



# Datasheet

## Gas Discharge Tube (GDT)

Series / Models	3RTA-5 Series
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Gas Discharge Tube(GDT)

3RTA-5 Series

Version History

Version	Date	Page	Description	Author
A0	2025-09-01	/	Initial draft	Xia Wu

## Gas Discharge Tube(GDT)

## 3RTA-5 Series

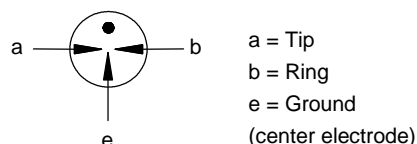
### Description

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 3RTA-5 series 3-electrode GDT is a lead component. Standardized pin spacing and dimensions. It is not only easy to install on printed circuit boards (PCBs), but also has excellent performance. The low capacitance characteristic minimizes its impact on signals when used in high-frequency communication circuits. High insulation resistance ensures that the performance of the circuit will not suffer additional losses under normal operating conditions. The 3RTA-5 series GDT can not only be used to protect communication interfaces, but its ability to withstand high surge currents (8/20uS, 5KA) also makes it suitable for power supply protection.



### Electrical symbol



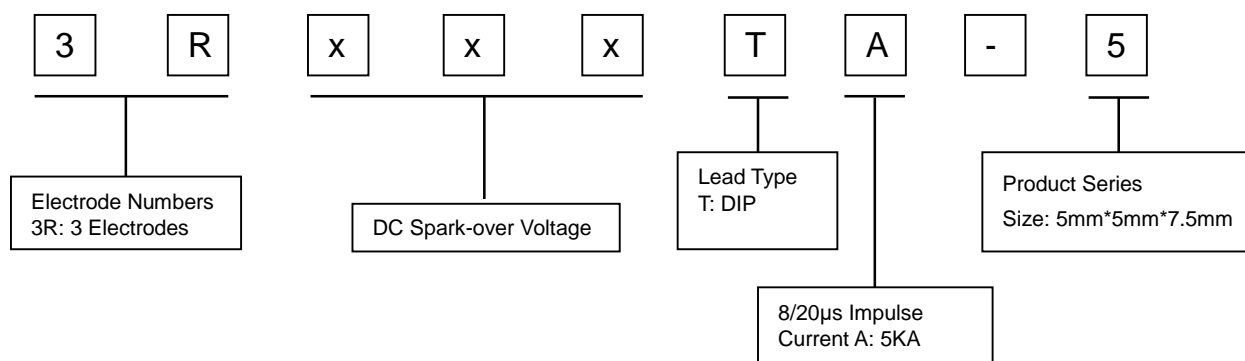
### Features

- I Excellent response to fast rising transients
- I Stable breakdown voltage
- I GHz working frequency
- I 8/20μs Impulse current capability: 5KA
- I Surface Mount package
- I Non-Radioactive
- I Ultra Low capacitance (<1pF)
- I High insulation resistance
- I Size: 5mm\*5mm\*7.5mm

### Applications

- I Communication equipment
- I CATV equipment
- I Data lines
- I Power supplies
- I Telecom SLIC protection
- I Broadband equipment
- I ADSL equipment, including ADSL2+
- I XDSL equipment
- I Satellite and CATV equipment
- I Test equipment
- I Consumer electronics

### Part Number Code



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## 3RTA-5 Series

### Electrical Characteristics

Part Number	DC Spark-over Voltage <sup>1) 2) 3)</sup> @100V/S	Impulse Spark-over Voltage <sup>3)</sup>		Insulation Resistance <sup>4)</sup>	Capacitance @1MHz	Life Ratings			
		100V/ $\mu$ S	1KV/ $\mu$ S			Impulse Discharge Current @8/20 $\mu$ s <sup>5)</sup>		Alternating Discharge Current @50Hz 1S <sup>5)</sup>	Impulse Life @10/1000 $\mu$ S 200A <sup>5)</sup>
		Max	Max			Nominal $\pm 5$ times	Max 1 time	Nominal 10 times	Min
	V	V	V	G $\Omega$	pF	KA	KA	A	Times
3R075TA-5	75 $\pm$ 20%	500	600	1	1	5	10	5	300
3R090TA-5	90 $\pm$ 20%	500	600	1	1	5	10	5	300
3R150TA-5	150 $\pm$ 20%	500	600	1	1	5	10	5	300
3R230TA-5	230 $\pm$ 20%	600	700	1	1	5	10	5	300
3R350TA-5	350 $\pm$ 20%	800	900	1	1	5	10	5	300
3R470TA-5	470 $\pm$ 20%	900	1000	1	1	5	10	5	300
3R600TA-5	600 $\pm$ 20%	1100	1200	1	1	5	10	5	300
3R800TA-5	800 $\pm$ 20%	1400	1500	1	1	5	10	5	300
Glow Voltage at 10mA..... ~60V									
Arc Voltage at 1A..... ~10V									
Glow to Arc transition Current..... ~0.5A									
Weight..... ~0.9g									
Operation and storage temperature..... -40~+125°C									
Climatic category (IEC 60068-1)..... 40/125/21									
Marking, Black.....					<b>RUILON</b> <b>xxx A Y</b> xxx -Nominal voltage A -Nominal Impulse Discharge Current Y -Year of production				
Surface treatment.....					Matte-tin plated				
Moisture sensitivity level <sup>6)</sup> .....					1				

<sup>1)</sup> At delivery AQL 0.65 level II, DIN ISO 2859.

<sup>2)</sup> In ionized mode.

<sup>3)</sup> Tip or ring electrode to center electrode.

<sup>4)</sup> Insulation Resistance Measuring Voltage: 75V ~150V at DC 50V, other at DC 100V.

<sup>5)</sup> Total current through center electrode, half value through tip respectively ring electrode.

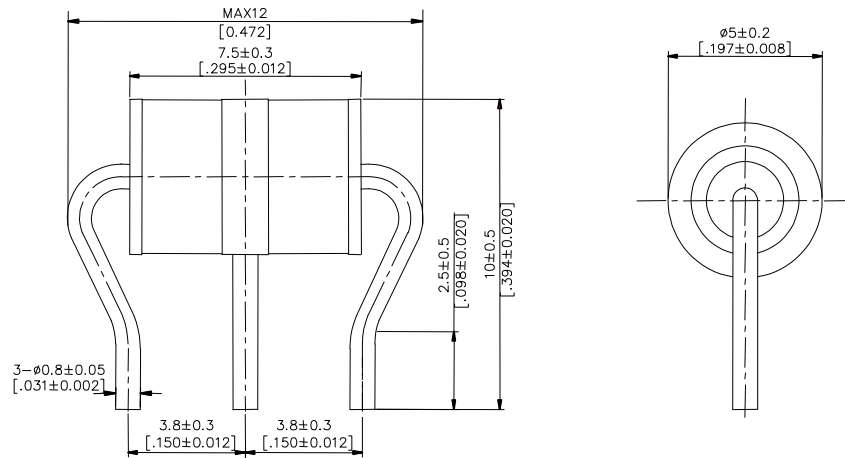
<sup>6)</sup> Tests according to JEDEC J-STD-020.

Terms in accordance with ITU-T Rec. K.12, IEC 61643-311, GB/T 9043.

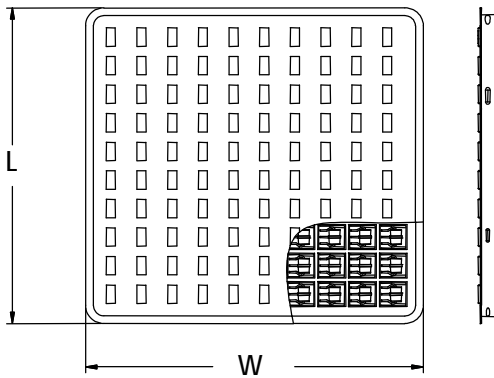
## Gas Discharge Tube(GDT)

## 3RTA-5 Series

### Dimensions (Unit: mm/inch)

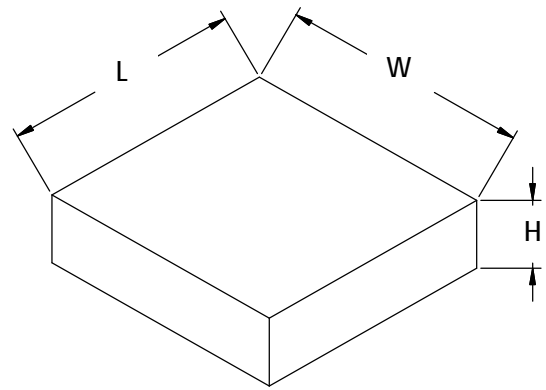


### Packaging Information (Unit: mm)



L\*W: 165mm×195mm

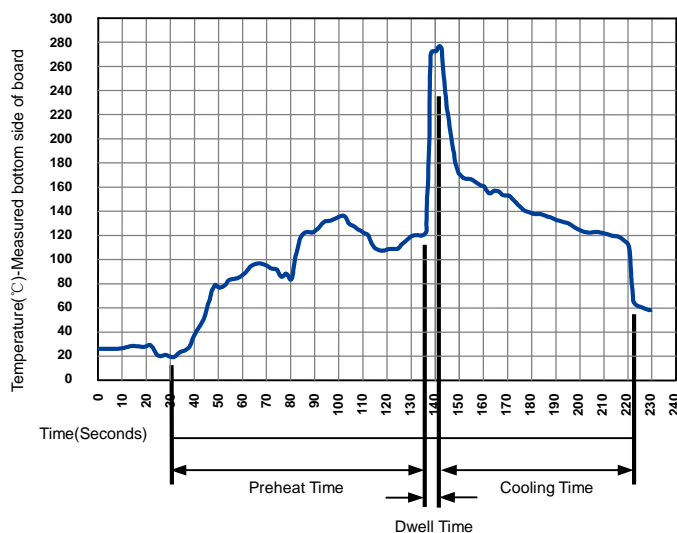
100PCS/ Plastic Tray



L\*W\*H: 175mm\*215mm\*55mm

500PCS, 5 Plastic Trays / Inner Box

### 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

# Gas Discharge Tube(GDT)

## 3RTA-5 Series

### Terms and definitions

NO.	Item	Definitions
1	<b>Gas discharge tube(GDT)</b>	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	<b>DC Spark-over Voltage</b>	The voltage at which the gas discharge tube sparks over with slowly increasing d.c. voltage.
3	<b>Impulse Spark-over Voltage</b>	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	<b>Arc voltage</b>	Voltage drop across the GDT during arc current flow.
6	<b>Glow voltage</b>	Peak value of voltage drop across the GDT when a glow current is flowing.
7	<b>Impulse discharge current 8/20μs</b>	Current impulse with a nominal virtual front time of 8 μs and a nominal time to half-value of 20 μs.
8	<b>Alternating Discharge Current</b>	The rms value of an approximately sinusoidal alternating current passing through the gas discharge tube.
9	<b>Insulation Resistance</b>	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	<b>Capacitance</b>	The capacitance shall be measured once at 1 MHz between all terminals unless otherwise specified.

## Cautions

- I 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.
- I 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.
- I Gas discharge tubes must be handled with care and must not be dropped.
- I Do not continue to use damaged gas discharge tubes.
- I 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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