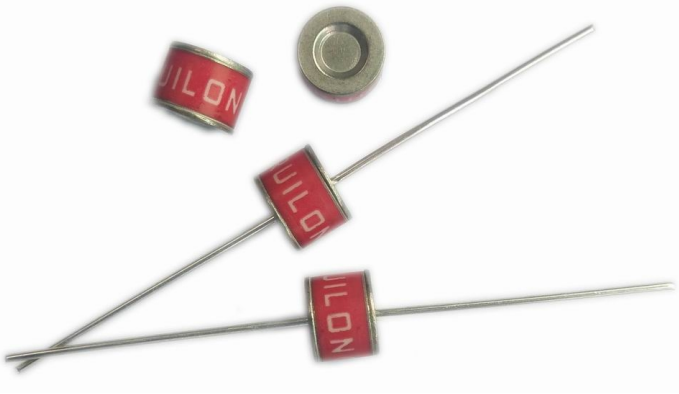
Gas Discharge Tubes(GDT) 2R-8(1000~4500V)

Description

2R-8 Gas Discharge Tubes (GDT) series provides high levels of protection against fast rising transients caused by lightning disturbances. Offered in a miniature surface mount package, it has a surge rating of 10KA/5KA8/20μs.

2R-8 GDTs are high voltage (1000-4500V) components designed for surge protection and high isolation applications. It is also suitable for applications for which bias voltage or signal levels of several hundred volts are normally present. 2R-8 GDTs can be used in conjunction with MOVs (Metal Oxide Varistors) to provide superior protection performance for AC applications.



Agency Approvals

Agency	Standards	Certificate No.
	UL1449	E479668
	UL1449	E508408
	EN 61643-311 IEC 61643-311	J50571931

Features

- Voltage Ranges 1000V to 4500V
- Excellent response to fast rising transients
- 8/20μs Impulse current capability: 10KA/5KA
- Non-Radioactive
- Ultra Low capacitance (<1.5pF)
- Size: Φ8mm*6mm
- Storage and operational temperature: -40~+125°C

Applications

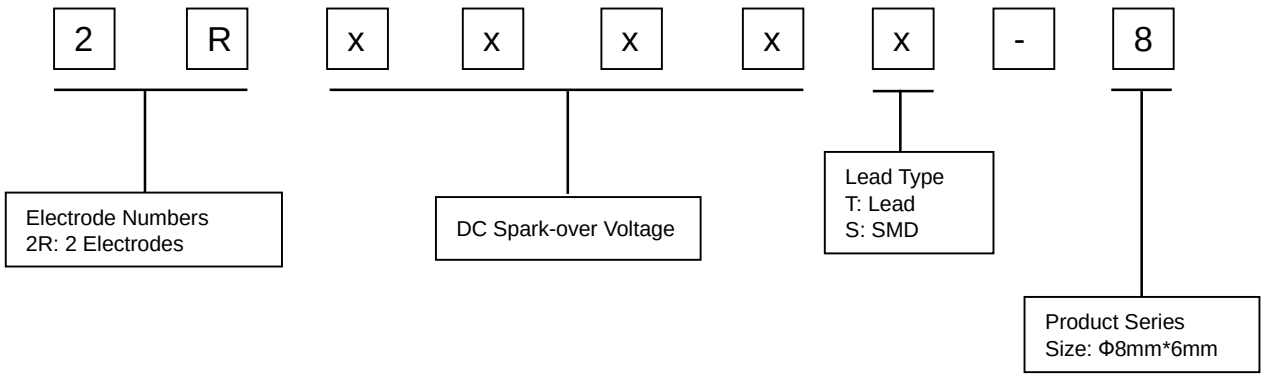
Automotive:

- On-board chargers
- Vehicle charging stations

Others:

- LED lighting
- Power supply
- Photovoltaic
- Air conditioning

Part Number Code



Gas Discharge Tubes(GDT) 2R-8(1000~4500V)

Electrical Characteristics

Part Number		DC Spark-over Voltage [1) 2)] @100V/S	Impulse Spark-over Voltage		Insulation Resistance [3)]	Capacitance @1MHz	Glow Voltage @10mA	Arc Voltage @1A	AC withstand voltage @5mA 1Min	Life Ratings		
			100V/μS	1KV/μS						Impulse Discharge Current @8/20μS		Alternating Discharge Current @50Hz 1S
			Max	Max	Min	Max	Typical	Typical		±5 times	1 time	5 times
DIP	SMD	V	V	V	GΩ	pF	V	V	V	KA	KA	A
2R1000T-8	2R1000S-8	1000±20%	1400	1500	1	1.5	160	15	500	10	15	5
2R1200T-8	2R1200S-8	1200±20%	1700	1800	1	1.5	160	15	600	10	15	5
2R1400T-8	2R1400S-8	1400±20%	1900	2000	1	1.5	235	18	700	10	15	5
2R1500T-8	2R1500S-8	1500±20%	2100	2300	1	1.5	235	18	750	10	15	5
2R1600T-8	2R1600S-8	1600±20%	2300	2500	1	1.5	235	18	800	10	15	5
2R1800T-8	2R1800S-8	1800±20%	2600	2800	1	1.5	235	18	900	10	15	5
2R2000T-8	2R2000S-8	2000±20%	2800	3000	1	1.5	235	18	1000	5	10	2.5
2R2400T-8	2R2400S-8	2400±20%	3500	3700	1	1.5	260	30	1200	5	10	2.5
2R2500T-8	2R2500S-8	2500±20%	3600	3800	1	1.5	260	30	1300	5	10	2.5
2R2700T-8	2R2700S-8	2300~3240	3700	3900	1	1.5	260	30	1500	5	10	2.5
2R3000T-8	2R3000S-8	3000±20%	3800	4000	1	1.5	260	30	1600	5	10	2.5
2R3600T-8	2R3600S-8	3600±20%	4400	4600	1	1.5	260	30	1900	5	10	2.5
2R4000T-8	2R4000S-8	4000±20%	4800	5000	1	1.5	280	35	2100	5	10	2.5
2R4500T-8	2R4500S-8	4500±20%	5800	6000	1	1.5	280	35	2300	5	10	2.5

Glow to Arc transition Current……....	~0.5A
Weight……....	DIP ~1.2g SMD ~0.95g
Operation and storage temperature…….	-40~+125°C
Climatic category (IEC 60068-1)……..	40/125/21
Marking, red negative……...	**RUILON XXX Y** XXX -Nominal voltage Y -Year of production
Surface treatment……....	DIP -Nickel Plated SMD -Matte-tin plated

[1)] At delivery AQL 0.65 level II, DIN ISO 2859.

[2)] In ionized mode.

[3)] Insulation Resistance Measuring Voltage at DC 100V.

Terms in accordance with ITU-T Rec. K.12, IEC 61643-311, GB/T18802.311.

Gas Discharge Tubes(GDT) 2R-8(1000~4500V)

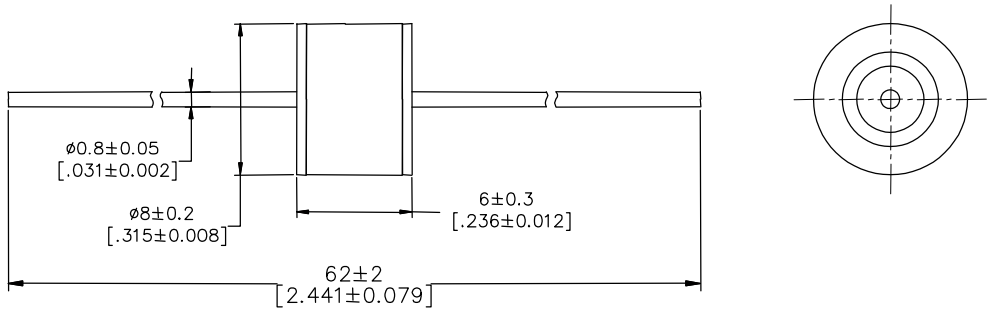
Certifications table

Part Number				
DIP	SMD	UL1449 E479668	UL1449 E508408	EN 61643-311 IEC 61643-311
2R1000T-8	2R1000S-8	●	--	--
2R1200T-8	2R1200S-8	--	--	--
2R1400T-8	2R1400S-8	●	--	--
2R1500T-8	2R1500S-8	--	●	--
2R1600T-8	2R1600S-8	●	--	--
2R1800T-8	2R1800S-8	--	--	--
2R2000T-8	2R2000S-8	●	--	●
2R2400T-8	2R2400S-8	●	--	--
2R2500T-8	2R2500S-8	●	--	●
2R2700T-8	2R2700S-8	●	--	--
2R3000T-8	2R3000S-8	●	--	●
2R3600T-8	2R3600S-8	●	--	●
2R4000T-8	2R4000S-8	●	--	--
2R4500T-8	2R4500S-8	●	--	--

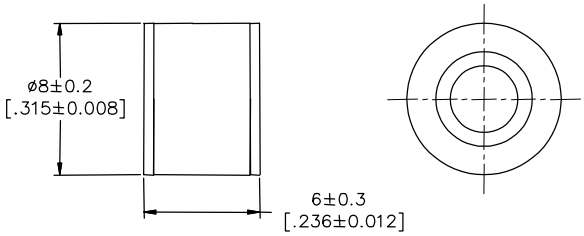
Notes:
1. ● indicates that the product has passed the certification.
2. -- indicates that the product is not certified.

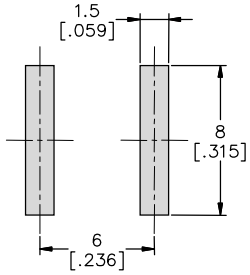
Dimensions (Unit: mm/inch)

DIP Series (2RxxxxT-8)



SMD Series (2RxxxxS-8)



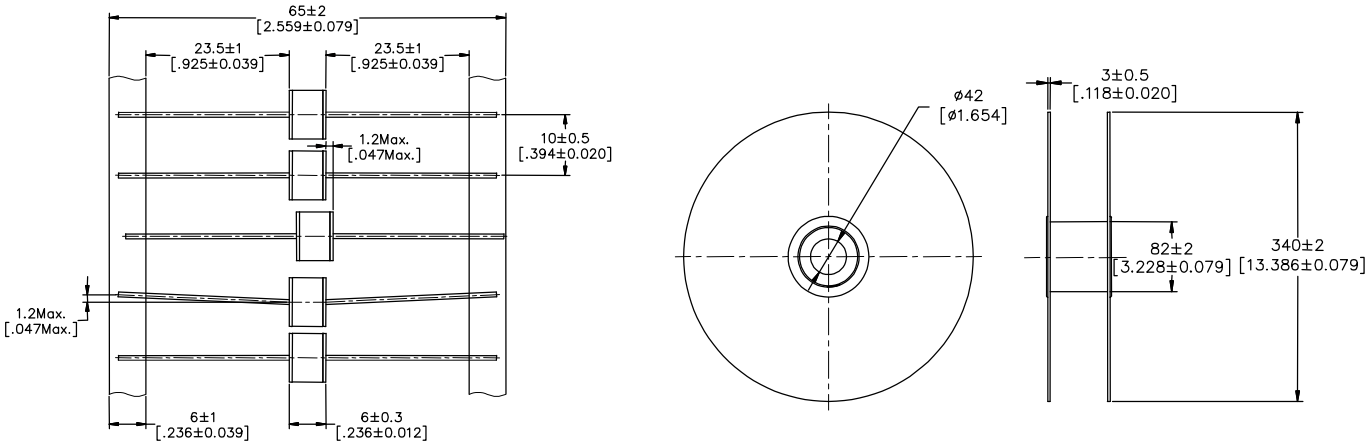


Recommended Soldering Pad Layout

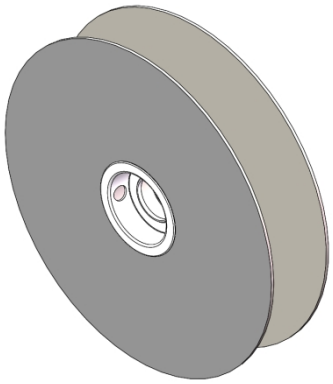
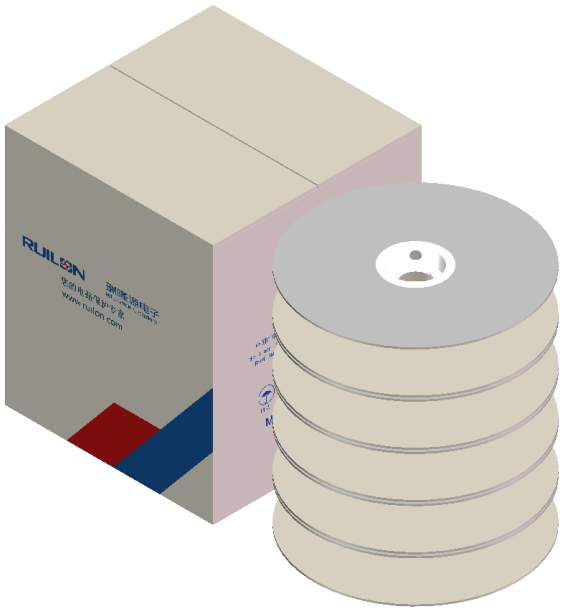
Packaging Information

Axial Packaging (Tape & Reel)

Tape **Reel**

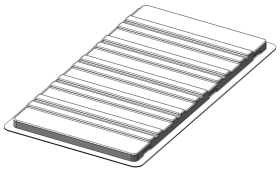
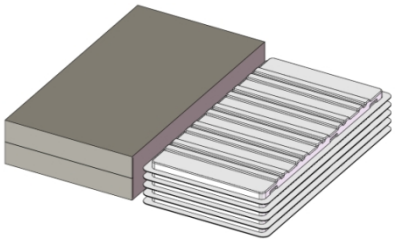
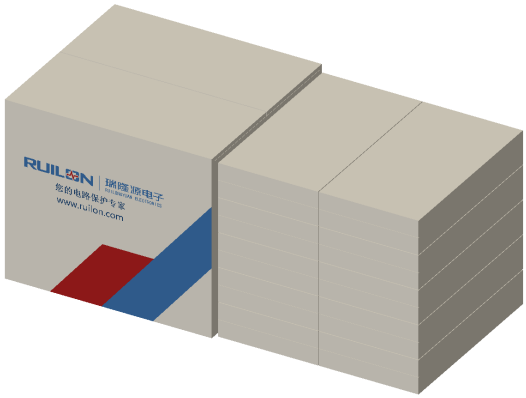


According to IEC 60286-1

	Reel	Carton
Size	340×78mm	350×350×407mm
Quantity	MPQ/MOQ: 1 reel=800pcs	1 Carton=5 reels =4,000pcs
Photos		

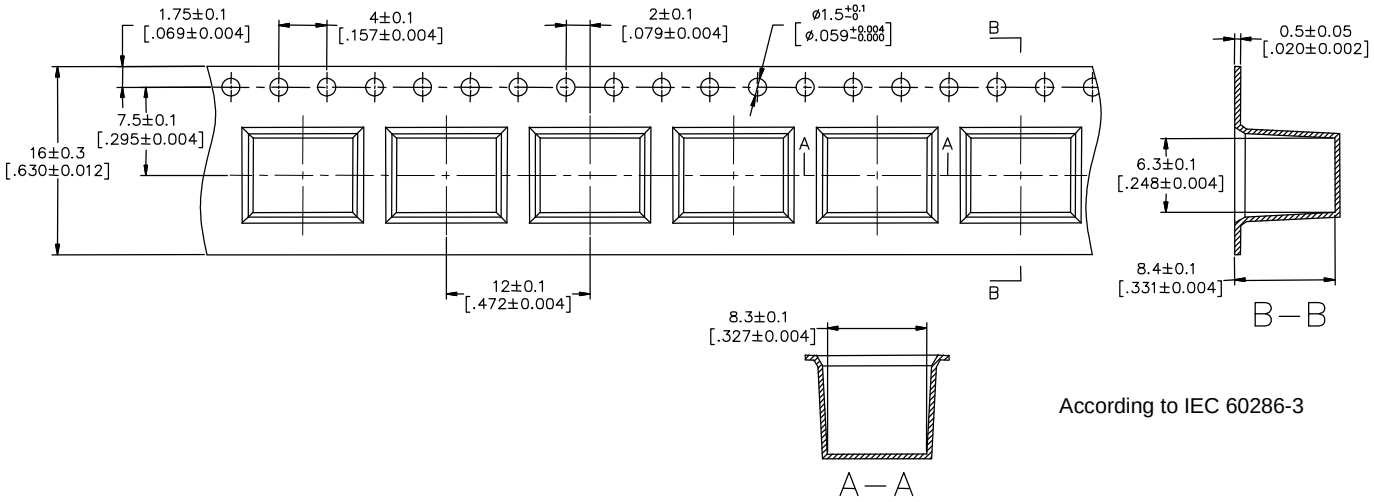
Gas Discharge Tubes(GDT) 2R-8(1000~4500V)

Axial Packaging (Bulk)

	PVC tray	Inner Box	Carton
Size	265×148×10mm	275×150×50mm	315×290×272mm
Quantity	MPQ: 1 tray=100pcs	MOQ: 1 Inner Box=5 trays=500pcs	1 Carton=10 Inner boxes=5,000pcs
Photos			

SMD Packaging (Tape & Reel)

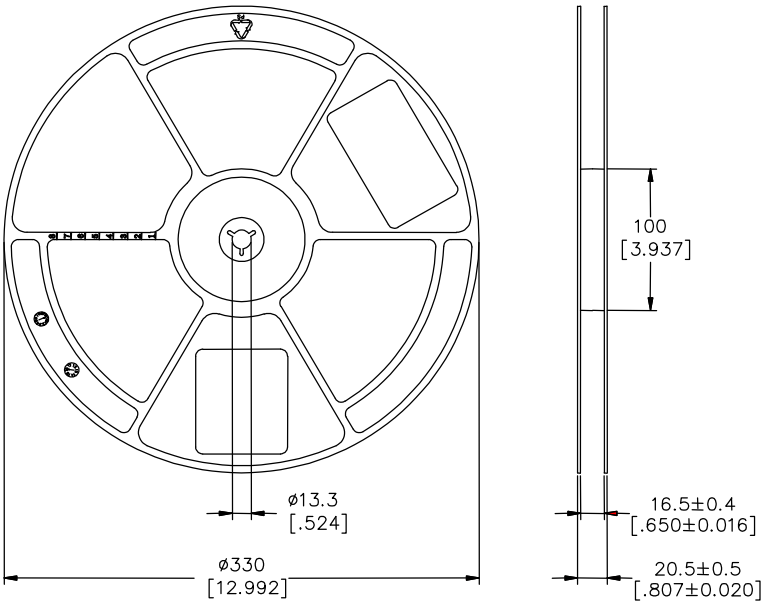
Tape

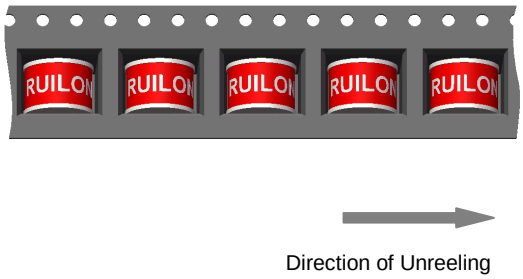


According to IEC 60286-3

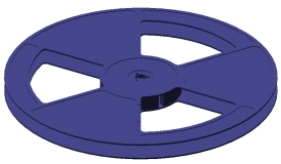
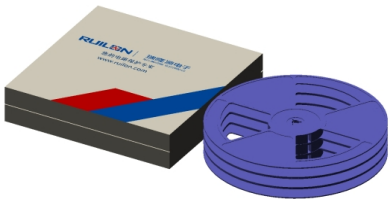
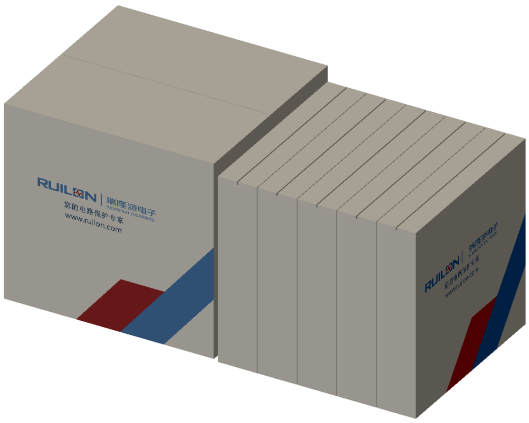
Gas Discharge Tubes(GDT) 2R-8(1000~4500V)

Reel



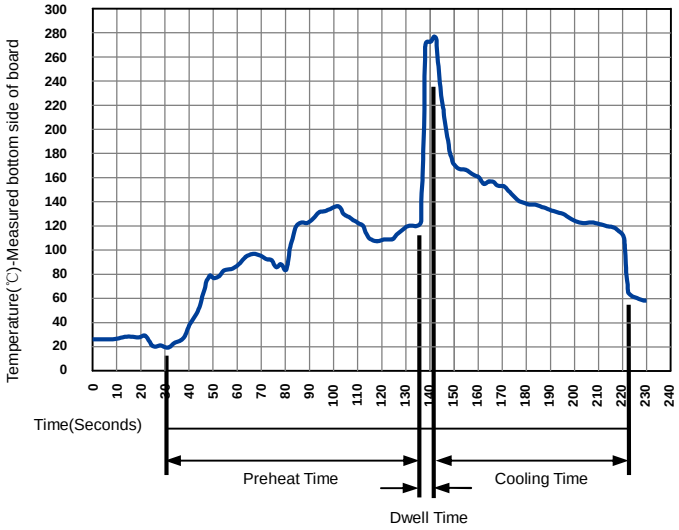


Direction of Unreeling

	Reel	Inner Box	Carton
Size	330×20.5mm	340×333×70mm	375×353×380mm
Quantity	MPQ/MOQ: 1 reel=500pcs	1 Inner Box=3 reels=1,500pcs	1 Carton=5 Inner boxes=7,500pcs
Photos			

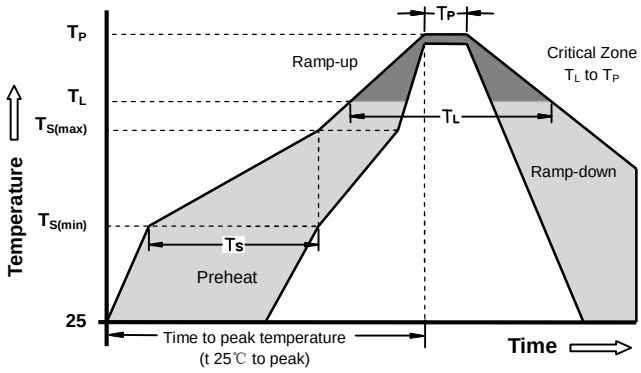
Gas Discharge Tubes(GDT) 2R-8(1000~4500V)

Soldering Parameters - Wave soldering (Thru-Hole Devices)



Wave Soldering Condition		Pb-Free assembly
Preheat	Temperature Min	100°C
	Temperature Max	150°C
	Time (Min to Max)	60-180 Seconds
Solder Pot Temperature		280°C Max
Solder Dwell Time		2-5 Seconds

Soldering Parameters - Reflow Soldering (Surface Mount Devices)



Reflow Condition		Pb - Free assembly
Preheat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 -180 Seconds
Average ramp up rate (Liquids Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		5°C/second max
Reflow	- Temperature (T_L) (Liquids)	217°C
	- Time (min to max) (t_s)	60 -150 Seconds
Peak Temperature (T_P)		260 +0/-5°C
Time within 5°C of actual peak Temperature (t_p)		10 - 30 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		260°C

Surface mounted components (SMD) may exhibit a temporary increase in the DC spark-over voltage after the solder reflow process. The components will recover within 24 hours. There is no quality defect nor change in protection levels during the temporary change in DC spark-over voltage.

Terms and definitions

NO.	Item	Definitions
1	**Gas discharge tube(GDT)**	A gap, or several gaps, in an enclosed discharge medium, other than air at atmospheric pressure, designed to protect apparatus or personnel, or both, from high transient voltages. Also referred to as "gas tube surge arrester".
2	**DC Spark-over Voltage**	The voltage at which the gas discharge tube sparks over with slowly increasing d.c. voltage.
3	**Impulse Spark-over Voltage**	The highest voltage which appears across the terminals of a gas discharge tube in the period between the application of an impulse of given wave-shape and the time when current begins to flow.
5	**Arc voltage**	Voltage drop across the GDT during arc current flow.
6	**Glow voltage**	Peak value of voltage drop across the GDT when a glow current is flowing.
7	**Impulse discharge current 8/20μs**	Current impulse with a nominal virtual front time of 8 μs and a nominal time to half-value of 20 μs.
8	**Alternating Discharge Current**	The rms value of an approximately sinusoidal alternating current passing through the gas discharge tube.
9	**Insulation Resistance**	Insulation resistance shall be measured from each terminal to every other terminal of the GDT. The test is performed with DC50V when normal spark-over Voltage 70~150V, others with DC100V.
10	**Capacitance**	The capacitance shall be measured once at 1 MHz between all terminals unless otherwise specified.