

Gas Discharge Tube (GDT) Data Sheet

Features

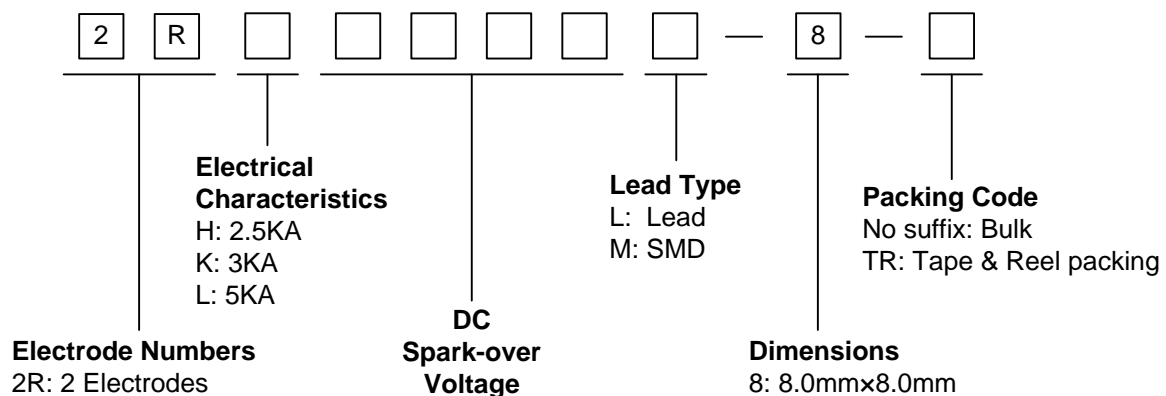
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/ μ s
- Stable breakdown voltage
- High insulation resistance
- Low capacitance (≤ 1.5 pF)
- High holdover voltage
- Large absorbing transient current capability
- Micro-Gap Design
- Size: 8.0mm*8.0mm
- 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 |

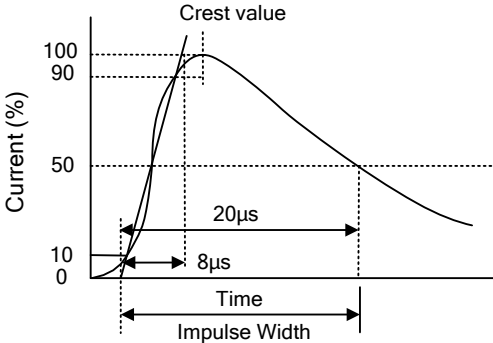
Electrical Characteristics

| 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.

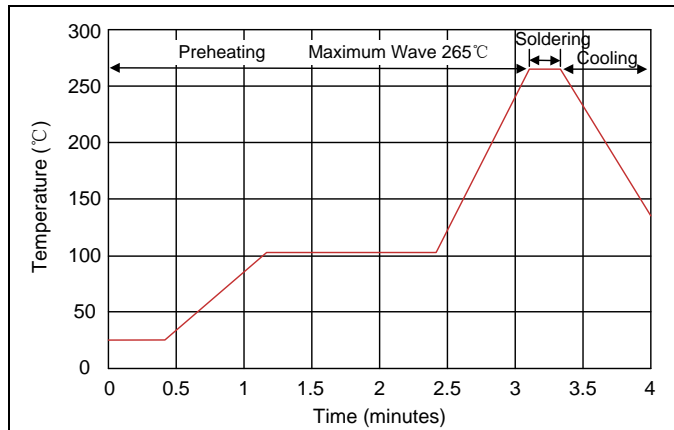
☆X may be L or M.

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 | |

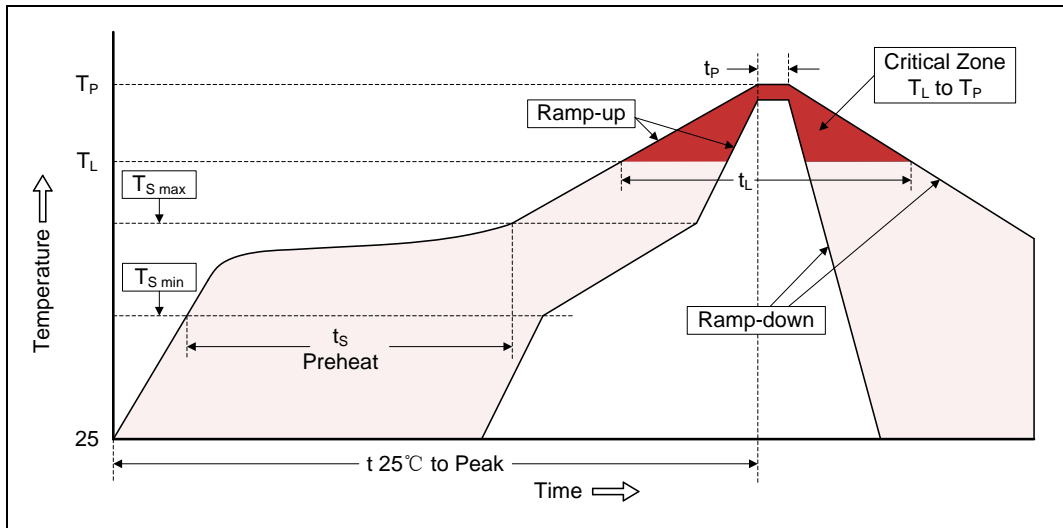
Recommended Soldering Conditions

Wave Soldering



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

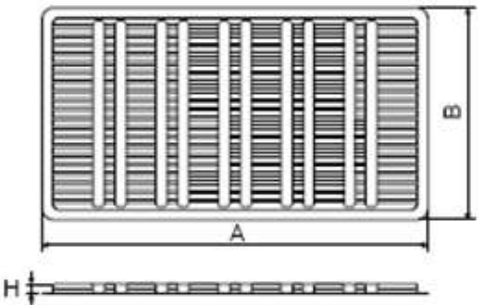
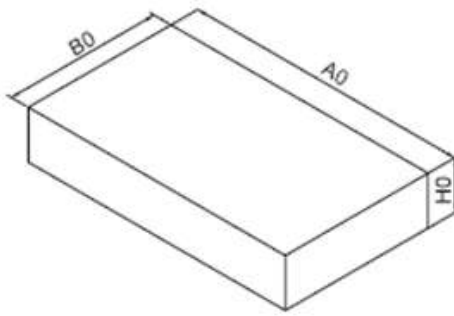
Reflow Soldering



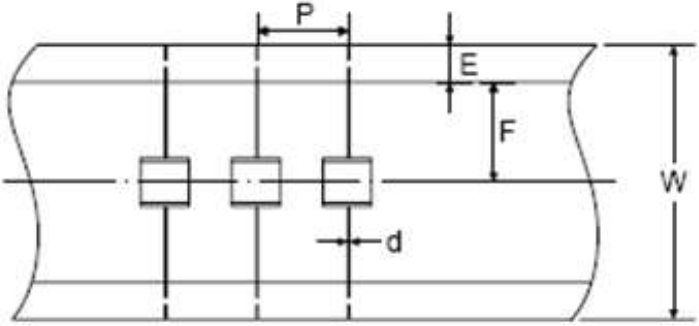
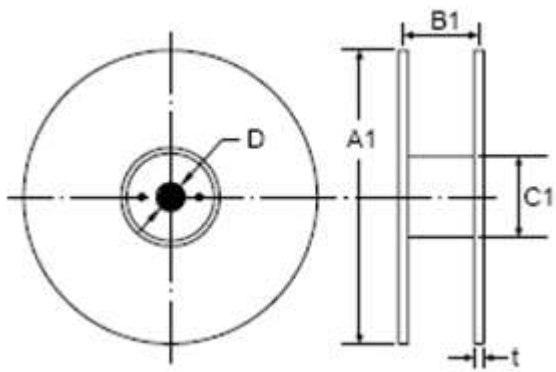
| Profile Feature | Pb-Free Assembly |
|--|------------------|
| Average ramp-up rate (T_L to T_P) | 3°C/second max. |
| Preheat | |
| -Temperature Min ($T_{S\ min}$) | 150°C |
| -Temperature Max ($T_{S\ max}$) | 200°C |
| -Time (min to max) (t_s) | 60-180 seconds |
| $T_{S\ max}$ to T_L | |
| -Ramp-up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

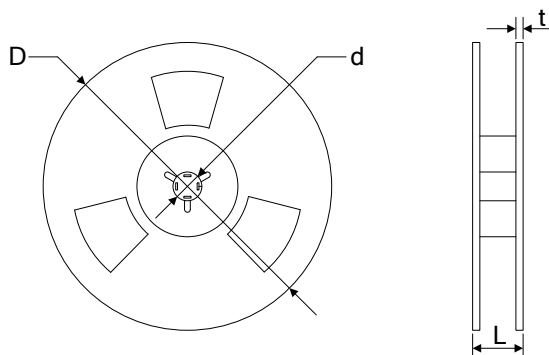
| Tape  | Dimension (mm) | |
|---|------------------|-------------------|
| | Symbol | Spec. / Tolerance |
| | P | 10.0 ±0.5 |
| | W | 65.0 ±1.0 |
| | E | 6.0 ±0.5 |
| | F | 26.5 ±0.5 |
| d | 0.8 ±0.1 | |
| Reel  | A1 | 330.0 ±2.0 |
| | B1 | 70.0 ±2.0 |
| | C1 | 82.0 ±2.0 |
| | D | 25.0 ±0.5 |
| | t | 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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