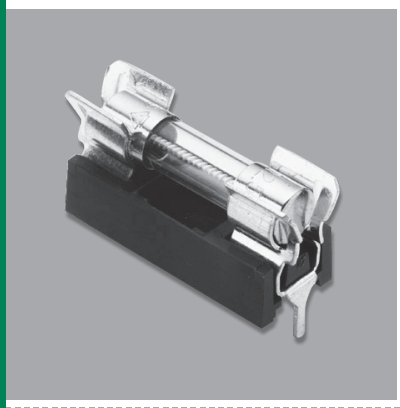
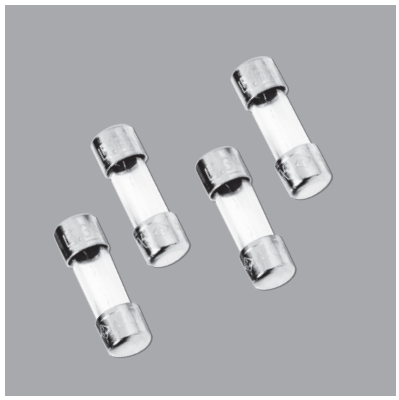
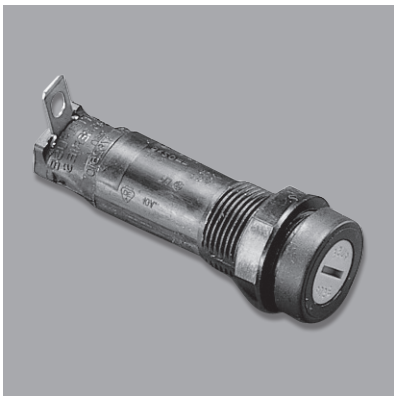
Littelfuse®

Expertise Applied | Answers Delivered



FUSEHOLDER SELECTION





Fuseholder Selection Guide

A guide to selecting Littelfuse Fuseholder components for electronic applications.

DOWNLOAD CATALOGS
Littelfuse.com/catalogs

FUSEHOLDER SELECTION GUIDE www.littelfuse.com/fuseholders

Circuit Connection Method		Wire	Wire Connector Terminals	TH= Thru-Hole Solder SM= Surface Mount Solder ST= Screw Terminal CT= Wire Connector Terminal RS= Rivet/Screw Hole					
Fuse Holder Type		In- Line Fuse Holders	Panel Mount Fuse Enclosure	Circuit Board Mount Fuse Enclosure		Fuse Blocks		Fuse Clips	
Fuse Type	Fuse Series								
4.5x14.5 mm (2AG)	225 229	150274	245001 Solder QC			TH	254101	TH	111501
			245002 NEMA QC			TH	254121	SM	111505
			286377 Flip Top			CT	Other 254 Series	TH	111506
			345 Series Int. Shock-Safe (old)						
			3452 Series Int. Shock-Safe						
5x20 mm	213 215 216 217 218 219XA 232 233 234 235 239	150274	3455 Int. Shock-Safe	TH	345121 Shocksafe	TH	520 101	TH	04450001 / 00300210
			345121 Int. Shock-Safe	TH	646 / 649 / 656 Series	CT	520 003 - 005	TH	05200001
			286677 Flip Top	TH	810 / 811 / 814 Series	CT	647 Series	TH	51800001009
			800 / 801 / 802 / 821 Series	TH	830 / 831 / 834 Series	SM	658 Series	TH	51900001009
			820/820 - 20 Series Mini Shocksafe	TH	852 / 853 / 862 Series			TH	52000001009
			823 Series Snap-in	TH	OPTF Series			TH	52100001009
			824/824-20 / 850 / 851 / 860 series					TH	100 / 111 Series
			870 Series Medical Grade					TH	523 / 445 Series
6.3x32 mm (3AB/3AG)	312 313 314 322 326	150322	342006 Watertight	TH	345101 Shocksafe	CT	354 Series	RS	101001 / 101002
		150 Series	342021 (FHN26W) Water Tight	TH	354101-GY	ST	356 Series	RS	101003 / 102064
		155 Series	342024 (FHN26G2) Drip Proof	TH	810 Series	ST	359 Series	TH	102071 / 102074
		LHFB Series	342025 (FHN20G) Drip Proof	TH	811 Series			TH	102076 / 102078
			346877 Flip Top	TH	814 Series			TH	102079 / 102080
			340 Series RF Shielded / Watertight	TH	862 Series			RS	121001 / 121002
			342 Series Traditional					RS	121004
			344 Series Snap / Panel Mount					TH	100058 / 122083
			345 Series Int. Shocksafe (old)					TH	122087 / 122088
			3453 Series Int. Shocksafe					TH	122090 / 122093
			348 Series Snap Mount					TH	10207101009
			800 Series Shocksafe					TH	51800001009
			801 / 802 / 803-01 Series						
			860 Series						
TE5®/ TR5®	369 / 370 372 / 373 374 / 382 383 / 385 391 / 392 395 / 396 397 / 398 399 / 400 808		570 Series	TH	571 0000 000				
				TH	559 / 560 / 562 Series				
				SM	564 Series				
				TH	576 Series				
Micro™/ TR3®	262 / 268 269 / 272 273 / 274 278 / 279		282001 Front mt. Neoprene	TH	281005 Vertical Silver				
			282007 Front mt. Conductive	TH	281007 Horizontal Silver				
			282002 Rear mt. Neoprene	TH	281008 Vertical Tin				
			282008 Rear mt. Conductive	TH	281010 Horizontal Tin				
			280004 32V indicating						

4.5mm x 14.5mm (2AG) Size Fuse Series and Holder Options

Fuse Options

Fuse Series Name	Time Lag (Slo-Blo®)	Medium Acting	Fast Acting	Very Fast Acting	Device Range * (Operating Current Options in Amps)	Max. Voltage Rating * (Volts)	Interrupting Rating at Max Voltage Rating * (Amps)	Operating Temperature Range	Agency Approvals *													RoHS Compliant	Lead Free
									Americas				Europe					Asia					
									UL	UR	CSA	QPL	CE	VDE	TUV	BSI	Semko	PSE	K	CCC	CQC		
225			•		0.1 - 10	250 / 125	35 - 500		•	•	•		•					•				•	•
230	•				0.25 - 7	250 / 125	35 - 400		•	•	•		•					•				•	•

Holder Options

Circuit Connection Method	Wire	Wire Connector Terminals	TH= Thru-Hole Solder SM= Surface Mount Solder ST= Screw Terminal CT= Wire Connector Terminal RS= Rivet/Screw Hole					
Fuse Holder Type	In- Line Fuse Holders	Panel Mount Fuse Enclosure	Circuit Board Mount Fuse Enclosure		Fuse Blocks		Fuse Clips	
	150274	245001 Solder QC			TH	254101	TH	111501
		245002 NEMA QC			TH	254121	SM	111505
		286377 Flip Top			CT	Other 254 Series	TH	111506
		345 Series Int. Shock-Safe (old)						
		3452 Series Int. Shock-Safe						

5mm x 20mm Size Fuse Series and Holder Options

Fuse Options

Fuse Series Name	Time Lag (Slo-Blo®)	Medium Acting	Fast Acting	Very Fast Acting	Device Range * (Operating Current Options in Amps)	Max. Voltage Rating * (Volts)	Interrupting Rating at Max Voltage Rating * (Amps)	Operating Temperature Range	Agency Approvals *													RoHS Compliant	Lead Free
									Americas				Europe					Asia					
									UL	UR	CSA	QPL	CE	VDE	TUV	BSI	Semko	PSE	K	CCC	CQC		
213	•				0.2 - 6.3	250	35 - 63			•	•		•	•		•	•	•		•		•	•
215	•				0.125 - 25	250	300 - 1500			•	•		•	•		•	•	•	•	•		•	•
216			•		0.05 - 16	250	750 - 1500			•	•		•	•		•	•	•	•	•		•	•
217			•		0.032 - 15	250	35 - 150			•	•		•	•		•	•	•	•	•		•	•
218	•				0.032 - 16	250	35 - 100			•	•		•	•		•	•	•	•	•		•	•
219XA	•				0.4 - 6.3	250	150	-55°C to +125°C		•	•		•	•		•	•	•		•		•	•
232		•			1 - 10	250 / 125	300 / 10,000						•					•	•			•	•
233		•			1 - 10	125	10,000		•		•		•					•	•			•	•
234		•			1 - 10	250	100 - 200		•		•		•					•	•			•	•
235			•		0.1 - 7	250 / 125	35 - 10,000		•		•		•					•	•			•	•
239	•				0.08 - 7	250 / 125	35 - 10,000		•		•		•					•	•			•	•

Holder Options

Circuit Connection Method	Wire	Wire Connector Terminals	TH= Thru-Hole Solder SM= Surface Mount Solder ST= Screw Terminal CT= Wire Connector Terminal RS= Rivet/Screw Hole							
Fuse Holder Type	In- Line Fuse Holders	Panel Mount Fuse Enclosure	Circuit Board Mount Fuse Enclosure			Fuse Blocks			Fuse Clips	
	150274	3455 Int. Shock-Safe	TH	345121 Shocksafe		TH	520 101	TH	04450001 / 00300210	
		345121 Int. Shock-Safe	TH	646 / 649 / 656 Series		CT	520 003 - 005	TH	05200001	
		286677 Flip Top	TH	810 / 811 / 814 Series		CT	647 Series	TH	51800001009	
		800 / 801 / 802 / 821 Series	TH	830 / 831 / 834 Series		SM	658 Series	TH	51900001009	
		820/820 - 20 Series Mini Shocksafe	TH	852 / 853 / 862 Series				TH	52000001009	
		823 Series Snap-in	TH	OPTF Series				TH	52100001009	
		824/824-20 / 850 / 851 / 860 series						TH	100 / 111 Series	
		870 Series Medical Grade						TH	523 / 445 Series	

6.3mm X 32mm (3AB / 3AG) Size Fuse Series and Holder Options

Fuse Options

Fuse Series Name	Time Lag (Slo-Blo®)	Medium Acting	Fast Acting	Very Fast Acting	Device Range * (Operating Current Options in Amps)	Max. Voltage Rating * (Volts)	Interrupting Rating at Max Voltage Rating * (Amps)	Operating Temperature Range	Agency Approvals *													RoHS Compliant	Lead Free
									Americas				Europe					Asia					
									UL	UR	CSA	OPL	CE	VDE	TUV	BSI	Semko	PSE	K	CCC	COC		
312			•		0.01 - 35	250 / 125 / 32	35 - 300	-55°C to +125°C	•	•	•		•					•	•			•	•
313	•				0.01 - 30	250 / 125 / 32	35 - 300		•	•	•		•					•	•			•	•
314			•		0.125 - 40	250	35 - 1000		•	•	•		•					•	•			•	•
322				•	1 - 30	250 / 65	100 - 1000			•			•					•				•	•
326	•				0.01 - 30	250 / 125	100 - 600		•	•	•		•					•	•			•	•

Holder Options

Circuit Connection Method	Wire	Wire Connector Terminals	TH= Thru-Hole Solder SM= Surface Mount Solder ST= Screw Terminal CT= Wire Connector Terminal RS= Rivet/Screw Hole					
Fuse Holder Type	In- Line Fuse Holders	Panel Mount Fuse Enclosure	Circuit Board Mount Fuse Enclosure		Fuse Blocks		Fuse Clips	
	150322	342006 Watertight	TH	345101 Shocksafe	CT	354 Series	RS	101001 / 101002
	150 Series	342021 (FHN26W) Water Tight	TH	354101-GY	ST	356 Series	RS	101003 / 102064
	155 Series	342024 (FHN26G2) Drip Proof	TH	810 Series	ST	359 Series	TH	102071 / 102074
	LHFB Series	342025 (FHN20G) Drip Proof	TH	811 Series			TH	102076 / 102078
		346877 Flip Top	TH	814 Series			TH	102079 / 102080
		340 Series RF Shielded / Watertight	TH	862 Series			RS	121001 / 121002
		342 Series Traditional					RS	121004
		344 Series Snap / Panel Mount					TH	100058 / 122083
		345 Series Int. Shocksafe (old)					TH	122087 / 122088
		3453 Series Int. Shocksafe					TH	122090 / 122093
		348 Series Snap Mount					TH	10207101009
		800 Series Shocksafe					TH	51800001009
		801 / 802 / 803-01 Series						
		860 Series						

Fuseholder Re-Rating

For 25°C ambient temperatures, it is recommended that fuseholders be operated at no more than 60% of the nominal current rating established using the controlled test conditions specified by Underwriters Laboratories.

The primary objective of these UL test conditions is to specify common test standards necessary for the continued control of manufactured items intended for protection against fire, etc. A copper dummy fuse is inserted in the fuseholder by Underwriters Laboratories, and then the current is increased until a certain temperature rise occurs.

The majority of the heat is produced by the contact resistance of the fuseholder clips. This value of current is considered to be the rated current of the fuseholder, expressed as 100% of rating.

Some of the more common, everyday applications may differ from these UL test conditions as follows: fully enclosed fuseholders, high contact resistance, air movement, transient spikes, and changes in connecting cable size (diameter and length).

Even small variations from the controlled test conditions can greatly affect the ratings of the fuseholder. For this reason, **it is recommended that fuseholders be de-rated by 40% (operated at no more than 60% of the nominal current rating** established using the Underwriter Laboratories test conditions).

* In some cases for these categories the ratings, agency approvals and specifications vary by part number and are presented here as ranges representing the whole series.

TE5®/TR5® Type Fuse Series and Holder Options

Fuse Options

Fuse Series Name	Time Lag (Slo-Blo®)	Medium Acting	Fast Acting	Very Fast Acting	Device Range * (Operating Current Options in Amps)	Max. Voltage Rating * (Volts)	Interrupting Rating at Max Voltage Rating * (Amps)	Operating Temperature Range	Agency Approvals *														RoHS Compliant	Lead Free
									Americas				Europe					Asia						
									UL	UR	CSA	OPL	CE	VDE	TUV	BSI	Semko	PSE	K	CCC	COC			
370			•		0.4 - 6.3	250	35 - 50	-40°C to +85°C		•				•			•	•		•		•	•
372	•				0.4 - 6.3	250	35 - 50			•				•			•	•	•	•	•	•	•
373			•		0.5 - 10	250	50		•		•											•	•
374	•				0.5 - 10	250	50		•		•											•	•
382	•				1 - 10	250	100			•				•			•	•	•	•	•	•	•
383	•				1 - 10	300	50 - 100			•				•				•				•	•
369	•				1 - 6.3	300	50	-40°C to +85°C		•								•				•	•
385	•				0.35 - 1.5	125	50			•												•	•
391			•		0.125 - 4	65	50			•												•	•
392	•				0.8 - 6.3	250	25 - 63			•				•			•	•	•		•	•	•
395			•		0.05 - 6.3	125	100		•									•				•	
396	•				0.05 - 6.3	125	100		•									•				•	•
397	•				0.35 - 1.5	125	50		•													•	•
398		•			0.125 - 4	65	50			•												•	•
399	•				0.125 - 4	65	50			•												•	•
400	•				0.5 - 6.3	250	130			•				•				•				•	•
808			•		1 - 5	250	100			•												•	•

Holder Options

Circuit Connection Method	Wire Connector Terminals	TH= Thru-Hole Solder SM= Surface Mount Solder ST= Screw Terminal CT= Wire Connector Terminal RS= Rivet/Screw Hole	
Fuse Holder Type	Panel Mount Fuse Enclosure	Circuit Board Mount Fuse Enclosure	
	570 Series	TH	571 0000 000
		TH	559 / 560 / 562 Series
		SM	564 Series
		TH	576 Series

Micro™/TR3® Type Fuse Series and Holder Options

Fuse Options

Fuse Series Name	Time Lag (Slo-Blo®)	Medium Acting	Fast Acting	Very Fast Acting	Device Range * (Operating Current Options in Amps)	Max. Voltage Rating * (Volts)	Interrupting Rating at Max Voltage Rating * (Amps)	Operating Temperature Range	Agency Approvals *														RoHS Compliant	Lead Free
									Americas				Europe					Asia						
									UL	UR	CSA	OPL	CE	VDE	TUV	BSI	Semko	PSE	K	CCC	COC			
262 / 268 / 269				•	0.002 - 5	125	10,000	-55°C to +125°C		•	•	•												
272 / 278				•	0.002 - 5	125	10,000	-55°C to +125°C		•	•	•												
273 / 274 / 279				•	0.002 - 5	125	10,000	-55°C to +85°C																

Holder Options

Circuit Connection Method	Wire Connector Terminals	TH= Thru-Hole Solder SM= Surface Mount Solder ST= Screw Terminal CT= Wire Connector Terminal RS= Rivet/Screw Hole	
Fuse Holder Type	Panel Mount Fuse Enclosure	Circuit Board Mount Fuse Enclosure	
	282001 Front mt. Neoprene	TH	281005 Vertical Silver
	282007 Front mt. Conductive	TH	281007 Horizontal Silver
	282002 Rear mt. Neoprene	TH	281008 Vertical Tin
	282008 Rear mt. Conductive	TH	281010 Horizontal Tin
	280004 32V indicating		

As the world's #1 brand in circuit protection, Littelfuse offers the broadest and deepest portfolio of circuit protection products and a global network of technical support backed by more than 80 years of application design expertise. Visit our design support center to access:

- > **Reference Designs**
- > **Application Notes**
- > **Application Testing**
- > **SPICE Models**
- > **Local Technical Support**
- > **Product Samples**
- > **Technical Articles**
- > **Certification Documents**
- > **Data Sheets**

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Littelfuse offers technologies that protect electronic and electrical circuits and their users against electrostatic discharge (ESD), load switching surges, lightning strike effects, overloads, short circuits, power faults, ground faults and other threats.

Overcurrent Protection Products:

Fuses Littelfuse offers the world's broadest range of fuse types and ratings, including cartridge, leaded, surface mount and thin film designs

PTCs Positive Temperature Coefficient thermistor technology provides resettable current-limiting protection

Protection Relays Electronic and microprocessor-based protection relays minimize damage to equipment and personnel caused by electrical faults

Overvoltage Protection Products:

Varistors Littelfuse offers surface mount Multi-Layer Varistors (MLVs) and industrial Metal Oxide Varistors (MOVs) to protect against transients

GDTs Gas Discharge Tubes (GDTs) to dissipate transient voltage through a contained plasma gas

Thyristors Solid state switches that control the flow of current in a wide range of appliances, tools and equipment

SIDACtor® Devices Overvoltage protection specifically designed for legacy telecom and today's broadband connections

TVS Diodes Silicon Transient Voltage Suppression (TVS) devices

SPAs Silicon Protection Arrays designed for analog and digital signal line protection

PulseGuard® ESD Suppressors Small, fast-acting Electrostatic Discharge (ESD) suppressors

Special Application Products:

PLED LED Protectors LED string reliability devices that offer open LED bypass, ESD protection and reverse connection protection

Download catalogs at **www.littelfuse.com/catalogs** or contact your authorized Littelfuse product representative for more information.

Specifications descriptions and illustrative material in this literature are as accurate as known at the time of publication, but are subject to changes without notice. Visit **www.littelfuse.com** for the most up-to-date technical information.

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