# Ferrule Fuses

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## Accessories



## 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

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 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 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

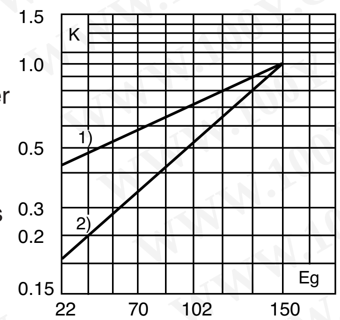
IR: — 100kA Sym.

**Agency Information:** CE, UL Recognition JFHR2.E91958

### Electrical Characteristics

### Total Clearing I²t

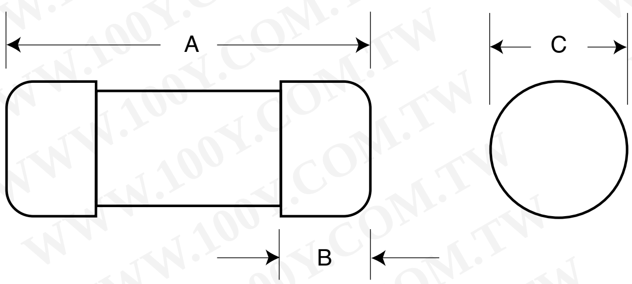
The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, $E_g$, (rms).




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

### Dimensions - in (mm)

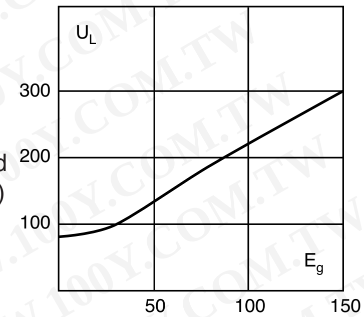
| Amp Range | Dimensions A | B | C |
|---|---|---|---|
| 5-30 | 1.5 (38.1) | 0.375 (9.5) | 0.406 (10.3) |
| 35-60 | 2.0 (50.8) | 0.625 (15.9) | 0.811 (20.6) |





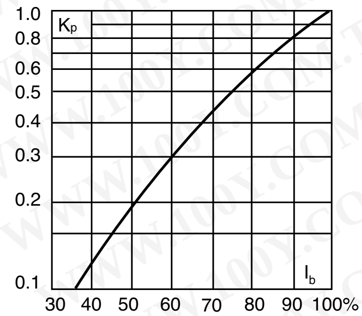

### Arc Voltage

This curve gives the peak arc voltage, $U_L$, which may appear across the fuse during its operation as a function of theapplied 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 | I²t (A² Sec): Pre-arc | I²t (A² Sec): Clearing at 150V | Watts Loss |
|---|---|---|---|---|---|
| FWA-5A10F | 10 x 38mm (13⁄32" x 1½") | 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 (13⁄16" 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 243.

### 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

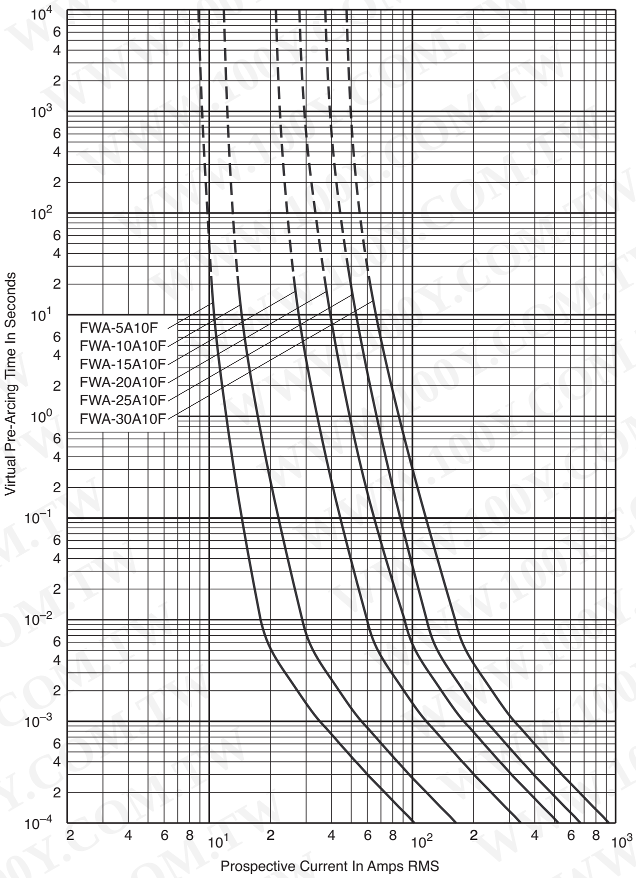
- DC Common bus
- DC Drives
- Power converters/rectifiers
- Reduced voltage starters

Data Sheet: 720003

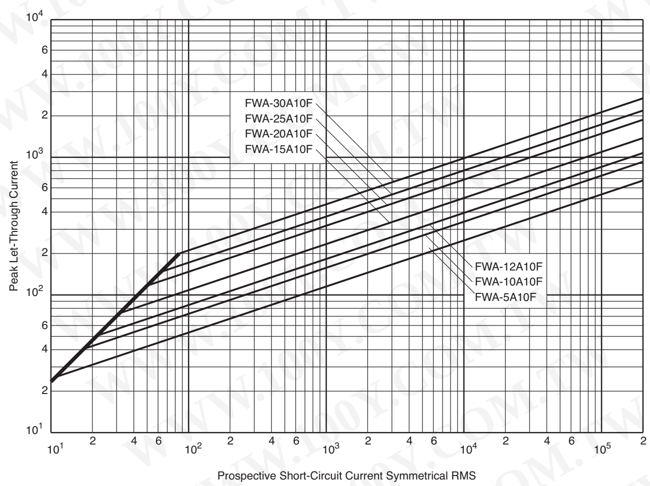
# Ferrule — FWA 150V: 5-60A

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

### Time-Current Curve



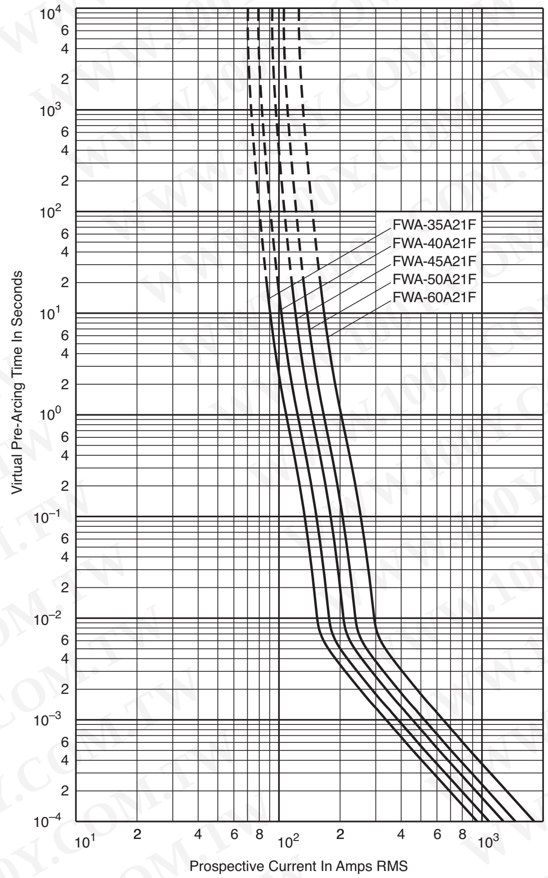

### Peak Let-Through Curve



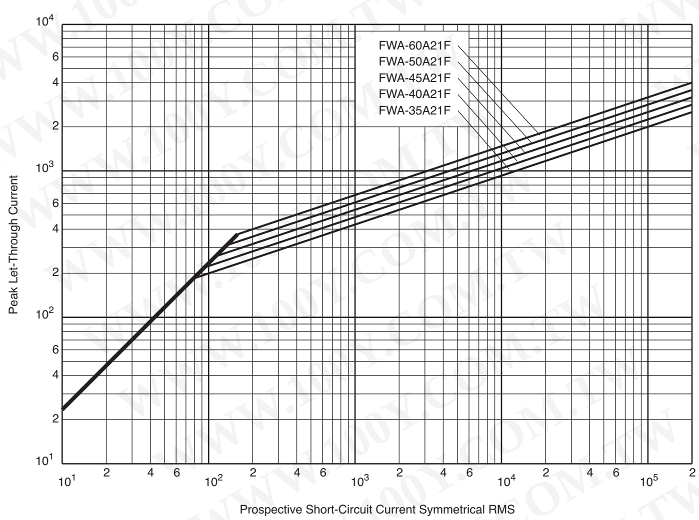

**Data Sheet: 35785317**

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

### Time-Current Curve




### Peak Let-Through Curve




**Data Sheet: 35785305**

# 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.

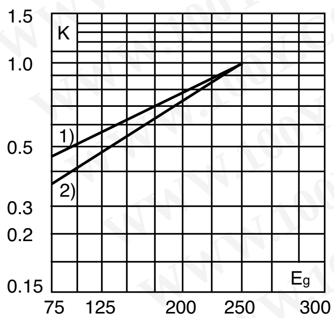
— 50kA @ 250Vdc

**Agency Information:** CE, UL Recognition JFHR2.E91958 1-50A & CSA Component Acceptance file Class 1422-30, 1422-90 (53787) 5-30A

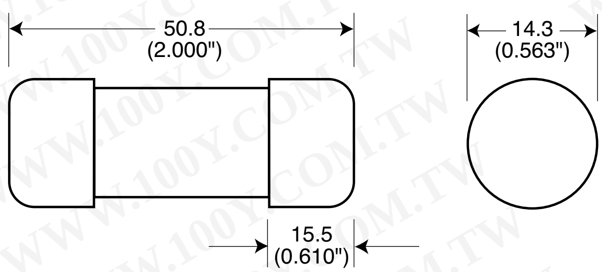
### Electrical Characteristics

### 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).



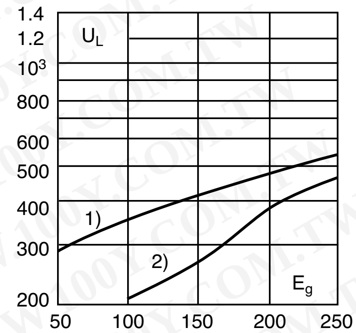

### Dimensions - mm (in)





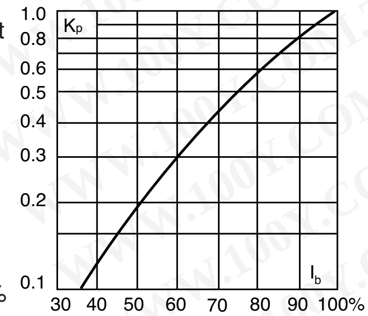

### Arc Voltage

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 | I²t (A²Sec): Pre-arc | I²t (A²Sec): Clearing at 250V | Watts Loss |
|---|---|---|---|---|---|
| FWX-1A14F | | 1 | — | — | — |
| FWX-2A14F | | 2 | — | — | — |
| FWX-3A14F | | 3 | — | — | — |
| FWX-4A14F | | 4 | — | — | — |
| FWX-5A14F | 14 x 51mm | 5 | 1.6 | 13 | 1.3 |
| FWX-10A14F | (⁹⁄₁₆" x 2") | 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 Bussmann for additional ratings.
• See accessories on page 243.

### 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

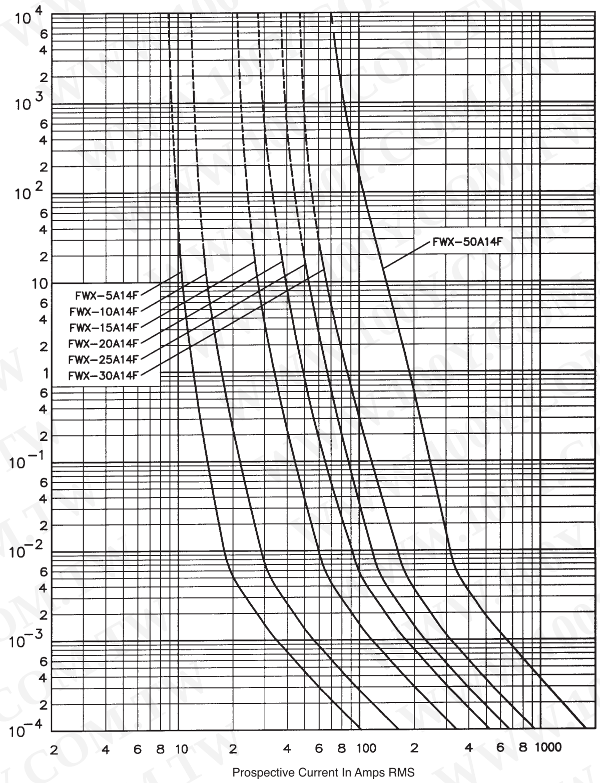
- DC Common bus
- DC Drives
- Power converters/rectifiers
- Reduced voltage starters

Data Sheet: 720006

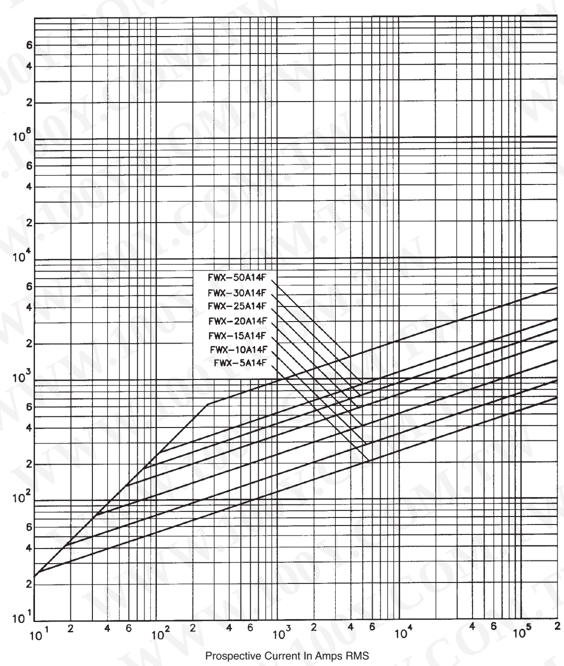
# Ferrule — FWX 250V (UL): 1-50A

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

### Time-Current Curve




### Peak Let-Through Curve






High Speed Fuses

**Data Sheet: 35785302**

# Ferrule — FWH 500V: 0.25-30A

## FWH (6 x 32mm)

**Specifications**

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

**Dimensions:** See dimensions illustrations.

**Ratings:**

Volts: — 500Vac (0.25-6.3A)
500Vdc (2-5A)

Amps: — 0.25-30A

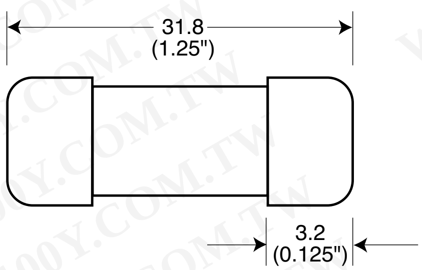
IR: — 50kA at ≥ 20% pf (0.25-20A)
— 20kA at ≥ 20% pf (25-30A)

**Agency Information:** CE, UL Recognition JFHR2.E91958 0.25-30A, CSA Component Acceptance file Class 1422-30, 1422-90 (53787) 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 | Electrical Characteristics: Rated Current RMS-Amps | I²t (A² Sec): Pre-arc | I²t (A² Sec): Clearing at 500V | Watts Loss |
|---|---|---|---|---|---|
| FWH-.250A6F | | 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 x 32mm (¼" x 1¼") | 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 Bussmann for DC ratings.
• See accessories on page 243.

### 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

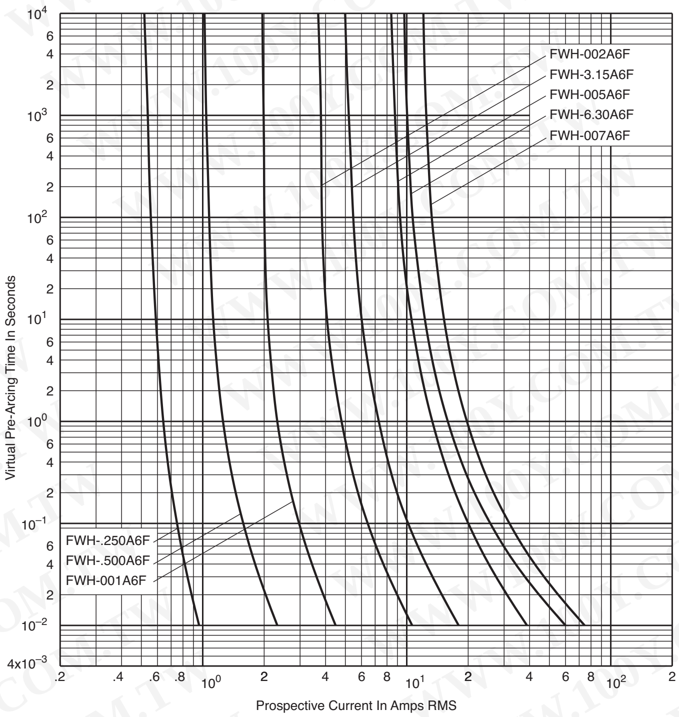


**Data Sheet: 720038**

# Ferrule — FWH 500V: 0.25-30A

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

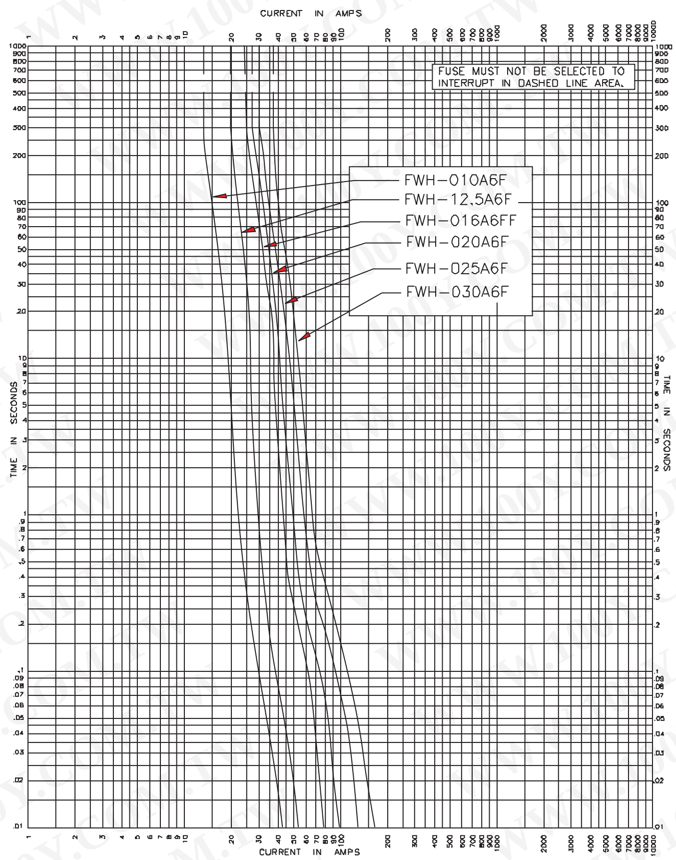
### Time-Current Curve




Data Sheet: 35785256

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

### Time-Current Curve




Data Sheet: 50955

# Ferrule — FWH 500V: 1-30A

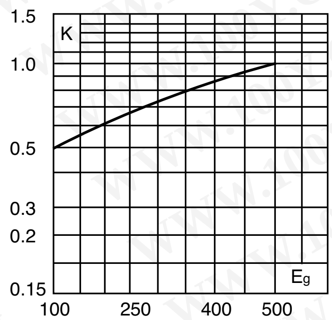
## FWH (14 x 51mm)

**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 file Class 1422-30, (53787) on: 5 - 30A.

### Electrical Characteristics

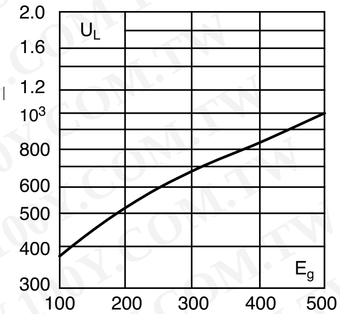
**Total Clearing I²t**

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).



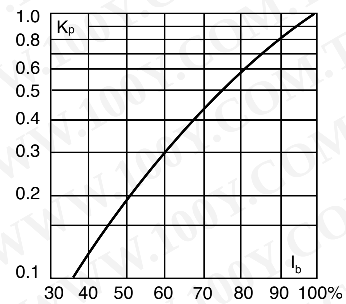

### Arc Voltage

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.

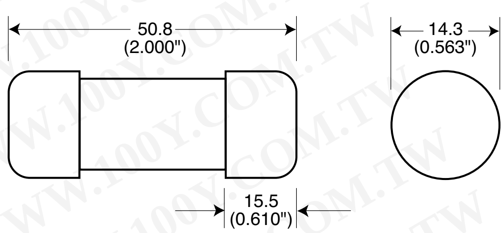



### Catalog Numbers

| Catalog Numbers | Size | Electrical Characteristics: Rated Current RMS-Amps | I²t (A² Sec) Pre-arc | I²t (A² Sec) Clearing at 500V | Watts Loss |
|---|---|---|---|---|---|
| FWH-1A14F | 14 x 51mm | 1 | — | — | — |
| FWH-2A14F | (⁹⁄₁₆" 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 243.

### 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

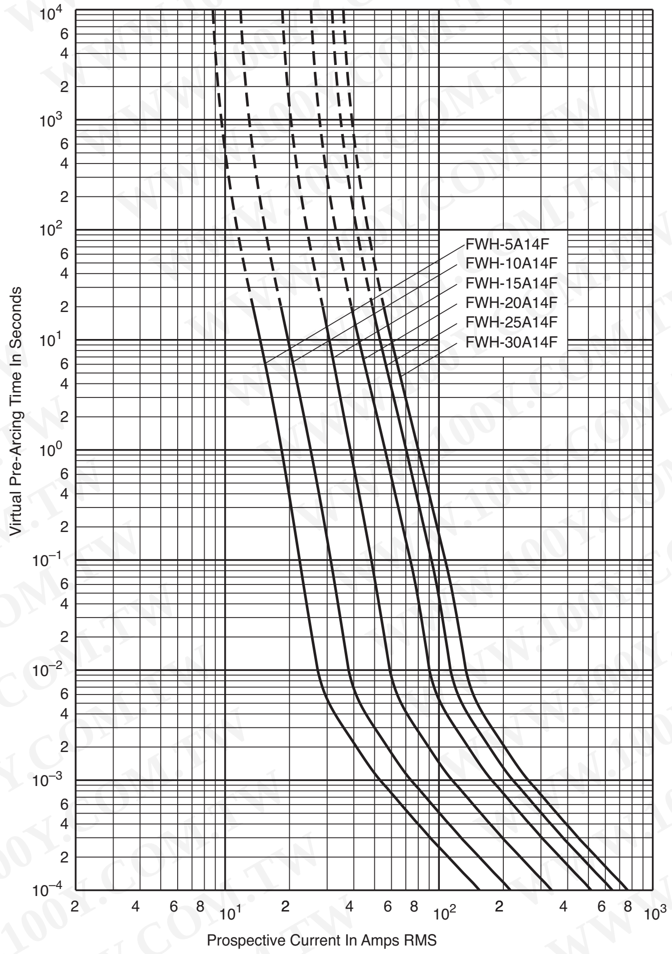


Data Sheet: 720008

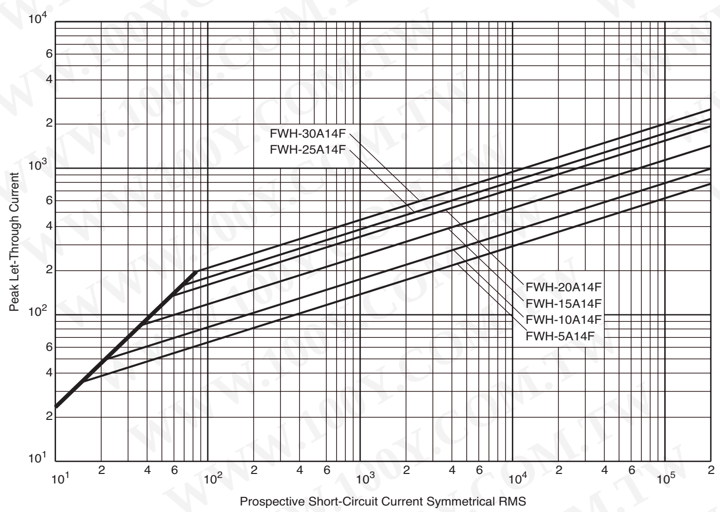
# Ferrule — FWH 500V: 1-30A

## 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/700Vdc (6-25A)
600Vac (30-32A)

Amps: — 6-32A

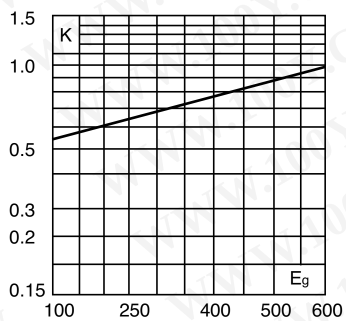
IR: — 200kA RMS Sym.
— 50kA @ 700Vdc (6-25A)

**Agency Information:** CE, UL Recognition JFHR8.E91958 6-32A. & CSA Component Acceptance file Class 1422-30, (53787) on (6-32A)

### Electrical Characteristics

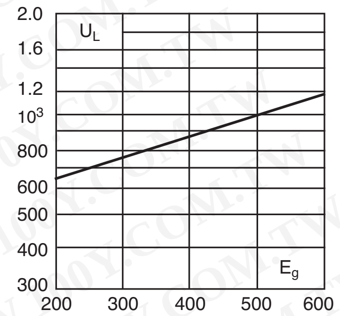
**Total Clearing I²t**

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).



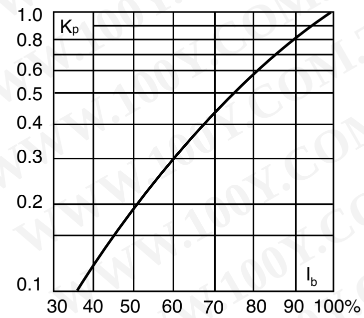

**Arc Voltage**

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

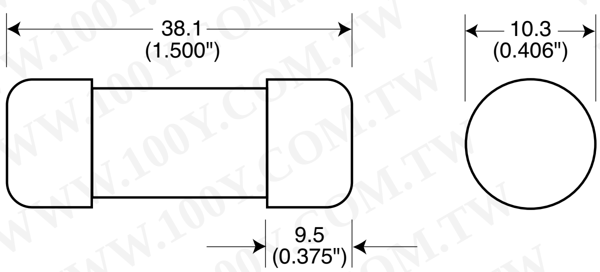



**Power Losses**

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.




**Dimensions - mm (in)**




**Catalog Numbers**

| Catalog Numbers | Size | Electrical Characteristics Rated Current RMS-Amps | I²t (A² Sec) Pre-arc | Clearing at 600V | Watts Loss |
|---|---|---|---|---|---|
| FWC-6A10F | | 6 | 4 | 30 | 1.5 |
| FWC-8A10F | | 8 | 6 | 50 | 2.0 |
| FWC-10A10F | | 10 | 9 | 70 | 2.5 |
| FWC-12A10F | 10 x 38mm | 12 | 15 | 120 | 3.0 |
| FWC-16A10F | (13/32" x 1½") | 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 243.

**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

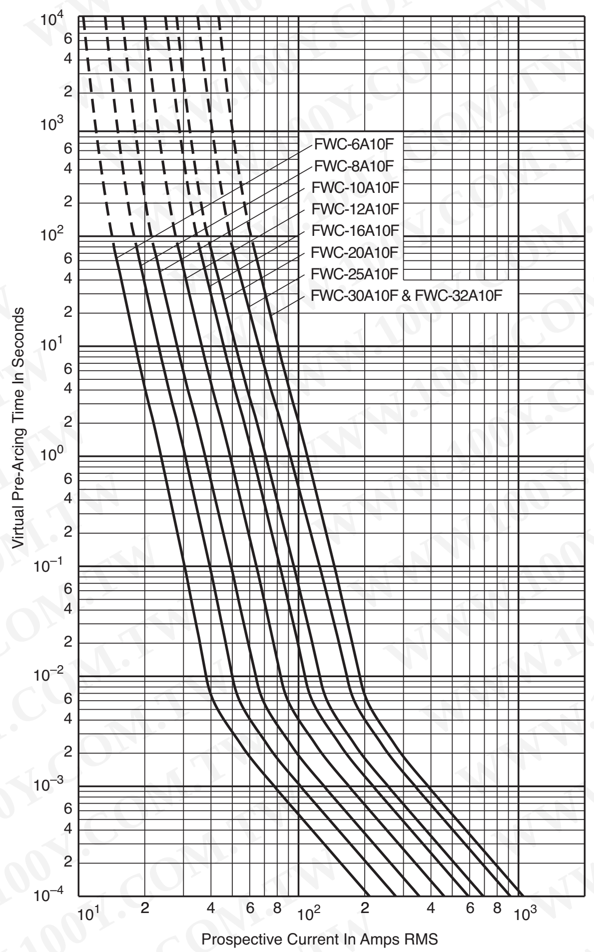


Data Sheet: 720011

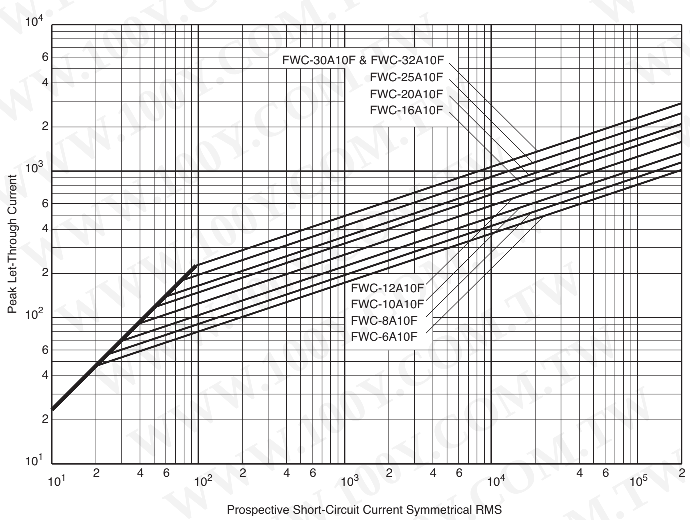
# Ferrule — FWC 600V: 6-32A

## 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)


FWP with striker option.

**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

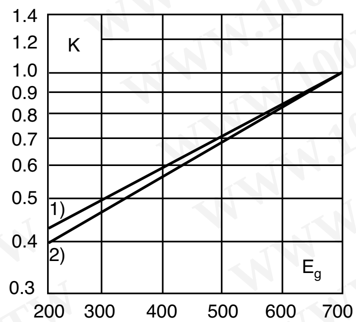
IR: — 200kA RMS Sym.
— 50kA @800Vdc

**Agency Information:** CE, UL Recognition JFHR2.E91958, CSA Component Acceptance file Class 1422-30, 1422-90 (53787) for versions without indicator only. Designed and tested to IEC 60269: Part 4.

### Electrical Characteristics

**Total Clearing I²t**

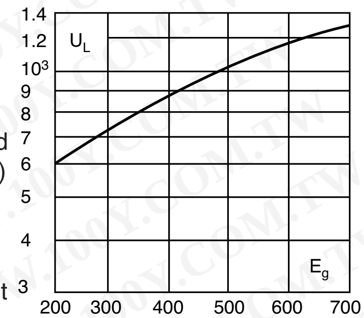
The total clearing I²t at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing I²t is found by multiplying by correction factor, K, given as a function of applied working voltage, $E_g$, (rms).



1) 5-30A Range
2) 32-50A Range

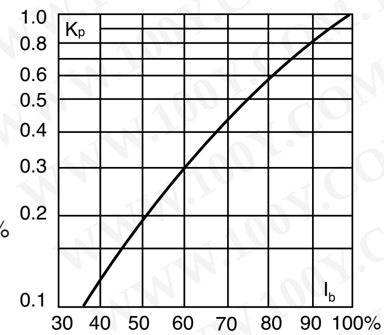
### Arc Voltage

This curve gives the peak arc voltage, $U_L$, which may appear across the fuse during its operation as a function of theapplied 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.



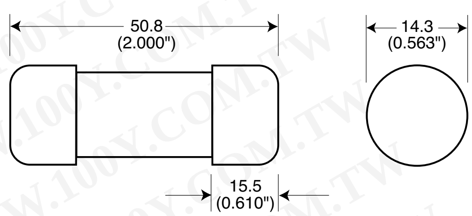

### Catalog Numbers

| Catalog Numbers | Size | Current RMS-Amps | Electrical Characteristics: Rated I²t (A² Sec) Minimum Melting | Rated I²t (A² Sec) Clearing At Rated Voltage | Watts Loss |
|---|---|---|---|---|---|
| Without Striker | | | | | |
| FWP-1A14F | 14 x 51mm (⁹⁄₁₆" x 2") | 1 | — | — | — |
| FWP-2A14F | | 2 | — | — | — |
| FWP-2.5A14F | | 2.5 | — | — | — |
| FWP-3A14F | | 3 | — | — | — |
| FWP-4A14F | | 4 | — | — | — |
| FWP-5A14F | | 5 | 1.6 | 11.0 | 1.5 |
| FWP-10A14F | | 10 | 3.6 | 38.5 | 4 |
| FWP-15A14F | | 15 | 8.6 | 70 | 5.5 |
| FWP-20A14F | | 20 | 26.0 | 230 | 6 |
| FWP-25A14F | | 25 | 46.5 | 375 | 7 |
| FWP-30A14F | | 30 | 58 | 485 | 9 |
| FWP-32A14F | | 32 | 68 | 600 | 7.6 |
| FWP-40A14F | | 40 | 84 | 750 | 8 |
| FWP-50A14F | | 50 | 200 | 1800 | 9 |
| With Striker* | | | | | |
| FWP-10A14FI | 14 x 51mm (⁹⁄₁₆" 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 |

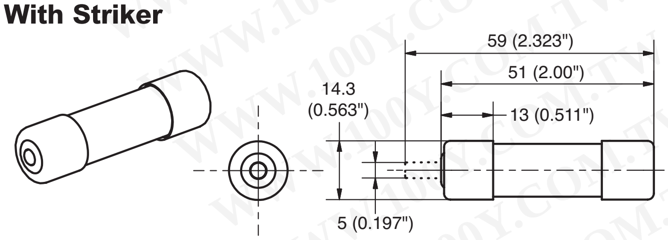
*Striker range is 600Vdc only
• Watts loss provided at rated current.
• See accessories on page 243.

### Dimensions - mm (in)

**Without Striker**




**With Striker**




### Features and Benefits

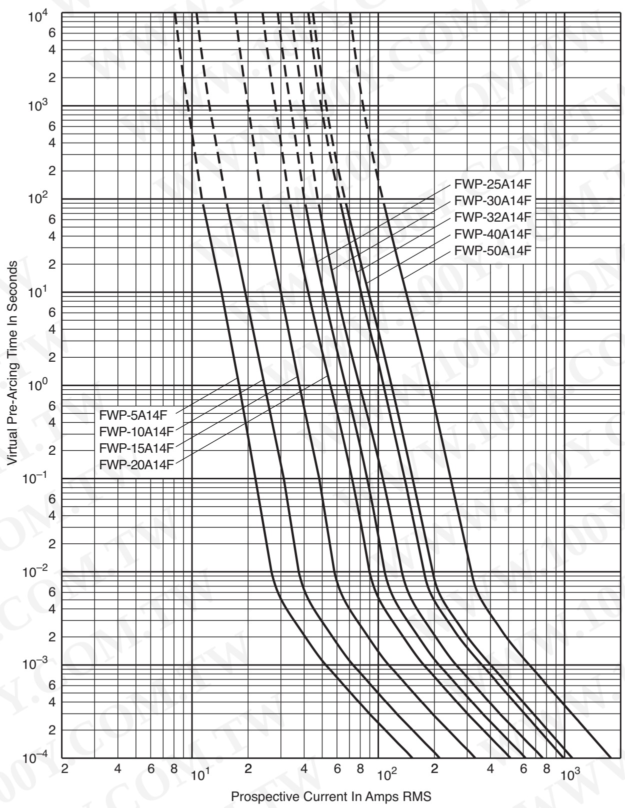
- Excellent cycling capability and DC performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

**Data Sheet: 720025**

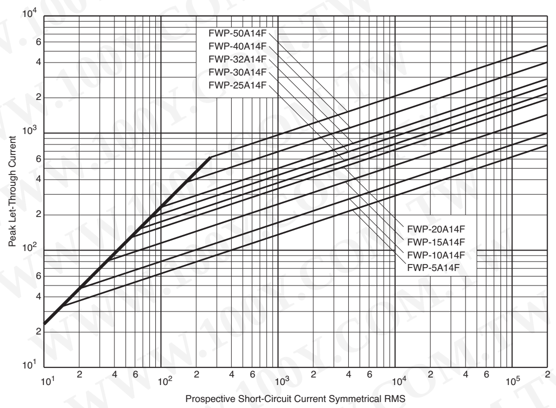
# Ferrule — FWP 690V/700V (IEC/UL): 1-50A, Striker Optional

## Without Striker
## FWP 5-50A: 660V/700V (14 x 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)


FWP with striker option.

### Specifications

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

**Dimensions:** See dimensions illustration.

**Ratings:**

Volts: — 690Vac (IEC)
— 700Vac (UL)
— 500Vac
— 500Vdc (20-100A)

Amps: — 20-100A

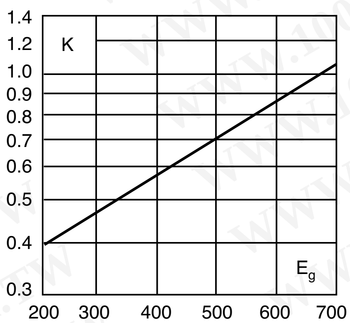
IR: — 200kA RMS Sym.
— 50kA @ 500Vdc

**Agency Information:** CE, UL Recognition JFHR2.E91958, CSA Component Acceptance file Class 1422-30, 1422-90 (53787)

### Electrical Characteristics

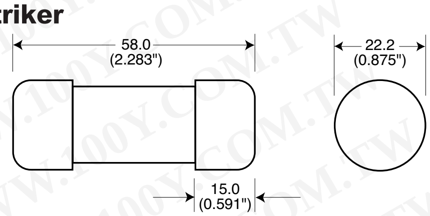
### Total Clearing I²t

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).

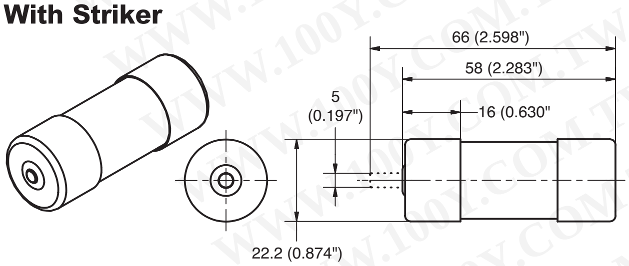



### Dimensions - mm (in)

### Without Striker

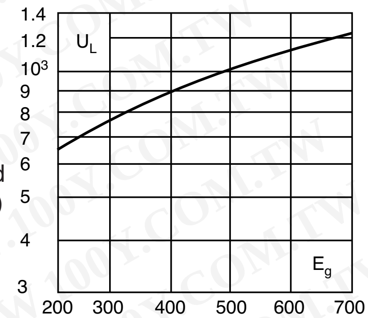



### With Striker



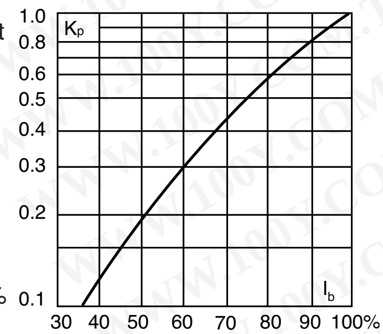

### Arc Voltage

This curve gives the peak arc voltage, $U_L$, which may appear across the fuse during its operation as a function of theapplied 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 | I²t (A² Sec): Minimum Melting | I²t (A² Sec): Clearing At Rated Voltage | Watts Loss |
|---|---|---|---|---|---|
| Without Striker | | | | | |
| FWP-20A22F | 22 x 58mm (⅞" x 29⁄32") | 20 | 19.0 | 260 | 5 |
| FWP-25A22F | | 25 | 34.0 | 410 | 6 |
| FWP-32A22F | | 32 | 53.5 | 605 | 8 |
| FWP-40A22F | | 40 | 68 | 750 | 9 |
| FWP-50A22F | | 50 | 135 | 1600 | 9.5 |
| FWP-63A22F | | 63 | 280 | 3080 | 11 |
| FWP-80A22F | | 80 | 600 | 6600 | 13.5 |
| FWP-100A22F | | 100* | 1100 | 12500 | 16 |
| With Striker | | | | | |
| FWP-20A22FI | 22 x 58mm (⅞" x 29⁄32") | 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 (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

### Typical Applications

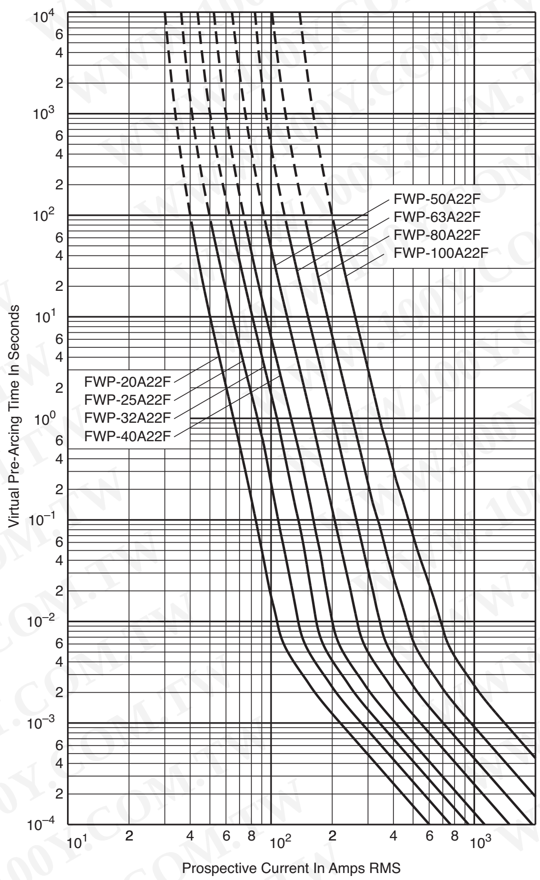
- DC Common bus
- DC Drives
- Power converters/rectifiers
- Reduced voltage starters

**Data Sheet: 720026**

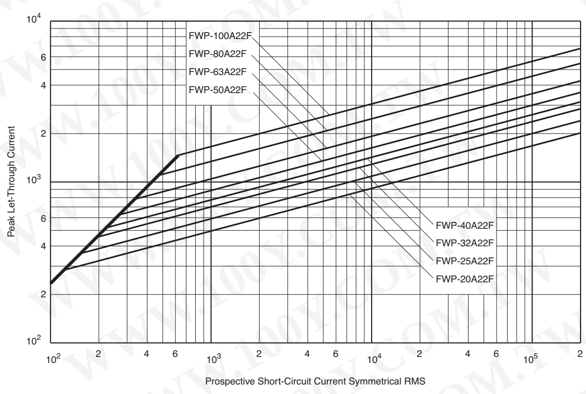
# Ferrule — FWP 690V/700V (IEC/UL): 20-100A, Striker Optional

## Without Striker
## FWP 20-100A: 660V/700V (22 x 58mm)

### Time-Current Curve




### Peak Let-Through Curve






**Data Sheet: 35785291**

# 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 | $I^2t$ ($A^2$ Sec): Pre-arc | $I^2t$ ($A^2$ Sec): Clearing at 750Vdc |
|---|---|---|---|---|
| FWK-5A20F | 20 x 127mm (1 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 3/4") | 35 | 1300 | 4300 |
| FWK-40A25F | | 40 | 1600 | 5300 |
| FWK-50A25F | | 50 | 3100 | 12000 |
| FWK-60A25F | | 60 | 5900 | 24000 |

Recommended fuseholders for 20x127, -2, -3
Recommended fuseclips for 20x127, 1A1837
Recommended fuseclips for 25x146, A3354705

**Dimensions - mm (in)**

Fig. 1: 5-30A

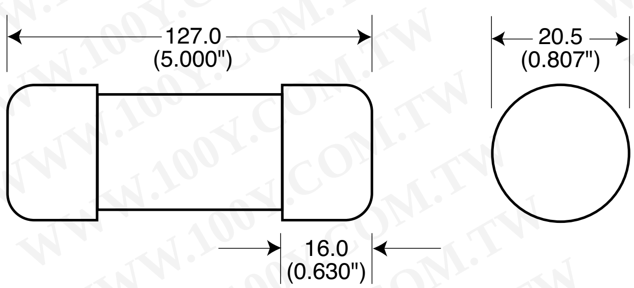
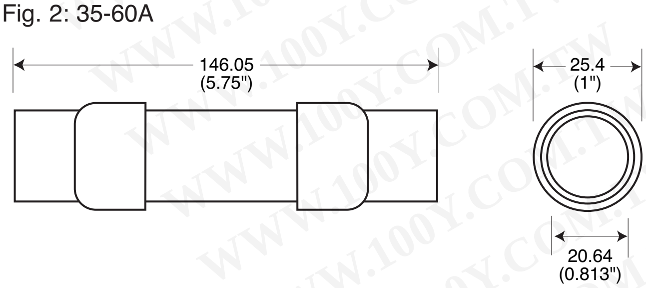



Fig. 2: 35-60A



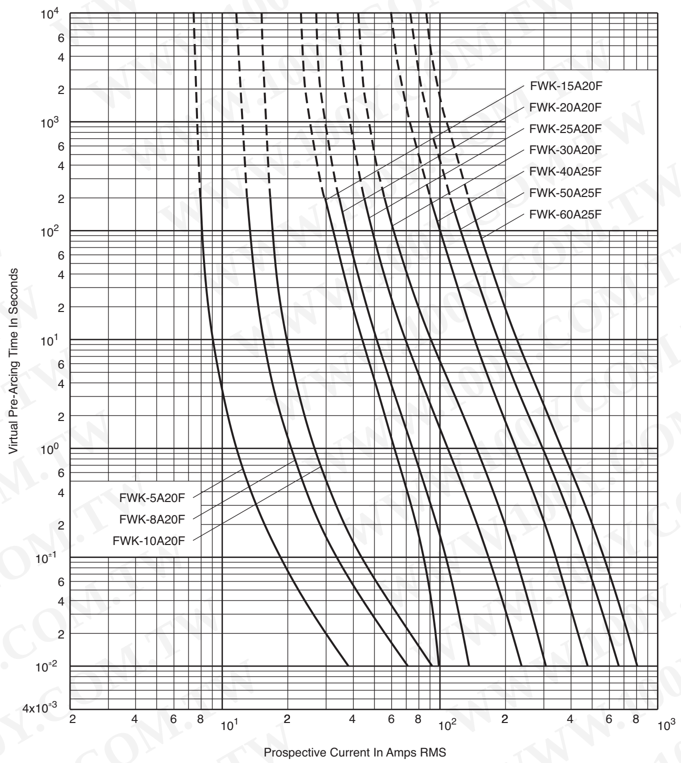



Data Sheet: 720039

# Ferrule — FWK 750V: 5-60A

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

### Time-Current Curve






**Data Sheet: 720028**

# 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.

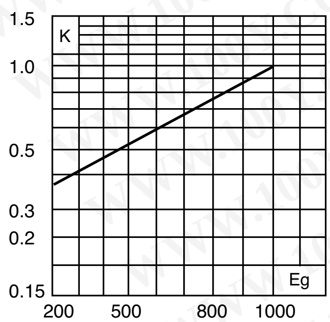
— 20kA @ 800Vdc

**Agency Information:** CE, UL Recognized JFHR2.E91958

### Electrical Characteristics

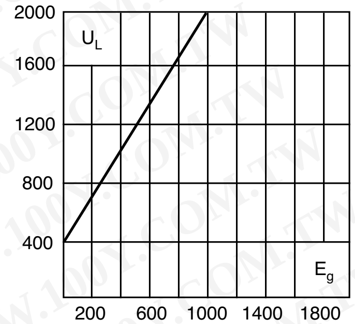
### Total Clearing I²t

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).



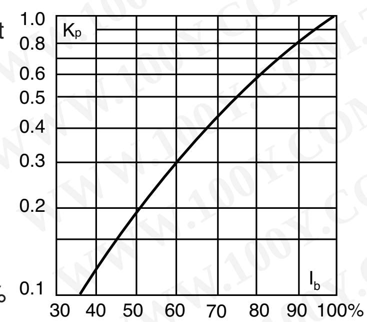

### Arc Voltage

This curve gives the peak arc voltage, $U_L$, which may appear across the fuse during its operation as a function of theapplied 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, Kp, is given as a function of the RMS load current, $I_b$, in % of the rated current.

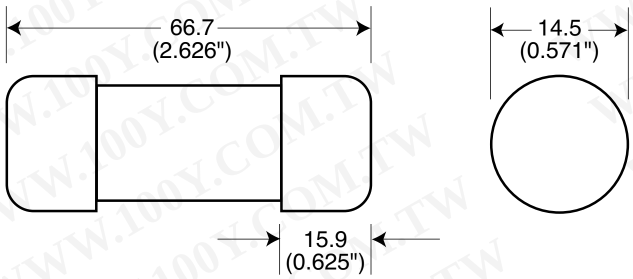



### Catalog Numbers

| Catalog Numbers | Size | Electrical Characteristics: Rated Current RMS-Amps | I²t (A² Sec) Pre-arc | I²t (A² Sec) Clearing at 1000V | Watts Loss |
|---|---|---|---|---|---|
| FWJ-20A14F | 14 x 67mm | 20 | 25 | 220 | 9 |
| FWJ-25A14F | (⁹⁄₁₆" x 2⅝") | 25 | 33 | 350 | 11 |
| FWJ-30A14F | | 30 | 52 | 450 | 14 |

• Watts loss provided at rated current.
• See accessories on page 243.

### Dimensions - mm (in)




### 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

**Fuseclips:**

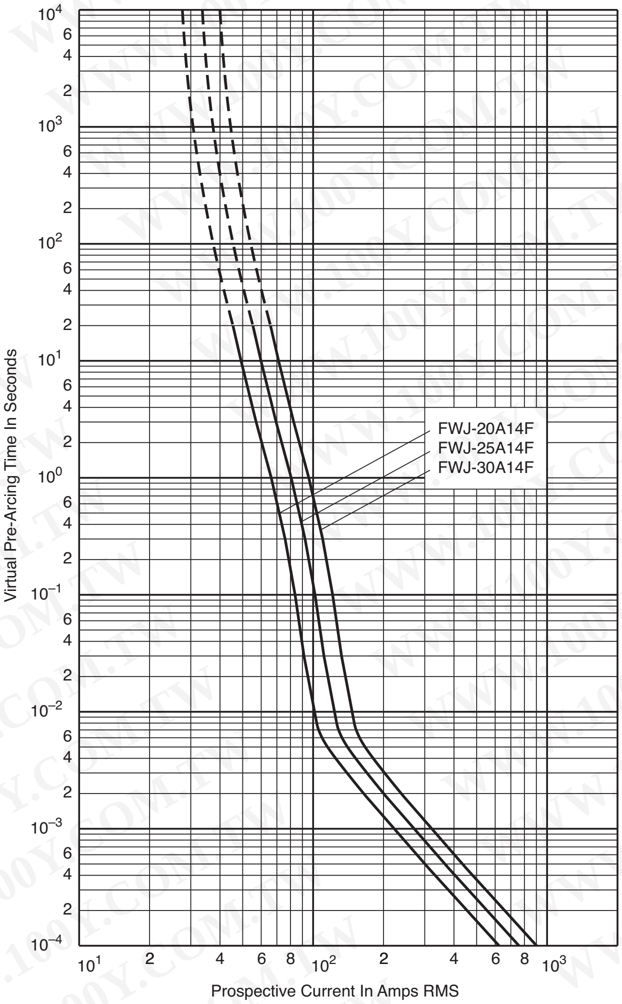
• Catalog Number: 5591 (see data sheet 2132)

**Data Sheet: 35785031**

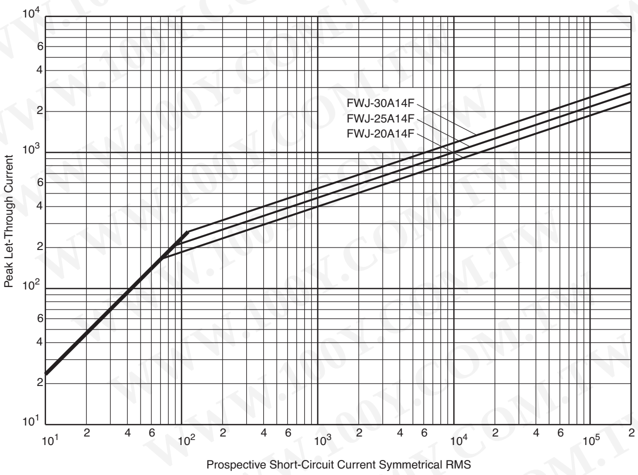
# Ferrule — FWJ 1000V: 20-30A

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

### Time-Current Curve



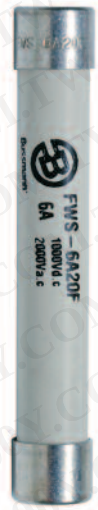

### Peak Let-Through Curve




**Data Sheet: 35785315**

# 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

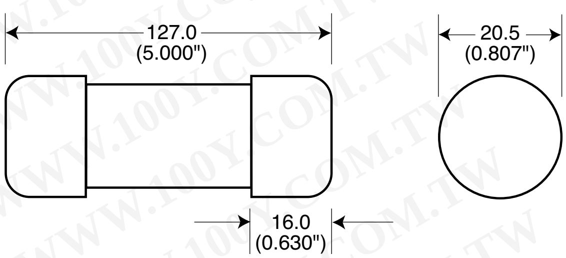
**Agency Information:** CE, IEC 60077

**Catalog Numbers**

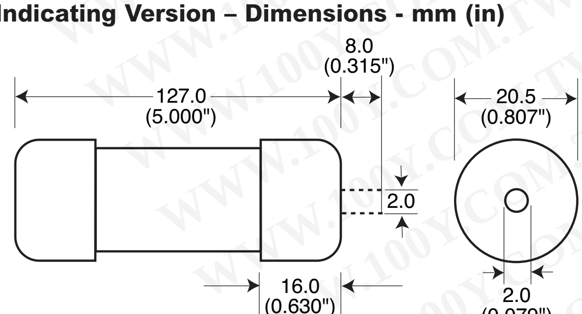
| Catalog Numbers | Size | Electrical Characteristics: Rated Current RMS-Amps | I²t (A² Sec): Pre-arc | I²t (A² Sec): Clearing at 1000Vdc | Watts Loss |
|---|---|---|---|---|---|
| FWS-2A20F | 20 x 127mm (1³⁄₁₆" x 5") | 2 | 0.8 | 2.4 | 4.4 |
| FWS-6A20F | | 6 | 27 | 81 | 6.7 |
| FWS-8A20F | | 8 | 64 | 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 (1³⁄₁₆" 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
- See accessories on page 243.
- Watts loss provided at rated current.

**Dimensions - mm (in)**




**Indicating Version – Dimensions - mm (in)**




**Features and Benefits**

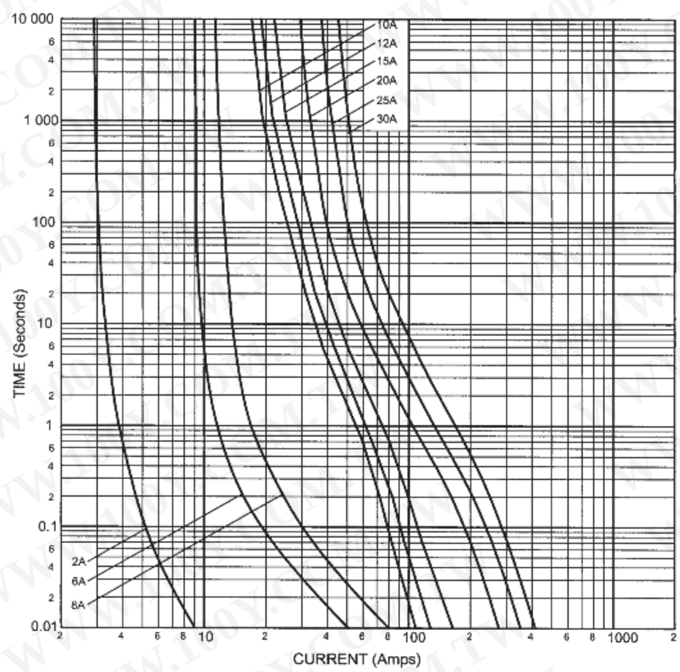
- Excellent cycling capability and DC performance
- Low arc voltage and low energy let-through (I²t)
- Low watts loss in a compact size
- Used with finger-safe holders/blocks

**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**




**Data Sheet: 720040**

# Ferrule Fuse Accessories

## Fuse Holders

**Specifications**
**Catalog Symbol:** CH Series
**Description:** DIN-Rail mount fuse holders
**Agency Information:**
UL File E14853, Guide IZLT Listed, IZLT2 Recognized
CSA: File 47235, CHPV and CHM - Class 6225-30, CHCC - Class 6225-01
**Ratings:** 600V/30A (UL)
690V/32A (IEC)

**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

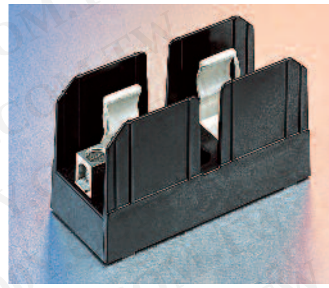
**Recommended Cooper Bussmann Fuse Types**

| | |
|---|---|
| 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 |
| 14 x 51 | FWX, FWH, FWP & NON |
| 22 x 58 | FWP |

See pages 274-280 for CH Series fuse holder information.

**Data Sheet: 2053**

## Fuse Blocks



**Specifications**
**Catalog Symbol:** J70100, J70032
**Description:** Fuse blocks for 22x58mm & 14x51mm fuses.
**Ratings:**
Volts: — 700Vac/dc
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 |
|---|---|---|---|---|---|
| J70032-1CR | 14x51 | 32 | 1 | #2 | Box Lug w/ Retaining Clip |
| J70032-2CR | | 32 | 2 | #2 | |
| J70032-3CR | | 32 | 3 | #2 | |
| J70100-1CR | 22x58 | 100 | 1 | #2 | |
| J70100-2CR | | 100 | 2 | #2 | |
| J70100-3CR | | 100 | 3 | #2 | |

**Data Sheet: 1211**

# High speed fuses

Faster lead-time.
Better protection.
More energy efficient.

Bussmann
by EATON