

SPD Module

Surge Protective Device Module

SM20KxxxP1 Series



Description

SM20KxxxP1 Series is a fail-safe device combined with ATCO, MOV and GDT, which is specially designed to be used on PCB for overvoltage protection. Its built-in thermal protection element prevents fire hazard under the degradation of varistor or sustained overvoltage conditions. Compared with the discrete SPD, SM20KxxxP1 Series is more space saving. It is also convenient for users to design and install.

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)

Agency Approvals

Agency	Standards	No.
	EN 61643-11	on request
Environment	RoHS & REACH	Compliant

Part Numbering System

SM 20K 121 P1 G B A - 001

Other Options

Connection

A: Parallel Circuit With Remote Signal

Installation

B: PCB Installation Mode

Circuit Characteristic

G: With GDT
N: Without GDT

Quantity of Protection Mode

P1: One Protection Mode

Nominal Varistor Voltage

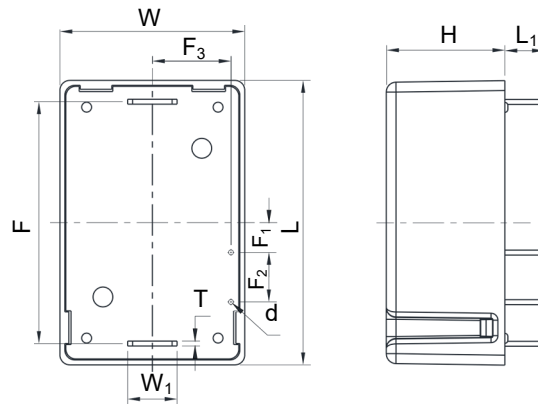
820	121
82×10^0 =82 V	12×10^1 =120 V

Design Sequence

Product Category

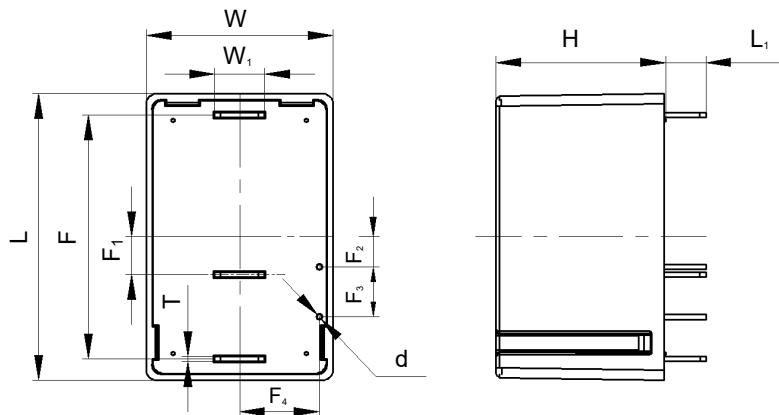
Dimensions (mm)

SM20KxxxP1N*



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*



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

Schematics

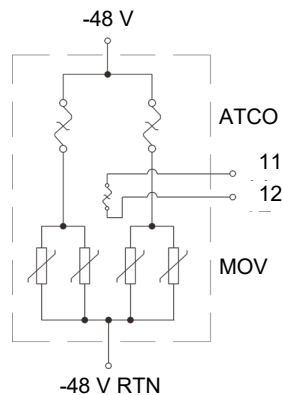


FIGURE SM20KxxxP1-1

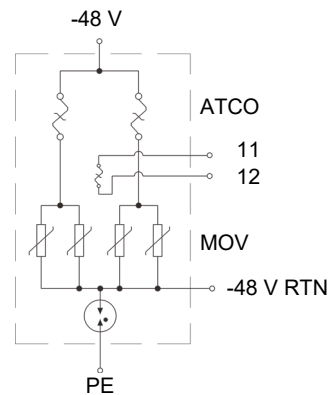


FIGURE SM20KxxxP1-2

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 μ s. — (IEC 61643-11)
I_{max}	Maximum Discharge Current Crest value of a current through the SPD having an 8/20 μ s 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.
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.

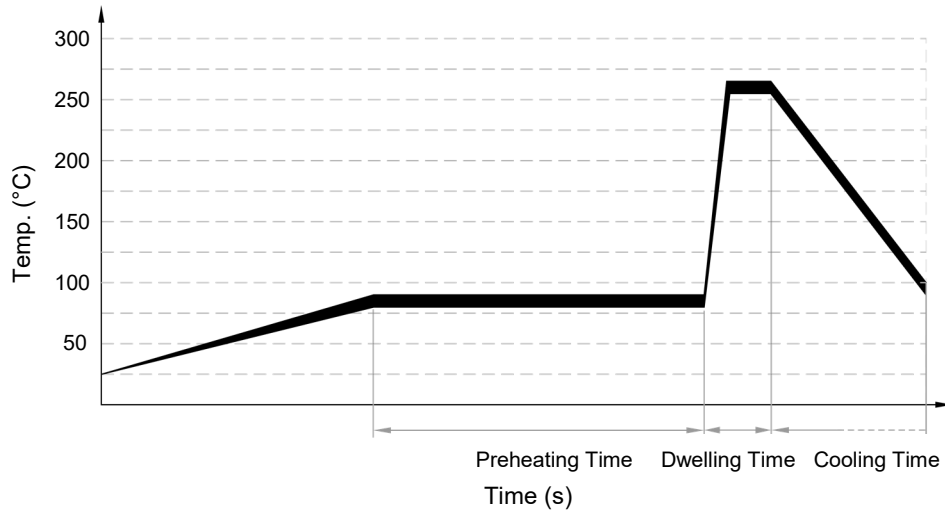
Specifications

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	U_p	(ns)	(A)	FIGURE	
	(VAC)	(VDC)	(kA)	(V)				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.

Wave Soldering Parameters (Reference)



Item	Temp. (°C)	Time (s)
Preheating	80 to 90	60 to 150
Dwelling	250 to 260	2 to 4

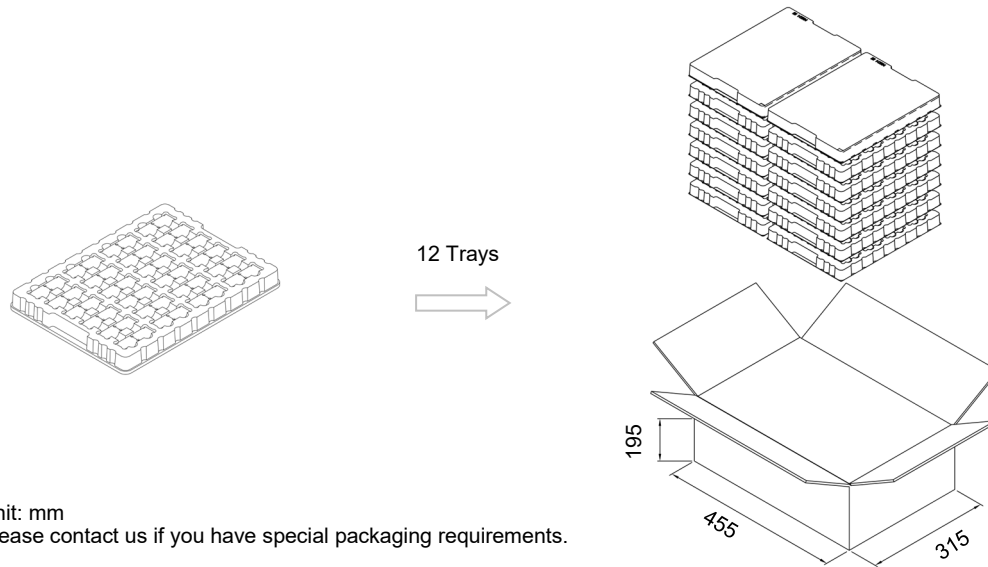
Note:

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

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.)

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
Gross Weight (kg)		(10.6 - 14.0) ± 10%

Note:

The gross weight of each carton will be different because of the difference of product model. It depends on the voltage of the product. The gross weight is for reference only, please contact us for more details.



ATTENTION

Usage

1. Frequency range is from 47 Hz to 63 Hz.
2. The voltage applied continuously to the SPD module must not exceed its maximum continuous operating voltage U_c .
3. When atmosphere press is from 80 kPa to 106 kPa, the related altitude shall be from 2000 meters to - 500 meters.
4. Do not touch the product body or pins directly when power is on, to avoid electric shock.

Replace

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

Storage

Do not store SPD module 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 module to the place that may suffer severe vibration.