

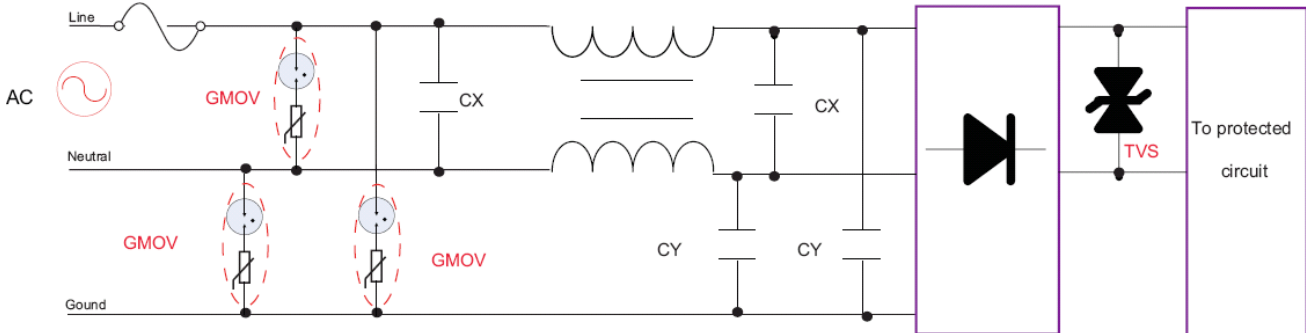
## Gas Discharge Tubes

GDT(Gas Discharge Tube) composes of two or more metal electrodes. There is distance between electrodes and impressed pressure noble gasses inside the tube. It is a device which is enclosed in ceramic tube, so it is called ceramic gas discharge tube.



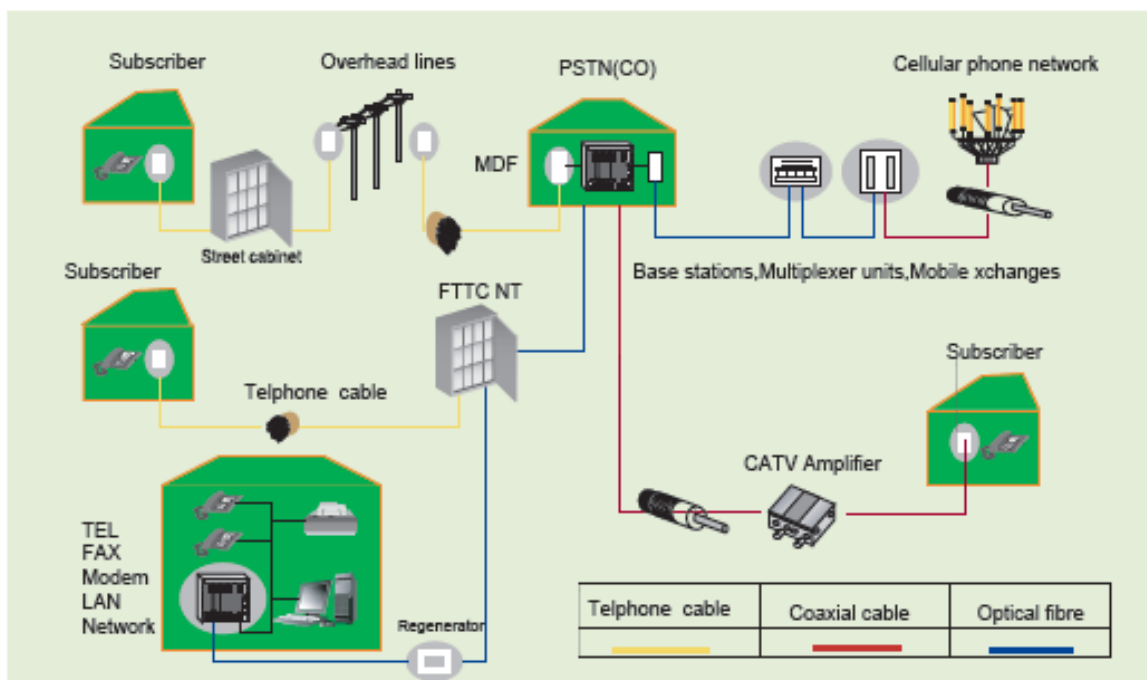
- It responds very fast, less than 100ns.
- It is a switching type lightning surge protection component which is paralleled in the circuit.
- It has wide range voltage from 70V to 6000V, surge current ability ranges from dozens amperes to hundreds of amperes.
- It has various package dimension:  $\Phi 5.5*6$ 、 $\Phi 5.0*7.2$ 、 $\Phi 8*6$ 、 $\Phi 8*8$ 、 $\Phi 8*10$ 、 $\Phi 11$ 、 $\Phi 20$ 、 $\Phi 25$ 、 $\Phi 32$ 、 $6.2*4.2$ 、 $4.0*4.2$ 、1812 (4532)、1206.
- Very low capacitance, several pF
- It has no polarity and is easy to install.
- Very high impedance, not easy to fatigue, strong reliability.
- It is used in protecting high frequency communication lines. But it is not used in AC circuit directly.

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



GDT 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 interface, antenna, base station & duplexer etc.
- Its voltage should be higher than protecting product's safe voltage. Usually there is secondary protection in selection and designing.



Brightking GDT products comply with RoHS WEEE compliant and meet the following test standards: IEC61000-4-5, GB9043, ITU K21, IEC61643-311, GR1089 & UL etc.

## The guide of selecting GDT

### ELECTRICAL CHARACTERISTICS

Part Number	Impulse Spark-over Voltage	Maximum Impulse Spark-over Voltage	Maximum Surge Discharge Current	AC Discharge Current	Impulse Life	Minimum Insulation Resistance		Maximum Capacitance
	100V/s	1KV/ $\mu$ s	8/20 $\mu$ s, 10 times	50Hz, 1sec	10/1000 $\mu$ s, 100A	Test voltage	(G $\Omega$ )	1MHz
	(V)	(V)	(KA)	(A)	(times)	DC(V)		(pF)
2RK075M-4	75 $\pm$ 20%	800	3	3	300	25	1	1.0
2RK090M-4	90 $\pm$ 20%	800	3	3	300	50	1	1.0
2RK145M-4	145 $\pm$ 20%	800	3	3	300	50	1	1.0
2RK230M-4	230 $\pm$ 20%	700	3	3	300	100	1	1.0
2RK250M-4	250 $\pm$ 20%	700	3	3	300	100	1	1.0

- DC spark-over voltage: It is defined as DC breakdown voltage tested at 100V/S or 1000V/S rise voltage. Usually the tolerance is about  $\pm 20\%$  of nominal DC breakdown voltage.
- Impulse spark-over voltage: It is defined as impulse breakdown voltage tested at 100V/ $\mu$ S or 1000V/ $\mu$ S rise voltage.
- Nominal impulse discharge current : It is defined as lightning impulse discharge current which the GDT can withstand at the waveform of 8/20 $\mu$ s.
- AC discharge current: It is defined as withstanding AC power frequency current ability at 50HZ.
- Insulation resistance: It is the impedance tested in certain voltage between the discharge tube.
- Capacitance: It is the capacitance between the tube's two electrodes.

### How to Select GDT'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 GDT's surge current

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