

## 3-Electrode Gas Discharge Tube (GDT)

### 3RXXXL-5 Series

#### Description

Gas discharge Tubes (GDT) are classical components for protecting the installations of the telecommunications. It is essential that IT and telecommunications systems -with their high-grade but sensitive electronic circuits - be protected by arresters. They are thus fitted at the input of the power supply system together with varistors and at the connection points to telecommunication lines. They have become equally indispensable for protecting base stations in mobile telephone systems as well as extensive cable television (CATV) networks with their repeaters and distribution systems.

These protective components are also indispensable in other sectors, In AC power transmission systems, they are often used with current-limiting varistors, In customer premises equipment such as DSL modems, WLAN routers, TV sets and cable modems In air-conditioning equipment, the integral black-box concept offers graduated protection by combining arresters with varistors, PTC, diodes and inductor.

#### Features

- ◆ Non-Radioactive
- ◆ Low insertion loss
- ◆ Excellent response to fast rising transients
- ◆ Ultra low capacitance
- ◆ 5KA surge capability tested with 8/20µs pulse as defined by IEC 61000-4-5

#### Applications

- ◆ Communication equipment
- ◆ CATV equipment
- ◆ Test equipment
- ◆ Data lines
- ◆ Power supplies
- ◆ Telecom SLIC protection
- ◆ Broadband equipment
- ◆ ADSL equipment, including ADSL2+
- ◆ XDSL equipment
- ◆ Satellite and CATV equipment
- ◆ Consumer electronics

3RXXXL-5



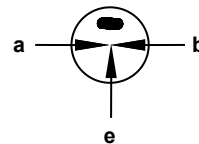
3RXXXL-5



3RXXXL-5S



#### Schematic Symbol



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

#### Product Characteristics

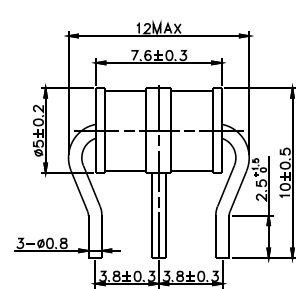
Materials	<b>Leaded Device:</b> Nickel-plated with Tinplated wires <b>Surface Mount:</b> Dull Tin-plated	
Product Marking	<b>GDT XXXL</b> XXX -Nominal voltage L -5KA	
Glow to Arc Transition Current	< 0.5 Amps	
Glow Voltage	~60 Volts	
Storage and Operational Temperature	-40 to +90°C	
Weight	3RXXXL-5	~0.78g
	3RXXXL-5	~0.66g
	3RXXXL-5S	~0.68g
Climatic category (IEC 60068-1)	40/ 90/ 21	

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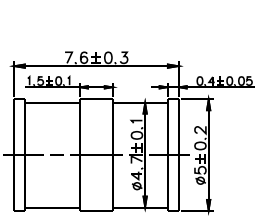
### 3RXXXL-5 Series

#### Dimensions (Unit: mm)

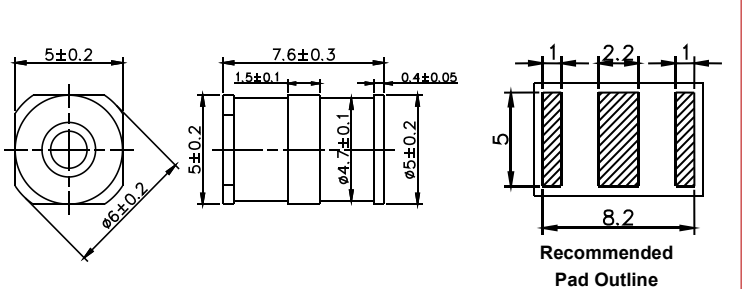
Radial Leaded Devices  
(3RXXXLM-5)



Without wire Devices  
(3RXXXL-5)



Surface Mount Devices (3RXXXL-5S)



#### Electrical Characteristics

Part Number	Marking	DC Spark-over Voltage	Maximum Impulse Spark-over Voltage		Minimum Insulation Resistance	Maximum Capacitance	Arc Voltage	Service Life			
								Nominal Impulse Discharge Current	Max Impulse Discharge Current	Nominal Alternating Discharge Current	Impulse Life
			@100V/μs	@1KV/μs				@8/20μs <sup>4)</sup> ±5 times	@8/20μs <sup>4)</sup> 1 time	@50Hz <sup>4)</sup> 1 Sec 10 times	@10/1000μs <sup>4)</sup> 300 times
3R075LM-5 3R075L-5 3R075L-5S	GDT 75L	75V±30%	<500V	<600V	1 GΩ (at 25V)	<1.5pF	~15V	5KA	10KA	5A	200A
3R090LM-5 3R090L-5 3R090L-5S	GDT 90L	90V±30%	<500V	<600V	1 GΩ (at 50V)	<1.5pF	~15V	5KA	10KA	5A	200A
3R150LM-5 3R150L-5 3R150L-5S	GDT 150L	150V±30%	<500V	<600V	1 GΩ (at 50V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R230LM-5 3R230L-5 3R230L-5S	GDT 230L	230V±30%	<600V	<700V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R250LM-5 3R250L-5 3R250L-5S	GDT 250L	250V±30%	<600V	<700V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R300LM-5 3R300L-5 3R300L-5S	GDT 300L	300V±30%	<800V	<900V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R350LM-5 3R350L-5 3R350L-5S	GDT 350L	350V±30%	<800V	<900V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R420LM-5 3R420L-5 3R420L-5S	GDT 420L	420V±30%	<900V	<1000V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R470LM-5 3R470L-5 3R470L-5S	GDT 470L	470V±30%	<900V	<1000V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A
3R600LM-5 3R600L-5 3R600L-5S	GDT 600L	600V±30%	<1100V	<1200V	1 GΩ (at 100V)	<1.5pF	~20V	5KA	10KA	5A	200A

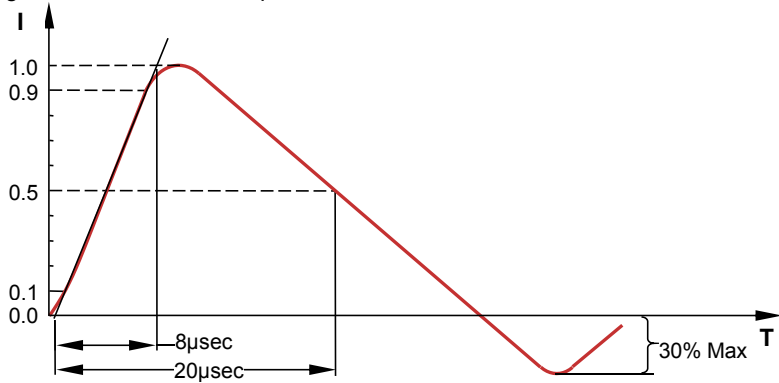
#### Notes:

- 1). Terms in accordance with ITU-T K.12 and GB/T 9043-2008
- 2). At delivery AQL 0.65 level II, DIN ISO 2859
- 3). Tip or ring electrode to center electrode
- 4). Total current through center electrode, half value through tip respectively ring electrode

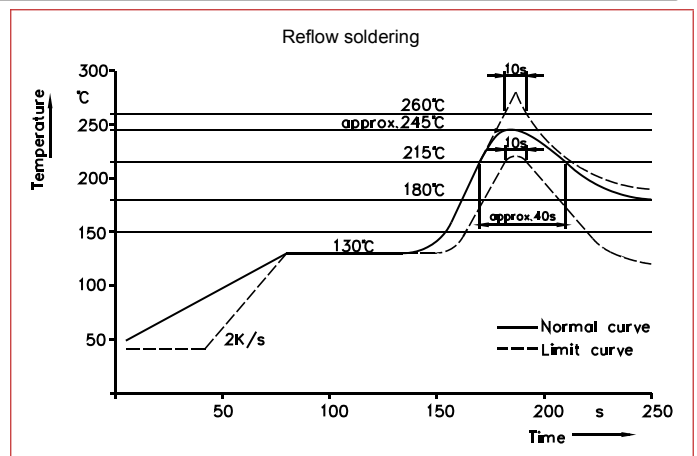
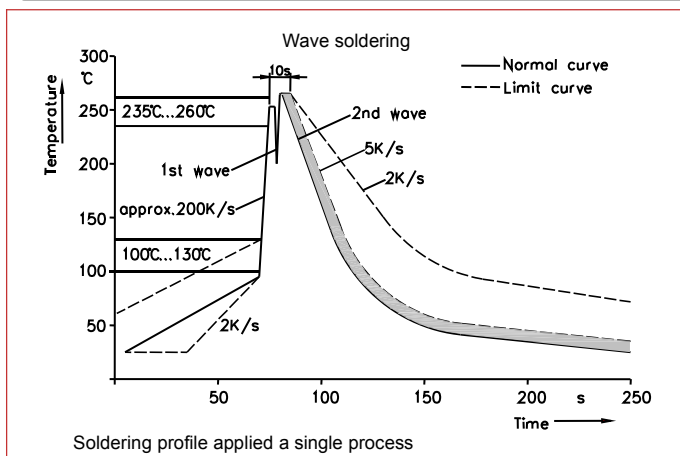
### 3-Electrode Gas Discharge Tube (GDT)

#### 3RXXL-5 Series

#### Electrical Rating

Item	Test Condition / Description	Requirement
<b>DC Spark-over Voltage</b>	The voltage is measured with a slowly rate of rise $dv / dt = 100V/s$	To meet the specified value
<b>Impulse Spark-over Voltage</b>	The maximum impulse spark-over voltage is measured with a rise time of $dv / dt = 100V/\mu s$ or $1KV/\mu s$	
<b>Insulation Resistance</b>	The resistance of gas tube shall be measured each terminal each other terminal, please see above spec.	
<b>Capacitance</b>	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency :1MHz	
<b>Nominal Impulse Discharge Current</b>	<p>The maximum current applying a waveform of <math>8/20\mu s</math> that can be applied across the terminals of the gas tube. One hour after the test is completed, re-testing of the DC spark-over voltage does not exceed <math>\pm 30\%</math> of the nominal DC spark-over voltage. Dwell time between pulses is 3 minutes.</p> 	
<b>Nominal Alternating Discharge Current</b>	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. The DC spark-over voltage does not exceed $\pm 30\%$ of the nominal DC spark-over voltage. $IR > 10^8 ohms$ .	

#### Recommended Soldering Profile



#### Soldering Parameters - Hand Soldering

Solder Iron Temperature:  $350^{\circ}C \pm 5^{\circ}C$

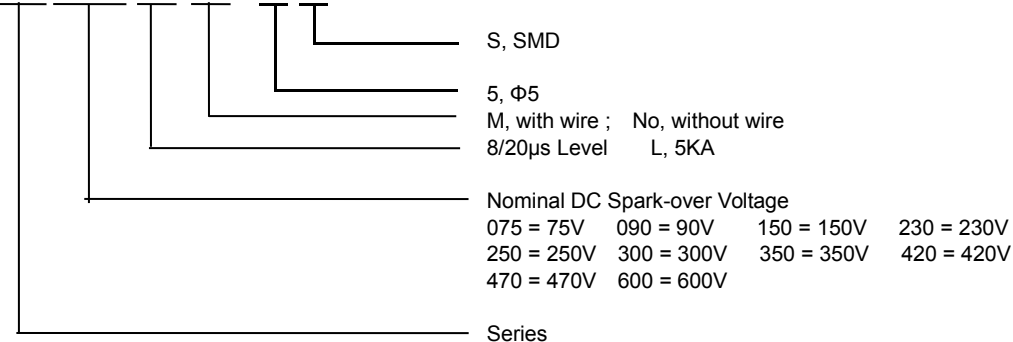
Heating Time: 5 seconds max.

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### Part Numbering

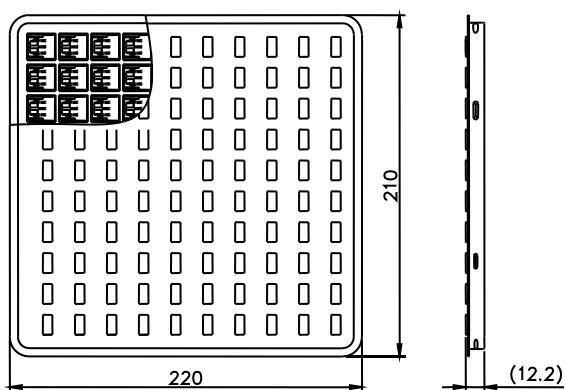
3 R X X X L M - 5 S



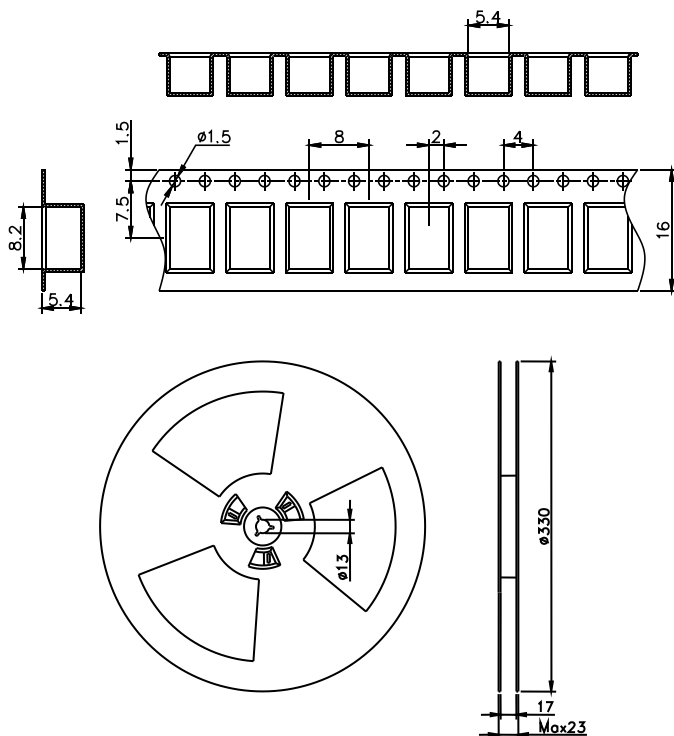
### Packaging

Part Number	Description	Quantity
3RXXXLM-5	100PCS per Tray, 10 Trays / Inner Carton	1000 PCS
3RXXXL-5	100PCS per Tray, 10 Trays / Inner Carton	1000 PCS
3RXXXL-5S	100PCS per Tray, 10 Trays/ Inner Carton	1000 PCS
	16mmTape & 13" Reel	1000 PCS

Tray Dimension (Unit: mm)



Tape and Reel Dimension (Unit: mm)



### Cautions and Warnings

- ◆ Gas discharge tubes (GDT) must not be operated directly in power supply networks.
- ◆ Gas discharge tubes (GDT) may become hot in case of longer periods of current stress (danger of burning).
- ◆ Gas discharge tubes (GDT) may be used only within their specified values. In the event of overload, the head contacts may fail or the component may be destroyed.
- ◆ Damaged Gas discharge tubes (GDT) must not be re-used.