# Gas Discharge Tube (GDT) Data Sheet

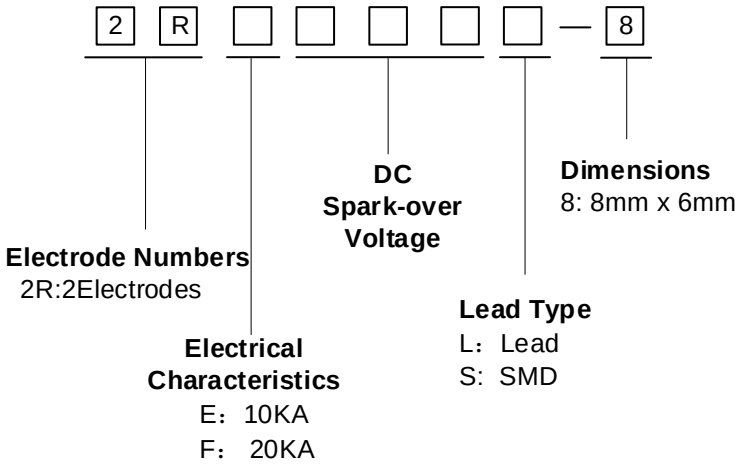
## Features

- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/μs
- Low capacitance（≤1.5pF）
- High holdover voltage
- Stable breakdown voltage
- Large absorbing transient current capability
- Surface mounted gas arrester
- Micro-Gap Design
- Operating and Storage Temperature ：-40℃ ~ +125℃
- Meets MSL Level 1，per J-STD-020

## Applications

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

## Part Number Code



## Electrical Characteristics

| Part Number | | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Impulse Life Test | Minimum Insulation Resistance | | Maximum Capacitance | Nominal Impulse Discharge Current | Alternating Discharge Current | Device Marking Code |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 100V/S | 1KV/us | 10/1000us 100A | Test Voltage | （GΩ） | (1MHz 1V) | 8/20us | 50Hz,1S | |
| | | (v) | (v) | (times) | DC(V) | | (pF) | (KA) | (A) | |
| 2RE075L-8 | 2RE075S-8 | 75±20% | 600 | 500 | 25 | 1 | 1.5 | 10 | 10 | 2RE075-8 |
| 2RE090L-8 | 2RE090S-8 | 90±20% | 600 | 500 | 50 | 1 | 1.5 | 10 | 10 | 2RE090-8 |
| 2RE120L-8 | 2RE120S-8 | 120±20% | 600 | 500 | 50 | 1 | 1.5 | 10 | 10 | 2RE120-8 |
| 2RE150L-8 | 2RE150S-8 | 150±20% | 700 | 500 | 100 | 1 | 1.5 | 10 | 10 | 2RE150-8 |
| 2RE230L-8 | 2RE230S-8 | 230±20% | 700 | 500 | 100 | 1 | 1.5 | 10 | 10 | 2RE230-8 |
| 2RE250L-8 | 2RE250S-8 | 250±20% | 800 | 500 | 100 | 1 | 1.5 | 10 | 10 | 2RE250-8 |
| 2RE300L-8 | 2RE300S-8 | 300±20% | 900 | 500 | 100 | 1 | 1.5 | 10 | 10 | 2RE300-8 |
| 2RE350L-8 | 2RE350S-8 | 350±20% | 900 | 500 | 100 | 1 | 1.5 | 10 | 10 | 2RE350-8 |
| 2RE400L-8 | 2RE400S-8 | 400±20% | 1000 | 500 | 100 | 1 | 1.5 | 10 | 10 | 2RE400-8 |
| 2RE470L-8 | 2RE470S-8 | 470±20% | 1100 | 500 | 250 | 1 | 1.5 | 10 | 10 | 2RE470-8 |
| 2RE600L-8 | 2RE600S-8 | 600±20% | 1300 | 500 | 250 | 1 | 1.5 | 10 | 10 | 2RE600-8 |
| 2RE800L-8 | 2RE800S-8 | 800±20% | 1500 | 500 | 250 | 1 | 1.5 | 10 | 10 | 2RE800-8 |

## Electrical Characteristics

| Part Number | | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Impulse Life Test | Minimum Insulation Resistance | | Maximum Capacitance | Nominal Impulse Discharge Current | Alternating Discharge Current | Device Marking Code |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 100V/S | 1KV/us | 10/1000us 100A | Test Voltage | （GΩ） | (1MHz 1V) | 8/20us | 50Hz,1S | |
| | | (v) | (v) | (times) | DC(V) | | (pF) | (KA) | (A) | |
| 2RF075L-8 | 2RF075S-8 | 75±20% | 600 | 500 | 25 | 1 | 1.5 | 20 | 20 | 2RF075-8 |
| 2RF090L-8 | 2RF090S-8 | 90±20% | 600 | 500 | 50 | 1 | 1.5 | 20 | 20 | 2RF090-8 |
| 2RF120L-8 | 2RF120S-8 | 120±20% | 600 | 500 | 50 | 1 | 1.5 | 20 | 20 | 2RF120-8 |
| 2RF150L-8 | 2RF150S-8 | 150±20% | 700 | 500 | 100 | 1 | 1.5 | 20 | 20 | 2RF150-8 |
| 2RF230L-8 | 2RF230S-8 | 230±20% | 700 | 500 | 100 | 1 | 1.5 | 20 | 20 | 2RF230-8 |
| 2RF250L-8 | 2RF250S-8 | 250±20% | 800 | 500 | 100 | 1 | 1.5 | 20 | 20 | 2RF250-8 |
| 2RF300L-8 | 2RF300S-8 | 300±20% | 900 | 500 | 100 | 1 | 1.5 | 20 | 20 | 2RF300-8 |
| 2RF350L-8 | 2RF350S-8 | 350±20% | 900 | 500 | 100 | 1 | 1.5 | 20 | 20 | 2RF350-8 |
| 2RF400L-8 | 2RF400S-8 | 400±20% | 1000 | 500 | 100 | 1 | 1.5 | 20 | 20 | 2RF400-8 |
| 2RF470L-8 | 2RF470S-8 | 470±20% | 1100 | 500 | 250 | 1 | 1.5 | 20 | 20 | 2RF470-8 |
| 2RF600L-8 | 2RF600S-8 | 600±20% | 1300 | 500 | 250 | 1 | 1.5 | 20 | 20 | 2RF600-8 |
| 2RF800L-8 | 2RF800S-8 | 800±20% | 1500 | 500 | 250 | 1 | 1.5 | 20 | 20 | 2RF800-8 |

## Electrical Characteristics

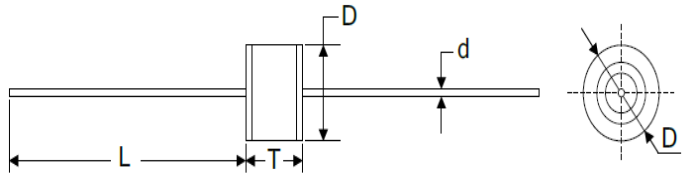
| Part Number | | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Impulse Life Test | Minimum Insulation Resistance | | Maximum Capacitance | Nominal Impulse Discharge Current | Alternating Discharge Current | Device Marking Code |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 100V/S | 1KV/us | 10/1000us 100A | Test Voltage | （GΩ） | (1MHz 1V) | 8/20us | 50Hz,1S | |
| | | ±20%(v) | (v) | (times) | DC(V) | | (pF) | (KA) | (A) | |
| 2RC2500L-8 | 2RC2500S-8 | 2500 | 4000 | 100 | 1000 | 1 | 1.5 | 3 | 3 | 2RC2500-8 |
| 2RC3000L-8 | 2RC3000S-8 | 3000 | 4200 | 100 | 1000 | 1 | 1.5 | 3 | 3 | 2RC3000-8 |
| 2RC3500L-8 | 2RC3500S-8 | 3500 | 5000 | 100 | 1000 | 1 | 1.5 | 3 | 3 | 2RC3500-8 |
| 2RC3600L-8 | 2RC3600S-8 | 3600 | 5200 | 100 | 1000 | 1 | 1.5 | 3 | 3 | 2RC3600-8 |
| 2RC4000L-8 | 2RC4000S-8 | 4000 | 5500 | 100 | 1000 | 1 | 1.5 | 3 | 3 | 2RC4000-8 |

## Electrical Characteristics

| Part Number | | DC Spark-over Voltage | Maximum Impulse Spark-over Voltage | Impulse Life Test | Minimum Insulation Resistance | | Maximum Capacitance | Nominal Impulse Discharge Current | Alternating Discharge Current | Device Marking Code |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 100V/S | 1KV/us | 10/1000us 100A | Test Voltage | （GΩ） | (1MHz 1V) | 8/20us | 50Hz,1S | |
| | | ±20%(v) | (v) | (times) | DC(V) | | (pF) | (KA) | (A) | |
| 2RD1000L-8 | 2RD1000S-8 | 1000 | 1400 | 100 | 500 | 1 | 1.5 | 5 | 5 | 2RD1000-8 |
| 2RD1400L-8 | 2RD1400S-8 | 1400 | 2200 | 100 | 500 | 1 | 1.5 | 5 | 5 | 2RD1400-8 |
| 2RD1600L-8 | 2RD1600S-8 | 1600 | 2400 | 100 | 500 | 1 | 1.5 | 5 | 5 | 2RD1600-8 |
| 2RD2000L-8 | 2RD2000S-8 | 2000 | 3000 | 100 | 500 | 1 | 1.5 | 5 | 5 | 2RD2000-8 |
| 2RD2500L-8 | 2RD2500S-8 | 2500 | 3600 | 100 | 1000 | 1 | 1.5 | 5 | 5 | 2RD2500-8 |

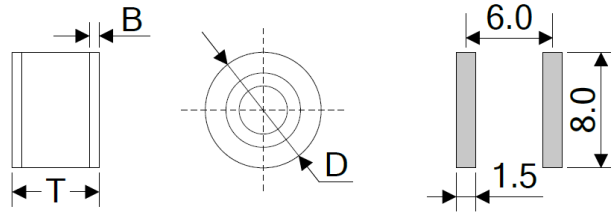
## Dimensions

L Type




| Symbol | Dimension (mm) |
|---|---|
| D | 8.00±0.50 |
| T | 6.00±0.50 |
| d | 0.80±0.10 |
| L | 30 max. |

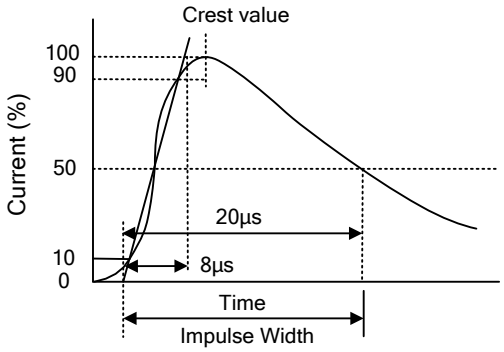
S Type




Recommended Pad Size

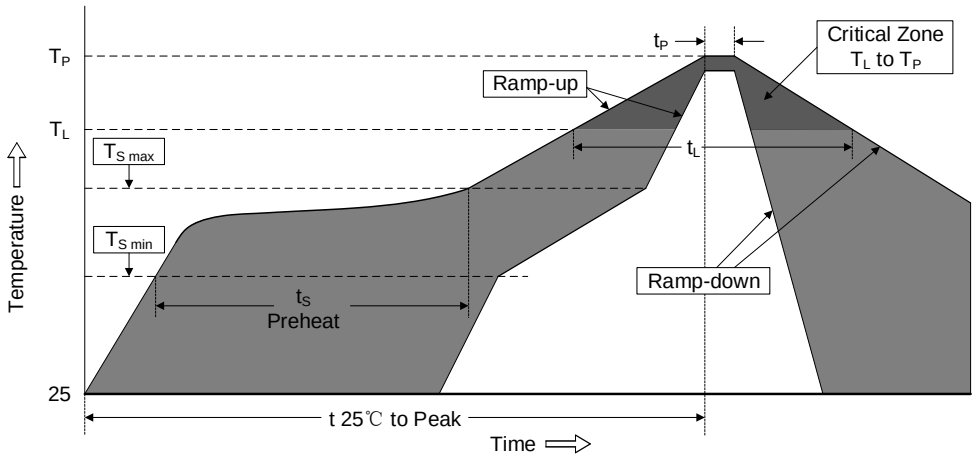
| | |
|---|---|
| D | 8.00±0.50 |
| T | 6.00±0.50 |
| B | 0.50±0.10 |

## 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/μs. | |
| 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 | |
| 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, 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 ±25% from its initial value.IR＞$10^8$ ohms (-20%, +30% for 70~90V). | |

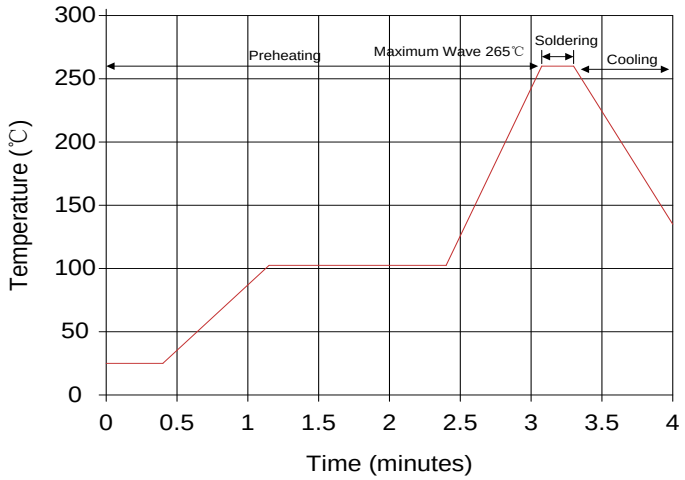
## Soldering Recommendation

### Reflow Soldering




| Profile Feature | Pb-Free Assembly |
|---|---|
| Average ramp-up rate ($T_L$to $T_P$) | 3℃/second max. |
| Preheat<br>-Temperature Min ($T_{S\ min}$)<br>-Temperature Max ($T_{S\ max}$)<br>-Time (min to max)( $t_S$) | <br>150℃<br>200℃<br>60-180 seconds |
| $T_{S\ max}$to $T_L$<br>-Ramp-up Rate | <br>3℃/second max. |
| Time maintained above:<br>-Temperature ($T_L$)<br>-Time ($t_L$) | <br>217℃<br>60-150 seconds |
| Peak Temperature ($T_P$) | 260℃ |
| Time within 5℃ of actual PeakTemperature ($t_P$) | 20-40 seconds |
| Ramp-down Rate | 6℃/second max. |
| Time 25℃ to Peak Temperature | 8 minutes max. |

### Wave Soldering

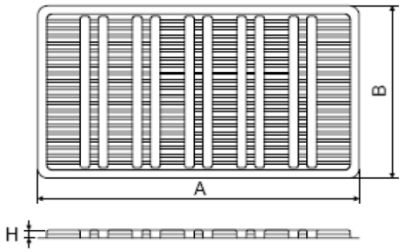



| Item | Conditions |
|---|---|
| Peak Temperature | 265℃ |
| Dipping Time | 10 seconds(max.) |
| Soldering | 1 time |

## Packaging

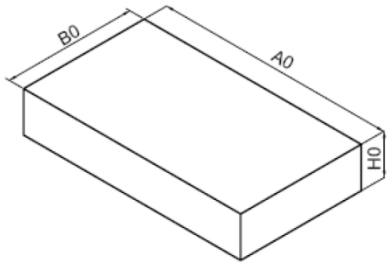
Axial Packing

Sking packing



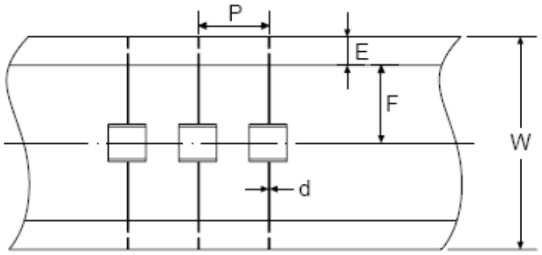

| Symbol | Dimension (mm) |
|---|---|
| A | 265 ± 5.0 |
| B | 146 ± 5.0 |
| H | 8.5 ± 0.5 |
| Quantity:100pcs | |

Inner box



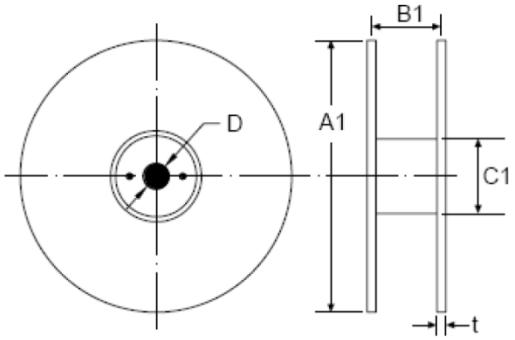

| | |
|---|---|
| A0 | 270 ± 2.0 |
| B0 | 150 ± 2.0 |
| H0 | 50 ± 2.0 |
| Quantity: 500pcs | |

Tape




| | |
|---|---|
| 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 |

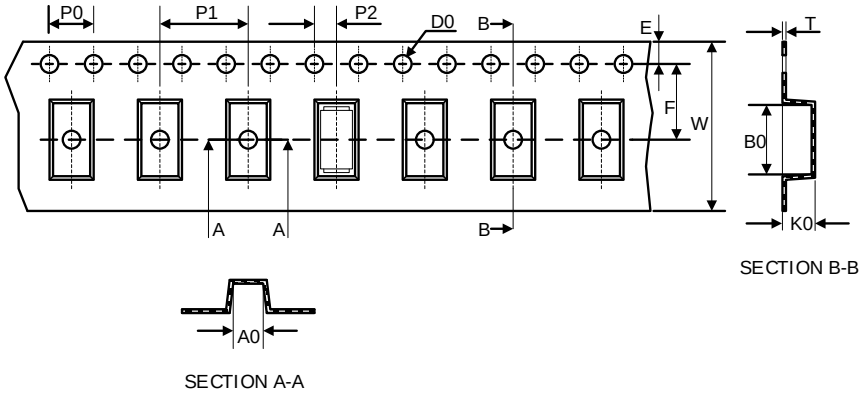
Reel




| | |
|---|---|
| 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 | |

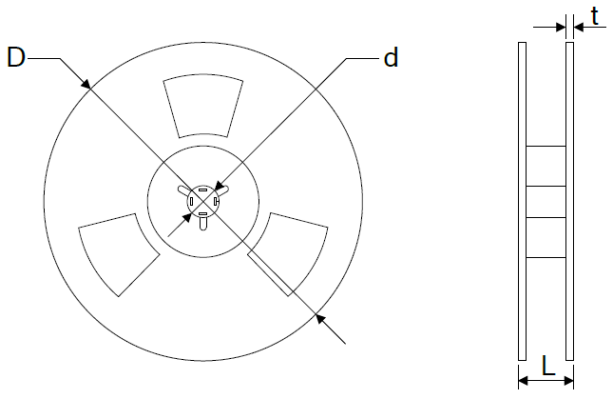
SMD packing

Tape




| Symbol | Dimension (mm) |
|---|---|
| W | 16.00±0.20 |
| P0 | 4.00±0.10 |
| P1 | 12.00±0.20 |
| P2 | 2.00±0.10 |
| D0 | Φ1.55±0.05 |
| E | 1.75±0.10 |
| F | 7.50±0.10 |
| A0 | 8.20±0.1 |
| B0 | 7.50±0.1 |
| K0 | 8.50±0.1 |
| T | 0.50±0.1 |

Reel




| | |
|---|---|
| D | 330.0±2.0 |
| d | 13.0±0.5 |
| L | 20.0±2.0 |
| t | 2.0±0.2 |
| Quantity: 500PCS | |

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