

Fuse Crossover List

Page	IBS Fuses	Bussmann	Littelfuse	Page	IBS Fuses	Bussmann	Littelfuse
2	FSA	AGC	312	9	TCD-P	SS05-V	221
2	FSA-P	AGC-V	318	10	FSE	C520	225
2	FCA	ABC	314	10	FSE-P	C518	224
2	FCA-P	ABC-V	324	10	TSE	C519	229
3	SCA	GBB	322	10	TSE-P	C515	230
3	SCA-P	GBB-V		11	FSE-BP	C517	220
4	TSA	MDL	313	11	TSE-LSP		
4	TSA-P	MDL-V	315	12	FCF		
4	TCA	MDA	326	12	FCF-P		
4	TCA-P	MDA-V	325	12	TCF		
5	FSC	GMA	235	12	TCF-P		
5	FSC-P	GMA-V	236	13	GMT		
5	FCC			13	HLT	402001	
5	FCC-P			13	HLS		
6	MSC	GMC	232	13	PCT		
6	MSC-P	GMC-V	232-XE	14	MCR	MCR	251
6	MCC			14	SFT	SFT	459
6	MCC-P			15	3216FF	3216FF	429
7	TSC	GMD	239	15	3216CP	3216CP	
7	TSC-P	GMD-V	238	16	ANE	ANL	CNL
7	TCC			16	ATI	FLB	
7	TCC-P			16	ATK	FLM	
8	FSD	GDB	217	17	APM	ATM	297
8	FSD-P	GDB-V	227	17	APR	ATC	257
8	FCD	GDA	216	17	APX	MAX	MAX
8	FCD-P	GDA-V	226	18	KTK	KTK	KLK
9	TSD	GDC	218	18	KTK-R	KTK-R	KLKR
9	TSD-P	GDC-V	228	19	FNQ	FNQ	KLD
9	TED	SS05	215	19	FNQ-R	FNQ-R	KLDR

*Ordering Information for: Fuses, Fuseholders, Fused AC Receptacles and Fuseclips can be found on the Inside Back Cover of this Catalog.



Fuses.....1-19

1/4" x 1 1/4"	1-4
5 x 20mm (US version)	5-7
5 x 20mm (EUR version)	8-9
5 x 15mm	10-11
3.6 x 10mm	12
Telecom – Fuse/Fuseholder	13
PCB	14
SMT	14-15
Open Link	16
Automotive Link	16
Automotive Blade	17
13/32" x 1 1/2"	18-19



Fuseholders.....13, 20-24, 31

Telecom	13
1/4" x 1 1/4"	20-21
5 x 20mm	22-23
13/32" x 1 1/2"	24
Inline	31



Fused AC Receptacles.....25

Fuse Clips.....26-30

1/4" x 1 1/4"	26-27
5 x 20mm	28
3.6 x 10mm	29
13/32" x 1 1/2"	29
Specialty	30

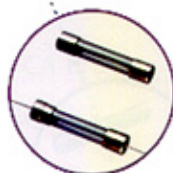


Fuseology.....32





IBS Fuses Product Catalog • Fuses 1/4" x 1 1/4" (6.3 x 32mm)



FSA/FSA-P
1/4" x 1 1/4" Fuse

Fast Acting/Glass Construction

A cost-effective general purpose fast-acting fuse for use in all low interrupting capacity applications.

Electrical Specifications

125mA–10A	250VAC
12A–30A	52VAC

Time Characteristics

110%	4h	min. hold time
155%	1h	max. hold time
200%	5s	max. hold time (125mA–10A)
	10s	max. hold time (12A–30A)

Approvals

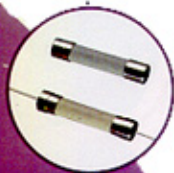
UL Listed (125mA–10A)
UL Recognized (15A–30A)
CSA Certified (125mA–30A)



Mounting

Fuse clips: see pages 26–27

Panel-mounted fuse holders: see pages 20–21



FCA/FCA-P
1/4" x 1 1/4" Fuse

Fast Acting/Ceramic Construction

A cost-effective general purpose fast-acting fuse for use in all higher interrupting capacity and voltage applications.

Electrical Specifications

125mA–20A	250VAC
25A–30A	125VAC

Time Characteristics

110%	4h	min. hold time
155%	1h	max. hold time
200%	15s	max. hold time (125mA–12A)
	30s	max. hold time (15A–30A)

Approvals

UL Listed (125mA–15A)
UL Recognized (20A–30A)
CSA Certified (125mA–15A)



Mounting

Fuse clips: see pages 26–27

Panel-mounted fuse holders: see pages 20–21



Very Fast Acting/Ceramic Construction

A very fast-acting fuse for use in all applications where maximum short circuit protection is necessary such as the protection of SCR and solid-state devices.

SCA/SCA-P

1/4" x 1 1/4" Fuse



Electrical Specifications

125mA-20A	250VAC
25A-30A	125VAC

Time Characteristics

100%	4h	min. hold time
250%	200ms	max. hold time (125mA-10A)
	1s	max. hold time (12A-30A)

Approvals

UL Recognized (125mA-30A)
CSA Certified (125mA-10A)



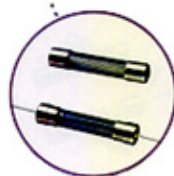
Mounting

Fuse clips: see pages 26-27

Panel-mounted fuse holders: see pages 20-21



IBS Fuses Product Catalog • Fuses 1/4" x 1 1/4" (6.3 x 32mm)



TSA/TSA-P
1/4" x 1 1/4" Fuse

Time Delay/Glass Construction

A cost-effective general purpose time-delay fuse for use in all low interrupting capacity applications where additional time is necessary for high in-rush currents.

Electrical Specifications

125mA–8A	250VAC
10A–30A	32VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	5s	min. hold time (125mA–3A)
	12s	min. hold time (3.15A–30A)
	120s	max. hold time

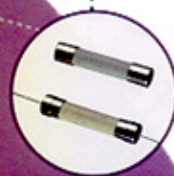
Approvals

UL Listed (125mA–8A)
UL Recognized (10A–30A)
CSA Certified (125mA–8A)



Mounting

Fuse clips: see pages 26-27
Panel-mounted fuse holders: see pages 20-21



TCA/TCA-P
1/4" x 1 1/4" Fuse

Time Delay/Ceramic Construction

A cost-effective general purpose time-delay fuse for use in higher interrupting and voltage applications where additional time is necessary for high in-rush currents.

Electrical Specifications

125mA–20A	250VAC
25A–30A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	5s	min. hold time (125mA–3A)
	12s	min. hold time (3.15A–30A)
	120s	max. hold time

Approvals

UL Listed (125mA–20A)
UL Recognized (25A–30A)
CSA Certified (125mA–15A)



Mounting

Fuse clips: see pages 26-27
Panel-mounted fuse holders: see pages 20-21

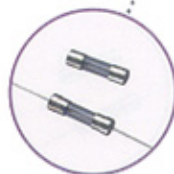


Fast Acting/Glass Construction

A cost effective fast-acting fuse for use in all low interrupting capacity applications in North America.

FSC/FSC-P

(US) 5 X 20mm Fuse



Electrical Specifications

125mA-3A	250VAC
3.15A-15A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	120s	max. hold time

Approvals

UL Listed (125mA-6A)
UL Recognized (7A-15A)
CSA Certified



Mounting

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23

Fast Acting/Ceramic Construction

A cost-effective fast-acting fuse for use in higher interrupting applications in North America.

FCC/FCC-P

(US) 5 X 20mm Fuse



Electrical Specifications

125mA-3A	250VAC
3.15A-20A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	120s	max. hold time

Approvals

UL Listed (125mA-6A)
UL Recognized (7A-20A)
CSA Certified (125mA-8A)



Mounting

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23

MSC/MS-C-P

5 X 20mm Fuse (US)

Medium Time Delay/Glass Construction

A cost-effective fast-acting fuse for use in all low interrupting capacity applications in North America requiring some time-delay for small in-rush currents.

Electrical Specifications

125mA–3A	250VAC
3.15A–15A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	3s	min. hold time
	120s	max. hold time

Approvals

UL Listed (125mA–6.3A)
UL Recognized (7A–15A)
CSA Certified



Mounting

Fuse clips: see pages 28–29

Panel-mounted fuse holders: see pages 22–23

MCC/MCC-P

5 x 20mm Fuse (US)

Medium Time Delay/Ceramic Construction

A cost-effective fast-acting fuse for use in higher interrupting capacity applications in North America requiring some time-delay for small in-rush currents.

Electrical Specifications

125mA–3A	250VAC
3.15A–15A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	3s	min. hold time
	120s	max. hold time

Approvals

UL Listed (125mA–6.3A)
UL Recognized (7A–15A)
CSA Certified



Mounting

Fuse clips: see pages 28–29

Panel-mounted fuse holders: see pages 22–23

**Time Delay/Glass Construction**

A cost effective true time-delay for use in all low interrupting capacity applications in North America where extended time-delay is necessary for in-rush currents.

TSC/TSC-P

(US) 5 X 20mm Fuse

**Electrical Specifications**

125mA-3A	250VAC
3.15A-15A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	5s	min. hold time
	120s	max. hold time

Approvals

UL Listed (125mA-3A)
UL Recognized (3.15A-15A)
CSA Certified

**Mounting**

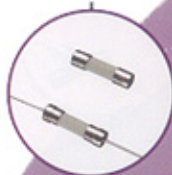
Fuse clips: see pages 28-29
Panel-mounted fuse holders: see pages 22-23

Time Delay/Ceramic Construction

A cost-effective true time-delay fuse for use in higher interrupting capacity applications in North America where extended time-delay is necessary for in-rush currents.

TCC/TCC-P

(US) 5 X 20mm Fuse

**Electrical Specifications**

125mA-3A	250VAC
3.15A-15A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	5s	min. hold time
	120s	max. hold time

Approvals

UL Listed (125mA-3A)
UL Recognized (3.15A-15A)
CSA Certified

**Mounting**

Fuse clips: see pages 28-29
Panel-mounted fuse holders: see pages 22-23

FSD/FSD-P

5 X 20mm Fuse (EUR)

Fast Acting/Glass Construction

A cost-effective fast acting fuse for use in all low interrupting capacity applications in global markets beyond North America.

Electrical Specifications

125mA-16A 250VAC

Time Characteristics

150%	1h	min. hold time
210%	0.5h	max. hold time
275%	50ms	min. hold time
	2s	max. hold time
400%	10ms	min. hold time
	300ms	max. hold time
1000%	20ms	max. hold time

Approvals

IEC 127-2 — Sheet II (125mA-6.3A)

UL Recognized (125mA-6.3A)



Mounting

Fuse clips: see pages 28-29

Panel mounted fuse holders: see pages 22-23

FCD/FCD-P

5 x 20mm Fuse (EUR)

Fast Acting/Ceramic Construction

A cost-effective fast-acting fuse for use in higher interrupting capacity applications in global markets beyond North America.

Electrical Specifications

125mA-16A 250VAC

Time Characteristics

150%	1h	min. hold time
210%	0.5h	max. hold time
275%	10ms	min. hold time
	2s	max. hold time (125mA-3.15A)
	3s	max. hold time (3.15A-6.3A)
400%	3ms	min. hold time
	300ms	max. hold time
1000%	20ms	max. hold time

Approvals

IEC 127-2 — Sheet I (125mA-6.3A)

UL Recognized (125mA-6.3A)



Mounting

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23

**Time Delay/Glass Construction**

A cost effective time-delay fuse for use in all low interrupting capacity applications with higher in-rush currents in global markets beyond North America.

TSD/TSD-P

(EUR) 5 X 20mm Fuse

Electrical Specifications

125mA-16A 250VAC

Time Characteristics

150%	1h	min. hold time	400%	150ms	min. hold time
210%	120s	max. hold time		3s	max. hold time
275%	600ms	min. hold time	1000%	20ms	min. hold time
	10s	max. hold time		300ms	max. hold time

Approvals

IEC 127-2 — Sheet III (125mA-6.3A)

UL Recognized (125mA-6.3A)

**Mounting**

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23

Time Delay/Ceramic Construction

A cost-effective time-delay fuse for use in higher interrupting capacity applications with higher in-rush currents in global markets beyond North America.

TCD/TCD-P

(EUR) 5 X 20mm Fuse

Electrical Specifications

125mA-16A 250VAC

Time Characteristics

150%	1h	min. hold time			
210%	0.5h	max. hold time			
275%	1s	min. hold time			
	80s	max. hold time			
400%	95ms	min. hold time (125mA-3.15A)			
	150ms	min. hold time (3.5A-6.3A)			
	5s	max. hold time			
1000%	10ms	min. hold time (125mA-3.15A)			
	20ms	min. hold time (3.5A-6.3A)			
	15s	max. hold time (125mA-400mA)			
	1s	max. hold time (500mA-6.3A)			

Approvals

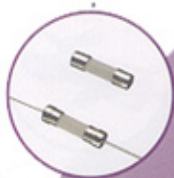
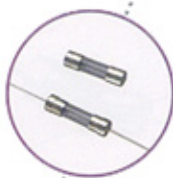
IEC 127-2 — Sheet V (125mA-6.3A)

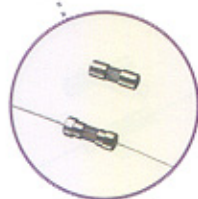
UL Recognized (125mA-6.3A)

**Mounting**

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23





FSE/FSE-P
5 X 15mm Fuse

Fast Acting/Glass Construction

A fast-acting fuse for use in all low interrupting capacity applications where PCB space is limited.

Electrical Specifications

125mA–3A	250VAC
3.15A–10A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	2s	max. hold time

Approvals

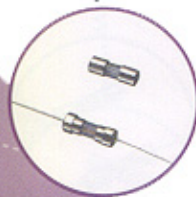
UL Recognized
CSA Certified



Mounting

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23



TSE/TSE-P
5 x 15mm Fuse

Time Delay/Glass Construction

A time-delay fuse for use in low interrupting capacity applications where PCB space is limited and higher in-rush currents are present.

Electrical Specifications

125mA–3A	250VAC
3.15A–10A	125VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	2s	max. hold time

Approvals

UL Listed (125mA–3A)
UL Recognized (3.15A–10A)
CSA Certified



Mounting

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23

**Fast Acting/Ceramic Construction**

A fast-acting fuse for specific use in electronic ballast protection applications.

FSE-BP

5 X 15mm Fuse

**Electrical Specifications**

3A	250VAC	100A	@350VAC—Interrupting Rating
----	--------	------	-----------------------------

Time Characteristics

110%	4h	min. hold time	400%	45ms	max. hold time
135%	400s	max. hold time	800%	7ms	max. hold time
200%	550ms	max. hold time	1000%	4ms	max. hold time
300%	100ms	max. hold time			

Approvals

UL Listed (to 250VAC)

UL Recognized (at 350VAC)

CSA Certified

**Mounting**

Axial leaded only

Time Delay/Glass Construction

A time-delay fuse for specific use in the protection of telecommunication circuits and other applications where short pulse lightning surge withstand is needed.

TSE-LSP

5 X 15mm Fuse

**Electrical Specifications**

125mA–3A	250VAC
3.15A–7A	125VAC

Time Characteristics (General UL)

110%	4h	min. hold time
135%	1h	max. hold time
200%	3s	min. hold time
	20s	max. hold time

Time Characteristics (Telecom @350mA)

350mA	2h	min. hold time
600mA	90s	max. hold time
2A	2s	max. hold time
6A	500ms	max. hold time

Approvals

UL Listed

UL Recognized

CSA Certified

**Mounting**

Fuse clips: see pages 28-29

Panel-mounted fuse holders: see pages 22-23

FCF/FCF-P

3.6 x 10mm Fuse

Fast Acting/Ceramic Construction

A cost-effective fast-acting fuse for use on printed circuit boards and other subminiature protection applications.

Electrical Specifications

125mA–8A 250VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	5s	max. hold time

Approvals

UL Listed
CSA Certified



Mounting

Fuse clips: see page 29

TCF/TCF-P

3.6 x 10mm Fuse

Time Delay/Ceramic Construction

A cost-effective fast-acting fuse for use on printed circuit boards and other subminiature protection applications where in-rush currents are present.

Electrical Specifications

125mA–5A 250VAC

Time Characteristics

110%	4h	min. hold time
135%	1h	max. hold time
200%	60s	max. hold time

Approvals

UL Listed
CSA Certified



Mounting

Fuse clips: see page 29

**Fast Acting/UL 94VO Thermoplastic Construction**

Used in telecom, computer and control circuits applications with visual spring and alarm circuitry indication. Color-coded flags determine fuse ampere ratings

Electrical Specifications

180mA–15A 125VAC/60VDC

Interrupting Rating

300A @120VAC

450A @60VDC

Ampereage/Color Code

180mAYellow	3ABlue
250mAViolet	3.5AWhite/Blue
375mAWhite/Gray	4AWhite/Brown
500mARed	5AGreen
650mABlack	7.5ABlack/White
750mABrown	10ARed/White
1AGray	12AYellow/Green
1.33AWhite	15ARed/Blue
1.5AWhite/Yellow	DummyGray
2AOrange	

Approvals

UL Recognized

**Mounting**

HLS, HLT, PCT Fuseholders: see page 13

Fuseholders for Indicating Telecom Fuses**UL 94VO Thermoplastic Construction**

Used in telecom, computer and control circuits applications with visual spring and alarm circuitry indication. Color-coded flags determine fuse ampere ratings.

Electrical Specifications

125VAC/60VDC

Approvals

UL Recognized

**GMT**

Telecom Indicating Fuse

**HLT / HLS / PCT**

Fuseholders



MCR
Subminiature Fuse

Fast Acting/Solid Matrix

A high performance fast-acting current-limiting subminiature fuse used in printed circuit board component protection applications.

Electrical Specifications

63mA–5A	125VAC/125VDC
7A–10A	60VAC/90VDC

Time Characteristics

100%	4h	min. hold time
250%	5s	max. hold time

Interrupting Rating

50A	@ 125VAC
300A	@ 60/90VDC

Approvals

UL Recognized
CSA Certified



Mounting

Axial leaded only

SFT
Surface Mount Fuse

Fast Acting/Solid Matrix

A high performance fast-acting current-limiting surface mount fuse used in printed circuit board component protection applications.

Electrical Specifications

63mA–5A	125VAC/125VDC
7A–10A	60VAC/90VDC

Time Characteristics

100%	4h	min. hold time
250%	5s	max. hold time

Interrupting Rating

50A	@ 125VAC
300A	@ 60/90VDC

Approvals

UL Recognized
CSA Certified



Mounting

Surface mounting only

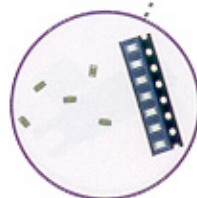


Fast Acting/Encapsulated Ceramic Substrate

A high performance fast-acting current-limiting surface mount fuse used in printed circuit board component protecting applications.

3216FF

Surface Mount Fuse



Electrical Specifications

250mA–3A	32VAC/63VDC
4A–5A	32VAC/32VDC

Time Characteristics

100%	4h	min. hold time
250%	5s	max. hold time (250mA–3A)
350%	1s	max. hold time (4A–5A)

Interrupting Rating

50A	@ 32VAC
50A	@ 63/32VDC

Approvals

UL Recognized
CSA Certified



Mounting

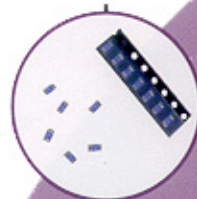
Surface mounting only

Fast Acting/Encapsulated Ceramic Substrate

A high performance fast-acting surface mount circuit protector used in printed circuit board component protection applications with DC voltage present.

3216CP

Surface Mount Fuse



Electrical Specifications

250mA–5A	24VDC
----------	-------

Time Characteristics

250%	10s	max. hold time
600%	1ms	typ. hold time

Interrupting Rating

35A	@ 24VDC
-----	---------

Approvals

UL Recognized
CSA Certified



Mounting

Surface mounting only



ANE
81 mm (61 mm hole-to-hole) Fuse

Fast Acting/Open Link Design

A cost-effective fuse for use in high power DC, forklift and other large battery applications.

Electrical Specifications

35A–500A 32VAC/80VDC

Interrupting Rating

6000A @ 32VAC

Approvals

UL Recognized



Mounting

Stud mounts or fork lift fuse panels



ATI
Auto Fuse Link

Fast Acting/Axial Stud Mounting

A cost-effective high-current automotive fuse for use in automotive, battery and general DC applications.

Electrical Specifications

20A–120A 32VDC

Interrupting Rating

10,000A @ 32VDC

Amperage/Body Color

See body colors for Stud Mount below.



ATK
Auto Fuse Link

Fast Acting/Radial Stud Mounting

A cost-effective high-current automotive fuse for use in automotive, battery and general DC applications.

Electrical Specifications

20A–120A 32VDC

Interrupting Rating

10,000A @ 32VDC

Amperage/Body Color

20A	White	70A	Brown
30A	Pink	80A	Black
40A	Green	100A	Blue
50A	Red	120A	Grey
60A	Yellow		



Fast Acting/Blade Mounting

A cost-effective miniature automotive fuse for use in automotive, battery and general DC applications.

Electrical Specifications

2A–30A 32VDC

Time Characteristics

110%	100h	min. hold time	350%	80ms	min. hold time
135%	750ms	min. hold time		300ms	max. hold time
	.5h	max. hold time	600%	35ms	min. hold time
200%	150ms	min. hold time		100ms	max. hold time
	5s	max. hold time			

Amperage — (2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30)A*

Fast Acting/Blade Mounting

A cost-effective standard automotive fuse for use in automotive, battery and general DC applications.

Electrical Specifications

1A–40A 32VDC

Time Characteristics

110%	100h	min. hold time	350%	80ms	min. hold time
135%	750ms	min. hold time		250ms	max. hold time
	.5h	max. hold time	600%	30ms	min. hold time
200%	150ms	min. hold time		100ms	max. hold time
	5s	max. hold time			

Amperage — (1, 2, 3, 4, 5, 7.5, 10, 15, 20, 25, 30, 40)A*

Fast Acting/Blade Mounting

A cost-effective maxi automotive fuse for use in automotive, battery and general DC applications.

Electrical Specifications

20A–120A 32VDC

Time Characteristics

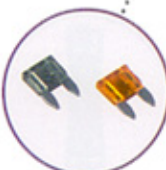
110%	100h	min. hold time	350%	700ms	min. hold time
135%	60s	min. hold time		7s	max. hold time
	1h	max. hold time	600%	100ms	min. hold time
200%	4s	min. hold time		1s	max. hold time
	60s	max. hold time			

Amperage — (20, 30, 40, 50, 60, 70, 80, 100, 120)A*

*see color chart in right panel of this page

APM

Auto Fuse

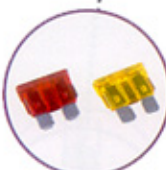


Amperage/Color

1A	Black
2A	Gray
3A	Violet
4A	Pink
5A	Tan
7.5A	Brown
10A	Red
15A	Blue
20A	Yellow
25A	Clear
30A	Green
40A-APR	Orange
40A-APX	Amber
50A	Red
60A	Blue
70A	Blue
80A	Clear
100A	Violet
120A	Purple

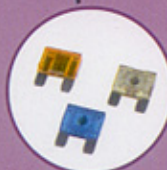
APR

Auto Fuse



APX

Auto Fuse





KTK
13/32" x 1 1/2" Fuse

Fast Acting/Melamine Tube

A high performance supplementary midjet fuse used in circuits requiring higher interrupting ratings and current limiting performance such as control circuits, street lighting and HID lighting.

Electrical Specifications

100mA–30A 600VAC/300VDC

Interrupting Rating

100,000A @600VAC 10,000A @300VDC

Approvals

UL Listed (AC Rating Only)
CSA Certified (100mA–30A)



Mounting

Fuse clips: see page 29

Panel-mounted fuse holders: see page 24



KTK-R
13/32" x 1 1/2" Fuse

Fast Acting/Melamine Tube

A high performance rejection-type branch circuit fuse offering current limiting ability giving maximum short-circuit protection in control circuits, street lighting and other high power applications.

Electrical Specifications

100mA–30A 600VAC/300VDC

Interrupting Rating

200,000A @600VAC 10,000A @300VDC

Approvals

UL Listed Class-CC (AC Rating Only)
CSA Certified (100mA–30A)



Mounting

Fuse clips: see page 29

Panel-mounted fuse holders: see page 24



Time Delay/Melamine Tube

A high performance supplementary midjet time-delay fuse used in applications such as control power transformers, small motors protection and other circuits with high inrush currents.

FNQ

13/32" x 1 1/2" Fuse



Electrical Specifications

100mA–30A 500VAC/250VDC

Interrupting Rating

10,000A @500VAC 10,000A @250VDC

Approvals

UL Listed (AC Rating Only)
CSA Certified (100mA–30A)



Mounting

Fuse clips: see page 29

Panel-mounted fuse holders: see page 24

Time Delay/Melamine Tube

A high performance rejection-type branch circuit fuse offering current limiting ability giving maximum short-circuit protection in motor control circuits, power transformers and other applications requiring additional time-delay to overcome high inrush.

FNQ-R

13/32" x 1 1/2" Fuse



Electrical Specifications

100mA–30A 600VAC/300VDC

Interrupting Rating

200,000A @600VAC 10,000A @300VDC

Approvals

UL Listed Class-CC (AC Rating Only)
CSA Certified (100mA–30A)



Mounting

Fuse clips: see page 29

Panel-mounted fuse holders: see page 24



PDA-01
1/4" x 1 1/4" Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

Electrical Specifications

6.3A 250VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified / VDE & Semko Approved



PDA-02
1/4" x 1 1/4" Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

Electrical Specifications

10A 250VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified



PKA-01
1/4" x 1 1/4" Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified



PKA-02
1/4" x 1 1/4" Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper/Solder tabs/1/4" QC

Approvals

CSA Certified



Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

PKA-03

1/4" x 1 1/4" Holder

Electrical Specifications

10A 250VAC

Cap Design

Terminals

Finger-grip

Nickel-plated copper alloy

Solder Tabs/ 1/4" Quick Connects

Approvals

CSA Certified



Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

PKA-04

1/4" x 1 1/4" Holder

Electrical Specifications

15A 250VAC

Cap Design

Terminals

Finger-grip

Nickel-plated copper alloy/Solder tabs

Approvals



Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

PKA-05

1/4" x 1 1/4" Holder

Electrical Specifications

15A 250VAC

Cap Design

Terminals

Finger-grip

Nickel-plated copper alloy

Solder tabs/ 1/4" Quick Connects

Approvals



Panel Mounted Fuseholder/Bakelite Body

Use with 1/4" x 1 1/4" Fuses (6.3 x 32mm).

PKA-06

1/4" x 1 1/4" Holder

Electrical Specifications

10A 250VAC

Cap Design

Terminals

Indicator light

Nickel-plated copper alloy/Solder tabs

Approvals





PDC-01
5 x 20mm Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

Electrical Specifications

10A 250VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy/Solder tabs

Approvals



PDC-02
5 x 20mm Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

Electrical Specifications

10A 250VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified



PDC-03
5 x 20mm Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

Electrical Specifications

10A 250VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified / Semko Approved



PDC-04
5 x 20mm Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

Electrical Specifications

6.3A 250VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified / Semko Approved



Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

PKC-01

5 x 20mm Holder



Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized / CSA Certified

Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

PKC-02

5 x 20mm Holder



Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy/Solder tabs

Approvals

Panel Mounted Fuseholder/Bakelite Body

Use with 5 x 20mm Fuses.

PKC-03

5 x 20mm Holder



Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy/Solder tabs

Approvals

Panel Mounted Fuseholder/Thermoplastic Body

Use with 5 x 20mm Fuses.

PKC-04

5 x 20mm Holder



Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy/Solder tabs

Approvals

UL Recognized



PVC-01
5 x 20mm Holder

PCB Mounted Vertical Fuseholder/Thermoplastic Body

Use with 5 x 20mm Fuses.

Electrical Specifications

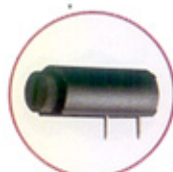
10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy PCB pins

Approvals

UL Recognized



PHC-01
5 x 20mm Holder

PCB Mounted Horizontal Fuseholder/Thermoplastic Body

Use with 5 x 20mm Fuses.

Electrical Specifications

10A 250VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy PCB pins

Approvals

UL Recognized / CSA Certified / Semko Approved



PDG-01
13/32" x 1 1/2" Holder

Panel Mounted Fuseholder/Thermoplastic Body

Use with 13/32" x 1 1/2" Fuses (10.3 x 32.1mm).

Electrical Specifications

30A 600VAC

Cap Design Terminals

Screwdriver slot Nickel-plated copper alloy
Solder tabs/ 1/4" Quick connects

Approvals



PKG-01
13/32" x 1 1/2" Holder

Panel Mounted Fuseholder/Bakelite Body

Use with 13/32" x 1 1/2" Fuses (10.3mm x 32.1mm).

Electrical Specifications

30A 600VAC

Cap Design Terminals

Finger-grip Nickel-plated copper alloy
Solder tabs/ # Quick connects

Approvals

UL Recognized / CSA Certified



IEC AC Receptacle with Fuseholder/Thermoplastic Body

Snap in mounting. Use with 5 x 20mm Fuses.

RPC-01

Receptacle

Electrical Specifications

6A 250VAC (UL/CSA) 10A 250VAC (Semko, VDE)

Approvals

UL Listed / CSA Certified / Semko Approved / VDE Approved



IEC AC Receptacle with Fuseholder/Thermoplastic Body

Flange mounting. Use with 5 x 20mm Fuses.

RPC-02

Receptacle

Electrical Specifications

6A 250VAC (UL/CSA) 10A 250VAC (Semko, VDE)

Approvals

UL Listed / CSA Certified / Semko Approved / VDE Approved



IEC AC Receptacle with Fuseholder and Switch Housing Thermoplastic Body

Snap in mounting. Use with 5 x 20mm Fuses.

RPC-03

Receptacle

Electrical Specifications

6A 250VAC (UL/CSA) 10A 250VAC (Semko, VDE)

Approvals

UL Listed / CSA Certified / Semko Approved / VDE Approved



IEC AC Receptacle with Fuseholder and Switch Housing Thermoplastic Body

Flange mounting. Use with 5 x 20mm Fuses.

RPC-04

Receptacle

Electrical Specifications

6A 250VAC (UL/CSA) 10A 250VAC (Semko/VDE)

Approvals

UL Listed / CSA Certified / Semko Approved / VDE Approved





IBS Fuses Product Catalog • Fuseclips use with 1/4" Diameter Fuses (6.3mm)



CSA-01
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 1/4" Diameter Fuses (6.3mm).

Electrical Specifications

15A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating



CSA-02
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 1/4" Diameter Fuses (6.3mm).

Electrical Specifications

15A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating



CSA-03
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 1/4" Diameter Fuses (6.3mm).

Electrical Specifications

15A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating



CSA-04
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 1/4" Diameter Fuses (6.3mm).

Electrical Specifications

15A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating



Spring Brass/Tin Plated

Fuseclip without End Stops. Use with 1/4" Diameter Fuses (6.3mm).

CNA-01
Fuseclip



Electrical Specifications

15A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating

Spring Brass/Tin Plated

Fuseclip without End Stops. Use with 1/4" Diameter Fuses (6.3mm).

CNA-02
Fuseclip



Electrical Specifications

15A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating

Spring Brass/Tin Plated

Fuseclip without End Stops. Use with 1/4" Diameter Fuses (6.3mm).

CNA-03
Fuseclip



Electrical Specifications

15A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating

Spring Brass/Tin Plated

Fuseclip without End Stops. Use with 1/4" Diameter Fuses (6.3mm).

CNA-04
Fuseclip



Electrical Specifications

15A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



IBS Fuses Product Catalog • Fuseclips use with 5mm Diameter Fuses



CSC-01
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 5mm Diameter Fuses.

Electrical Specifications

10A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



CSC-02
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 5mm Diameter Fuses.

Electrical Specifications

10A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



CSC-03
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 5mm Diameter Fuses (6.3mm).

Electrical Specifications

10A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



CSC-04
Fuseclip

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 5mm Diameter Fuses.

Electrical Specifications

10A 250VAC

Options

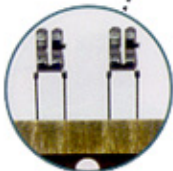
Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



Phosphor Bronze/Tin Plated

Fuseclip with End Stops. Tape and Reel. Use with 5mm Diameter Fuses.

CSC-05
Fuseclip



Electrical Specifications

10A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 3.6mm Diameter Fuses.

CSF-01
Fuseclip



Electrical Specifications

6.3A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 13/32" Diameter Fuses (10.3mm).

CSG-01
Fuseclip



Electrical Specifications

15A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating

Spring Brass/Tin Plated

Fuseclip with End Stops. Use with 13/32" Diameter Fuses (10.3mm).

CSG-02
Fuseclip



Electrical Specifications

30A 250VAC

Options

- Add
- B for Beryllium Copper base material
 - N for Nickel plating
 - S for Silver plating
 - G for Gold plating



CSH-01
Fuseclip

Spring Brass/Tin Plated

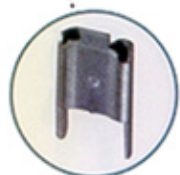
Fuseclip with End Stops. Use with 1/4" or 5mm Diameter Fuses.

Electrical Specifications

15A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



CNR-01
Fuseclip

Spring Brass/Tin Plated

Use with Standard Automotive Blade Fuses.

Electrical Specifications

30A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



CNM-01
Fuseclip

Spring Brass/Tin Plated

Use with Mini Automotive Blade Fuses.

Electrical Specifications

30A 250VAC

Options

Add -B for Beryllium Copper base material
-N for Nickel plating
-S for Silver plating
-G for Gold plating



94VO Thermoplastic Housing/Brass Contacts

In-line Fuseholder. Use with 1/4" x 1 1/4" Fuses (6.3 x 32.1 mm).

LPA-01

Fuseholder

Electrical Specifications

30A 32VAC

Wiring

12 # AWG

8" wire loop (Additional sizes available—please consult factory.)

94VO Thermoplastic Housing/Brass Contacts

In-line Fuseholder. Use with 5 x 20mm Fuses.

LPC-01

Fuseholder

Electrical Specifications

10A 32VAC

Options

12 # AWG

8" wire loop (Additional sizes available—please consult factory.)

94VO PVC Housing/Brass Contacts

In-line Fuseholder. Use with Standard Automotive Fuses.

LPR-01

Fuseholder

Electrical Specifications

30A 32VAC

Options

12 # AWG

8" wire loop (Additional sizes available—please consult factory.)

94VO PVC Housing/Brass Contacts

In-line Fuseholder with cap. Use with Miniature Automotive Fuses.

LPM-01

Fuseclip

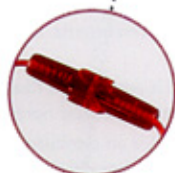
Electrical Specifications

30A 32VAC

Options

12 # AWG

8" wire loop (Additional sizes available—please consult factory.)





Fuse Technology

Fuses are overcurrent protection devices that used for three primary purposes:

- To prevent damage to electronic and electrical equipment.
- To provide safety for equipment users and personnel.
- To isolate subsystems from the main system after an over current occurs.

Fuses are designed to allow electric currents to safely flow during normal operation but will quickly open when an over-current situation develops.

Overcurrents

There are typically two types of overcurrents: short circuits and overloads. Overcurrents exist when the normal load for a circuit is exceeded.

An overload is any current flowing within the normal circuit path that is higher than the circuit normal full load current.

A short circuit is an overcurrent which greatly exceeds the normal full load current of the circuit. Also, as the name infers, a short circuit leaves the normal current carrying path of the circuit and takes a "short-cut" around the load and back to the power source.

Components and equipment can be severely damaged by both types of overcurrents. Fuses are used not to prevent overcurrents but rather to protect components, equipment and people when overcurrents do occur.

Fuse Characteristics

Fuses are classified by the different fuse characteristics. These defining characteristics include:

- Physical size
- Interrupting Ratings
- Construction
- Opening Speed
- Electrical Ratings
- Safety Agency Approvals

Physical Size

Electronic fuses are available in a variety of sizes and shapes as predetermined by the user's applications. The more popular fuse sizes include 1/4" x 1/4" (6.3 x 32.1 mm), 5 x 20 mm, 5 x 15 mm, 13/32" x 1 1/2" (10.3 x 38 mm) as well as special use fuses such as surface mount, teleom indicating, and automotive type fuses.

Construction

Electronic fuses are constructed with many different material types. The most cost effective of the materials is a glass tube, however, when higher voltages or interrupting rating are desired, then stronger materials such as ceramic or glass melamine tubes must be used. Plastic housings are typically used in low voltage automotive fuse construction.

Electrical Ratings

Typically each fuse has two different electrical ratings: Voltage and Current.

Voltage Rating

The voltage rating of a fuse refers to the maximum voltage that a fuse may be subjected to for safe operation. Fuses are typically marked for A/C Voltage but may also carry a D/C Voltage rating as well.

Current Rating

The current rating of a fuse must be selected as to adequately protect a circuit without causing "nuisance" openings. Generally, fuses should be selected at 125% of the steady state RMS or DC current of the circuit at 25 °C. Higher ambient temperatures may cause the fuse to open prematurely; therefore fuse de-rating may be necessary in those applications. Please consult the Optifuse factory for de-rating specifications.

Additional consideration must be given to circuits with potential "inrush currents". Inrush currents are created by switching, capacitive loads or in motor or transformer applications. This inrush may be many times the circuit's normal full load amperes. Time delay fuses should be selected for these applications.

Interrupting Ratings (Breaking Current)

The interrupting rating of the fuse is the maximum current that the fuse can safely open at the rated voltage without rupturing or breaking the fuse casing. Stronger materials such as ceramic or glass melamine offer the greatest amount of interrupting capabilities.

Opening Speed

When specifying fuses, careful consideration must be made for the protection of the other circuit elements. Typically, the more sensitive the circuit, the more protection will be necessary for adequate component protection. Fast acting fuses offer higher protection but may not be suitable for circuit with in-rush currents. Circuits with in-rush currents should be protected with time delay fuses to prevent nuisance openings.

Agency Approvals

Worldwide safety agencies, such as Underwriter's Labs (U.L.), provide test specifications and test fuses and fuse-accessories under these specifications. Each worldwide safety agency will have its own specifications and test procedures and may conflict with one another (such as the test specifications used for testing 5 x 20 mm fuses).

At U.L. if a test specification is available and the fuse passes these tests, then the fuse will be listed under this standard. If a test specification is not available, then the fuse may still be tested (using the manufacturers specifications) by U.L. but will receive U.L. recognition rather than U.L. listing.

International Electrotechnical Commission (IEC) writes the standards followed by many European and Asian countries. Because the electrical characteristics of these fuses are so different, UL/CSA and IEC rated fuses are not characteristically interchangeable.

Fuse Mounting

All fuses must be mounted into a circuit either by directly soldering them on a printed circuit board (PCB), or by using a fuseholder or fuseclips. Directly soldering fuses to a PCB allows for some cost reduction while using holders or clips allows for field replacements. Please consult the Optifuse factory for direct soldering specifications.