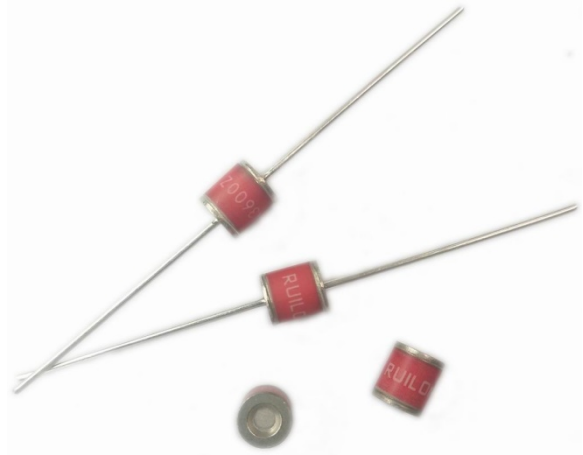


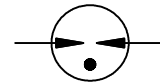
**Description**

2R-5 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 5KA/3KA/2kA 8/20μs.

2R-5 GDTs are high voltage (1000-5000V) 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-5 GDTs can be used in conjunction with MOVs (Metal Oxide Varistors) to provide superior protection performance for AC applications.



**Electrical symbol**



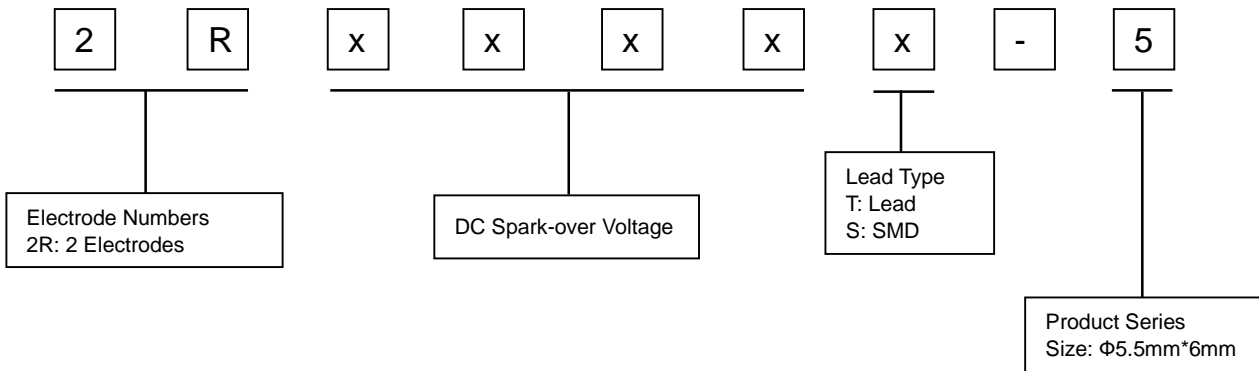
**Features**

- I Voltage Ranges 1000V to 5000V
- I Excellent response to fast rising transients
- I 8/20μs Impulse current capability: 5KA/3KA/2kA
- I Non-Radioactive
- I Ultra Low capacitance (<1pF)
- I Lead-free compliant
- I RoHS and REACH compliant
- I UL 1449 Recognized: E479668
- I Size: Φ5.5mm\*6mm
- I Storage and operational temperature: -40~+125°C

**Applications**

- |  |  |
|--|--|
| <p><b>Automotive:</b></p> <ul style="list-style-type: none"> <li>I On-board chargers</li> <li>I Vehicle charging stations</li> </ul> | <p><b>Others:</b></p> <ul style="list-style-type: none"> <li>I LED lighting</li> <li>I Power supply</li> <li>I Photovoltaic</li> <li>I Air conditioning</li> </ul> |
|--|--|

**Part Number Code**



## 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	AC withstand voltage @5mA 1Min	Life Ratings		
			100V/μS	1KV/μS						Impulse Discharge Current @8/20μS		AC Discharge Current @50Hz 1S
			Max	Max						Min	Max	Type
DIP	SMD	V	V	V	GΩ	pF	V	V	V	KA	KA	A
2R1000T-5	2R1000S-5	1000±20%	1600	1800	1	1	150	15	500	5	10	5
2R1200T-5	2R1200S-5	1200±20%	1800	2000	1	1	150	15	600	5	10	5
2R1400T-5	2R1400S-5	1400±20%	2200	2400	1	1	170	18	700	5	10	5
2R1500T-5 <sup>4)</sup>	2R1500S-5 <sup>4)</sup>	1500±20%	2300	2500	1	1	170	18	750	5	10	5
2R1600T-5	2R1600S-5	1600±20%	2400	2600	1	1	170	18	800	5	10	5
2R2000T-5	2R2000S-5	2000±20%	2800	3000	1	1	260	30	1000	3	5	3
2R2500T-5	2R2500S-5	2500±20%	3300	3500	1	1	260	30	1300	3	5	3
2R2700T-5 <sup>4)</sup>	2R2700S-5 <sup>4)</sup>	2700±20%	3400	3600	1	1	260	30	1400	3	5	3
2R3000T-5	2R3000S-5	3000±20%	3700	3900	1	1	260	30	1600	3	5	3
2R3500T-5	2R3500S-5	3500±20%	4300	4500	1	1	260	30	1800	3	5	3
2R3600T-5	2R3600S-5	3600±20%	4400	4600	1	1	260	30	1900	3	5	3
2R4000T-5 <sup>4)</sup>	2R4000S-5 <sup>4)</sup>	4000±20%	5000	5500	1	1	260	35	2100	2	5	2
2R4500T-5 <sup>4)</sup>	2R4500S-5 <sup>4)</sup>	4500±20%	5500	6000	1	1	260	35	2300	2	5	2
2R5000T-5 <sup>4)</sup>	2R5000S-5 <sup>4)</sup>	5000±20%	6000	6500	1	1	260	35	2600	2	5	2

Glow to Arc transition Current..... ~0.3A

Weight..... DIP ~0.7g  
SMD ~0.43g

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

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

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

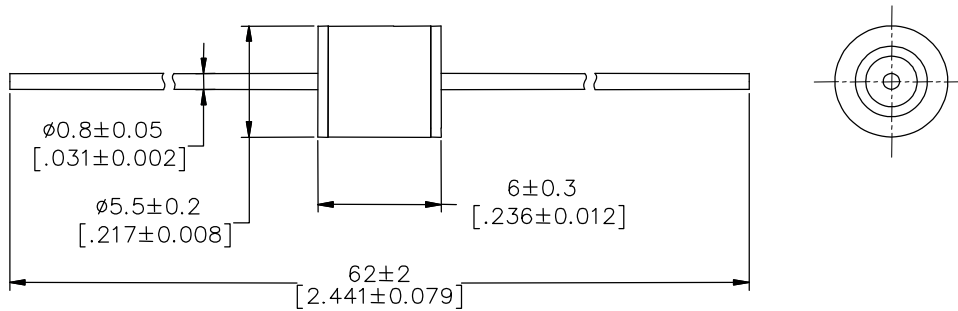
<sup>3)</sup> Insulation Resistance Measuring Voltage at DC 100V.

<sup>4)</sup> No UL 1449 Recognized.

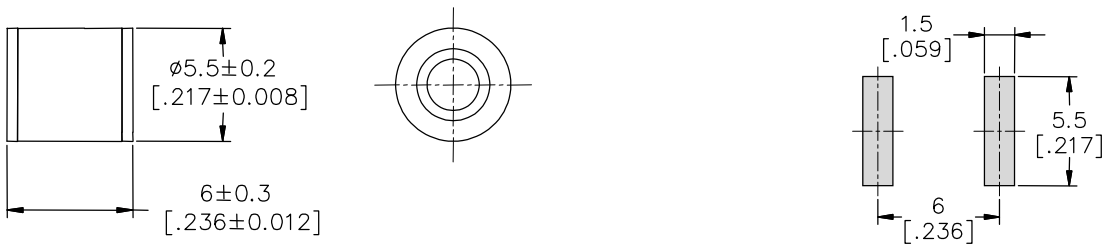
Terms in accordance with ITU-T Rec. K.12, IEC 61643-311, GB/T 9043.

**Dimensions (Unit: mm/inch)**

**DIP Series (2RxxxxT-5)**



**SMD Series (2RxxxxS-5)**

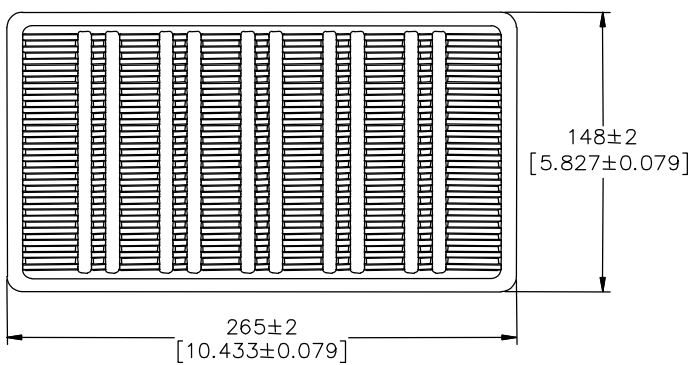


Recommended Soldering Pad Layout

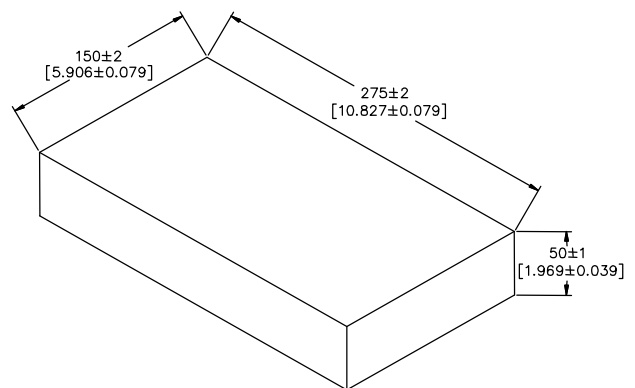
**Packaging Information (Unit: mm/inch)**

**Axial Packaging (Bulk)**

**Plastic Tray**



**Inner box**

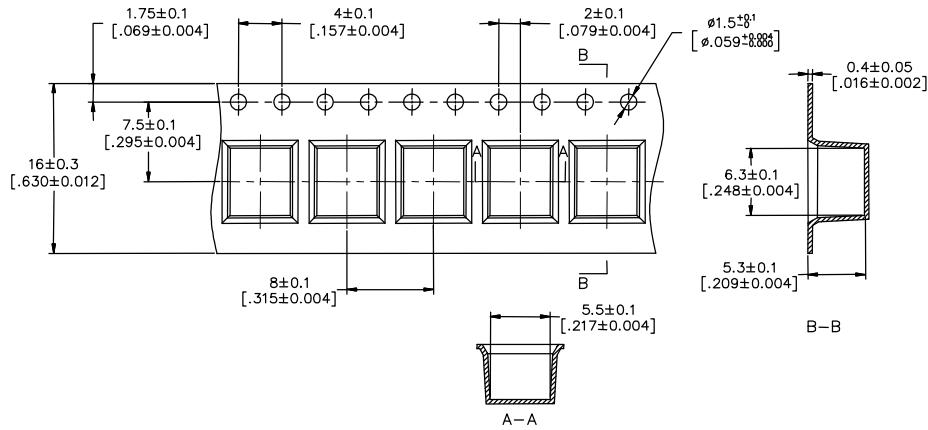


**Packaging Quantity:**

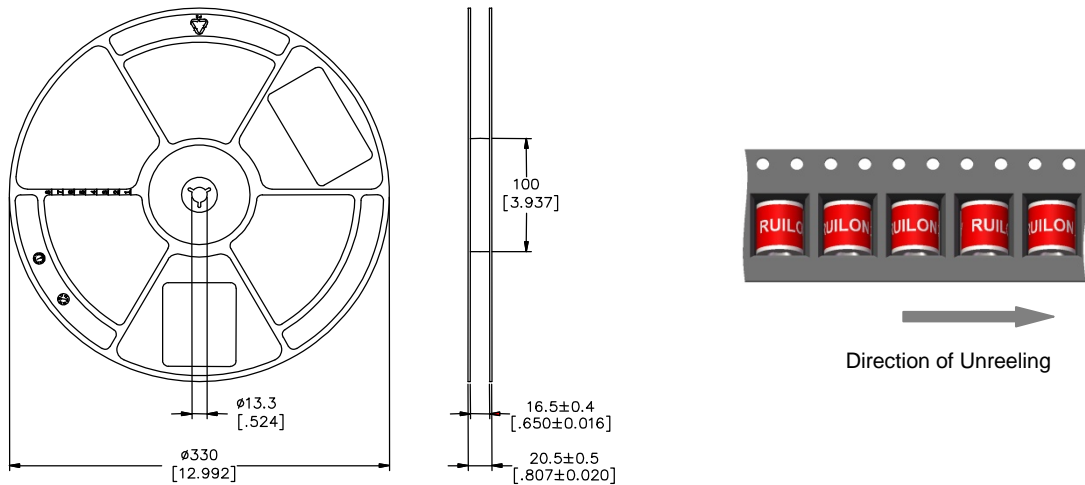
- 1,00 PCS per Plastic Tray
- 5 Plastic Trays per inner box
- 500 PCS per inner box

SMD Packaging (Tape & Reel)

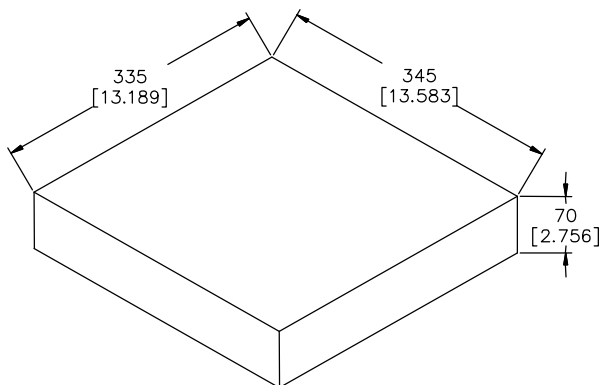
Tape



Reel



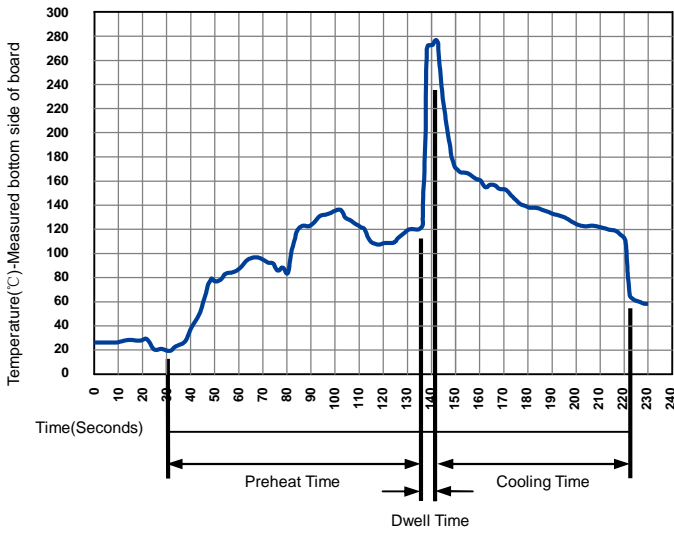
Inner box



Packaging Quantity:

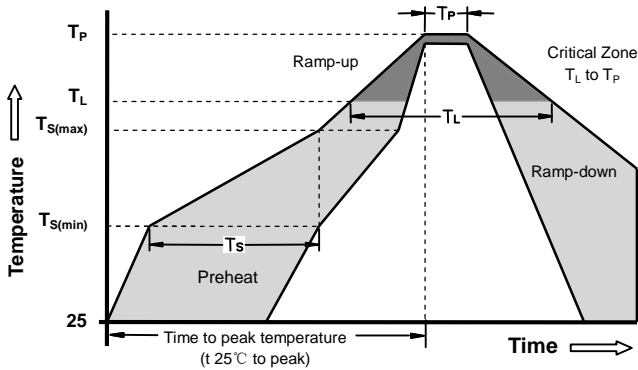
- 1,000 PCS per reel (13")
- 3 reels per inner box
- 3,000 PCS per inner box

**Soldering Parameters - Wave soldering (Thru-Hole Devices)**



Wave Soldering Condition		Pb-Free assembly
Preheat at	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 at	-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
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max
Do not exceed		260°C