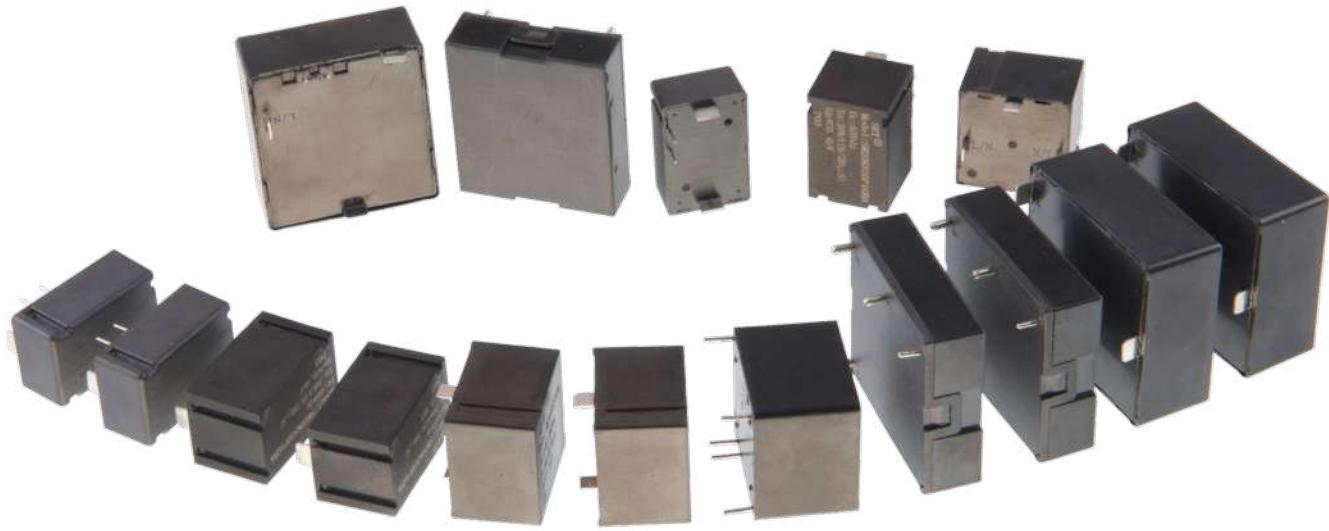


SPD-M

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.

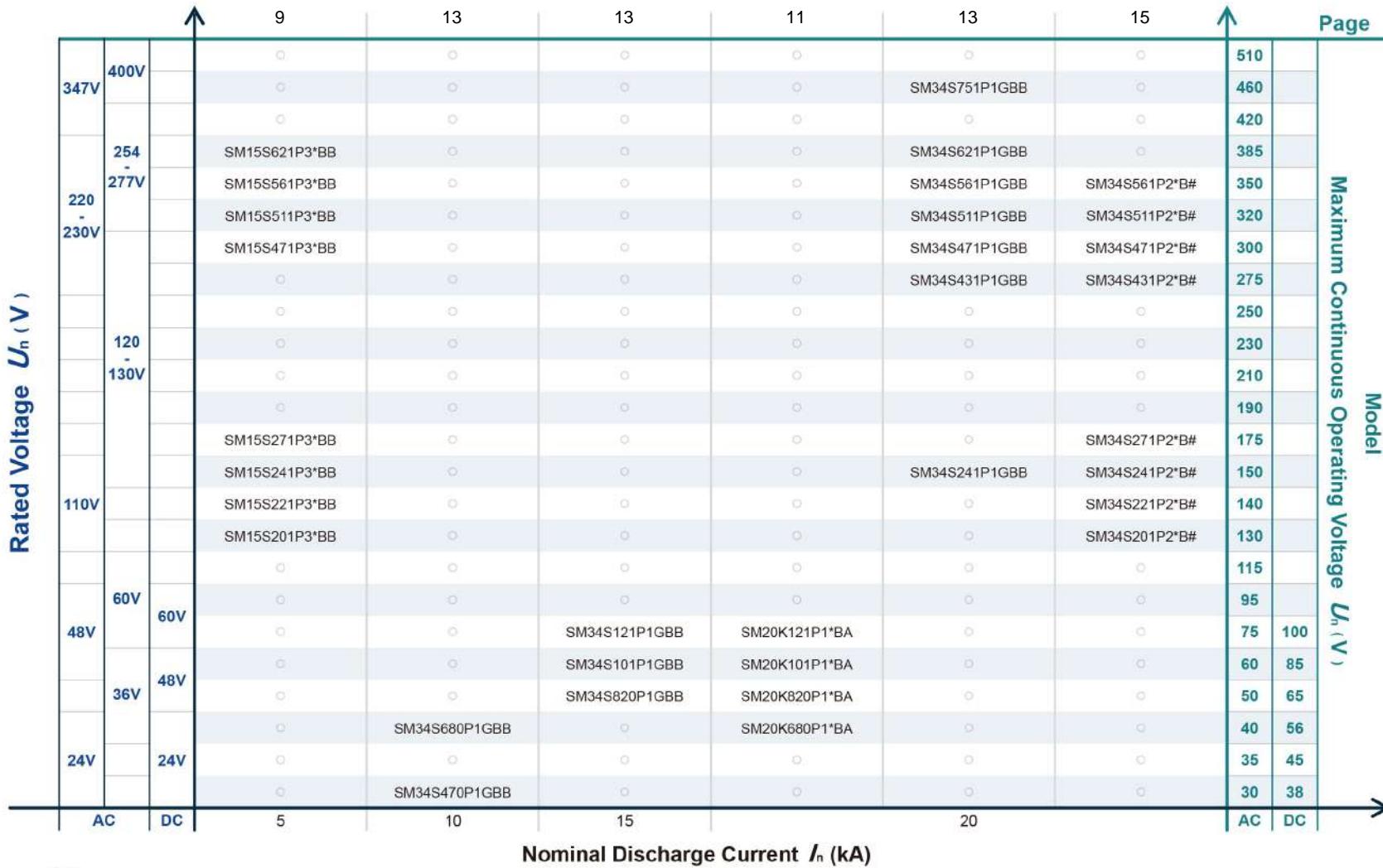
SPD-M, an integrated solution, can simplify the design and selection of surge protection modules for users, and is suitable for surge protection of low-voltage AC or DC power supply equipment. Surge protective device module (SPD-M) has the characteristics of small board space, high level of integration,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

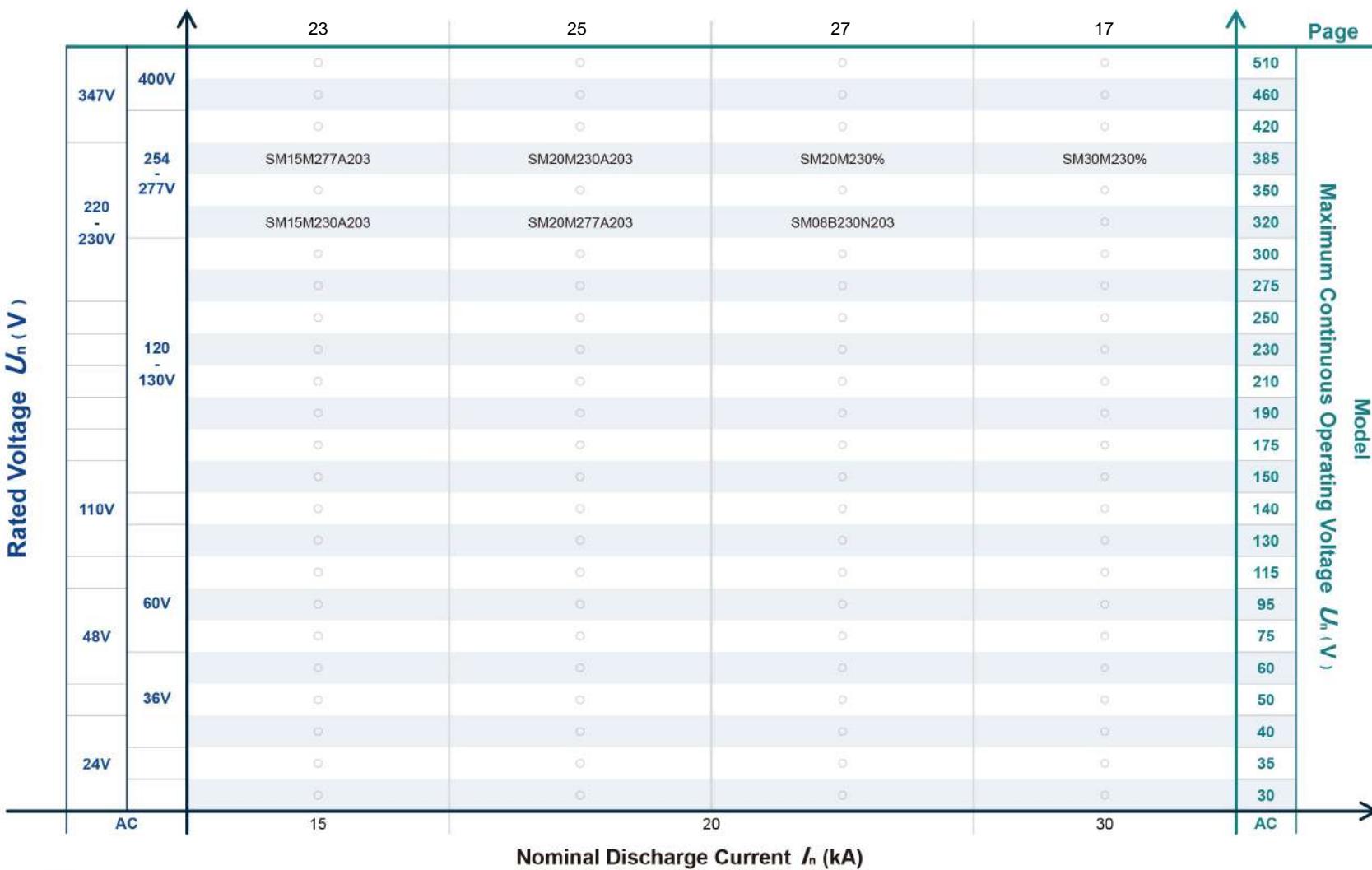
Applications

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

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



Notes:

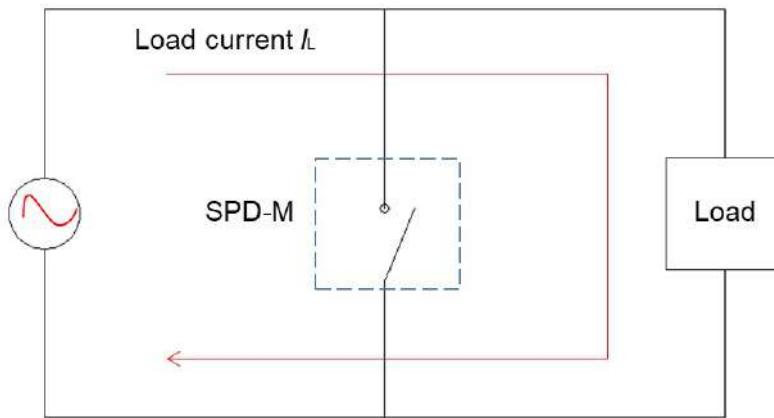
% May be followed by L205, L306 or A404.

SPD-M

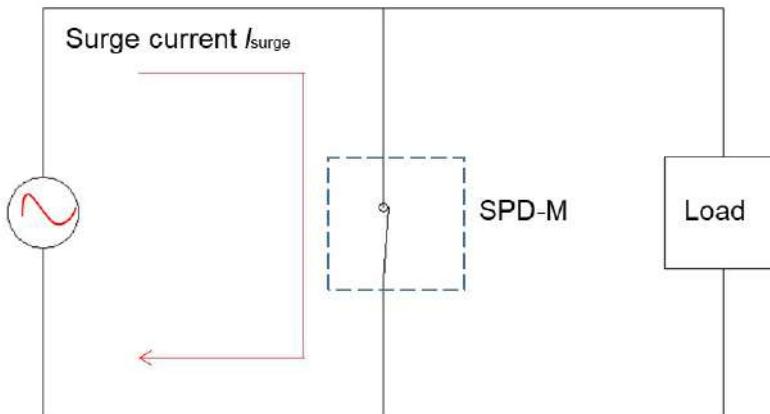
Surge Protective Device Module

Operation Principle

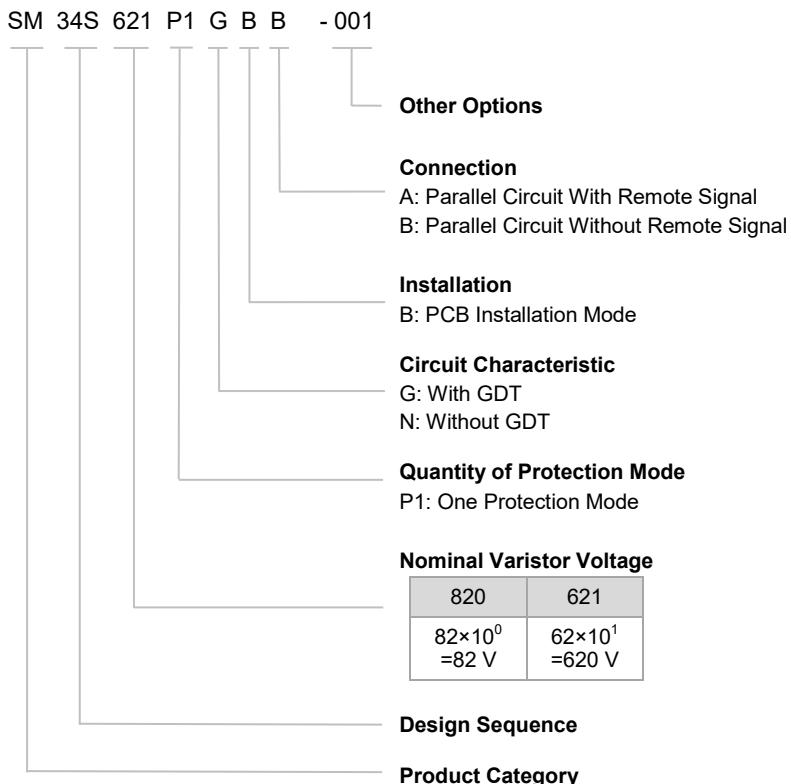
SPD-M is equivalent to open circuit when the circuit without surge (Impedance > 100 MΩ)



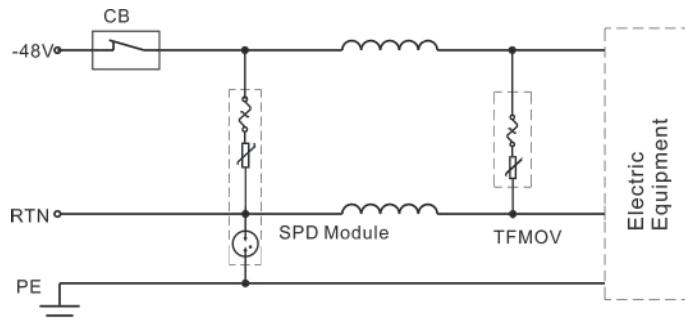
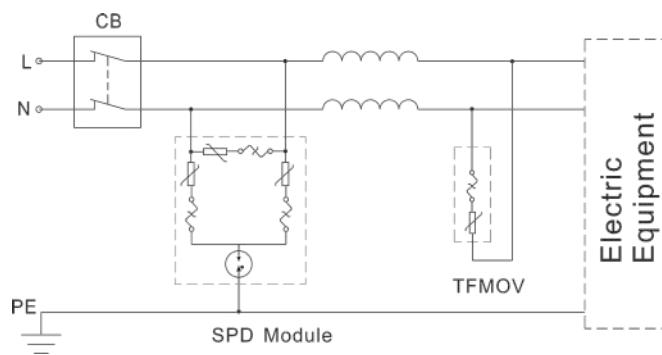
When a surge invades the circuit, the SPD-M circuit mutates to a low impedance, releasing the surge current into the ground



Part Numbering System



Application Options



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 μs	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 μs	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.



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

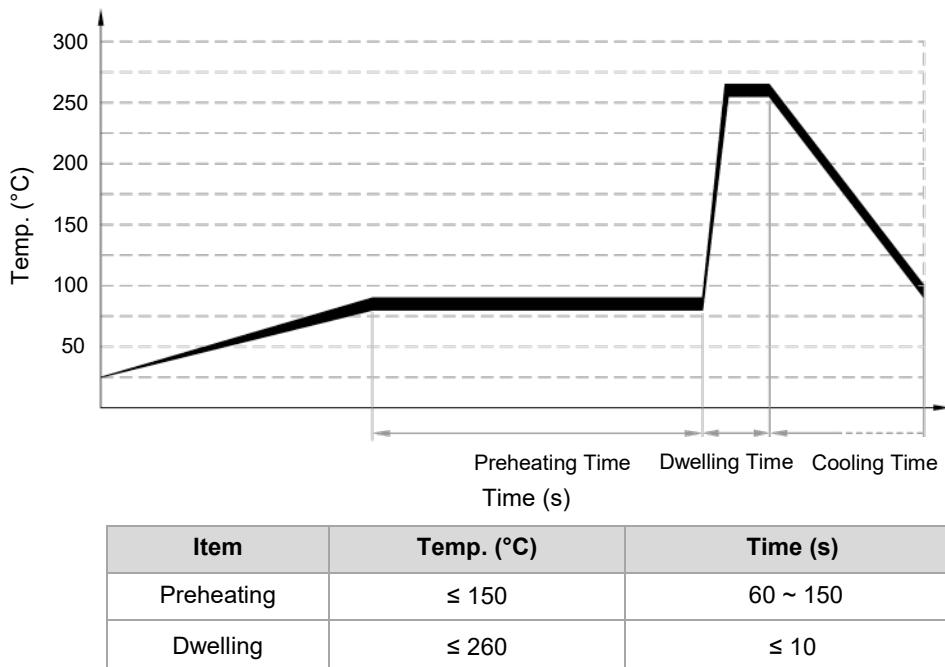
Do not install SPD-M to the place that may suffer severe vibration.

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)

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	

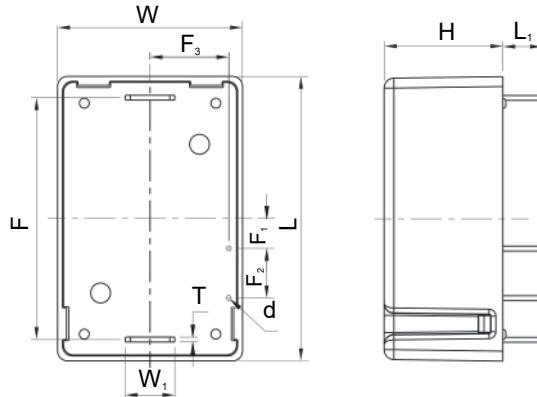
SPD-M

Surge Protective Device Module

SM20KxxxP1 Series

SM20KxxxP1N*

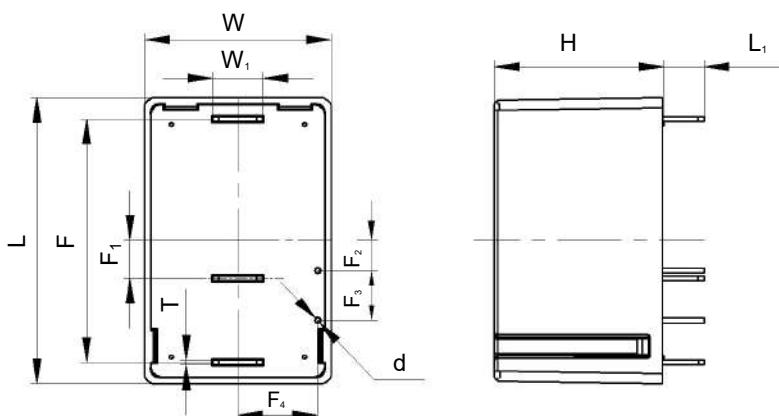
Unit: mm



L	L ₁	W	W ₁	H	T	d	F	F ₁	F ₂	F ₃
28.5±1.0	4.0±1.0	18.5±1.0	5.0±0.5	12.0±1.0	0.50±0.05	0.50±0.05	24.4±1.0	3.0±1.0	5.0±1.0	8.0±1.0

SM20KxxxP1G*

Unit: mm



L	L ₁	W	W ₁	H	T	d	F	F ₁	F ₂	F ₃	F ₄
28.5±1.0	4.0±1.0	18.5±1.0	5.0±0.5	17.0±1.0	0.50±0.05	0.50±0.05	24.4±1.0	4.0±1.0	3.0±0.5	5.0±1.0	8.0±1.0

Features

- High Reliability
- Small Size
- Combination Technology of ATCO, MOV and GDT
- Remote Signaling Contact

Applications

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

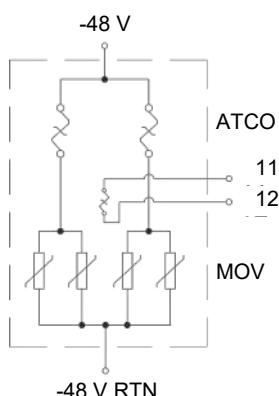
Schematics

FIGURE SM20KxxxP1-1

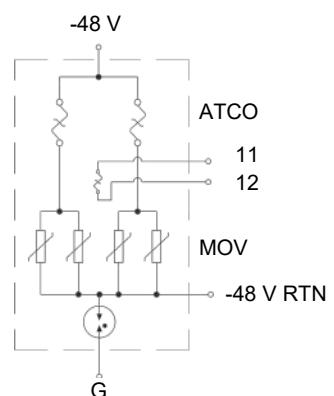


FIGURE SM20KxxxP1-2

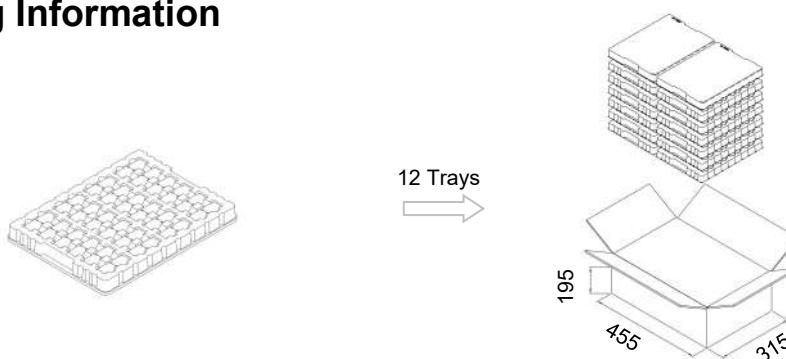
Specifications

Model	Max. Continuous Operating Voltage		Nominal Discharge Current (8/20 μs)	Voltage Protection Level	Response Time	External Overcurrent Protection ^a	Schematics	Agency Approvals
	U_c	I_n						
	(VAC)	(VDC)	(kA)	(V)	(ns)	(A)	FIGURE	TUV
SM20K680P1NBA	40	56	20	350	<25	16	SM20KxxxP1-1	
SM20K820P1NBA	50	65	20	400	<25	16	SM20KxxxP1-1	●
SM20K101P1NBA	60	85	20	500	<25	16	SM20KxxxP1-1	●
SM20K121P1NBA	75	100	20	600	<25	16	SM20KxxxP1-1	●
SM20K680P1GBA	40	56	20	350	<100	16	SM20KxxxP1-2	
SM20K820P1GBA	50	65	20	400	<100	16	SM20KxxxP1-2	●
SM20K101P1GBA	60	85	20	500	<100	16	SM20KxxxP1-2	●
SM20K121P1GBA	75	100	20	600	<100	16	SM20KxxxP1-2	●

Note:

a: Recommended External Circuit Breaker Model C 16 A, Curve C.

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)	48	576