

## Gas Discharge Tube (GDT) Data Sheet

### Features

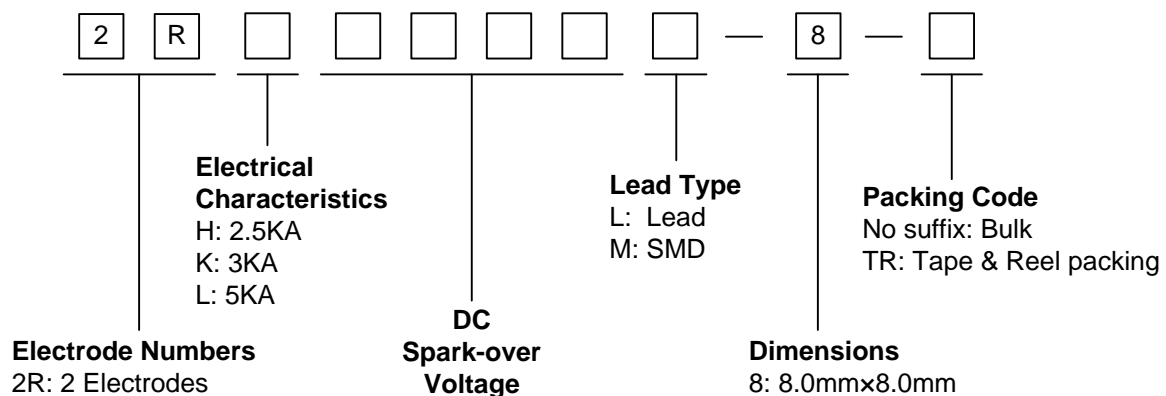
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/ $\mu$ s
- Stable breakdown voltage
- High insulation resistance
- Low capacitance ( $\leq 1.5$ pF)
- High holdover voltage
- Large absorbing transient current capability
- Micro-Gap Design
- Size: 8.0mm\*8.0mm
- Storage and operating temperature:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Meets MSL level 1, per J-STD-020
- Safety certification: E327997



### Applications

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

### Part Number Code



### Marking

**B** : BrightKing Logo  
 2RL1000-8 : Device Marking Code  
 YXXX : Date Code

**Dimensions**

L Type	Symbol	Dimension (mm)	
		Spec.	Tolerance
	D	8.0	+0.3, -0.5
	T	8.0	+0.6, -0.1
	d	0.8	±0.1
	L	30.0	Max.
M Type	D	8.0	+0.3, -0.5
	T	8.0	+0.6, -0.1
	B	0.5	±0.4

**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	AC Withstanding Voltage	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)		
2RH1400X-8	1400±20%	2200	2.5	2.5	100	500	1.0	1.5	-	2RH1400-8
2RH1600X-8	1600±20%	2400	2.5	2.5	100	500	1.0	1.5	-	2RH1600-8
2RH2000X-8	2000±20%	3000	2.5	2.5	100	500	1.0	1.5	-	2RH2000-8
2RH2500X-8	2500±20%	3600	2.5	2.5	100	500	1.0	1.5	AC1250V,1min	2RH2500-8
2RH2700X-8	2700±20%	4000	2.5	2.5	300*	1000	1.0	1.5	AC1250V,1min	2RH2700-8
2RH3000X-8	3000±20%	4200	2.5	2.5	100	1000	1.0	1.5	AC1500V,1min	2RH3000-8
2RH3500X-8	3500±20%	5000	2.5	2.5	100	1000	1.0	1.5	AC1800V,1min	2RH3500-8
2RH3600X-8	3600±20%	5200	2.5	2.5	100	1000	1.0	1.5	AC1800V,1min	2RH3600-8
2RK2700X-8	2700±20%	4000	3.0	3.0	300*	1000	1.0	1.5	AC1250V,1min	2RK2700-8
2RK3000X-8	3000±20%	4200	3.0	3.0	300*	1000	1.0	1.5	AC1500V,1min	2RK3000-8
2RK3500X-8	3500±20%	5000	3.0	3.0	100	1000	1.0	1.5	AC1800V,1min	2RK3500-8
2RK3600X-8	3600±20%	5200	3.0	3.0	100	1000	1.0	1.5	AC1800V,1min	2RK3600-8
2RK4000X-8	4000±20%	5500	3.0	3.0	100	1000	1.0	1.5	AC2000V,1min	2RK4000-8

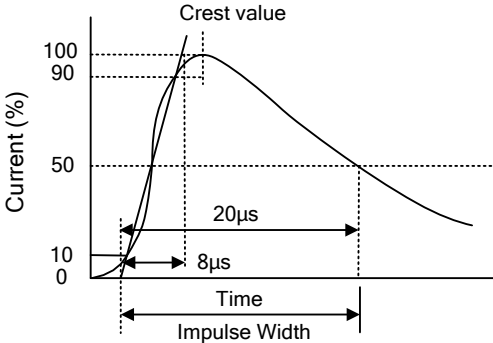
**Electrical Characteristics**

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	AC Withstanding Voltage	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)		
2RL1000X-8	1000±20%	1400	5.0	5.0	100	500	1.0	1.5	-	2RL1000-8
2RL1400X-8	1400±20%	2200	5.0	5.0	100	500	1.0	1.5	-	2RL1400-8
2RL1600X-8	1600±20%	2400	5.0	5.0	100	500	1.0	1.5	-	2RL1600-8
2RL2000X-8	2000±20%	3000	5.0	5.0	100	500	1.0	1.5	-	2RL2000-8
2RL2500X-8	2500±20%	3600	5.0	5.0	100	1000	1.0	1.5	AC1250V,1min	2RL2500-8

\* Measured with an 8/20μs waveform, 100A.

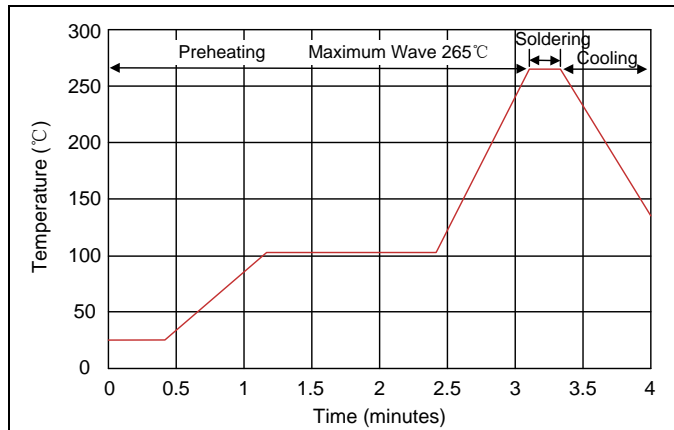
☆X may be L or M.

**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	<p>Maximum 8/20μs 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.</p> 	
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 ±25% from its initial value. $IR > 10^8$ ohms	
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	

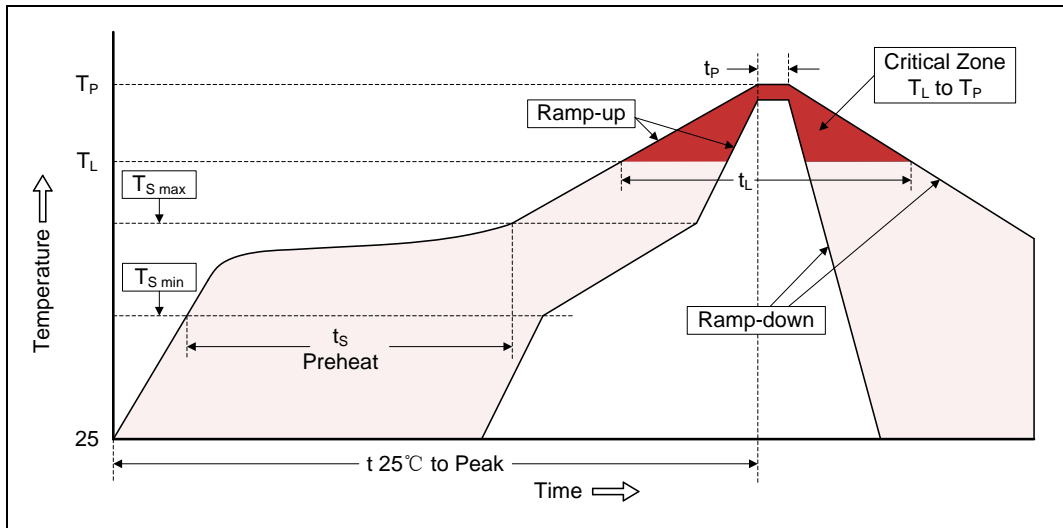
**Recommended Soldering Conditions**

**Wave Soldering**



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

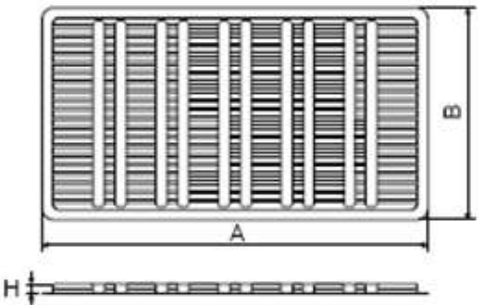
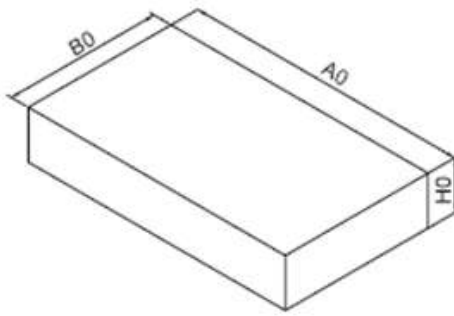
**Reflow Soldering**



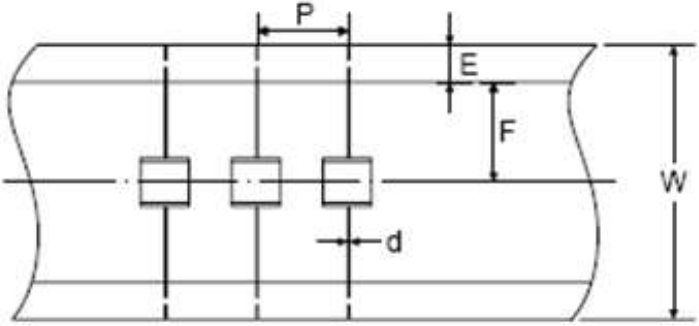
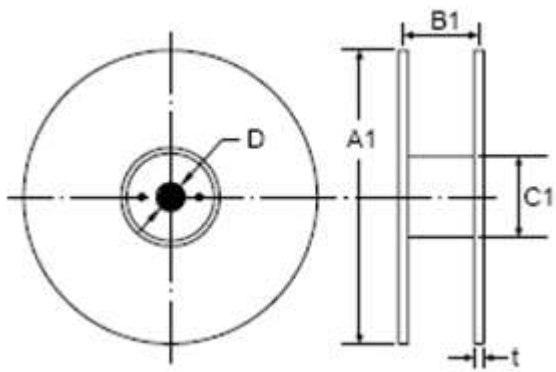
Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S\ min}$ )	150°C
-Temperature Max ( $T_{S\ max}$ )	200°C
-Time (min to max) ( $t_s$ )	60-180 seconds
$T_{S\ max}$ to $T_L$	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature ( $T_L$ )	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 	Dimension (mm)	
	Symbol	Spec. / Tolerance
	A	265.0 / ±5.0
	B	146.0 / ±5.0
H 9.5 / ±0.5 Quantity: 100pcs		
Inner box 	A0	270.0 / ±2.0
	B0	150.0 / ±2.0
	H0	50.0 / ±2.0
	Quantity: 500pcs	

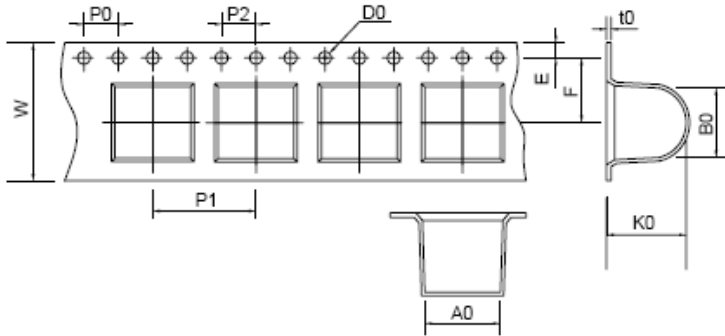
**Axial Packing (Tape & Reel)**

Tape 	Dimension (mm)	
	Symbol	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		
Reel 	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	

**Packaging**

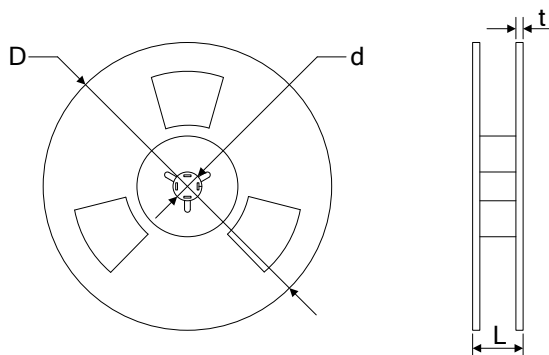
SMD Packing (Tape & Reel)

Tape



Symbol	Dimension (mm)	
	Spec.	Tolerance
W	16.00	±0.20
P0	4.00	±0.10
P1	12.00	±0.20
P2	4.00	±0.10
D0	1.55	±0.10
E	1.75	±0.10
F	7.50	±0.10
A0	8.80	±0.10
K0	8.30	±0.10
B0	8.30	±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		

Reel



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