

## Multi-gap Gas Discharge Tubes (MGDT)

## 5G-8E 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.

The 5G-8E series discharge tube has a total of 5 discharge gaps, so this product has a higher arc voltage and can be directly used for 48V or 60V DC power supplies.



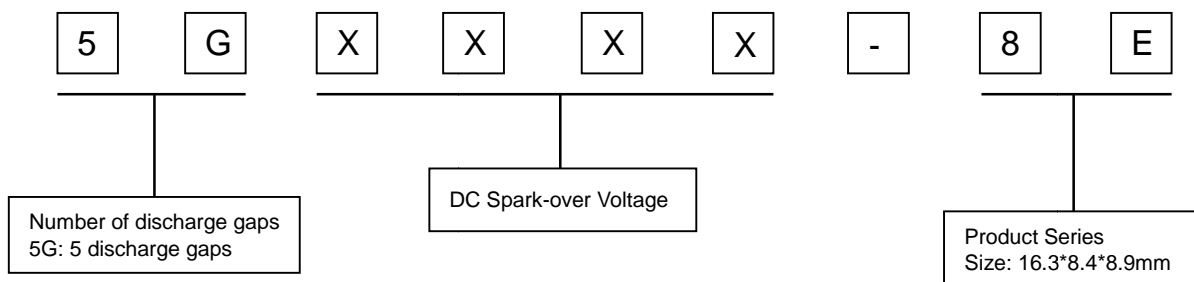
### Features

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

### Applications

- I DC power supply protection
- I Wireless base station

### Part Number Code



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### Electrical Characteristics

Model	5G800-8E		5G1400-8E		Units
	5G800-8E-C		5G1400-8E-C		
<b>DC Spark-over Voltage</b> <sup>1) 2)</sup> at 100V/S					
- initial	Arrester only	600~1000	980~1820		V
	With capacitors <sup>3)</sup>	<750	<1250		V
-after service life	Arrester only	560~1500	900~2100		V
<b>Impulse Spark-over Voltage</b> at 1KV/μs					
- initial	Arrester only	<1500	<2000		V
	With capacitors <sup>3)</sup>	<800	<800		V
-after service life	Arrester only	<2500	<2800		V
	With capacitors <sup>3)</sup>	<1400	<1400		V
<b>Front of wave spark-over voltage</b> at 1.2/50 μs, 6 kV					
- initial	Arrester only	<2000	<2300		V
	With capacitors <sup>3)</sup>	<900	<900		V
-after service life	Arrester only	<2600	<3000		V
	With capacitors <sup>3)</sup>	<1500	<1500		V
<b>DC operating voltage</b> <sup>4)</sup>					
- Nominal		48	60		V <sub>DC</sub>
- Max.		60	72		V <sub>DC</sub>
<b>Service life</b>					
Impulse Discharge Current	8/20μS ±5 times	20	20		KA
	10/350μS ±5 times	4	4		KA
	10/350μS ±50 times	500	500		A
	10/1000μS ±150 times (alternating polarity)	100	100		A
<b>Insulation Resistance</b>	at DC 100V	>1	>1		GΩ
<b>Arc Voltage</b>	at 30A	>60	>72		V
<b>Capacitance</b>	at 1MHz	<1	<1		pF
<b>Weight</b>		~5.1	~5.1		g
<b>Operation and storage temperature</b>		-40~+125	-40~+125		°C
<b>Climatic category (IEC60068-1)</b>		40/125/21	40/125/21		
<b>Marking, red positive</b>		<b>RL 48DC</b>	<b>RL 60DC</b>		
<b>Surface treatment</b>	Matte-tin plated				

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

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

<sup>3)</sup> Refer to circuit diagram on page 5.

<sup>4)</sup> DC current source 30 A.

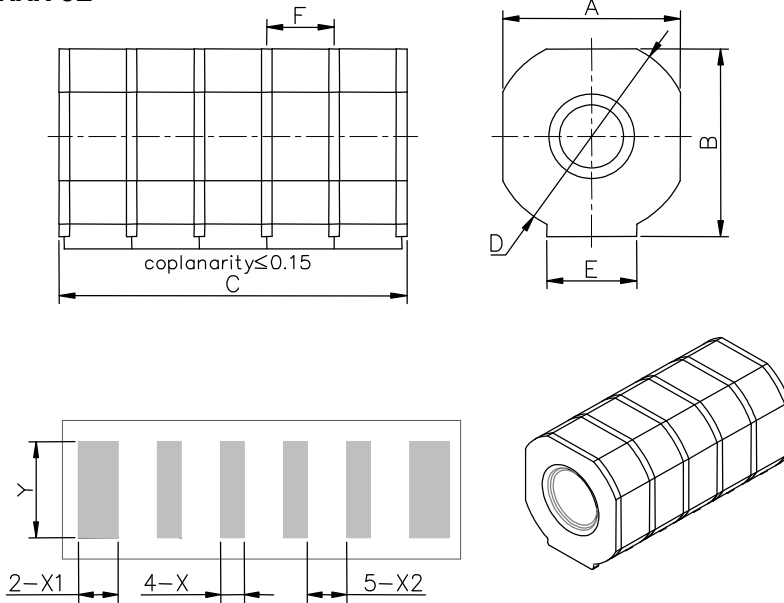
Terms in accordance with IEC 61643-11.

## Multi-gap Gas Discharge Tubes (MGDT)

## 5G-8E Series

### Dimensions

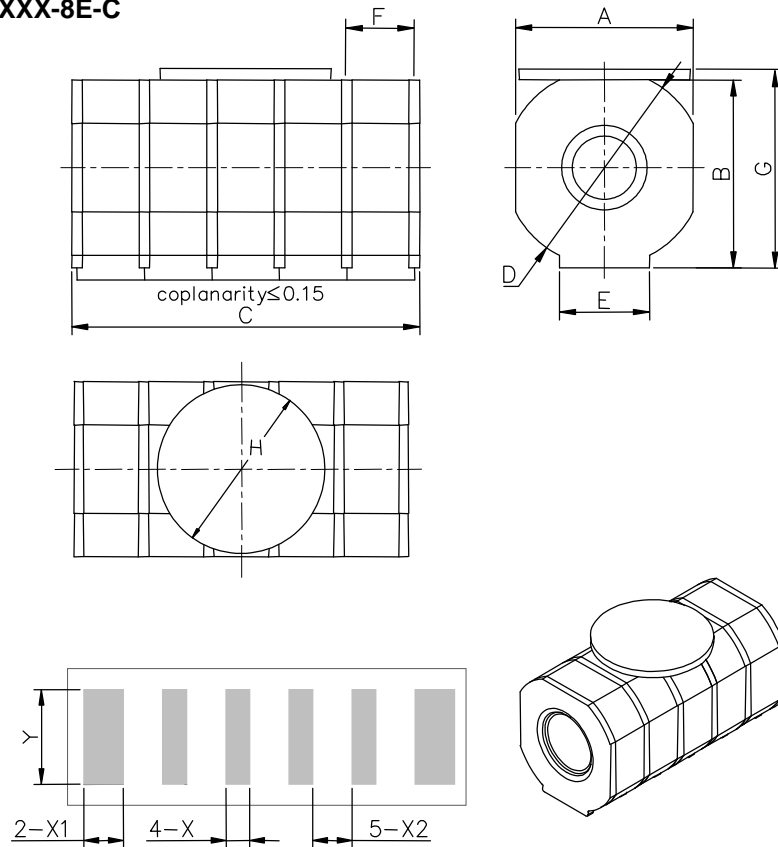
#### 5GXXX-8E



Recommended Soldering Pad Layout

Symbol	Millimeters	Inches
A	8.4±0.3	0.331±0.012
B	8.9±0.3	0.350±0.012
C	16.3±0.5	0.642±0.020
D	φ9.3±0.3	0.366±0.012
E	4.2±0.2	0.165±0.008
F	~3.2	~0.126
X	1.2	0.047
X1	2	0.079
X2	2	0.079
Y	4.5	0.177

#### 5GXXX-8E-C



Recommended Soldering Pad Layout

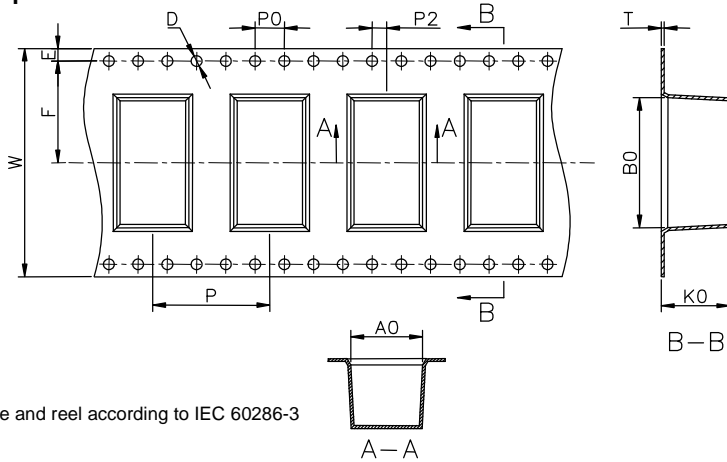
Symbol	Millimeters	Inches
A	8.4±0.3	0.331±0.012
B	8.9±0.3	0.350±0.012
C	16.3±0.5	0.642±0.020
D	φ9.3±0.3	0.366±0.012
E	4.2±0.2	0.165±0.008
F	~3.2	~0.126
G	9.5±0.3	0.374±0.012
H	Φ8.0	0.315
X	1.2	0.047
X1	2	0.079
X2	2	0.079
Y	4.5	0.177

## Multi-gap Gas Discharge Tubes (MGDT)

## 5G-8E Series

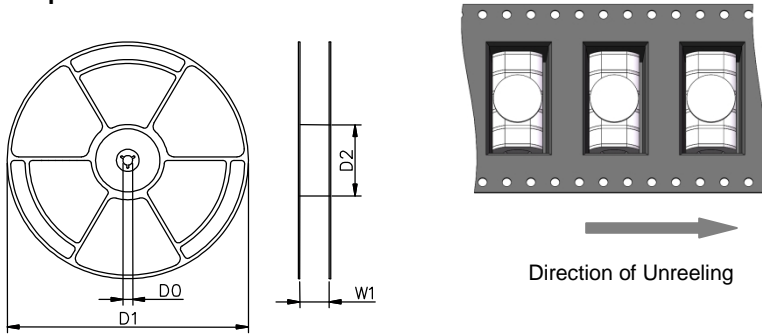
### Packaging Information

#### Tape Specifications



Symbol	Millimeters	Inches
W	32±0.3	1.260±0.012
A0	8.8±0.1	0.346±0.004
B0	17.1±0.1	0.673±0.004
K0	10.3±0.2	0.406±0.0079
P	16.0±0.1	0.630±0.004
E	1.75±0.1	0.069±0.004
F	14.2±0.1	0.559±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
T	0.4±0.1	0.0157±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	33+1/-0.5	1.299+0.039/-0.0197

#### Reel Specifications

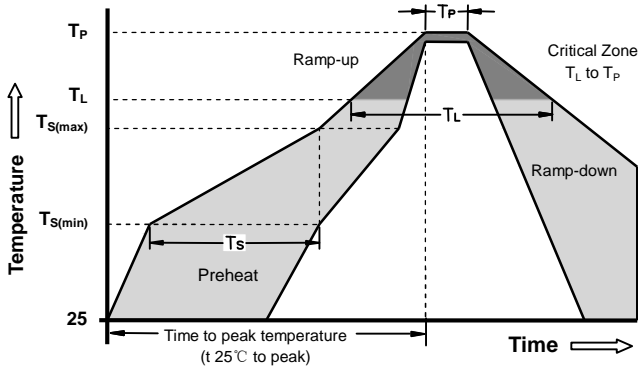


	Reel	Inner Box	Carton
Size	330 × 35mm	340 × 333 × 70mm	375 × 353 × 380mm
Quantity	MPQ/MOQ: 1 reel=300pcs	1 Inner Box=2 reels=600pcs	1 Carton=5 Inner boxes=3,000pcs
Photos			

# Multi-gap Gas Discharge Tubes (MGDT)

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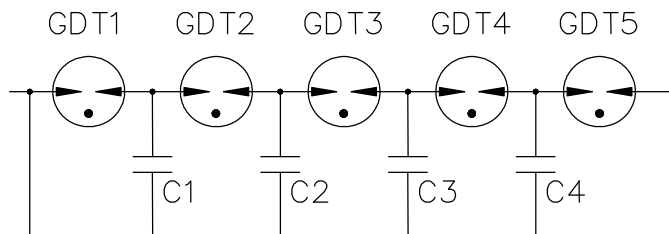
## Soldering Parameters - Reflow Soldering (Surface Mount Devices)



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

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.

### Application Circuit (C1 to C4 = each capacitor 100 pF to 470 pF, withstand voltage 2KV)



**Cautions and warnings**

- I The follow current must be limited (see test circuit) so that the arrester can be properly extinguished when the surge has decayed. The arrester might otherwise heat up and ignite adjacent components.
- I If the contacts of the surge arresters are defective, current load can cause sparks and loud noises.
- 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 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 must be handled with care and must not be dropped.
- I Do not continue to use damaged surge arresters.
- I The shown SMD pad dimensions represent a safe way to mount the arrester and are a recommendation of the manufacturer. During the reflow process it must be assured that no solder material reduces the insulation distance between the pads below the arrester.
- I SMD surge arresters should be soldered within 24 month after shipment.