PRODUCT SELECTION GUIDE

Switching Thyristors

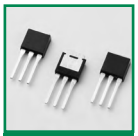
Switching Thyristors are solid state switches that are normally open circuits (very high impedance), capable of withstanding rated blocking/off-state voltage until triggered to on state. Used for circuit control applications, Littelfuse offers TRIAC, QUADRAC, SCRs, SIDAC, Rectifiers plus Alternistor Triacs for best commutating and noise immunity. Offered in various and other configurations for a wide range of currents blocking/off-state voltages, packages, and triggering.

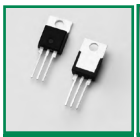
Through-Hole Packages:


DO-15


TO-92-2L


TO-92-3L


TO-251


TO-220


TO-218


TO-218X

Others:


TO3 Fastpak

Surface Mount Packages:


SOT-89


SOT-223


Compak


DO-214AA


TO-252


TO-263

$I_{T(RMS)}$	V_{DRM}/V_{RRM}	$I_{GT\ (Q1)}$	Series			Through-Hole							Surface Mount			
			Sensitive	Standard	Alternistor	TO-92	TO-251	TO-220 Isl	TO-220 Non-Isl	TO-218 Isl	TO-218X Isl	TO-3	Compak	SOT-223	TO-252	TO-263
Triac																
0.8A	400-600V	3-25mA	LxX8Ex LxXx	QxX8Ex QxXx		•							•			
0.8A	400-600V	3-5mA	LX8			•								•		
1.0A	400-600V	3-25mA	Lx01Ex,LxNx	Qx01Ex,QxNx		•							•			
1.0A	400-800V	3-10mA	L01			•								•		
4A	400-1000V	3-25mA	Lxx04xx	Qxx04xx			•	•	•						•	
6A	400-1000V	5-50mA	Lxx06xx	Qxx06xx	Qxx06xHx		•	•	•						•	•
8A	400-1000V	5-50mA	Lxx08xx	Qxx08xx	Qxx08xHx		•	•	•						•	•
	600V	10mA			Q6008LH1LED			•								
10A	400-1000V	25-50mA		Qxx10xx	Qxx10xHx			•	•							•
12A	400-1000V	10-50mA			Qxx12xHx			•	•							•
	600V	10mA			Q6012LH1LED			•								
15A & 16A	400-1000V	10-80mA		Qxx15xx	Qxx16xHx			•	•							•
25A	400-1000V	50-80mA		Qxx25xx	Qxx25xHx			•	•	•	•	•				•
25A	600V	50mA			HQ6025xH5			•	•	•						•
30A & 35A	400-800V	50mA		Qxx35xx	Qxx35xHx			•	•			•				•
40A	400-1000V	50-100mA			Qxx40xx					•	•					

$I_{T(RMS)}$	V_{DRM}/V_{RRM}	$I_{GT\ (Q1)}$	Series			Through-Hole							Surface Mount			
			Sensitive	Standard	Alternistor	TO-92	TO-251	TO-220 Isl	TO-220 Non-Isl	TO-218 Isl	TO-218X Isl	TO-3	Compak	SOT-223	TO-252	TO-263
Quadrac																
4-15A	400-600V			QxxxxLT	QxxxxLTH			•								
8A	600V				Q6008LTH1LED			•								
12A	600V				Q6012LTH1LED			•								

$I_{T(RMS)}$	V_{DRM}/V_{RRM}	$I_{GT\ (Q1)}$	Series		Through-Hole								Surface Mount				
			Sensitive	Standard	TO-92	TO-251	TO-220 Isl	TO-220 Non-Isl	TO-218AC Isl	TO-218AC Non-Isl	TO-218X Isl	TO-218X Non-Isl	Compak	SOT-89	SOT-223	TO-252	TO-263
SCR																	
0.8A	400-600V	12 - 500µA	EC103xx SxSx		•								•				
0.8A	400-800V	5 - 200µA	SxX8xSx		•									•	•		
1A	400-600V	10mA		Sx01E SxN1	•								•				
1.5A		200µA	TCR22-x		•												
1.5A		200µA	Sx02xS		•										•		
4A		50- 500µA	Sxx04xSx			•										•	
6A	400-1000V	0.2-15mA	Sxx06xSx	Sxx06x		•	•	•								•	
8A		0.2-15mA	Sxx08xSx	Sxx08x		•	•	•								•	
10A		0.2-15mA	Sxx10xSx	Sxx10x		•	•	•								•	
12A		20mA		Sxx12x		•		•								•	
15A & 16A		30mA		Sxx15x Sxx16x			•	•									•
20A & 25A		30-35mA		Sxx20x Sxx25x			•	•									•
35A		40mA		Sxx35x					•		•						
40A		40mA		Sxx40x				•									•
55A		40mA		Sxx55x				•		•		•					•
65A		50mA		Sxx65x					•		•						
70A	400-800V	50mA		Sxx70x								•					

Series			Through Hole	Surface Mount	Switching V_{BO}	I_H	I_{TSM}	static dv/dt	di/dt	T_J
Standard	High Energy	Multipulse								
SIDAC										
Kxxxzy			DO-15,TO-92	DO-214AA	79-330V	150mA	20A	1500V/µs	150A/µs	-40 to +125 °C
	Kxxx0yH		DO-15,TO-92	DO-214AA	190-280V	150mA	20A		150A/µs	-40 to +125 °C
	K2xx0GHU		DO-15		190-260V	60mA			220A/µs	-40 to +125 °C
		Kxxx1G	DO-15		200-380V	120mA			150A/µs	-40 to +125 °C
		Kxxx1GL	DO-15		200-265V	30mA			150A/µs	-40 to +125 °C

Series	Through Hole	$I_{F(RMS)}$	$I_{F(AV)}$	I_{FSM}		I^2t	T_{stg}	T_J
		RMS forward current	Average forward current	Peak non-repetitive surge current		I^2t Value for fusing	Storage temperature range	
Rectifiers								
Dxx15L Dxx20L Dxx25L	TO-220 Isl.	15 - 25A	9.5 to15.9A	single half cycle; f = 50Hz; TJ (initial) = 25°C 188 - 300A	single half cycle; f = 60Hz; TJ (initial) = 25°C 225 - 350A	210 - 508 A^2s	-40 to +150 °C	-40 to +125 °C

Product Descriptions

Thyristors

A Thyristor is any semiconductor switch with a bi-stable action depending on p-n-p-n regenerative feedback. Thyristors are normally two- or three-terminal devices for either unidirectional or bi-directional circuit configurations. Thyristors can have many forms, but they have certain commonalities. All Thyristors are solid state switches that are normally open circuits (very high impedance), capable of withstanding rated blocking/off-state voltage until triggered to on state. When triggered to on state, Thyristors become a low-impedance current path until principle current either stops or drops below a minimum holding level. After a Thyristor is triggered to on-state condition, the trigger current can be removed without turning off the device. Thyristors are used to control the flow of electrical currents in applications including:

- Home appliances (lighting, heating, temperature control, alarm activation, fan speed)
- Electrical tools (for controlled actions such as motor speed, stapling event, battery charging)
- Outdoor equipment (water sprinklers, gas engine ignition, electronic displays, area lighting, sports equipment, physical fitness)

Sensitive Triacs

Littelfuse's sensitive gate Triacs are AC bidirectional silicon switches that provide guaranteed gate trigger current levels in Quadrants I, II, III, and IV. Interfacing to microprocessors or other equipment with single polarity gate triggering is made possible with sensitive gate Triacs. Gate triggering currents of 3 mA, 5 mA, 10 mA, or 20 mA may be specified.

Sensitive gate Triacs are capable of controlling AC load currents from 0.8 A to 8 A rms and can withstand operating voltages from 400 V to 600 V.

Standard Triacs

Littelfuse's products are bidirectional AC switches, capable of controlling loads from 0.8 A to 35 A rms with 10 mA, 25 mA, and 50 mA I_{GT} in operating Quadrants I, II and III.

Triacs are useful in full-wave AC applications to control AC power either through full-cycle switching or phase control of current to the load element. These Triacs are rated to block voltage in the "OFF" condition from 400 V minimum with selected products capable of 1000 V operation. Typical applications include motor speed controls, heater controls, and incandescent light controls.

Quadrac

Quadrac devices, originally developed by Littelfuse, are Triacs and Alternistor Triacs with a DIAC trigger mounted inside the same package. These devices save the user the expense and assembly time of buying a discrete DIAC and assembling in conjunction with a gated Triac.

The Quadrac is offered in capacities from 4 A to 15 A rms and voltages from 400 V to 600 V.

Alternistor Triacs

The Alternistor Triac is specifically designed for applications required to switch highly inductive loads. The design of this special bidirectional chip effectively offers the same performance as two Thyristors (SCRs) wired inverse parallel (back-to-back).

This new chip construction provides the equivalent of two electrically-separate SCR structures, providing enhanced dv/dt characteristics while retaining the advantages of a single-chip device.

Littelfuse manufactures 6 A to 40 A Alternistor Triac with blocking voltage rating from 400 V to 1000 V. Alternistor Triacs are offered in TO-220, TO-251, TO-252, TO-218, and TO-218X packages with isolated and non-isolated versions.

Sensitive SCRs

Littelfuse's sensitive gate SCRs are unidirectional Silicon-Controlled Rectifiers representing the best in design, performance, and packaging techniques for low- and medium-current applications.

Anode currents of 0.8 A to 10 A rms can be controlled by sensitive gate SCRs with gate drive currents ranging from 5 µA to 500 µA. Sensitive gate SCRs are ideally suited for interfacing to integrated circuits or in applications where high current load requirements and limited gate drive current capabilities exist. Examples include ignition circuits, motor controls, and DC latching for alarms in smoke detectors. Sensitive gate SCRs are available in voltage ratings to 600 V.

SCRs

Littelfuse's SCR products are half-wave, Silicon-Controlled Rectifiers that represent the state of the art in design and performance.

Load current capabilities range from 1 A to 70 A rms, and voltages from 400 V to 1000 V may be specified to meet a variety of application needs.