

## Gas Discharge Tube (GDT) Data Sheet

### Features

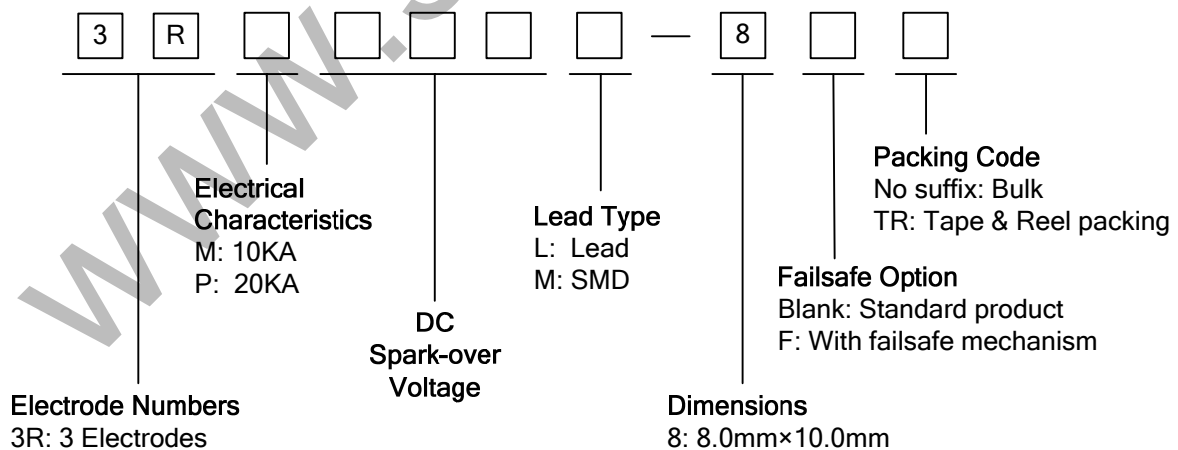
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/ $\mu$ s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance ( $\leq 2$ pF)
- High holdover voltage
- Large absorbing transient current capability.
- Micro-Gap Design
- Size: 8.0mm\*10.0mm
- Storage and operating temperature: -40°C ~ +85°C
- Meets MSL level 1, per J-STD-020
- Safety certification: UL: E244458



### Applications

- Repeaters, Modems.
- Telephone Interface, Line cards.
- Data communication equipment.
- Line test equipment

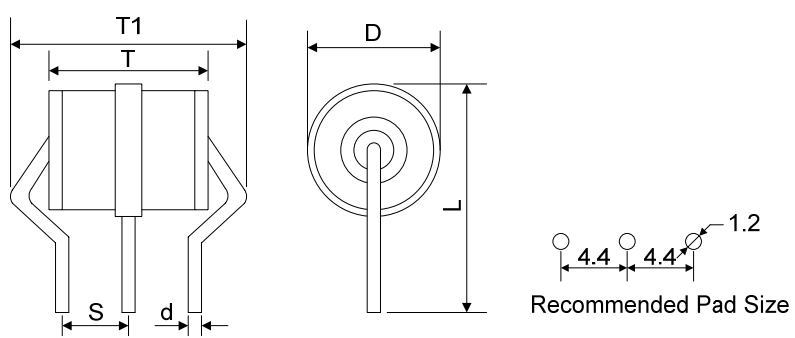
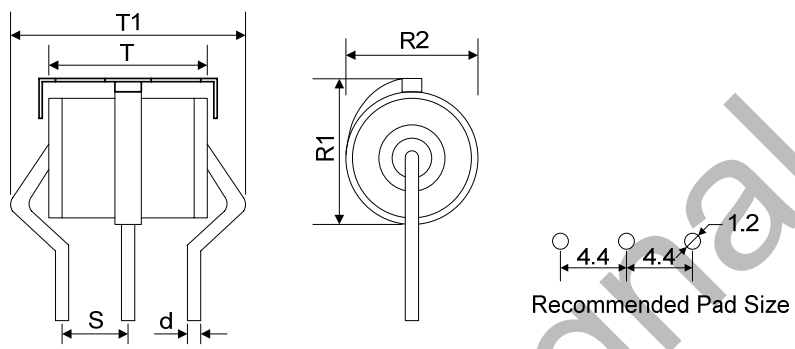
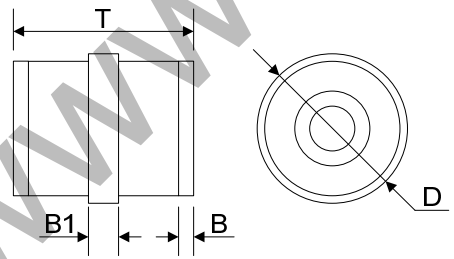
### Part Number Code



### Marking

**B** : BrightKing Logo  
 3RM090-8 : Device Marking Code  
 YXXX : Date Code

**Dimensions**

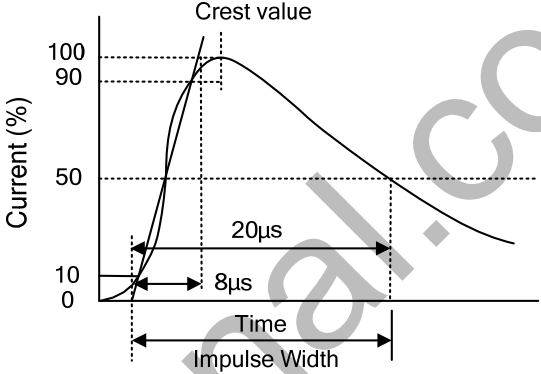
L Type	Symbol	Dimension (mm)	
		Spec.	Tolerance
	D	8.0	+0.2, -0.8
	T	10.0	±0.5
	T1	12.0	±0.5
	L	15.0	±0.5
<b>L-F Type</b> 	S	4.4	±0.4
	d	1.0	±0.1
	R1	9.8	±0.4
	R2	8.1	±0.3
<b>M Type</b> 	D	8.0	+0.2, -0.8
	T	10.0	±0.5
	B	0.5	±0.1
	B1	1.5	±0.2

Notes: This type is not suitable for PCB soldering.

**Electrical Characteristics**

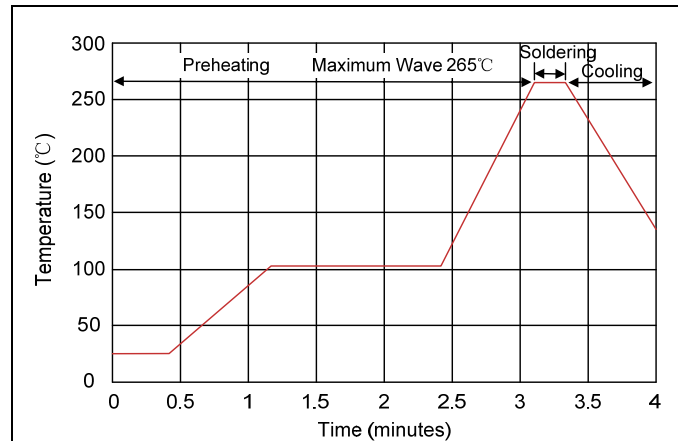
Part Number		DC Spark-over Voltage	Maximum Impulse Spark-over Voltage	Nominal Impulse Discharge Current	Alternating Discharge Current	Impulse Life	Minimum Insulation Resistance		Maximum Capacitance	Device Marking Code
		100V/s	1000V/ $\mu$ s	8/20 $\mu$ s 10times	50Hz, 1sec	10/1000 $\mu$ s 100A	Test Voltage	(G $\Omega$ )	1MHz	
		(V)	(V)	(KA)	(A)	(times)	DC(V)		(pF)	
3RM075L-8	3RM075M-8	75 $\pm$ 20%	700	10	10	300	25	1.0	2.0	3RM075-8
3RM090L-8	3RM090M-8	90 $\pm$ 20%	700	10	10	300	50	1.0	2.0	3RM090-8
3RM150L-8	3RM150M-8	150 $\pm$ 20%	700	10	10	300	100	1.0	2.0	3RM150-8
3RM200L-8	3RM200M-8	200 $\pm$ 20%	700	10	10	300	100	1.0	2.0	3RM200-8
3RM230L-8	3RM230M-8	230 $\pm$ 20%	700	10	10	300	100	1.0	2.0	3RM230-8
3RM350L-8	3RM350M-8	350 $\pm$ 20%	850	10	10	300	100	1.0	2.0	3RM350-8
3RM400L-8	3RM400M-8	400 $\pm$ 20%	850	10	10	300	100	1.0	2.0	3RM400-8
3RM470L-8	3RM470M-8	470 $\pm$ 20%	950	10	10	300	250	1.0	2.0	3RM470-8
3RM600L-8	3RM600M-8	600 $\pm$ 20%	1300	10	10	300	250	1.0	2.0	3RM600-8
3RM800L-8	3RM800M-8	800 $\pm$ 20%	1500	10	10	300	250	1.0	2.0	3RM800-8
3RP075L-8	3RP075M-8	75 $\pm$ 20%	700	20	20	300	25	1.0	2.0	3RP075-8
3RP090L-8	3RP090M-8	90 $\pm$ 20%	700	20	20	300	50	1.0	2.0	3RP090-8
3RP150L-8	3RP150M-8	150 $\pm$ 20%	700	20	20	300	100	1.0	2.0	3RP150-8
3RP200L-8	3RP200M-8	200 $\pm$ 20%	700	20	20	300	100	1.0	2.0	3RP200-8
3RP230L-8	3RP230M-8	230 $\pm$ 20%	700	20	20	300	100	1.0	2.0	3RP230-8
3RP350L-8	3RP350M-8	350 $\pm$ 20%	850	20	20	300	100	1.0	2.0	3RP350-8
3RP400L-8	3RP400M-8	400 $\pm$ 20%	850	20	20	300	100	1.0	2.0	3RP400-8
3RP470L-8	3RP470M-8	470 $\pm$ 20%	950	20	20	300	250	1.0	2.0	3RP470-8
3RP600L-8	3RP600M-8	600 $\pm$ 20%	1300	20	20	300	250	1.0	2.0	3RP600-8
3RP800L-8	3RP800M-8	800 $\pm$ 20%	1500	20	20	300	250	1.0	2.0	3RP800-8

**Electrical Ratings**

Items	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with voltage ramp $dv/dt=100V/s$ . Test is between each side electrode and center electrode.	
Maximum Impulse Spark-over Voltage	The maximum impulse spark-over voltage is measured with voltage ramp $dv/dt=1000V/\mu s$ . Test is between each side electrode and center electrode.	
Impulse Discharge Current	<p>Maximum surge current that can be applied through center electrode with 8/20<math>\mu s</math> waveform, for 10 times with 3min interval time, which will be equally divided between each side electrode to center electrode, without causing the DC breakdown voltage to change more than 25% from its initial measured value.</p>  <p>The graph shows Current (%) on the y-axis (0, 10, 50, 90, 100) and Time on the x-axis. The waveform rises to a 'Crest value' of 100% within 8<math>\mu s</math> and then decays. The time to reach 50% current is 20<math>\mu s</math>. The total 'Impulse Width' is indicated as the time from 10% to 90% current.</p>	To meet the specified value
Alternating Discharge Current	<p>Rated RMS value of AC current at 50Hz, 1 sec. for 10 times with interval time 3 min. DC spark-over voltage shall not change more than <math>\pm 25\%</math> from its initial value. Test is between each side electrode and center electrode.</p> <p><math>IR &gt; 10^8</math> ohms (-20%, +30% for 70~90V).</p>	
Insulation Resistance	The resistance of gas tube shall be measured between each side electrodes and center electrode.	
Capacitance	<p>The capacitance of gas tube shall be measured between each side electrodes and center electrode.</p> <p>Test frequency: 1MHz</p>	

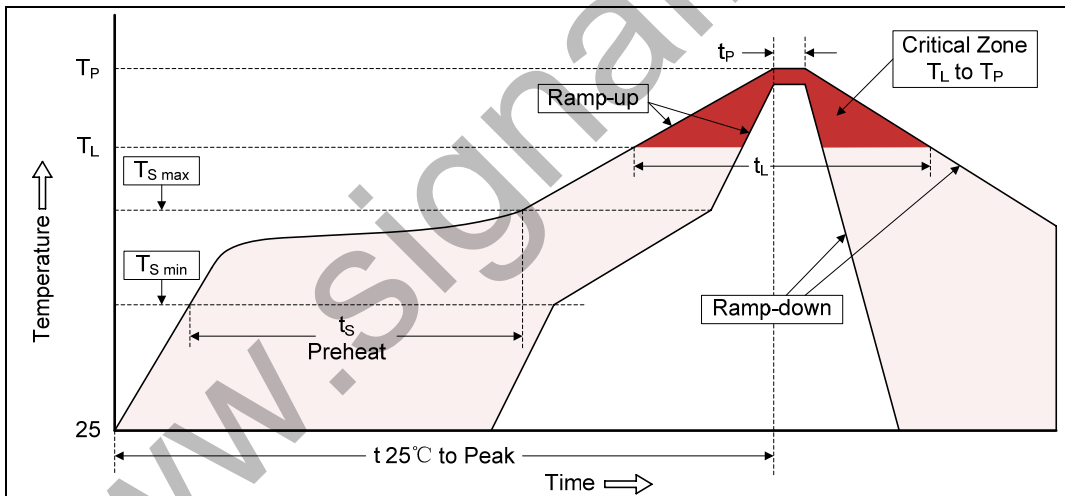
**Recommended Soldering Conditions**

**Wave Soldering**



Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds
Soldering	1 time

**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
Peak Temperature ( $T_P$ )	260°C
Time within 5°C of actual Peak Temperature ( $t_P$ )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

**Packaging**

**Axial Packing (Bulk)**

Symbol	Dimension (mm)	
	Spec.	Tolerance
A	217.0	±1.0
B	207.0	±1.0
H	10.3	±0.2
Quantity: 100pcs		
A0	338.0	±1.0
B0	336.0	±1.0
H0	58.0	±1.0
Quantity: 500pcs		

**SMD Packing (Tape & Reel)**

Symbol	Dimension (mm)	
	Spec.	Tolerance
W	16.00	±0.20
P0	4.00	±0.10
P1	16.00	±0.10
P2	2.00	±0.10
D0	1.55	±0.05
E	1.75	±0.10
F	7.50	±0.10
A0	11.6	±0.10
K0	8.90	±0.10
B0	8.60	±0.10
B1	10.00	±0.10
t0	0.50	±0.05
D	330.00	±1.00
d	13.00	±0.50
L	20.00	±0.50
t	2.00	±0.20
Quantity: 300pcs		