

# SPD-M

Surge Protective Device Module

SM20M230A203 Series

## Description



Surge Protective Devices Module (SPD-M) is an onboard surge protection module. Integrated thermal protection, overvoltage protection and remote signal functions. A single module may have common mode, differential mode or full mode protection.

Integrated module can simplify the design and selection for users, suitable for low-voltage AC or DC power supply.

SETsafe | SETfuse SM20M230A203 series are mainly composed of varistor (MOV), Gas Discharge Tube (GDT), flame retardant case and other metal accessories. Features such as compact size, high integration, and full protection functions. UL、cUL certification and complied with RoHS and REACH.

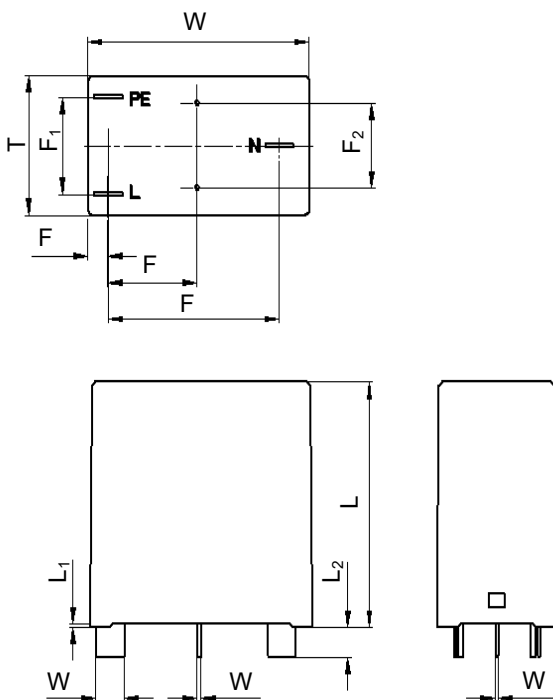
## Features

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

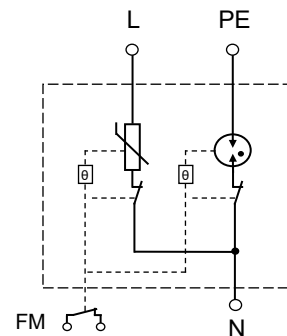
## Applications

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

## Dimensions (Unit : mm)



## Schematics



L	L <sub>1</sub>	L <sub>2</sub>	W
37.0 ± 0.5	0.5 ± 0.2	3.5 ± 0.5	39.0 ± 0.5
W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	T
5.0 ± 0.3	0.8 ± 0.1	0.5 ± 0.1	21.0 ± 0.5
F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>
14.7 ± 0.5	12.8 ± 0.5	3.6 ± 0.5	15.6 ± 0.5
F <sub>5</sub>			
30.1 ± 0.5			

# SPD-M

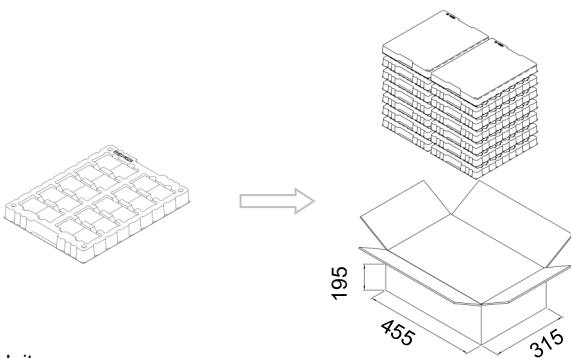
Surge Protective Device Module

SM20M230A203 Series

## Specifications

Features	Specifications	
Model	SM20M230A203	SM20M277A203
Nominal system Voltage ( $U_n$ )	230 VAC	277 VAC
Max. Continuous Operating Voltage ( $U_c$ )	L-N : 320 VAC	L-N : 385 VAC
	N-G : 255 VAC	N-G : 255 VAC
Nominal Discharge Current (8/20 $\mu$ s) ( $I_n$ )	20 kA	20 kA
Maximum Discharge Current (8/20 $\mu$ s) ( $I_{max}$ )	40 kA	40 kA
Voltage Protection Rating ( $U_p$ )	L - N : 1800 V	L - N : 1800 V
	N - PE : 1000 V	N - PE : 1000 V
Protection Mode	1+1 (L-N; N-G)	
Indicator	Black (Normal) / Red (Fault)	
Alarm	Remote Signal	
Max. Main-side Overcurrent Protection	125 A gL/gG	
According to Standard	IEC/EN 61643-11 Class II, UL 1449 Type 4CA	
Installation	PCB	
Operational Temperature Range	(-40 ~ 85) °C	

## Packaging Information



Item	Tray	Carton
Dimensions (mm)	295 × 220	455 × 315 × 195
Quantity (PCS)	78	312

Unit: mm



Please contact us if you have special packaging requirements.

# SPD-M

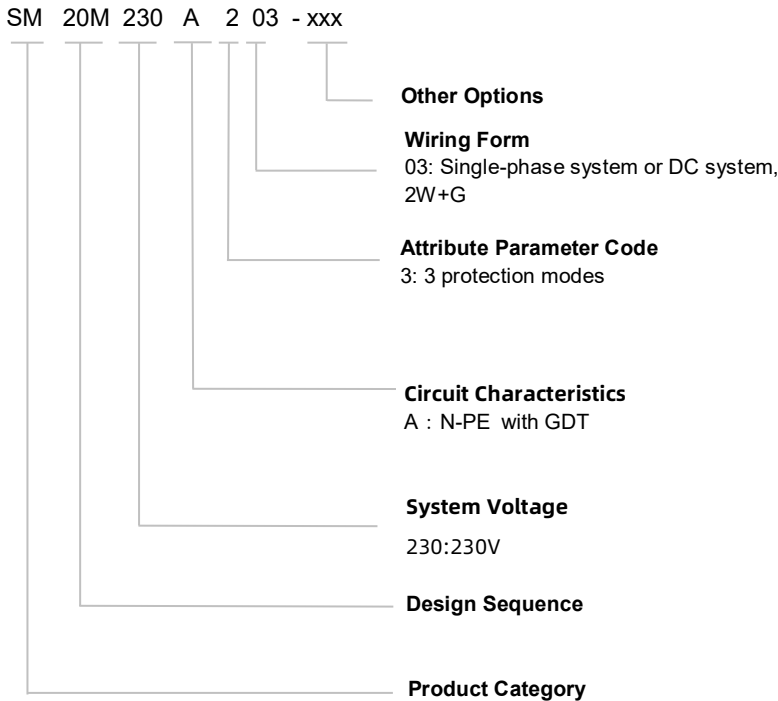
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SM20M230A203 Series

## Agency Information

Agency Symbol		Standards	The File No. and certification No. obtained by SETsafe   SETfuse	Category
	UL	UL 1449	E322662	Type 4CA
	CUL	CSA C22.2 NO. 5	E322662	Type 4CA
Environment	EN	RoHS & REACH	Compliant	

## Part Numbering System



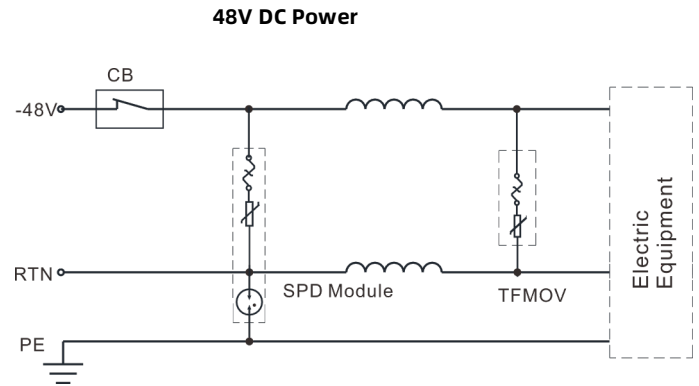
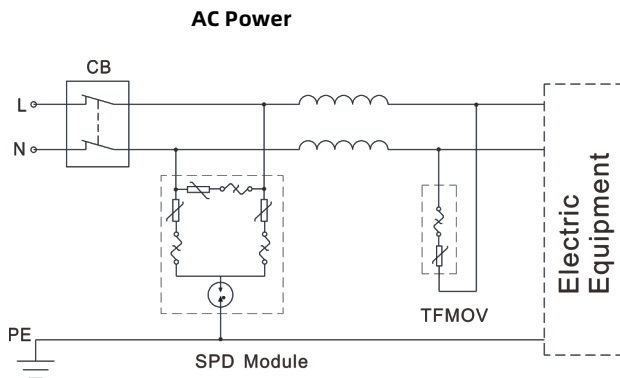
Reminder:  
 Part numbering system in the datasheet is only for selecting correct parameter and product features. Before placing order, please contact us for specifications and use the part number and product code in the specifications to place order to ensure the part is correct. Product code is the unique identification.

# SPD-M

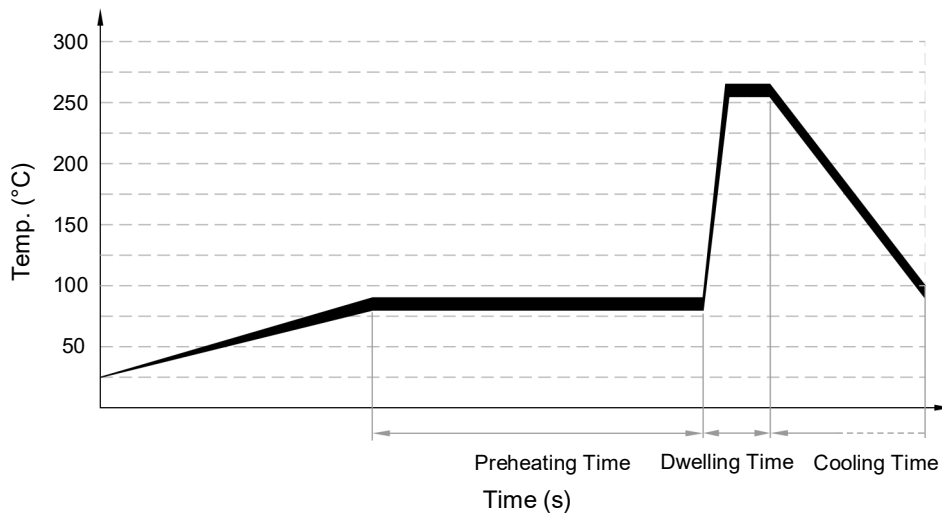
Surge Protective Device Module

SM20M230A203 Series

## Application Options



## 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.

## 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.)

**Glossary**

Item	Description
$U_p$	<p><b>Voltage Protection Level</b>                      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)</p>
8/20 $\mu$ s	<p><b>8/20 Current Impulse</b>                      Current impulse with a nominal virtual front time of 8 <math>\mu</math>s and a nominal time to half-value of 20 <math>\mu</math>s.                      — (IEC 61643-11)</p>
1.2/50 $\mu$ s	<p><b>1.2/50 Voltage Impulse</b>                      Voltage impulse with a nominal virtual front time of 1,2 <math>\mu</math>s and a nominal time to half-value of 50 <math>\mu</math>s.                      — (IEC 61643-11)</p>
$U_c$	<p><b>Maximum Continuous Operating Voltage</b>                      Maximum r.m.s. voltage, which may be continuously applied to the SPD's mode of protection.                      — (IEC 61643-11)</p>
$I_n$	<p><b>Nominal Discharge Current</b>                      Crest value of the current through the SPD having a current waveshape of 8/20.                      — (IEC 61643-11)</p>
$I_{imp}$	<p><b>Impulse Discharge Current for Class I Test</b>                      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)</p>
$I_{max}$	<p><b>Maximum Discharge Current</b>                      Crest value of a current through the SPD having an 8/20 waveshape and magnitude according to the manufacturers specification. <math>I_{max}</math> is equal to or greater than <math>I_n</math>.                      — (IEC 61643-11)</p>
<b>Modes of Protection</b>	<p><b>Modes of Protection</b>                      An intended current path, between terminals that contains protective components, e.g. line-to-line, line-to-earth, line-to-neutral, neutral-to-earth.</p>
<b>IP</b>	<p><b>Degrees of Protection Provided by Enclosure (IP Code)</b>                      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.</p>
<b>TCO</b>	<p><b>Thermal-Link</b>                      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.</p>
<b>ATCO</b>	<p><b>Alloy Thermal-Link</b>                      Alloy Type Thermal-Link, Alloy is the thermal element.</p>



## 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.

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

Rated Voltage $U_n$ (V)		Model	Nominal Discharge Current $I_n$ (kA)		Maximum Continuous Operating Voltage $U_n$ (V)		Page		
			5	10	15	20	AC	DC	
347V	400V							510	
						SM34S751P1GBB		460	
220 - 230V	254 - 277V	SM15S621P3*BB				SM34S621P1GBB		420	
		SM15S561P3*BB				SM34S561P1GBB	SM34S561P2*B#	385	
	SM15S511P3*BB				SM34S511P1GBB	SM34S511P2*B#	350		
	SM15S471P3*BB				SM34S471P1GBB	SM34S471P2*B#	320		
						SM34S431P1GBB	SM34S431P2*B#	300	
110V	120 - 130V							275	
								250	
								230	
	SM15S271P3*BB							210	
	SM15S241P3*BB					SM34S241P1GBB	SM34S241P2*B#	190	
48V	60V	SM15S221P3*BB					SM34S221P2*B#	175	
		SM15S201P3*BB					SM34S201P2*B#	150	
								140	
24V	36V							130	
								115	
								95	
24V	48V							75	100
					SM34S121P1GBB	SM20K121P1*BA			60
						SM34S101P1GBB	SM20K101P1*BA		
24V	60V							50	65
					SM34S820P1GBB	SM20K820P1*BA			40
				SM34S680P1GBB	SM20K680P1*BA			35	45
								30	38
			SM34S470P1GBB						

**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)				Page	
	15	20	30	AC		
347V	400V	○	○	○	510	
		○	○	○	460	
		○	○	○	420	
220 - 230V	254 - 277V	SM15M277A203	SM20M230A203	SM20M230%	SM30M230%	385
		○	○	○	○	350
		SM15M230A203	SM20M277A203	SM08B230N203	○	320
120 - 130V		○	○	○	○	300
		○	○	○	○	275
		○	○	○	○	250
110V		○	○	○	○	230
		○	○	○	○	210
		○	○	○	○	190
60V		○	○	○	○	175
		○	○	○	○	150
		○	○	○	○	140
48V		○	○	○	○	130
		○	○	○	○	115
		○	○	○	○	95
36V		○	○	○	○	75
		○	○	○	○	60
		○	○	○	○	50
24V		○	○	○	○	40
		○	○	○	○	35
		○	○	○	○	30

Maximum Continuous Operating Voltage  $U_n$  (V)

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