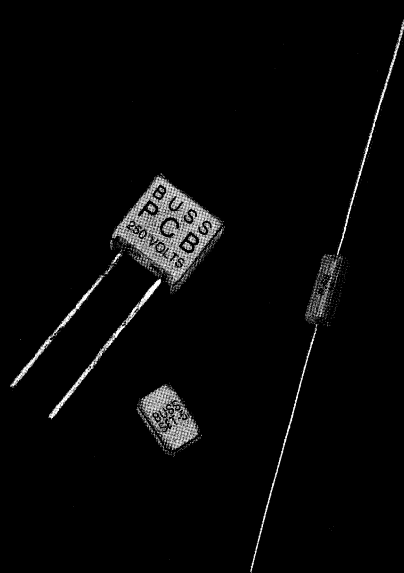
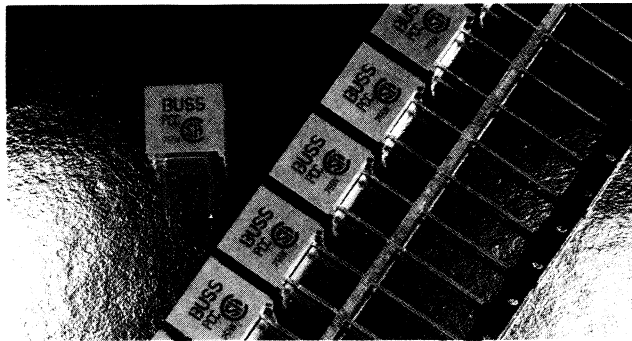


ELECTRONIC and SMALL DIMENSION FUSES



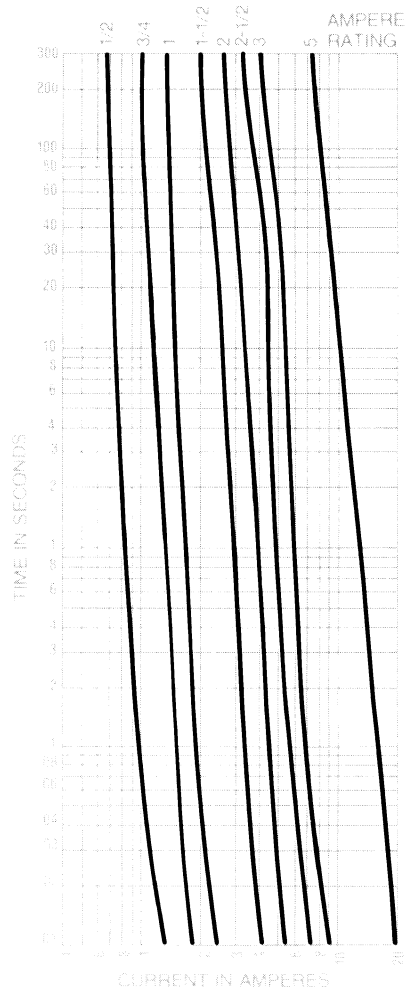
BUSSMANN

PC-Tron® Fuses



Short-Circuit Performance

The PC-Tron® subminiature fuse offers short-circuit performance which until now could only be found in much larger size glass tube fuses. At 250V_{AC}, the 1/2 to 3 amp PC-Tron can safely interrupt 50 amperes; at 125V_{AC} the 1/2 to 5 amp versions can interrupt 10,000 amperes. This high interrupting capacity makes the PC-Tron subminiature fuse ideal for line-side protection of power supplies.



Specifications—PC-Tron

Interrupting and Voltage Ratings

10,000A @ 125 V_{AC} (1/2–5A) 50A @ 250 V_{AC} (1/2–3A)

Ampere Ratings

1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, & 5

Time-Current Characteristics

Carry 100% of rating for 4 hrs. minimum. Open at 200% of rating in 10 sec. maximum.
(Non-Time-Delay ... extremely low let-through)

Agency Approvals

PCB, PCC, PCD, PDE, PCF, PCH, and PCI—U.L. Recognized; File E19180, Guide JDYX2. (PCG approval pending.)

PCB, PCC, PCD, PCF, PCH, PCI, and PDE—CSA Certified; File 42731, Class 1421-01. (PCG, certification pending.)

Dimensions and Material

Body: 0.350" × 0.350" × 0.184"; High temperature plastic.

Leads: 0.020" × 0.015" × 0.100" (short) 0.750" (full) (tape & reel) (Tin-plated copper).

Mounting Socket

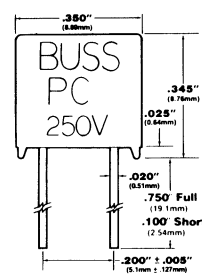
Available as option. (Specify catalog number BK/PCS (100-in) and short fuse lead length—PCC or PCE)

Cold Resistance Data

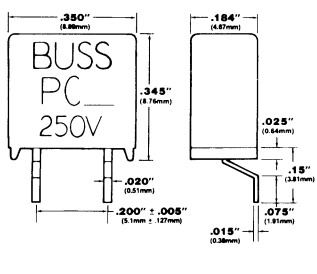
(10% Rated Current) Nominal Value

1/2A—1.4Ω; 3/4A—.72Ω; 1A—.43Ω; 1 1/2A—.24Ω; 2A—.15Ω; 2 1/2A—.10Ω; 3A—.072Ω; 5A—.023Ω

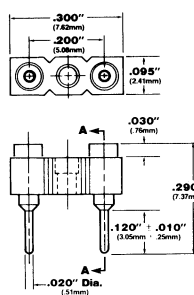
Standard Fuse



Surface Mount Fuse



Socket



Max. Total Clearing I²t (Amps² Sec.)

Amp Rating	125 Volts			250 Volts	
	50A	1,000A	10,000A	35A & 50A	
1/2A	0.006	0.006	0.006	0.006	
3/4A	0.016	0.016	0.016	0.016	
1A	0.020	0.020	0.020	0.020	
1 1/2A	0.090	0.090	0.090	0.090	
2A	0.200	0.200	0.200	0.200	
2 1/2A	0.300	0.300	0.300	0.300	
3A	0.750	0.750	0.750	0.750	
5A	5.0	5.0	5.0	—	

Note—Power Factor > .90.

Ordering Information (Catalog Numbers)

Standard Fuse

Packaging	Cat. Symbol	Ampere Rating
Blank—Std. Pack (5-in)	B—Full lead lgth. (250 V) (1/2–3A)	(1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, and 5) (5A available only as PCD or PCE)
BK—Bulk (100-in)	C—Short lead lgth.* (250 V) (1/2–3A)	
TR—Tape and Reel (500-in)	D—Full lead lgth. (125 V) (5A)	
	E—Short lead lgth.* (125 V) (5A)	

*Note—Short lead length not available in tape-and-reel packaging.

Surface Mount Fuse

Packaging	Cat. Symbol	Ampere Rating
Std. (5-in)	H—1/2–3A	(1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, and 5) (5A Available only as PCI)
BK—Bulk	I—5A	

Fuse with 0.4" Lead Spacing (contact factory for availability)

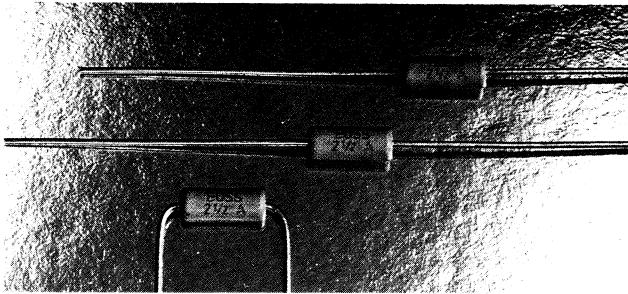
Packaging	Cat. Symbol	Ampere Rating
Std. (5-in)	F—1/2–3A	(1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, and 5) (5A available only as PCG)
BK—Bulk	G—5A	

Socket

Packaging	Cat. Symbol
Std. Pack (100-in)	BK/PCS

Microtron® Fuses

Now a subminiature axial leaded fuse that delivers performance without compromise . . .



Superior Performance

The MICROTRON® subminiature fuse is designed to safely interrupt 50 amperes at 125V_{AC}.* This excellent performance is achieved at power factors as low as 97%. Competitive components claim similar short-circuit interrupting ratings, but at a 100% power factor—a condition that rarely exists in real world applications. In addition, the MICROTRON is capable of interrupting a 300 ampere fault at 125V_{DC}.*

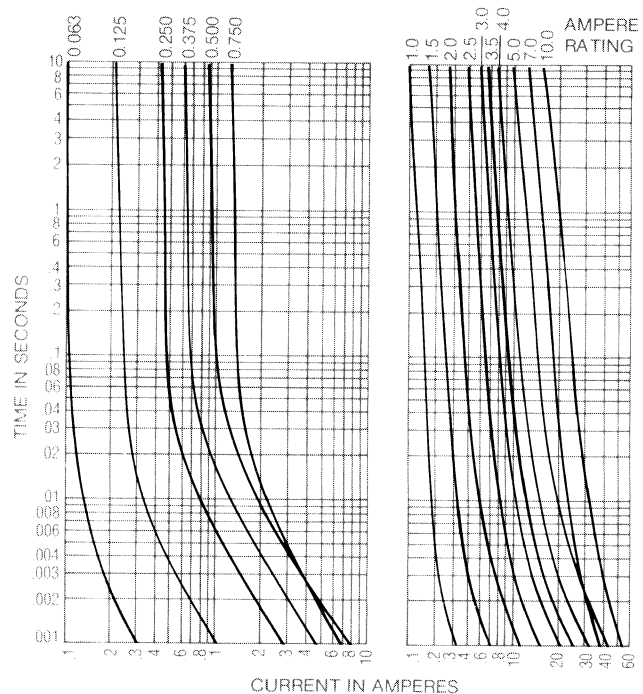
In A Familiar Package

This superior short-circuit performance is achieved in a similar form factor as other subminiature fuses, including the Buss® Tinitron®. The 0.295" × 0.120" diameter, high-temperature, plastic body fits the same mounting footprint as existing subminiature fuses (.4" centerline-to-centerline holes).

With No Compromises

Unlike similar devices, the MICROTRON subminiature fuse exhibits very good ampere rating stability after being exposed to rigorous lead form, automatic insertion, and wave soldering processes. The body is hermetically sealed allowing the device to be exposed to a wide variety of aqueous and chemical circuit board washing solutions. The high temperature body material will not discolor after prolonged periods of operation, near or at rated current, which means the body marking will remain legible.

*1/6—5 Ampere devices only. 7 and 10 Ampere devices rated at 60 Volts.



General Specifications

Typical Opening Times—4 hrs. min. @ 100%
—5 sec. max. @ 250%

Body Material—High temperature plastic with a U.L. 94VO rating.

Lead Pull Force—7 lb. minimum

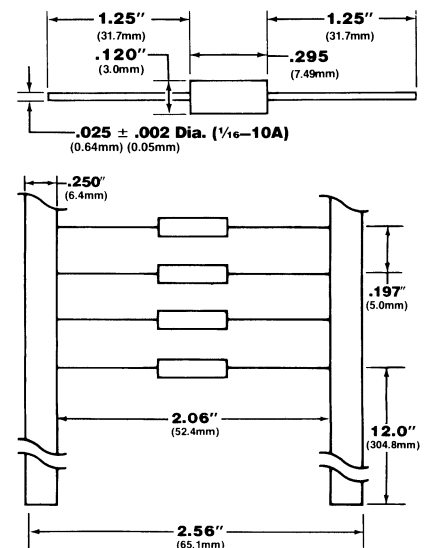
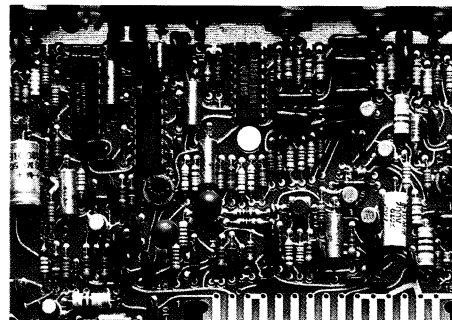
Agency Approvals—U.L. Recognition and CSA Certification pending

Units Per Reel—2500.

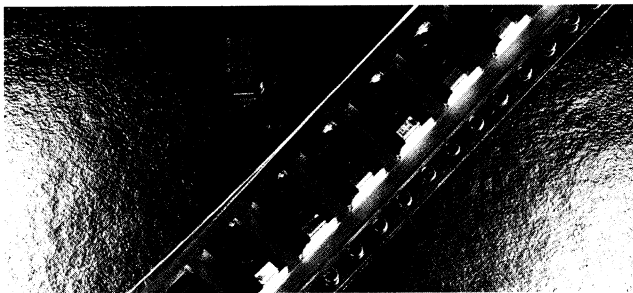
Packaging—Per E.I.A. Standard RS-296-D. All materials are sulfur free to maintain component solderability.

Ordering Information—Catalog No's.

Blank—Std. Pack (10-in.)	MCR	Ampere Ratings—
BK/—Bulk Pack (500-in.)	Product Symbol	1/16, 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 5, 7A, and 10A.
TR1/—Tape-and-Reel (5000 units)		

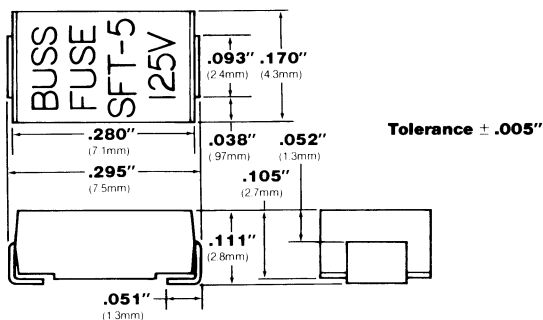


PC Board SMD TRON[®] Fuses



Industry Standard Surface-Mount Package

The Bussmann SMD Tron is designed to EIA-PD-100, DWG SOPM-7243, making it the industry's first, true, surface-mount fuse. A high temperature body material is capable of surviving a 60-second exposure to a temperature of 420° F in a fluorinert FC-5311 environment. Because the SMD Tron is totally sealed, it can be subjected to cleaning by a wide variety of aggressive solvents. These features make the SMD Tron the first subminiature fuse to take full advantage of the production efficiencies offered by surface mount technology.



General Specifications

Typical Opening Times—4 hrs. min. @ 100%
—5 sec. max. @ 250%

Voltage Rating—125V AC, 125V DC

Interrupting Rating 50A AC, 300A DC

Body Material—Thermo Plastic U.L. 94VO
Flamability Rating

Leads—Tinplated Copper

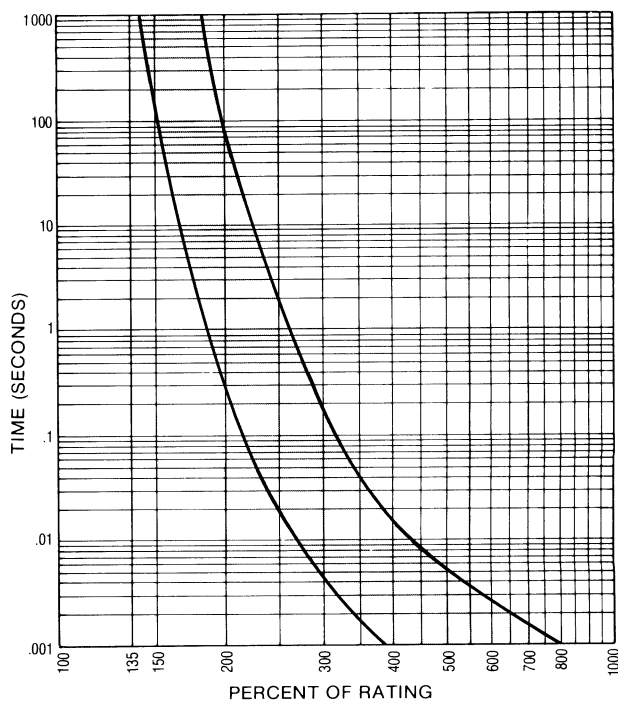
Agency Approval—U.L. Recognized E19180
Guide JDYX2
CSA Certified File #62941
Class 1423-01

Order Information (Catalog No's.)

Blank—Std. Pack (10-in)	SFT	Product Symbol	Ampere Ratings
BK—Bulk Pack (100-in)			1
TR/Tape- and-Reel Pack (500 units)			1.5
TR1/Tape- and-Reel Pack (2000 units)			2
			2.5
			3
			3.5
			4
			5

All package material complies with EIA STD 481,
and is Anti-Static.

TIME/CURRENT CURVE — TOTAL CLEARING
SFT 1-5A



Current Limiting

Bussmann's SMD Tron is the latest addition to a new family of current limiting fuses. A current limiting fuse has the unique ability to limit the amount of energy let through during short-circuits to extremely low levels. The only other subminiature fuse that can make this claim is the Bussmann PC-Tron[®]. The revolutionary construction of Bussmann's new subminiature fuses demonstrate let-through energy which is substantially less than other subminiature fuses. This extraordinary feature allows the design engineer the benefit of protecting components and circuit board traces than could not be protected before.

Electrical Characteristics

Ampere Rating	Typical Melting I ² t (Amps ² Seconds)		Max. Voltage Drop
	125V AC, 50 Amps .95 PF	125V DC, 300 Amps TC < 1 ms	
1	.0175	.010	.247
1.5	.0475	.028	.262
2	.13	.085	.197
2.5	.26	.175	.174
3	.55	.288	.197
3.5	.82	.490	.172
4	TBD	TBD	TBD
5	2.55	1.75	.172

1. Interrupting ratings were measured at 95% power factor on AC, and a time constant less than 1 ms on DC.
2. Voltage drop was measured at 25°C $\pm$ 3°C ambient temperature at rated current with device mounted on a circuit trace.

Selection Guide

Ferrule Fuses					
5mm × 20mm					
Fast-Acting (F)		Time-Lag (T)			
					
GDA-/GDA-V-S501-	GDB-/GDB-V-S500-	GDC-/GDC-V-	S504	S506	S505
Designed To IEC Standards (IEC127, BS4265)					
IEC SHEET I Ceramic	IEC SHEET II Glass	IEC SHEET III Glass	IEC Sheet III Glass	IEC Sheet III Glass	IEC Sheet V Ceramic
—	32mA 250V	32mA 250V ^{BSV}	32mA 250V ^{BSV}	—	—
—	40mA 250V	40mA 250V ^{BSV}	40mA 250V ^{BS}	—	—
50mA 250V ^S	50mA 250V ^{BSV}	50mA 250V ^{BSV}	50mA 250V ^{BSV}	—	—
63mA 250V	63mA 250V ^{BSV}	63mA 250V ^{BSV}	63mA 250V ^{BSV}	—	—
80mA 250V	80mA 250V ^{BSV}	80mA 250V ^{BSV}	80mA 250V ^{BSV}	—	—
100mA 250V	100mA 250V ^{BSV}	100mA 250V ^{BSV}	100mA 250V ^{BSV}	—	—
125mA 250V	125mA 250V ^{BS}	125mA 250V ^{BSV}	125mA 250V ^{BSV}	—	—
160mA 250V ^S	160mA 250V ^{BSV}	160mA 250V ^{BSV}	160mA 250V ^{BSV}	—	—
200mA 250V	200mA 250V ^{BSV}	200mA 250V ^{BSV}	200mA 250V ^{BSV}	—	—
250mA 250V ^B	250mA 250V ^{BSV}	250mA 250V ^{BSV}	250mA 250V ^{BSV}	—	—
—	—	—	—	—	—
315mA 250V ^S	315mA 250V ^{BSV}	315mA 250V ^{BSV}	315mA 250V ^{BSV}	—	—
400mA 250V ^B	400mA 250V ^{BSV}	400mA 250V ^{BSV}	400mA 250V ^{BSV}	—	—
500mA 250V ^S	500mA 250V ^{BSV}	500mA 250V ^{BSV}	500mA 250V ^{BSV}	500mA 250V ^{BSV}	500mA 250V
—	—	—	—	—	—
630mA 250V ^{BS}	630mA 250V ^{BSV}	630mA 250V ^{BSV}	630mA 250V ^{BSV}	—	630mA 250V
—	—	—	—	—	—
800mA 250V	800mA 250V ^{BSV}	800mA 250V ^{BSV}	800mA 250V ^{BSV}	800mA 250V ^{BSV}	800mA 250V
1A 250V ^S	1A 250V ^{BSV}	1A 250V ^{BSV}	1A 250V ^{BSV}	1A 250V ^{BSV}	1A 250V
1.25A 250V ^S	1.25A 250V ^{BSV}	1.25A 250V ^{BSV}	1.25A 250V ^{BSV}	1.25A 250V ^{BSV}	1.25A 250V
—	—	—	—	—	—
1.6A 250V ^S	1.6A 250V ^{BSV}	1.6A 250V ^{BSV}	1.6A 250V ^{BSV}	1.6A 250V ^{BSV}	1.6A 250V
2A 250V ^S	2A 250V ^{BSV}	2A 250V ^{BSV}	2A 250V ^{BSV}	2A 250V ^{BSV}	2A 250V
2.5A 250V ^S	2.5A 250V ^{BSV}	2.5A 250V ^{BS}	2.5A 250V ^{BSV}	2.5A 250V ^{BS}	2.5A 250V
—	—	—	—	—	—
3.15A 250V ^S	3.15A 250V ^{BSV}	3.15A 250V ^{BSV}	3.15A 250V ^{BS}	3.15A 250V ^{BSV}	3.15A 250V
—	—	—	—	—	—
4A 250V ^S	4A 250V ^{BSV}	4A 250V ^{BSV}	4A 250V ^{BSV}	4A 250V ^{BSV}	4A 250V
5A 250V ^S	5A 250V ^{BSV}	5A 250V ^{BSV}	5A 250V ^{BSV}	5A 250V ^{BSV}	5A 250V
—	—	—	—	—	—
6.3A 250V ^{BS}	6.3A 250V ^{BSV}	6.3A 250V ^{BSV}	6.3A 250V ^{BSV}	6.3A 250V ^{BSV}	6.3A 250V
—	—	—	—	—	—
—	8A 250V	—	—	—	—
—	10A 250V	—	—	—	—
—	—	—	—	—	—

^BBritish Standard Approval; ^SSEMKO Approval; ^VVDE Approval; approvals do not apply to -v leaded versions. UL Recognition pending; types GDA/S501, GDB/S500, GDC (June, 1990).

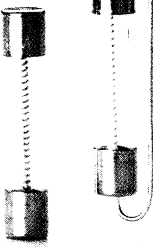
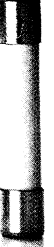
Ferrule Fuses						
5 × 20mm			1/4" × 5/8"	1/4" × 7/8"	1/4" × 1"	1/4" × 1 1/4"
Fast-Acting	Time-Lag	Time-Delay	Non-Time Delay			Fast-Acting
						
GMA-/GMA-V-TDC487-	GMC-/GMC-V-TDC612-	GMD-/GMD-V-TDC488-	AGA	AGW	AGX/MKB	TDC10
Designed to U.L. and CSA Standards						
Glass	Glass	Glass	Glass. For electronic and small appliance circuits. Formerly 1AG.	Glass. For electronic and small appliance circuits. Formerly 7AG.	MKB—low resistance. 1/16 & 1/8A. 250V	Complies with BS2950A
—	—	—	—	—	AGX-1/500 250V ^{UC}	—
—	—	—	—	—	AGX-1/200 250V ^{UC}	—
—	—	—	—	—	AGX-1/100 250V ^{UC}	50mA 1000V
63mA 250V ^{UC}	63mA 250V ^{UC}	—	—	—	AGX-1/32 250V ^{UC}	60mA 1000V
—	—	—	AGA-1/16 125V ^U	—	AGX-1/16 250V ^{UC}	—
100mA 250V ^{UC}	100mA 250V ^{UC}	100mA 250V ^{UC}	AGA-1/10 125V ^U	—	AGX-1/10 250V ^{UC}	100mA 1000V
125mA 250V ^{UC}	125mA 250V ^{UC}	125mA 250V ^{UC}	AGA-1/8 125V ^U	—	AGX-1/8 250V ^{UC}	—
—	—	150mA 250V ^{UC}	—	—	—	150mA 1000V
200mA 250V ^{UC}	200mA 250V ^{UC}	200mA 250V ^{UC}	—	—	—	—
250mA 250V ^{UC}	250mA 250V ^{UC}	250mA 250V ^{UC}	—	—	AGX-2/10 250V ^{UC}	250mA 1000V
—	300mA 250V ^{UC}	300mA 250V ^{UC}	—	—	AGX-3/16 250V ^{UC}	—
—	315mA 250V ^{UC}	375mA 250V ^{UC}	AGA-1/4 125V ^U	—	AGX-1/4 250V ^{UC}	—
—	—	400mA 250V ^{UC}	—	—	AGX-3/10 250V ^{UC}	500mA 750V
500mA 250V ^{UC}	500mA 250V ^{UC}	500mA 250V ^{UC}	AGA-3/8 125V ^U	—	AGX-3/8 250V ^{UC}	—
600mA 250V ^{UC}	600mA 250V ^{UC}	600mA 250V ^{UC}	—	—	AGX-4/10 250V ^{UC}	750mA 500V
—	—	630mA 250V ^{UC}	AGA-1/2 125V ^U	AGW-1/2 32V	AGX-1/2 250V ^{UC}	—
750mA 250V ^{UC}	750mA 250V ^{UC}	750mA 250V ^{UC}	AGA-9/10 125V ^U	—	—	—
800mA 250V ^{UC}	800mA 250V ^{UC}	800mA 250V ^{UC}	AGA-3/4 125V ^U	—	AGX-3/4 250V ^{UC}	—
1A 250V ^{UC}	1A 250V ^{UC}	1A 250V ^{UC}	—	—	—	—
—	—	1.25A 250V ^{UC}	AGA-1 125V ^U	AGW-1 32V	AGX-1 250V ^{UC}	1A 350V
1.5A 250V ^{UC}	1.5A 250V ^{UC}	1.5A 250V ^{UC}	—	—	—	—
1.6A 250V ^{UC}	1.6A 250V ^{UC}	1.6A 250V ^{UC}	—	—	—	—
2A 250V ^{UC}	2A 250V ^{UC}	2A 250V ^{UC}	—	—	AGX-1 1/4 250V ^{UC}	—
2.5A 250V ^{UC}	2.5A 250V ^{UC}	2.5A 250V ^{UC}	—	—	—	—
3A 250V ^{UC}	3A 250V ^{UC}	3A 250V ^{UC}	AGA-1 1/2 125V ^U	AGW-1 1/2 32V	AGX-1 1/2 250V ^{UC}	1.5A 250V
—	3.15A 250V ^{UC}	—	—	—	—	—
3.5A 250V ^{UC}	3.5A 250V ^{UC}	—	—	—	—	—
4A 250V ^{UC}	4A 250V ^{UC}	—	AGA-2 32V ^R	AGW-2 32V	AGX-2 250V ^{UC}	2A 250V
5A 250V ^{UC}	5A 250V ^{UC}	—	—	—	—	—
6A 250V ^{UC}	6A 250V ^R	—	AGA-2 1/2 32V ^R	AGW-2 1/2 32V	AGX-2 1/2 125V ^U	—
—	6.3A 250V ^R	—	—	—	—	—
7A 125V ^R	7A 125V ^R	—	AGA-3 32V ^R	AGW-3 32V	AGX-3 125V ^U	3A 250V
8A 125V ^R	8A 125V ^R	—	—	—	—	—
10A 125V ^R	10A 125V ^R	—	—	—	— 125V ^U	—
15A 125V ^R	—	—	—	AGW-4 32V	AGX-4 125V ^U	—
—	—	—	—	—	—	—
—	—	—	AGA-5 32V ^U	AGW-5 32V	AGX-5 125V ^U	5A 250V
—	—	—	—	—	—	—
—	—	—	AGA-6 32V ^R	AGW-6 32V	AGX-6 32V ^R	—
—	—	—	—	—	—	—
—	—	—	AGA-7 32V ^R	—	AGX-7 32V ^R	7A 150V
—	—	—	AGA-7 1/2 32V ^R	AGW-7 1/2 32V	—	—
—	—	—	—	—	AGX-8 32V ^R	—
—	—	—	—	—	—	—
—	—	—	AGA-10 32V ^R	AGW-10 32V	AGX-10 32V ^R	10A 100V
—	—	—	—	—	—	12A 32V
—	—	—	AGA-15 32V	AGW-15 32V	AGX-15 32V ^R	15A 32V
—	—	—	AGA-20 32V	AGW-20 32V	AGX-20 32V ^R	20A 32V
—	—	—	AGA-25 32V	AGW-25 32V	AGX-25 32V	25A 32V
—	—	—	AGA-30 32V	AGW-30 32V	AGX-30 32V	—

^UU.L. Listed; ^RU.L. Recognized under Component Program; ^CCSA Certified

Selection Guide

Ferrule Fuses

1/4" × 1 1/4" (32mm × 6.3mm)

Fast-Acting	Fast-Acting	Very Fast Acting	Time-Lag	Time-Delay and Time-Lag	Dual-Element Time-Delay	Time-Delay
						
AGC/GJV† ★	ABC ★	GBB	TDC11	MDL/MDV** ★	MDQ	MDA/MWO
For instrument, electronic and small appliance circuits				For circuits with high inrush currents		
GJV has Axial Leads	Ceramic	Ceramic. For protection of Semiconductors.		MDV has axial leads.	Glass	Ceramic. MWO for microwave ovens. Available: 12 and 15 Amp 125V ^{UC}
AGC-1/500 250V ^{UC}	—	—	—	—	—	—
AGC-1/200 250V ^{UC}	—	—	—	—	—	—
AGC-1/100 250V ^{UC}	—	—	50mA 1000V	MDL-1/100 250V ^C	MDQ-1/100 250V ^{UC}	MDA-1/100 250V ^C
AGC-1/32* 250V ^{UC}	—	—	60mA 1000V	MDL-1/32 250V ^C	MDQ-1/32 250V ^{UC}	MDA-1/32 250V ^C
AGC-1/16 250V ^{UC}	—	—	—	MDL-1/16 250V ^{UC}	MDQ-1/16 250V ^{UC}	MDA-1/16 250V ^{UC}
AGC-1/10 250V ^{UC}	—	—	100mA 1000V	MDL-1/10 250V ^{UC}	MDQ-1/10 250V ^{UC}	MDA-1/10 250V ^{UC}
AGC-1/8 250V ^{UC}	—	—	—	MDL-1/8 250V ^{UC}	MDQ-1/8 250V ^{UC}	MDA-1/8 250V ^{UC}
AGC-15/100 250V ^{UC}	—	—	150mA 1000V	MDL-15/100 250V ^{UC}	MDQ-15/100 250V ^{UC}	MDA-15/100 250V ^{UC}
AGC-175/1000 250V ^{UC}	—	—	—	MDL-175/1000 250V ^{UC}	MDQ-175/1000 250V ^{UC}	MDA-175/1000 250V ^{UC}
AGC-3/10 250V ^{UC}	—	—	250mA 1000V	MDL-3/10 250V ^{UC}	MDQ-3/10 250V ^{UC}	MDA-3/10 250V ^{UC}
AGC-3/16 250V ^{UC}	—	—	—	MDL-3/16 250V ^{UC}	MDQ-3/16 250V ^{UC}	MDA-3/16 250V ^{UC}
AGC-1/4 250V ^{UC}	ABC-1/4 250V ^{UC}	GBB-1/4 60V ^R	—	MDL-1/4 250V ^{UC}	MDQ-1/4 250V ^{UC}	MDA-1/4 250V ^{UC}
AGC-3/10 250V ^{UC}	—	—	500mA 750V	MDL-3/10 250V ^{UC}	MDQ-3/10 250V ^{UC}	MDA-3/10 250V ^{UC}
AGC-3/8 250V ^{UC}	—	—	—	MDL-3/8 250V ^{UC}	MDQ-3/8 250V ^{UC}	MDA-3/8 250V ^{UC}
AGC-4/10* 250V ^{UC}	—	—	750mA 500V	MDL-4/10 250V ^{UC}	MDQ-4/10 250V ^{UC}	MDA-4/10 250V ^{UC}
AGC-1/2 250V ^{UC}	ABC-1/2 250V ^{UC}	—	—	MDL-1/2 250V ^{UC}	MDQ-1/2 250V ^{UC}	MDA-1/2 250V ^{UC}
AGC-6/10 250V ^{UC}	—	—	—	MDL-6/10†† 250V ^{UC}	MDQ-6/10 250V ^{UC}	MDA-6/10 250V ^{UC}
AGC-3/4 250V ^{UC}	ABC-3/4 250V ^{UC}	GBB-3/4 60V ^R	—	MDL-3/4 250V ^{UC}	MDQ-3/4 250V ^{UC}	MDA-3/4 250V ^{UC}
AGC-8/10 250V ^{UC}	—	—	—	MDL-8/10 250V ^{UC}	MDQ-8/10 250V ^{UC}	MDA-8/10 250V ^{UC}
AGC-1 250V ^{UC}	ABC-1 250V ^{UC}	GBB-1 60V ^R	1A 350V	MDL-1 250V ^{UC}	MDQ-1 250V ^{UC}	MDA-1 250V ^{UC}
—	—	—	—	MDL-13/10 250V ^{UC}	MDQ-13/10 250V ^{UC}	—
—	—	—	—	—	—	—
AGC-1 1/4 250V ^{UC}	—	GBB-1 1/4 60V ^R	—	MDL-1 1/4 250V ^{UC}	MDQ-1 1/4 250V ^{UC}	MDA-1 1/4 250V ^{UC}
—	—	—	—	—	—	—
AGC-1 1/2 250V ^{UC}	ABC-1 1/2 250V ^{UC}	—	1.5A 250V	MDL-1 1/2 250V ^{UC}	MDQ-1 1/2 250V ^{UC}	MDA-1 1/2 250V ^{UC}
AGC-1 5/10* 250V ^{UC}	—	—	—	MDL-1 5/10 250V ^{UC}	MDQ-1 5/10 250V ^{UC}	MDA-1 5/10 250V ^{UC}
AGC-1 1/10 250V ^{UC}	—	—	—	MDL-1 1/10 250V ^{UC}	MDQ-1 1/10 250V ^{UC}	—
AGC-2 250V ^{UC}	ABC-2 250V ^{UC}	GBB-2 250V ^R	2A 250V	MDL-2 250V ^{UC}	MDQ-2 250V ^{UC}	MDA-2 250V ^{UC}
AGC-2 1/4 250V ^{UC}	—	—	—	MDL-2 1/4 250V ^{UC}	MDQ-2 1/4 250V ^{UC}	—
AGC-2 1/2 250V ^{UC}	ABC-2 1/2 250V ^{UC}	—	—	MDL-2 1/2 250V ^{UC}	MDQ-2 1/2 250V ^{UC}	MDA-2 1/2 250V ^{UC}
—	—	—	—	MDL-2 5/10 250V ^{UC}	MDQ-2 5/10 250V ^{UC}	MDA-2 5/10 250V ^{UC}
AGC-3 250V ^{UC}	ABC-3 250V ^{UC}	GBB-3 250V ^R	3A 250V	MDL-3 250V ^{UC}	MDQ-3 250V ^{UC}	MDA-3 250V ^{UC}
AGC-3 3/10 250V ^{UC}	—	—	—	MDL-3 3/10 250V ^{UC}	MDQ-3 3/10 250V ^{UC}	MDA-3 3/10 250V ^{UC}
—	—	—	—	—	—	—
AGC-4 250V ^{UC}	ABC-4 250V ^{UC}	GBB-4 60V ^R	—	MDL-4 250V ^{UC}	MDQ-4 250V ^{UC}	MDA-4 250V ^{UC}
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AGC-5 250V ^{UC}	ABC-5 250V ^{UC}	GBB-5 60V ^R	5A 250V	MDL-5 250V ^{UC}	MDQ-5 250V ^{UC}	MDA-5 250V ^{UC}
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AGC-6 250V ^{UC}	ABC-6 250V ^{UC}	GBB-6 60V ^R	—	MDL-6 250V ^{UC}	MDQ-6 250V ^{UC}	MDA-6 250V ^{UC}
AGC-6 1/4 250V ^{UC}	—	—	—	MDL-6 1/4 250V ^{UC}	MDQ-6 1/4 250V ^{UC}	MDA-6 1/4 250V ^{UC}
AGC-7 250V ^{UC}	ABC-7 250V ^{UC}	GBB-7 60V ^R	7A 150V	MDL-7 250V ^{UC}	MDQ-7 250V ^{UC}	MDA-7 250V ^{UC}
AGC-7 1/2 250V ^{UC}	—	—	—	MDL-7 1/2 250V ^{UC}	MDQ-7 1/2 32V ^R	—
AGC-8 250V ^{UC}	ABC-8 250V ^{UC}	GBB-8 60V ^R	—	MDL-8 250V ^{UC}	MDQ-8 32V ^R	MDA-8 250V ^{UC}
AGC-9 250V ^{UC}	—	GBB-9 60V ^R	—	MDL-9† 32V ^R	MDQ-9 32V ^R	—
AGC-10 250V ^{UC}	ABC-10 250V ^{UC}	GBB-10 250V ^R	10A 100V	MDL-10† 32V ^R	MDQ-10 32V ^R	MDA-10 250V ^{UC}
AGC-12 32V ^{RC}	ABC-12 250V ^{UC}	GBB-12 60V ^R	—	MDL-12† 32V ^R	MDQ-12 32V ^R	MDA-12 250V ^R
AGC-15 32V ^{RC}	ABC-15 250V ^{UC}	GBB-15 60V ^R	—	MDL-15† 32V ^R	MDQ-15 32V ^R	MDA-15 250V ^R
AGC-20 32V ^{RC}	ABC-20 250V ^{UC}	GBB-20 60V ^R	—	MDL-20† 32V ^R	MDQ-20 32V ^R	MDA-20 250V ^R
AGC-25 32V ^{RC}	ABC-25 125V ^U	GBB-25 60V ^R	—	MDL-25† 32V ^R	MDQ-25 32V ^R	MDA-25 125V
AGC-30 32V ^{RC}	ABC-30 125V	GBB-30 60V ^R	—	MDL-30† 32V ^R	MDQ-30 32V ^R	MDA-30 125V

†U.L. Listed; †U.L. Recognized under Component Program; †CSA Certified.

*Also AGC-1/20, AGC-45/100, AGC-1 1/4

**MDV—Maximum current rating is 7 amps. 1 1/4 amps thru 7 amps are rated at 250 volts and U.L. and CSA Listed.

†GJV 0-3 CSA.

††Also MDL-7 1/10

‡Time-Lag

Ferrule Fuses

13/32" × 1 1/2"

13/32" ×
Various Lengths

1/4" × 1"

Fast-Acting

Time Delay

Dual-Element Time-Delay

Fast/Medium

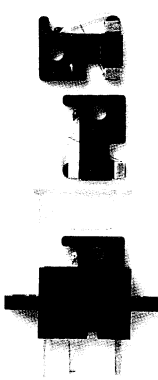
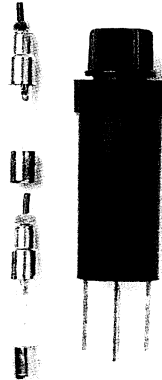
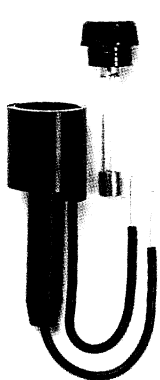
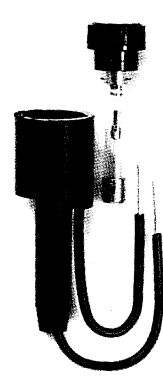
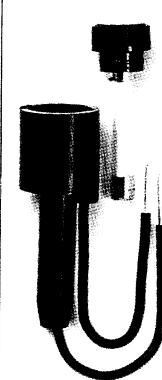


KTK/KLM**	KTK-R	FNM/FNW†	FNQ	FNQ-R	SC	TDC 180
Melamine. For circuits having high fault I. 100,000 AIC (KLM's have d-c rating of 500V, 0-30 Amps CSA Certified, 0-10 Amp U.L. Listed, 12-30 Amp 600V U.L. Listed).	KTK with rejection feature. U.L. Class CC. Branch circuit fuse. 200,000 AIC.	For circuits with high inrush currents. 10,000 AIC. †For motor control transformers. Circuit with inrush current 10,000 AIC. 250V U.L. Listed. FNW available only 12-30 amps	For motor control transformers. Circuits with inrush I's. 200,000 AIC. Single element above 3 3/10 A.	Ideal for Control Transformer Protection. UL Class CC, CSA HRCI-Misc.	For branch circuits & supplementary protection. U.L. Class G (1/2 to 5A fuses do not have time delay). 200,000 AIC.	BS 1362 IEC 269-3A 6000 AIC.
—	—	—	—	—	SC-1/2 300V ^{UC}	1A 240V
KTK/KLM-1/10 600V ^{UC}	KTK-R-1/10 600V ^{UC}	FNM-1/10 250V ^{UC}	FNQ-1/10 500V ^{UC}	—	SC-1 300V ^{UC}	2A 240V ^{BA}
KTK/KLM-1/8 600V ^{UC}	KTK-R-1/8 600V ^{UC}	—	FNQ-1/8 500V ^{UC}	—	SC-2 300V ^{UC}	3A 240V ^{BA}
—	—	FNM-1 5/100 250V ^{UC}	FNQ-1 5/100 500V ^{UC}	—	SC-3 300V ^{UC}	5A 240V ^{BA}
—	—	—	—	—	SC-4 300V ^{UC}	7A 240V ^{BA}
KTK/KLM-2/10 600V ^{UC}	KTK-R-2/10 600V ^{UC}	FNM-2/10 250V ^{UC}	FNQ-2/10 500V ^{UC}	—	SC-5 300V ^{UC}	10A 240V ^{BA}
—	—	—	FNQ-3/16 500V ^{UC}	—	SC-6 300V ^{UC}	13A 240V ^{BA}
KTK/KLM-1/4 600V ^{UC}	KTK-R-1/4 600V ^{UC}	FNM-1/4 250V ^{UC}	FNQ-1/4 500V ^{UC}	FNQ-R-1/4 600V ^{UC}	SC-8 300V ^{UC}	Various Sizes
KTK/KLM-3/10 600V ^{UC}	KTK-R-3/10 600V ^{UC}	FNM-3/10 250V ^{UC}	FNQ-3/10 500V ^{UC}	FNQ-R-3/10 600V	SC-10 300V ^{UC}	
—	—	—	—	—	SC-15 300V ^{UC}	Fast
—	KTK-R-4/10 600V ^{UC}	FNM-4/10 250V ^{UC}	FNQ-4/10 500V ^{UC}	FNQ-R-4/10 600V	SC-20 300V ^{UC}	
KTK/KLM-1/2 600V ^{UC}	KTK-R-1/2 600V ^{UC}	FNM-1/2 250V ^{UC}	FNQ-1/2 500V ^{UC}	FNQ-R-1/2 600V ^{UC}	SC-25 300V ^{UC}	TDC 119-122
—	KTK-R-5/10 600V ^{UC}	FNM-5/10 250V ^{UC}	FNQ-5/10 500V ^{UC}	FNQ-R-5/10 600V ^{UC}	SC-30 300V ^{UC}	
KTK/KLM-3/4 600V ^{UC}	KTK-R-3/4 600V ^{UC}	—	—	FNQ-R-3/4 600V	SC-35 300V ^{UC}	
—	—	FNM-8/10 250V ^{UC}	FNQ-8/10 500V ^{UC}	FNQ-R-8/10 600V	SC-40 300V ^{UC}	
KTK/KLM-1 600V ^{UC}	KTK-R-1 600V ^{UC}	FNM-1 250V ^{UC}	FNQ-1 500V ^{UC}	FNQ-R-1 600V	SC-45 300V ^{UC}	
—	—	—	—	FNQ-R-1 3/10 600V	SC-50 300V ^{UC}	
—	—	FNM-1 1/8 250V ^{UC}	—	FNQ-R-1 1/10 600V	SC-60 300V ^{UC}	
—	—	FNM-1 1/4 250V ^{UC}	FNQ-1 1/8 500V ^{UC}	FNQ-R-1 1/8 600V	—	
—	—	FNM-1 1/10 250V ^{UC}	FNQ-1 1/4 500V ^{UC}	FNQ-R-1 1/4 600V	—	
KTK/KLM-1 1/2 600V ^{UC}	KTK-R-1 1/2 600V ^{UC}	FNM-1 1/2 250V ^{UC}	FNQ-1 1/2 500V ^{UC}	FNQ-R-1 1/2 600V	—	
—	—	FNM-1 1/10 250V ^{UC}	FNQ-1 1/10 500V ^{UC}	FNQ-R-1 1/10 600V	—	BS 1361, IEC 269-3, 16,500 AIC.
—	—	FNM-1 1/10 250V ^{UC}	—	FNQ-R-1 1/10 600V	—	
KTK/KLM-2 600V ^{UC}	KTK-R-2 600V ^{UC}	FNM-2 250V ^{UC}	FNQ-2 500V ^{UC}	FNQ-R-2 600V ^{UC}	—	
—	—	FNM-2 1/4 250V ^{UC}	FNQ-2 1/4 500V ^{UC}	FNQ-R-2 1/4 600V	—	
KTK-2 1/2 600V ^{UC}	—	FNM-2 1/2 250V ^{UC}	FNQ-2 1/2 500V ^{UC}	FNQ-R-2 1/2 600V ^{UC}	—	
—	—	FNM-2 3/10 250V ^{UC}	—	FNQ-R-2 3/10 600V	—	
KTK/KLM-3 600V ^{UC}	KTK-R-3 600V ^{UC}	FNM-3 250V ^{UC}	FNQ-3 500V ^{UC}	FNQ-R-3 600V ^{UC}	—	
—	—	FNM-3 3/10 250V ^{UC}	FNQ-3 3/10 500V ^{UC}	FNQ-R-3 3/10 600V	—	
KTK-3 1/2 600V ^{UC}	—	FNM-3 1/2 250V ^{UC}	FNQ-3 1/2 500V ^{UC}	FNQ-R-3 1/2 600V	—	
KTK/KLM-4 600V ^{UC}	KTK-R-4 600V ^{UC}	FNM-4 250V ^{UC}	FNQ-4 500V ^{UC}	FNQ-R-4 600V ^{UC}	—	
—	—	FNM-4 1/2 250V ^{UC}	FNQ-4 1/2 500V ^{UC}	—	—	5A 240V
KTK/KLM-5 600V ^{UC}	KTK-R-5 600V ^{UC}	FNM-5 250V ^{UC}	FNQ-5 500V ^{UC}	FNQ-R-5 600V ^{UC}	—	15A 240V
—	—	FNM-5 5/10 250V ^{UC}	FNQ-5 5/10 500V ^{UC}	—	—	20A 240V
KTK/KLM-6 600V ^{UC}	KTK-R-6 600V ^{UC}	FNM-6 250V ^{UC}	FNQ-6 500V ^{UC}	FNQ-R-6 600V ^{UC}	—	30A 240V
—	—	FNM-6 1/4 250V ^{UC}	FNQ-6 1/4 500V ^{UC}	FNQ-R-6 1/4 600V	—	45A 240V
KTK-7 600V ^{UC}	KTK-R-7 600V ^{UC}	FNM-7 250V ^{UC}	FNQ-7 500V ^{UC}	FNQ-R-7 600V	—	—
—	—	—	—	FNQ-R-7 1/2 600V ^{UC}	—	—
KTK/KLM-8 600V ^{UC}	KTK-R-8 600V ^{UC}	FNM-8 250V ^{UC}	FNQ-8 500V ^{UC}	—	—	—
KTK 600V ^{UC}	KTK-R-9 600V ^{UC}	FNM-9 250V ^{UC}	FNQ-9 500V ^{UC}	—	—	—
KTK/KLM-10 600V ^{UC}	KTK-R-10 600V ^{UC}	FNM-10 250V ^{UC}	FNQ-10 500V ^{UC}	—	—	—
KTK-12 600V ^{UC}	KTK-R-12 600V ^{UC}	FNM-12† 125V ^{UC}	FNQ-12 500V ^{UC}	—	—	—
KTK/KLM-15 600V ^{UC}	KTK-R-15 600V ^{UC}	FNM-15† 125V ^{UC}	FNQ-15 500V ^{UC}	—	—	—
KTK/KLM-20 600V ^{UC}	KTK-R-20 600V ^{UC}	FNM-20† 32V	FNQ-20 500V ^{UC}	—	—	—
KTK/KLM-25 600V ^{UC}	KTK-R-25 600V ^{UC}	FNM-25† 32V	FNQ-25 500V ^{UC}	—	—	—
KTK/KLM-30 600V ^{UC}	KTK-R-30 600V ^{UC}	FNM-30† 32V	FNQ-30 500V ^{UC}	—	—	—

^UU.L. Listed; ^CCSA Certified. [†]U.L. and CSA Listings applicable only to KTK fuses. ^BBritish Standard Approval. ^AASTA Approval.

*Also FNQ-14

Selection Guide

Telecommunications Type		Specialty Units				PC Board
Consult factory for other telecommunication fuses.		In-Line Holders & Fuses				Sub-Miniature
Non-Time Delay		Non-Time Delay		Dual-Element Time-Delay	Time-Delay	Non-Time Delay
						
70 Series	GMT	GLR	GLQ	GMF	GMQ/GMF/GRF	GFA
Pin indicating and circuit activating. For 15087 holder (panel mount). Color-coded pins.	Fuse and holder (HLT or PCT) combination. Visual indicating and circuit activating. Color-coded "flags." 60VDC.	Integral fuse and holder knob. Single size holder HLR ^{RC} .	Integral fuse and holder knob. Holder HLQ ^{RC} rejection type. Size must be specified.	Fusetron fuse. Integral fuse and holder knob. Single size holder HLR ^{RC} .	Available in higher ampere ratings.	Axial leads. 50AIC. Color-coded.
70P- ¹ / ₁₀ 300V	GMT- ¹⁸ / ₁₀₀ 125V ^R	GLR- ³ / ₁₆ 300V ^{UC}	—	GMF- ¹ / ₂ 300V ^{UC}	GMQ-5 300V ^{UC}	GFA- ¹ / ₂₀₀ 125V ^R
70R- ¹⁸ / ₁₀₀ 300V	GMT- ¹ / ₄ 125V ^R	GLR- ¹ / ₂ 300V ^{UC}	GLQ-1 300V ^{UC}	GMF- ⁶ / ₁₀ 300V ^{UC}	GMQ-6 ¹ / ₄ 300V ^{UC}	GFA- ¹ / ₁₀₀ 125V ^R
70E- ¹⁸ / ₁₀₀ 300V	GMT- ¹ / ₂ 125V ^R	GLR-1 300V ^{UC}	GLQ-1 ¹ / ₂ 300V ^{UC}	GMF- ⁸ / ₁₀ 300V ^{UC}	GMF-5 300V ^{UC}	GFA- ¹ / ₆₄ 125V ^R
70X- ² / ₁₀ 300V	GMT- ⁶⁵ / ₁₀₀ 125V ^R	GLR-1 ¹ / ₂ 300V ^{UC}	GLQ-1 ⁹ / ₁₀ 300V ^{UC}	GMF-1 300V ^{UC}	GMF-6 ¹ / ₄ 300V ^{UC}	GFA- ¹ / ₃₂ 125V ^R
70F- ¹ / ₄ 300V	GMT- ³ / ₄ 125V ^R	GLR-1 ⁸ / ₁₀ 300V ^{UC}	GLQ-2 300V ^{UC}	GMF-1 ¹ / ₄ 300V ^{UC}	GRF-7 125V ^{UC}	GFA- ¹ / ₂₀ 125V ^R
70K- ¹ / ₄ 300V	GMT-1 125V ^R	GLR-2 300V ^{UC}	GLQ-2 ¹ / ₂ 300V ^{UC}	GMF-1 ⁹ / ₁₀ 300V ^{UC}	GRF-8 125V ^{UC}	GFA- ¹ / ₁₆ 125V ^R
70G- ¹ / ₂ 300V	GMT-1 ¹ / ₃ 125V ^R	GLR-2 ¹ / ₂ 300V ^{UC}	GLQ-3 300V ^{UC}	GMF-2 300V ^{UC}	GRF-10 125V ^{UC}	GFA- ¹ / ₁₀ 125V ^R
70H- ³ / ₄ 300V	GMT-1 ¹ / ₂ 125V ^R	GLR-3 300V ^{UC}	GLQ-4 300V ^{UC}	GMF-2 ¹ / ₂ 300V ^{UC}	—	GFA- ¹ / ₈ 125V ^R
GKB-1 300V	GMT-2 125V ^R	GLR-4 300V ^{UC}	GLQ-5 300V ^{UC}	GMF-2 ⁹ / ₁₀ 300V ^{UC}	—	GFA- ¹⁵ / ₁₀₀ 125V ^R
70A-1 ¹ / ₃ 300V	GMT-3 125V ^R	GLR-5 300V ^{UC}	GLQ-6 300V ^{UC}	GMF-3 300V ^{UC}	—	GFA- ² / ₁₀ 125V ^R
70B-2 300V	GMT-3 ¹ / ₂ 125V ^R	GLR-6 300V ^{UC}	GLQ-7 300V ^{UC}	GMF-3 ³ / ₁₀ 300V ^{UC}	—	GFA- ¹ / ₄ 125V ^R
70C-3 300V	GMT-4 125V ^R	GLR-7 300V ^{UC}	GLQ-8 300V ^{UC}	GMF-4 300V ^{UC}	—	GFA- ³ / ₁₀ 125V ^R
70J-3 ¹ / ₂ 300V	GMT-5 125V ^R	GLR-8 300V ^{UC}	GLQ-9 300V ^{UC}	—	—	GFA- ⁴ / ₁₀ 125V ^R
70D-5 300V	GMT-7 ¹ / ₂ 125V ^R	GLR-9 300V ^{UC}	GLQ-10 300V ^{UC}	—	—	GFA- ¹ / ₂ 125V ^R
71A-6 300V	GMT-10 125V ^R	GLR-10 300V ^{UC}	—	—	—	GFA- ⁶ / ₁₀ 125V ^R
70M-8 300V	—	GLR-12 300V ^{UC}	—	—	—	GFA- ³ / ₄ 125V ^R
GKB-10 300V	—	GLR-15 300V ^{UC}	—	—	—	GFA-1 125V ^R
—	—	—	—	—	—	GFA-1 ¹ / ₂ 125V ^R
—	—	—	—	—	—	GFA-2 125V ^R
—	—	—	—	—	—	GFA-2 ¹ / ₂ 125V ^R
—	—	—	—	—	—	GFA-3 125V ^R
—	—	—	—	—	—	GFA-4 125V ^R
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—	—	—	—	—	—	GFA-7 32V
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^UU.L. Listed; ^RU.L. Recognized under Component Program; ^CCSA Certified

Panel-Mount—HTB Fuseholders $\frac{1}{4}" \times 1\frac{1}{4}"$ 5mm $\times$ 20mm

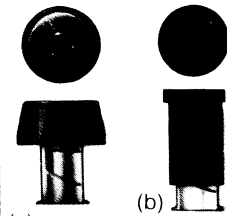
Fifty-Six Models For Total Flexibility

Three Mounting Configurations



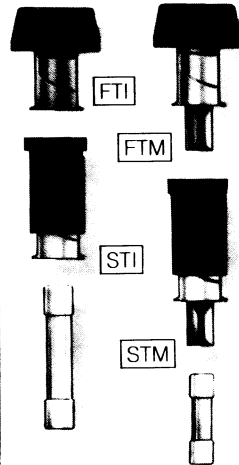
- (a) Hex nut mounts on rear of panel (HTB-20, 30, 40 and 50 series)
- (b) Hex nut mounts on front of panel (HTB-60 series) Fuseholder installs through rear of panel allowing wire harness to be connected before holder is installed.
- (c) Snap-in mount (HTB-80 and 90 series) provides fast, easy and secure mounting without tools or hardware.

Knob and Screw-Driver Slot Carriers



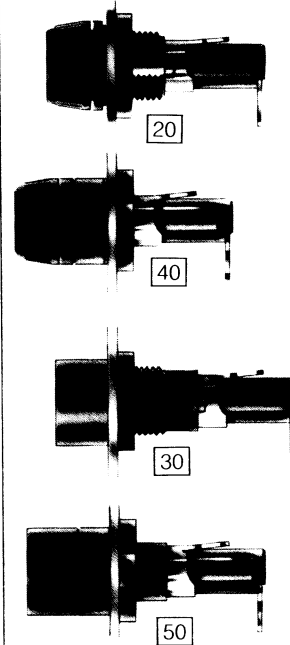
- (a) Knob type carrier interchangeable with all HTB-20, 40, 60 and 80 Series holders.
- (b) Screwdriver slot type carrier interchangeable with all HTB-30, 50 and 90 Series holders.

$\frac{1}{4}" \times 1\frac{1}{4}"$ and 5mm $\times$ 20mm Fuse Carriers



All holder bodies have the option of using either $\frac{1}{4}" \times 1\frac{1}{4}"$ or 5mm $\times$ 20mm carriers. This feature allows the OEM the flexibility of shipping equipment to International destinations simply by changing the fuse carriers.

High and Low Profile



The HTB-20 and 30 Series are low profile versions minimizing front panel exposure. The HTB-40 and 50 Series are high profile versions conserving critical, behind-panel space.

Two Terminal Options



- 2 Solder- $\frac{3}{16}"$ quick-connect (in-line)



- 4 Solder- $\frac{3}{16}"$ quick-connect (right-angle)



- 6 $\frac{1}{4}"$ quick-connect (in-line)



- 8 $\frac{1}{4}"$ quick-connect (right angle)

Terminals are one piece rivetless construction for low contact resistance and high reliability.

Specifications—HTB

Approvals—UL-20A ($\frac{3}{16}"$ quick-connect 15A) @ 250V; CSA-16A @ 250V; VDE-10A @ 250V; SEMKO-10A @

Electrical

Data—Insulation resistance (per IEC #257)—10,000M ohms @ 500VDC; contact resistance (per IEC #257)—0.005 ohms max. @ 1A; standoff voltage (per IEC #257)—480V/Mil @ .125 in. thickness.

Environmental—Ambient temperature -55°C to 85°C .

Molded

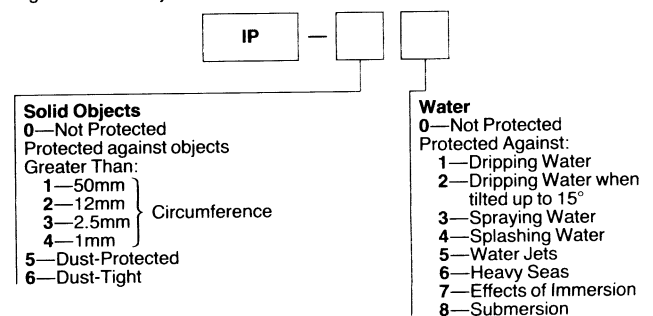
Components—High temperature, flame retardant, thermoplastic; UL Component Recognized; 94VO; mounting nut, spacer-black polycarbonate.

Terminals—Tin-plated brass.

Mounting—Withstands 15 to 20 lb-ins torque to mounting nut when mounting fuseholder to panel. Maximum panel thickness 0.300 inches.

DEGREE OF PROTECTION

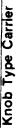
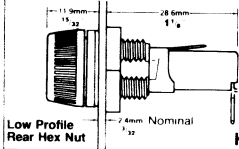
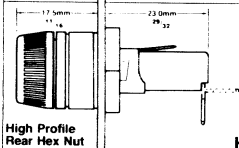
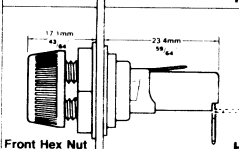
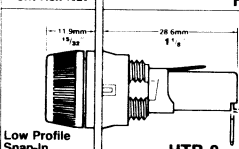
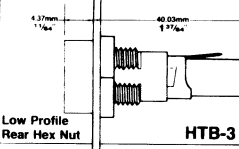
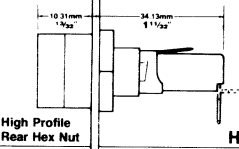
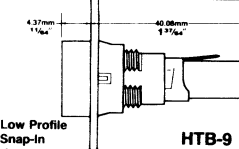
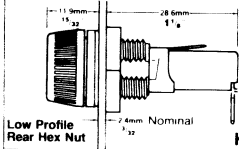
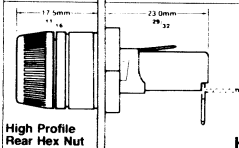
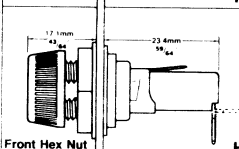
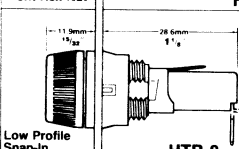
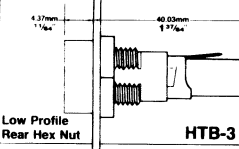
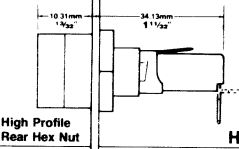
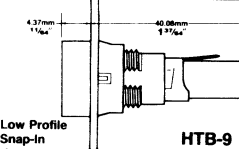
IEC 529 provides a classification system for the degree of protection of equipment enclosures and associated panel components, with respect to the ingress of solid objects and water.

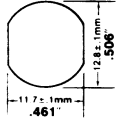
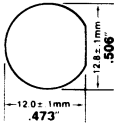
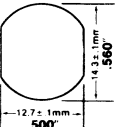


Finger grip (knob type) and screwdriver slot versions have a rating of IP-40. Finger grip versions with the splash proof (SP) option have a rating of IP-67.

HTB Fuseholders $\frac{1}{4}" \times 1\frac{1}{4}"$ 5mm x 20mm

Selection Guide And Dimensional Data

Common Dimensional Data: Length (Knob Type)—1 1/16" (42.9mm) Plus In-Line Terminal (Screwdriver Slotted) 1 3/4" (44.5mm) Note—Plus In-Line Terminal		Terminal Options				Carrier Options				Mounting Hole Options (Nominal Dimensions)					
		Solder/ 3/16" Quick-Connect		1/4" Quick-Connect		1/4" x 1 1/4" ("I" Equals Inches)		5mm x 20mm ("M" Equals Metric)							
		In-Line	Rt. Angle	In-Line	Rt. Angle	Knob	Screwdriver	Knob	Screwdriver						
															
Low Profile Rear Hex Nut HTB-2		HTB-22I	HTB-24I	HTB-26I	HTB-28I	✓									
		HTB-22M	HTB-24M	HTB-26M	HTB-28M				✓						
High Profile Rear Hex Nut HTB-4		HTB-42I	HTB-44I	HTB-46I	HTB-48I	✓									
		HTB-42M	HTB-44M	HTB-46M	HTB-48M				✓						
Front Hex Nut HTB-6		HTB-62I	HTB-64I	HTB-66I	HTB-68I	✓									
		HTB-62M	HTB-64M	HTB-66M	HTB-68M				✓						
Low Profile Snap-In HTB-8		HTB-82I	HTB-84I	HTB-86I	HTB-88I	✓									
		HTB-82M	HTB-84M	HTB-86M	HTB-88M				✓						
Low Profile Rear Hex Nut HTB-3		HTB-32I	HTB-34I	HTB-36I	HTB-38I		✓								
		HTB-32M	HTB-34M	HTB-36M	HTB-38M								✓		
High Profile Rear Hex Nut HTB-5		HTB-52I	HTB-54I	HTB-56I	HTB-58I		✓								
		HTB-52M	HTB-54M	HTB-56M	HTB-58M								✓		
Low Profile Snap-In HTB-9		HTB-92I	HTB-94I	HTB-96I	HTB-98I		✓								
		HTB-92M	HTB-94M	HTB-96M	HTB-98M								✓		

Note Before Tooling contact Factory for exact dimensions and panel thickness range	
Common Mounting Hole for HTB-2, -3, -4, -5, -6	
	
For HTB-2, -3, -4, -5.	
	
1A4287-1	
For HTB-6	
	
1A3322	
	
1A3321	
For HTB-8, -9.	
	

Fuseholders and fuse carriers may be ordered separately

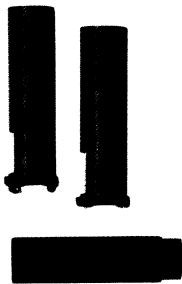
 HTB- Packing (Blank)—Std. BK—Bulk	 HTB- Product Symbol	 HTB- Product Symbol	 HTB- Product Symbol	 HTB- Product Symbol	Fuse Carrier I — $\frac{1}{4}" \times 1\frac{1}{4}"$ M —5mm x 20mm	S P Splash Proof (optional on -2, -4, -8)	Fuse Carrier Only  Packaging (Blank)—Std. BK—Bulk	 Product Symbol	 Fuse Carrier I — $\frac{1}{4}" \times 1\frac{1}{4}"$ M —5mm x 20mm FT —Knob Type (For 20, 40, 60, and 80 Series Only) ST —Screw Driver Slotted (For 30, 50 and 90 Series Only)
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*Profile varies with panel thickness. Holder installs thru rear of panel.

*Printed Circuit Board Fuseholders—HB



Models For Vertical and Horizontal Mounting



There's one model that mounts on a PC board in a horizontal plane (HBH); and two models which mount in a vertical plane—one with "stability" pins (HBV) and one without (HBW). All three feature common fuse carriers that are interchangeable with their European counterparts.

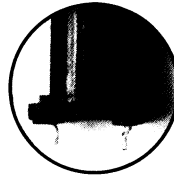
Fuse Carriers For 5mm × 20mm and 1/4" × 1 1/4" Fuses



Carriers fit all three body models. Carrier knobs are color coded for easy identification—gray for 1/4" fuses; black for 5mm fuses.

When locked, slots of horizontal holders are always parallel to PC board; always in alignment on vertical holders. Precise, uniform line-up makes them look good.

"Kicked" Terminals For Optimum Wave-Soldering



Stabilizes holder. Makes for constant high quality soldering even with wide tolerance PC board hole tooling.

Anti-Wicking Terminals



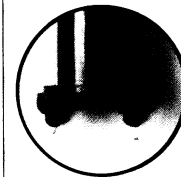
The bottom (line-side) terminal incorporates an exclusive closed element design. Prevents solder flux from "wicking-up" into the holder body and the resulting poor continuity between the fuse and the terminal.

*Individual Components—PC Board Fuseholders	
Fuseholder Body Only	
Body Type	Cat. No.
Horizontal Mount	BK/MBH
Vertical Mount w/ Stability Pins	BK/MBV
Vertical Mount w/o Stability Pins	BK/MBW
Fuseholder Carrier Only	
1/4" × 1 1/4"	BK/FBI
5mm × 20mm	BK/FBM

*Available in bulk only.

"Stabilizer" Pins on HBV Vertical Model Offer Added Stability

Corner pins integral to the HBV holder body give additional stability to vertical holders for wave-soldering and, at the same time, reduce any mechanical stress that might be imposed on contact pins during service. HBW model offers direct interchangeability with European models.



Specifications PC Board Fuseholders

Electrical Ratings	UL—12A @ 250V, CSA—12A @ 250V, VDE—6.3A @ 250V, SEMKO—6.3A @ 250V (CSA, VDE and SEMKO approvals pending.) Insulation resistance—10,000 megohm at 500 VDC. Contact resistance—less than 0.005 ohms @ 20mV. Dielectric strength—over 200 volts/mil.
Molded Material	High dielectric molded phenolic with a UL V0 flammability rating.
Terminals	Copper alloy, tin plated
Fuse Carrier & Knob	Spring-loaded, bayonet type. Brass, tin-plated. Screwdriven slotted.
Mounting	"Kicked" terminals (all models) and stabilizer pins on HBV model for increased stability.
Environmental	Ambient temperature—(–40°C) to +85°C

Note: Voltage ratings of fuseholders in A.C. Degree of protection rating, IP-40 (See page 10).

Selection Chart—Printed Circuit Board Fuseholders.

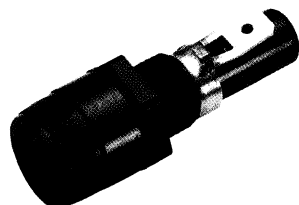
Model	Fuse Size	*Cat. No.	*Agency Listings	Dimensions	Mounting Dimensions
Horizontal Mount					
		HBH-I	UL CSA SEMKO		
		HBH-M			
Vertical Mount With Stability Pins					
		HBV-I	UL CSA VDE SEMKO		
		HBV-M			
Vertical Mount Without Stability Pins					
		HBW-I	UL CSA VDE SEMKO		
		HBW-M			

*Pending

Note—Carriers do not fit panel-mounted fuseholders. *Recommended for new designs.

*Panel-Mounted Fuseholders & Fuseblocks

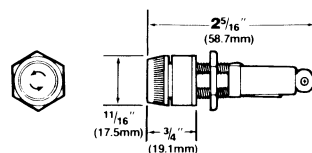
HKP Series—Standard For 1/4" × 1 1/4" Fuses (6.4mm × 31.8mm)



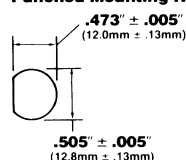
Bayonet type knob. Vibration resistant. For panels up to 5/16" (7.9mm) thick. Locking keys are available; specify 1/16" key for panels up to 1/8" and 3/16" key for panels in excess of 1/8". Military version is designated FHN26G1. The HKP and HKP-HH holders are U.L. Recognized and CSA Listed. (U.L. File No. E14853, Guide No. IZLT2; CSA File No. 47235, Class 6225).

Symbol	Amps	Volts	Features
HKP	30	250	-HH has quick-connect
HKP-CC	30	250	terminals. -CC is 3/32"
HKP-HH	15	250	shorter behind panel.

Shipping weight per 100—3.25 lbs. (1.47kg).

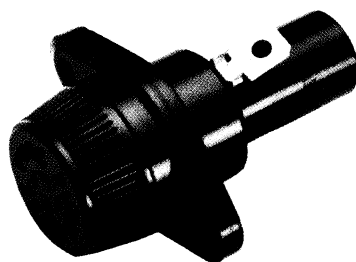


Punched Mounting Hole



U.L. File E14853; CSA File 47235

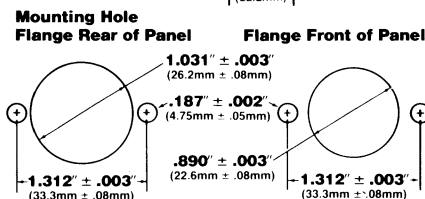
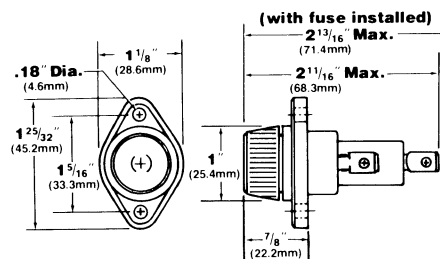
*HPF Series—Standard For 1 1/2" × 1 5/16" to 1 1/2" and Types KTK-R and SC Fuses (10.3mm × 33.3mm to 38.1mm)



*Recommended for new designs. One piece side terminal and threaded insert eliminates two-piece solder fabrication. Combination 1/4" quick-connect/solder terminals for versatility. Screw type knob. The HPF Series functional replaces the Buss HPC Series. U.L. Recognized (File No. E14853, Guide No. IZLT2).

Symbol	Amps	Volts	Fuse
HPF	30	600	1 1/2" (38.1mm)
HPF-C	30	600	1 1/2" (38.1mm)
HPF-L	5	600	BBS 1 1/8" (34.9mm)
HPF-EE	15	300	SC 0 to 15, 1 1/16" (33.3mm)
HPF-JJ	20	300	SC 20; 1 1/32" (35.7mm)
HPF-FF	30	300	SC 25 & 30; 1 5/8" (41.3mm)
HPF-RR	30	600	KTK-R
HPF-WT	30	600	Splash-proof knob

Shipping weight per 100: 6 3/4 lbs. (3.06kg).



U.L. File E14853

5mm × 20mm Multiple Pole; Series 2000-Break-A-Ways



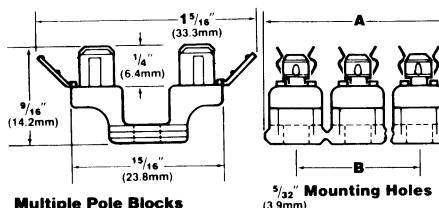
Mount 5mm × 20 mm fuses. Provide low-cost, cluster fuse protection. For Break-A-Way™ design reduces stocking levels and simplifies inventory. One to ten poles. Combination quick-connect/solder terminals. Compact, low-profile design for minimal space. Anti-rotational stud pin of single-pole block permits mounting with single screw.

Specifications

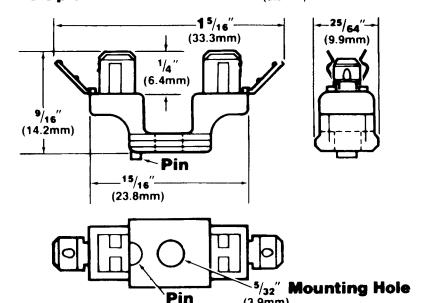
Rating—15A, 250 V (per U.L. testing criteria). Contact Resistance—5 mΩ (Maximum per IEC No. 257). Molded material: Black glass-filled polyester (94VO flammability rating). Terminals clips: Beryllium copper; Tin plated. Ambient temperature: -55°C to +85°C.

Catalog And Dimensional Data

Catalog Number	No. of Poles	Inches A B	Millimeters A B
2000-1	1	(see drawing)	
2000-2	2	2 5/32 2 5/64	19.8 9.9
2000-3	3	1 1/64 2 5/32	29.8 19.8
2000-4	4	1 35/64 1 11/64	39.3 29.8
2000-5	5	1 11/16 1 35/64	49.2 39.3
2000-6	6	2 21/64 1 11/16	59.1 49.2
2000-7	7	2 23/32 2 21/64	69.0 59.1
2000-8	8	3 3/64 2 23/32	79.0 69.0
2000-9	9	3 31/64 3 3/64	88.5 79.0
2000-10	10	3 7/8 3 31/64	98.4 88.5



Multiple Pole Blocks



Single Pole Block — Cat No. 2000-1

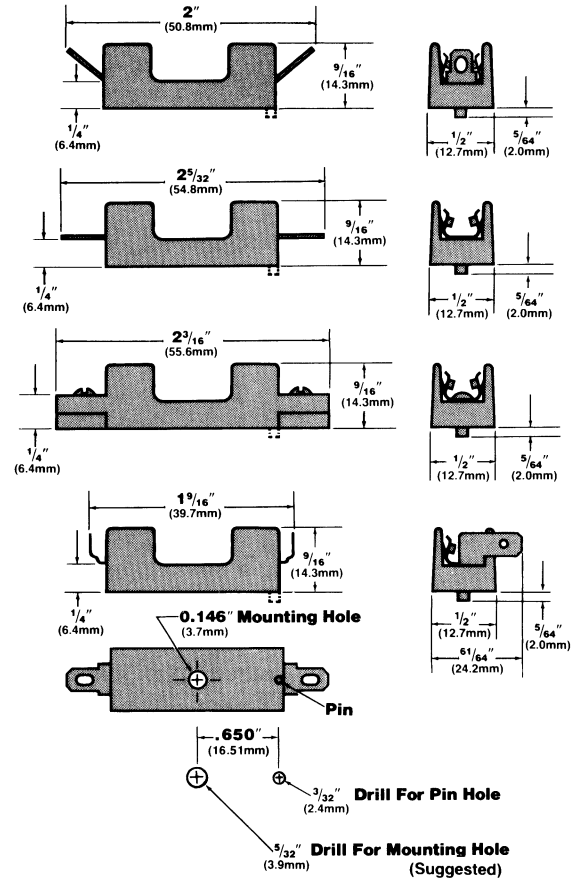
1/4" × 1 1/4"—Series 8000



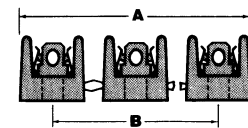
- For low-cost, tight cluster mounting of 1/4" × 1 1/4" fuses.
- Single-pole to 12 pole units • Break-a-way design permits Fuse Block to be sub-divided with simple finger pressure.
- All types of terminal configurations.
- 300 volt rating.
- U.L. Recognized under Components Program.
- CSA listed • A host of exclusive Buss features, "anti-pivot" barriers; solid mount clips; totally sealed base; spec grade terminal tabs.
- Blocks are molded glass-filled, thermoplastic polyester. Clips are spring-bronze.

Dimensional and Mounting Data

Single Pole



Multiple Pole



Catalog Code

BK/	S-8	0	00	-00
Prefix for Bulk Packing				
Series 8000 Product Line				
Type Terminal				
0" Solder; 1" 3/16" Quick Connect; 2" 1/4" Quick Connect; 3" Screw				
Terminal Angle				
01° straight (0°); 02° 40°; 03° side				
Number of Poles (01-12)				

*Available only in a single pole

Catalog Numbers.

Terminals	Size	Angle	*Basic Cat. No.	Poles (Suffix)
Solder	3/16"	0°	S-8001-	1-12
		40°	S-8002-	
		0°	S-8101-	
Quick-Connect	1/4"	40°	S-8102-	1-12
		0°	S-8201-	
		40°	S-8202-	
Screw	—	—	S-8203	—
		—	S-8301-	

Carton Quantity: 10; shelf package: 100.
Bulk Carton: Single-pole and 2-pole fuse blocks—1,000.
Multiple-pole fuse blocks—3-8 pole: 200; 9-12 pole: 50.

*When ordering bulk quantities, prefix "BK" to catalog number; i.e., "BK/S-8001-12".

Anti-Rotation Pin
Single pole blocks may be ordered without the anti-rotational pin simply by adding an "X" to the number of poles (example: BK/S-8000-1X).

Cross Reference (Standard Fuseblocks Vs. Series 8000 Fuseblocks.

Standard Blocks (No Side Barriers)	Series 8000 Blocks
2245-1 thru -12	S-8002-1 thru -12
2430-1 thru -12	S-8202-1 thru -12
2480-1 thru -12	S-8102-1 thru -12
2799	S-8101-1
2839	S-8202-1
2841	S-8201-1
3823-1 thru -12	S-8002-1 thru -12
3833-1 thru -12	S-8301-1 thru -12
3998	S-8002-1
4405	S-8001-1
4407	S-8301-1
4408	S-8001-2
4512	S-8301-1

Current Ratings.

Series	Terminal	Ampers
8000	Solder	UL 25A CSA 21A
8100	3/16" Quick Connect	UL 15A CSA 13A
8200	1/4" Quick Connect	UL 20A CSA 16A
8301	Screw	UL 30A CSA 10A

Dimensions.

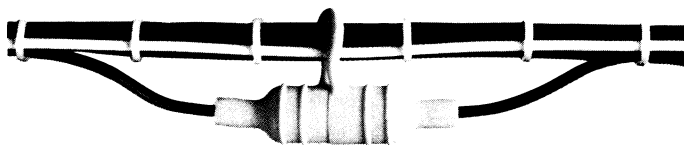
No. of Poles	Inches A	Inches B	Millimeters A	Millimeters B
1	—	—	—	—
2	1 1/8"	3/8"	28.6	15.9
3	1 3/4"	1 1/4"	44.4	31.8
4	2 3/8"	1 1/8"	60.3	47.6
5	3"	2 1/2"	76.2	63.5
6	3 5/8"	3 1/8"	92.1	79.4
7	4 1/4"	3 3/4"	108.0	95.2
8	4 7/8"	4 3/8"	123.8	111.1
9	5 1/2"	5"	139.7	127.0
10	6 1/8"	5 5/8"	155.6	142.9
11	6 3/4"	6 1/4"	171.4	158.8
12	7 3/8"	6 7/8"	187.3	174.6

*See outline drawings.

U.L. Recognized; File E14853A, Guide IZLT2
CSA Certified

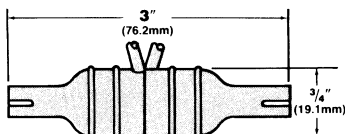
In-Line—HFB Waterproof; HHB Universal

HFB Waterproof In-Line Fuseholder For 1/4" x 1 1/4" Fuses (6.35mm x 31.8mm)



- Rated 30 amps, 32 volts.
- Ideal for harsh environments.
 - Degree of Protection rating of IP-68 (See page 10)
 - Water
 - Salt spray
 - Ultraviolet light
 - Ozone
 - -40° to 150° temp. range
 - Withstands many organic solvents and rigorous shock and vibration
- Accepts #12 to #18 wire leads (not provided).
- Simple assembly.
- One-piece molded thermo-plastic.
- High visibility yellow color for easy identification in dark or hard-to-access locations.
- Important information molded into body

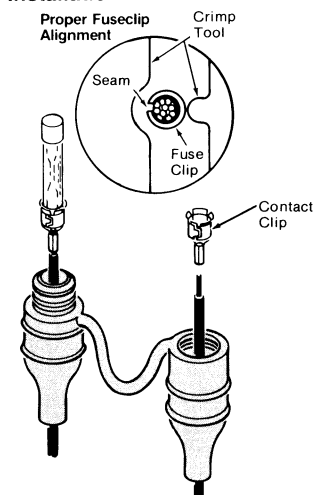
Dimensional Data



Catalog Numbers

Standard Pack (10-in)	HFB
Bulk Pack (20-in)	BK/HFB
Extra Contact Clip	BK/1A2294

Installation



- 1) Thread wire through housing.
- 2) Strip insulation per strip gauge.
- 3) Crimp fuse clip to wire.*
- 4) Pull wire and seat fuse clip in housing.
- 5) Insert fuse.
- 6) Snap housing together.

*Recommended crimping tools:
 1) Thomas & Betts No. WT-111-M
 2) Radio Shack No. 64-409
 3) California Terminal Products No. 1250

Overall Specifications—HFB

Temperature Range—-40°C to 150°C.
 (NOTE: This temperature range applies to the fuseholder only. Fuses may not operate properly over this range.)

Waterproof—typically to a depth of 1 foot for 2 hours.

Vibration Resistance—Per Mil Standard 810C.
 Humidity—85°C/85% R.H. for 96 hours.

Material Specifications—HFB

Brittle Point—less than -60°C.

Abrasion—54% NBS index.

Fluid

Resistance—Type 4 Class AA, BA, BC, BE, CA, CE per ASTM D-2000 Standard Classification System for rubbers.

Flame

Resistance—Pass FMV5302 and rated slow burning when tested in accordance with UL 94HB.

Ozone Resistance—Passed 70 hours in 50 ppm ozone per ASTM D-5.

Salt Spray—15% for 166 hours = 0% volume swell.

Xenon Arc Weatherometer.

Time (Hrs)	Tensile Strength (psi)	Elong. (%)	100% Mod. (psi)
0	1100	375	470
500	1130	350	520
1000	1190	350	520

Heat Aging (% retention of mechanical properties at 125°C).

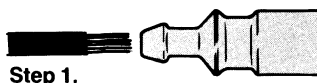
Parameters	Days				
	1	7	15	30	41.7
Tensile Stgth.	100	105	115	120	120
% Elongation	90	90	90	90	90
100% Mod.	105	110	120	120	120

HHB Universal In-Line Fuseholder For 1/4" x 7/8", 1", and 1 1/4" Fuses (6.35mm x 22.2, 25.4mm, and 31.8mm)



- Rated 30 amps, 32 volts.
- An economical and versatile nylon fuseholder for normal environments.
- Accepts #12 to #18 wire leads (not provided with basic fuseholder).
- Accepts a wide range of 1/4" diameter fuse sizes:
 - 1/4" x 7/8" (AGW);
 - 1/4" x 1" (AGX);
 - 1/4" x 1 1/4" (AGC, MDL, etc.);
- Simple crimp assembly.
- "Snap-Lock" feature provides strong positive union of fuseholder housing.
- High visibility yellow color for easy identification in dark or hard-to-access locations.
- Important information molded-in.

Installation



Step 1.



Step 2.

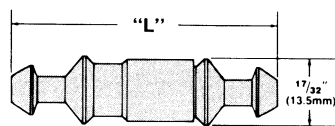


Step 3.

- 1) Strip insulation from wire (approximately 3/8 inch).
- 2) Insert wire in holder.
- 3) Crimp terminal through body.*
- 4) Repeat steps 1-3 for other half of holder.
- 5) Insert fuse.
- 6) Snap housing together.

*Recommended Crimping Tools:
 Thomas & Betts No. WT-1300; Radio Shack No. 64-409; General Electric—U.S. & Metric Electrical Terminal Tool.

Dimensional Data



Dimensional Data

Fuse Length	"L"
7/8"	2.1"
1"	2.25"
1 1/4"	2.42"

Specifications

Body material: Nylon.

Pull Force: 5 lbs. minimum to separate fuseholder housing with fuse installed.

Catalog Numbers

Holder (Without Leads)	
Description	Catalog Number
Standard Pack (10-in)	HHB
Bulk Pack (100-in)	BK/HHB

*Holder With Pre-attached Lead Wires (#14 Insulated)

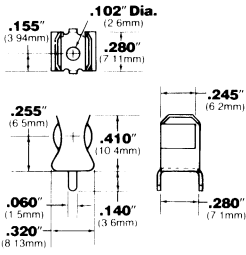
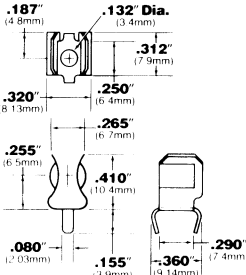
Wire Color	19" Length	8" Length
Yellow	BK/HHB-Y419	BK/HHB-Y408
Red	BK/HHB-R419	BK/HHB-R408
Black	BK/HHB-B419	BK/HHB-B408

*Contact Bussmann for other options.

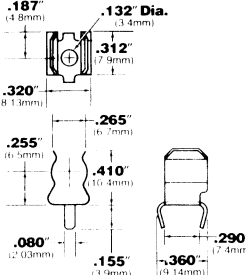
Fuse Clips For Printed Circuit Boards

Spring bronze fuse clips provide high gripping strength and retain high spring pressure under adverse conditions. Also, spring bronze is the most economical base material available. However, the highest quality clip material is beryllium copper. It gives lasting spring pressure and high conductivity in high current applications or where frequent fuse replacement is anticipated. Bright tin plating complies with the solderability requirements of MIL STD 202 F Method 208. Contact the factory for information regarding the availability of other clip designs or plating finishes.

For 1/4" Dia. Fuses (With End Stops) (†Without End Stops)

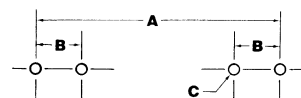
Catalog Number	Clip Mat.*	Finish	
	1A1907-06	Spg Br	Bright Tin
	1A1907-05	BeCu*	Silver
	1A1907-03	BeCu*	Bright Tin
	1A3398-07†	Spg Br	Bright Tin
			
	1A1119-10	Spg Br	Bright Tin
	1A1119-05	BeCu*	Silver
	1A1119-04	BeCu*	Bright Tin
			

For 1/4" Dia. Fuses (Without End Stops)

Catalog Number	Clip Mat.*	Finish	
	1A1120-09	Spg Br	Bright Tin
	1A1120-05	BeCu*	Silver
	1A1120-06	BeCu*	Bright Tin
			

*Beryllium copper recommended for currents higher than 15 amps (1/4" clips).
10 amps (5mm clips).
Spg Br — Spring Bronze; BeCu — Beryllium Copper

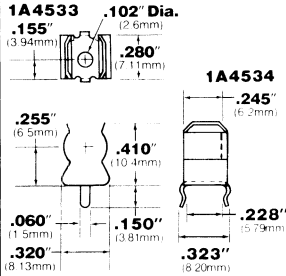
Footprint Dimensions



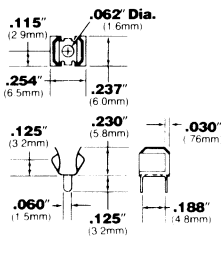
Fuse Clip Catalog Number

Dim.	Fuse Size	1A3398-1A1907-	1A1119-	1A1120-	1A3399-	1A3400-	1A4533-	1A4534-
A	7/8"	1.00"	1.00"	1.00"	—	—	1.00"	1.00"
	(22.2mm)	(25.40mm)	(25.40mm)	(25.40mm)	—	—	(25.40mm)	(25.40mm)
	1"	1.125"	1.125"	1.125"	—	—	1.125"	1.125"
	(25.4mm)	(28.58mm)	(28.58mm)	(28.58mm)	—	—	(28.58mm)	(28.58mm)
	1 1/4"	1.375"	1.375"	1.375"	—	—	1.375"	1.375"
	(31.8mm)	(34.92mm)	(34.92mm)	(34.92mm)	—	—	(34.92mm)	(34.92mm)
	1 3/8"	—	—	—	—	1.50"	—	—
B Tabs	1 1/2"	—	—	—	—	1.625"	—	—
	(38.10mm)	—	—	—	—	(41.28mm)	—	—
	20mm	—	—	—	.875"	—	—	—
C (4 holes)		.295"-.305"	.295"-.305"	.295"-.305"	.200"	.405"	.300"	.300"
		(7.49-7.75mm)	(7.49-7.75mm)	(7.49-7.75mm)	(5.08mm)	(10.29mm)	(7.62mm)	(7.62mm)
Board Thickness		.067"-.070"	.093" ± .002"	.093" ± .002"	.067"-.070"	.091"-.095"	.067"-.070"	.067"-.070"
		(1.70-1.78mm)	(2.36 ± .05mm)	(2.36 ± .05mm)	(1.70-1.78mm)	(2.31-2.41mm)	(1.70-1.78mm)	(1.70-1.78mm)

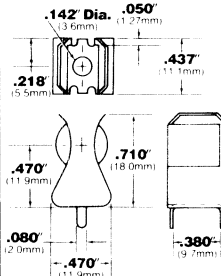
For 1/4" Dia. (Without and With End Stops)

Catalog Number	Clip Mat.*	Finish	
	1A4533-01	BeCu*	Bright Tin
	1A4533-06	Spg Br	Bright Tin
	1A4534-01	BeCu*	Bright Tin
	1A4534-06	Spg Br	Bright Tin
			

For 5mm Dia. (With End Stops)

Catalog Number	Clip Mat.*	Finish	
	1A3399-10	Spg Br	Bright Tin
	1A3399-01	BeCu*	Silver
	1A3399-04	BeCu*	Bright Tin
			

For 13/32" Dia. Fuses (20 Amps Max.)

Catalog Number	Clip Mat.*	Finish	
	1A3400-09	Spg Br	Bright Tin
			

*Beryllium copper recommended for currents higher than 15 amps (13/32" clips).
10 amps (5mm clips).
Spg Br — Spring Bronze; BeCu — Beryllium Copper

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