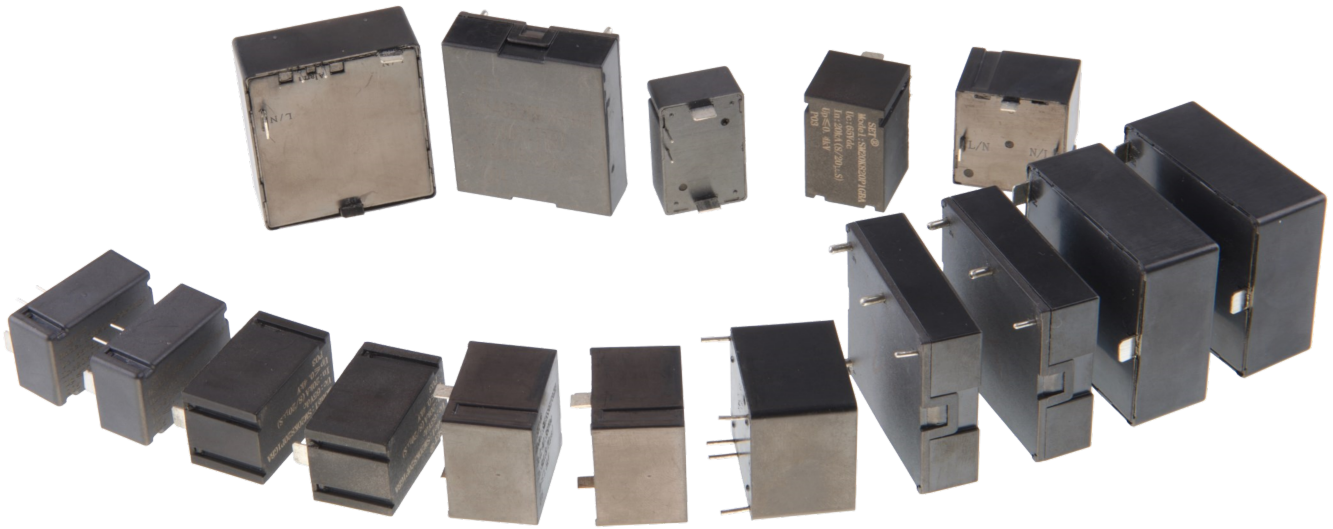


SPD-M

Surge Protective Device Module



Description

Surge protective device module (SPD-M) is an onboard lightning protection module that integrates functions, such as thermal protection, overvoltage protection, and remote signaling, and others. A single module can meet common-mode, differential-mode or full-mode protection requirements.

SPD-M, an integrated solution, can simplify the design and selection of surge protection modules for users, and is suitable for surge protection of low-voltage AC or DC power supply equipment. Surge protective device module (SPD-M) has the characteristics of small board space, high level of integration, and complete protection functions and solutions.

Features

- High Reliability
- Small Size
- Combination Technology of ATCO, MOV and GDT
- Comply with UL 1449 / IEC 61643-11
- Differential-mode / Common-mode Protection

Applications

- Telecom Equipment
- AC / DC Power Supply
- Uninterruptable Power Supply (UPS)
- Surge Protective Device (SPD)

Surge Protective Device Module (SPD-M) Feature & Model List Overview

Rated Voltage U_n (V)			Nominal Discharge Current I_n (kA)						Maximum Continuous Operating Voltage U_n (V)		Page	
			9	13	13	11	13	15	AC	DC		
347V	400V		○	○	○	○	○	○	510		Maximum Continuous Operating Voltage U_n (V)	Model
			○	○	○	○	SM34S751P1GBB	○	460			
220 - 230V	254 - 277V		○	○	○	○	○	○	420			
			SM15S621P3*BB	○	○	○	SM34S621P1GBB	○	385			
			SM15S561P3*BB	○	○	○	SM34S561P1GBB	SM34S561P2*B#	350			
			SM15S511P3*BB	○	○	○	SM34S511P1GBB	SM34S511P2*B#	320			
			SM15S471P3*BB	○	○	○	SM34S471P1GBB	SM34S471P2*B#	300			
		○	○	○	○	SM34S431P1GBB	SM34S431P2*B#	275				
		○	○	○	○	○	○	250				
		○	○	○	○	○	○	230				
		○	○	○	○	○	○	210				
		○	○	○	○	○	○	190				
110V		SM15S271P3*BB	○	○	○	○	SM34S271P2*B#	175				
		SM15S241P3*BB	○	○	○	SM34S241P1GBB	SM34S241P2*B#	150				
		SM15S221P3*BB	○	○	○	○	SM34S221P2*B#	140				
		SM15S201P3*BB	○	○	○	○	SM34S201P2*B#	130				
48V	60V		○	○	○	○	○	○	115			
			○	○	○	○	○	○	95			
			○	○	SM34S121P1GBB	SM20K121P1*BA	○	○	75	100		
	36V	48V		○	○	SM34S101P1GBB	SM20K101P1*BA	○	○	60		
				○	○	SM34S820P1GBB	SM20K820P1*BA	○	○	50	65	
24V	24V		○	SM34S680P1GBB	○	SM20K680P1*BA	○	○	40	56		
			○	○	○	○	○	○	35	45		
			○	SM34S470P1GBB	○	○	○	○	30	38		
AC	DC	5	10	15		20		AC	DC			

Notes:
* May be followed by G or N.
May be followed by B or A.

Surge Protective Device Module (SPD-M) Feature & Model List Overview

Rated Voltage U_n (V)		Nominal Discharge Current I_n (kA)				Model	Maximum Continuous Operating Voltage U_n (V)	Page
		15	20	25	27	30		
347V	400V	○	○	○	○	○	510	
		○	○	○	○	○	460	
220 - 230V	254 - 277V	○	○	○	○	○	420	
		SM15M277A203	SM20M230A203	SM20M230%	SM30M230%		385	
		○	○	○	○	○	350	
		SM15M230A203	SM20M277A203	SM08B230N203		○	320	
		○	○	○	○	○	300	
		○	○	○	○	○	275	
		○	○	○	○	○	250	
	120 - 130V	○	○	○	○	○	230	
		○	○	○	○	○	210	
		○	○	○	○	○	190	
110V		○	○	○	○	○	175	
		○	○	○	○	○	150	
		○	○	○	○	○	140	
		○	○	○	○	○	130	
		○	○	○	○	○	115	
48V	60V	○	○	○	○	○	95	
		○	○	○	○	○	75	
		○	○	○	○	○	60	
	36V	○	○	○	○	○	50	
24V		○	○	○	○	○	40	
		○	○	○	○	○	35	
		○	○	○	○	○	30	
AC		15	20	25	27	30	AC	

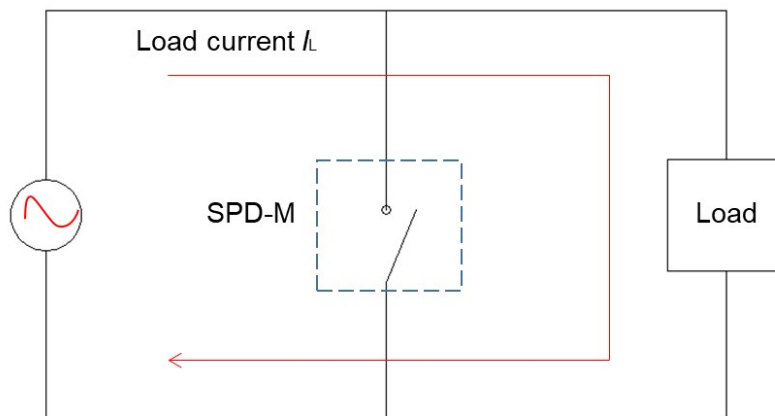
Notes:
% May be followed by L205, L306 or A404.

SPD-M

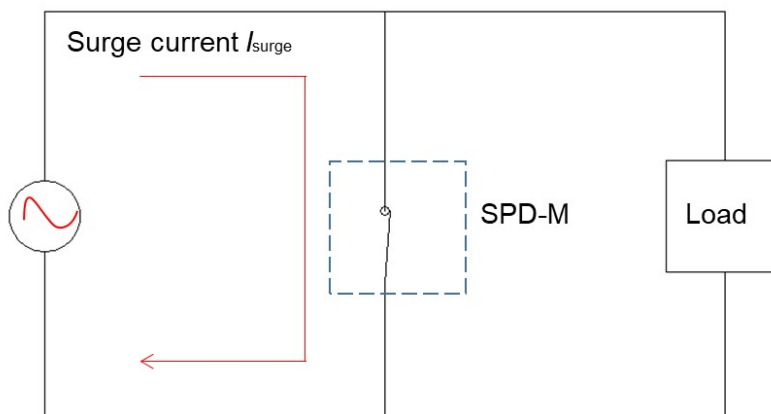
Surge Protective Device Module

Operation Principle

SPD-M is equivalent to open circuit when the circuit without surge (Impedance > 100 MΩ)



When a surge invades the circuit, the SPD-M circuit mutates to a low impedance, releasing the surge current into the ground



SPD-M

Surge Protective Device Module

Part Numbering System

SM 34S 621 P1 G B B - 001

Other Options

Connection

Installation

Circuit Characteristic

Quantity of Protection Mode

Nominal Varistor Voltage

Design Sequence

Product Category

A: Parallel Circuit With Remote Signal

B: Parallel Circuit Without Remote Signal

B: PCB Installation Mode

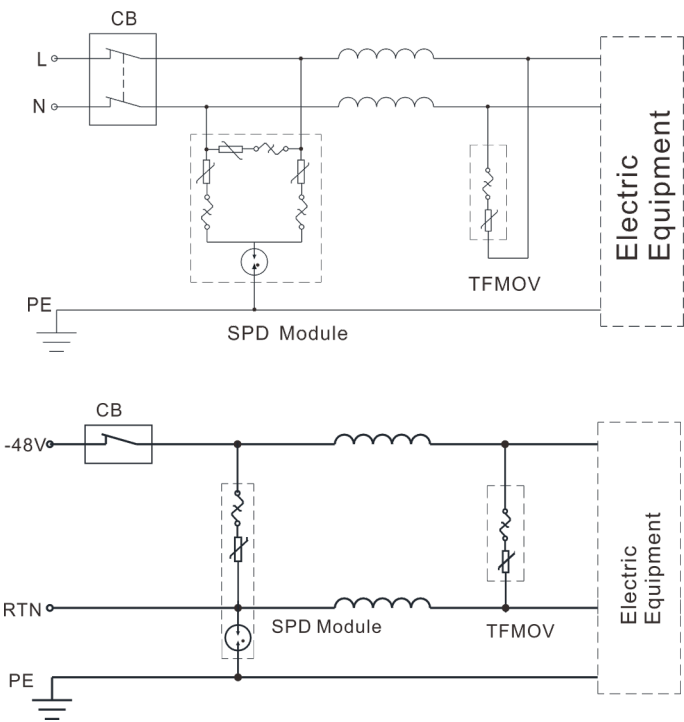
G: With GDT

N: Without GDT

P1: One Protection Mode

820	621
82×10^0 =82 V	62×10^1 =620 V

Application Options



SPD-M

Surge Protective Device Module

Glossary

Item	Description
U_p	Voltage Protection Level Maximum voltage to be expected at the SPD terminals due to an impulse stress with defined voltage steepness and an impulse stress with a discharge current with given amplitude and wave shape. — (IEC 61643-11)
8/20 μ s	8/20 Current Impulse Current impulse with a nominal virtual front time of 8 μ s and a nominal time to half-value of 20 μ s. — (IEC 61643-11)
1.2/50 μ s	1.2/50 Voltage Impulse Voltage impulse with a nominal virtual front time of 1,2 μ s and a nominal time to half-value of 50 μ s. — (IEC 61643-11)
U_c	Maximum Continuous Operating Voltage Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection. — (IEC 61643-11)
I_n	Nominal Discharge Current Crest value of the current through the SPD having a current waveshape of 8/20. — (IEC 61643-11)
I_{imp}	Impulse Discharge Current for Class I Test Crest value of a discharge current through the SPD with specified charge transfer Q and specified energy W/R in the specified time. — (IEC 61643-11)
I_{max}	Maximum Discharge Current Crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the manufacturers specification. I_{max} is equal to or greater than I_n . — (IEC 61643-11)
Modes of Protection	Modes of Protection An intended current path, between terminals that contains protective components, e.g. line-to-line, line-to-earth, line-to-neutral, neutral-to-earth.
IP	Degrees of Protection Provided by Enclosure (IP Code) Classification preceded by the symbol IP indicating the extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and possibly harmful ingress of water.
TCO	Thermal-Link A non-resettable device incorporating a THERMAL ELEMENT which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed.
ATCO	Alloy Thermal-Link Alloy Type Thermal-Link, Alloy is the thermal element.

SPD-M

Surge Protective Device Module

**ATTENTION****Usage**

1. Frequency range is from 47 Hz to 63 Hz a.c.
2. The voltage applied continuously to the SPD-M must not exceed its maximum continuous operating voltage U_c .
3. When atmosphere press is from 45 kPa to 106 kPa, the related altitude shall be from 5000 meters to - 500 meters.
4. Do not touch the product body or pins directly when power is on, to avoid electric shock.

Replacement

As SPD-M is a non-repairable product, for safety sake, please use the same type of SPD-M for replacement.

Storage

Do not store SPD-M at high temperature, high humidity or corrosive gas environment, to avoid oxidation of the lead wires. Use them up within 1 year after receiving the goods.

Installation Position

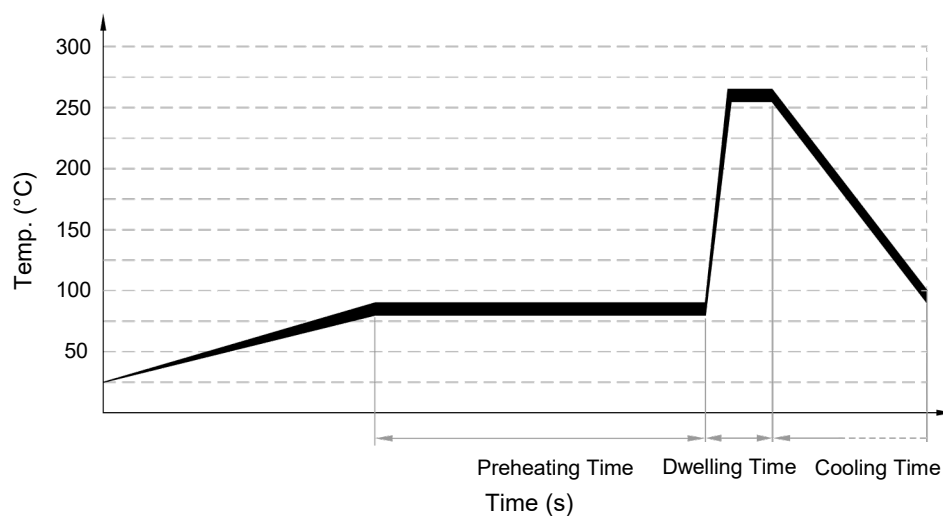
Do not install SPD-M to the place that may suffer severe vibration.

Recommended Hand-Soldering Parameters

Item	Condition
Iron Temperature	350 °C (Max.)
Soldering Time	4 seconds (Max.)
Distance between Soldering Point and the Bottom of Product	2 mm (Min.)

SPD-M

Surge Protective Device Module

Wave Soldering Parameters (Reference)

Item	Temp. (°C)	Time (s)
Preheating	≤ 150	60 ~ 150
Dwelling	≤ 260	≤ 10

Note:

The wave soldering parameters are for reference only. Before SPD-M is for practice usage, relative validation is recommended.

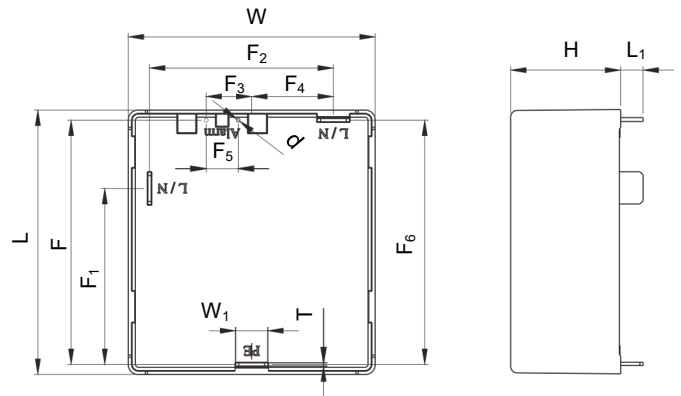
Agency Information

Agency Information		Standards	NO.	Category
	UL	UL 1449 4th Edition	E322662	VZCA2
	CUL	CSA C22.2 NO.269, CSA ECN 516	E322662	VZCA8
	TUV	IEC/EN 61643-11	See the different models for details	
	CE	IEC/EN 61643-11	See the different models for details	

SPD-M

Surge Protective Device Module

SM34SxxxP2 Series



Unit: mm

L	L ₁	W	W ₁	H	T	d	F	F ₁
41.0±1.0	3.5±1.0	38.5±1.0	5.0±0.5	17.0±1.0	0.50±0.05	0.5±0.1	38.0±1.0	27.5±1.0
F ₂	F ₃	F ₄	F ₅	F ₆				
28.6±1.0	7.0±1.0	13.0±1.0	5.0±1.0	38.0±1.0				

Features

- High Reliability
- Small Size
- Combination Technology of ATCO, MOV and GDT
- Remote Signaling Contact (Optional)
- UL 1449 Type 4CA

Applications

- Telecom Equipment
- AC / DC Power Supply
- Uninterruptable Power Supply (UPS)
- Surge Protective Device (SPD)

Schematics

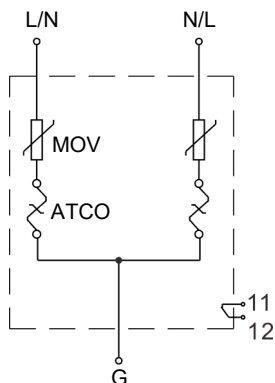


FIGURE SM34SxxxP2-1

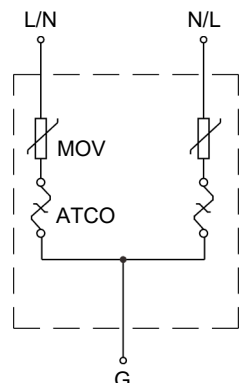


FIGURE SM34SxxxP2-2

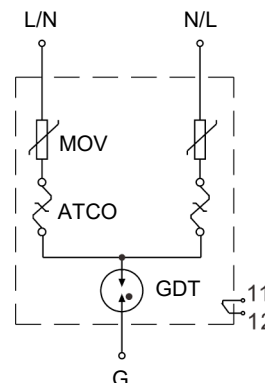


FIGURE SM34SxxxP2-3

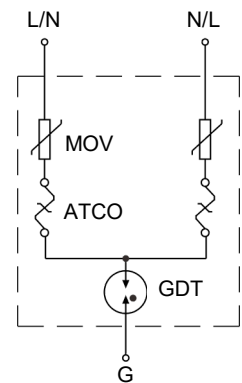


FIGURE SM34SxxxP2-4

Agency Approvals

Agency	Standards	No.
 UL [®] us	UL1449	E322662
 TÜV Rheinland	EN 61643-11	J 50347206
Environment	RoHS 2.0 & REACH	Compliant

SPD-M

Surge Protective Device Module

SM34SxxxP2 Series

Specifications

Model	Max. Continuous Operating Voltage		Nominal Discharge Current (8/20 μ s)	Max. Discharge Current (8/20 μ s)	Voltage Protection Level	Response Time	External Overcurrent Protection ^a	Product Schematics	Agency Approvals	
	U_c		I_n	I_{max}	U_p					
	(VAC)	(VDC)	(kA)	(kA)	(V)				UL, CUL	TUV
SM34S680P2GB*	40	56	10	20	400	<100	32	SM34SxxxP2-3/4		
SM34S820P2GB*	50	65	15	30	400	<100	32	SM34SxxxP2-3/4		
SM34S101P2GB*	60	85	15	30	500	<100	32	SM34SxxxP2-3/4		
SM34S201P2GB*	127	-	20	40	700	<100	32	SM34SxxxP2-3/4	•	
SM34S221P2GB*	140	-	20	40	800	<100	32	SM34SxxxP2-3/4	•	
SM34S241P2GB*	150	-	20	40	800	<100	32	SM34SxxxP2-3/4	•	
SM34S271P2GB*	175	-	20	40	800	<100	32	SM34SxxxP2-3/4	•	
SM34S431P2GB*	275	-	20	40	1500	<100	32	SM34SxxxP2-3/4	•	•
SM34S471P2GB*	300	-	20	40	1500	<100	32	SM34SxxxP2-3/4	•	•
SM34S511P2GB*	320	-	20	40	1500	<100	32	SM34SxxxP2-3/4	•	•
SM34S561P2GB*	350	-	20	40	1500	<100	32	SM34SxxxP2-3/4	•	
SM34S680P2NB*	40	56	10	20	400	<25	32	SM34SxxxP2-1/2		
SM34S820P2NB*	50	65	15	30	400	<25	32	SM34SxxxP2-1/2		
SM34S101P2NB*	60	85	15	30	500	<25	32	SM34SxxxP2-1/2		
SM34S201P2NB*	127	-	20	40	700	<25	32	SM34SxxxP2-1/2	•	
SM34S221P2NB*	140	-	20	40	800	<25	32	SM34SxxxP2-1/2	•	
SM34S241P2NB*	150	-	20	40	800	<25	32	SM34SxxxP2-1/2	•	
SM34S271P2NB*	175	-	20	40	800	<25	32	SM34SxxxP2-1/2	•	
SM34S431P2NB*	275	-	20	40	1500	<25	32	SM34SxxxP2-1/2	•	
SM34S471P2NB*	300	-	20	40	1500	<25	32	SM34SxxxP2-1/2	•	
SM34S511P2NB*	320	-	20	40	1500	<25	32	SM34SxxxP2-1/2	•	
SM34S561P2NB*	350	-	20	40	1500	<25	32	SM34SxxxP2-1/2	•	

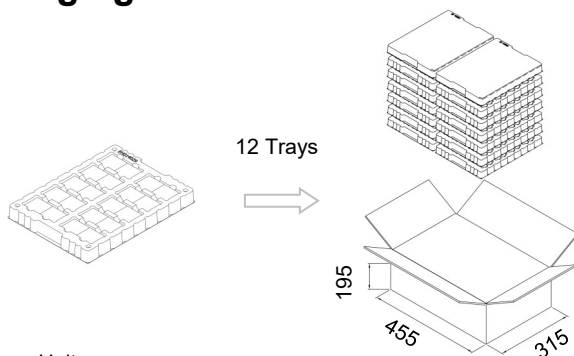
Notes:

a: Recommended External Circuit Breaker Model C 32 A, Curve C.

*: May be A or B.

Product meeting TUV approval, U_c : 320 VAC(SM34S431P2), 350 VAC(SM34S471P2), 350 VAC(SM34S511P2)

Packaging Information



- Unit: mm
- Please contact us if you have special packaging requirements.

Item	Tray	Carton
Dimensions (mm)	295 × 220	455 × 315 × 195
Quantity (PCS)	20	240