Datasheet

Gas Discharge Tube (GDT)

Series / Models	2R-13A Series
Product Code	10.15.13.XXXX
Version	A4
Date	2025-05-29
File Number	SP-GDT-106

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Version History

Version	Date	Page	Description	Author
A0	2023-09-08	/	Initial draft	Xia Wu
A1	2023-11-20	Page 4	Update electrical characteristics	Xia Wu
A2	2023-12-18	Page 5	Update Packaging Information	Xia Wu
A3	2024-02-28	Page 6	Update terms and definitions	Xia Wu
A4	2025-05-29	Page 1,2,3,4	1. Add cover and version history 2. Update description 3. Delete some models	Xia Wu

Gas Discharge Tubes (GDT) 2R-13A Series

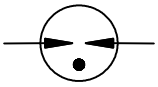
Description

Gas discharge tubes (GDTs) are generally in a high insulation resistance state, equivalent to an open circuit, which has almost no impact on the normal operation of the circuit. When transient overvoltage occurs in the circuit and the voltage amplitude exceeds the breakdown voltage of the GDT, the gas inside the GDT is ionized, causing the GDT to quickly conduct and limit the overvoltage to a lower level, thereby protecting electronic devices or circuit components connected in parallel from high voltage impact damage. After the overvoltage disappears, the GDT immediately returns to a high insulation resistance state, and the circuit resumes normal operation.

The 2R-10D series is an ultra-thin GDT that can easily adapt to various compact electronic device layouts, greatly saving space and bringing higher flexibility to design. The low residual voltage characteristic ensures that after completing discharge protection, the residual voltage in the circuit is negligible, minimizing the potential impact on the precision electronic components at the back end and providing reliable guarantees for the stable operation of the equipment. It can also be perfectly combined with MOVs, and this composite design achieves complementary advantages, further enhancing the overall protective performance and being able to cope with more complex and harsh application environments.



Electrical symbol



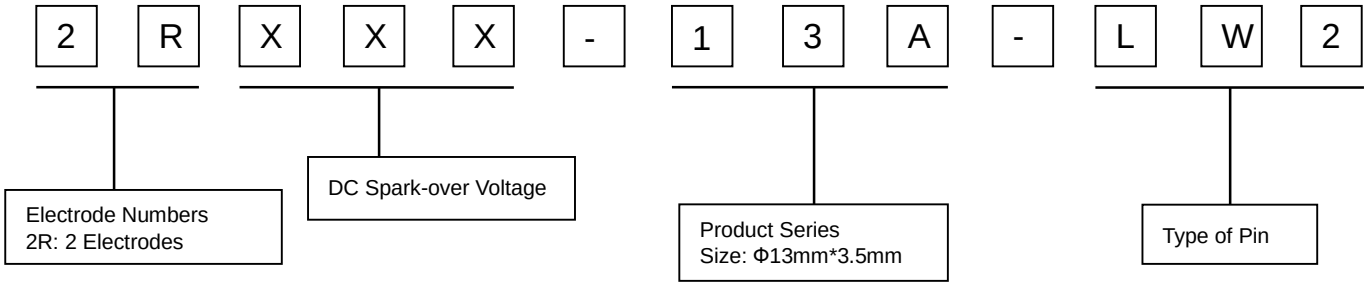
Features

- Stable performance over life
- Very fast response time
- High insulation resistance
- Non-Radioactive

Applications

- LED lighting
- Power supply
- Photovoltaic
- Combine with MOVs to form a composite component

Part Number Code



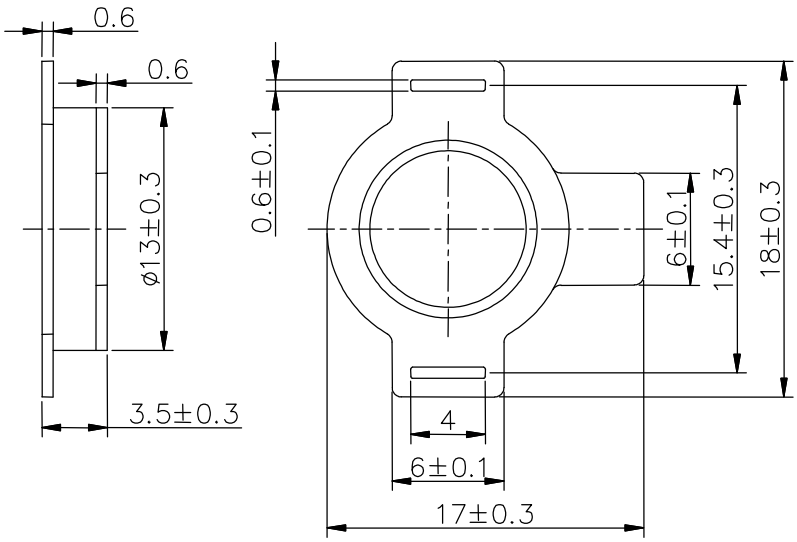
Electrical Characteristics

Model		2R150-13A	2R350-13A	2R600-13A	2R1000-13A	Units
DC Spark-over Voltage [1) 2)]	at 100V/S	150±20%	350±20%	600±20%	1000±20%	V
Impulse Spark-over Voltage	at 100V/μS	<500	<700	<900	<1400	V
	at 1KV/μS	<600	<800	<1000	<1500	V
Front of wave spark-over voltage	at 1.2/50 μs, 6 kV	<800	<1000	<1300	<1800	V
Service life (According to IEC 61643-311)						
Nominal impulse discharge current	8/20μs 15 times	20	20	20	20	KA
Max. impulse discharge current	8/20μs 1 time	40	40	40	40	KA
impulse discharge current	10/350μs 1 time	2.5	2.5	2.5	2.5	KA
Insulation Resistance		>1	>1	>1	>1	GΩ
Insulation Resistance Measuring Voltage		50	100	100	100	V
Capacitance	at 1MHz	<5	<5	<5	<5	pF
Weight		~2.10	~2.10	~2.10	~2.10	g
Operation temperature		-40~+125	-40~+125	-40~+125	-40~+125	°C
Recommended storage [3)]						
Temperature		+5~+35	+5~+35	+5~+35	+5~+35	°C
Humidity		45~80	45~80	45~80	45~80	%
Period		≤ 2	≤ 2	≤ 2	≤ 2	years
Climatic category (IEC60068-1)		40/125/21	40/125/21	40/125/21	40/125/21	
Marking, blue positive		**RUILON 150**	**RUILON 350**	**RUILON 600**	**RUILON 1000**	
Surface treatment		Matte-tin plated				
Moisture sensitivity level [4)]		1				

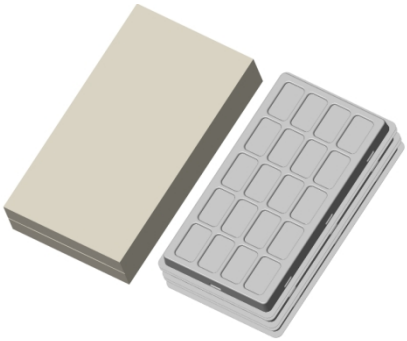
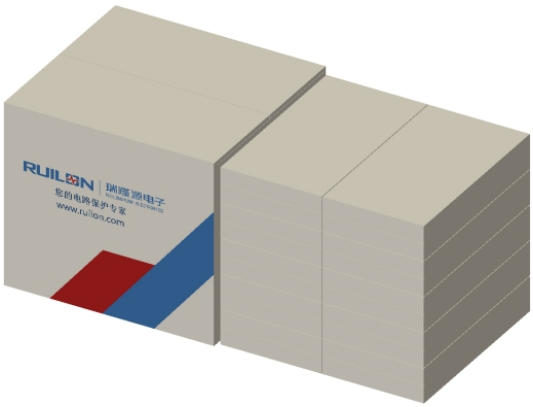
1) At delivery AQL 0.65 level II, DIN ISO 2859.
2) In ionized mode.
3) Specified in terms of corrosion against tin plating.
4) Tests according to JEDEC J-STD-020.

Dimensions (Unit: mm)

2RXXX-13A-LW2



Packaging Information

	PVC tray	Inner Box	Carton
Size	265×150×17mm	275×150×50mm	315×290×272mm
Quantity	MPQ: 1 tray=100pcs	MOQ: 1 Inner Box=3 trays=300pcs	1 Carton=10 Inner boxes=3,000pcs
Photos			

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.

Cautions

- Do not operate gas discharge tubes in power supply networks, whose maximum operating voltage exceeds the minimum spark-over voltage of the gas discharge tubes.
- Gas discharge tubes may become hot in the event of longer periods of current stress (burn risk). In the event of overload the connectors may fail or the component may be destroyed.
- Gas discharge tubes must be handled with care and must not be dropped.
- Do not continue to use damaged gas discharge tubes.
- The shown SMD pad dimensions represent a safe way to mount the arrester and are a recommendation of the manufacturer. During the reflow process it must be assured that no solder material reduces the insulation distance between the pads below the arrester.
- SMD gas discharge tubes should be soldered within 24 month after shipment.
- The electrical characteristics described in this datasheet are only typical characteristics, and all of these characteristics have been confirmed through testing and inspection. If the customer's usage requirements are different from this or have special requirements, please contact Ruilongyuan Electronics Co., Ltd. If protection failure or circuit damage occurs as a result, our company is not responsible for it.
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