

Gas Discharge Tube (GDT) Data Sheet

Features

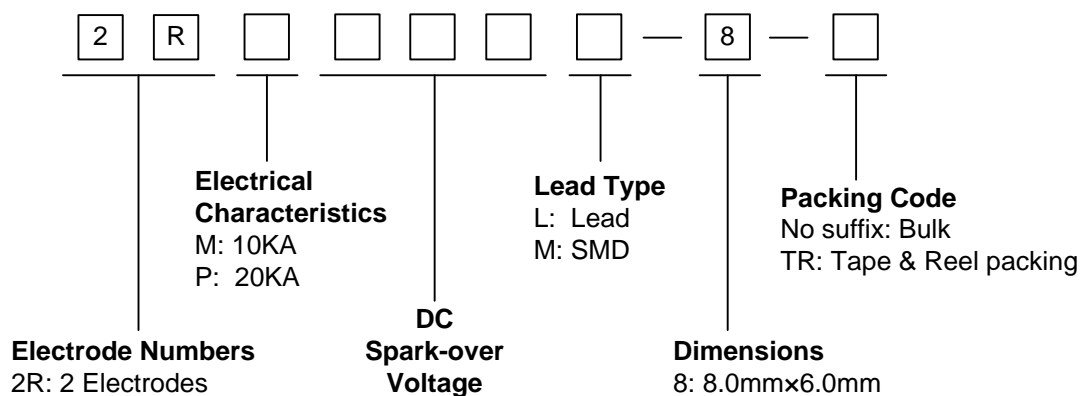
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/μs
- Stable breakdown voltage
- High insulation resistance
- Low capacitance (≤1.5pF)
- High holdover voltage
- Large absorbing transient current capability
- Micro-Gap Design
- Size: 8.0mm*6.0mm
- 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 | <p>Recommended Pad Size</p> | D | 8.0 | +0.3, -0.5 |
| T | | 6.0 | +0.3, -0.5 | |
| B | | 0.5 | ±0.1 | |

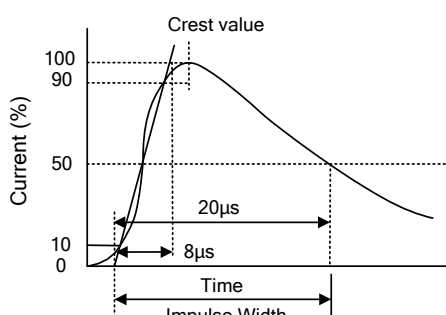
Electrical Characteristics

| 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

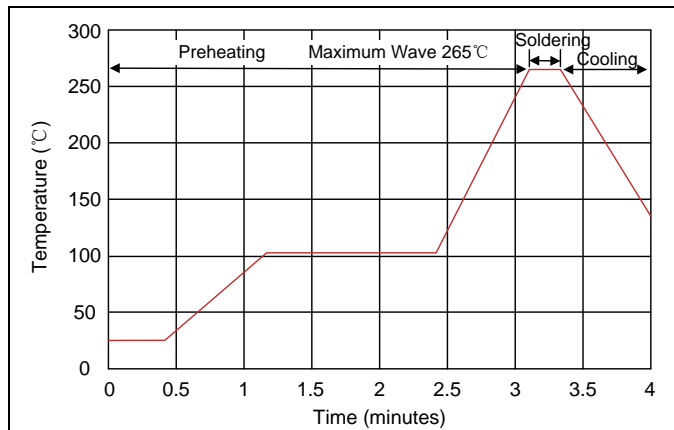
| Part Number | | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Nominal Impulse Discharge Current | Alternating Discharge Current | Impulse Life | Minimum Insulation Resistance | | Maximum Capacitance | Device Marking Code |
|-------------|-----------|-----------------------|------------------------------------|-----------------------------------|-------------------------------|-------------------------|-------------------------------|---------------|---------------------|---------------------|
| | | 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) | |
| 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 μs 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 | |

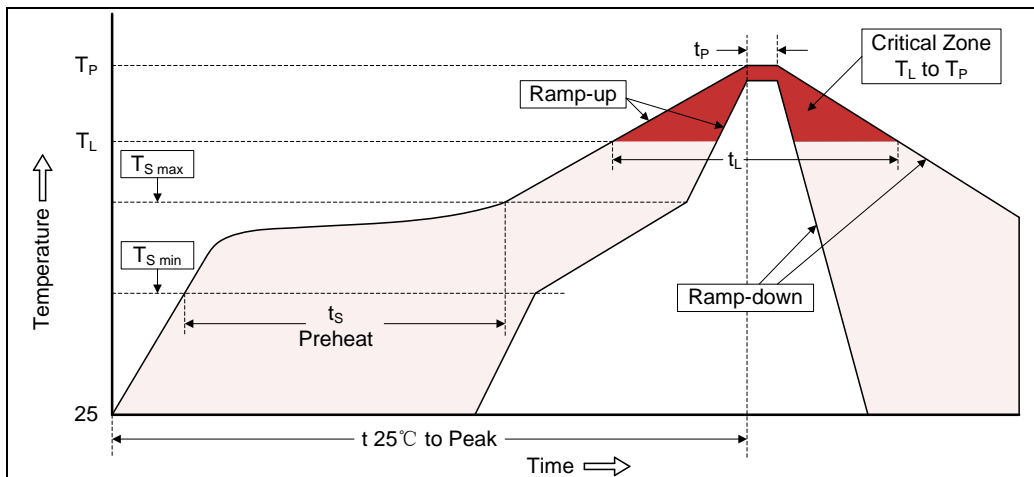
Recommended Soldering Conditions

Wave Soldering



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

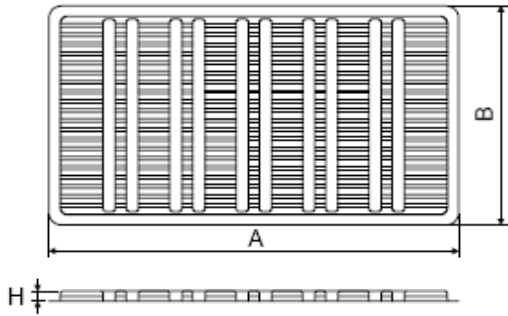
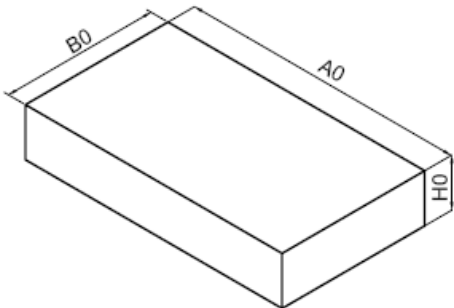
Reflow Soldering



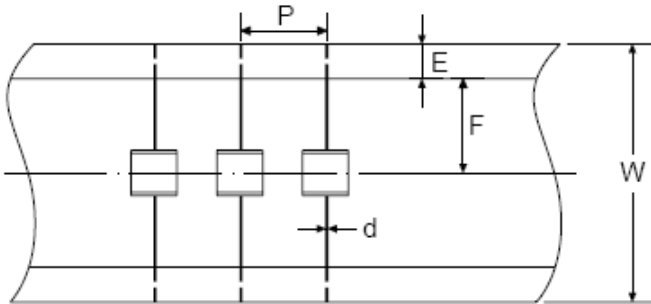
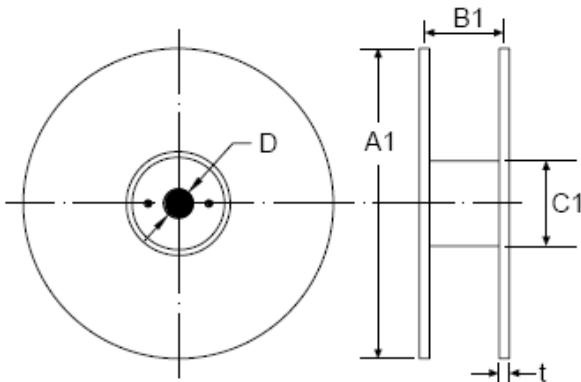
| Profile Feature | Pb-Free Assembly |
|--|------------------|
| Average ramp-up rate (T_L to T_P) | 3°C/second max. |
| Preheat | |
| -Temperature Min ($T_{S\ min}$) | 150°C |
| -Temperature Max ($T_{S\ max}$) | 200°C |
| -Time (min to max) (t_s) | 60-180 seconds |
| $T_{S\ max}$ to T_L | |
| -Ramp-up 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 |
| Symbol | Dimension (mm) | | | | | | | | | | | | | | |
| | Spec. | Tolerance | | | | | | | | | | | | | |
| A | 265.0 | ±5.0 | | | | | | | | | | | | | |
| B | 146.0 | ±5.0 | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | |

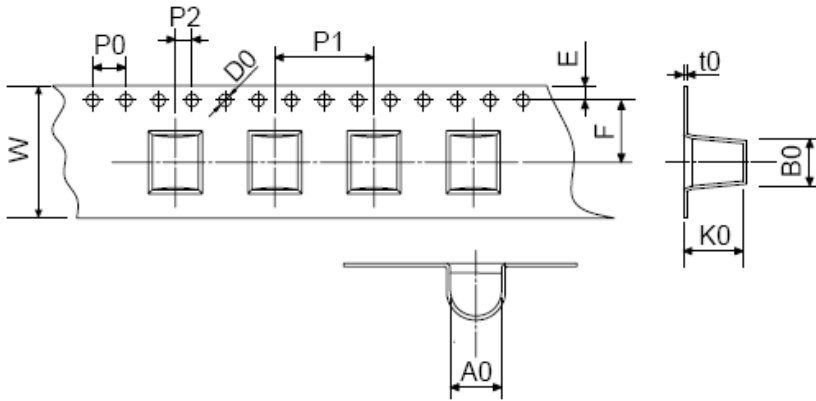
Axial Packing (Tape & Reel)

| Tape |  | | | | | | | | | | | | | | | | | | | | |
|--------|---|-----------|----------------|------|-------|-----------|------|------|------|------|------|------|------|-----|------|------|------------------|------|---|-----|------|
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| 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 | | | | | | | | | | | | | | | | | | | |
| 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 | | | | |
| 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 | | | | | | | | | | | | | | | | | | | |

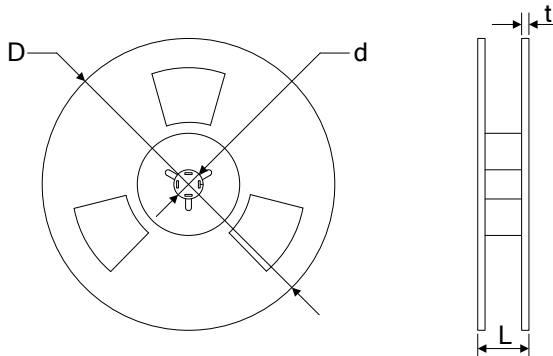
SMD Packing (Tape & Reel)

| 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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