# RUIL&N

# **3RD-8S Series**

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### 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 8/20µs Impulse current capability: 20KA
- I Non-Radioactive
- I Ultra Low capacitance (<1.5pF)
- I High insulation resistance
- I Size: Φ8mm\*10mm
- I Storage and operational temperature: -40~+90°C

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# **Electrical symbol**



a = Tip b = Ring e = Ground (center electrode)

### **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



Specifications are subject to change without notice. Please refer to http://www.ruilon.com.cn for current information. Version: A4/2024-05-22 File Number: SP-GDT-029

# RUILIN

# Gas Discharge Tubes(GDT)

# **3RD-8S Series**

## **Electrical Characteristics**

	DC Spark-over Voltage 1) 2) 3) @100V/S	Impulse				e Glow Voltage @10mA	-	Life Ratings <sup>5)</sup>				
Part Number		Spark-over Voltage <sup>3)</sup>	Capacitance @1MHz		Impu Disch Curr @8/2			arge ent	Impulse Discharge Current	Alternating Discharge Current	Impulse Life @10/1000µS	
		100V/µS	ιS 1KV/μS					@0/Z	σμο	@10/350µS	@50Hz 1S	
		Max	Max	Min	Max	Typical	Typical	±5 times	1 time	±5 times	10 times	300 times
	v	v	v	GΩ	pF	v	v	KA	KA	KA	Α	А
3R075SD-8S	75±20%	500	600	1	1.5	60	10	20	25	5	20	200
3R090SD-8S	90±20%	500	600	1	1.5	60	10	20	25	5	20	200
3R150SD-8S	150±20%	500	600	1	1.5	60	10	20	25	5	20	200
3R230SD-8S	230±20%	600	700	1	1.5	60	10	20	25	5	20	200
3R250SD-8S	250±20%	600	700	1	1.5	60	10	20	25	5	20	200
3R350SD-8S	350±20%	800	900	1	1.5	60	10	20	25	5	20	200
3R420SD-8S	420±20%	850	950	1	1.5	60	10	20	25	5	20	200
3R470SD-8S	470±20%	900	1000	1	1.5	60	10	20	25	5	20	200
3R600SD-8S	600±20%	1100	1200	1	1.5	60	10	20	25	5	20	200
Glow to Arc transition Current ~1A				·1A								
Operation and s	Operation and storage temperature					40~+90°(	0					
Climatic catego	Climatic category (IEC60068-1)				40/90/21							
Marking, red negative					ן א א	RUILON xxx Y xxx -Nominal voltage Y -Year of production						
Weight	Weight				·2.0g							
Surface treatme	Surface treatment				/latte-tin p	olated						
<ol> <li>At delivery AQL 0.65 level II, DIN ISO 2859</li> <li>In ionized mode</li> </ol>												

<sup>3)</sup> Tip or ring electrode to center electrode

<sup>4)</sup> Insulation Resistance Measuring Voltage:

75V~150V at DC 50V

Other at DC 100V

 $^{\rm 5)}\,$  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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# Gas Discharge Tubes(GDT)

## Dimensions





Recommended Soldering Pad Layout

Symbol	Millimeters	Inches
Α	8±0.2	0.315±0.008
В	8±0.2	0.315±0.008
С	10±0.3	0.394±0.012
D	Φ8±0.2	Ф0.315±0.008
E	Φ7.2±0.1	Ф0.283±0.004
F	0.5±0.1	0.020±0.004
G	1.5±0.1	0.059±0.004
Н	0.5±0.1	0.020±0.004
х	1.5	0.059
X1	1.5	0.059
X2	10.0	0.394
Y	6.0	0.236

# **Packaging Information**







Symbol	Millimeters	Inches
w	16±0.3	0.630±0.012
A0	10.5±0.1	0.413±0.004
В0	8.3±0.1	0.327±0.004
К0	8.4±0.1	0.331±0.004
Р	16±0.1	0.630±0.004
F	7.5±0.1	0.295±0.004
E	1.75±0.1	0.069±0.004
D	1.5+0.1/-0.0	0.059+0.004/-0.0
P0	4±0.1	0.157±0.004
P2	2±0.1	0.079±0.004
т	0.4±0.1	0.016±0.004
D0	13.3±0.15	0.524±0.006
D1	330±2	12.992±0.079
D2	100+1/-2	3.937+0.039/-0.079
W1	16.5±0.4	0.65±0.016

# **3RD-8S Series**

HSE

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# Gas Discharge Tubes(GDT)

**3RD-8S Series** 

HSE

	Reel	Inner Box	Carton
Size	330×20.5mm	340×333×70mm	375×353×380mm
Quantity	MPQ/MOQ: 1 reel=400pcs	1 Inner Box=3 reels=1,200pcs	1 Carton=5 Inner boxes=6,000pcs
Photos			RULEN MARKE

# Soldering Parameters - Reflow Soldering (Surface Mount Devices)



Reflow Co	ndition	Pb - Free assembly		
Pre Heat	-Temperature Min (T <sub>s(min)</sub> )	150°C		
	-Temperature Max (T <sub>s(max)</sub> )	200°C		
	- Time (min to max) (t <sub>s</sub> )	60 -180 Seconds		
Average rate $T_L$ ) to peak	amp up rate ( Liquids Temp <	3°C/second max		
T <sub>S(max)</sub> to T	L - Ramp-up Rate	5°C/second max		
Reflow	- Temperature (T⊾) (Liquids)	217°C		
	- Time (min to max) (t <sub>s</sub> )	60 -150 Seconds		
Peak Tem	perature (T <sub>P</sub> )	260 +0/-5°C		
Time withi Temperatu	n 5°C of actual peak ure (t <sub>p</sub> )	10 - 30 Seconds		
Ramp-dow	vn Rate	6°C/second max		
Time 25°C	to peak Temperature (T <sub>P</sub> )	8 minutes Max		
Do not exc	ceed	260°C		

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.

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# Gas Discharge Tubes(GDT)

# **3RD-8S Series**

### **Terms and definitions**

NO.	ltem	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 $\mu s$ and a nominal time to half-value of 20 $\mu s.$			
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.