

Protistor® Square-body Fuses PSC - LR (large rectifier) PSC - LR ranges



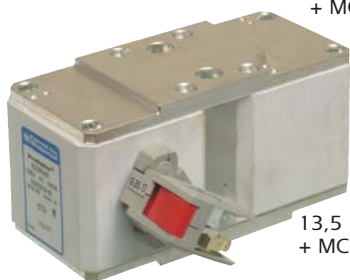
25 URD 123 TTF 630



4 URD TDF 1000



9,5 URD 94 PPASF 3800
+ MC3E 1-5N



13,5 URD 283 PLAF 1600
+ MCR3E 1-5NBS

Ferraz Shawmut PSC-LR fuse-links provide maximum flexibility in equipment design and ultimate protection for today's power conversion equipment. These square body fuse-links are available in various body sizes with a broad range of ampere ratings allowing the greatest flexibility in equipment design.

The Ferraz Shawmut PSC-LR fuse range has been engineered to provide state of the art protection for high power semiconductor devices such as diodes, thyristors, GTO's, IGCT's and IGBT's.

They have pure silver fuse elements embedded in solidified sand which provides optimized I^2t and high interrupting rating. All contact surfaces are plated and all hardware non-magnetic.

All fuses are standard with a low voltage blown fuse indicator. This indicator can operate a microswitch which is easily mounted directly onto the fuse in service.

Features/Benefits

Customized terminals

available under request

Wide range of mounting styles

Broad range of ampere ratings in each body size for design flexibility

IEC 60269-4 compliance for fuses for worldwide semiconductor applications

Highlights

- Highly current limiting.
- Isolating fuse
- High breaking capacities
- High capability of selection in case of external fault
- Worldwide acceptance.
- Superior cycling ability.
- High withstanding in rush current and overloads
- Optimized coordination ratio

Ratings

AC: up to 10 000A
130 V - 3 800V
100 - 240 kA IR

DC: Consult Factory

Applications

Protection of large rectifiers, inverters, static transfer switch, AC & DC drives and UPS systems.

Approvals

AC: Tested to IEC 60269-4



13,5 URD 294 TDSFF 3400
+ MCR3E 1-5NBS



13 URD 84 TQFPLA 0900

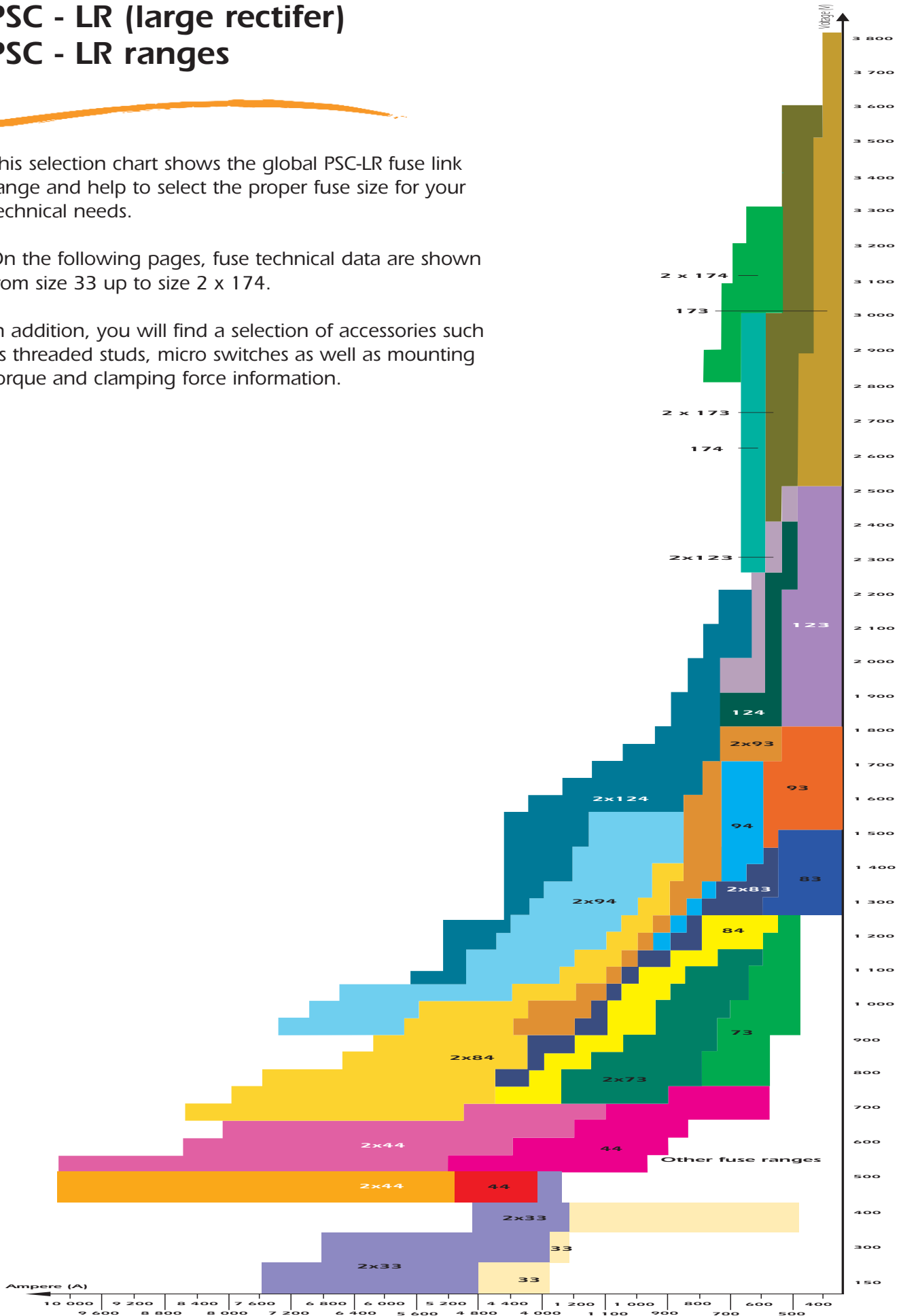
Semiconductor (AC) fuses

Protistor® Square-body Fuses PSC - LR (large rectifier) PSC - LR ranges

This selection chart shows the global PSC-LR fuse link range and help to select the proper fuse size for your technical needs.

On the following pages, fuse technical data are shown from size 33 up to size 2 x 174.

In addition, you will find a selection of accessories such as threaded studs, micro switches as well as mounting torque and clamping force information.



Protistor® Square-body Fuses PSC - LR (large rectifier) Microswitches for other Square-body Protistor®

Microswitch system for round and square-body fuses (except PSC line)

- REMOTE SIGNALING SYSTEMS FOR FITTING ON FERRAZ SHAWMUT FUSES EQUIPPED WITH MICROSWITCH SUPPORT: all square-body sizes 44 / 8X / 9X / 12X / 17X / 30X and 60X
- PERMANENT INDICATION OF FUSE STATE
 - CONDUCTIVE
 - BLOWN
- MANUAL RESETTING
- STANDARD AND LOW ELECTRICAL LEVEL WITH DIFFERENT INSULATION LEVELS
- VAPOR AND WATERTIGHT MODEL FOR USE IN CORROSIVE ATMOSPHERE



Main Characteristics

Type	Designation	AC or DC Insulation voltage rating U _i (V)	AC voltage withstand test (*)	Impulse voltage test U _{imp} 1,2/50 μs (**)	Positive operating min. voltage /min. current	Current rating	Interrupting rating						
							Current	Non-inductive circuit			Inductive circuit: L/R = 25ms		
								30V	110V	250V	30V	110V	250V
Standard	MC3E 1-5N	1250V	15 kV	20 kV	20 V 50 mA	5 A	50/60 Hz	10 A	10 A	7 A			6 A
	MCR3E 1-5N	2200	20 kV	30 kV			DC	5 A	0.5 A			1,6 A	0,3 A
Low level	MC3E 1-5NBS	1250 V	15 kV	20 kV	10 V 10 mA	3 A	50/60 Hz	3 A	3 A	3 A	2 A	1 A	1 A
	MC3E 1-9NBS							2200 V	20 kV (1)	30 kV	3 A	3 A	3 A
	MCR3E 1-5NBS	6000 V	23 kV (2)	40 kV			DC		3 A		0.5 A	0.25A	3 A
	MCR3E 1-9NBS		24 kV (1)				40 kV	3 A	0.5 A	0,2 A	0,1 A		
MC2R3E 1-5NBS	6000 V	26 kV (2)	40 kV	50 Hz	3 A	3 A		1 A	1 A				
MC2R3E 1-9NBS		32 kV (3)		DC	0.5 A	0,2 A							
Watertight IP 50	MC3E 1-5NET	1250 V	11 kV	16 kV	10 V 10 mA	3 A	50 Hz	3 A	3 A	1 A	1 A		
	MCR3E 1-5NET	2200 V	20 kV (1)	30 kV				DC	0.5 A	0,2 A			
	MC2R3E 1-5NET	6000 V	24 kV (2)	40 kV									

Catalog Numbering system: MC3E 1-5 single pole microswitch - MC3E 1-9 double pole microswitch - MCR, MC2R reinforced insulation microswitch.

* Between power circuit and microswitch terminals as per IEC 60 and 694 and NFC 64010 (50/60 Hz 1 min duration in dry air).

** Between power circuit and microswitch terminals U_{imp}: impulse voltage according to IEC 947-1.

*** Between power circuit and microswitch terminals

(1) fitting sizes 44 - 70 - 71 - 72 - 73 - 83 - 84 fuses.

(2) fitting sizes 91 - 92 - 93 - 94 -120 - 121 - 122 - 123 - 124 fuses.

(3) fitting sizes 171 - 172 - 173 - 174 - 300 - 302 - 600 - 602 fuses.

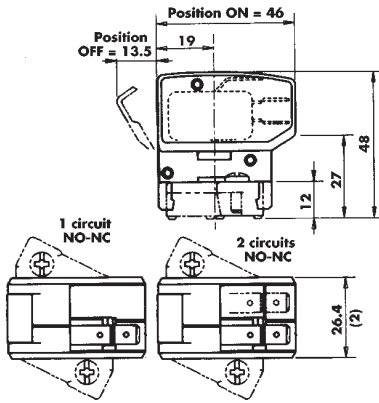
Semiconductor (AC) fuses

Protistor® Square-body Fuses

PSC - LR (large rectifier)

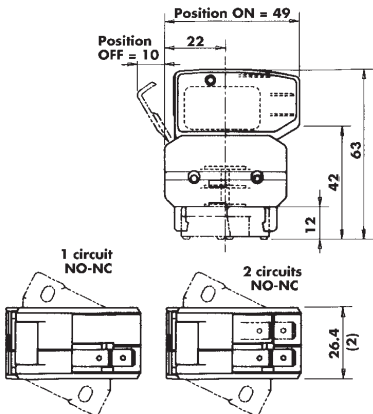
Microswitches for other Square-body Protistor®

Remote signaling with 1250 V AC/DC insulation voltage



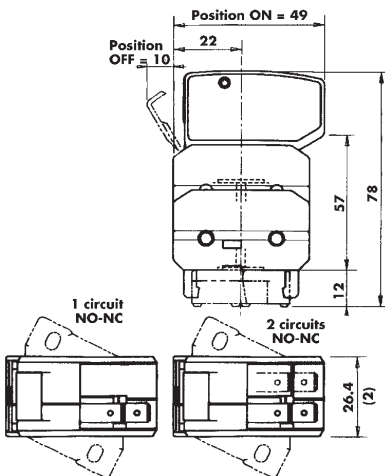
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MC3E 1-5N	D310020	39.5	3	MC3E1-5N
1	low level	MC3E 1-5NBS	E310021	39.5	3	MC3E1-5NBS
2	low level	MC3E 1-9NBS	F310022	45.7	3	MC3E1-9NBS
1	watertight	MC3E 1-5NET	L310027	40.2	3	MC3E1-5N ETANCHE

Remote signaling with insulation voltage up to 2200 V AC/DC



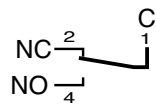
Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	standard	MCR3E 1-5N	G310023	51.7	1	MCR3E1-5N
1	low level	MCR3E 1-5NBS	P310030	51.7	1	MCR3E1-5NBS
2	low level	MCR3E 1-9NBS	H310024	58.0	1	MCR3E1-9NBS
1	watertight	MCR3E 1-5NET	Q310031	52.5	1	MCR3E1-5N ETANCHE

Remote signaling with insulation voltage up to 6000 V AC/DC

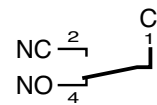


Quantity of NO-NC separated circuits	Contact	Designation	Ref. Number	Weight (g)	Pack. (1)	Catalog Number
1	low level	MC2R3E 1-5NBS	J310025	64.0	1	MC2R3E1-5NBS
1	watertight	MC2R3E 1-5NET	N310029	64.8	1	MC2R3E1-5NET
2	low level	MC2R3E 1-9NBS	K310026	70.3	1	MC2R3E1-9NBS

Electrical diagram of each microswitch circuit



Non-blown fuse
Microswitch ON



Blown fuse
Microswitch OFF

All of these signalling systems are hand resettable and fitted with silver-plated 3-terminal microswitch C, NO and NC.

The C terminal is on the top and connection is made via 6.35 mm clips except for watertight models whose clips are 4.8 mm wide.

NOTE (2): The 26.4 dimension is the same with 1 or 2 separated circuits NO-NC.

Tests with sine vibrations carried out at ambient with scanning of the three main holder axes.

Spectrum: 1st segment (2 to 16 Hz) constant trip $x = 5$ mm peak.

2nd segment (16 to 250 Hz) constant acceleration $g = 5$ g peak.



Exponential scanning speed : 1 octave per minute.

Duration: 2 hours per axis.

Protistor® Square-body Fuses PSC - LR (large rectifier) Metric-studs

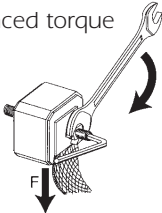
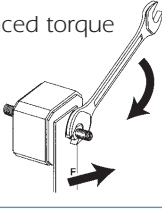
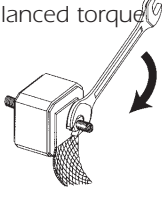
Metric studs for threaded terminal fuses



Type and fuse size	Designation	Ref. Number	Unit weight (g)	Pack.	Catalog Number
 Sizes 0 and 1	HC stud pair M8x30 & M8x35	S098801	23	6 pairs	STU M8x30 M8x35
	Size 2 HC stud pair M10x30 & M10x50	T098802	40	6 pairs	STU M10x30 M10x50
	Size 3 HC stud pair M12x35 & M12x50	V098803	60	6 pairs	STU M12x35 M12x50
 Size 2	HC stud pair M10x50	W098804	45	6 pairs	STU M10x50
	Size 3 HC stud pair M12x50	X098805	45	6 pairs	STU M12x50

We recommend the use of studs, whose quality is suited to all FERRAZ SHAWMUT square-body fuses with terminals

Stud mounting

Torque type	Stud type	Maximum stud tightening torque (Nm) (1)	Maximum nut tightening torque (Nm) (1)
Balanced torque 	M8x30 & M8x35	10	13.5
	M10x30 & M10x50	15	26
	M12x35 & M12x50	15	46
Balanced torque 	M8x30 & M8x35	10	13.5
	M10x30 & M10x50	15	26
	M12x35 & M12x50	15	46
Unbalanced torque 	M8x30 & M8x35	10	13.5
	M10x30 & M10x50	15	26
	M12x35 & M12x50	15	46

(1) Factory limit on torque at 20°C ambient: +0, -2Nm; except on 46Nm value (+0, -4Nm)