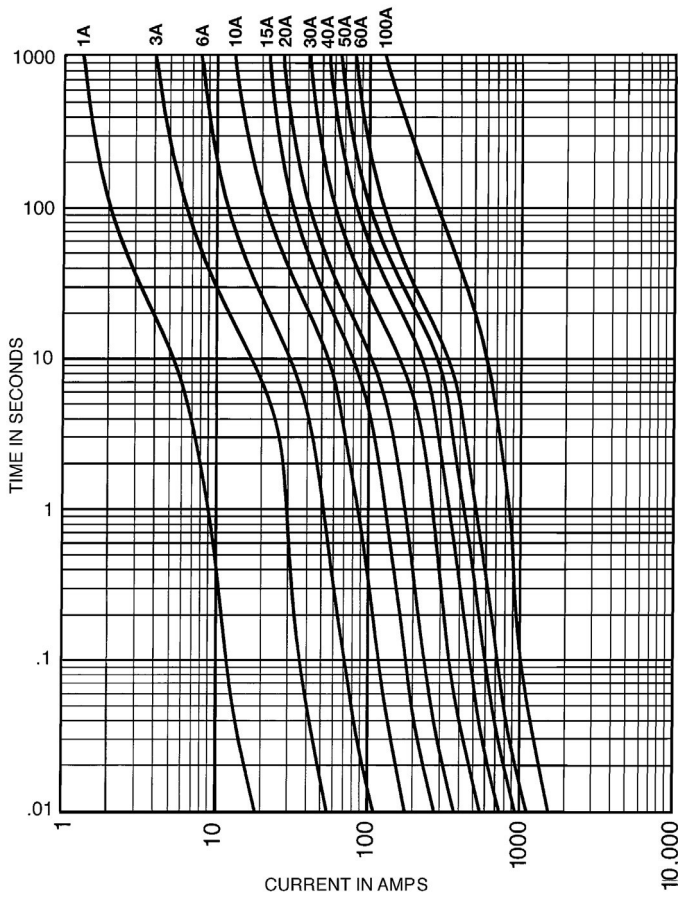
Fuse amps	A	B	C	D	E
1-15				0.23 (6)	
17-1/2	1.88 (48)	0.75 (19)	1.0 (25)	0.27 (7)	
20				0.31 (8)	0.67 (17)
25-30				0.36 (9)	
35-40				0.44 (11)	
45-50	2.13 (54)		1.13 (29)		
60		1.0 (25)			
70				0.49 (12)	
80-90	3.01 (76)		1.26 (32)		0.64 (16)
100				0.57 (14)	
110					0.51 (13)
125					0.51 (13)
150	3.62 (92)	2.9 (74)	1.34 (34)	1.02 (26)	0.51 (13)
175					0.57 (14.5)
200					0.57 (14.5)
225					0.63 (16)
250					0.73 (18.5)
300	4.25 (108)	3.46 (88)	1.69 (43)	1.47 (36)	0.79 (20)
350					0.86 (21.5)
400					0.86 (21.5)



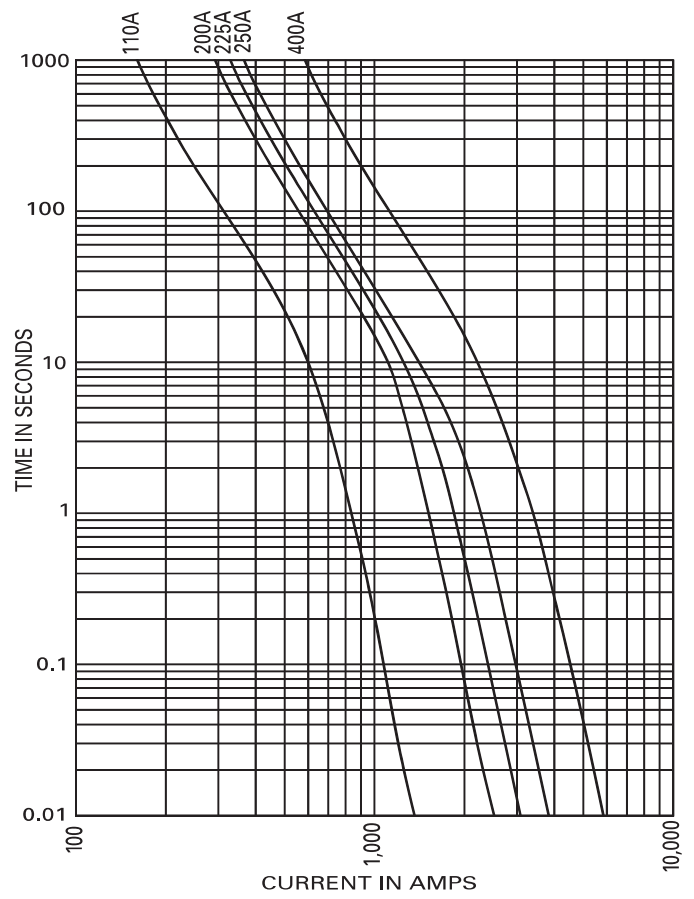
## Carton quantity and weight

Amp range	Carton qty.	Weight per carton lb (kg)
Up to 30	12	1.39 (0.63)
35-60	12	1.42 (0.64)
70-100	6	1.74 (0.79)
110 to 225	1	0.71 (0.32)
250 to 400	1	1.23 (0.56)

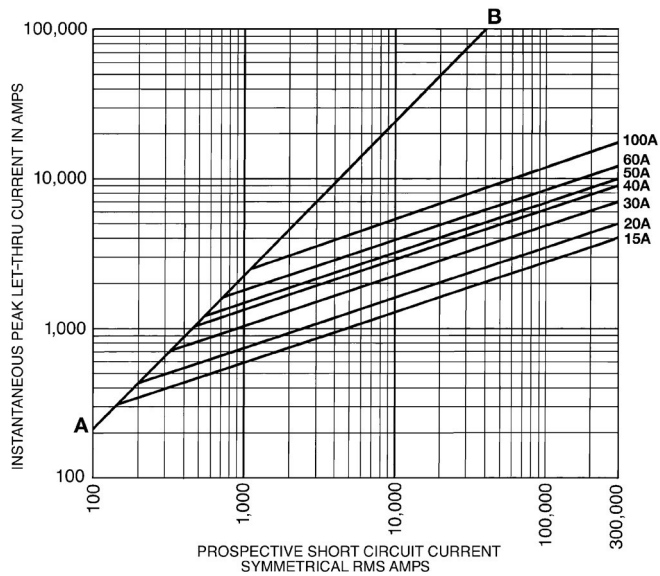
Up to 100 A time-current characteristics – average melt



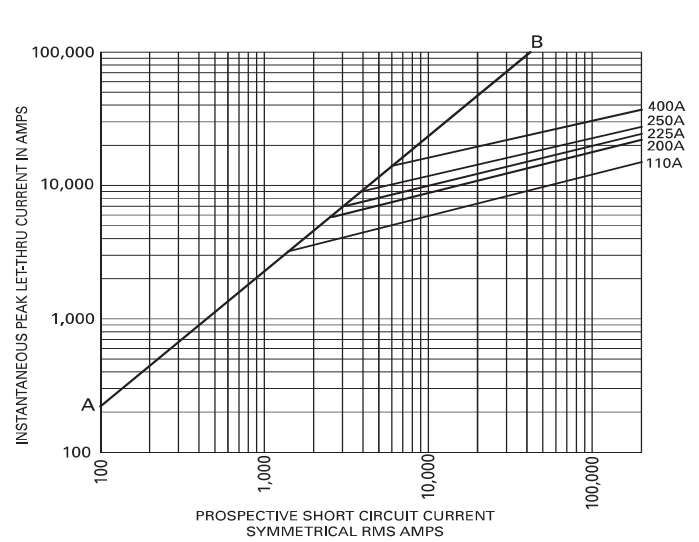
110 to 400 A time-current characteristics – average melt



Up to 100 A current let-through curves



110 to 400 A current let-through curves



Motor sizing table (from NEC Tables 430.248 and 430.250)

Bussmann series TCF Low-Peak time-delay Class CF fuses

Voltage	Motor size (Hp)	Motor FLA (amps)	Min (amps)	NEC code max (amps)	Heavy start* (amps)
<b>115 Vac, 1-phase</b>	0.167	4.4	10	10	10
	0.25	5.8	10	15	15
	0.333	7.2	15	15	15
	0.5	9.8	15	20	20
	0.75	13.8	25	25	30
	1	16	25	30	35
	1.5	20	30	35	45
	2	24	40	45	50
	3	34	50	60	70
	5**	56	90	100	125
	7.5	80	125	150	175
	10	100	150	175	225
<b>230 Vac, 1-phase</b>	0.167	2.2	6	6	6
	0.25	2.9	6	6	6
	0.333	3.6	6	10	10
	0.5	4.9	10	10	10
	0.75	6.9	15	15	15
	1	8	15	15	17.5
	1.5	10	15	20	20
	2	12	20	25	25
	3	17	25	30	35
	5	28	45	50	60
7.5	40	60	70	90	
10**	50	80	90	110	
<b>200 Vac, 3-phase</b>	0.5	2.5	6	6	6
	0.75	3.7	6	10	10
	1	4.8	10	10	10
	1.5	6.9	15	15	15
	2	7.8	15	15	17.5
	3	11	17.5	20	20
	5	17.5	30	35	35
	7.5	25.3	40	45	50
	20**	62.1	100	110	125
	25	78.2	125	150	175
30	92	150	175	200	
40	120	200	225	250	
50	150	225	300	300	
60	177	300	350	350	

**Note:** Use NEC code max column for low to moderate reverse/jog/plug applications.

\* Heavy Start permitted only if NEC code max does not allow motor start-up.  
 \*\*If equipment terminations are rated for 60°C conductors only, the 60°C conductor ampacities must be utilized and therefore larger conductor sizes or conduit sizes may be required.

Voltage	Motor size (Hp)	Motor FLA (amps)	Min (amps)	NEC code max (amps)	Heavy start* (amps)
<b>208 Vac, 3-phase</b>	0.5	2.4	6	6	6
	0.75	3.5	6	10	10
	1	4.6	10	10	10
	1.5	6.6	10	15	15
	2	7.5	15	15	15
	3	10.6	17.5	20	20
	5	16.7	25	30	35
	7.5	24.2	40	45	50
	20**	59.4	90	110	125
	25	74.8	125	150	150
	30	88	150	175	175
	40	114	175	200	250
50	143	225	300	300	
60	169	300	300	350	
<b>230 Vac, 3-phase</b>	0.5	2.2	6	6	6
	0.75	3.2	6	6	6
	1	4.2	10	10	10
	1.5	6	10	15	15
	2	6.8	15	15	15
	3	9.6	15	20	20
	5	15.2	25	30	30
	7.5	22	35	40	45
	20**	54	90	100	110
	25	68	110	125	150
	30	80	125	150	175
	40	104	175	200	225
50	130	200	250	250	
60	154	250	300	300	
75	192	300	350	400	
<b>460 Vac, 3-phase</b>	0.5	1.1	3	3	3
	0.75	1.6	3	3	3
	1	2.1	6	6	6
	1.5	3	6	6	6
	2	3.4	6	6	6
	3	4.8	10	10	10
	5	7.6	15	15	15
	7.5	11	17.5	20	20
	10	14	25	25	30
	15	21	35	40	45
	20	27	40	50	60
	50**	65	100	125	125
60	77	125	150	150	
75	96	150	175	200	
100	124	200	225	250	
125	156	250	300	350	
150	180	300	350	400	

**Note:** Use NEC code max column for low to moderate reverse/jog/plug applications.

\* Heavy Start permitted only if NEC code max does not allow motor start-up.  
 \*\*If equipment terminations are rated for 60°C conductors only, the 60°C conductor ampacities must be utilized and therefore larger conductor sizes or conduit sizes may be required.

**Motor sizing table (from NEC Tables 430.248 and 430.250)**

**Bussmann series TCF Low-Peak time-delay Class CF fuses**

Voltage	Motor size (Hp)	Motor FLA (amps)	Min (amps)	NEC code max (amps)	Heavy start* (amps)
<b>575 Vac, 3-phase</b>	0.5	0.9	3	3	3
	0.75	1.3	3	3	3
	1	1.7	3	3	3
	1.5	2.4	6	6	6
	2	2.7	6	6	6
	3	3.9	6	10	10
	5	6.1	10	15	15
	7.5	9	15	20	20
	10	11	17.5	20	20
	40**	41	70	80	80
	50	52	80	100	110
	60	62	100	110	125
	75	77	125	150	150
	100	99	150	175	200
	125	125	200	225	250
	150	144	225	300	300
	200	192	300	350	400

**Note:** Use NEC code max column for low to moderate reverse/jog/plug applications.

\* Heavy Start permitted only if NEC code max does not allow motor start-up.

\*\*If equipment terminations are rated for 60°C conductors only, the 60°C conductor ampacities must be utilized and therefore larger conductor sizes or conduit sizes may be required.

**CUBEFuse (cat. no. TCFH\_N) holders**

The CUBEFuse is used in holders that can be dovetail together for the smallest footprint possible of any Class J fuse solution (see data sheet no. 9007 for details).



**Finger-safe DIN-Rail or panel mount holders up to 100 A.**

- 30 A holder accepts any CUBEFuse up to 30 A.
- 60 amp holder accepts any CUBEFuse up to 60 A.
- 100 amp holder accepts any CUBEFuse up to 100 A.

**200 and 400 A Compact Circuit Protector (cat. no. CCP2-CF) switches**



These panel mounted 1-, 2- and 3-pole switches are UL 98 horsepower rated disconnects. Each CCP2 will accept a fuse amp rating equal to or less than its rating (e.g., a 200 A CCP will accept any CUBEFuse from 110 to 200 A). Complete installation requires installing various lugs to meet the application requirement. Accessories include side or front rotary operators and auxiliary contacts (see data sheet no. 10801 for details).



**Panel mount holders from 200 to 400 A.**

- 200 A holder accepts any CUBEFuse from 110 to 200 A
- 225 A\* holder accepts any CUBEFuse from 110 to 225 A
- 400 A holder accepts any CUBEFuse from 110 to 400 A

Finger-safe installation achievable for three ganged holders and lug kits with shroud

\* 200 A and 225 A holders share the same overall dimensions, but the 200 A holder will reject a 225 A fuse.

**Compact Circuit Protector Base (cat. no. CCP2B)**



These 1-, 2- and 3-pole switches are UL 98 horsepower rated branch circuit disconnects. Primarily used in the Quik-Spec Coordination Panelboard, they're available in ratings up to 100 A. The CCP2B has amp rejection breaks that prevent installing any CUBEFuse amp rating greater than that of the switch. These coincide with standard conductor ampacities to help prevent overfusing and are available at 15, 20, 30, 40, 50, 60, 70, 90 and 100 amps for all 1-, 2- and 3-pole switches.

**30, 60 and 100 A Compact Circuit Protector (cat. no. CCP2\_CF) switches**



These DIN-Rail mounted 1-, 2- and 3-pole switches are UL 98 horsepower rated disconnects available with front or side rotary operators. Each CCP2 will accept a fuse amp rating equal to or less than its rating (e.g., a 60 A CCP will accept any CUBEFuse up to 60 A). Accessories include multi-wire lug kits with shrouds, auxiliary contacts and PLC fuse monitor (see data sheet no. 10801 for details).

The only controlled copy of this data sheet is the electronic read-only version located on the Eaton network drive. All other copies of this document are by definition uncontrolled. This bulletin is intended to clearly present comprehensive product data and provide technical information that will help the end user with design applications. Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin. Once a product has been selected, it should be tested by the user in all possible applications.

**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com

Bussmann Division  
114 Old State Road  
Ellisville, MO 63021  
United States  
Eaton.com/bussmannseries

© 2019 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. 9000 – BU-SB18086  
March 2019

Eaton, Bussmann, CUBEFuse, Low-Peak, easyID and Quik-Spec are valuable trademarks of Eaton in the US and other countries. You are not permitted to use the Eaton trademarks without prior written consent of Eaton.

CSA is a registered trademark of the Canadian Standards Group  
NEC is a registered trademark of the National Fire Protection Association  
UL is a registered trademark of the Underwriters Laboratories, Inc.

For Eaton's Bussmann series product information, call **1-855-287-7626** or visit: **Eaton.com/bussmannseries**

Follow us on social media to get the latest product and support information.

