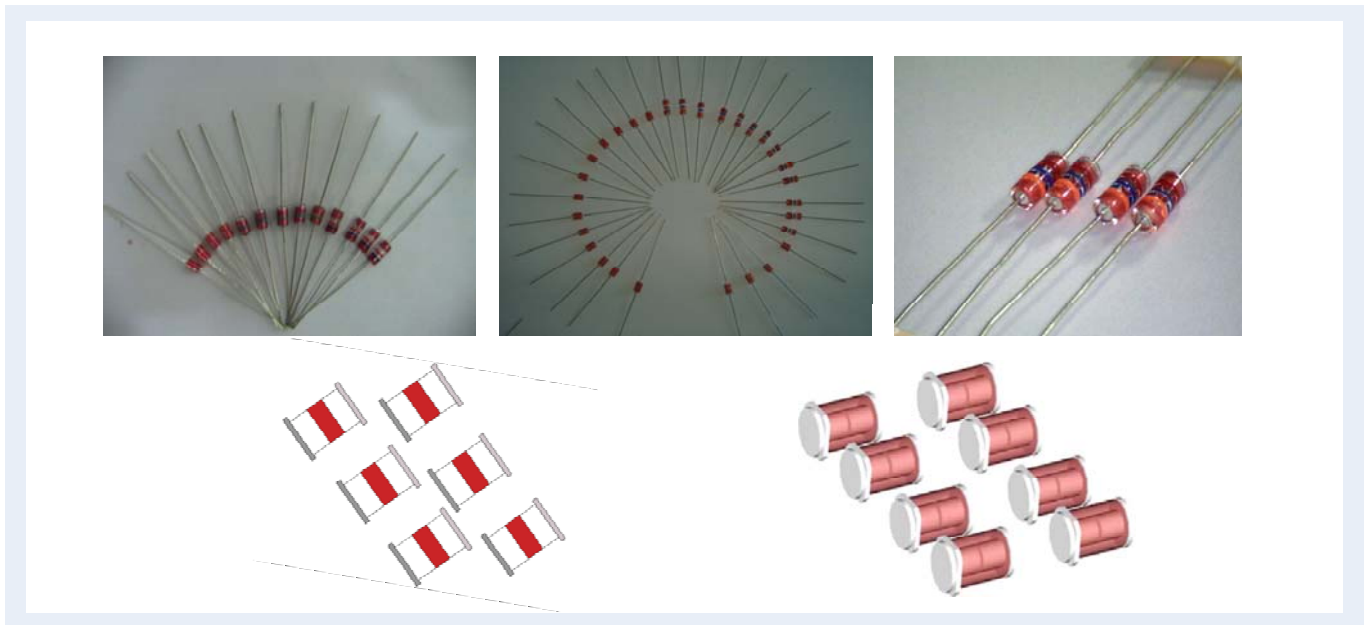


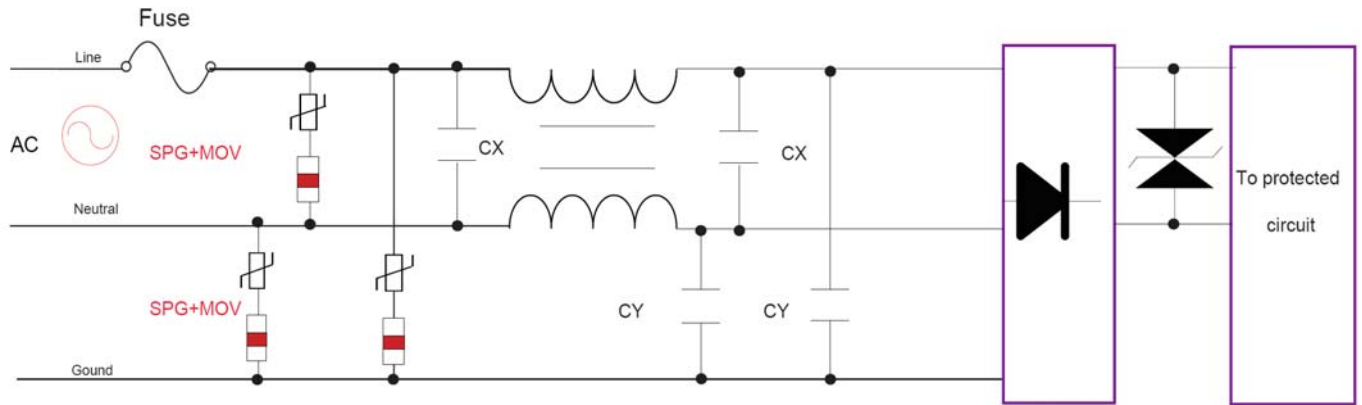
SPark Gap Protectors

SPG(SPark Gap Discharge Tube) is enclosed in glass tube and magnesium wire. There is distance between electrodes and chip inside the tube which SPG uses to discharge. Inside the tube, it impresses pressure noble gasses.



- It responds extremely fast, less than 1ns.
- It is a switching type lightning surge protection component which is paralleled in the circuit.
- It has wide range voltage from 70V to 6000V. There are several different surge current ability SPGs, such as 500A, 1000A, 2000A and 3000A.
- Its dimension is very small, the smallest is $\Phi 1.4 \times 3.4$.
- Within the same voltage specification, SPG's residual voltage is the lowest in gas switching type component.
- Low capacitance, less than 1pF.
- It has no polarity, easy to install.
- High insulating resistance, not easy to fatigue, strong reliability. Its resistance maintains very high in humid environment for long time. Other protecting components can't realize this property.
- It is used in protecting high frequency communication lines. But it is not used in AC circuit directly.

Because there exists follow current in SPG, it is not used in protecting AC circuit directly. It must be added clamping type protecting component (MOV or Hyperfix etc) in AC product.



SPG is used widely in protecting consumer communication products' semiconductor and sensitive component from transient over-voltage.

- Transient over-voltage protection in communication device: such as ADSL, MODEM, CATV, IC card telephone, switcher, network card, splitter, fax machine & RS485/232 etc.
- Electronic device's ESD protection: CRT, vehicle audio system, ESD & EMC protecting etc.
- Over voltage lightning protection of electric equipment's power: frequency conversion air conditioner, fax machine & small household appliance etc.

Brightking SPG products comply with RoHS WEEE compliant and meet the following test standards: IEC61000-4-5, ITU K21 & UL etc.

The guide of selecting GDT

ELECTRICAL CHARACTERISTICS



Part Number	DC Spark-Over Voltage	Minimum Insulation Resistance		Maximu Capacitance (1KHz-6V _{MAX})	Surge current capacity (8/20μs)
	V _s (V)	Test Voltage(V)	IR _{OHM} (MΩ)	C(pf)	(A)
BK2XX00702-M	140	50	100	0.8	1000
BK2XX01002-M	200	100	100	0.8	1000

- DC spark-over voltage: It is defined as DC breakdown voltage tested at 100V/S rise voltage. Discharge current is less than 0.5mA. The tolerance is about $\pm 10\%$, $\pm 20\%$ and $\pm 30\%$ of nominal DC breakdown voltage based on different specification.
- Insulation Resistance: It is defined as insulating resistance. It is tested in certain voltage within one minute.
- Maximum Capacitance: Maximum off-state capacitance tested in 1KHz-6V.
- Surge current capability: Withstanding surge current capability based on certain lightning waveform.

How to Select SPG's voltage

- DC spark-over voltage: DC spark-over voltage should be higher than the maximum working voltage of protected circuit.
- Because the impulse breakdown voltage is very high, it needs to add secondary lightning protection in selection and designing. In this way the protected IC will not be damaged by high residual voltage.

How to Select SPG's surge current

- Usually we select SPG's surge current and package dimension based on lightning test standard of customer's product.