2R-8 Series
Gas Discharge Tubes



Additional Information

Resources | Accessories | Samples

Agency Approvals

Agency	Agency File Number
	E527857

2 Electrode GDT Graphical Symbol



Description

GDT (Gas Discharge Tubes) 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 GDTs 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

- Stable breakdown voltage
- High insulation resistance
- High current rating
- Low capacitance (≤1.5pF)
- Stable performance over life
- Large absorbing transient current capability
- Fast response time
- RoHS compliant
- Standard Size: 8.0mm*6.0mm
- Meets MSL level 1, per J-STD-020
- Storage and operating temperature: -40℃ ~ +90℃

Application

- Repeaters, Modems
- Subscriber protection
- Telephone Interface, Line cards
- Data communication equipment
- Line test equipment
- Branch exchange
- Subscriber protection
- Alarm system
- Tuner
- Antenna protection

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Electrical Characteristics (T_A=25℃ unless otherwise noted)

Part Number		Device Marking Code	DC Spark-over Voltage	Maximum Impulse Spark-over Voltage	Nominal Impulse Discharge Current	Alternating Discharge Current	Impulse Life	Minimum Insulation Resistance		Maximum Capacitance	Agency Approvals
			100V/s (V)	1000V/μs (V)	8/20μs, 10 times (kA)	50Hz, 1sec (A)	10/1000μs, 100A	Test Voltage	GΩ	1MHz (pF)	
2R075ML-8	2R075MM-8	075	75±20%	600	10	10	300 times	25VDC	1	1.5	√
2R090ML-8	2R090MM-8	090	90±20%	600	10	10	300 times	50VDC	1	1.5	√
2R150ML-8	2R150MM-8	150	150±20%	700	10	10	300 times	100VDC	1	1.5	√
2R230ML-8	2R230MM-8	230	230±20%	700	10	10	300 times	100VDC	1	1.5	√
2R250ML-8	2R250MM-8	250	250±20%	800	10	10	300 times	100VDC	1	1.5	√
2R300ML-8	2R300MM-8	300	300±20%	900	10	10	300 times	100VDC	1	1.5	√
2R350ML-8	2R350MM-8	350	350±20%	900	10	10	300 times	100VDC	1	1.5	√
2R400ML-8	2R400MM-8	400	400±20%	1000	10	10	300 times	100VDC	1	1.5	√
2R470ML-8	2R470MM-8	470	470±20%	1100	10	10	300 times	250VDC	1	1.5	√
2R600ML-8	2R600MM-8	600	600±20%	1300	10	10	300 times	250VDC	1	1.5	√
2R800ML-8	2R800MM-8	800	800±20%	1500	10	10	300 times	250VDC	1	1.5	√
2R1000ML-8	2R1000MM-8	1000	1000±20%	1900	10	5	300 times	500VDC	1	1.5	√
2R1200ML-8	2R1200MM-8	1200	1200±20%	2000	10	5	300 times	500VDC	1	1.5	√
2R1400ML-8	2R1400MM-8	1400	1400±20%	2200	10	5	300 times	500VDC	1	1.5	√
2R1500ML-8	2R1500MM-8	1500	1500±20%	2300	10	5	300 times	500VDC	1	1.5	√
2R1600ML-8	2R1600MM-8	1600	1600±20%	2400	10	5	300 times	500VDC	1	1.5	√
2R2000LL-8	2R2000LM-8	2000	2000±20%	3200	5	5	300 times	500VDC	1	1.5	√
2R2500LL-8	2R2500LM-8	2500	2500±20%	3800	5	5	300 times	500VDC	1	1.5	√
2R2700LL-8	2R2700LM-8	2700	2700±20%	4000	5	5	300 times	1000VDC	1	1.5	√
2R3000LL-8	2R3000LM-8	3000	3000±20%	4200	5	5	300 times	1000VDC	1	1.5	√
2R3600LL-8	2R3600LM-8	3600	3600±20%	5200	5	5	300 times	1000VDC	1	1.5	√
2R075PL-8	2R075PM-8	075P	75±20%	600	20	20	300 times	25VDC	1	1.5	√
2R090PL-8	2R090PM-8	090P	90±20%	600	20	20	300 times	50VDC	1	1.5	√
2R150PL-8	2R150PM-8	150P	150±20%	700	20	20	300 times	100VDC	1	1.5	√
2R230PL-8	2R230PM-8	230P	230±20%	700	20	20	300 times	100VDC	1	1.5	√
2R250PL-8	2R250PM-8	250P	250±20%	800	20	20	300 times	100VDC	1	1.5	√
2R300PL-8	2R300PM-8	300P	300±20%	900	20	20	300 times	100VDC	1	1.5	√
2R350PL-8	2R350PM-8	350P	350±20%	900	20	20	300 times	100VDC	1	1.5	√
2R400PL-8	2R400PM-8	400P	400±20%	1000	20	20	300 times	100VDC	1	1.5	√
2R470PL-8	2R470PM-8	470P	470±20%	1100	20	20	300 times	250VDC	1	1.5	√
2R600PL-8	2R600PM-8	600P	600±20%	1300	20	20	300 times	250VDC	1	1.5	√
2R800PL-8	2R800PM-8	800P	800±20%	1500	20	20	300 times	250VDC	1	1.5	√

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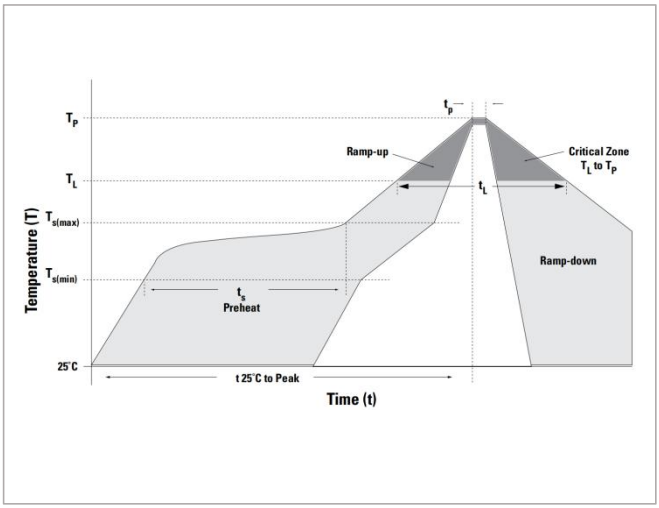
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Test Methods and Results

Items	Test Method	Standard
DC Spark-over Voltage	measured with voltage ramp dv/dt=100V/s.	To meet the specified value
Maximum Impulse Spark-over Voltage	measured with voltage ramp dv/dt=1000V/μs.	To meet the specified value
Impulse Discharge Current	applied between two electrodes, 5 positive and 5 negative surges, with 3 minutes interval time,	To meet the specified value
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. for 10 times with interval time 3 min.	To meet the specified value
Insulation Resistance	measured between two electrodes.	To meet the specified value
Capacitance	measured between two electrodes. Test frequency: 1MHz	To meet the specified value

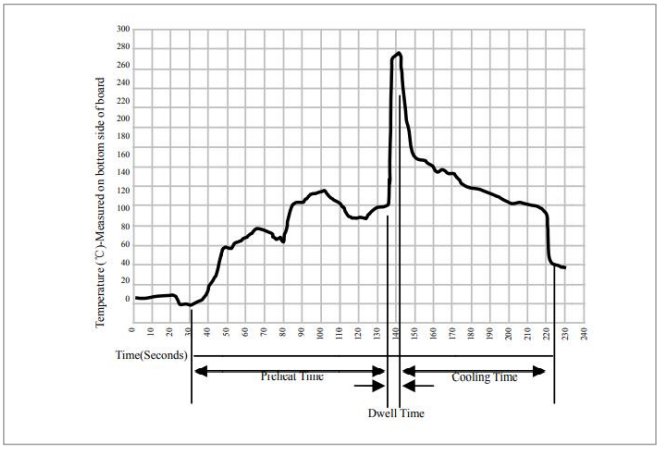
Soldering Parameters (Reflow Soldering)

Reflow Condition		Pb-Free Assembly
Pre Heat	-Temperature Min ($T_{S\ min}$)	150℃
	-Temperature Max ($T_{S\ max}$)	200℃
	-Time (min to max) (t_S)	60-180 secs
Average ramp-up rate(Liquidus Temp (T_L) to peak		3℃/second max.
$T_{S\ (max)}$ to T_L-Ramp-up Rate		3℃/second max.
Reflow	-Temperature (T_L) (Liquidus)	217℃
	-Time (min to max) (t_L)	60-150 seconds
Peak Temperature (T_P)		260℃
Time within 5℃ of actual Peak Temperature (t_P)		20-40 seconds
Ramp-down Rate		6℃/second max.
Time 25℃ to Peak Temperature		8 minutes max.
Do not exceed		260℃



Soldering Parameters (Wave Soldering)

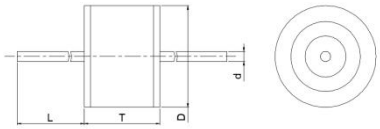
Item	Conditions
Temperature minimum	100℃
Temperature maximum	150℃
Preheat Time	60~180 seconds
Solder Pot Temperature	280℃ Maximum
Solder Dwell Time	2~5 seconds



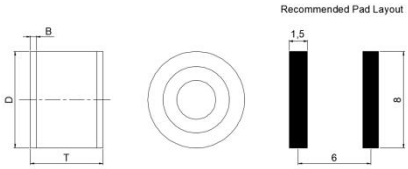
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Dimensions



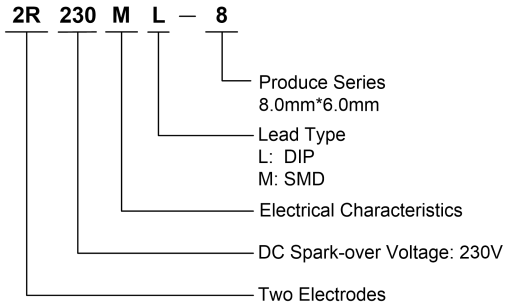
L type



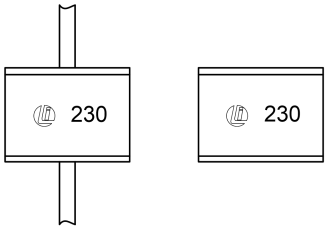
M type

Symbol	Millimeters	Inches
D	8.0±0.3	0.315±0.012
T	6.0±0.3	0.236±0.012
d (10kA)	0.8±0.1	0.031±0.004
d (20kA)	1.0±0.1	0.039±0.004
L	30.0 Max.	1.181 Max.
B	0.5±0.1	0.020±0.004

Part Numbering System



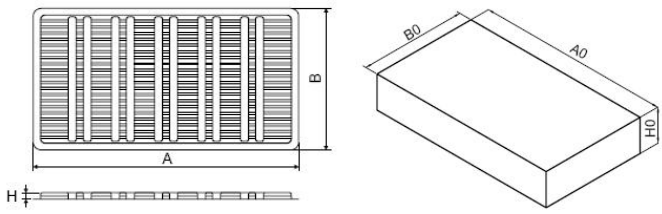
Part Marking System



Packaging Specification

Part number	Quantity	Packaging Option
2RxxxXL-8	500	Bulk - 100pcs per tray, 5 trays per inner box
2RxxxXL-8-TR	800	Tape & Reel - 65mm tape/13" reel
2RxxxXM-8	500	Tape & Reel - 16mm tape/13" reel

Axial Packing (Tray & Inner box)

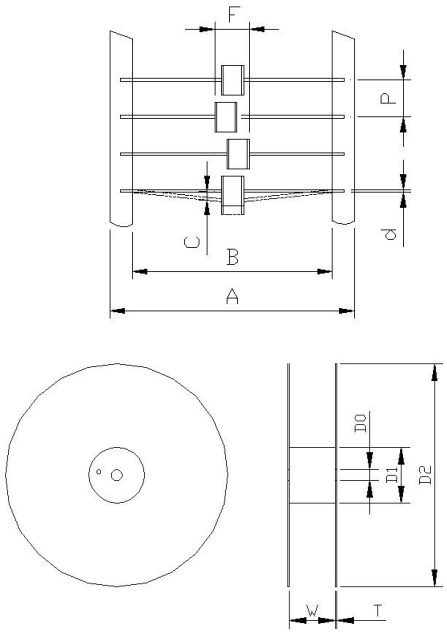


Symbol	Millimeters	Inches
A	265.0±5.0	10.433±0.197
B	146.0±5.0	5.748±0.197
H	9.5±1.0	0.374±0.039
A0	270.0±2.0	10.630±0.079
B0	150.0±2.0	5.906±0.079
H0	50.0±2.0	1.969±0.079

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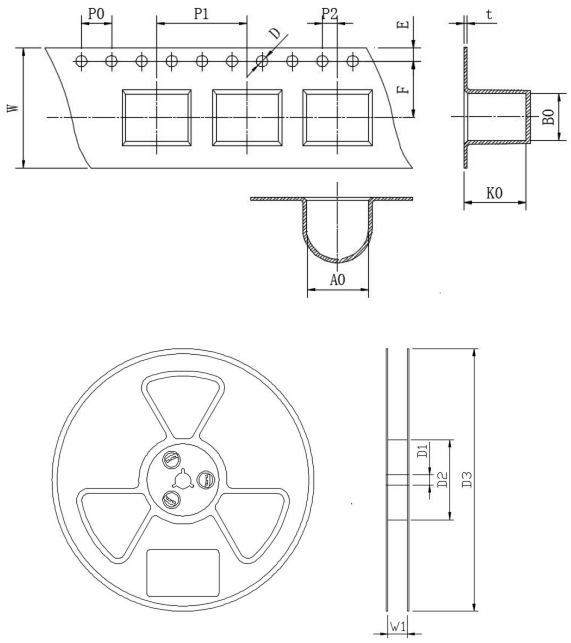
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Axial Packing (Tape & Reel)



Symbol	Millimeters	Inches
P	10.0±0.5	0.394±0.020
A	65.0±3.0	2.559±0.118
B	52.0±2.0	2.047±0.079
C	1.2 Max.	0.047 Max.
d	0.8±0.1	0.031±0.004
F	7.4 Max.	0.291 Max.
D0	16.0±1.0	0.630±0.039
D1	82.0±2.0	3.228±0.079
D2	330.0±2.0	12.992±0.079
W	70.0±0.5	2.756±0.020
T	3.0±0.2	0.118±0.008

SMD Packing (Tape & Reel)



Symbol	Millimeters	Inches
W	16.0±0.2	0.630±0.008
P0	4.0±0.1	0.157±0.004
P1	12.0±0.2	0.472±0.008
P2	2.0±0.1	0.079±0.004
D	1.55±0.1	0.061±0.004
E	1.75±0.1	0.069±0.004
F	7.5±0.1	0.295±0.004
A0	8.3±0.1	0.327±0.004
K0	8.5±0.1	0.335±0.004
B0	6.3±0.1	0.248±0.004
t0	0.5±0.1	0.020±0.004
D1	13.3±1.0	0.524±0.039
D2	100.0±2.0	3.937±0.079
D3	330.0±2.0	12.992±0.079
W1	16.5±0.5	0.650±0.020

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