

# DATA SHEET

**GAS DISCHARGE TUBES  
TELEPHONE INTERFACE**  
2R-8x6 series

RoHS compliant & free



Product specification— July 12, 2023 V.1



## 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: UL



### Applications

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

### Part Number Code



| Ordering Code                | Lead type | Packing     |
|------------------------------|-----------|-------------|
| 2RMXXXL-8/B<br>2RPXXXL-8/B   | Lead      | Box (Tray)  |
| 2RMXXXL-8/TR<br>2RPXXXL-8/TR | Lead      | Tape & Reel |
| 2RMXXXM-8<br>2RPXXXM-8       | SMD       | Tape & Reel |

**Marking**

**B** : BrightKing Logo  
 2RM090-8 : Device Marking Code  
 XXXX : Internal Control Code

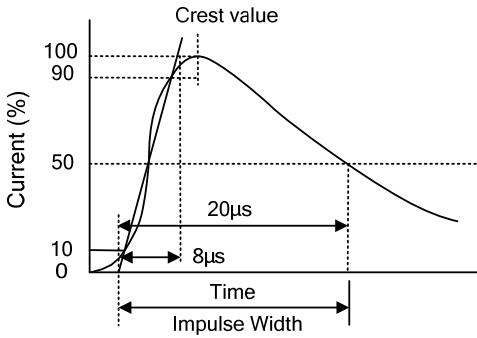
**Dimensions**

| L Type |                          | Dimension (mm) |       |            |
|--------|---|----------------|-------|------------|
|        |   | Symbol         | 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 | <br>Recommended Pad Size | D              | 8.0   | +0.3, -0.5 |
|        |   | T              | 6.0   | +0.3, -0.5 |
|        |   | B              | 0.5   | ±0.1       |

**Electrical Characteristics**

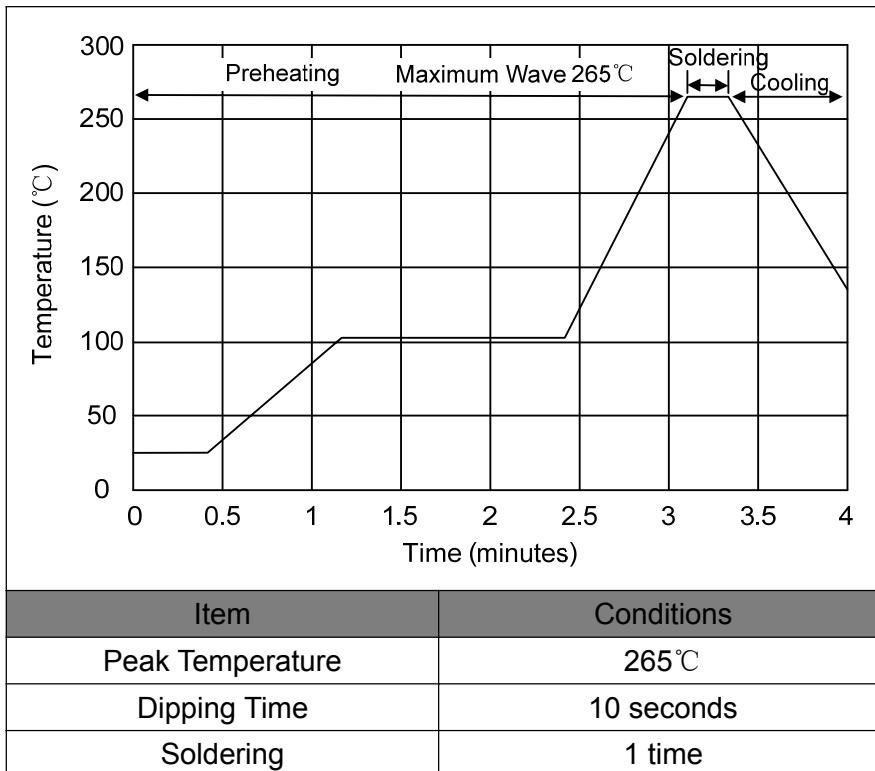
| Part Number | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Nominal Impulse Discharge Current | Alternating Discharge Current | Impulse Life | Minimum Insulation Resistance |          | Maximum Capacitance | Device Marking Code |                |            |                |              |      |      |
|-------------|-----------------------|------------------------------------|-----------------------------------|-------------------------------|--------------|-------------------------------|----------|---------------------|---------------------|----------------|------------|----------------|--------------|------|------|
|             |                       |                                    |                                   |                               |              | 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       |            |                |              |      |      |
| 2RP075L-8   | 2RP075M-8             | 75±20%                             | 600                               | 20                            | 20           | 500                           | 25       | 1.0                 | 1.5                 | 2RP075-8       |            |                |              |      |      |
| 2RP090L-8   | 2RP090M-8             | 90±20%                             | 600                               | 20                            | 20           | 500                           | 50       | 1.0                 | 1.5                 | 2RP090-8       |            |                |              |      |      |
| 2RP120L-8   | 2RP120M-8             | 120±20%                            | 600                               | 20                            | 20           | 500                           | 50       | 1.0                 | 1.5                 | 2RP120-8       |            |                |              |      |      |
| 2RP145L-8   | 2RP145M-8             | 145±20%                            | 700                               | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP145-8       |            |                |              |      |      |
| 2RP150L-8   | 2RP150M-8             | 150±20%                            | 700                               | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP150-8       |            |                |              |      |      |
| 2RP230L-8   | 2RP230M-8             | 230±20%                            | 700                               | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP230-8       |            |                |              |      |      |
| 2RP250L-8   | 2RP250M-8             | 250±20%                            | 800                               | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP250-8       |            |                |              |      |      |
| 2RP300L-8   | 2RP300M-8             | 300±20%                            | 900                               | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP300-8       |            |                |              |      |      |
| 2RP350L-8   | 2RP350M-8             | 350±20%                            | 900                               | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP350-8       |            |                |              |      |      |
| 2RP400L-8   | 2RP400M-8             | 400±20%                            | 1000                              | 20                            | 20           | 500                           | 100      | 1.0                 | 1.5                 | 2RP400-8       |            |                |              |      |      |
| 2RP470L-8   | 2RP470M-8             | 470±20%                            | 1100                              | 20                            | 20           | 500                           | 250      | 1.0                 | 1.5                 | 2RP470-8       |            |                |              |      |      |
| 2RP600L-8   | 2RP600M-8             | 600±20%                            | 1300                              | 20                            | 20           | 500                           | 250      | 1.0                 | 1.5                 | 2RP600-8       |            |                |              |      |      |
| 2RP800L-8   | 2RP800M-8             | 800±20%                            | 1500                              | 20                            | 20           | 500                           | 250      | 1.0                 | 1.5                 | 2RP800-8       |            |                |              |      |      |

**Electrical Ratings**

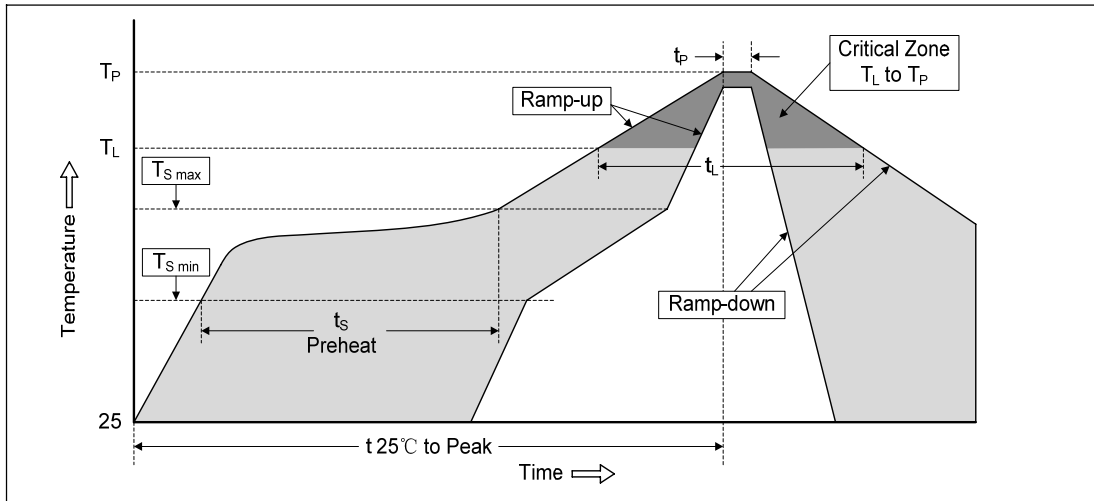
| Items                              | Test Condition/Description   | Requirement                 |
|------------------------------------|--|-----------------------------|
| DC Spark-over Voltage              | The voltage is measured with voltage ramp $dv/dt=100V/s$ .   | To meet the specified value |
| 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.<br> |                             |
| 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**

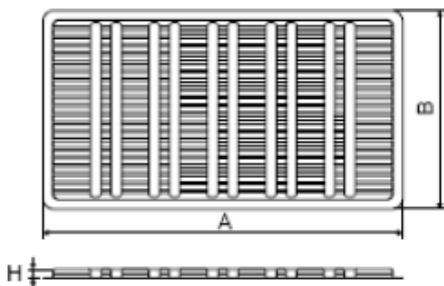


| Profile Feature  | Pb-Free Assembly                 |
|--|----------------------------------|
| Average ramp-up rate (TL to TP)  | 3°C/second max.                  |
| Preheat<br>-Temperature Min (TSmin)<br>-Temperature Max (TSmax)<br>-Time (min to max) (ts) | 150°C<br>200°C<br>60-180 seconds |
| TSmax to TL<br>-Ramp-up Rate   | 3°C/second max.                  |
| Time maintained above:<br>-Temperature (TL)<br>-Time (tL)                                  | 217°C<br>60-150 seconds          |
| Peak Temperature (TP)  | 260°C                            |
| Time within 5°C of actual Peak Temperature (tp)  | 20-40 seconds                    |
| Ramp-down Rate   | 6°C/second max.                  |
| Time 25°C to Peak Temperature  | 8 minutes max.                   |

**Packaging**

**Axial Packing (Box)**

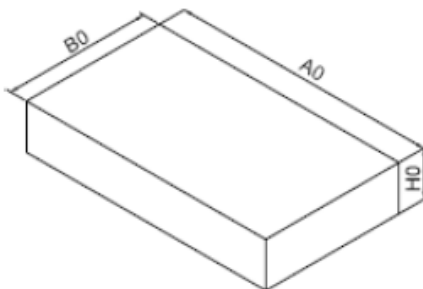
**Skin packing**



| Symbol | Dimension (mm) |           |
|--------|----------------|-----------|
|        | Spec.          | Tolerance |
| A      | 267.0          | ±2.0      |
| B      | 146.0          | ±2.0      |
| H      | 8.5            | ±1.0      |

Quantity: 100pcs

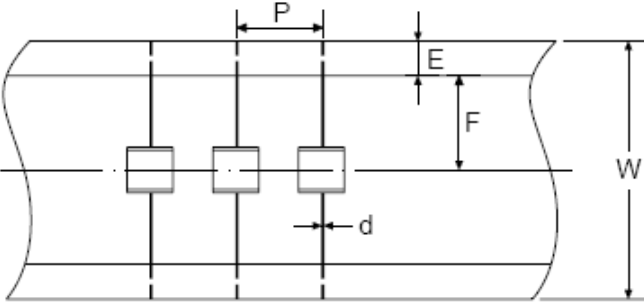
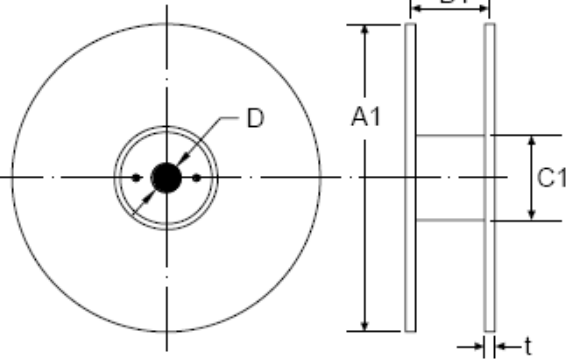
**Inner box**



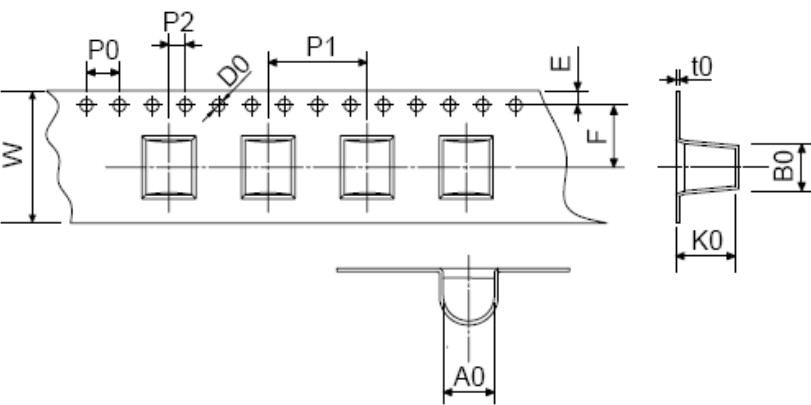
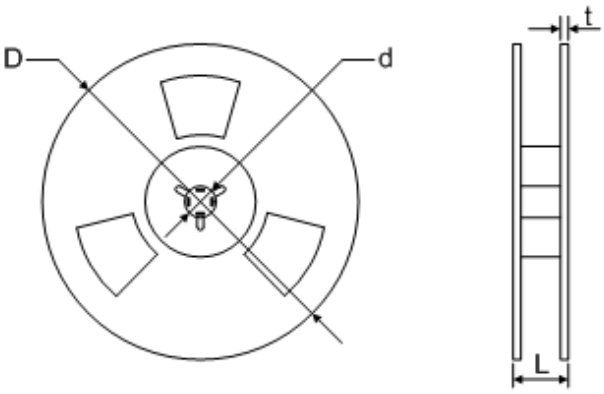
|    |       |      |
|----|-------|------|
| A0 | 270.0 | ±2.0 |
| B0 | 150.0 | ±2.0 |
| H0 | 50.0  | ±2.0 |

Quantity: 500pcs

Axial Packing (Tape & Reel)

| Tape  | 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      |
|   | <b>Reel</b>      |                |           |
|  | 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 |                |           |

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  | 8.20           | ±0.10     |       |
|  | K0  | 8.50           | ±0.10     |       |
|  | B0  | 7.50           | ±0.10     |       |
|  | t0  | 0.50           | ±0.10     |       |
|  | <b>Reel</b>   |                |           |       |
|  |  | D              | 330.00    | ±2.00 |
|  |   | d              | 13.00     | ±0.50 |
| L  |   | 20.00          | ±2.00     |       |
| t  |   | 2.00           | ±0.20     |       |
| Quantity: 500pcs   |   |                |           |       |

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