

Gas Discharge Tubes (GDT)

3RB-6 Series

Description

GDT is placed in front of, and in parallel with, sensitive telecom equipment such as power lines, communication lines, signal lines and data transmission lines to help protect them from damage caused by transient surge voltages that may result from lightning strikes and equipment switching operations. These devices do not influence the signal in normal operation. However, in the event of an overvoltage surge, such as a lightning strike, the GDT switches to a low impedance state and diverts the energy away from the sensitive equipment.

Our GDT offer a high level of surge protection, a broad voltage range, low capacitance, and many form factors including new surface mount devices, which makes them suitable for applications such as Main Distribution Frame (MDF) modules, high data-rate telecom applications (e.g. ADSL, VDSL), and surge protection on power lines. Their low capacitance also results in less signal distortion. When used in a coordinated circuit protection solution with PolySwitch devices, they can help equipment manufacturers meet stringent safety regulatory standards.

Features

- I Excellent response to fast rising transients
- I Stable breakdown voltage
- I GHz working frequency
- I 8/20 μ s Impulse current capability: 10KA
- I Non-Radioactive
- I Ultra Low capacitance (<1.5pF)
- I High insulation resistance
- I Size: Φ 6mm*8.5mm
- I Storage and operational temperature: -40~+90°C



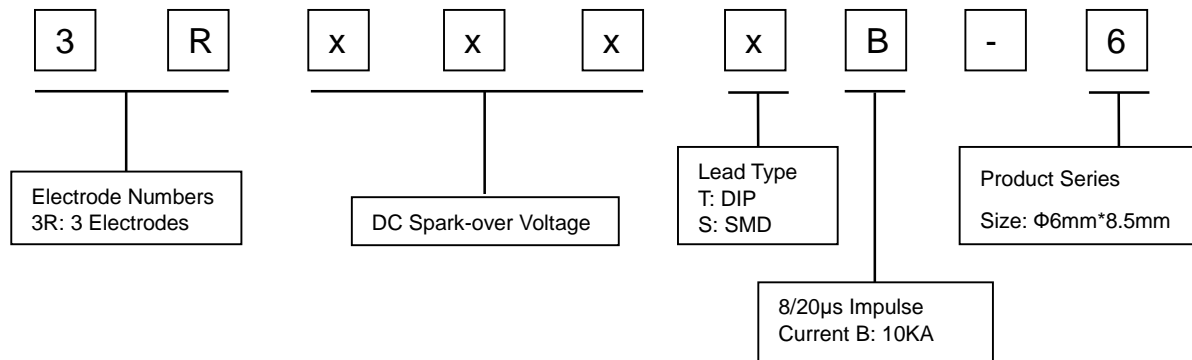
Agency Approvals

Agency	Standards	Certificate No.
	UL497B	E465335

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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Electrical Characteristics

Part Number			DC Spark-over Voltage ^{1) 2) 3)} @100V/S	Impulse Spark-over Voltage ³⁾		Insulation Resistance ⁴⁾	Capacitance @1MHz	Life Ratings			
				100V/μS	1KV/μS			Impulse Discharge Current @8/20μs ⁵⁾		Alternating Discharge Current @50Hz 1S ⁵⁾	Impulse Life @10/1000μS
				Max	Max			±5 times	1 time	5 times	300 times
DIP	SMD	DIP-F	V	V	V	GΩ	pF	KA	KA	A	A
3R070TB-6	3R070SB-6	3R070TB-6F	70±20%	500	600	1	1.5	10	15	10	100
3R075TB-6	3R075SB-6	3R075TB-6F	75±20%	500	600	1	1.5	10	15	10	100
3R090TB-6	3R090SB-6	3R090TB-6F	90±20%	750	850	1	1.5	10	15	10	100
3R150TB-6	3R150SB-6	3R150TB-6F	150±20%	750	850	1	1.5	10	15	10	100
3R230TB-6	3R230SB-6	3R230TB-6F	230±20%	600	700	1	1.5	10	15	10	100
3R250TB-6	3R250SB-6	3R250TB-6F	250±20%	600	700	1	1.5	10	15	10	100
3R300TB-6	3R300SB-6	3R300TB-6F	300±20%	700	900	1	1.5	10	15	10	100
3R350TB-6	3R350SB-6	3R350TB-6F	350±20%	700	900	1	1.5	10	15	10	100
3R400TB-6	3R400SB-6	3R400TB-6F	400±20%	800	1000	1	1.5	10	15	10	100
3R470TB-6	3R470SB-6	3R470TB-6F	470±20%	900	1100	1	1.5	10	15	10	100
3R600TB-6	3R600SB-6	3R600TB-6F	600±20%	1100	1300	1	1.5	10	15	10	100
Glow Voltage at 10mA.....						~60V					
Arc Voltage at 1A.....						~10V					
Glow to Arc transition Current.....						~1A					
Operation and storage temperature.....						-40~+90°C					
Climatic category (IEC60068-1).....						40/90/21					
Marking, Black.....						RUILON xxx B Y xxx -Nominal voltage B -Nominal Impulse Discharge Current Y -Year of production					
Weight.....						~1.25g					
Surface treatment.....						DIP -Nickel Plated SMD -Matte-tin plated					

¹⁾ At delivery AQL 0.65 level II, DIN ISO 2859

²⁾ In ionized mode

³⁾ Tip or ring electrode to center electrode

⁴⁾ Insulation Resistance Measuring Voltage:

75V~150V at DC 50V

Other at DC 100V

⁵⁾ Total current through center electrode, half value through tip respectively ring electrode.

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

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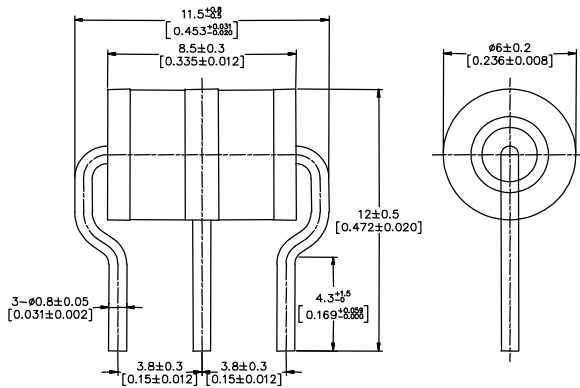
3RB-6 Series

Certifications table

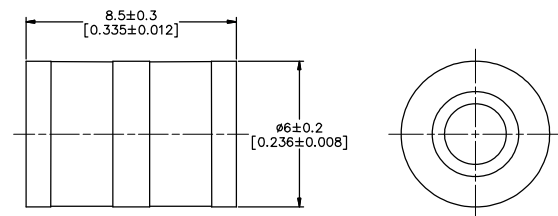
Part Number		UL497B
DIP	SMD	
3R070TB-6	3R070SB-6	--
3R075TB-6	3R075SB-6	•
3R090TB-6	3R090SB-6	•
3R150TB-6	3R150SB-6	•
3R230TB-6	3R230SB-6	•
3R250TB-6	3R250SB-6	--
3R300TB-6	3R300SB-6	•
3R350TB-6	3R350SB-6	•
3R400TB-6	3R400SB-6	•
3R470TB-6	3R470SB-6	•
3R600TB-6	3R600SB-6	•

Dimensions (Unit: mm/inch)

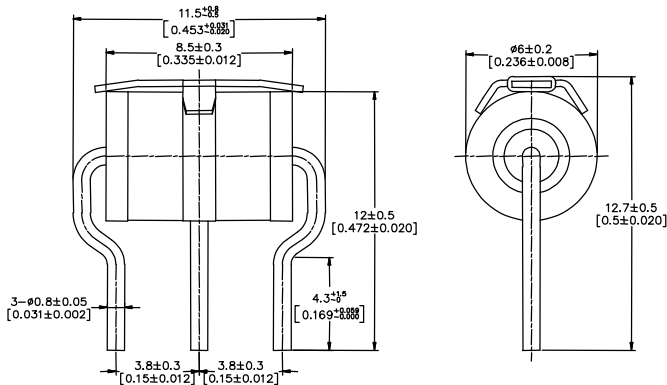
DIP Series (3RxxxTB-6)



SMD Series (3RxxxSB-6)



DIP Series (3RxxxTB-6F)


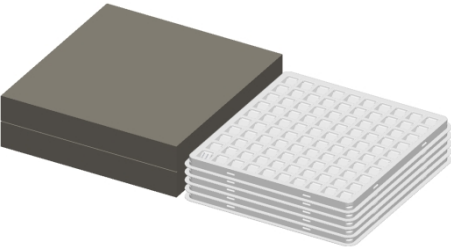
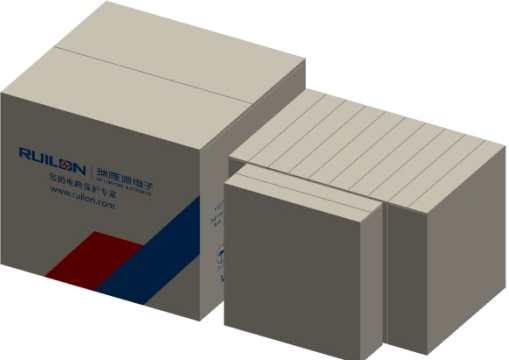


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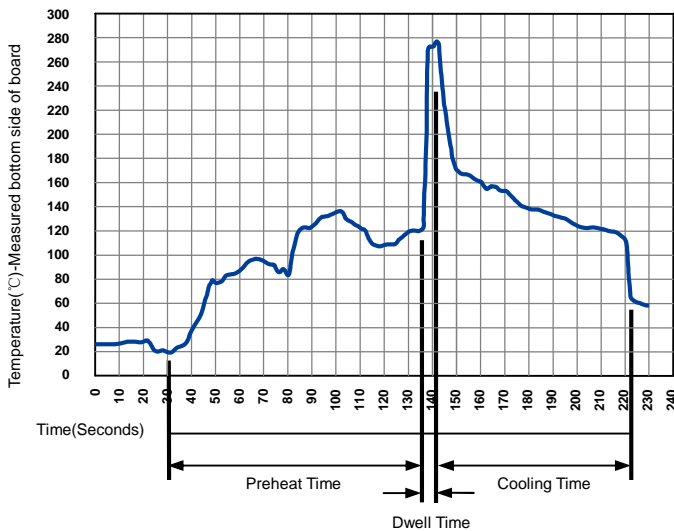
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Packaging Information

“DIP Series” and “DIP-F Series” Packaging (Bulk)

	PVC tray	Inner Box	Carton
Size	220×210×12mm	225×215×62mm	315×290×272mm
Quantity	MPQ: 1 tray=100pcs	MOQ: 1 Inner Box=5 trays=500pcs	1 Carton=6 Inner boxes=3,000pcs
Photos			

Soldering Parameters - Wave soldering (Thru-Hole Devices)

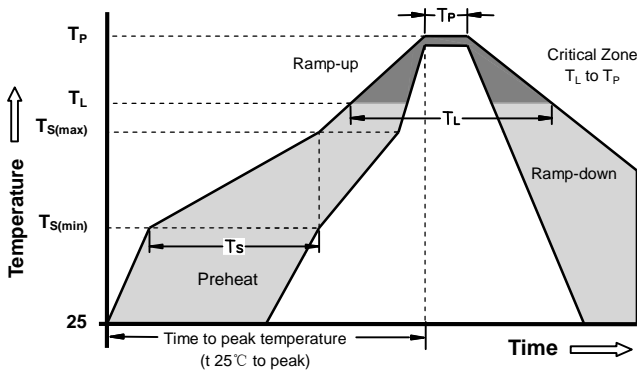


Wave Soldering Condition		Pb-Free assembly
Preheat	Temperature Min	100°C
	Temperature Max	150°C
	Time (Min to Max)	60-180 Seconds
Solder Pot Temperature		280°C Max
Solder Dwell Time		2-5 Seconds

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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
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max
Do not exceed		260°C

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 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 If the contacts of the surge arresters are defective, current load can cause sparks and loud noises.
- I Surge arresters must be handled with care and must not be dropped.
- I Do not continue to use damaged surge arresters.