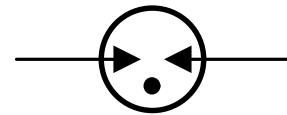


## Features

- Stable breakdown voltage
- High insulation resistance
- High current rating
- Low capacitance ( $\leq 1.5\text{pF}$ )
- 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:  $-40^{\circ}\text{C} \sim +90^{\circ}\text{C}$

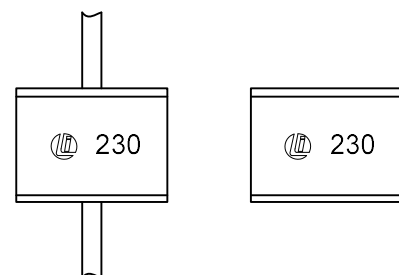
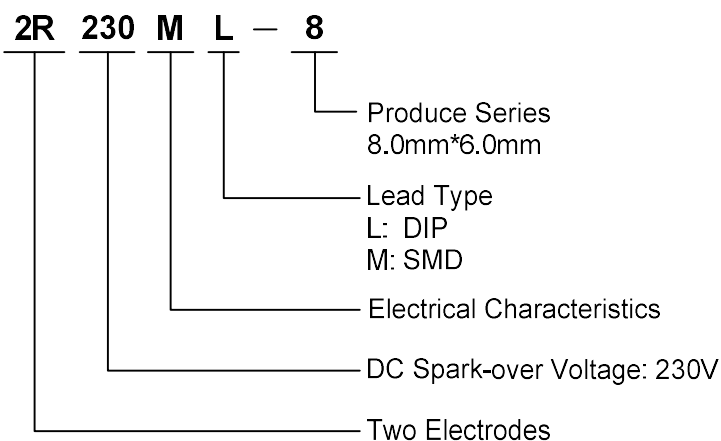
GDT Graphical Symbol



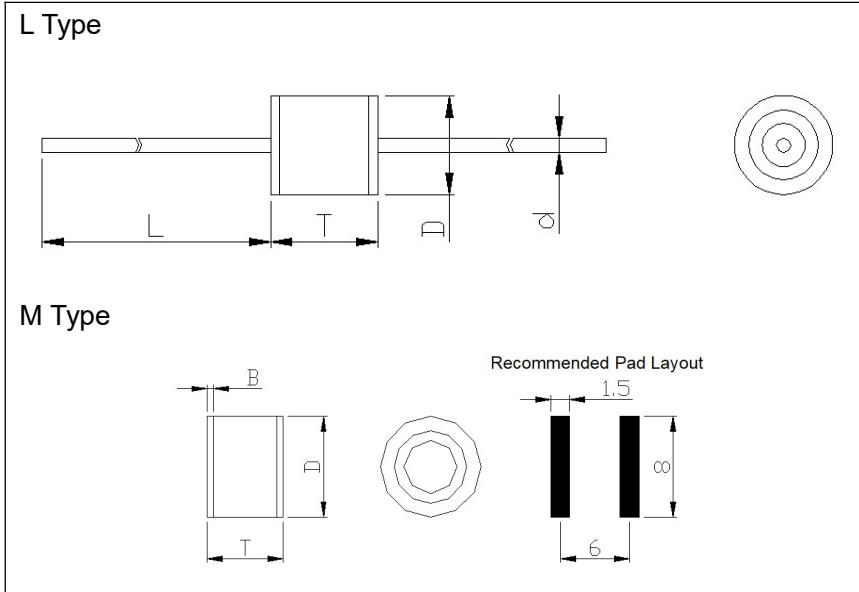
## Applications

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

## Part Number Code and Marking



## Dimensions

L Type		Item	Dimensions(mm)
		D	8.0±0.3
		T	6.0±0.3
		d (10KA)	0.8±0.1
		d (20KA)	1.0±0.1
		L	30.0 Max.
		B	0.5±0.1

## Electrical Characteristics (T<sub>A</sub>=25°C)

Part Number	Marking	DC Spark-over Voltage	Maximum Impulse Spark-over Voltage	Nominal Impulse Discharge Current	Alternating Discharge Current	Impulse Life	Minimum Insulation Resistance		Maximum Capacitance	
							Test Voltage	GΩ		
2R075ML-8	2R075MM-8	075	75V±20%	600V	10KA	10A	300 times	25VDC	1	1.5pF
2R090ML-8	2R090MM-8	090	90V±20%	600V	10KA	10A	300 times	50VDC	1	1.5pF
2R150ML-8	2R150MM-8	150	150V±20%	700V	10KA	10A	300 times	100VDC	1	1.5pF
2R230ML-8	2R230MM-8	230	230V±20%	700V	10KA	10A	300 times	100VDC	1	1.5pF
2R250ML-8	2R250MM-8	250	250V±20%	800V	10KA	10A	300 times	100VDC	1	1.5pF
2R300ML-8	2R300MM-8	300	300V±20%	900V	10KA	10A	300 times	100VDC	1	1.5pF
2R350ML-8	2R350MM-8	350	350V±20%	900V	10KA	10A	300 times	100VDC	1	1.5pF
2R400ML-8	2R400MM-8	400	400V±20%	1000V	10KA	10A	300 times	100VDC	1	1.5pF
2R470ML-8	2R470MM-8	470	470V±20%	1100V	10KA	10A	300 times	250VDC	1	1.5pF
2R600ML-8	2R600MM-8	600	600V±20%	1300V	10KA	10A	300 times	250VDC	1	1.5pF
2R800ML-8	2R800MM-8	800	800V±20%	1500V	10KA	10A	300 times	250VDC	1	1.5pF

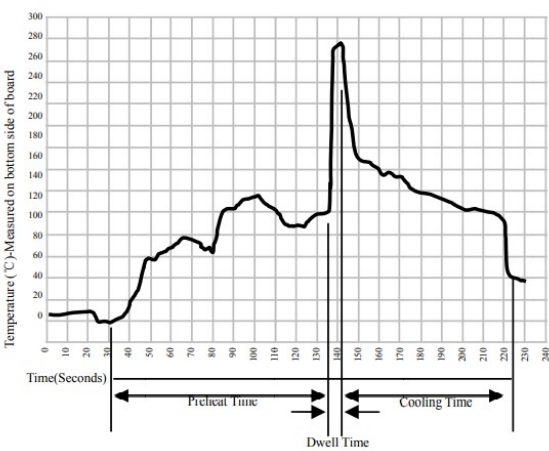
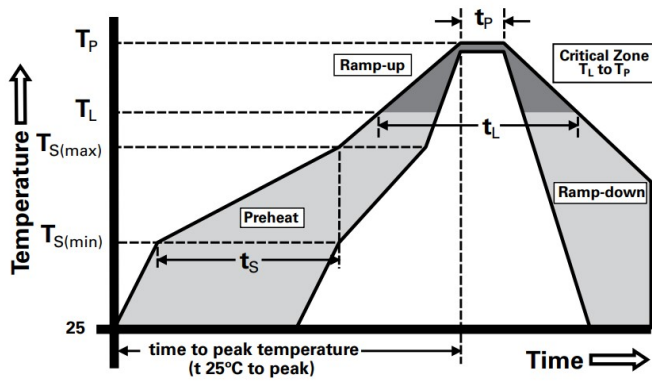
## Electrical Characteristics (T<sub>A</sub>=25°C)

Part Number		Marking	DC Spark-over Voltage	Maximum Impulse Spark-over Voltage	Nominal Impulse Discharge Current	Alternating Discharge Current	Impulse Life	Minimum Insulation Resistance		Maximum Capacitance
			100V/s	1000V/μs	8/20μs, 10 times	50Hz, 1sec	10/1000μs, 100A	Test Voltage	GΩ	1MHz
2R1000ML-8	2R1000MM-8	1000	1000V±20%	1900V	10KA	5A	300 times	500VDC	1	1.5pF
2R1200ML-8	2R1200MM-8	1200	1200V±20%	2000V	10KA	5A	300 times	500VDC	1	1.5pF
2R1400ML-8	2R1400MM-8	1400	1400V±20%	2200V	10KA	5A	300 times	500VDC	1	1.5pF
2R1500ML-8	2R1500MM-8	1500	1500V±20%	2300V	10KA	5A	300 times	500VDC	1	1.5pF
2R1600ML-8	2R1600MM-8	1600	1600V±20%	2400V	10KA	5A	300 times	500VDC	1	1.5pF
2R2000LL -8	2R2000LM -8	2000	2000V±20%	3200V	5KA	5A	300 times	500VDC	1	1.5pF
2R2500LL -8	2R2500LM -8	2500	2500V±20%	3800V	5KA	5A	300 times	500VDC	1	1.5pF
2R2700LL -8	2R2700LM -8	2700	2700V±20%	4000V	5KA	5A	300 times	1000VDC	1	1.5pF
2R3000LL -8	2R3000LM -8	3000	3000V±20%	4200V	5KA	5A	300 times	1000VDC	1	1.5pF
2R075PL-8	2R075PM-8	075P	75V±20%	600V	20KA	20A	300 times	25VDC	1	1.5pF
2R090PL-8	2R090PM-8	090P	90V±20%	600V	20KA	20A	300 times	50VDC	1	1.5pF
2R150PL-8	2R150PM-8	150P	150V±20%	700V	20KA	20A	300 times	100VDC	1	1.5pF
2R230PL-8	2R230PM-8	230P	230V±20%	700V	20KA	20A	300 times	100VDC	1	1.5pF
2R250PL-8	2R250PM-8	250P	250V±20%	800V	20KA	20A	300 times	100VDC	1	1.5pF
2R300PL-8	2R300PM-8	300P	300V±20%	900V	20KA	20A	300 times	100VDC	1	1.5pF
2R350PL-8	2R350PM-8	350P	350V±20%	900V	20KA	20A	300 times	100VDC	1	1.5pF
2R400PL-8	2R400PM-8	400P	400V±20%	1000V	20KA	20A	300 times	100VDC	1	1.5pF
2R470PL-8	2R470PM-8	470P	470V±20%	1100V	20KA	20A	300 times	250VDC	1	1.5pF
2R600PL-8	2R600PM-8	600P	600V±20%	1300V	20KA	20A	300 times	250VDC	1	1.5pF
2R800PL-8	2R800PM-8	800P	800V±20%	1500V	20KA	20A	300 times	250VDC	1	1.5pF

### Test Methods and Results

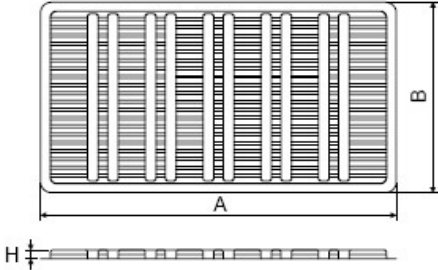
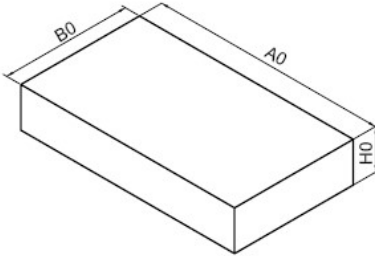
Items	Test Method	Standard
DC Spark-over Voltage	measured with voltage ramp $dv/dt=100V/s$ .	To meet the specified value
Maximum Impulse Spark-over Voltage	measured with voltage ramp $dv/dt=1000V/\mu s$ .	
Impulse Discharge Current	applied between two electrodes, 5 positive and 5 negative surges, with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

### Soldering Parameters

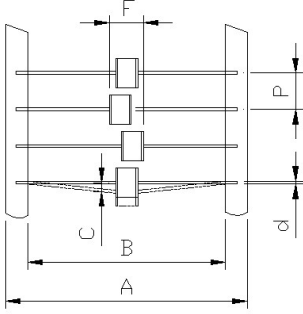
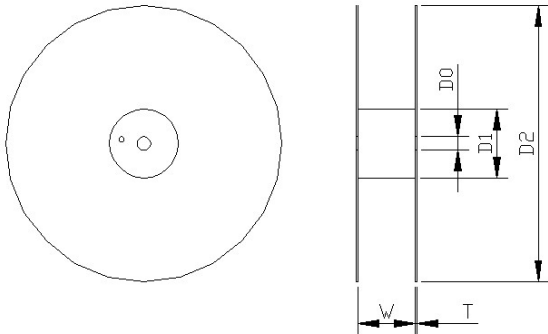
Wave Soldering		Reflow Soldering	
			
		Profile Feature	Pb-Free Assembly
		Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
		Preheat	
		-Temperature Min ( $T_{S\ min}$ )	150°C
		-Temperature Max ( $T_{S\ max}$ )	200°C
		-Time (min to max) ( $t_S$ )	60-180 seconds
		$T_{S\ max}$ to $T_L$	
		-Ramp-up Rate	3°C/second max.
		Time maintained above:	
		-Temperature ( $T_L$ )	217°C
		-Time ( $t_L$ )	60-150 seconds
Item	Conditions	Peak Temperature ( $T_P$ )	260°C
Peak Temperature	265°C	Time within 5°C of actual Peak Temperature ( $t_P$ )	20-40 seconds
Dipping Time	10 seconds	Ramp-down Rate	6°C/second max.
Soldering	1 time	Time 25°C to Peak Temperature	8 minutes max.

### Packaging Specification

#### Axial Packing (Bulk)

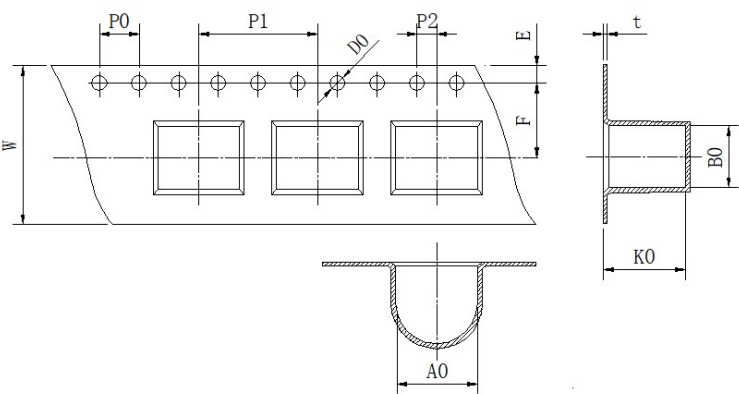
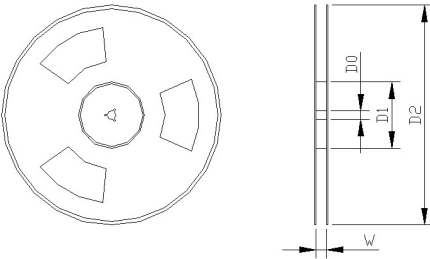
Skin packing		Symbol	Dimension (mm)
		A	265.0±5.0
		B	146.0±5.0
		H	9.5±1.0
		Quantity: 100pcs	
Inner box		A0	270.0±2.0
		B0	150.0±2.0
		H0	50.0±2.0
		Quantity: 500pcs	

#### Axial Packing (Tape & Reel)

Tape		Symbol	Dimension (mm)
		P	10.0±0.5
		A	65.0±3.0
		B	52.0±2.0
		C	1.2 Max.
		d	0.8±0.1
		F	7.4 Max.
		Reel	
		D1	82.0±2.0
		D2	330.0±2.0
		W	70.0±0.5
		T	3.0±0.2
		Quantity: 800pcs	

**Packaging Specification**

SMD Packing (Tape & Reel)

Tape		Symbol	Dimension (mm)		
		W	16.0±0.2		
		P0	4.0±0.1		
		P1	12.0±0.2		
		P2	2.0±0.1		
		D0	1.55±0.1		
		E	1.75±0.1		
		F	7.5±0.1		
		A0	8.3±0.1		
		K0	8.5±0.1		
		B0	6.3±0.1		
		t0	0.5±0.1		
				D0	13.3±1.0
				D1	100.0±2.0
				D2	330.0±2.0
W	16.5±0.5				
Quantity: 500pcs					

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