

## Gas Discharge Tubes (GDT)

## 2RB-8S Series

### Description

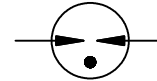
Gas discharge tubes (GDT) use noble gasses enclosed in ceramic tubes to provide an alternate circuit path for voltage spikes. The ceramic envelope and with nickel connectors allow for high loads. 2RB-8S Gas Discharge Tubes (GDT) series has a surge rating of 10kA, 8/20 $\mu$ s. Offered in a Squared Surface Mount package, which helps to make pick and place on PCB process easier.

This GDT series is perfectly suited for broadband equipment applications. The GDT's low off-state capacitance is compatible with high bandwidth applications and this capacitance loading value does not vary if the voltage across the GDT changes.

2RB-8S Gas Discharge Tube (GDT) series are specifically designed for protection of electrical, multimedia, and communication equipment against over voltage transients in surface mount assembly applications.



### Electrical symbol



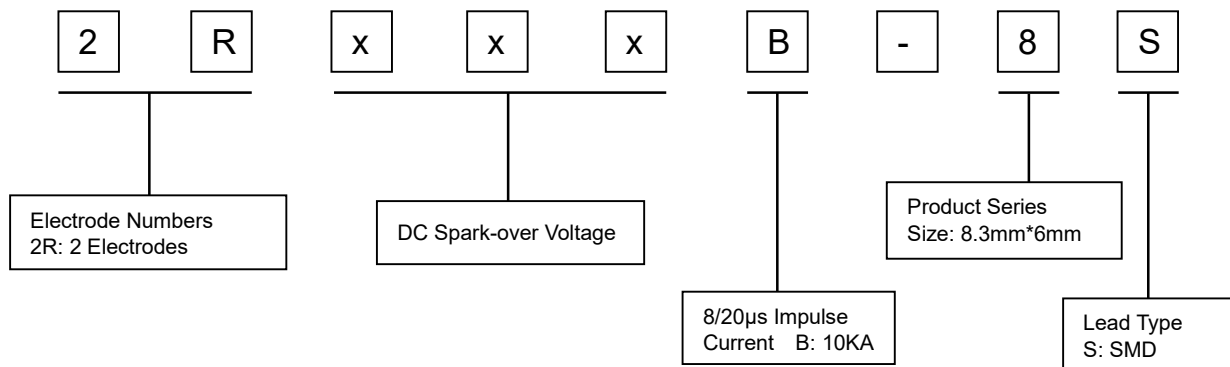
### Features

- I Excellent response to fast rising transients
- I Stable breakdown voltage
- I GHz working frequency
- I 8/20 $\mu$ s Impulse current capability: 10KA
- I Non-Radioactive
- I Ultra Low capacitance (<1.5pF)
- I Size: 8.3mm\*6mm
- I Storage and operational temperature: -40~+90°C

### Applications

- I MDF modules
- I xDSL equipment
- I RF systems
- I Antenna
- I Base stations
- I Repeaters, Modems
- I Telephone Interface, Line cards
- I Data communication equipment
- I Line test equipment
- I Power supplies
- I Surge protectors, Alarm systems

### Part Number Code



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### Electrical Characteristics

Part Number	DC Spark-over Voltage <sup>1) 2)</sup> @100V/S	Impulse Spark-over Voltage		Insulation Resistance <sup>3)</sup>	Capacitance @1MHz	Glow Voltage @10mA	Arc Voltage @1A	Life Ratings			
		100V/μS	1KV/μS					Impulse Discharge Current @8/20μS		Alternating Discharge Current @50Hz 1S	Impulse Life @10/1000μS
		Max	Max					±5 times	1 time		
		V	V					V	GΩ	pF	V
2R075B-8S	75±20%	500	600	1	1.5	60	10	10	20	10	100
2R090B-8S	90±20%	500	600	1	1.5	60	10	10	20	10	100
2R150B-8S	150±20%	500	600	1	1.5	60	10	10	20	10	100
2R230B-8S	230±20%	600	700	1	1.5	60	10	10	20	10	100
2R250B-8S	250±20%	600	700	1	1.5	60	10	10	20	10	100
2R300B-8S	300±20%	750	850	1	1.5	60	10	10	20	10	100
2R350B-8S	350±20%	750	850	1	1.5	60	10	10	20	10	100
2R400B-8S	400±20%	800	900	1	1.5	135	15	10	20	10	100
2R420B-8S	420±20%	800	900	1	1.5	135	15	10	20	10	100
2R470B-8S	470±20%	800	900	1	1.5	135	15	10	20	10	100
2R600B-8S	600±20%	900	1000	1	1.5	135	15	10	20	10	100
2R800B-8S	800±20%	1200	1400	1	1.5	135	15	10	20	10	100
2R1000-8S	1000±20%	1400	1600	1	1.5	135	15	10	20	10	100
Glow to Arc transition Current.....					<1.0A						
Weight.....					~1.38g						
Operation and storage temperature.....					-40~+90°C						
Climatic category (IEC 60068-1).....					40/90/21						
Marking, blue negative.....					<b>RUILON XXX Y</b> XXX -Nominal voltage Y -Year of production						
Surface treatment.....					Matte-tin plated						

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

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

<sup>3)</sup> Insulation Resistance Measuring Voltage:

75V~150V at DC 50V

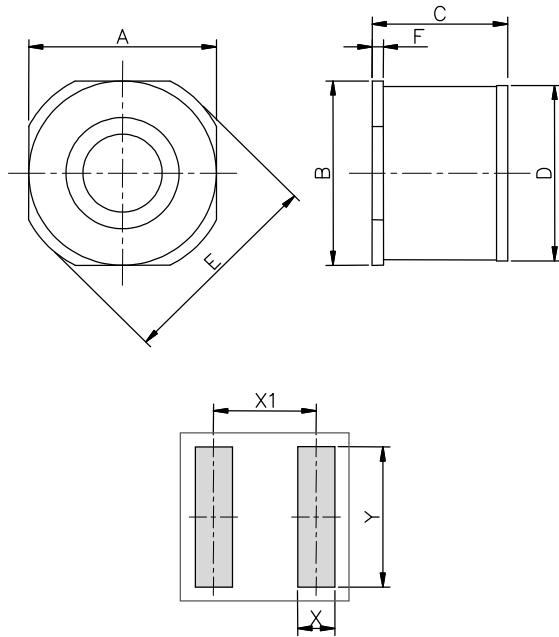
Other at DC 100V

Terms in accordance with ITU-T K.12, IEC 61643-311, GB/T 9043, GB/T18802.311.

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### Dimensions

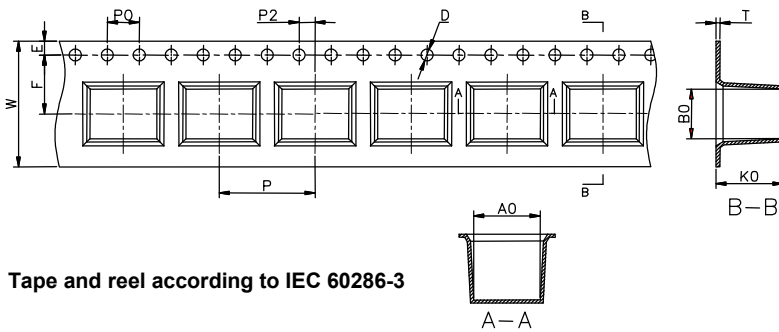


Symbol	Millimeters	Inches
<b>A</b>	8.3±0.2	0.327±0.008
<b>B</b>	8.3±0.2	0.327±0.008
<b>C</b>	6±0.3	0.236±0.012
<b>D</b>	Φ8±0.2	Φ0.315±0.008
<b>E</b>	Φ9.3±0.2	Φ0.366±0.008
<b>F</b>	0.5±0.1	0.020±0.004
<b>X</b>	1.2	0.047
<b>X1</b>	5.8	0.228
<b>Y</b>	9.0	0.354

Recommended Soldering Pad Layout

### Packaging Information

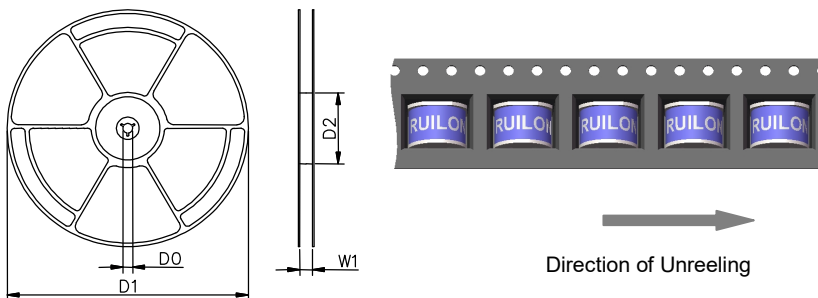
#### Tape Specifications



Tape and reel according to IEC 60286-3

Symbol	Millimeters	Inches
<b>W</b>	16±0.3	0.630±0.012
<b>A0</b>	8.3±0.1	0.327±0.004
<b>B0</b>	6.3±0.1	0.248±0.004
<b>K0</b>	8.4±0.1	0.331±0.004
<b>P</b>	12±0.1	0.472±0.004
<b>F</b>	7.5±0.1	0.295±0.004
<b>E</b>	1.75±0.1	0.069±0.004
<b>D</b>	1.5+0.1/-0.0	0.059+0.004/-0.0
<b>P0</b>	4±0.1	0.157±0.004
<b>P2</b>	2±0.1	0.079±0.004
<b>T</b>	0.5±0.1	0.020±0.004
<b>D0</b>	13.3±0.15	0.524±0.006
<b>D1</b>	330±2	12.992±0.079
<b>D2</b>	100+1/-2	3.937+0.039/-0.079
<b>W1</b>	16.5±0.4	0.65±0.016

#### Reel Specifications

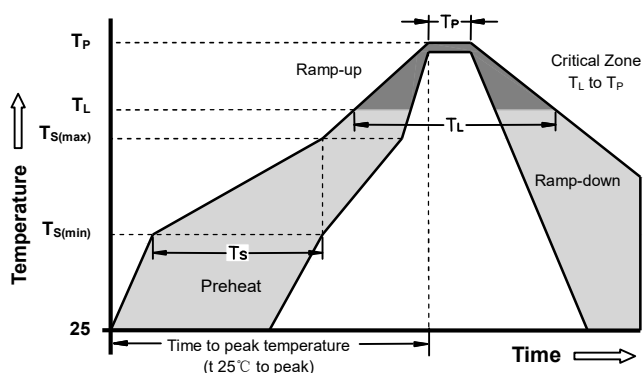


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	Reel	Inner Box	Carton
Size	330×20.5mm	340×333×70mm	375×353×380mm
Quantity	MPQ/MOQ: 1 reel=500pcs	1 Inner Box=3 reels=1,500pcs	1 Carton=5 Inner boxes=7,500pcs
Photos			

### 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 $T_L$ - 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

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	<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 and warnings**

- I Do not operate surge arresters in power supply networks, whose maximum operating voltage exceeds the minimum spark-over voltage of the surge arresters.
- I Surge arresters 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 Surge arresters must be handled with care and must not be dropped.
- I Do not continue to use damaged surge arresters.
- I 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.
- I SMD surge arresters should be soldered within 24 month after shipment.