

## Gas Discharge Tube (GDT) Data Sheet

### Features

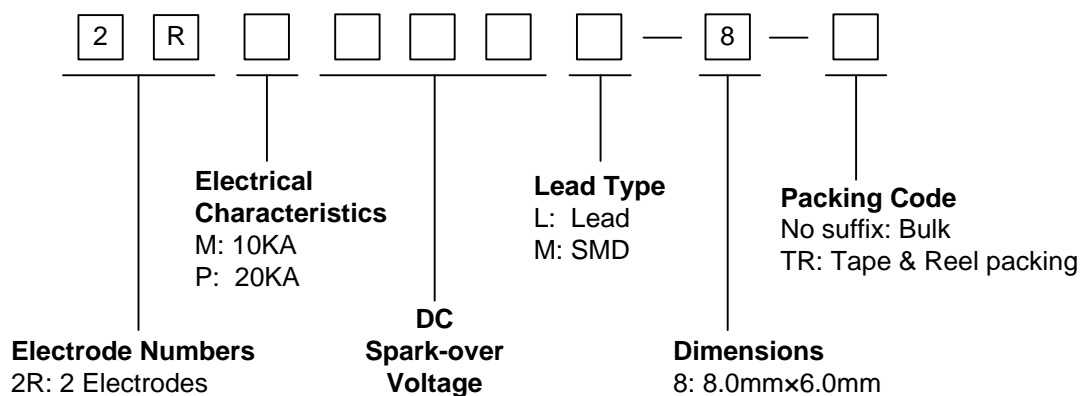
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/μs
- Stable breakdown voltage
- High insulation resistance
- Low capacitance (≤1.5pF)
- High holdover voltage
- Large absorbing transient current capability
- Micro-Gap Design
- Size: 8.0mm\*6.0mm
- Storage and operating temperature: -40°C ~ +85°C
- Meets MSL level 1, per J-STD-020
- Safety certification: E244458



### Applications

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

### Part Number Code



### Marking

**B** : BrightKing Logo  
 2RM090-8 : Device Marking Code  
 YXXX : Date Code

**Dimensions**

L Type	Symbol	Dimension (mm)	
		Spec.	Tolerance
	D	8.0	+0.3, -0.5
	T	6.0	+0.3, -0.5
	d	0.8	±0.1
	L	30.0	Max.
M Type	D	8.0	+0.3, -0.5
	B	0.5	±0.1

*Note: M Type diagrams show dimensions B, T, D, and a Recommended Pad Size of 6.0 x 8.0 with a 1.5 offset.*

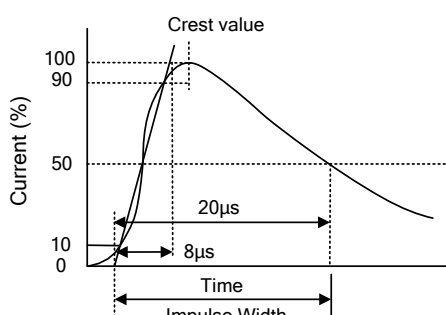
**Electrical Characteristics**

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/μs	8/20μs 10times	50Hz, 1sec	10/1000μs 100A	Test Voltage	(GΩ)	1MHz	
		(V)	(V)	(KA)	(A)	(times)	DC(V)		(pF)	
2RM075L-8	2RM075M-8	75±20%	600	10	10	500	25	1.0	1.5	2RM075-8
2RM090L-8	2RM090M-8	90±20%	600	10	10	500	50	1.0	1.5	2RM090-8
2RM120L-8	2RM120M-8	120±20%	600	10	10	500	50	1.0	1.5	2RM120-8
2RM145L-8	2RM145M-8	145±20%	700	10	10	500	100	1.0	1.5	2RM145-8
2RM150L-8	2RM150M-8	150±20%	700	10	10	500	100	1.0	1.5	2RM150-8
2RM230L-8	2RM230M-8	230±20%	700	10	10	500	100	1.0	1.5	2RM230-8
2RM250L-8	2RM250M-8	250±20%	800	10	10	500	100	1.0	1.5	2RM250-8
2RM300L-8	2RM300M-8	300±20%	900	10	10	500	100	1.0	1.5	2RM300-8
2RM350L-8	2RM350M-8	350±20%	900	10	10	500	100	1.0	1.5	2RM350-8
2RM400L-8	2RM400M-8	400±20%	1000	10	10	500	100	1.0	1.5	2RM400-8
2RM470L-8	2RM470M-8	470±20%	1100	10	10	500	250	1.0	1.5	2RM470-8
2RM600L-8	2RM600M-8	600±20%	1300	10	10	500	250	1.0	1.5	2RM600-8
2RM800L-8	2RM800M-8	800±20%	1500	10	10	500	250	1.0	1.5	2RM800-8

**Electrical Characteristics**

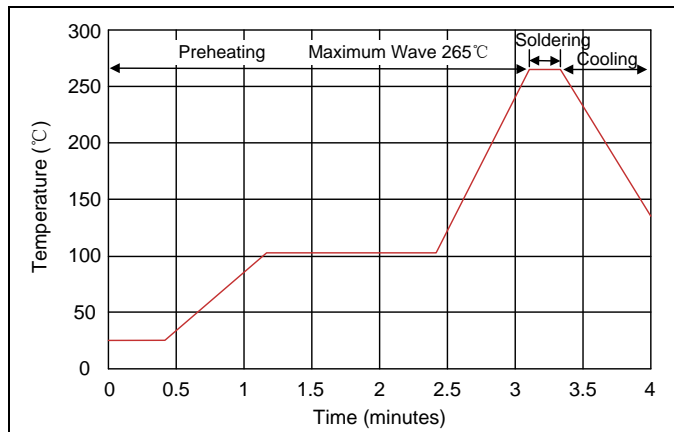
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		100V/s	1000V/ $\mu$ s	8/20 $\mu$ s 10times	50Hz, 1sec	10/1000 $\mu$ s 100A	Test Voltage	(G $\Omega$ )	1MHz	
		(V)	(V)	(KA)	(A)	(times)	DC(V)		(pF)	
2RP075L-8	2RP075M-8	75 $\pm$ 20%	600	20	20	500	25	1.0	1.5	2RP075-8
2RP090L-8	2RP090M-8	90 $\pm$ 20%	600	20	20	500	50	1.0	1.5	2RP090-8
2RP120L-8	2RP120M-8	120 $\pm$ 20%	600	20	20	500	50	1.0	1.5	2RP120-8
2RP145L-8	2RP145M-8	145 $\pm$ 20%	700	20	20	500	100	1.0	1.5	2RP145-8
2RP150L-8	2RP150M-8	150 $\pm$ 20%	700	20	20	500	100	1.0	1.5	2RP150-8
2RP230L-8	2RP230M-8	230 $\pm$ 20%	700	20	20	500	100	1.0	1.5	2RP230-8
2RP250L-8	2RP250M-8	250 $\pm$ 20%	800	20	20	500	100	1.0	1.5	2RP250-8
2RP300L-8	2RP300M-8	300 $\pm$ 20%	900	20	20	500	100	1.0	1.5	2RP300-8
2RP350L-8	2RP350M-8	350 $\pm$ 20%	900	20	20	500	100	1.0	1.5	2RP350-8
2RP400L-8	2RP400M-8	400 $\pm$ 20%	1000	20	20	500	100	1.0	1.5	2RP400-8
2RP470L-8	2RP470M-8	470 $\pm$ 20%	1100	20	20	500	250	1.0	1.5	2RP470-8
2RP600L-8	2RP600M-8	600 $\pm$ 20%	1300	20	20	500	250	1.0	1.5	2RP600-8
2RP800L-8	2RP800M-8	800 $\pm$ 20%	1500	20	20	500	250	1.0	1.5	2RP800-8

**Electrical Ratings**

Items	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with voltage ramp $dv/dt=100V/s$ .	To meet the specified value
Maximum Impulse Spark-over Voltage	The maximum impulse spark-over voltage is measured with voltage ramp $dv/dt=1000V/\mu s$ .	
Impulse Discharge Current	Maximum 8/20 $\mu s$ surge current that can be applied between two electrodes, 5 positive and 5 negative surges, with 3 minutes interval time, without causing the DC spark-over voltage to change more than 25% from its initial value. 	
Alternating Discharge Current	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 $\pm 25\%$ from its initial value. $IR > 10^8$ ohms (-20%, +30% for 70~90V).	
Insulation Resistance	The resistance of gas tube shall be measured between two electrodes.	
Capacitance	The capacitance of gas tube shall be measured between two electrodes. Test frequency: 1MHz	

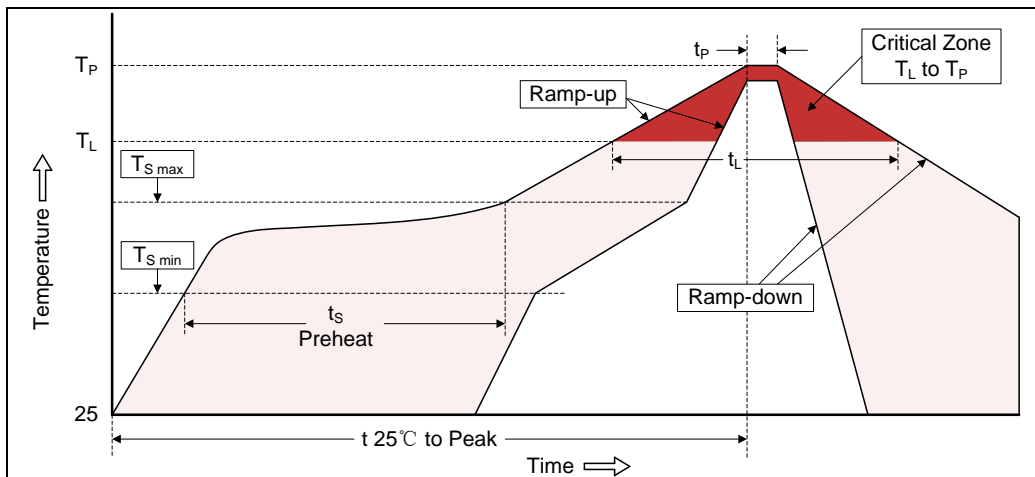
**Recommended Soldering Conditions**

**Wave Soldering**



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

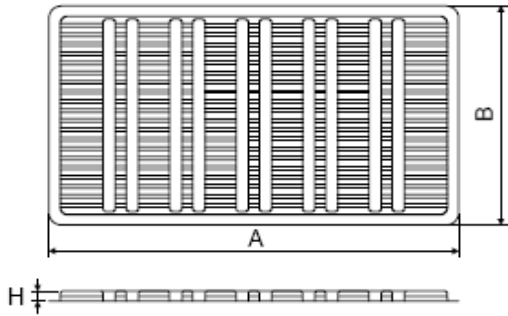
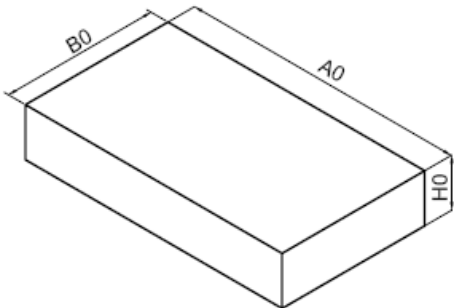
**Reflow Soldering**



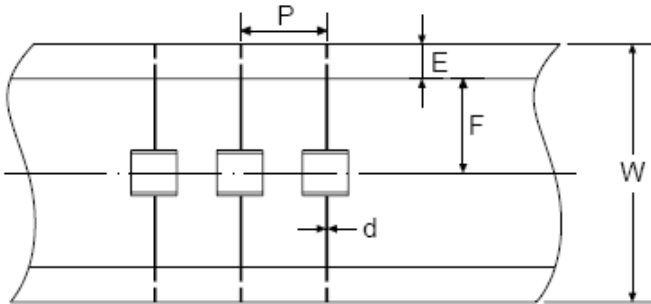
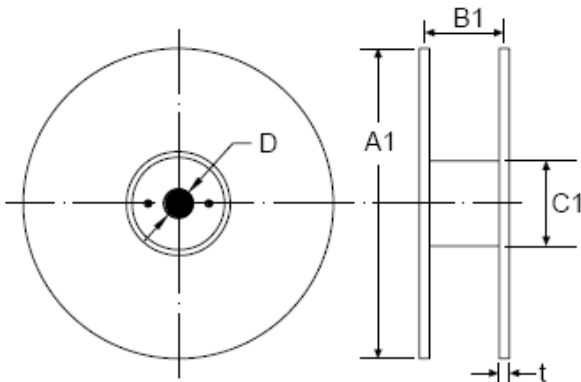
Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S\ min}$ )	150°C
-Temperature Max ( $T_{S\ max}$ )	200°C
-Time (min to max) ( $t_s$ )	60-180 seconds
$T_{S\ max}$ to $T_L$	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature ( $T_L$ )	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)**

Skin packing															
	<table border="1"> <thead> <tr> <th rowspan="2">Symbol</th> <th colspan="2">Dimension (mm)</th> </tr> <tr> <th>Spec.</th> <th>Tolerance</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>265.0</td> <td>±5.0</td> </tr> <tr> <td>B</td> <td>146.0</td> <td>±5.0</td> </tr> <tr> <td>H</td> <td>8.5</td> <td>±0.5</td> </tr> </tbody> </table>	Symbol	Dimension (mm)		Spec.	Tolerance	A	265.0	±5.0	B	146.0	±5.0	H	8.5	±0.5
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H	8.5	±0.5													
Inner box															
	<table border="1"> <tbody> <tr> <td>A0</td> <td>270.0</td> <td>±2.0</td> </tr> <tr> <td>B0</td> <td>150.0</td> <td>±2.0</td> </tr> <tr> <td>H0</td> <td>50.0</td> <td>±2.0</td> </tr> </tbody> </table>	A0	270.0	±2.0	B0	150.0	±2.0	H0	50.0	±2.0	Quantity: 500pcs				
A0	270.0	±2.0													
B0	150.0	±2.0													
H0	50.0	±2.0													

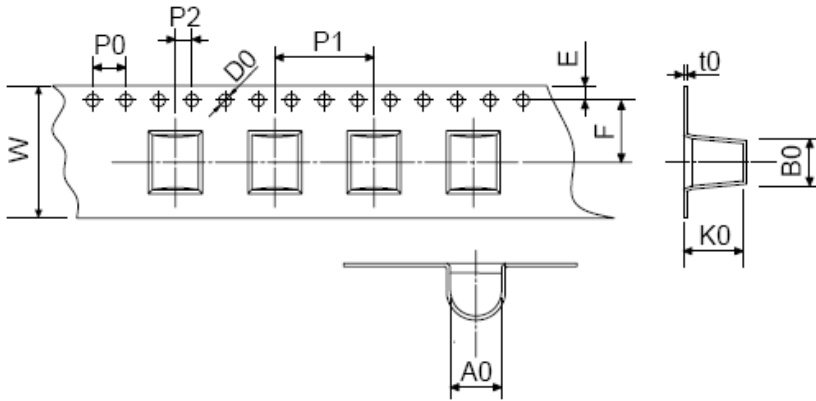
**Axial Packing (Tape & Reel)**

Tape																					
	<table border="1"> <thead> <tr> <th rowspan="2">Symbol</th> <th colspan="2">Dimension (mm)</th> </tr> <tr> <th>Spec.</th> <th>Tolerance</th> </tr> </thead> <tbody> <tr> <td>P</td> <td>10.0</td> <td>±0.5</td> </tr> <tr> <td>W</td> <td>65.0</td> <td>±1.0</td> </tr> <tr> <td>E</td> <td>6.0</td> <td>±0.5</td> </tr> <tr> <td>F</td> <td>26.5</td> <td>±0.5</td> </tr> <tr> <td>d</td> <td>0.8</td> <td>±0.1</td> </tr> </tbody> </table>	Symbol	Dimension (mm)		Spec.	Tolerance	P	10.0	±0.5	W	65.0	±1.0	E	6.0	±0.5	F	26.5	±0.5	d	0.8	±0.1
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Reel																					
	<table border="1"> <tbody> <tr> <td>A1</td> <td>330.0</td> <td>±2.0</td> </tr> <tr> <td>B1</td> <td>70.0</td> <td>±2.0</td> </tr> <tr> <td>C1</td> <td>82.0</td> <td>±2.0</td> </tr> <tr> <td>D</td> <td>25.0</td> <td>±0.5</td> </tr> <tr> <td>t</td> <td>2.0</td> <td>±0.2</td> </tr> </tbody> </table>	A1	330.0	±2.0	B1	70.0	±2.0	C1	82.0	±2.0	D	25.0	±0.5	t	2.0	±0.2	Quantity: 500pcs				
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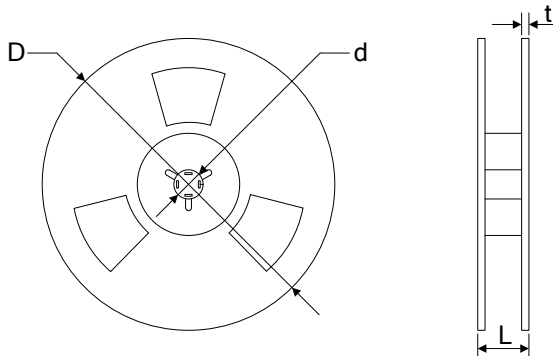
SMD Packing (Tape & Reel)

Symbol	Dimension (mm)	
	Spec.	Tolerance
W	16.00	±0.20
P0	4.00	±0.10
P1	12.00	±0.20
P2	2.00	±0.10
D0	1.55	±0.05
E	1.75	±0.10
F	7.50	±0.10
A0	8.20	±0.10
K0	8.50	±0.10
B0	7.50	±0.10
t0	0.50	±0.10
D	330.00	±2.00
d	13.00	±0.50
L	20.00	±2.00
t	2.00	±0.20
Quantity: 500pcs		

Tape



Reel



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