

## Ferrule fuses



### Table of Contents

Basic Catalog			
Number	Volts	Amp Range	Page
FWA	150	5-60	197-198
FWX	250	1-50	199-200
FWH	500	0.25-30	201-204
FWC	600	6-32	205-206
FWP	690V/700	1-100	207-210
FWK	750	5-60	211-212
FWJ	1000	20-30	213-214
FWL/FWS	1250/1500/2000	2-30	215

### Accessories

Fuse Holders	216
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### 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 ( $I^2t$ )

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.

## 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/dc

Amps: — 5-60A

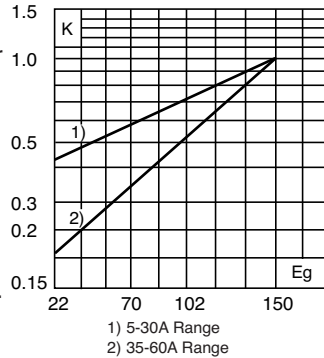
IR: — 100kA Sym.

**Agency Information:** CE, UL Recognition

### Electrical Characteristics

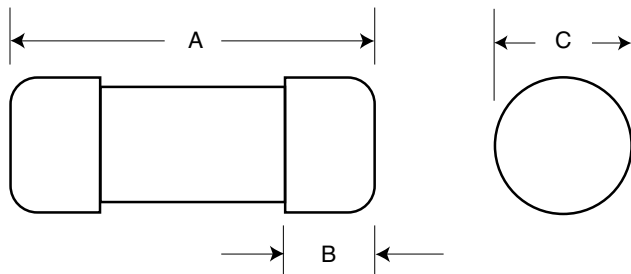
#### Total Clearing $I^2t$

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).



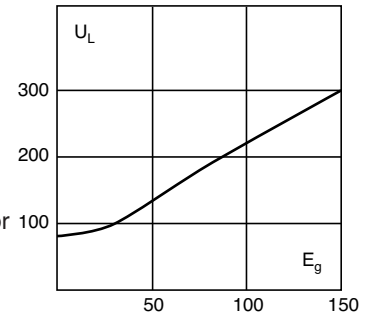
#### Dimensions - in (mm)

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)



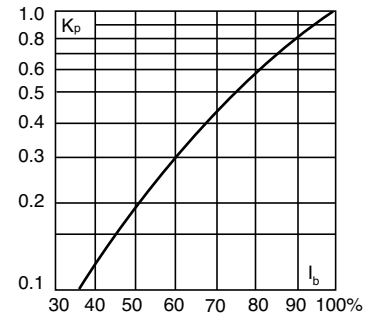
### Arc Voltage

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	$I^2t$ (A <sup>2</sup> Sec)		Watts Loss
			Pre-arc	Clearing at 150V	
FWA-5A10F	10 x 38mm ( <sup>13</sup> / <sub>16</sub> " x 1 <sup>1</sup> / <sub>2</sub> ")	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 ( <sup>13</sup> / <sub>16</sub> " 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 216.

### 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

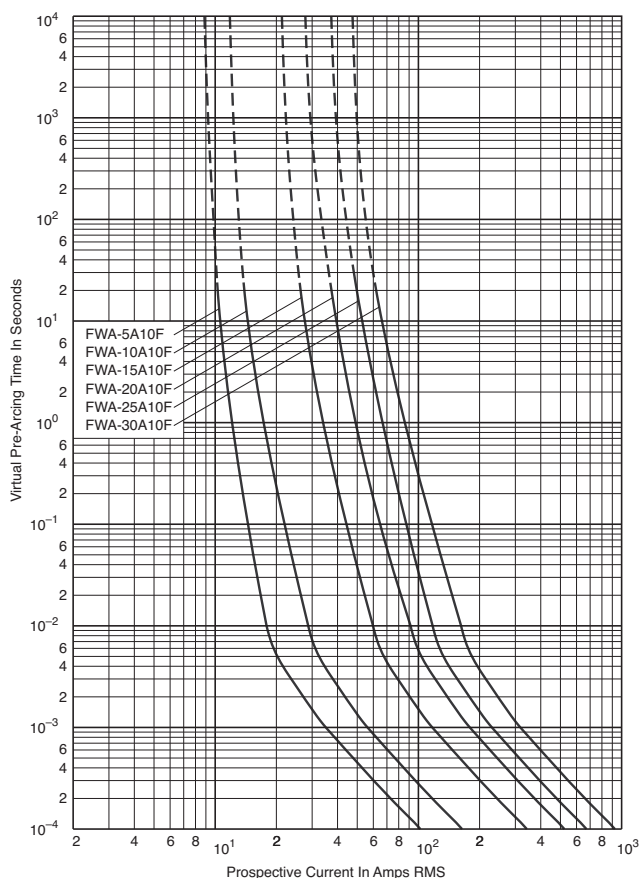
### Typical Applications

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

## Ferrule — FWA 150V: 5-60A

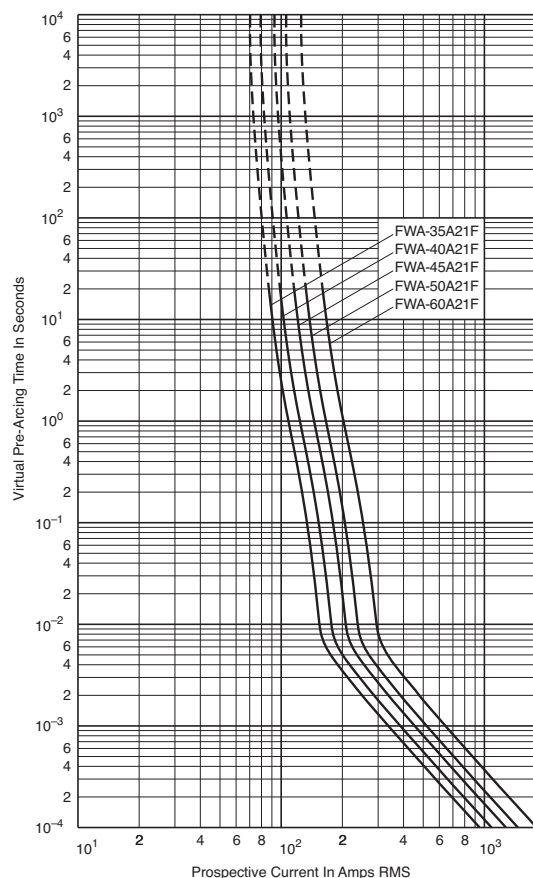
### FWA 5-30A: 150V (10 x 38mm)

Time-Current Curve

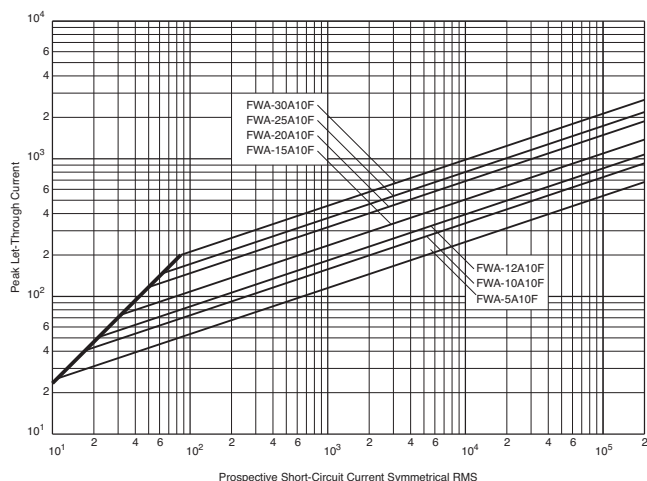


### FWA 35-60A: 150V (21 x 51mm)

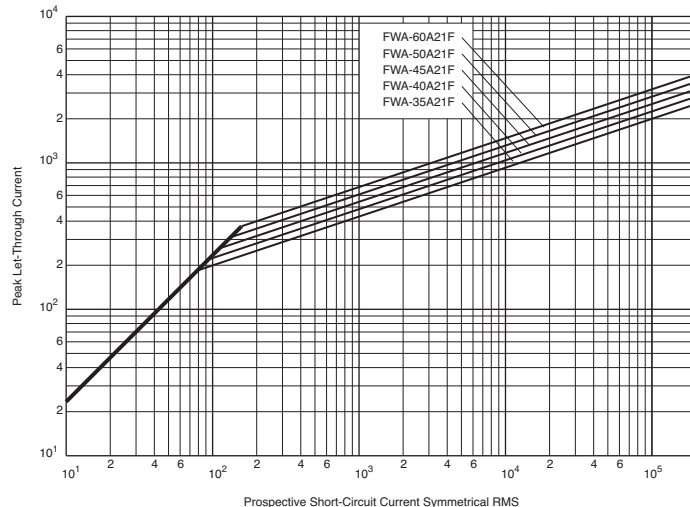
Time-Current Curve



Peak Let-Through Curve



Peak Let-Through Curve



## Ferrule — FWX 250V (UL): 1-50A

### FWX (14 x 51mm)

#### Specifications

**Description:** Ferrule style high speed fuses.

**Dimensions:** See dimensions illustration.

#### Ratings:

Volts: — 250Vac/dc

Amps: — 1-50A

IR: — 200kA RMS Sym.

— 50kA @ 250Vdc

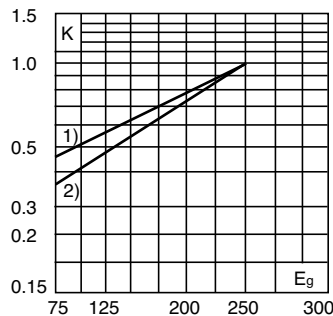
**Agency Information:** CE, UL Recognition 1-50A & CSA Component Acceptance: 5-30A

#### Electrical

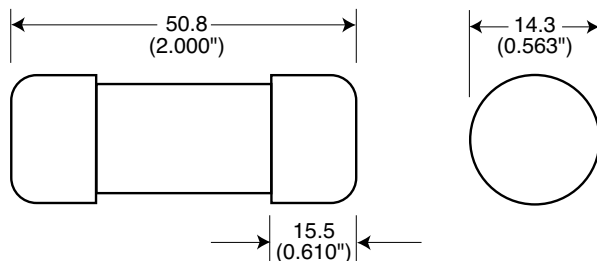
#### Characteristics

#### Total Clearing $I^2t$

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).

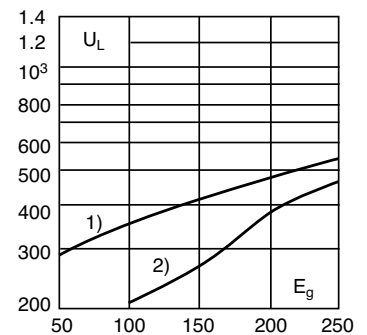


#### Dimensions - mm (inches)



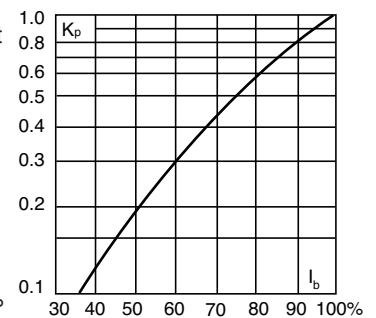
#### Arc Voltage

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

Catalog Number	Size	Electrical Characteristics			
		Rated Current RMS-Amps	$I^2t$ (A <sup>2</sup> Sec)		Watts Loss
			Pre-arc	Clearing at 250V	
FWX-1A14F	14 x 51mm ( $\frac{1}{2}$ " x 2")	1	—	—	—
FWX-2A14F		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 216.

#### 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

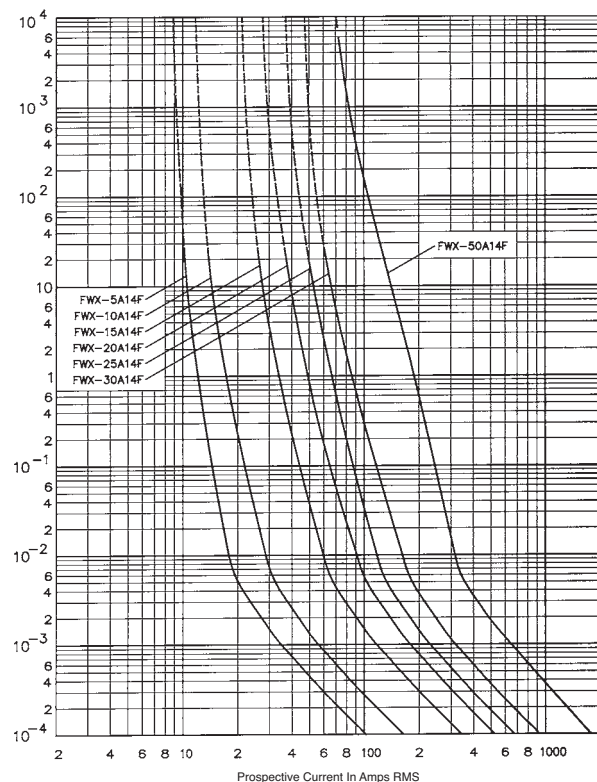
#### Typical Applications

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

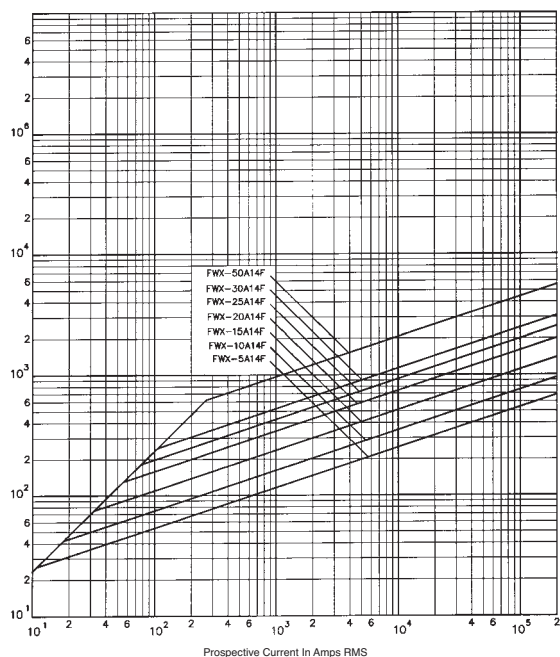
## Ferrule — FWX 250V (UL): 1-50A

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

Time-Current Curve



Peak Let-Through Curve



## 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  $\geq 20\%$  pf (0.25-20A)

— 20kA at  $\geq 20\%$  pf (25-30A)

**Agency Information:** CE, UL Recognition 0.25-30A, CSA

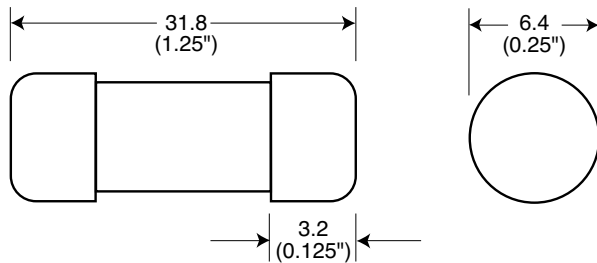
Component Acceptance: 0.25-7A

#### Opening Times

Amp Ratings	150%	200%	300%
0.25-7	> 30 min	< 30 min	$\leq 10$ sec
10-30	< 30 min	< 30 min	$\leq 10$ sec



#### Dimensions - mm (inches)



### Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I <sup>2</sup> t (A <sup>2</sup> Sec)		Watts Loss
			Pre-arc	Clearing at 500V	
FWH-.250A6F	6 x 32mm ( $\frac{1}{4}$ " x 1 $\frac{1}{4}$ ")	0.25*	0.01	0.05	2.7
FWH-.500A6F		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 216.

### Features and Benefits

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

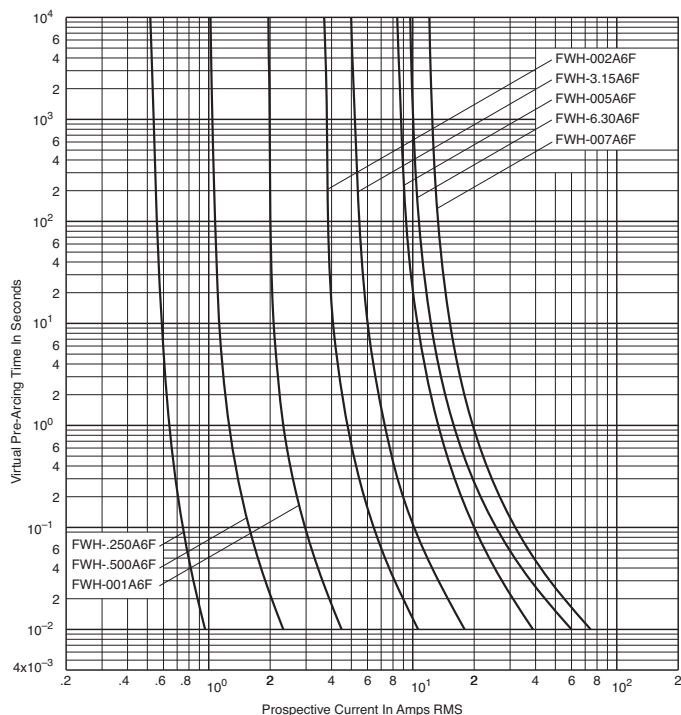
### Typical Applications

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

## Ferrule — FWH 500V: 0.25-30A

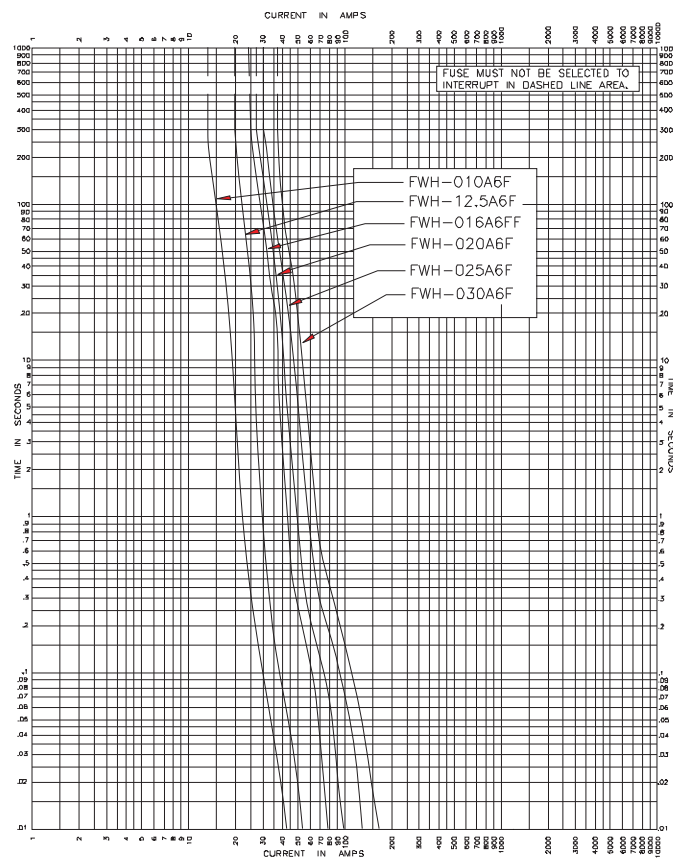
### FWH 0.25-7A: 500V (6 x 32mm)

Time-Current Curve



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

Time-Current Curve





## Ferrule — FWH 500V: 1-30A

### FWH (14 x 51mm)

#### Specifications

**Description:** Ferrule style high speed fuses.

**Dimensions:** See dimensions illustration.

#### Ratings:

Volts: — 500Vac/dc

Amps: — 1-30A

IR: — 200kA RMS Sym.

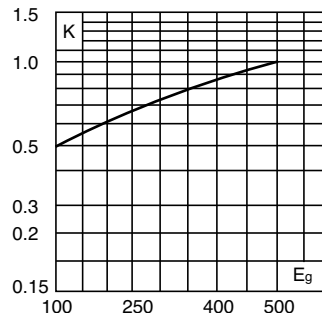
— 50kA @500Vdc

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

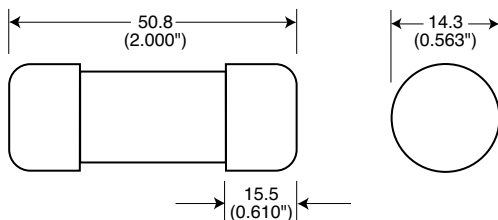
#### Electrical Characteristics

##### Total Clearing $I^2t$

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).

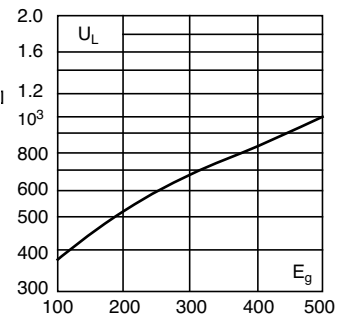


#### Dimensions - mm (inches)



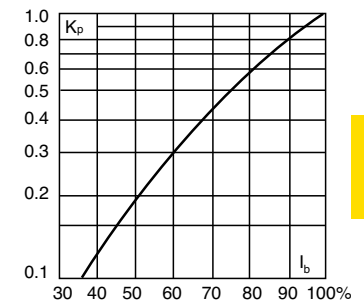
#### Arc Voltage

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

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	$I^2t$ (A <sup>2</sup> Sec)		Watts Loss
FWH-1A14F	14 x 51mm ( $\frac{1}{2}$ " x 2")	1	—	—	—
FWH-2A14F		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 216.

#### 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

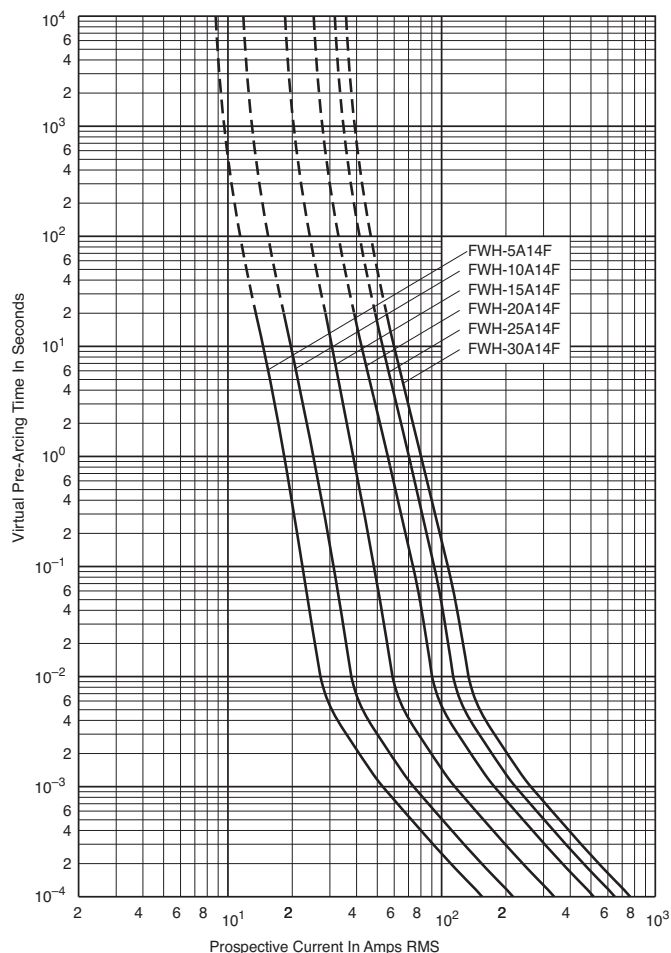
- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters



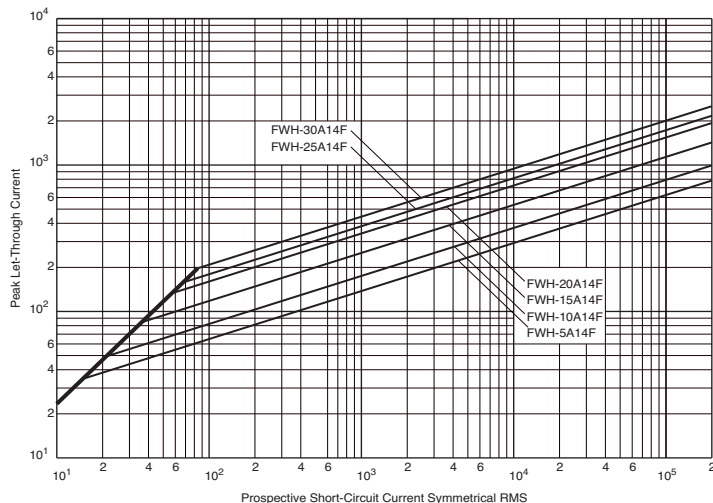
## Ferrule — FWH 500V: 1-30A

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

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785298

## Ferrule — FWC 600V: 6-32A

### FWC (10 x 38mm)

#### Specifications

**Description:** Ferrule style high speed fuses.

**Dimensions:** See dimensions illustration.

#### Ratings:

Volts: — 600Vac/dc

Amps: — 6-32A

IR: — 200kA RMS Sym.

— 50kA @ 700Vdc (6-25A)

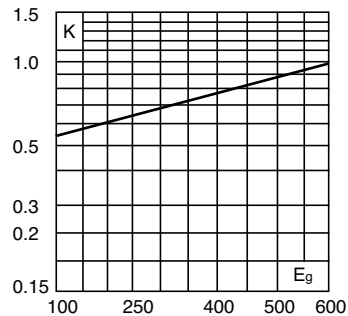
**Agency Information:** CE, UL Recognition: 6-32A.

UL Recognition: 6-25A

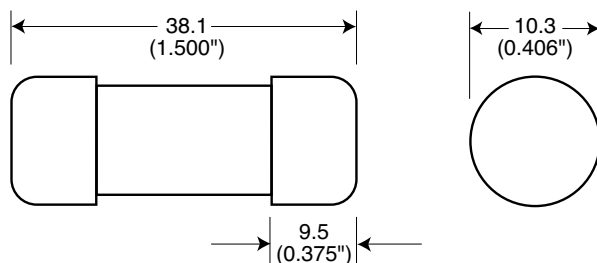
#### Electrical Characteristics

##### 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).

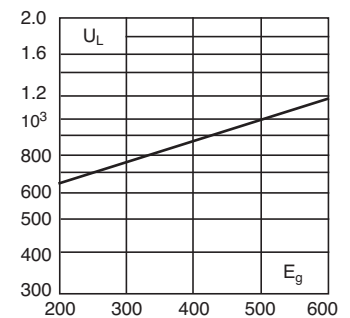


#### Dimensions - mm (inches)



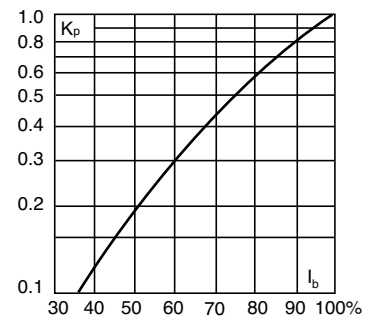
#### Arc Voltage

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

Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	$I^2t$ (A <sup>2</sup> Sec)		Watts Loss
			Pre-arc	Clearing at 600V	
FWC-6A10F	10 x 38mm ( <sup>13</sup> / <sub>32</sub> " x 1 1/2")	6	4	30	1.5
FWC-8A10F		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-30A10F		30	95	600	7.5
FWC-32A10F		32	95	600	7.5

• Watts loss provided at rated current.  
• See accessories on page 216.

#### 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

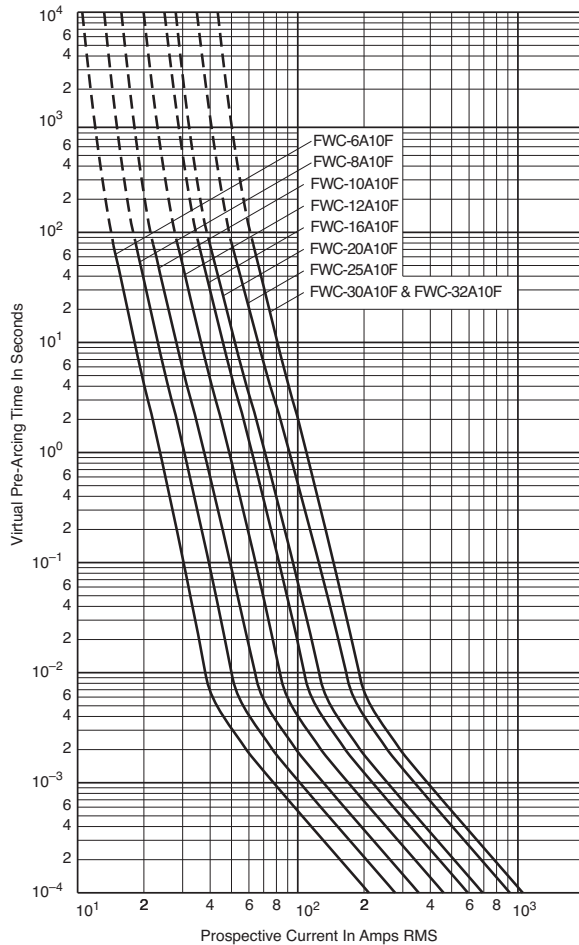
#### Typical Applications

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

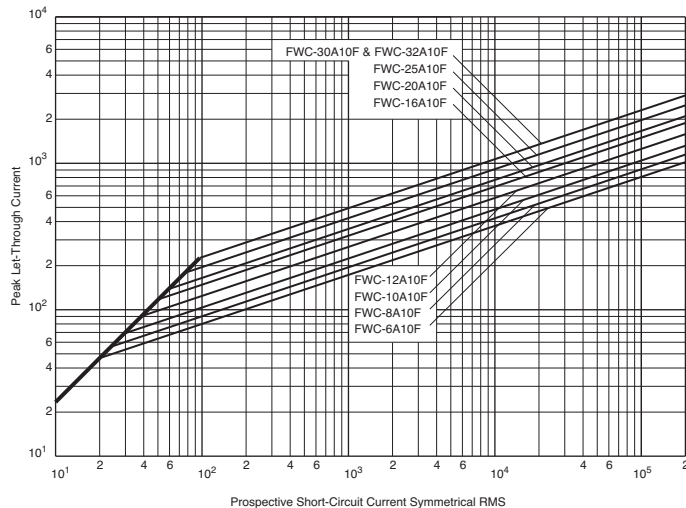
## Ferrule — FWC 600V: 6-32A

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

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785306

## 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)  
— 800Vdc (5-50A)

Amps: — 1-50A

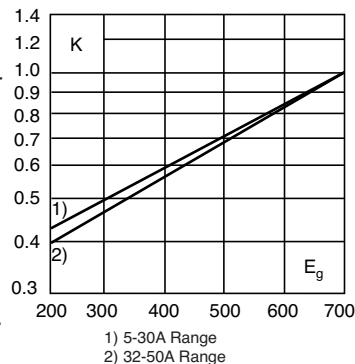
- IR: — 200kA RMS Sym.  
— 50kA @800Vdc

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

#### Electrical Characteristics

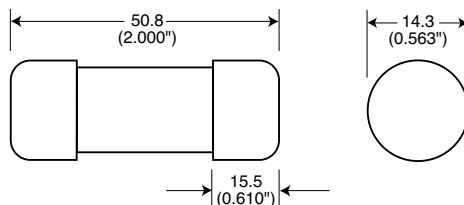
##### Total Clearing I<sup>2</sup>t

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

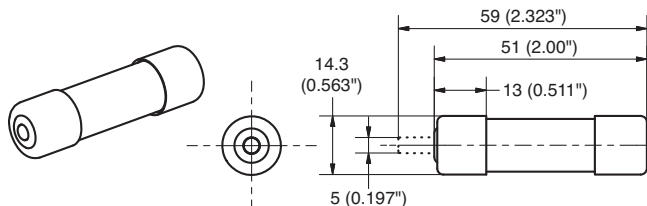


#### Dimensions - mm (inches)

##### Without Striker



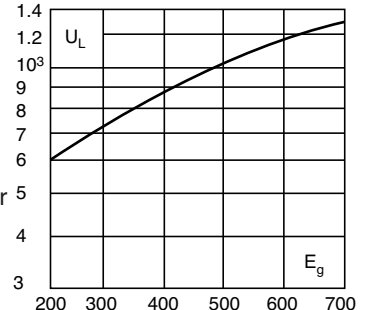
##### With Striker



FWP with striker option.

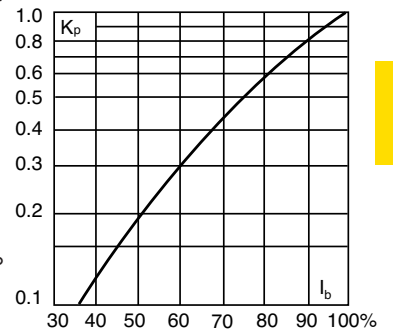
#### Arc Voltage

This curve gives the peak arc voltage, U<sub>L</sub>, which may appear across the fuse during its operation as a function of the applied working voltage, E<sub>g</sub>, (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<sub>p</sub>, is given as a function of the RMS load current, I<sub>b</sub>, in % of the rated current.



#### Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics			
		Current RMS-Amps	Rated Minimum Melting	Clearing At Rated Voltage	Watts Loss
Without Striker					
FWP-1A14Fa	14 x 51mm ( <sup>1</sup> / <sub>16</sub> " x 2")	1	—	—	—
FWP-2A14Fa		2	—	—	—
FWP-2.5A14Fa		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					
FWP-10A14FI	14 x 51mm ( <sup>1</sup> / <sub>16</sub> " x 2")	10	3.6	38.5	4
FWP-15A14FI		15	8.6	70	5.5
FWP-20A14FI		20	26.0	230	6
FWP-25A14FI		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

• Watts loss provided at rated current.  
• See accessories on page 216.

#### Features and Benefits

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

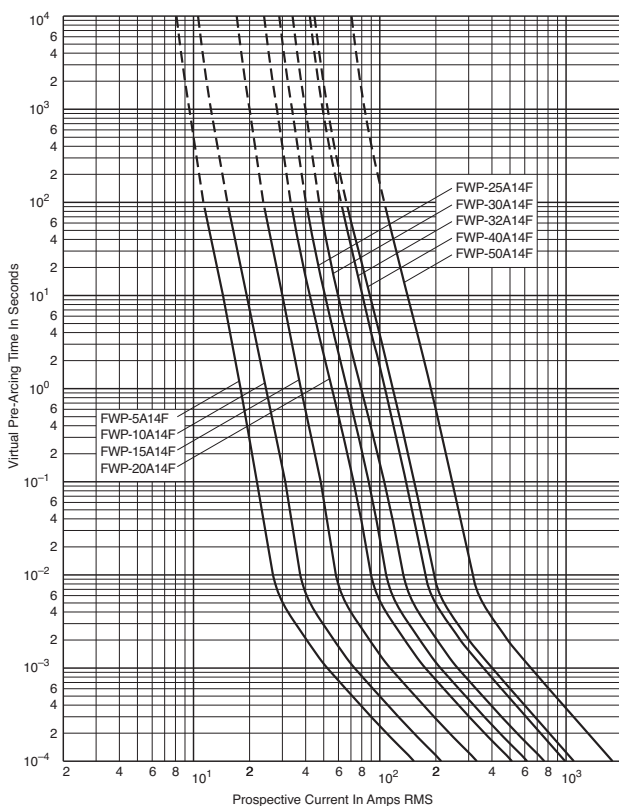
Data Sheet: 720025

## Ferrule — FWP 690V/700V (IEC/UL): 1-50A, Striker Optional

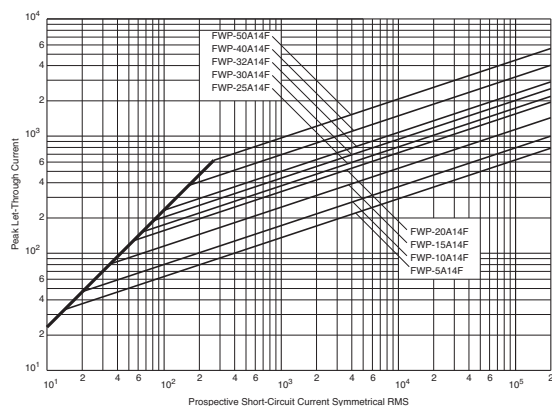
Without Striker

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

Time-Current Curve



Peak Let-Through Curve



Data Sheet: 35785307

## 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

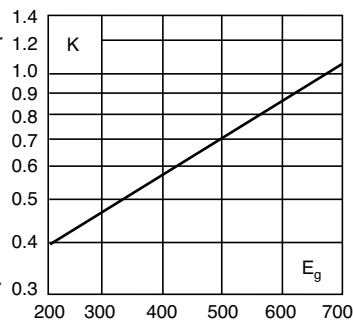
IR: — 200kA RMS Sym.  
— 50kA @ 500Vdc

**Agency Information:** CE, UL Recognition

#### Electrical Characteristics

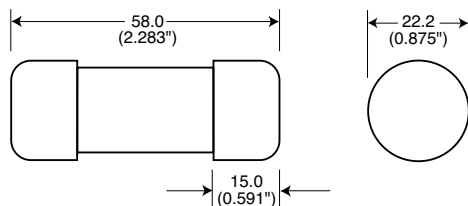
##### Total Clearing $I^2t$

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).

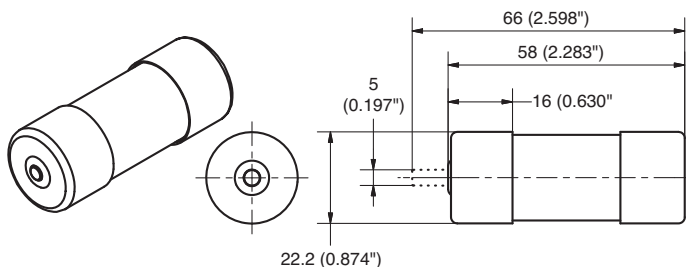


#### Dimensions - mm (inches)

##### Without Striker



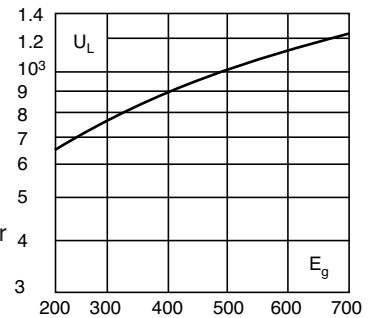
##### With Striker



Data Sheet: 720026

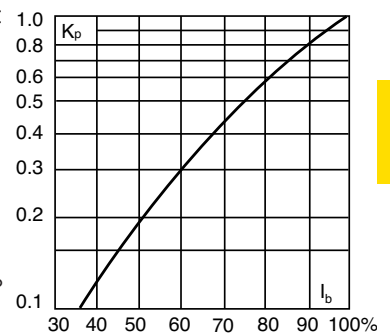
#### Arc Voltage

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	$I^2t$ (A <sup>2</sup> Sec)		Watts Loss
			Minimum Melting	Clearing At Rated Voltage	
Without Striker					
FWP-20A22Fa	22 x 58mm ( $\frac{7}{8}$ " x 2 $\frac{1}{2}$ " )	20	19.0	260	5
FWP-25A22Fa		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 ( $\frac{7}{8}$ " x 2 $\frac{1}{2}$ " )	20	19.0	260	5
FWP-25A22FI		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 690/700

#### 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

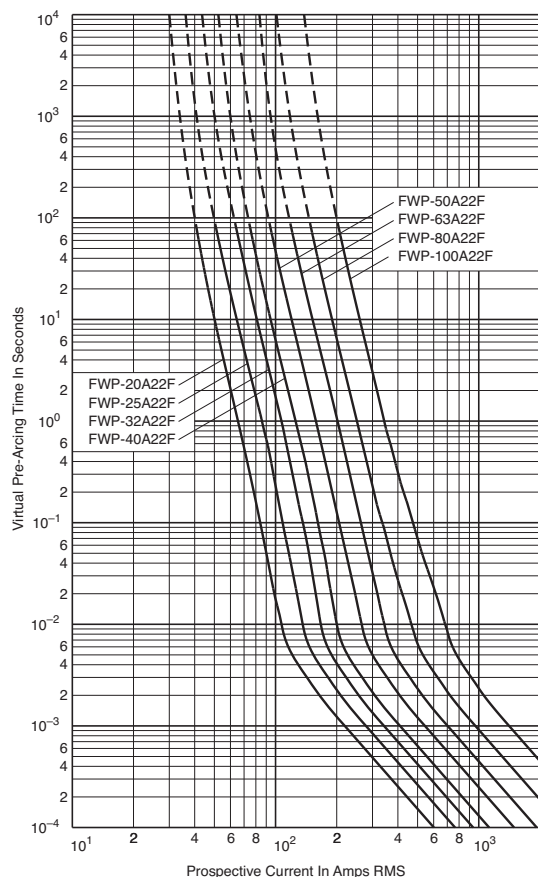
- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters

## Ferrule — FWP 690V/700V (IEC/UL): 20-100A, Striker Optional

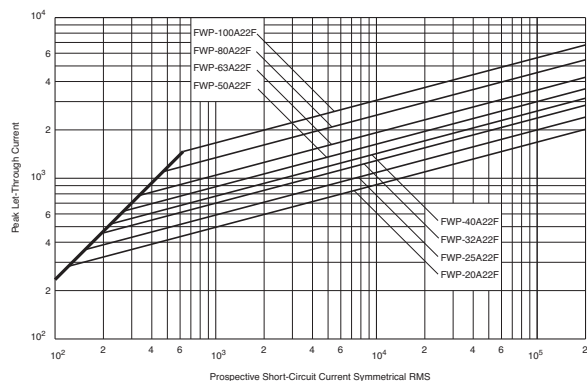
Without Striker

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

Time-Current Curve



Peak Let-Through Curve





## 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 = 10-15mS)

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 ( $I^2t$ )
- 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

#### Catalog Numbers

Catalog Numbers	Size	Electrical Characteristics		
		Rated Current RMS-Amps	$I^2t$ (A <sup>2</sup> Sec)	
			Pre-arc	Clearing at 750Vdc
FWK-5A20F	20 x 127mm ( $\frac{13}{16}$ " 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 $\frac{7}{8}$ ")	35	1300	4300
FWK-40A25F		40	1600	5300
FWK-50A25F		50	3100	12000
FWK-60A25F		60	5900	24000

Recommended fuseholders for 20x127, CH127-1, -2, -3

Recommended fuseclips for 20x127, 1A1837

Recommended fuseclips for 25x146, A3354705

#### Dimensions - mm (inches)

Fig. 1: 5-30A

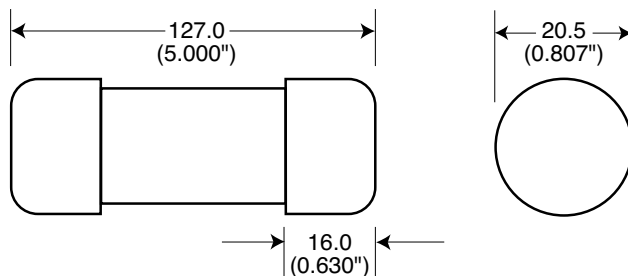
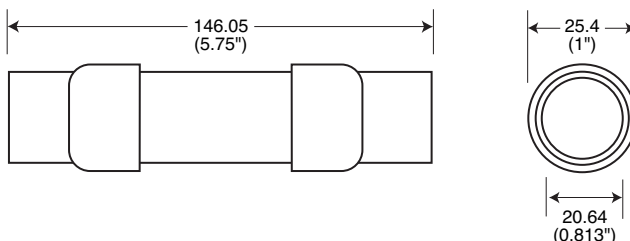


Fig. 2: 35-60A

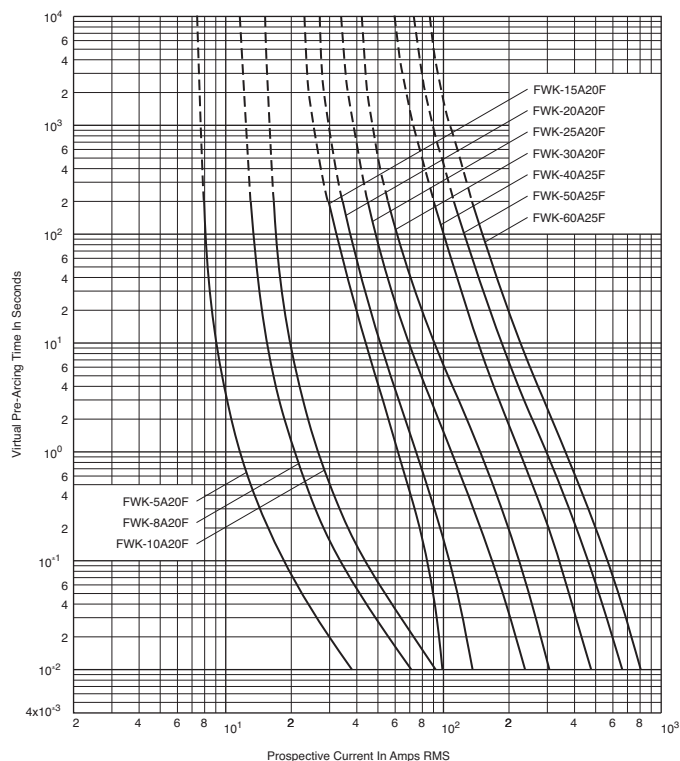


Data Sheet: 720039

## Ferrule — FWK 750V: 5-60A

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

Time-Current Curve



## Ferrule — FWJ 1000V: 20-30A

### FWJ (14 x 67mm)

#### Specifications

**Description:** Ferrule style high speed fuses.

**Dimensions:** See dimensions illustration.

#### Ratings:

Volts: — 1000Vac/800Vdc

Amps: — 20-30A

IR: — 25kA RMS Sym.

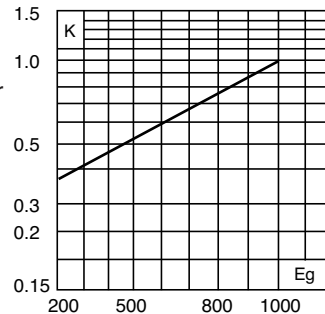
— 20kA @ 800Vdc

**Agency Information:** CE, UL Recognized

#### Electrical Characteristics

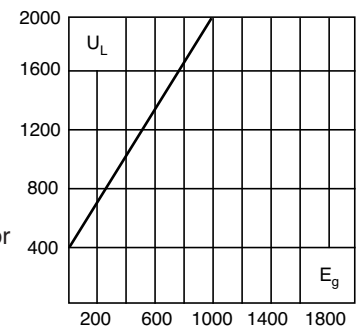
##### Total Clearing $I^2t$

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).



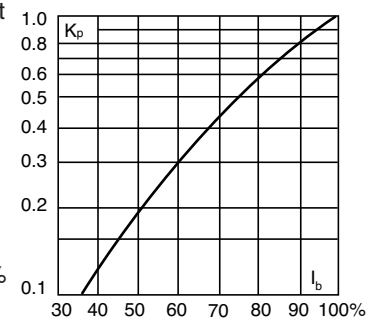
#### Arc Voltage

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	$I^2t$ (A <sup>2</sup> Sec)		Watts Loss
			Pre-arc	Clearing at 1000V	
FWJ-20A14F	14 x 67mm	20	25	220	9
FWJ-25A14F	( $\frac{1}{8}$ " x 2 $\frac{1}{2}$ " )	25	33	350	11
FWJ-30A14F		30	52	450	14

• Watts loss provided at rated current.  
• See accessories on page 216.

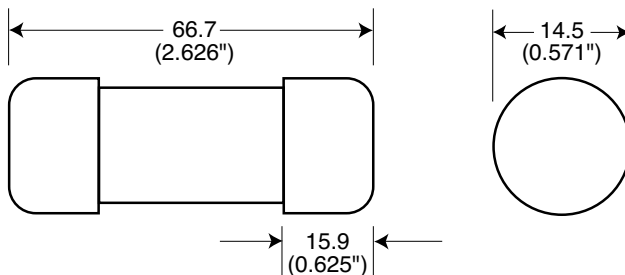
#### Features and Benefits

- 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

#### Dimensions - mm (inches)



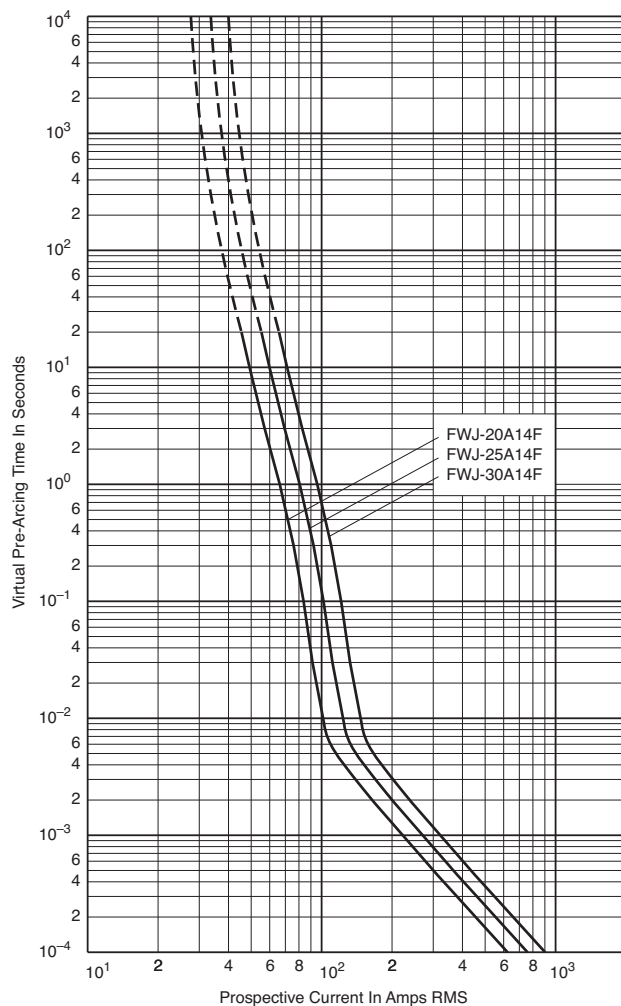
#### Fuseclips:

- Catalog Number: 5591 (see data sheet 2132)

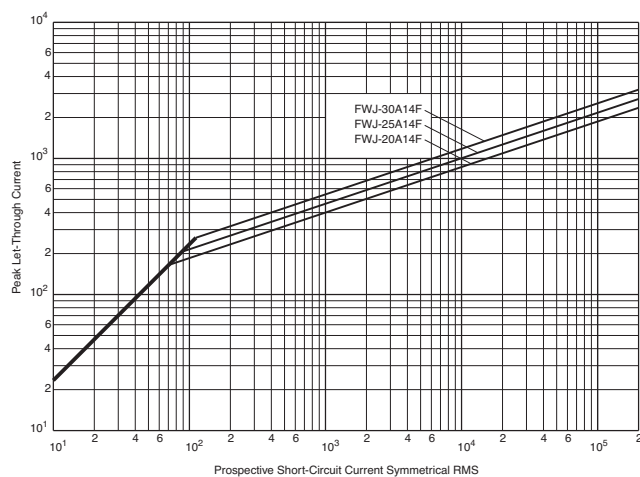
## Ferrule — FWJ 1000V: 20-30A

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

Time-Current Curve



Peak Let-Through Curve



## 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

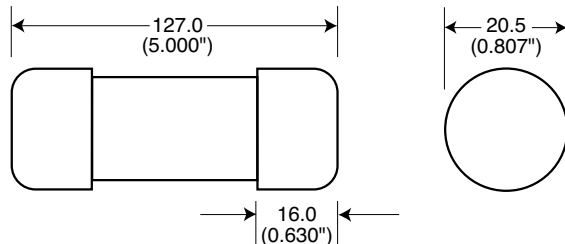
**Agency Information:** CE, IEC 60077

#### Catalog Numbers

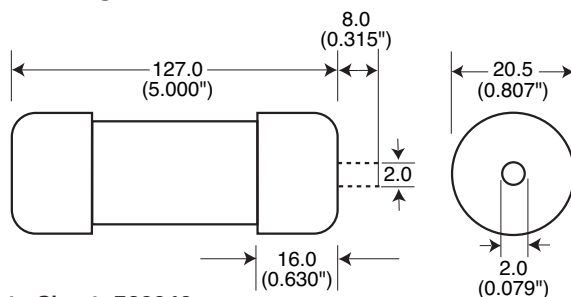
Catalog Numbers	Size	Electrical Characteristics			
		Rated Current RMS-Amps	I <sup>2</sup> t (A <sup>2</sup> Sec)		Watts Loss
FWS-2A20F	20 x 127mm ( <sup>13</sup> / <sub>16</sub> " x 5")	2	0.8	2.4	4.4
FWS-6A20F		6	27	81	6.7
FWS-8A20F		8	64	192	7.6
FWS-10A20F		10	118	277	3.0
FWS-12A20F		12	170	380	3.4
FWS-15A20F		15	209	500	5.0
FWL-20A20F	20 x 127mm ( <sup>13</sup> / <sub>16</sub> " x 5")	20	675	1550	5.9
FWL-25A20F		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 216.
- Watts loss provided at rated current.

#### Dimensions - mm (inches)



#### Indicating Version - Dimensions - mm (inches)



Data Sheet: 720040



#### Features and Benefits

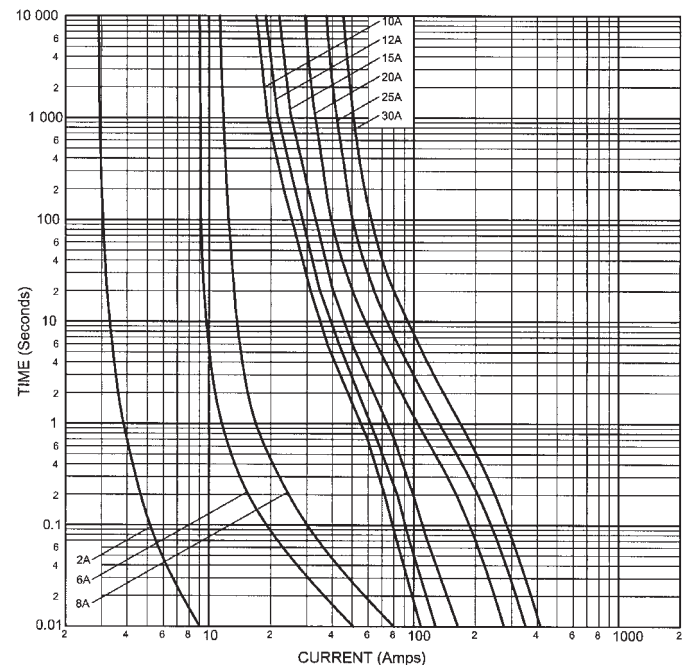
- Excellent cycling capability and DC performance
- Low arc voltage and low energy let-through (I<sup>2</sup>t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

#### 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

#### Agency Information:

cULus/cURus/CE

#### North American 10 x 38

**Class CC:** Listed UL 4248, Guide IZLT, File E14853, Certified CSA Std. C22.2 No. 39, Class 6225 01, File 47235

**North American 10 x 38 Midget:** Recognized UL 4248, 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 269-2-1, 22 x 58 IEC 269-2-1

#### Features and Benefits

- 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
- Wire ready lugs and spade terminal connections save installation time
- CE marking
- Available up to 1000Vdc
- PLC device available for remote monitoring

#### Typical Applications

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

#### Recommended Cooper Bussmann Fuse Types

**Class CC** 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, PV & DCM

**14 x 51** Fuses - FWX, FWH, FWP & NON

**22 x 58** Fuses - FWP

See pages 257 and 258 for CH Series fuse holder information.



### Fuse Blocks

#### Specifications

**Catalog Symbol:** J70100, J70032

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

#### Ratings:

Volts — 700Vac

Amps — 32-100A

Withstand — 200kA 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	



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