Gas Discharge Tubes (GDT) 2R-10D Series

Description

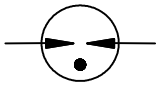
The Gas Discharge Tube (GDT) is a protective device which is filled with certain proportion of noble gas, or mixed gas or other discharge media in the space between metal electrodes and metalized ceramics, and then sealed at high temperature to form a single gap or multi-gap switch type protective device. When the protected circuit or equipment suffers to surge, GDT will change from high impedance state to low impedance state and release the surge energy to reduce the residual voltage of the circuit, and then protect the equipment or human body from the hazard of transient overvoltage.

2R-10D Series gas discharge tubes enable protection modules to be constructed with protection classes for N-PE applications.

2RXXX-10D-LS0

2RXXX-10D-LH0

Electrical symbol



Features

- Stable performance over life
- Very fast response time
- High insulation resistance
- Non-Radioactive

Applications

- AC power line N-PE application
- Class I and class II – surge protection

Part Number Code

2	R	X	X	X	-	1	0	D	-	L	X	X

- 2R: Electrode Numbers (2R: 2 Electrodes)
- XXX: DC Spark-over Voltage
- 10D: Product Series (Size: Φ10.4mm*2.5mm)
- LXX: Type of Pin

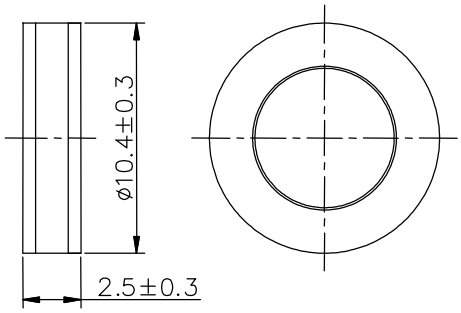
Electrical Characteristics

Model				2R090-10D	2R350-10D	2R600-10D	2R800-10D	2R1000-10D	Units
DC Spark-over Voltage [1) 2)]	at 100V/S			72~108	280~420	540~780	640~960	800~1200	V
Impulse Spark-over Voltage	at 1KV/μS			<600	<600	<850	<1100	<1350	V
Front of wave spark-over voltage	at 1.2/50 μs, 6 kV			<750	<750	<1000	<1250	<1500	V
According to IEC 61643-311									
Nominal impulse discharge current 8/20μs	±5 times			20	20	20	--	--	KA
Maximum discharge current 8/20μs	1 time			25	25	25	--	--	KA
Impulse discharge current 10/350μs	1 time			5	5	5	--	--	KA
Class I (according to IEC 61643-11)									
Maximum continuous operating voltage	at 50/60Hz		U_C	--	--	--	255	275	Vrms
Nominal impulse discharge current 8/20μs	15 times		I_n	--	--	--	10	10	KA
Impulse discharge current 10/350μs	5 times		I_{imp}	--	--	--	2.5	2.5	KA
Follow current at 50/60Hz			I_f	--	--	--	100	100	A
Class II (according to IEC 61643-11)									
Maximum continuous operating voltage	at 50/60Hz		U_C	--	--	--	255	275	Vrms
Nominal impulse discharge current 8/20μs	15 times		I_n	--	--	--	10	10	KA
Maximum discharge current 8/20μs	1 time		I_{max}	--	--	--	20	20	KA
Follow current at 50/60Hz			I_f	--	--	--	100	100	A
Insulation Resistance	at DC 100V			>1	>1	>1	>1	>1	GΩ
Capacitance	at 1MHz			<4	<4	<4	<4	<4	pF
Glow Voltage	at 10mA			~60	~180	~200	~225	~225	V
Arc Voltage	at 1A			~10	~16	~18	~22	~22	V
Weight									
2RXXX-10D-LS0				~1.1	~1.1	~1.1	~1.1	~1.1	g
2RXXX-10D-LH0				~1.6	~1.6	~1.6	~1.6	~1.6	g
Operation and storage temperature				-40~+125	-40~+125	-40~+125	-40~+125	-40~+125	°C
Climatic category (IEC60068-1)				40/125/21	40/125/21	40/125/21	40/125/21	40/125/21	
Marking									
2RXXX-10D-LS0				Without	Without	Without	Without	Without	
2RXXX-10D-LH0, Laser marking				**RUILON 2R090-10**	**RUILON 2R350-10**	**RUILON 2R600-10**	**RUILON 2R800-10 DAC**	**RUILON 2R1000-10 DAC**	
Surface treatment				Matte-tin plated					

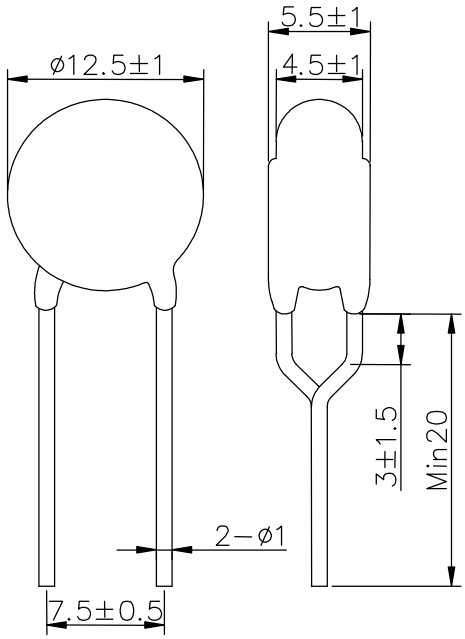
1) At delivery AQL 0.65 level II, DIN ISO 2859.
2) In ionized mode.
3) TOV - Temporary over voltage.

Dimensions (Unit: mm)

2RXXX-10D-LS0

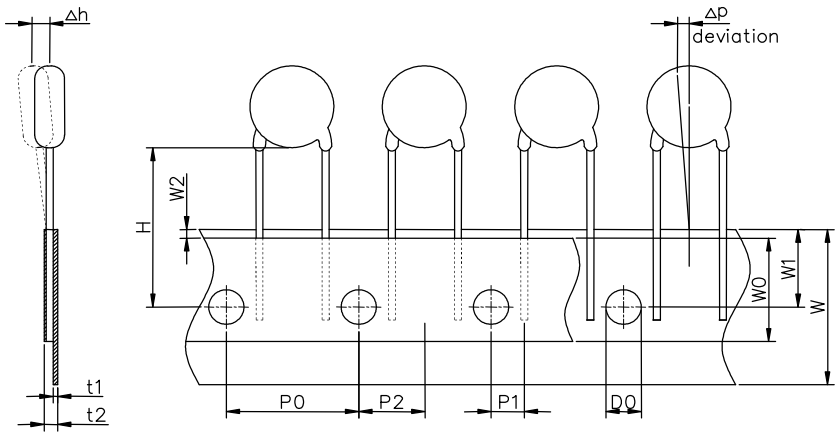


2RXXX-10D-LH0



Packaging Information

2RXXX-10A-LH0

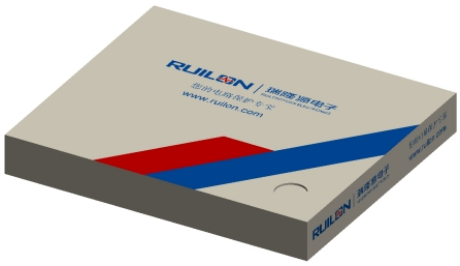


Direction of Unreeling

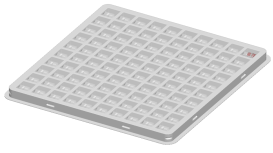
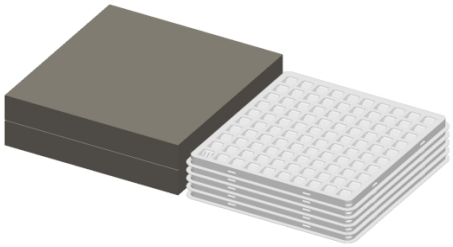
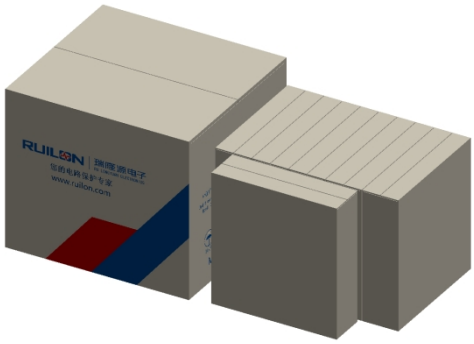
Packing and dimensions according to IEC 60286-2

Symbol	Millimeters	Inches
D0	Φ4±0.2	Φ0.157±0.008
△h	2.0 Max	0.08 Max
H	18+2/-0	0.709+0.079/-0
P0	15.0±0.3	0.591±0.012
P1	3.75±0.7	0.148±0.028
P2	7.5±0.5	0.295±0.020
△p	1.3 Max	0.051 Max
W	18+1/-0.5	0.709+0.039/-0.020
W0	13±0.5	0.512±0.020
W1	9+0.75/-0.5	0.354+0.030/-0.020
W2	3.0 Max	0.118 Max
t1	0.5±0.1	0.020±0.004
t2	1.7 Max	0.067 Max

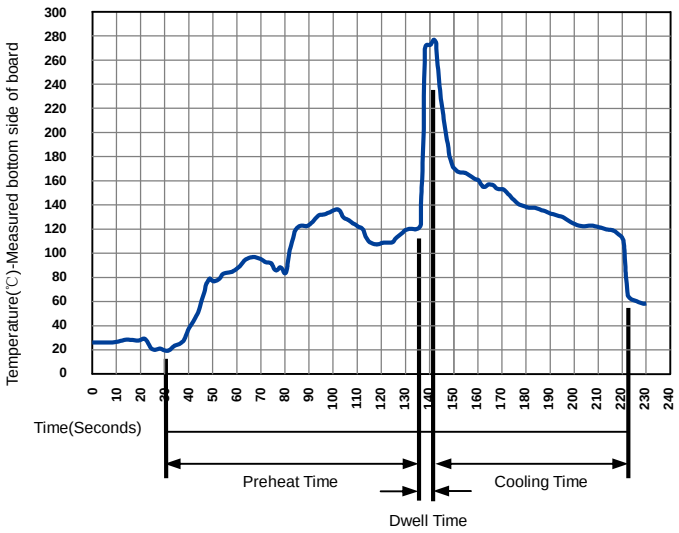
2RXXX-10D-LH0

	Inner Box	Carton
Size	335×265×40mm	550×350×240mm
Quantity	MPQ/MOQ: 1 Inner Box=800pcs	1Carton=10 Inner Box=8,000pcs
Photos		

2RXXX-10D-LS0

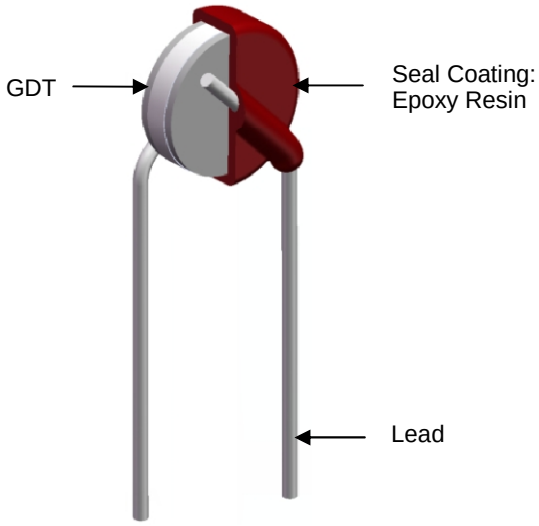
	PVC tray	Inner Box	Carton
Size	220×210×12mm	225×215×62mm	315×290×272mm
Quantity	MPQ: 1 tray=400pcs	MOQ: 1 Inner Box=2 trays=800pcs	1 Carton=6 Inner boxes=4,800pcs
Photos			

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

Construction (2RXXX-10D-LH0)



Terms and definitions

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

Cautions and warnings

- Surge arresters must not be operated directly in power supply networks.
- Surge arresters may become hot in case of longer periods of current stress (danger of burning).
- If the contacts of the surge arresters are defective, current stress can lead to the formation of sparks and loud noises.
- Surge arresters may be used only within their specified values. In case of overload, the head contacts may fail or the component may be destroyed.
- Damaged surge arresters must not be re-used.