

DATA SHEET

GAS DISCHARGE TUBES
TELEPHONE INTERFACE

2R-4 series

RoHS compliant & free



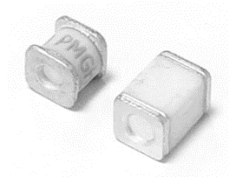
Product specification— July 12, 2023 V.1



Gas Discharge Tube (GDT) Data Sheet

Features

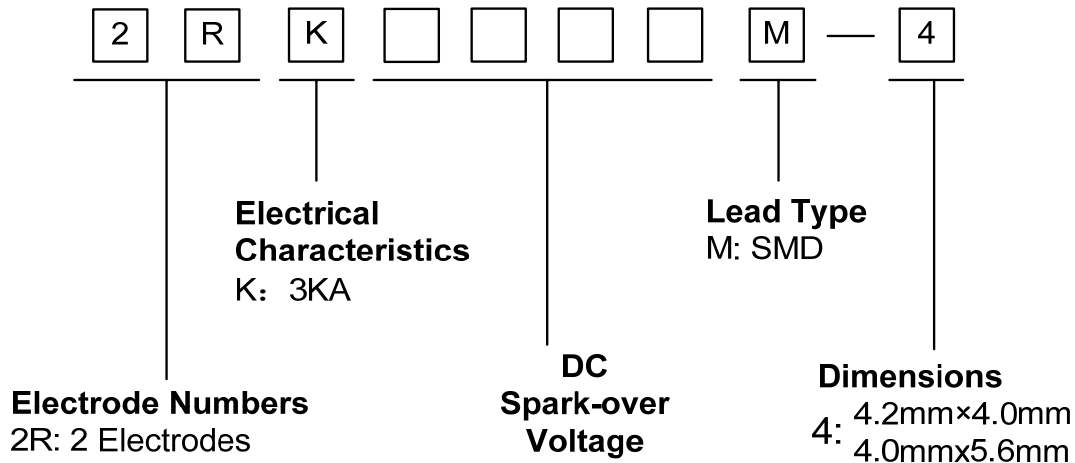
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/μs
- Stable breakdown voltage
- High insulation resistance
- Low capacitance (≤1pF)
- High holdover voltage
- Large absorbing transient current capability
- Micro-Gap Design
- Size: 4.2mm*4.0mm
- 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



Marking

090 : Device Marking Code
 XXXX : Internal Control Code

Dimensions

| Size: 4.2x4.0mm series | | Symbol | Dimension (mm) | |
|------------------------|---|--------|----------------|-----------|
| | | | Spec. | Tolerance |
| | D | 4.2 | ±0.3 | |
| | T | 4.0 | ±0.3 | |
| | B | 0.4 | ±0.2 | |
| | d | 3.9 | ±0.2 | |
| Size: 4.0x5.6mm series | | Symbol | Dimension (mm) | |
| | | | Spec. | Tolerance |
| | D | 4.0 | ±0.3 | |
| | T | 5.6 | ±0.3 | |
| | B | 0.5 | ±0.2 | |

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) | |
| 2RK075M-4 | 75±20% | 800 | 3 | 3 | 300 | 25 | 1 | 1.0 | 075 |
| 2RK090M-4 | 90±20% | 800 | 3 | 3 | 300 | 50 | 1 | 1.0 | 090 |
| 2RK145M-4 | 145±20% | 800 | 3 | 3 | 300 | 100 | 1 | 1.0 | 145 |
| 2RK230M-4 | 230±20% | 700 | 3 | 3 | 300 | 100 | 1 | 1.0 | 230 |
| 2RK250M-4 | 250±20% | 700 | 3 | 3 | 300 | 100 | 1 | 1.0 | 250 |
| 2RK300M-4 | 300±20% | 800 | 3 | 3 | 300 | 100 | 1 | 1.0 | 300 |
| 2RK350M-4 | 350±20% | 850 | 3 | 3 | 300 | 100 | 1 | 1.0 | 350 |
| 2RK400M-4 | 400±20% | 900 | 3 | 3 | 300 | 100 | 1 | 1.0 | 400 |
| 2RK470M-4 | 470±20% | 1000 | 3 | 3 | 300 | 250 | 1 | 1.0 | 470 |
| 2RK600M-4 | 600±20% | 1200 | 3 | 3 | 300 | 250 | 1 | 1.0 | 600 |
| 2RK800M-4 | 800±20% | 1400 | 3 | 3 | 300 | 250 | 1 | 1.0 | 800 |
| 2RK1000M-4 | 1000±20% | 1600 | 3 | 3 | 300 | 500 | 1 | 1.0 | 1000 |
| 2RK1200M-4 | 1200±20% | 1900 | 3 | 3 | 300 | 500 | 1 | 1.0 | 1200 |

Note: Size 4.2x4.0mm series

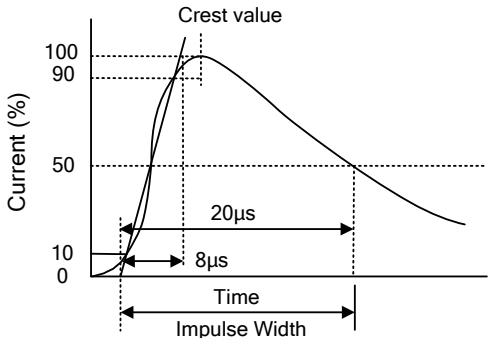
GAS DISCHARGE TUBS

2R-4 series

| Part Number | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Nominal Impulse Discharge Current | Impulse Life | Minimum Insulation Resistance | | Maximum Capacitance | AC Withstanding Voltage | Device Marking Code |
|-------------|-----------------------|------------------------------------|-----------------------------------|----------------|-------------------------------|------|---------------------|-------------------------|---------------------|
| | 100V/s | 1000V/μs | 8/20μs 10times | 8/20μs 100A | Test Voltage | (GΩ) | 1MHz | | |
| | (V) | (V) | (KA) | (times) | DC(V) | | (pF) | | |
| 2RK1400M-4 | 1400±20% | 2800 | 3 | 300 | 500 | 1 | 1.0 | - | None |
| 2RK1600M-4 | 1600±20% | 3000 | 3 | 300 | 500 | 1 | 1.0 | - | None |
| 2RK2000M-4 | 2000±20% | 3800 | 3 | 300 | 1000 | 1 | 1.0 | - | None |
| 2RK2500M-4 | 2500±20% | 4200 | 3 | 300 | 1000 | 1 | 1.0 | 1250VAC, 3s | None |
| 2RK3000M-4 | 3000±20% | 4500 | 3 | 300 | 1000 | 1 | 1.0 | 1500VAC, 3s | None |
| 2RK3600M-4 | 3600±20% | 4800 | 3 | 300 | 1000 | 1 | 1.0 | 1850VAC, 3s | None |

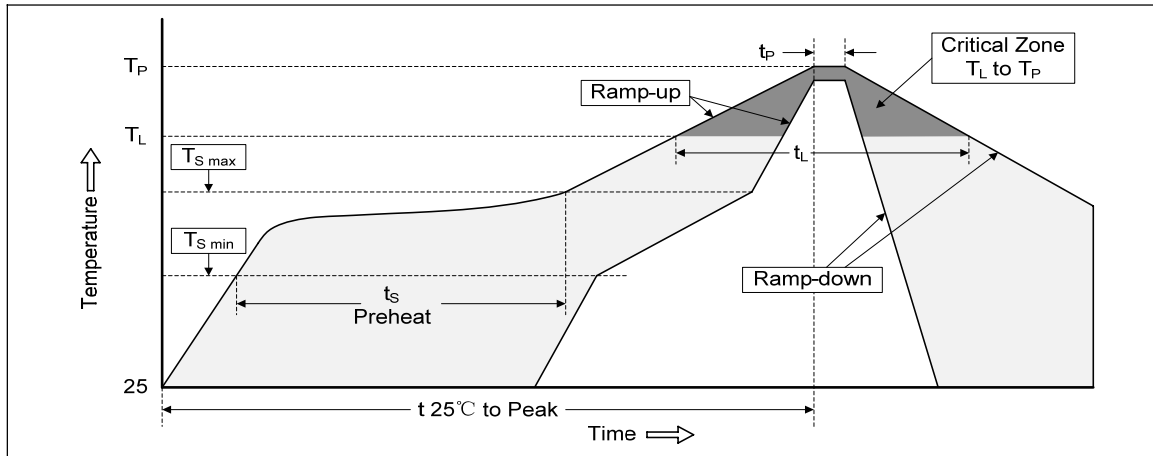
Note: Size 4.0x5.6mm series

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.</p>  | |
| 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

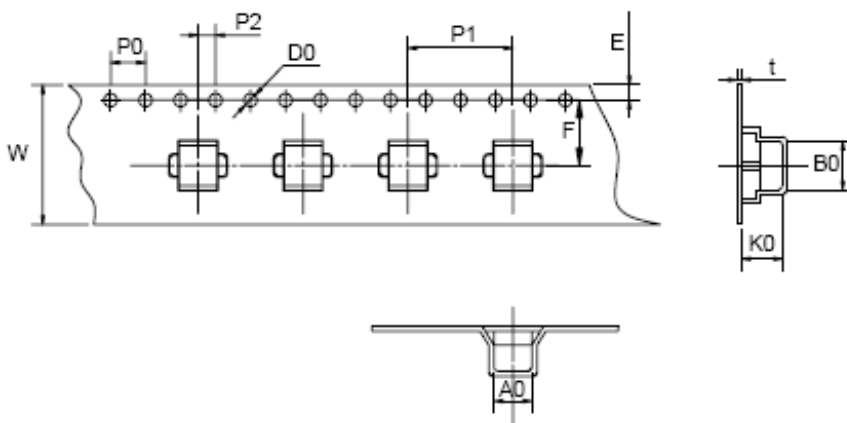
Reflow Soldering



| Profile Feature | Pb-Free Assembly |
|---|----------------------------------|
| Average ramp-up rate (T _L to T _P) | 3°C/second max. |
| Preheat -Temperature Min (T _{S min}) -Temperature Max (T _{S max}) -Time (min to max) (t _s) | 150°C 200°C 60-180 seconds |
| T _{S max} to T _L -Ramp-up Rate | 3°C/second max. |
| Time maintained above: -Temperature (T _L) -Time (t _L) | 217°C 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

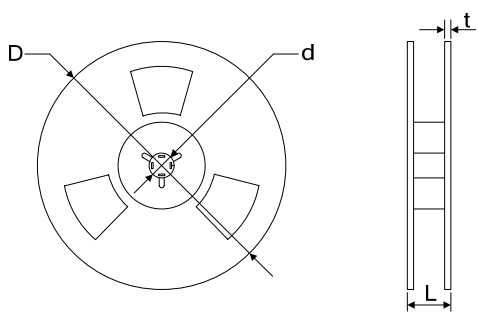
Tape



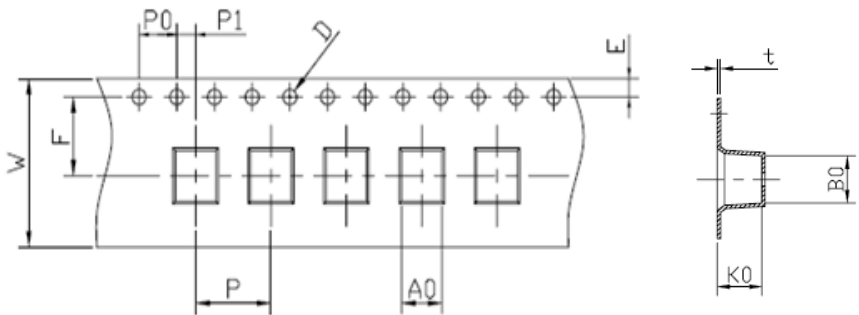
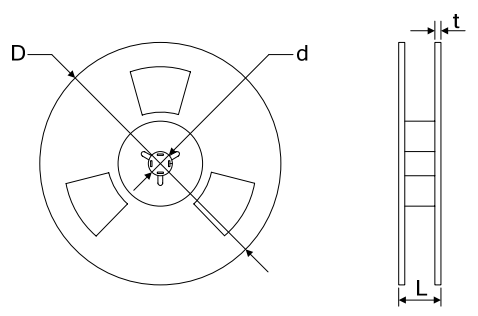
| Symbol | Dimension (mm) | |
|--------|----------------|-----------|
| | Spec. | Tolerance |
| W | 16.00 | ±0.20 |
| P0 | 4.00 | ±0.10 |
| P1 | 12.00 | ±0.20 |
| P2 | 2.00 | ±0.10 |
| D0 | 1.55 | ±0.05 |
| E | 1.75 | ±0.10 |
| F | 7.50 | ±0.10 |
| A0 | 4.27 | ±0.10 |
| K0 | 5.20 | ±0.10 |
| B0 | 4.45 | ±0.10 |
| t | 0.50 | ±0.10 |

GAS DISCHARGE TUBS

2R-4 series

| | | | |
|---|------------------|--------|-------|
| <p>Reel</p>  | D | 330.00 | ±2.00 |
| | d | 13.00 | ±0.50 |
| | L | 20.00 | ±2.00 |
| | t | 2.00 | ±0.20 |
| | Quantity: 900pcs | | |

Note: Packaging for size 4.2x4.0mm series

| | | | |
|---|-------------------|-----------------------|------------------|
| <p>Tape</p>  | Symbol | Dimension (mm) | |
| | | Spec. | Tolerance |
| | W | 16.00 | ±0.20 |
| | P | 8.00 | ±0.20 |
| | P0 | 4.00 | ±0.20 |
| | P1 | 2.00 | ±0.20 |
| | D | 1.50 | ±0.10 |
| | E | 1.75 | ±0.10 |
| | F | 7.50 | ±0.10 |
| | A0 | 4.30 | ±0.10 |
| | B0 | 5.80 | ±0.10 |
| | K0 | 4.30 | ±0.10 |
| | t | 0.40 | ±0.10 |
| <p>Reel</p>  | D | 330.00 | ±2.00 |
| | d | 13.00 | ±0.50 |
| | L | 20.00 | ±2.00 |
| | t | 2.00 | ±0.20 |
| | Quantity: 1500pcs | | |

Note: Packaging for size 4.0x5.6mm series

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