RUILON
ELECTRONICS

Gas Discharge Tubes

2RA-5 Series

361° Circuit Protection System

Specifications are subject to change without notice.

Please refer to http://www.ruilon.com.cn for current information.

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Gas discharge tubes (GDT) use noble gasses enclosed in ceramic tubes to provide an alternate circuit path for voltage spikes. The ceramic envelope and with nickel connectors allow for high loads and Ruilon offers products that function at 0.5KA-20KA.The breakdown voltages of the devices have a wide range (up to 20% tolerance).Major applications are high frequency telecommunication lines,stations, security systems,HID and high quality Surge Protection Devices (SPD).

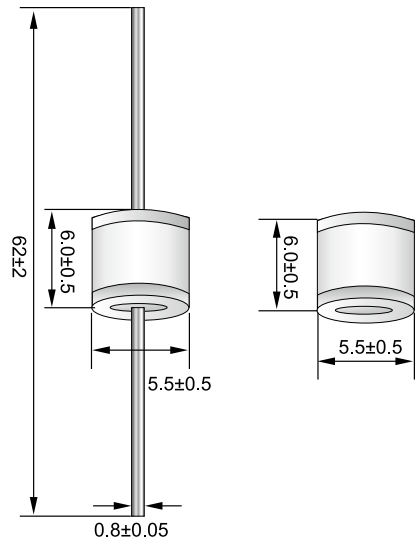
Features

- RoHS & HF compliant
- Size:5.5mm*6.0mm
- DC Spark-over voltage: 75~3600V
- Stable breakdown voltage
- High insulation resistance
- Low capacitance (<1pF)
- High holdover voltage
- Large absorbing transient current capability
- Storage and operational temperature: -40℃ ~ +85℃

Recommended Applications

- Cable Modem
- xDSL
- Set-Top Box
- Satellite and CATV equipment
- Power supplier
- Consumer electronics
- General telecom equipment

Dimension **unit:(mm)**



(T)Series (S)Series

Product Name

2	R	X	X	X	X	A	-	5

Electrode Numbers	DC Spark-over Voltage	Lead Type	Electrical Characteristics	Dimensions
2R : 2 Electrodes		T:Thrust S:SMD	A=5kA	5.5mm*6.0mm

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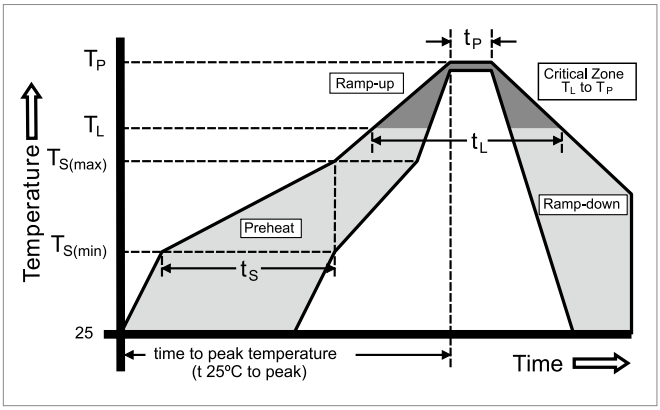
Electriacl Characteristics

Part Number		DC Spark-over Voltage	Maximum Impulse Breakdown Voltage		Maximum Impulse Discharge Current (8/20μs)		Impulse Life	Normal Alternating Discharge Current	DC Holdover Voltage	Minimum Insulation Resistance	Maximum Capacitance (1MHz)
		100V/S	100V/μs	1KV/μs	1 time	10 times	100 A	50Hz 1Sec			
DIP	SMD	(V)	(V)	(V)	(KA)		Times	(A)	(V)	(GΩ)	(pF)
2R075TA-5	2R075SA-5	75±20%	700	800	10	5	300 (10/1000μs)	5	52	1	1
2R090TA-5	2R090SA-5	90±20%	600	700	10	5	300 (10/1000μs)	5	52	1	1
2R150TA-5	2R150SA-5	150±20%	600	700	10	5	300 (10/1000μs)	5	52	1	1
2R230TA-5	2R230SA-5	230±20%	600	700	10	5	300 (10/1000μs)	5	80	1	1
2R300TA-5	2R300SA-5	300±20%	700	900	10	5	300 (10/1000μs)	5	135	1	1
2R350TA-5	2R350SA-5	350±20%	700	900	10	5	300 (10/1000μs)	5	135	1	1
2R420TA-5	2R420SA-5	420±20%	800	1000	10	5	300 (10/1000μs)	5	135	1	1
2R470TA-5	2R470SA-5	470±20%	900	1100	10	5	300 (10/1000μs)	5	135	1	1
2R600TA-5	2R600SA-5	600±20%	1300	1500	10	5	300 (10/1000μs)	2.5	135	1	1
2R800TA-5	2R800SA-5	800±20%	1500	1700	10	5	300 (10/1000μs)	2.5	135	1	1
2R1000T-5	2R1000S-5	1000±20%	1600	1800	3	2	300 (8/20μs)	2	135	1	1
2R1400T-5	2R1400S-5	1400±20%	2200	2400	3	2	300 (8/20μs)	2	135	1	1
2R1600T-5	2R1600S-5	1600±20%	2400	2600	3	2	300 (8/20μs)	2	135	1	1
2R2000T-5	2R2000S-5	2000±20%	2800	3000	3	2	300 (8/20μs)	2	135	1	1
2R2500T-5	2R2500S-5	2500±20%	3300	3500	3	2	300 (8/20μs)	2	135	1	1
2R2700T-5	2R2700S-5	2700±20%	3300	3500	3	2	300 (8/20μs)	2	135	1	1
2R3000T-5	2R3000S-5	3000±20%	3800	4000	3	2	300 (8/20μs)	2	135	1	1
2R3500T-5	2R3500S-5	3500±20%	4300	4500	3	2	300 (8/20μs)	2	135	1	1
2R3600T-5	2R3600S-5	3600±20%	4400	4600	3	2	300 (8/20μs)	2	135	1	1

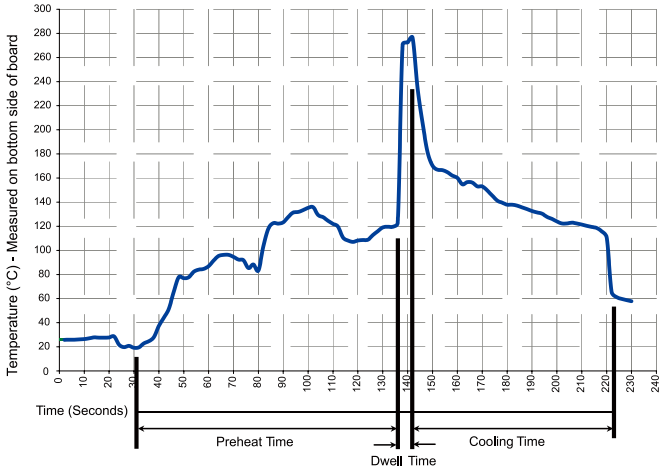
Gas Discharge Tubes - 2RA-5 Series

Soldering parameters reflow soldering(surface mount devices)

Reflow Condition		Pb – Free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		5°C/second max
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	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)		8minutes Max.
Do not exceed		260°C



Soldering parameters -wave soldering



Recommended process parameters

Wave Parameter	Lead-Free Recommendation
Preheat: (Depends on Flux Activation Temperature)	(Typical Industry Recommendation)
Temperature Minimum:	100° C
Temperature Maximum:	150° C
Preheat Time:	60-180 seconds
Solder Pot Temperature:	280° C Maximum
Solder Dwell Time:	2-5 seconds

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Warehouse Storage Condition

<table>
<tr><th>Item</th><th>Test Condition / Description</th><th>Requirement</th></tr>
<tr><td>DC Breakdown Voltage</td><td>The voltage measured at a rise time of 100v/s.</td><td rowspan="8">To meet the specified value</td></tr>
<tr><td>Maximum Impulse Breakdown Voltage</td><td>The maximum breakdown voltage at rise times of 100v/us and 1000v/us.</td></tr>
<tr><td>Maximum Impulse Discharge Current</td><td>The maximum current applying a waveform of 8/20us that can be applied across the terminals of the gas tube without causing the gas tube to change more than ±25% from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</td></tr>
<tr><td>Alternating Discharge Current</td><td>Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than ±25% from its initial measured DC breakdown voltage. IR > 10^8 ohms (-20%, +30% for 70 – 90V).</td></tr>
<tr><td>Impulse Life</td><td>The minimum number of impulses of a specified waveform and peak current which a gas tube will conduct without causing the gas tube to change more than ±25% from its initial measured DC breakdown voltage. Dwell time between pulses is 1-2 minutes.</td></tr>
<tr><td>DC Holdover Voltage</td><td>The maximum DC voltage across the two terminals of the gas tube under which it may be expected to return to the high impedance state after the gas tube breakdown.</td></tr>
<tr><td>Insulation Resistance</td><td>The resistance of the gas tube shall be measured each terminal to each other terminal.
<table>
<tr><th>DC Breakdown Voltage (V)</th><th>DC Measuring Voltage (V)</th></tr>
<tr><td>70</td><td>25</td></tr>
<tr><td>90-150</td><td>50</td></tr>
<tr><td>230-350</td><td>100</td></tr>
<tr><td>470-600</td><td>250</td></tr>
<tr><td>800</td><td>500</td></tr>
<tr><td>1000-1600</td><td>1000</td></tr>
</table></td></tr>
<tr><td>Capacitance</td><td>The capacitance of a gas tube shall be measured each terminal to each other terminal. Test frequency: 1MHz In measurements involving 3-electrode gas tubes, the terminal not being tested shall be connected to a ground plane.</td></tr>
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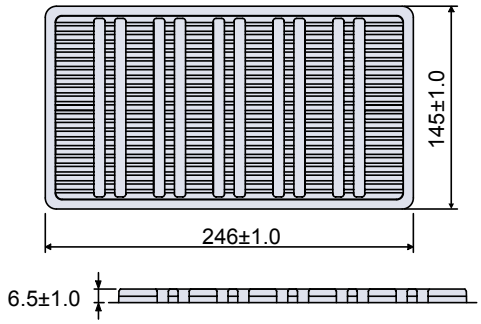
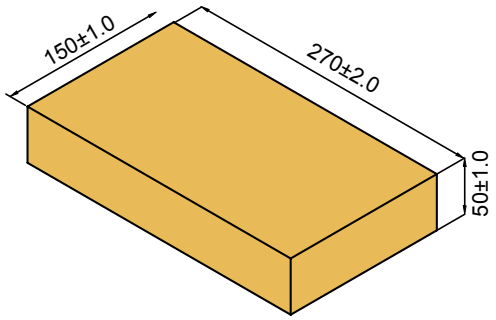
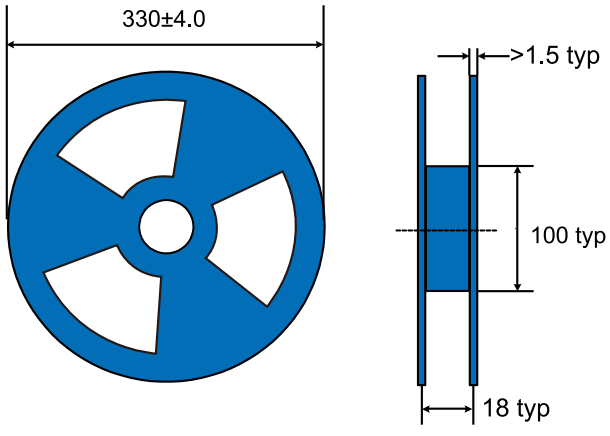
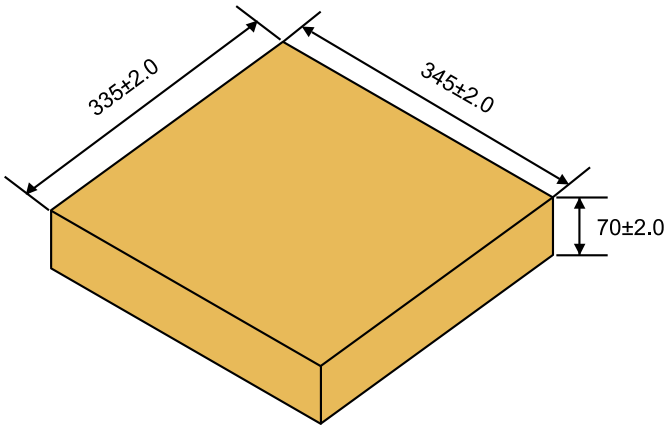
Packaging Taping

Axial Packing (Bulk)

Skin packing (264×145×7mm)	Inner Box (270×150×50mm)
	
100 PCS/ Plastic Tray	500 PCS/ Box

SMD Packing (Tape & Reel)

Reel packing (330×330×18mm)	Inner Box (335×345×70mm)
	
1000 PCS/ Reel	3000 PCS/ Box

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