

DATA SHEET

GAS DISCHARGE TUBES TELEPHONE INTERFACE

2R-5 series

RoHS compliant & Halogen free



Product specification— April 25, 2019 V.0



Gas Discharge Tube (GDT) Data Sheet

Features

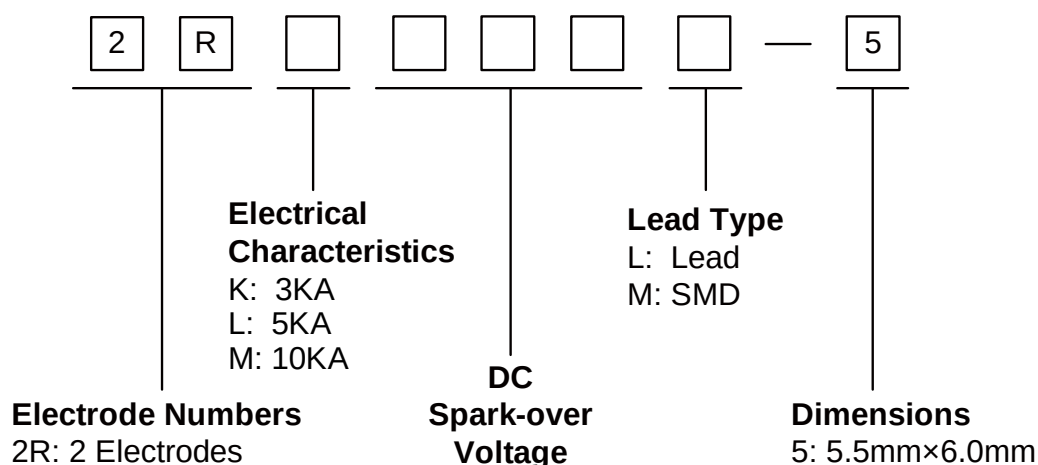
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/μs.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance ($\leq 1.5\text{pF}$)
- High holdover voltage
- Large absorbing transient current capability.
- Micro-Gap Design
- Size: 5.5mm*6.0mm
- Storage and operating temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Meets MSL level 1, per J-STD-020
- Safety certification: E244458 & E327997



Applications

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

Part Number Code



Ordering Code for different package in 2RLxxxxL-5, 2RMxxxxL-5, and 2RKxxxxL-5 series

Box package: Add suffix “/B” at the end of the part number, such as 2RL070L-5/B, 2RM070L-5/B, or 2RK3600L-5/B

Reel package: Add suffix “/TR” at the end of the part number, such as 2RL070L-5/TR, 2RM070L-5/TR, or 2RK3600L-5/TR

Marking



: BrightKing Logo

2RL090-5 : Device Marking Code

YXXX : Date Code

Dimensions

L Type	Symbol	Dimension (mm)	
		Spec.	Tolerance
	D	5.5	+0.3, -0.5
	T	6.0	+0.3, -0.5
	d	0.8	±0.1
	L	30.0	Max.
M Type	D	5.5	+0.3, -0.5
	T	6.0	+0.3, -0.5
	B	0.5	±0.1

Recommended Pad Size

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)	
2RM070L-5	2RM070M-5	70±20%	600	10	5.0	500	25	1.0	1.5	2RM070-5
2RM075L-5	2RM075M-5	75±20%	600	10	5.0	500	25	1.0	1.5	2RM075-5
2RM090L-5	2RM090M-5	90±20%	600	10	10	500	50	1.0	1.5	2RM090-5
2RM120L-5	2RM120M-5	120±20%	600	10	10	500	50	1.0	1.5	2RM120-5
2RM145L-5	2RM145M-5	145±20%	700	10	10	500	100	1.0	1.5	2RM145-5
2RM150L-5	2RM150M-5	150±20%	700	10	10	500	100	1.0	1.5	2RM150-5
2RM230L-5	2RM230M-5	230±20%	700	10	10	500	100	1.0	1.5	2RM230-5

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/ μ s	8/20 μ s 10times	50Hz, 1sec	10/1000 μ s 100A	Test Voltage	(G Ω)	1MHz	
		(V)	(V)	(KA)	(A)	(times)	DC(V)		(pF)	
2RL070L-5	2RL070M-5	70 $\pm$ 20%	800	5.0	5.0	300	25	1.0	1.5	2RL070-5
2RL075L-5	2RL075M-5	75 $\pm$ 20%	800	5.0	5.0	300	25	1.0	1.5	2RL075-5
2RL090L-5	2RL090M-5	90 $\pm$ 20%	700	5.0	5.0	300	50	1.0	1.5	2RL090-5
2RL120L-5	2RL120M-5	120 $\pm$ 20%	700	5.0	5.0	300	50	1.0	1.5	2RL120-5
2RL145L-5	2RL145M-5	145 $\pm$ 20%	700	5.0	5.0	300	100	1.0	1.5	2RL145-5
2RL150L-5	2RL150M-5	150 $\pm$ 20%	700	5.0	5.0	300	100	1.0	1.5	2RL150-5
2RL230L-5	2RL230M-5	230 $\pm$ 20%	700	5.0	5.0	300	100	1.0	1.5	2RL230-5
2RL250L-5	2RL250M-5	250 $\pm$ 20%	700	5.0	5.0	300	100	1.0	1.5	2RL250-5
2RL300L-5	2RL300M-5	300 $\pm$ 20%	900	5.0	5.0	300	100	1.0	1.5	2RL300-5
2RL350L-5	2RL350M-5	350 $\pm$ 20%	900	5.0	5.0	300	100	1.0	1.5	2RL350-5
2RL400L-5	2RL400M-5	400 $\pm$ 20%	1000	5.0	5.0	300	100	1.0	1.5	2RL400-5
2RL470L-5	2RL470M-5	470 $\pm$ 20%	1100	5.0	5.0	300	250	1.0	1.5	2RL470-5
2RL600L-5	2RL600M-5	600 $\pm$ 20%	1500	5.0	5.0	300	250	1.0	1.5	2RL600-5
2RL800L-5	2RL800M-5	800 $\pm$ 20%	1700	5.0	5.0	300	250	1.0	1.5	2RL800-5

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 1times	50Hz,1sec	8/20μs 100A	Test Voltage	(GΩ)	1MHz		
	(V)	(V)	(KA)	(A)	(times)	DC(V)		(pF)		
2RK3000L-5	3000±20%	5500	3.0	-	300	1000	1.0	1.5	AC1500, 1s	2RK3000-5
2RK3000M-5	3000±20%	5500	3.0	-	300	1000	1.0	1.5	AC1500, 1s	2RK3000-5
2RK3600L-5	3600±20%	5000	3.0	-	300	1000	1.0	1.5	AC1800, 1s	2RK3600-5
2RK3600M-5	3600±20%	5000	3.0	-	300	1000	1.0	1.5	AC1800, 1s	2RK3600-5

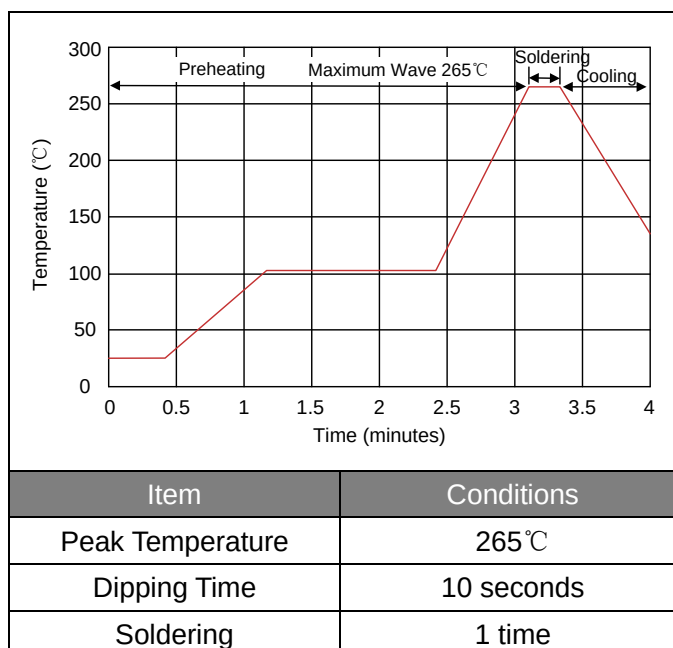
Notes: The surface for 2RXXXXM-5 series products is default for nickel plating, please change to use tin plating if used on PCB boards while soldering, and adding the code "Sn" as suffix of the part number to distinguish. Such as "2RL090M-5 Sn".

Electrical Ratings

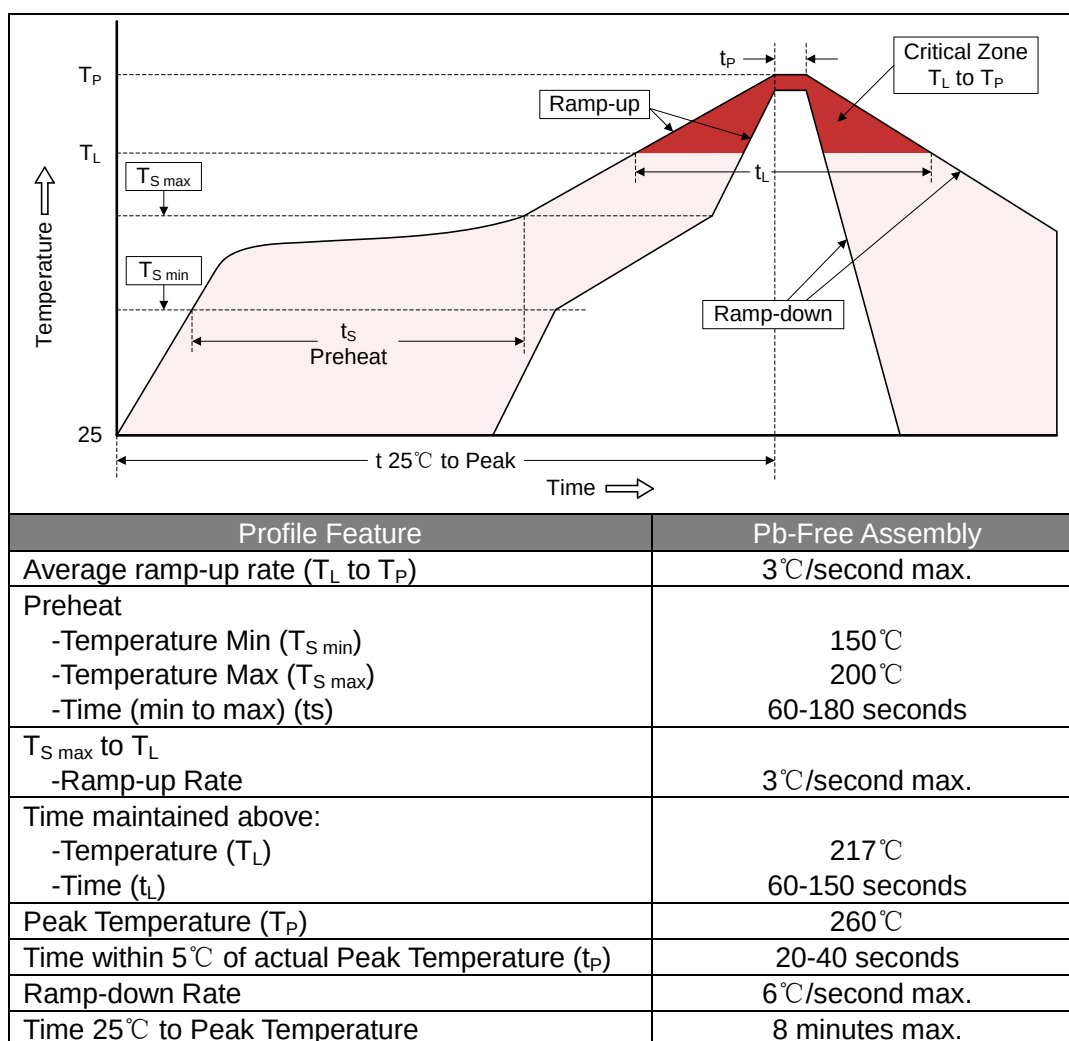
Items	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with voltage ramp $dv/dt=100V/s$.	To meet the specified value
Maximum Impulse Spark-over Voltage	The maximum impulse spark-over voltage is measured with voltage ramp $dv/dt=1000V/\mu s$.	
Impulse Discharge Current	Maximum 8/20μs surge current that can be applied between two electrodes, 5 positive and 5 negative surges, with 3 minutes interval time. The graph shows the impulse discharge current waveform. The y-axis is Current (%) from 0 to 100. The x-axis is Time. The curve starts at 0, rises to a crest value of 100%, and then decays. Key time points are marked: 8μs (time to 10% current), 20μs (time to 50% current), and Impulse Width (time to 10% current).	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. for 10 times with interval time 3 min.	
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



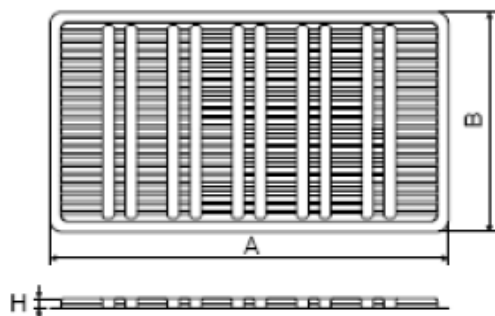
Reflow Soldering



Packaging

Axial Packing (Bulk)

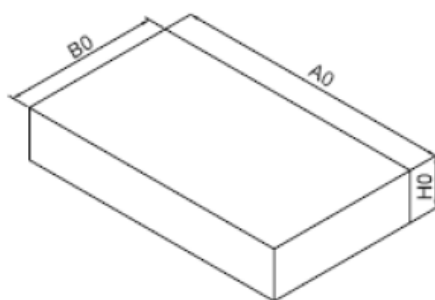
Skin packing



Symbol	Dimension (mm)	
	Spec.	Tolerance
A	264.0	±1.0
B	145.0	±1.0
H	6.5	±0.5

Quantity: 100pcs

Inner box

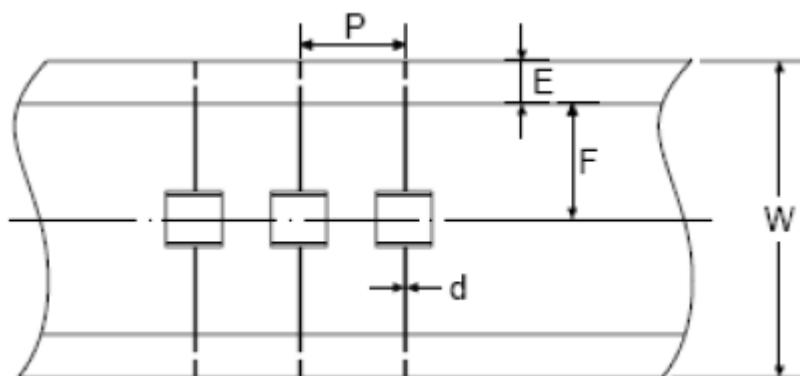


A0	270.0	±2.0
B0	150.0	±1.0
H0	50.0	±1.0

Quantity: 500pcs

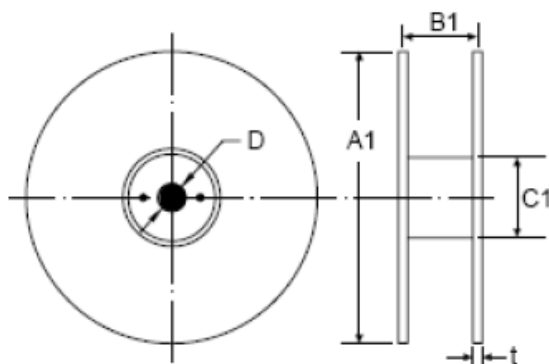
Axial Packing (Tape & Reel)

Tape



Symbol	Dimension (mm)	
	Spec.	Tolerance
P	10.0	±0.1
W	65.0	±0.3
E	6.0	±0.5
F	26.5	±0.1
d	0.8	±0.05

Reel



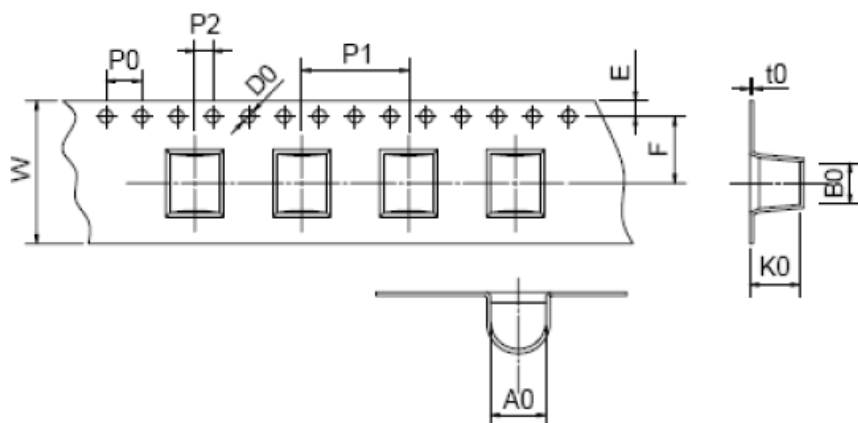
A1	330.0	±1.0
B1	70.0	±1.0
C1	82.0	±1.0
D	25.0	±0.2
t	3.0	±0.2

Quantity: 1000pcs

Packaging

SMD Packing (Tape & Reel)

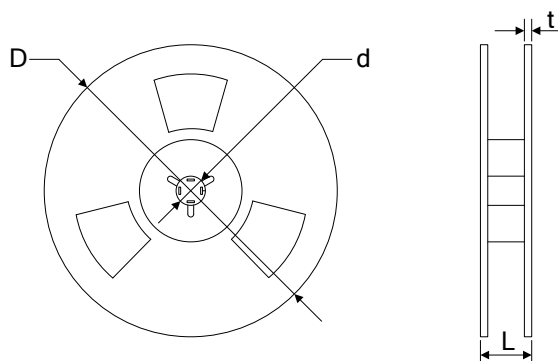
Tape



Symbol	Dimension (mm)	
	Spec.	Tolerance
W	16.00	±0.20
P0	4.00	±0.10
P1	12.00	±0.20
P2	2.00	±0.10
D0	1.55	±0.05
E	1.75	±0.10
F	7.50	±0.10
A0	5.85	±0.10
K0	6.20	±0.10
B0	7.00	±0.10
t0	0.50	±0.10

D	330.00	±1.00
d	13.00	±0.50
L	20.00	±0.50
t	2.00	±0.20
Quantity: 800pcs		

Reel



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