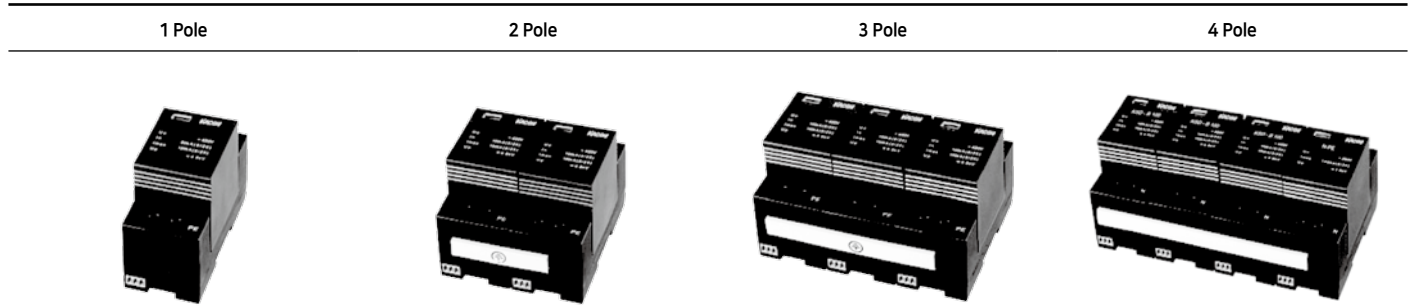


# Surge Protectors Device

## KSD Series

- Designed to improve users' safety
- Excellent convenience in construction and everyday use
- Large capacity nominal current
- Employs a signal connector exclusively for external monitoring

### Maximum discharge current 150kA (Rated discharge current 100kA)

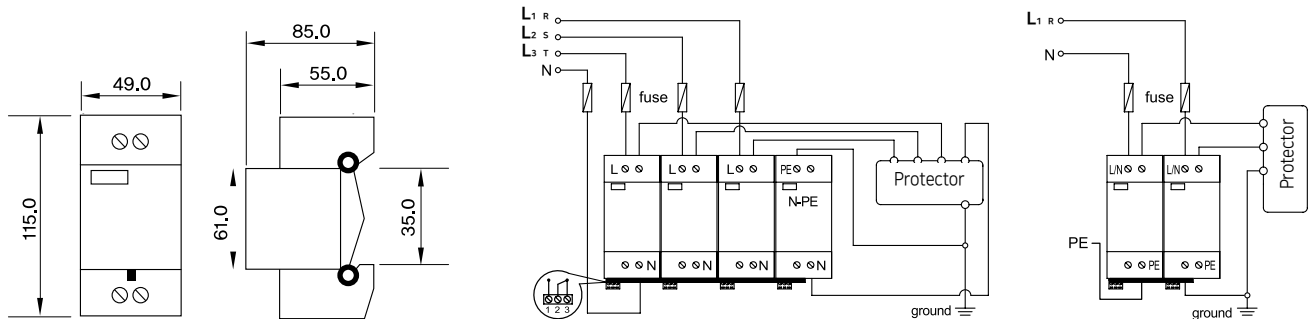


### Product Specification

Part Number	Number of Pole	Voltage Un (V)	Continuous Operating Voltage Uc (V)	Voltage Protection Level Up (kV)	Max. Discharge Current Imax (kA)	Rated discharge current (kA)	Response Time (ns)	Cable (mm <sup>2</sup> )	Overheating Protection Fuse (A) in Series
KSD-B1100 420	1	380VAC	420VAC	≤ 3.2	150	Max. 100	< 25	≥ 35	≤ 100A
KSD-B2100 420	2								
KSD-B3100 420	3								
KSD-B4100 420	3N								

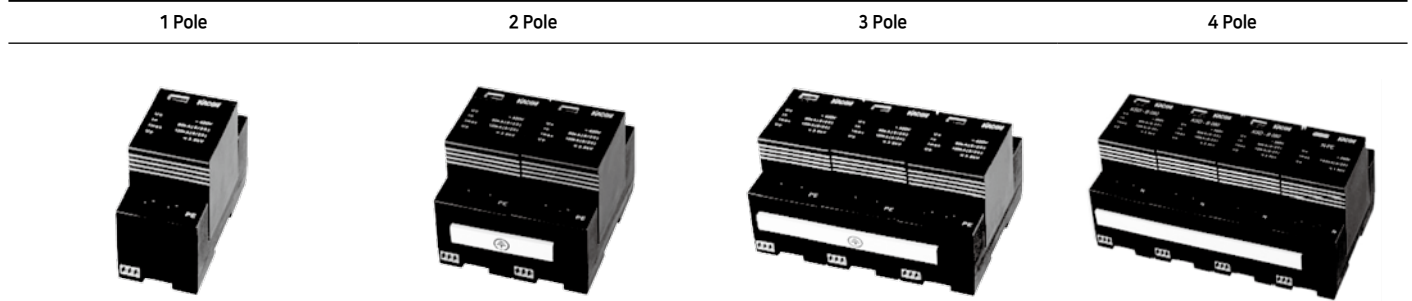
### Dimension

unit : mm





### Maximum discharge current 120kA (Rated discharge current 80kA)

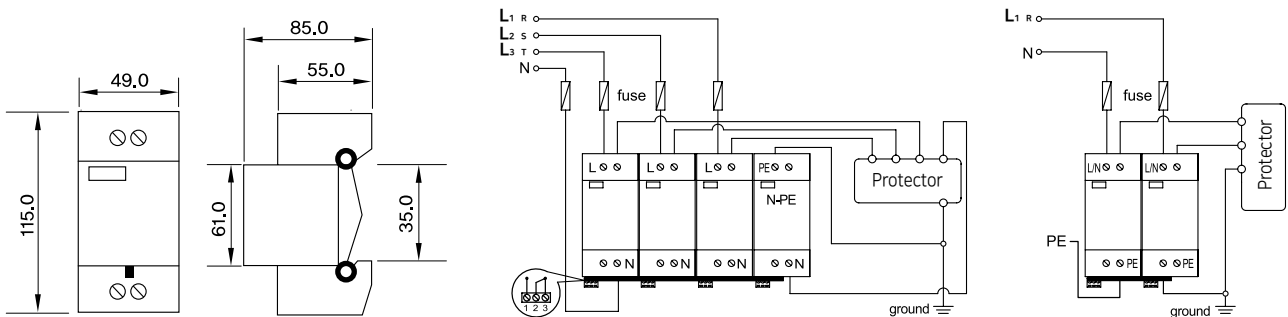


### Product Specification

Part Number	Number of Pole	Voltage Un (V)	Continuous Operating Voltage Uc (V)	Voltage Protection Level Up (kV)	Max. Discharge Current Imax kA	Rated discharge current (kA)	Response Time (ns)	Cable (mm <sup>2</sup> )	Overheating Protection Fuse (A) in Series
KSD-B1080 385	1	220VAC	385VAC	≤ 2.4	120	80	< 25	≥ 35	≤ 100A
KSD-B2080 385	2								
KSD-B3080 385	3								
KSD-B4080 385	3N								
KSD-B1080 420	1	380VAC	420VAC	≤ 2.8	120	80	< 25	≥ 35	≤ 100A
KSD-B2080 420	2								
KSD-B3080 420	3								
KSD-B4080 420	3N								

### Dimension

unit : mm

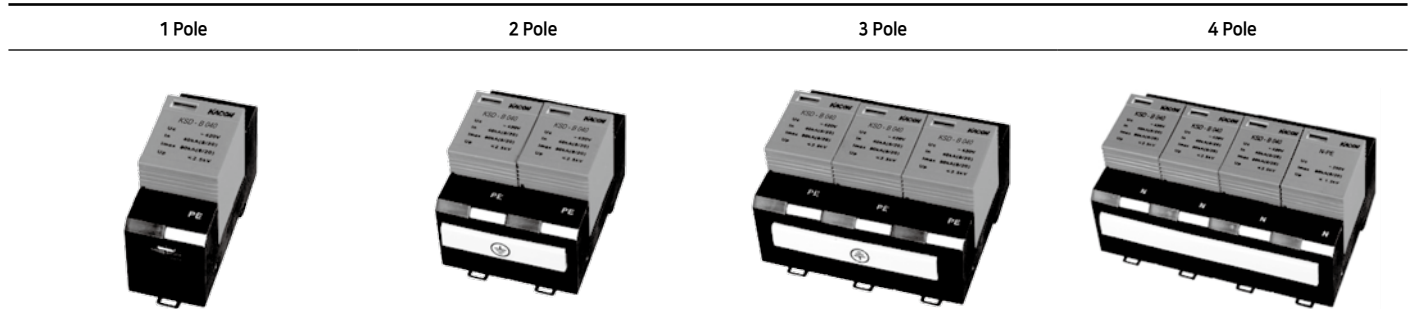


# Surge Protectors Device

## KSD Series

Designed to improve users' safety  
 Excellent convenience in construction and everyday use  
 Compact and pleasing appearance

### Maximum discharge current 80kA (Rated discharge current 40kA)

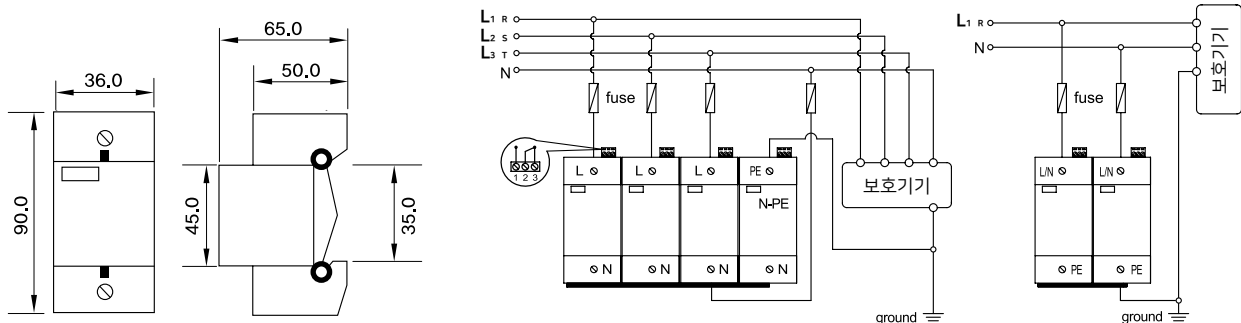


### Product Specification

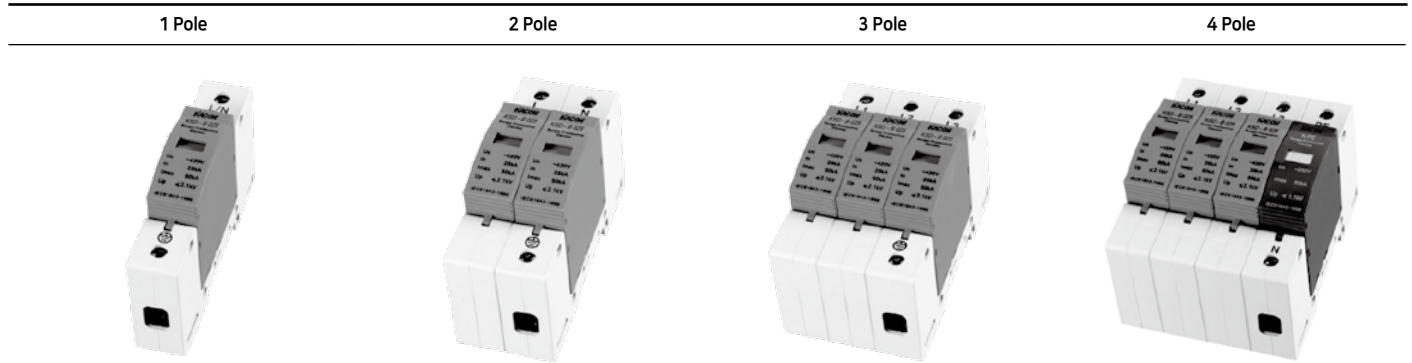
Part Number	Number of Pole	Voltage Un (V)	Continuous Operating Voltage Uc (V)	Voltage Protection Level Up (kV)	Max. Discharge Current Imax (kA)	Rated discharge current (kA)	Response Time (ns)	Cable (mm <sup>2</sup> )	Overheating Protection Fuse (A) in Series
KSD-B1040 385	1	220VAC	385VAC	≤ 2.0	80	40	< 25	≥ 35	≤ 40A
KSD-B2040 385	2								
KSD-B3040 385	3								
KSD-B4040 385	3N								
KSD-B1040 420	1	380VAC	420VAC	≤ 2.2	80	40	< 25	≥ 35	≤ 40A
KSD-B2040 420	2								
KSD-B3040 420	3								
KSD-B4040 420	3N								

### Dimension

unit : mm



Maximum discharge current 50kA (Rated discharge current 25kA)

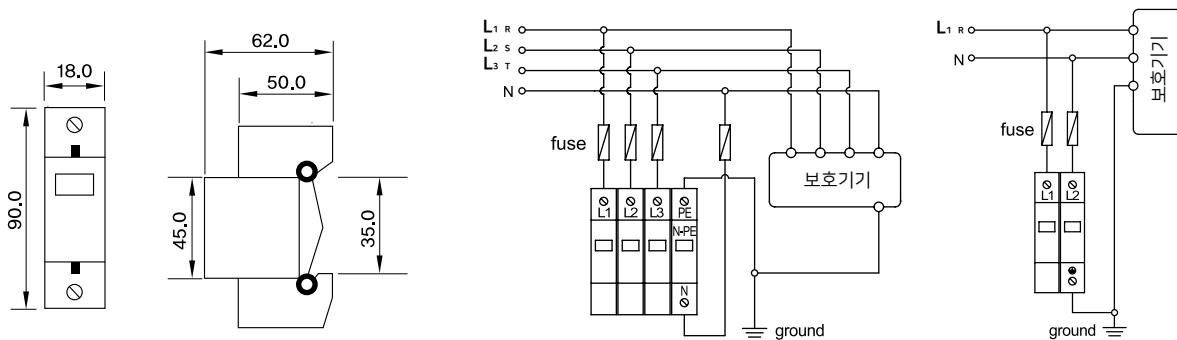


Product Specification

Part Number	Number of Pole	Voltage Un (V)	Continuous Operating Voltage Uc (V)	Voltage Protection Level Up (kV)	Max. Discharge Current I <sub>max</sub> kA	Rated discharge current (kA)	Response Time (ns)	Cable (mm <sup>2</sup> )	Overheating Protection Fuse (A) in Series
KSD-B1025 385	1	220VAC	385VAC	≤ 1.9	50	25	< 25	≥ 16	≤ 20A
KSD-B2025 385	2								
KSD-B3025 385	3								
KSD-B4025 385	3N								
KSD-B1025 420	1	380VAC	420VAC	≤ 2.0	50	25	< 25	≥ 16	≤ 20A
KSD-B2025 420	2								
KSD-B3025 420	3								
KSD-B4025 420	3N								

Dimension

unit : mm

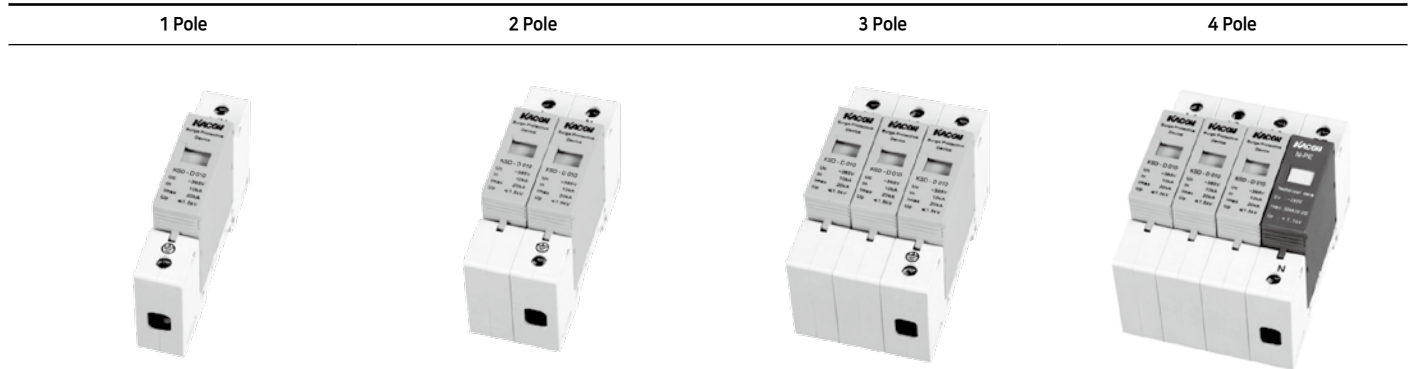


# Surge Protectors Device

## KSD Series

Designed to improve users' safety  
 Excellent convenience in construction and everyday use  
 Compact and pleasing appearance

### Maximum discharge current 20kA (Rated discharge current 10kA)

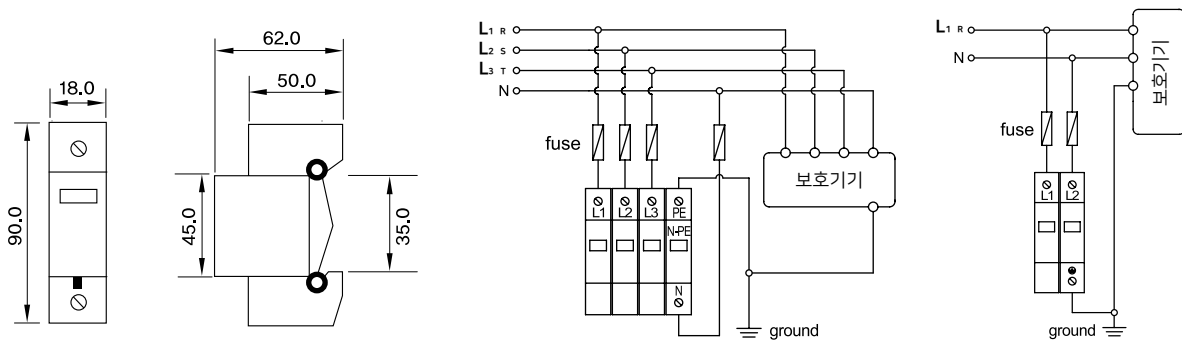


### Product Specification

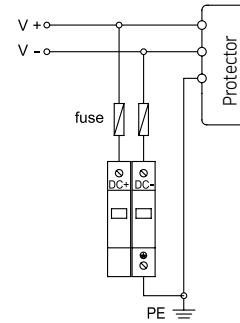
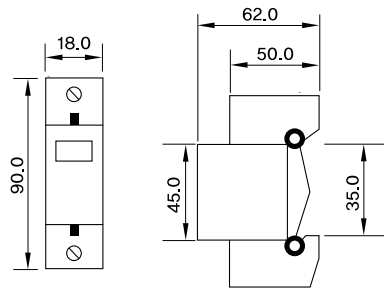
Part Number	Number of Pole	Voltage Un (V)	Continuous Operating Voltage Uc (V)	Voltage Protection Level Up (kV)	Max. Discharge Current Imax kA	Rated discharge current (kA)	Response Time (ns)	Cable (mm <sup>2</sup> )	Overheating Protection Fuse (A) in Series
KSD-D1010 385	1	220VAC	385VAC	≤ 1.5	20	10	< 25	≥ 10	≤ 16A
KSD-D2010 385	2								
KSD-D3010 385	3								
KSD-D4010 385	3N								
KSD-D1010 420	1	380VAC	420VAC	≤ 1.6	20	10	< 25	≥ 10	≤ 16A
KSD-D2010 420	2								
KSD-D3010 420	3								
KSD-D4010 420	3N								

### Dimension

unit : mm



## DC SURGE PROTECTOR



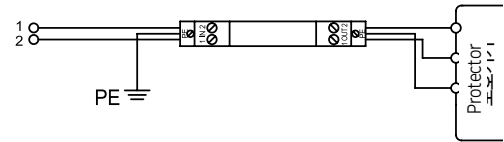
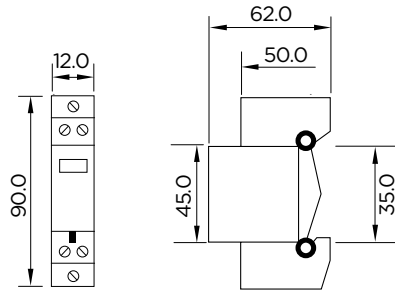
## Product Specification

Part Number	Max. Discharge Current I <sub>max</sub> (kA)	Rated discharge current (kA)	Voltage Protection Level U <sub>p</sub> (V)	Voltage U <sub>n</sub> (V)	Continuous Operating Voltage U <sub>c</sub> (V)	Cable (mm <sup>2</sup> )	Overheating Protection Fuse (A) in Series
KSD-0524	10	5	150	24VDC	32VDC	≥6	10A
KSD-1024	20	10	200	24VDC	32VDC	≥6	16A
KSD-2048	40	20	350	48VDC	62VDC	≥10	16A

# Surge Protectors Device

KSD Series

## COMMUNICATION SURGE PROTECTOR



### Product Specification

Part Number	Rated Voltage Un	Rated discharge current (kA)	Voltage Limit (VDC)	Transmission Speed (Mbps)	Plug-in Damage (dB)	Connection Method
KSD-CH06	6VDC		7VDC			1,2
KSD-CH12	12VDC	5kA	15VDC	10	≤ 0.5	1,2
KSD-CH24	24VDC		28VDC			1,2

### Precautions in Installations

- o Be sure to read the instruction manual and safety precautions before using the product.
- o Please make the product instruction manual available to the next user or to the repair manager.

#### Safety Precautions

Be aware of the safety precautions, dangers, etc. before handling, wiring, manipulating, and conducting inspections. Please observe the details regarding safe handling of the product.

#### Danger

- Always follow the instructions. Failure to follow the instructions may result in death or serious injury.
1. Make sure that the upstream breaker is turned OFF at all times. There are dangers of electric shock during installation.
  2. Be careful not to get in contact with the exposed parts of the terminals. It can cause electric shocks or short circuits.
  3. Be careful not to get in contact with two exposed live wires. It can cause electric shock.

#### Precautions

Observe the following to avoid to avoid injury.

1. Make sure to read the precautions before installation, and follow the instructions during installation.
2. A faulty installation can lead to a malfunction of the product and/or accident. Installation, maintenance, and repairs of surge protectors should be conducted by qualified personnel (electric technicians).
3. Please avoid installations at places exposed to rain, oil, dust, direct sunlight, etc. There are dangers of an electric shock, electric leakage, short circuit, fire, malfunction, etc.
  - 1) Application temperature: 40 ~ 70°C
  - 2) Relative humidity: 40 ~ 85%
  - 3) Altitude: Lower than 2000 m
- 4) Do not install the product at places susceptible to abnormal vibration, impact, excessive moisture, oil, smog, dust, corrosive gas, etc.
4. Connect the product to the rated power. Unrated power can lead to a malfunction or breakdown.
5. Insufficient fastening torque can cause excessive heat or fire. Firmly affix the terminal units in accordance with the specified fastening torque in the instruction manual of the product.
6. Install the connecting conductors parallel to each phase when fixing the terminals. Otherwise, there are dangers of short circuits between phases.
7. Do not conduct insulation resistance measurements, or withstand voltage tests between phases. Detach the product from the circuits when conducting the said tests on the circuit lines. Otherwise, there are high risks of breakdowns.
8. Be sure to ground the earth terminals of the electric devices.
9. Unearthed terminals can cause electric shock or fire.
10. Do not conduct unauthorized remodeling of the product.
11. Discard the product in accordance with the Wastes Control Act.

## Considerations in Installations

- o The performance of the surge protectors may differ, depending on the installation methods.
- o Please consider the following details for the installation.

### 1) Protection and Installation Method

To protect various power distribution systems, the installation of surge protectors with sufficient surge capacities at the entrance of the panelboards are highly recommended if the devices and equipment to be protected have sufficient overvoltage withstanding capacity.

### 2) Reciprocal Vibration Phenomena

In cases where the devices and equipment to be protected are far distant from the surge protectors, about two-fold limit voltages of the surge protectors can occur to said equipment due to reciprocal vibrations of plunging surges. Such reciprocal vibrations of surges can be disregarded if the wirings are shorter than 10 m; however, as two-fold voltage can occur even in wirings shorter than 10 m, surge absorbers and protectors inside the devices and equipment must be harmonized.

### 3) Connection Wire Length

To achieve the best possible over-voltage protection, the connection wires for the surge protector should be shortened to restrict inductive voltages.

### 4) Necessity of Additional Protection

When comparatively low lightning surge voltages plunge into the devices and equipment to be protected, it may be enough to install surge protectors at building entrances. If a magnetic field occurs within the building due to lightning discharging electricity, additional protective devices can be used to protect precision equipment, such as computers that are positioned far from the surge protectors installed at the entrance.

### 5) Selection of Surge Protector Installation Places Based on Rating Tests

It is highly recommended to select surge protectors with appropriate specifications by considering lightning surge voltages or over-voltages due to low-voltage wiring systems.

### 6) Concept of Protection Area

In the designs and applications of appropriate surge protectors, it is most recommended to classify the protection areas based on the protection areas regulated in IEC, departmentalize the wiring systems, and install surge protectors at the boundaries of the protection areas.

## Characteristics of surge Protectors

MOV is the most reliable technology for attenuating surge voltages. The clamping characteristics of MOV allow it to be applied in more than 95% of SPD for power supplies.

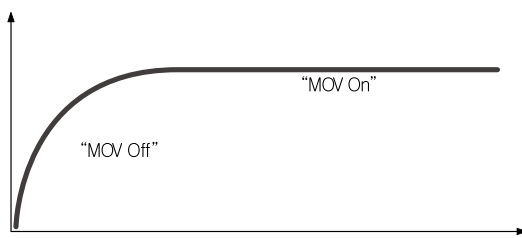
The silicon avalanche diodes (SAD) are frequently used in data cables and communication lines.

The following are the representative characteristics of MOV:

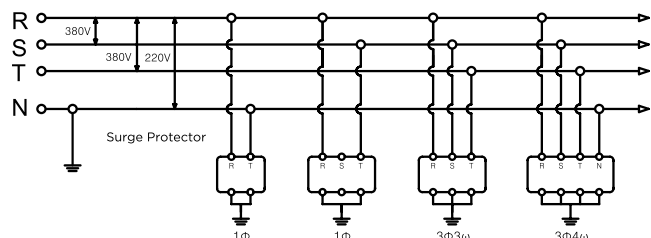
Almost no current leakage at ceiling voltages.

The higher the voltage is, the more the current leaks.

The voltage drop will not increase even at higher current flows.



SPD Voltage and Current Characteristic Curves



When 380V is applied between phases, the voltage changes to 220V at the surge protector due to the earth potential difference since the earth protector is grounded.

The surge protector should be selected and installed after considering the maximum continuous operating voltage (MCOV) and the voltage protection level (Up).