

## Gas Discharge Tubes (GDT)

## 2RB-8 (DAC) Series

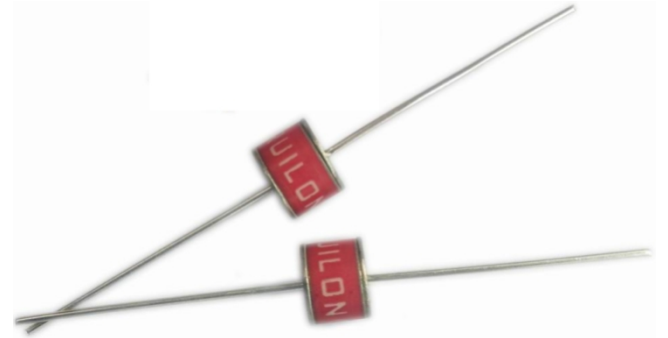
### Description

Gas Discharge Tube (GDT) Surge Arrestors operate as a voltage dependent switch. When a voltage appears across the device that is greater than its rated DC breakdown voltage the gas in the GDT will begin to ionize and conduct until it reaches its Impulse Spark-over Voltage. At this point, the device is fully in its on state and a low arc voltage is maintained irrespective of discharge current. When the transient passes, the GDT will reset to its non-conducting state. GDT technology is capable of handling very high surge currents, possesses very high off-state insulating resistance and is very low in capacitance making them ideal as a stand-alone protector or as the primary stage of a multi-stage circuit protection design.

2RB-8(DAC) Series gas discharge tubes enable protection modules to be constructed with protection classes for N-PE applications.

### Features

- I High follow current capability
- I Ultra-fast response time
- I Stable breakdown voltage
- I 8/20µs Impulse current capability: 10KA
- I Non-Radioactive
- I Ultra Low capacitance (<1.5pF)
- I Size: Φ8mm\*6mm
- I Storage and operational temperature: -40~+125°C



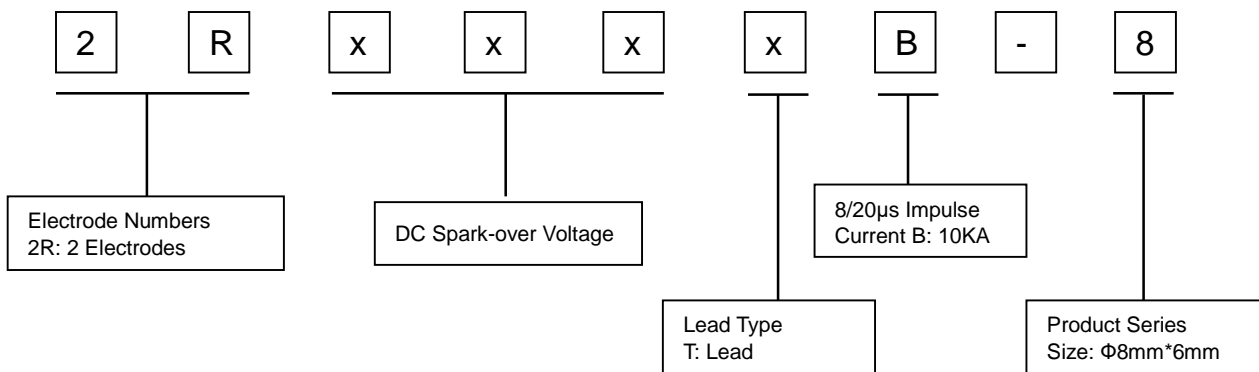
### Agency Approvals

Agency	Standards	Certificate No.
	UL497B	E465335
	UL1449	E479668
	EN 61643-311 IEC 61643-311	J50571931

### Applications

- I Application with high follow current
- I Power supply
- I Consumer electronics
- I AC power line devices

### Part Number Code



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### Electrical Characteristics

Model		2R350TB-8	2R600TB-8	2R800TB-8	Units		
<b>Product code</b>		<b>10.12.82.3500-DAC</b>	<b>10.12.82.6000-DAC</b>	<b>10.12.82.8000-DAC</b>			
<b>DC Spark-over Voltage</b> <sup>1)2)</sup>	at 100V/S	350±20%	600±20%	800±20%	V		
<b>Impulse Spark-over Voltage</b>	at 100V/μS	<500	<750	<1000	V		
	at 1KV/μS	<600	<850	<1100	V		
<b>Front of wave spark-over voltage</b>	at 1.2/50 μs, 6 kV	<800	<1000	<1500	V		
<b>Class II (according to IEC 61643-11)</b>							
Maximum continuous operating voltage	at 50/60Hz	$U_c$	120	255	255	Vrms	
Nominal impulse discharge current	8/20μs	15 times	$I_n$	10	10	10	KA
Maximum discharge current	8/20μs	1 time	$I_{max}$	20	20	20	KA
Follow current	at 50/60Hz		$I_f$	100	100	100	A
<b>Service life (According to IEC 61643-311)</b>							
Nominal impulse discharge current	8/20μs	±5 times		10	10	10	KA
Maximum discharge current	8/20μs	1 time		20	20	20	KA
Alternating Discharge Current	50Hz, 1S	10 times		10	10	10	A
Impulse Life	1.2/50μS, 2Ω	40 time		20	20	20	KV
	1.2/50μS, 12Ω	80 times		20	20	20	KV
<b>Glow Voltage</b>	at 10mA	~130	~150	~170		V	
<b>Arc Voltage</b>	at 1A	~15	~18	~20		V	
<b>Insulation Resistance</b>		>1	>1	>1		GΩ	
Insulation Resistance Measuring Voltage		100	100	100		V <sub>DC</sub>	
<b>Capacitance</b>	at 1MHz	<1.5	<1.5	<1.5		pF	
<b>Weight</b>		~1.1	~1.1	~1.1		g	
<b>Operation and storage temperature</b>		-40~+125	-40~+125	-40~+125		°C	
<b>Climatic category (IEC60068-1)</b>		40/125/21	40/125/21	40/125/21			
<b>Agency Approvals</b> <sup>3)</sup>							
UL497B	E465335	⊙	⊙	⊙			
UL1449	E479668	--	⊙	⊙			
EN 61643-311	IEC 61643-311	J50571931	--	⊙	⊙		
<b>Marking, red negative</b>		<b>RUILON350D Y</b>	<b>RUILON600D Y</b>	<b>RUILON800D Y</b>			
		<b>XXX</b> - Nominal voltage <b>D</b> - Turn off follow current <b>Y</b> - Year of production					
<b>Surface treatment</b>	Body	Nickel Plated					
	Wire	Tin plated					

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

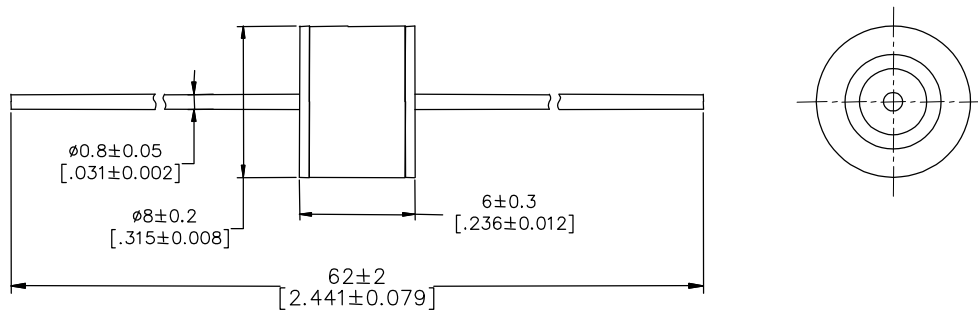
<sup>2)</sup> In ionized mode.

<sup>3)</sup> "⊙" indicates that the product has passed the certification, "--" indicates that the product is not certified.

**Gas Discharge Tubes (GDT)**

**2RB-8 (DAC) Series**

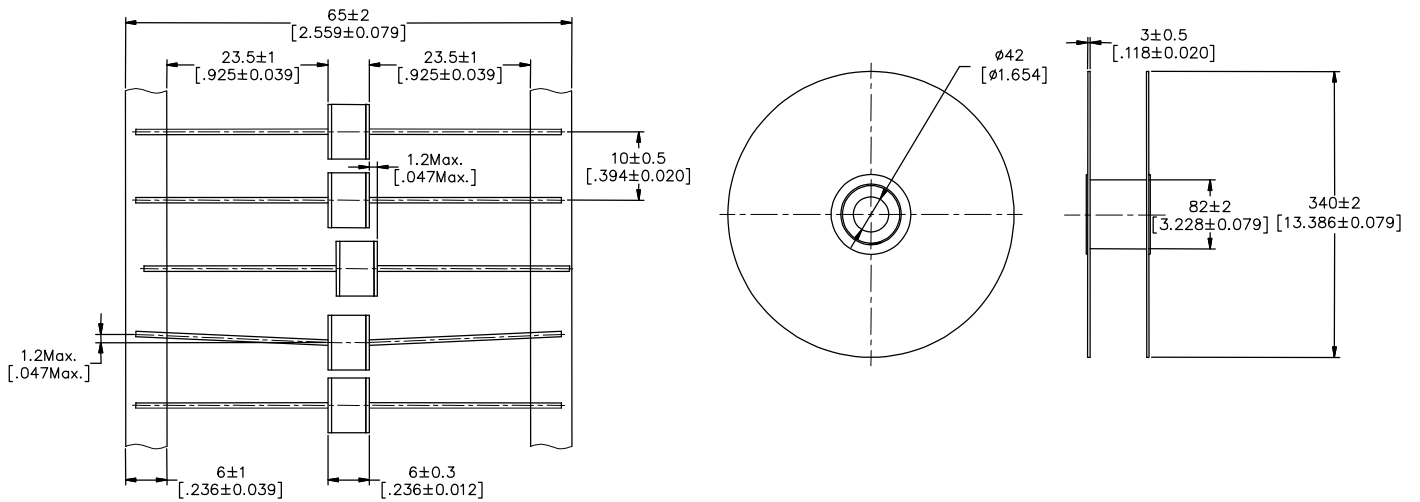
**Dimensions (Unit: mm/inch)**



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

**Tape**

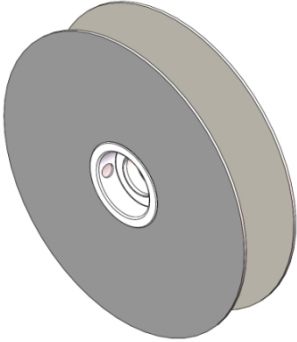
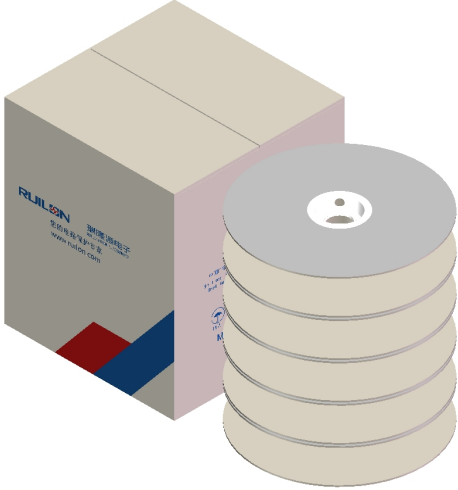
**Reel**



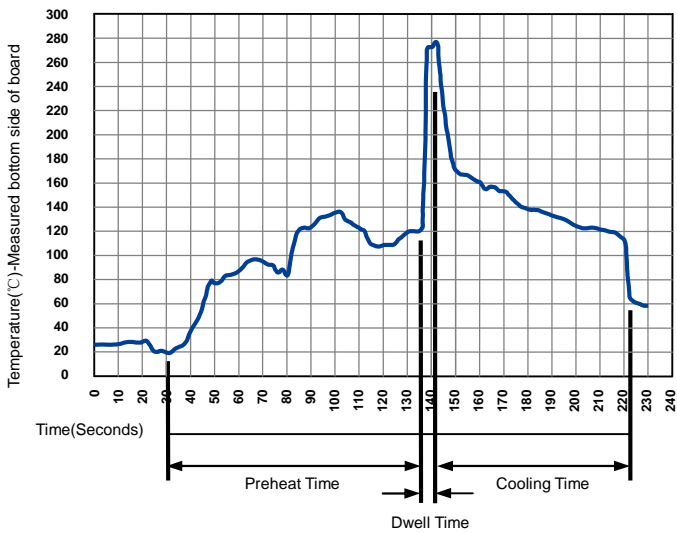
According to IEC 60286-1

### Gas Discharge Tubes (GDT)

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	Reel	Carton
Size	340×78mm	350×350×407mm
Quantity	MPQ/MOQ: 1 reel=800pcs	1 Carton=5 reels =4,000pcs
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

**Terms and definitions**

NO.	Item	Definitions
1	<b>Gas discharge tube(GDT)</b>	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 applications of an impulse of given waveform and the time when current begins to flow.
4	<b>Impulse discharge current 8/20<math>\mu</math>s</b>	Current impulse with a nominal virtual front time of 8 $\mu$ s and a nominal time to half-value of 20 $\mu$ s.
5	<b>Impulse discharge current 10/350<math>\mu</math>s</b>	Current impulse with a nominal virtual front time of 10 $\mu$ s and a nominal time to half-value of 350 $\mu$ s.
6	<b>1,2/50 voltage impulse</b>	Voltage impulse with a nominal virtual front time of 1,2 $\mu$ s and a nominal time to half-value of 50 $\mu$ s.
7	<b>Maximum continuous operating voltage <math>U_c</math></b>	Maximum rms. voltage, which may be continuously applied to the GDT's mode of protection.
8	<b>Nominal discharge current <math>I_n</math></b>	Crest value of the current through the GDT having a current waveform of 8/20.
9	<b>Maximum discharge current <math>I_{max}</math></b>	Crest value of a current through the Surge arrester having an 8/20 waveform and magnitude according to the manufacturers specification. $I_{max}$ is equal to or greater than $I_n$ .
10	<b>Impulse discharge current for class I test <math>I_{imp}</math></b>	Crest value of the current through the Surge arrester having a current waveform of 10/350 with specified charge transfer Q and specified energy W/R in the specified time.
11	<b>Follow current <math>I_f</math></b>	Current supplied by the electrical power system and flowing through the surge arrester after an $I_n$ -discharge current impulse.
12	<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.
13	<b>Capacitance</b>	The capacitance shall be measured once at 1 MHz between all terminals unless otherwise specified.
14	<b>Class I</b>	Surge arrester protects against direct lightning strike. Direct lightning strike is defined as current impulse $I_{imp}$ with waveform 10/350 $\mu$ s. Withstand capability acc. to IEC 61643-11 standard.
15	<b>Class II</b>	Surge arrester protects against induced surge current. Induced surge current is defined as current impulse $I_n$ and $I_{max}$ with waveform of shorter duration than $I_{imp}$ , 8/20 $\mu$ s. Withstand capability acc. to IEC 61643-11 standard.

**Cautions and warnings**

- I The follow current must be limited within  $I_f$  (see the value on page 2) value so that the arrester can be properly extinguished when the surge has decayed. The arrester might otherwise heat up and ignite adjacent components.
- 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 Damaged surge arresters must not be re-used.