

Ferrule fuses



High Speed
Fuses

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Accessories

Fuse Holders 211

Ferrule Fuse Ranges

Volts	Amps	AC	DC
150	5-60	X	X
250	1-50	X	X
500	0.25-30	X	X
600	6-32	X	X
700 (22 x 58mm)	20-100	X	—
700 (14 x 51mm)	1-50	X	X
750	5-60	X	X
1000	20-30	X	X (800Vdc)
1250	20-30	X	X (1000Vdc)
1500	8-15	X	X (1000Vdc)
2000	2-6	X	X (1000Vdc)

General Information

Cooper Bussmann offers a full line of ferrule style (cylindrical clip-mounted) fuses, designed and tested to meet standards and requirements in various locations around the world. Their unique design and construction provide:

- Superior cycling capability
- Low energy let-through (I²t)

Ferrule fuses provide an excellent solution for small UPS, small ac drives and other low power applications where space is at a premium.

Voltage Rating

All Cooper Bussmann® ferrule fuses — except 690V — have been tested at their rated voltage. The 690V ferrule fuse has been tested to the IEC 60269 standard, which requires clearing at the rated voltage +5%.

Accessories

Ferrule fuses may be mounted in fuseclips, fuse holders, fuse blocks or fused switches. A variety of products are available. Please consult Cooper Bussmann Application Engineering to discuss your requirement.

High Speed Fuses

Ferrule — FWA 150V: 5-60A

FWA 5-30A (10 x 38mm) 35-60A (21 X 51mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustration.

Ratings:

Volts: — 150Vac/150Vdc

Amps: — 5-60A

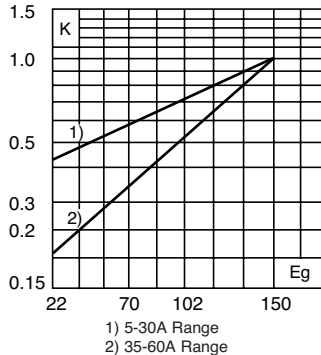
IR: — 100kA Sym.

Agency Information: CE, UL Recognition

Electrical Characteristics

Total Clearing I²t

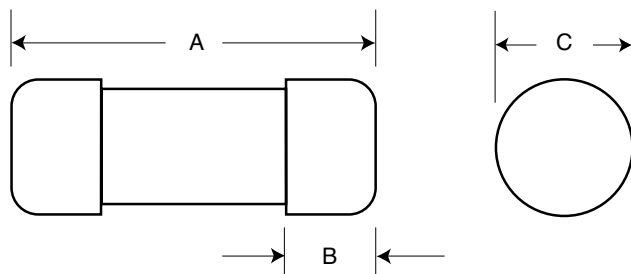
The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (rms).



1) 5-30A Range
2) 35-60A Range

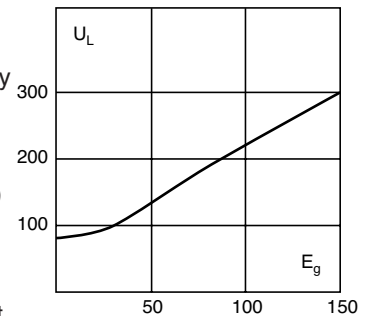
Dimensions - in (mm)

Amp Range	Dimensions		
	A	B	C
5-30	1.5 (38.1)	0.375 (9.5)	0.406 (10.3)
35-60	2.0 (50.8)	0.625 (15.9)	0.811 (20.6)



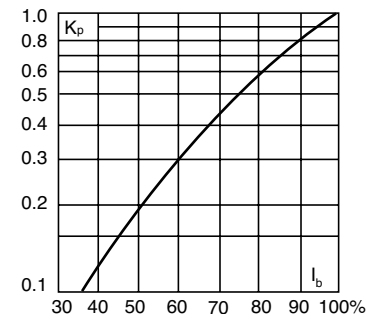
Arc Voltage

This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I ² t (A ² Sec)		Watts Loss
			Pre-arc	Clearing at 150V	
FWA-5A10F	10 x 38mm (¹ / ₂ " x 1 ¹ / ₂ ")	5	1.6	8	1
FWA-10A10F		10	3.6	16	2.7
FWA-15A10F		15	14	55	3.3
FWA-20A10F		20	33	130	3.8
FWA-25A10F		25	58	220	4.9
FWA-30A10F	30	100	400	4.9	
FWA-35A21F	21 x 51mm (¹ / ₂ " x 2")	35	75	800	4.5
FWA-40A21F		40	100	1000	5.1
FWA-45A21F		45	130	1300	6
FWA-50A21F		50	170	1600	7.3
FWA-60A21F		60	250	2400	8.0

• Watts loss provided at rated current.
• See accessories on page 211.

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

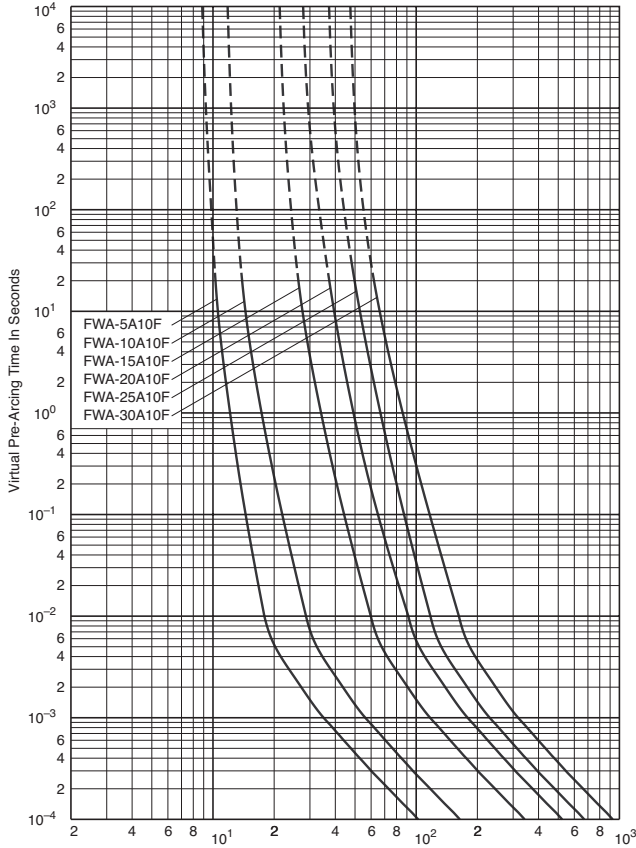
Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

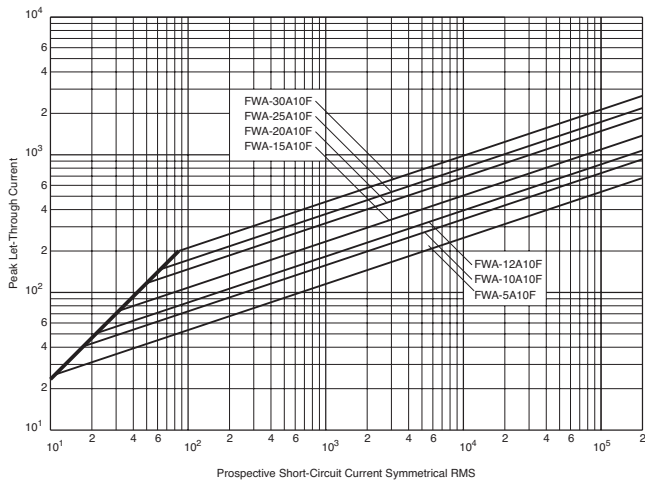
Ferrule — FWA 150V: 5-60A

FWA 5-30A: 150V (10 x 38mm)

Time-Current Curve



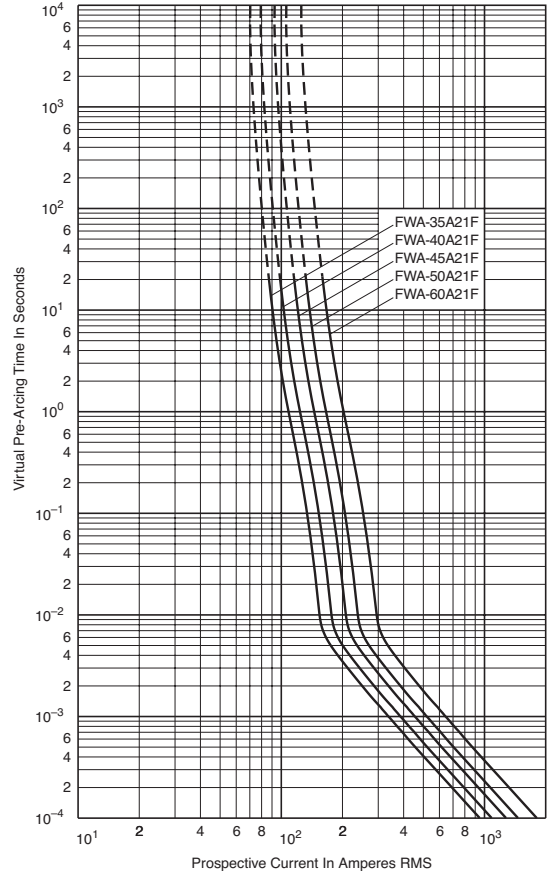
Peak Let-Through Curve



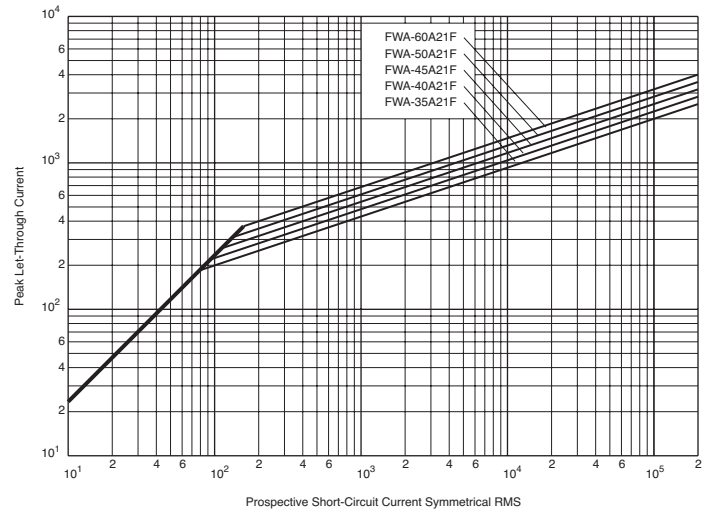
Data Sheet: 35785317

FWA 35-60A: 150V (21 x 51mm)

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785305

High Speed Fuses

High Speed Fuses

Ferrule — FWX 250V (UL): 1-50A

FWX (14 x 51mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustration.

Ratings:

Volts: — 250Vac

Amps: — 1-50A

IR: — 200kA RMS Sym.

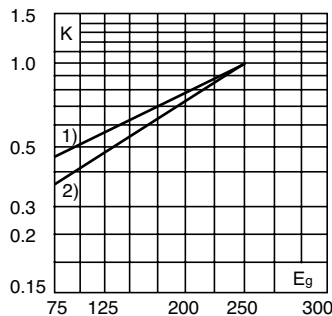
— 50kA @ 250Vdc

Agency Information: CE, UL Recognition 1-50A & CSA Component Acceptance: 5-30A

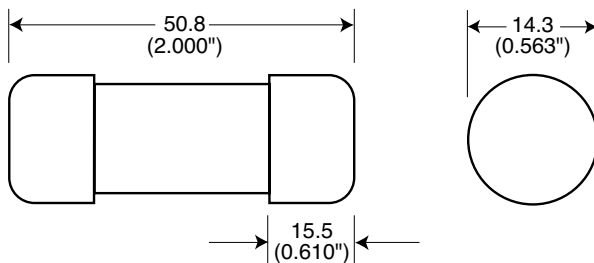
Electrical Characteristics

Total Clearing I²t

The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (rms).

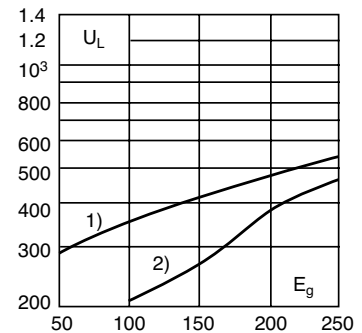


Dimensions - mm (inches)



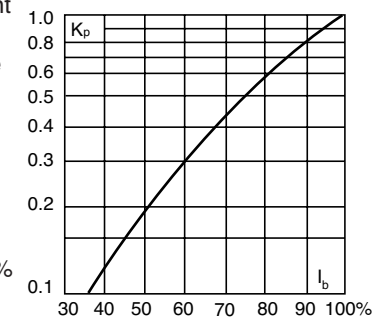
Arc Voltage

This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



Catalog Numbers

Catalog Number	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I ² t (A ² Sec)		Watts Loss
			Pre-arc	Clearing at 250V	
FWX-1A14F	14 x 51mm	1	—	—	—
FWX-2A14F	(1/8" x 2")	2	—	—	—
FWX-3A14F		3	—	—	—
FWX-4A14F		4	—	—	—
FWX-5A14F		5	1.6	13	1.3
FWX-10A14F		10	3.6	24	3.4
FWX-15A14F		15	14	83	3.8
FWX-20A14F		20	33	200	4.6
FWX-25A14F		25	58	300	5.3
FWX-30A14F		30	100	500	5.9
FWX-50A14F		50	200	1800	5.7

• Watts loss provided at rated current.
• (250Vdc/Interrupting rating 50kA) UL Recognition & CSA Component Acceptance on 5 through 30A only. Consult Cooper Bussmann for additional ratings.
• See accessories on page 211.

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

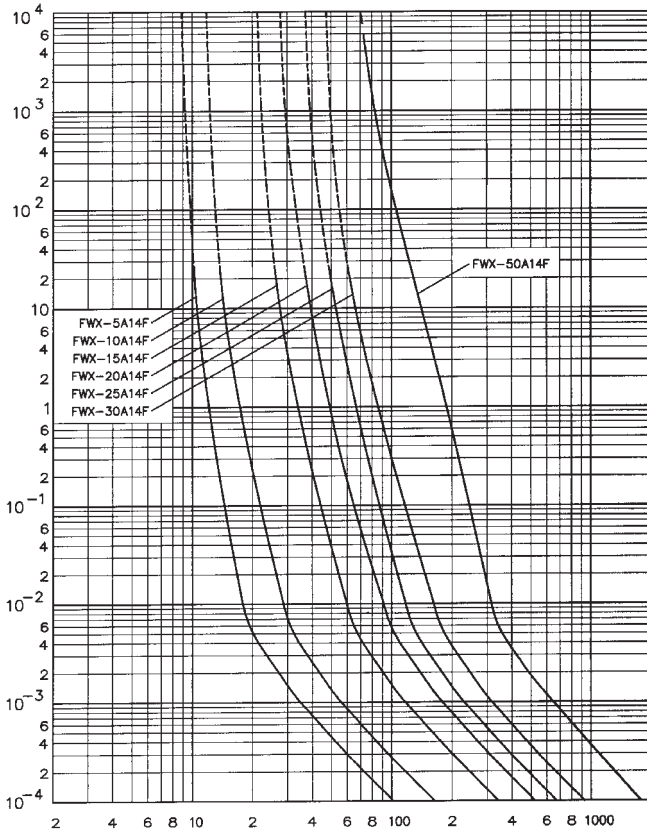
Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

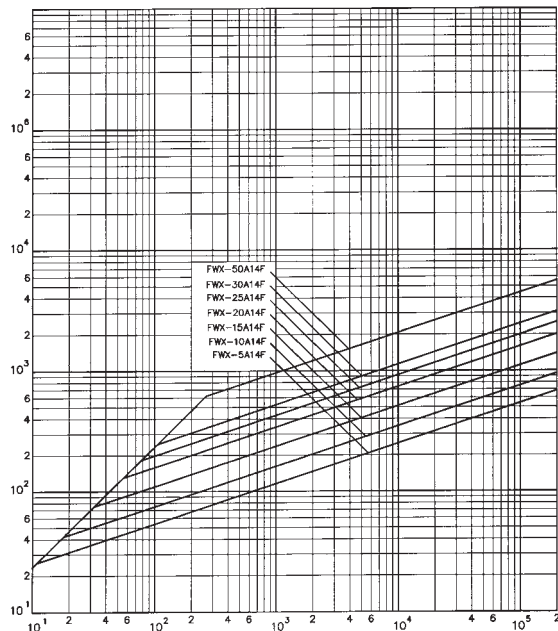
Ferrule — FWX 250V (UL): 1-50A

FWX 1-30A: 250V (14 x 51mm)

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785302

Did You Know?

All-Inclusive Elevator Disconnect Simplifies Installation Plus a Multitude of Codes and Standards



When the Westin Hotel chain renovated the historic Cupples Station in downtown St. Louis, the hotel's design-and-build electrical contractor specified the Cooper

Bussmann® Power Module™ elevator shunt trip disconnect. The primary reason was the savings in man-hours with everything in one box: the fire alarm, control wiring and power wiring; all the parts needed to interface with a fire alarm system in a UL 98 Listed assembly. In addition, all the codes and standards surrounding the elevator disconnecting means – electrical, elevator, fire alarm and the sprinkler system – are met, including ANSI/ASME A17.1, NFPA 72, NEC® 620.62.

The contractor faced a unique situation when the luxury hotel chain chose to revamp the old warehouse versus tearing the structure down and rebuilding. The hotel complex consists of four buildings interconnected with walkways. A total of eight elevators were installed with eight Power Module switches, two per building. Each 30 HP passenger elevator is fused with Cooper Bussmann® Low-Peak® Class J LPJ-70SP fuses while each 40HP service elevator uses the Class J LPJ-90SP fuses.

High Speed Fuses

High Speed Fuses

Ferrule — FWH 500V: 0.25-30A

FWH (6 x 32mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustrations.

Ratings:

Volts: — 500Vac

Amps: — 0.25-30A

IR: — 50kA at ≥ 20% pf (0.25-20A)

— 20kA at ≥ 20% pf (25-30A)

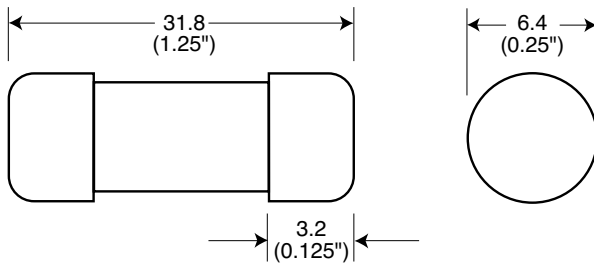
Agency Information: CE, UL Recognition 0.25-30A, CSA Component Acceptance: 0.25-7A

Opening Times

Amp Ratings	150%	200%	300%
0.25-7	> 30 min	< 30 min	≤ 10 sec
10-30	< 30 min	< 30 min	≤ 10 sec



Dimensions - mm (inches)



Catalog Numbers

Catalog Numbers	Size	Rated Current RMS-Amps	Electrical Characteristics		Watts Loss
			I ² t (A ² Sec)		
			Pre-arc	Clearing at 500V	
FWH-.250A6F	6 x 32mm	0.25*	0.01	0.05	2.7
FWH-.500A6F	(1/4" x 1 1/4")	0.5*	0.05	0.25	1.2
FWH-001A6F		1*	0.4	2	1.7
FWH-002A6F		2*	1.3	3.5	3.2
FWH-3.15A6F		3.15*	3.1	7.7	2.9
FWH-005A6F		5*	15	40	2.1
FWH-6.30A6F		6.3*	36	90	2.3
FWH-007A6F		7*	50	125	2.5
FWH-010A6F		10**	9.9	139	2.86
FWH-12.5A6F		12.5**	20	60	3.53
FWH-015A6F		15**	44	146	3.08
FWH-016A6F		16**	48	177	4.48
FWH-020A6F		20**	75	259	4.26
FWH-025A6F		25**	126	345	—
FWH-030A6F		30**	145	430	—

*300% minimum opening current at rated voltage.

**200% minimum opening current at rated voltage.

• Consult Cooper Bussmann for dc ratings.

• See accessories on page 211.

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

Did You Know?

Application Engineering Services

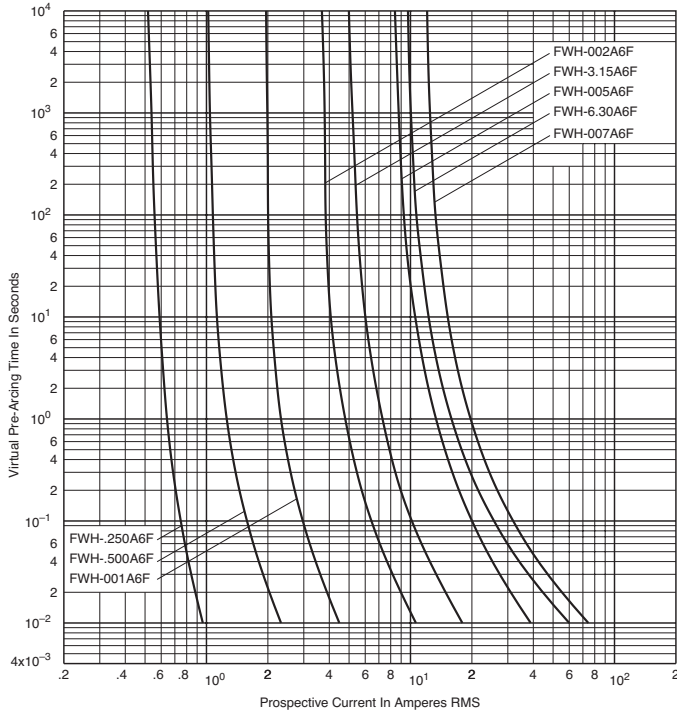
Application Engineering assistance is available to all customers. The Application Engineering team is staffed by degreed electrical engineers and available by phone with technical and application support Monday – Friday, 8:00 a.m. – 5:00 p.m. Central Time. Application Engineering can be reached via phone, fax or email:

- Phone: 636-527-1270
- E-mail: fusetech@cooperbussmann.com

Ferrule — FWH 500V: 0.25-30A

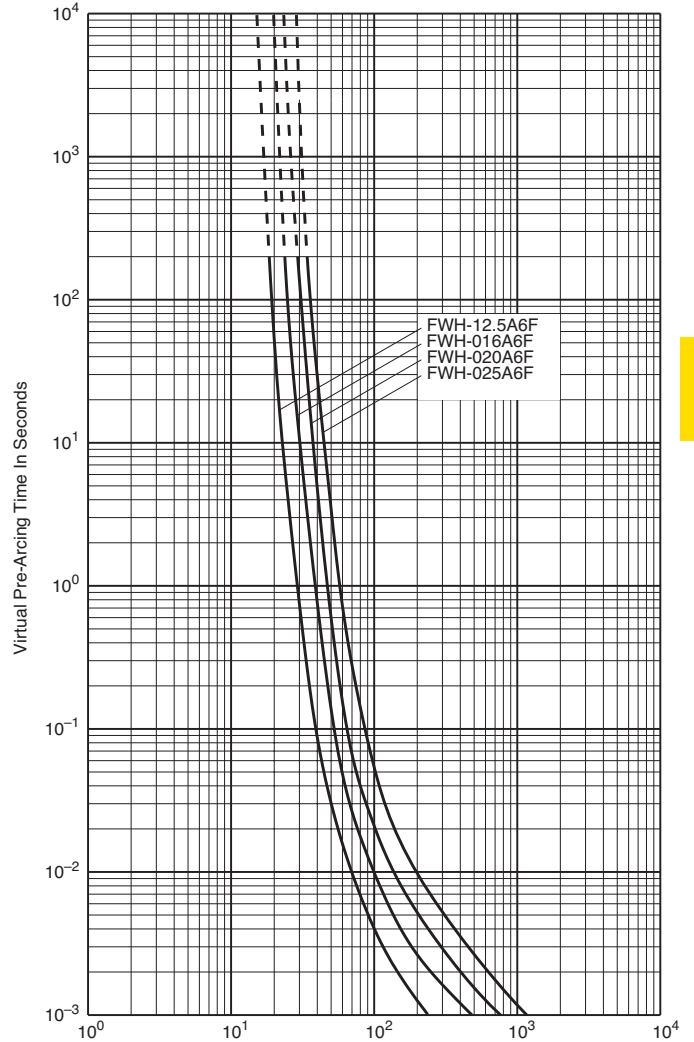
FWH 0.25-7A: 500V (6 x 32mm)

Time-Current Curve



FWH 10-30A: 500V (6 x 32mm)

Time-Current Curve



High Speed
Fuses

High Speed Fuses

Ferrule — FWH 500V: 1-30A

FWH (14 x 51mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustration.

Ratings:

Volts: — 500Vac

Amps: — 1-30A

IR: — 200kA RMS Sym.

— 50kA @500Vdc

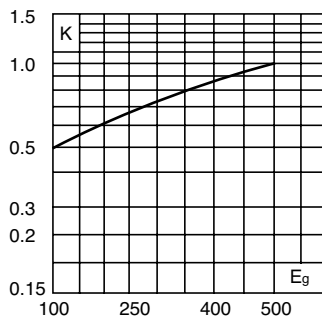
Agency Information: CE, UL Recognition 1- 30A & CSA Component Acceptance: 5 - 30A.



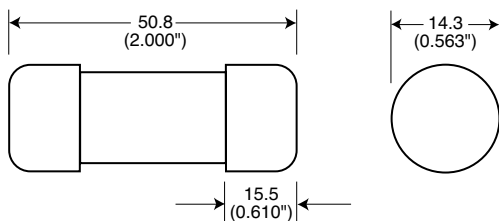
Electrical Characteristics

Total Clearing I²t

The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (rms).

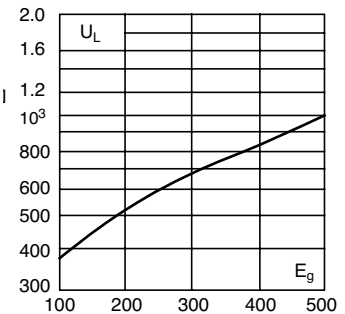


Dimensions - mm (inches)



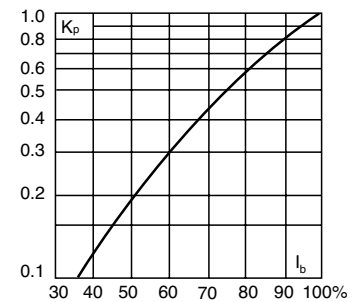
Arc Voltage

This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



Catalog Numbers

Catalog Numbers	Size	Rated Current RMS-Amps	Electrical Characteristics		
			I ² t (A ² Sec)		Watts Loss
			Pre-arc	Clearing at 500V	
FWH-1A14F	14 x 51mm	1	—	—	—
FWH-2A14F	(1/8" x 2")	2	—	—	—
FWH-3A14F		3	—	—	2.3
FWH-4A14F		4	—	—	—
FWH-5A14F		5	1.6	6.4	1.5
FWH-6A14F		6	1.6	6.4	1.5
FWH-10A14F		10	3.6	13	4
FWH-12A14F		12	—	—	—
FWH-15A14F		15	10	40	5.5
FWH-20A14F		20	26	96	6
FWH-25A14F		25	49	191	7
FWH-30A14F		30	58	232	9

• Watts loss provided at rated current.
• See accessories on page 211.

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

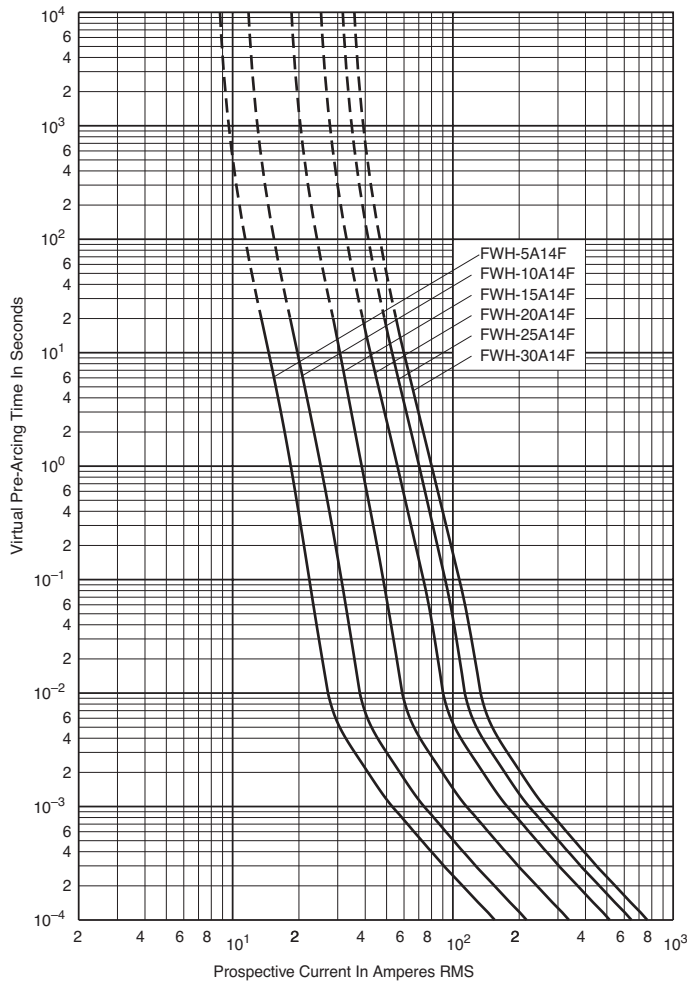
Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

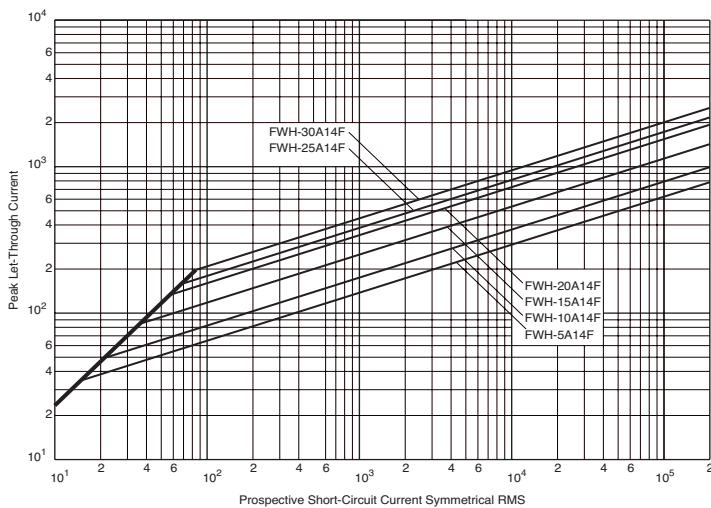
Ferrule — FWH 500V: 1-30A

FWH 1-30A: 500V (14 x 51mm)

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785298

High Speed Fuses

Ferrule — FWC 600V: 6-32A

FWC (10 x 38mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustration.

Ratings:

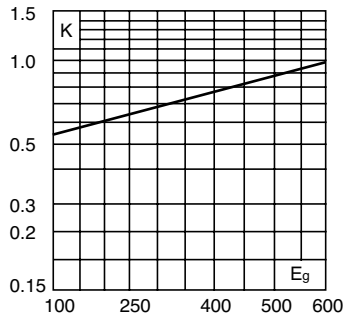
- Volts: — 600Vac
- Amps: — 6-32A
- IR: — 200kA RMS Sym.
- 50kA @ 700Vdc (6-25A)

Agency Information: CE, UL Recognition: 6-32A. UL Recognition: 6-25A

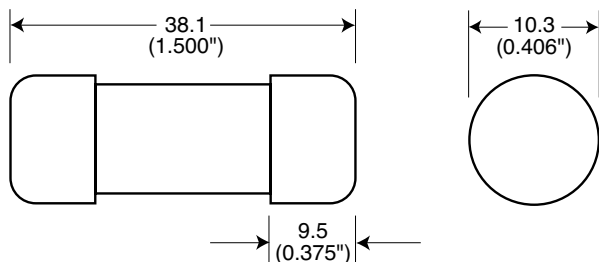
Electrical Characteristics

Total Clearing I^2t

The total clearing I^2t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I^2t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g , (rms).

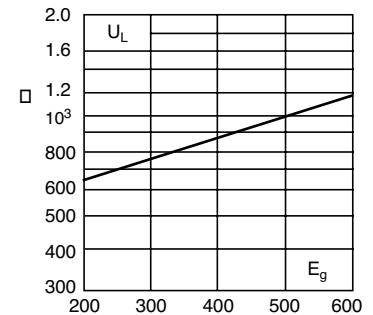


Dimensions - mm (inches)



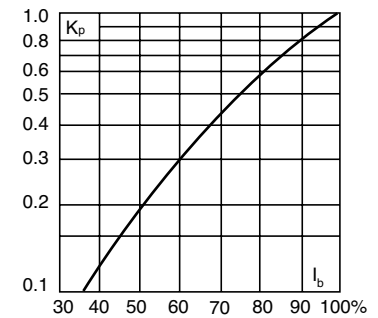
Arc Voltage

This curve gives the peak arc voltage, U_L , which may appear across the fuse during its operation as a function of the applied working voltage, E_g , (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p , is given as a function of the RMS load current, I_b , in % of the rated current.



Catalog Numbers	Size	Electrical Characteristics			Watts Loss
		Rated Current RMS-Amps	I^2t (A ² Sec)		
			Pre-arc	Clearing at 600V	
FWC-6A10F	10 x 38mm	6	4	30	1.5
FWC-8A10F	(¹ / ₂ " x 1 ¹ / ₂ ")	8	6	50	2.0
FWC-10A10F		10	9	70	2.5
FWC-12A10F		12	15	120	3.0
FWC-16A10F		16	25	150	3.5
FWC-20A10F		20	34	260	4.8
FWC-25A10F		25	60	390	6.0
FWC-32A10F		32	95	600	7.5

• Watts loss provided at rated current.
• See accessories on page 211.

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I^2t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

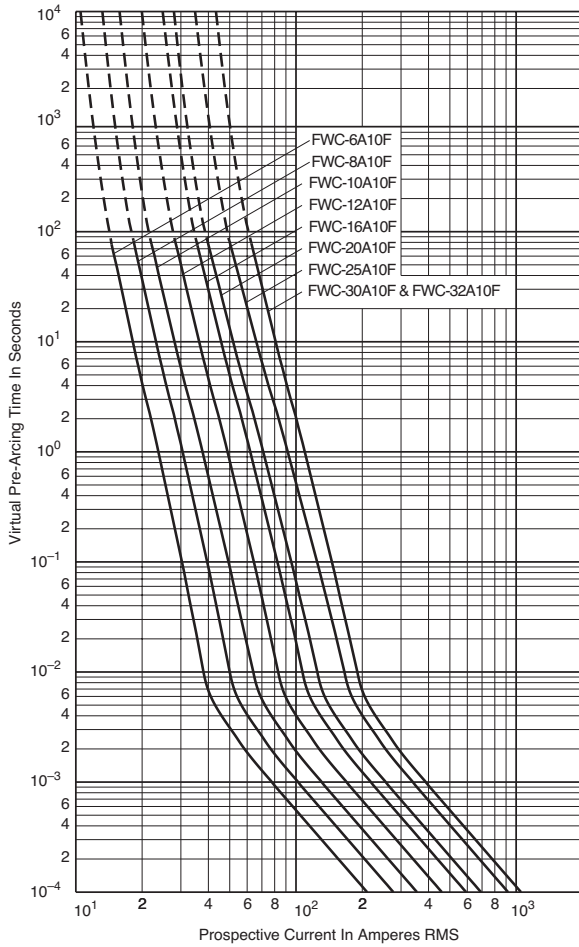
Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

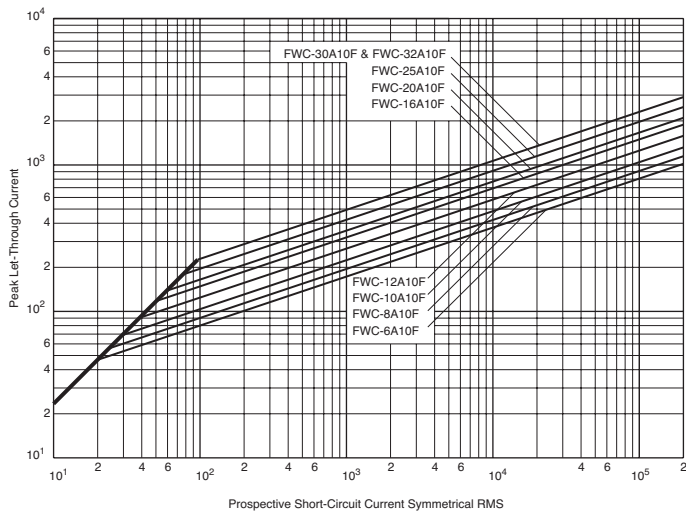
Ferrule — FWC 600V: 6-32A

FWC 6-32A: 600V (10 x 38mm)

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785306

High Speed Fuses

Ferrule — FWP 690V/700V (IEC/UL): 1-50A, striker optional

FWP (14 x 51mm)

Specifications

Description: Ferrule style high speed fuses with and without indicating striker.

Dimensions: See Dimensions illustrations.

Ratings:

Volts: — 690Vac (IEC)
— 700Vac (UL)

Amps: — 1-50A

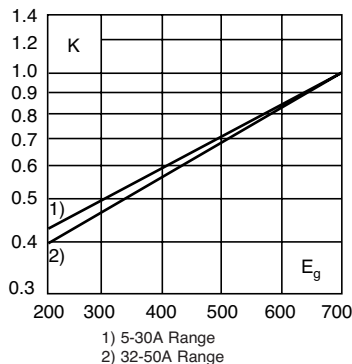
IR: — 200kA RMS Sym.
— 50kA @700Vdc

Agency Information: CE, UL Recognition, CSA Component Acceptance for versions without indicator only.

Electrical Characteristics

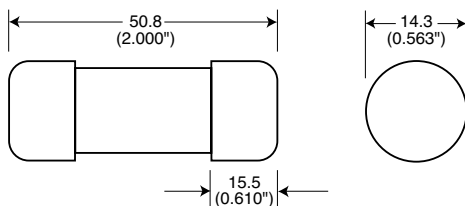
Total Clearing I²t

The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (rms).

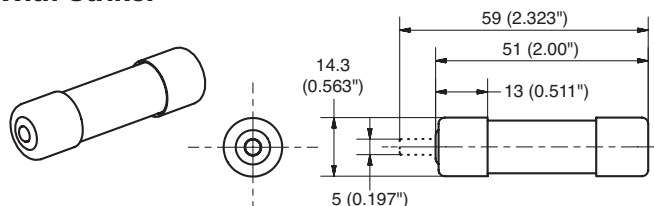


Dimensions - mm (inches)

Without Striker



With Striker

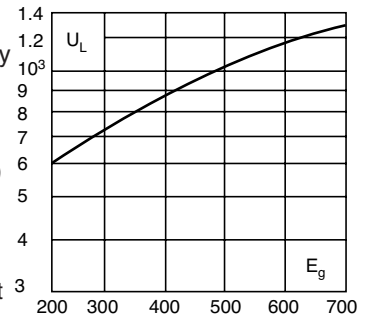


Data Sheets: E5781724 rev. B (without striker)
170K5342/43 (with striker)



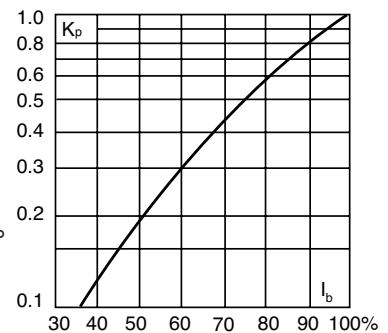
Arc Voltage

This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Current RMS-Amps	Rated Minimum Melting	I ² t (A ² Sec) Clearing At Rated Voltage	Watts Loss
Without Striker	14 x 51mm ($\frac{9}{16}$ " x 2")	1	—	—	—
FWP-1A14Fa		2	—	—	—
FWP-2A14Fa		2.5	—	—	—
FWP-3A14Fa		3	—	—	—
FWP-4A14Fa		4	—	—	—
FWP-5A14Fa		5	1.6	11.0	1.5
FWP-10A14Fa		10	3.6	38.5	4
FWP-15A14Fa		15	8.6	70	5.5
FWP-20A14Fa		20	26.0	230	6
FWP-25A14Fa		25	46.5	375	7
FWP-30A14Fa		30	58	485	9
FWP-32A14Fa	32	68	600	7.6	
FWP-40A14Fa	40	84	750	8	
FWP-50A14Fa	50	200	1800	9	
With Striker	14 x 51mm ($\frac{9}{16}$ " x 2")	10	3.6	38.5	4
FWP-10A14FI		15	8.6	70	5.5
FWP-15A14FI		20	26.0	230	6
FWP-20A14FI		25	46.5	375	7
FWP-30A14FI		30	58	485	9
FWP-32A14FI		32	68	600	7.6
FWP-40A14FI		40	84	750	8
FWP-50A14FI		50	200	1800	9

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

Typical Applications

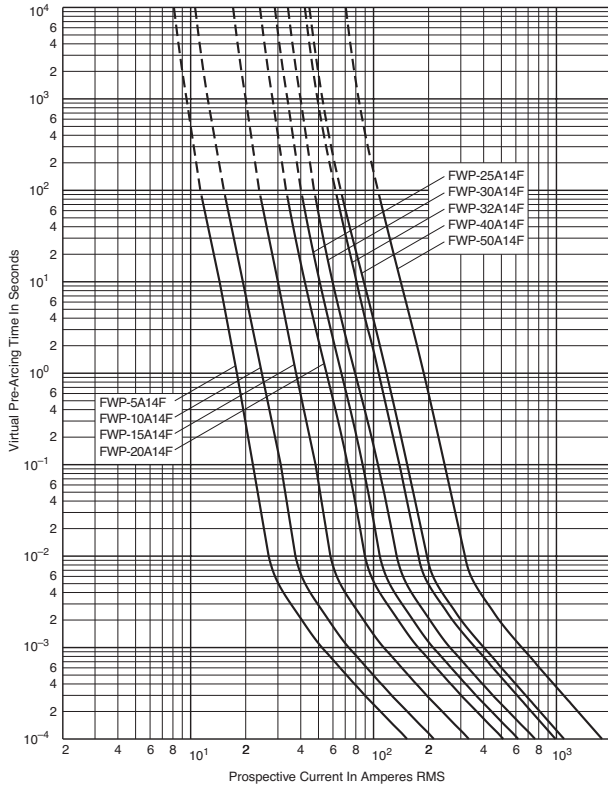
- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

High Speed Fuses

Ferrule — FWP 690V/700V (IEC/UL): 1-50A, striker optional

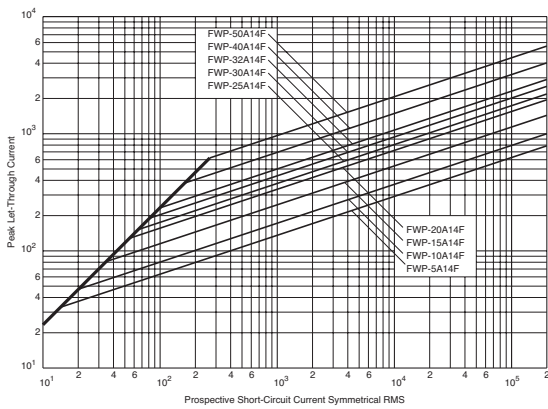
FWP 5-50A: 660V/700V (14x 51mm)

Time-Current Curve



High Speed
 Fuses

Peak Let-Through Curve



Data Sheet: 35785307

High Speed Fuses

Ferrule — FWP 690V/700V (IEC/UL): 20-100A, striker optional

FWP (22 x 58mm)

Specifications

Description: Ferrule style high speed fuses, with and without indicating striker.

Dimensions: See Dimensions illustration.

Ratings:

Volts: — 690Vac (IEC)
— 700Vac (UL)

Amps: — 20-100A

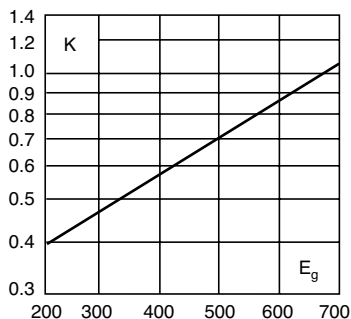
IR: — 200kA RMS Sym.
— 50kA @ 500Vdc

Agency Information: CE, UL Recognition

Electrical Characteristics

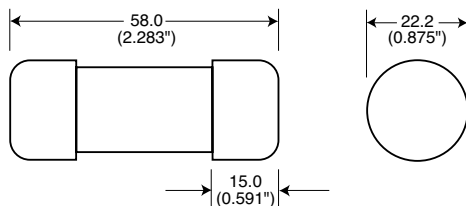
Total Clearing I²t

The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (rms).

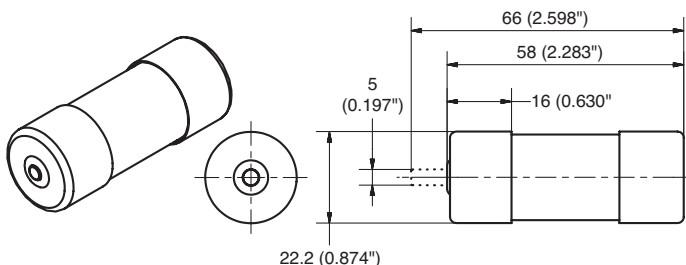


Dimensions - mm (inches)

Without Striker



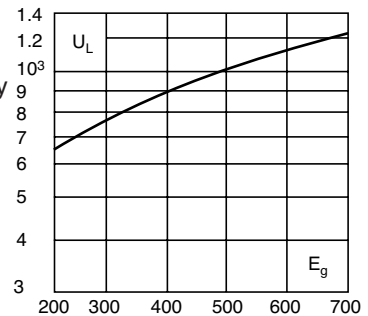
With Striker



FWP with
striker
option.

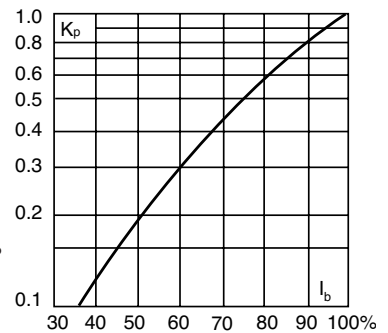
Arc Voltage

This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.



Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I ² t (A ² Sec)		Watts Loss
			Minimum Melting	Clearing At Rated Voltage	
Without Striker					
FWP-20A22Fa	22 x 58mm	20	19.0	260	5
FWP-25A22Fa	(⁷ / ₈ " x 2 ¹ / ₂ "	25	34.0	410	6
FWP-32A22Fa		32	53.5	605	8
FWP-40A22Fa		40	68	750	9
FWP-50A22Fa		50	135	1600	9.5
FWP-63A22Fa		63	280	3080	11
FWP-80A22Fa		80	600	6600	13.5
FWP-100A22Fa		100*	1100	12500	16
With Striker					
FWP-20A22FI	22 x 58mm	20	19.0	260	5
FWP-25A22FI	(⁷ / ₈ " x 2 ¹ / ₂ "	25	34.0	410	6
FWP-32A22FI		32	53.5	605	8
FWP-40A22FI		40	68	750	9
FWP-50A22FI		50	135	1600	9.5
FWP-63A22FI		63	280	3080	11
FWP-80A22FI		80	600	6600	13.5
FWP-100A22FI		100*	1100	12500	16

*IEC/UL Voltage rating 600/700

Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

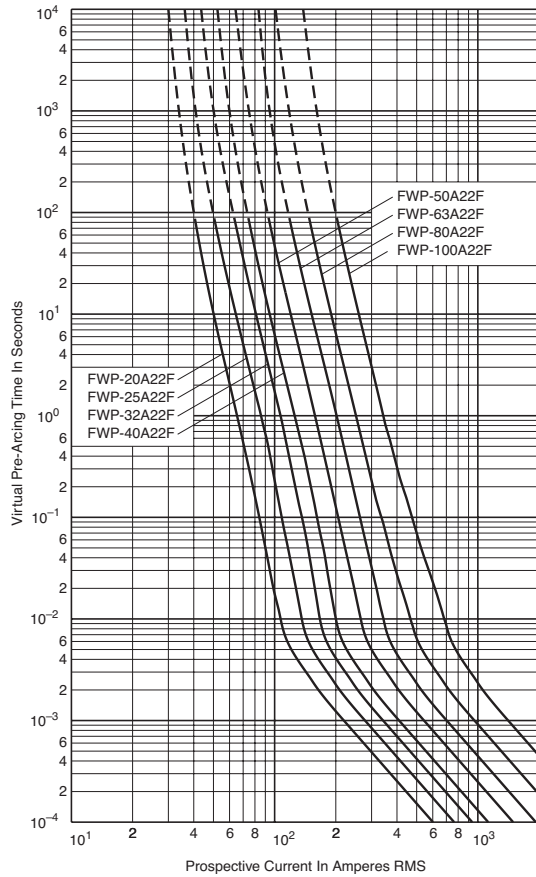
Data Sheets: E5781723 rev. B (without striker) 170K5344/45 (with striker)

High Speed Fuses

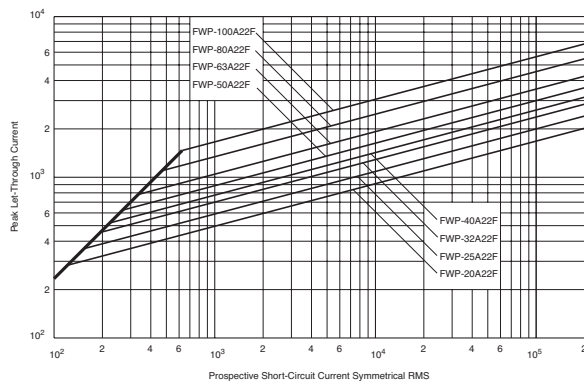
Ferrule — FWP 690V/700V (IEC/UL): 20-100A, striker optional

FWP 20-100A:660V/700V (22 x 58mm)

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785291

High Speed Fuses

Ferrule — FWK 750V: 5-60A

FWK 5-30A (20 x 127mm 35-60A (25 x 146mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustrations.

Ratings:

- Volts: — 750Vac
- 750Vdc (Time constant = 10-15 mS)

Amps: — 5-60A

IR: — 45kA RMS Sym.

Agency Information: CE



Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I ² t (A ² Sec)		Watts Loss
			Pre-arc	Clearing at 750Vdc	
FWK-5A20F	20 x 127mm (³ / ₁₆ " x 5")	5	8.5	16	—
FWK-8A20F		8	50	100	—
FWK-10A20F		10	95	200	—
FWK-15A20F		15	100	240	—
FWK-20A20F		20	125	315	—
FWK-25A20F		25	400	1100	—
FWK-30A20F	30	800	2600	—	
FWK-35A25F	25 x 146mm (1" x 5 ⁷ / ₁₆ ")	35	1300	4300	—
FWK-40A25F		40	1600	5300	—
FWK-50A25F		50	3100	12000	—
FWK-60A25F		60	5900	24000	—

* See accessories on page 211.

Dimensions - mm (inches)

Fig. 1: 5-30A

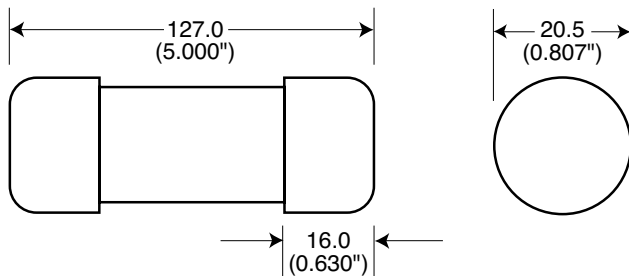
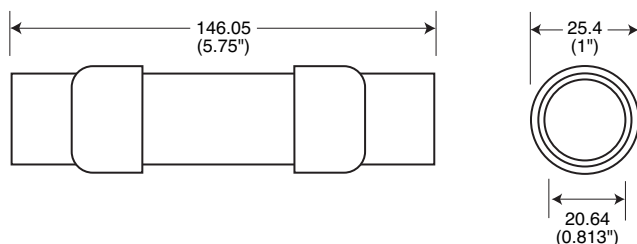


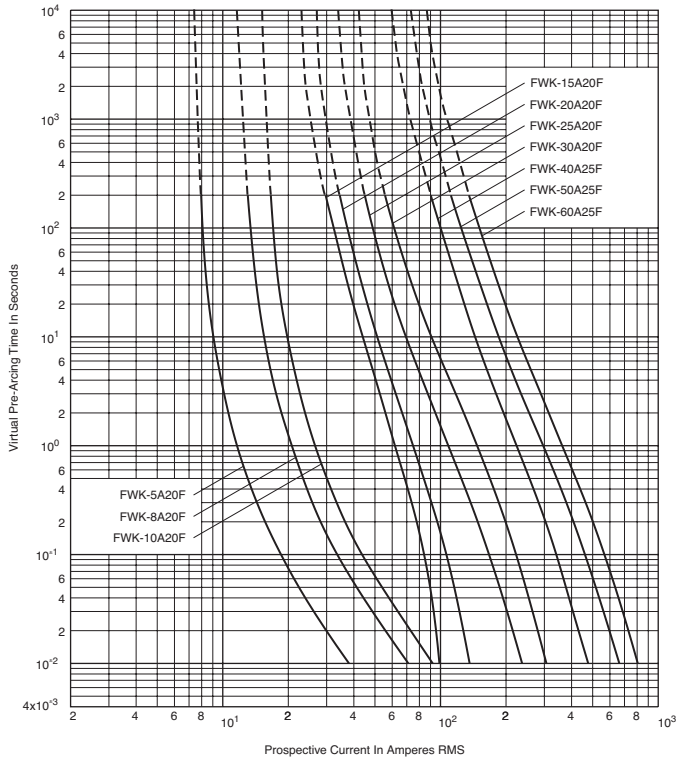
Fig. 2: 35-60A



Ferrule — FWK 750V: 5-60A

**FWK 750V: 5-30A (20 x 127mm)
35-60A (25 x 146mm)**

Time-Current Curve



High Speed
Fuses

Did You Know?

Lower Transaction Costs Mean Greater Operational Efficiency

We believe the synchronization of business is essential in maximizing the benefit of electronic commerce to the electrical distribution market. We're working hard to make doing business with Cooper Bussmann easier. Some other electronic commerce services we offer include:

- Industry Data Exchange Association (IDEA): We are a charter member of IDEA, a foundation for establishing standards for electronic communications founded by members of NAED and NEMA.
- Industry Data Warehouse (IDW)
- Electrical Industry Extranet (IDXchange)
- Socket to Socket
- Bar Coding: Cooper Bussmann product is coded with the UCC-128 serialized shipping container bar code to facilitate a distributor dock-to-stock and pay from receipt process. We also offer customer-specific bar coded shipments for distributors to use in cross-docking and automated receiving and stocking.

High Speed Fuses

Ferrule — FWJ 1000V: 20-30A

FWJ (14 x 67mm)

Specifications

Description: Ferrule style high speed fuses.

Dimensions: See Dimensions illustration.

Ratings:

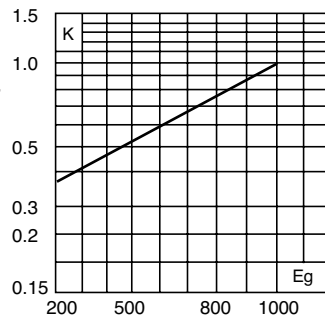
- Volts: — 1000Vac
- Amps: — 20-30A
- IR: — 25kA RMS Sym.
- 20kA @ 800Vdc

Agency Information: CE, UL Recognized

Electrical Characteristics

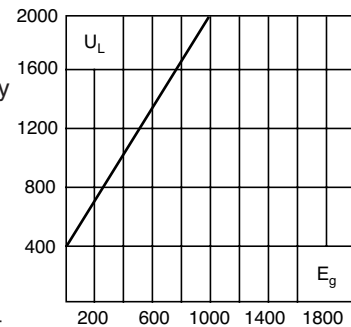
Total Clearing I²t

The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, E_g, (rms).



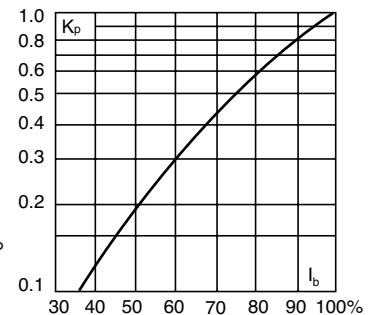
Arc Voltage

This curve gives the peak arc voltage, U_L, which may appear across the fuse during its operation as a function of the applied working voltage, E_g, (rms) at a power factor of 15%.



Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor, K_p, is given as a function of the RMS load current, I_b, in % of the rated current.

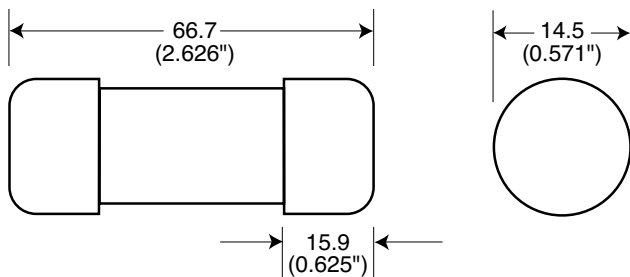


Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I ² t (A ² Sec)		Watts Loss
			Pre-arc	Clearing at 1000V	
FWJ-20A14F	14 x 67mm	20	25	220	9
FWJ-25A14F	(1/2" x 2 3/4")	25	33	350	11
FWJ-30A14F		30	52	450	14

- Watts loss provided at rated current.
- See accessories on page 211.

Dimensions - mm (inches)



Features and Benefits

- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

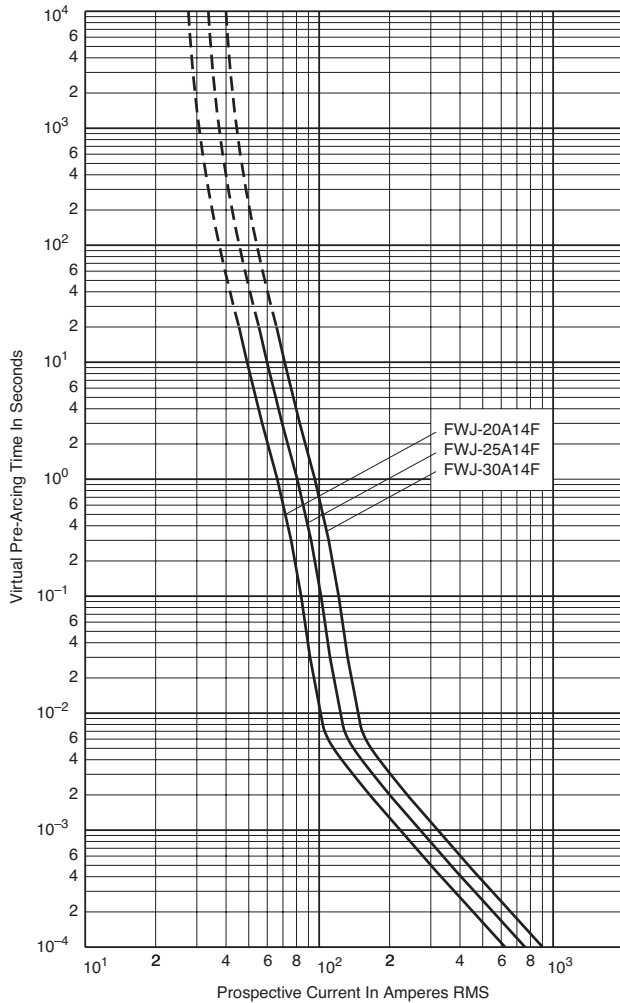
Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

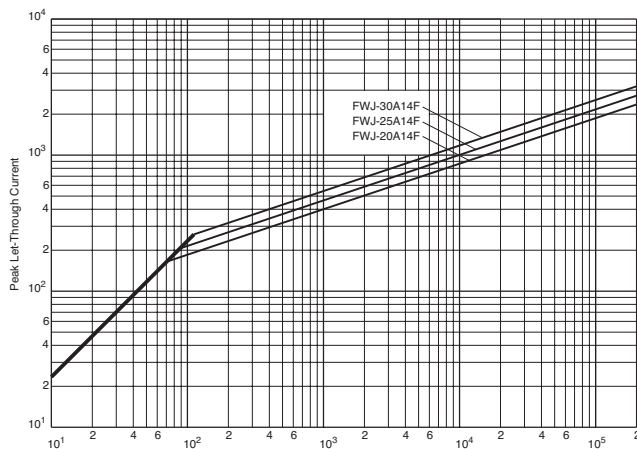
Ferrule — FWJ 1000V: 20-30A

FWJ 20-30A: 1000V (14 x 67mm)

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785315

Did You Know?

Reduce Downtime with Cooper Bussmann® 24/7 Emergency After-Hours Service

When overloads or short circuits open the fuse and there are no spares on the shelf, where do you turn to get the production line back up, the trains running or the elevators operating?

Customers pay only standard price for the required circuit protection device, rush freight charges and a \$75.00 emergency fee for this door-to-door service. No minimum order requirements. No surcharges for drop shipments.

Call us at 314-995-1342 and we will:
Set the Cooper Bussmann Customer Satisfaction team in motion to do what it takes to satisfy your needs.
Next flight out or next day service; your choice.

High Speed Fuses

High Speed Fuses

Ferrule — FWS/FWL 1000Vdc: 2-30A

FWS 2-15A (20 x 127mm) FWL 20-30A (20 x 127mm)

Specifications

Description: Ferrule style full range fuses.

Dimensions: See Dimensions illustrations.

Ratings:

- Volts: — 1200Vac (FWL 20-30A)
- 1400Vac (FWS 8-15A)
- 2100Vac (FWS 2-6A)
- 1000Vdc (FWL/FWS 2-30)

Amps: — 2-30A

- IR: — 45kA RMS Sym.
- 30kA @ 1000Vdc

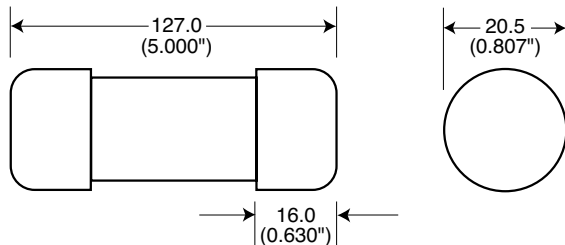
Agency Information: CE, IEC 60077

Catalog Numbers

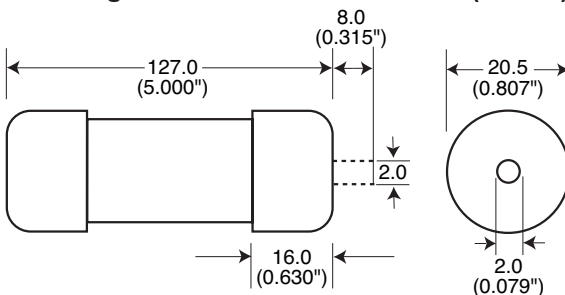
Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I ² t (A ² Sec)		Watts Loss
			Pre-arc	Clearing at 1000Vdc	
FWS-2A20F	20 x 127mm	2	0.8	2.4	4.4
FWS-6A20F	(¹ / ₈ " x 5")	6	27	81	6.7
FWS-8A20F		8	64	192	7.6
FWS-10A20F		10	118	277	3.0
FWS-12A20F		12	170	380	3.4
FWS-15A20F		15	209	500	5.0
FWL-20A20F	20 x 127mm	20	675	1550	5.9
FWL-25A20F	(¹ / ₈ " x 5")	25	1200	2760	6.5
FWL-30A20F		30	1850	4300	7.5

- ADD "I" to catalog number for indicating version.
- Enclosed finger-safe fuse holder — CH127
- Open style fuse block — 4530-OP
- See accessories on page 211.

Dimensions - mm (inches)



Indicating Version - Dimensions - mm (inches)



Data Sheet: 720040



Features and Benefits

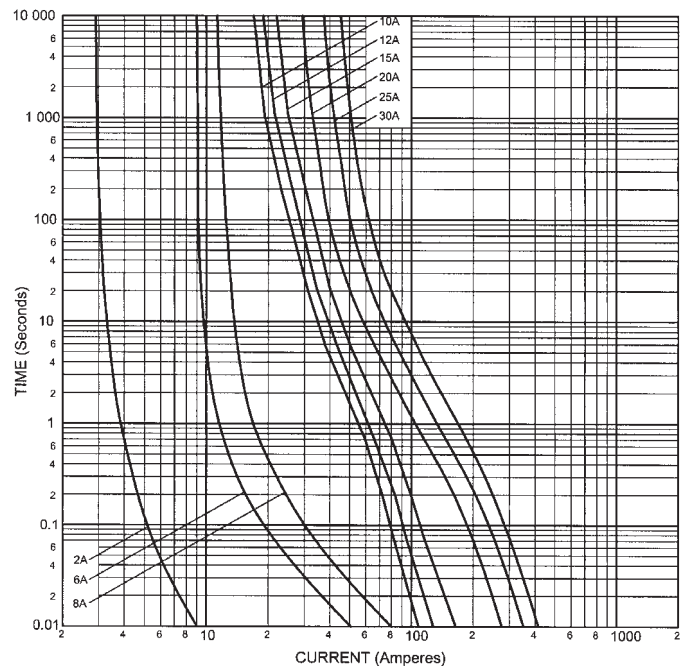
- Excellent cycling capability and dc performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters
- Traction aux circuits
- Capacitor protection

FWL/FWS 2-30A: 1000Vdc 2-30A (20 x 127mm)

Time-Current Curve



Ferrule fuse accessories

Fuse Holders

Specifications

Catalog Symbol: CH Series

Description: DIN rail mount fuse holders for high speed fuses.

Agency Information: CE

North American 10 x 38

Class CC: Listed UL 512, Guide IZLT2, File E14853, Certified CSA Std. C22.2 No. 39, Class 6225 01, File 47235

North American 10 x 38 Midget: Recognized UL 512, Guide IZLT2, File E14853, Certified CSA Std. C22.2 No. 39, Class 6225 01, File 47235

European: 10 x 38 IEC 269-2-1, 14 x 51 IEC 269-2, 22 x 58 IEC 269-2



Features and Benefits

- 10 x 38 Dovetail design provides maximum flexibility in assembling multiple poles
- Finger-safe design - No exposed contacts
- DIN rail mount (35mm) - Fits standard mounting rails
- Optional open fuse indication lights tells fuse status at a glance
- Handle/fusepuller easily installs and removes fuses
- Available in single and multi-pole configurations
- Circuit marking system (P/N CH10CL and CH10CM)
- Wire ready to save time as terminals are ready to accept wires
- CE marking

Typical Applications

- Switchboard panel, control consoles, small motors, transformers, and similar applications

Recommended Cooper Bussmann Fuse Types

- 10 x 38 North American Class CC Fuses - LP-CC, FNQ-R, KTK-R
- 10 x 38 North American Midget Fuses - FNQ, KTK, AGU, BAF, BAN, FNM, FWA, & FWC
- 14 x 51 Fuses - FWX, FWH, FWP & NON
- 22 x 58 Fuses - FWP

Fuse Blocks

Specifications

Catalog Symbol: J70100, J70032

Description: Fuse blocks for 22 x 58mm & 14 x 51mm fuses.

Construction: Thermoplastic

Ratings:

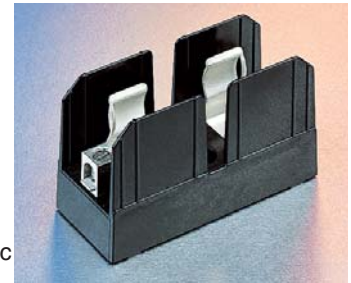
Volts: — 700Vac

Amps: — 32-100A

Withstand: — 200,000A RMS Sym.

Agency Information: CE, UL Recognized, Guide IZLT2, File E14853

Flammability Rating: UL 94V0



Catalog Numbers

Catalog Numbers	Fuse Size	Amps	Poles	Max Wire Size	Terminations
J70032-2CR	14x51	32	2	#2	Box Lug w/ Retaining Clip
J70032-3CR		32	3	#2	
J70100-1CR	22x58	100	1	#2	
J70100-2CR		100	2	#2	
J70100-3CR		100	3	#2	

High Speed Fuses

Did You Know?

Web Services

www.cooperbussmann.com

The Cooper Bussmann® web site makes available free information and other resources that include:

- Product Data Sheets for complete technical information on Cooper Bussmann products
- Online catalogs for the latest United States and European products
- Fuse Cross Reference to find the correct Cooper Bussmann replacement for a competitive fuse
- Arc-Flash Calculator to determine the incident energy level and flash protection boundary along with the recommends the level of Personal Protective Equipment (PPE)

COOPER Bussmann



easyID™

Reduce Downtime and Maintenance Costs.

Introducing an entire family of Cooper Bussmann® *easyID™* indication products for hundreds of circuit protection applications.

Cooper Bussmann *easyID* technology is available on many product lines: Low-Peak® fuses, CUBEFuse®, Safety Module™ fuse holders, high-speed fuses and Surge^{3™} surge suppressors.

Get superior circuit protection and convenience with no guessing about whether to replace the fuse or not.

To learn more about the product lines with *easyID* technology, whether local or remote, contact your nearest authorized Cooper Bussmann distributor or visit www.cooperbussmann.com today.

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