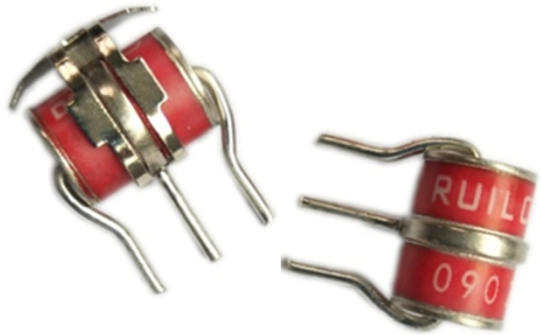
# Gas Discharge Tubes (GDT) 3RD-8 Series

## Description

GDT is placed in front of, and in parallel with, sensitive telecom equipment such as power lines, communication lines, signal lines and data transmission lines to help protect them from damage caused by transient surge voltages that may result from lightning strikes and equipment switching operations. These devices do not influence the signal in normal operation. However, in the event of an overvoltage surge, such as a lightning strike, the GDT switches to a low impedance state and diverts the energy away from the sensitive equipment.

Our GDT offer a high level of surge protection, a broad voltage range, low capacitance, and many form factors including new surface mount devices, which makes them suitable for applications such as Main Distribution Frame (MDF) modules, high data-rate telecom applications (e.g. ADSL, VDSL), and surge protection on power lines. Their low capacitance also results in less signal distortion. When used in a coordinated circuit protection solution with PolySwitch devices, they can help equipment manufacturers meet stringent safety regulatory standards.



## Agency Approvals

| Agency | Standards | Certificate No. |
|---|---|---|
| | UL497B | E465335 |

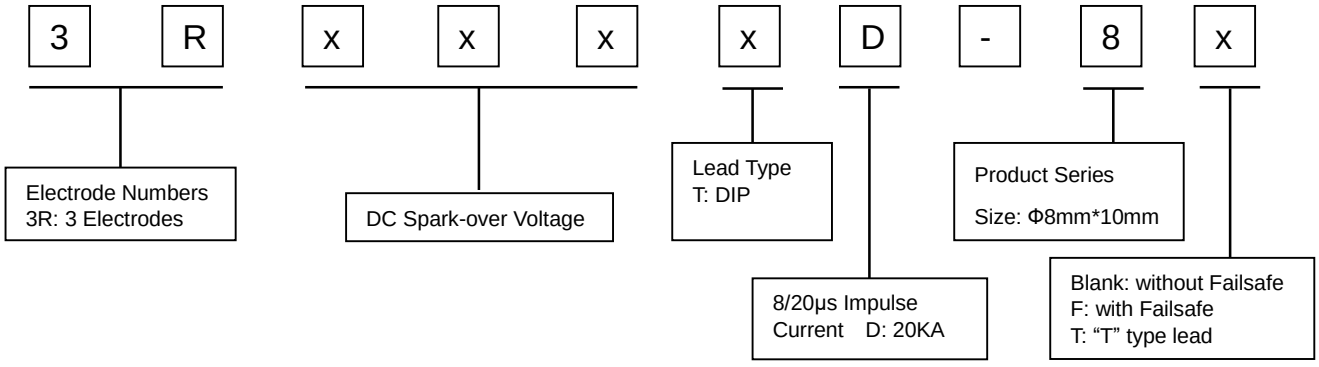
## Features

- Excellent response to fast rising transients
- Stable breakdown voltage
- GHz working frequency
- 8/20μs Impulse current capability: 20KA
- Non-Radioactive
- Ultra Low capacitance (<1.5pF)
- High insulation resistance
- Size: Φ8mm*10mm
- Storage and operational temperature: -40~+90°C

## Applications

- Communication equipment
- CATV equipment
- Data lines
- Power supplies
- Telecom SLIC protection
- Broadband equipment
- ADSL equipment, including ADSL2+
- XDSL equipment
- Satellite and CATV equipment
- Test equipment
- Consumer electronics

## Part Number Code



## Electrical Characteristics

| Part Number | | | DC Spark-over Voltage [1) 2) 3)] @100V/S | Impulse Spark-over Voltage [3)] | | Insulation Resistance [4)] | Capacitance @1MHz | Life Ratings | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 100V/μS | 1KV/μS | | | Impulse Discharge Current @8/20μs [5)] | | Alternating Discharge Current @50Hz 1S [5)] | Impulse Life @10/1000μS |
| | | | | Max | Max | Min | Max | ±5 times | 1 time | 10 times | 300 times |
| DIP | DIP-F | DIP-T | V | V | V | GΩ | pF | KA | KA | A | A |
| 3R075TD-8 | 3R075TD-8F | 3R075TD-8T | 75±20% | 500 | 600 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R090TD-8 | 3R090TD-8F | 3R090TD-8T | 90±20% | 500 | 600 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R150TD-8 | 3R150TD-8F | 3R150TD-8T | 150±20% | 500 | 600 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R200TD-8 | 3R200TD-8F | 3R200TD-8T | 200±20% | 600 | 700 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R230TD-8 | 3R230TD-8F | 3R230TD-8T | 230±20% | 600 | 700 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R250TD-8 | 3R250TD-8F | 3R250TD-8T | 250±20% | 600 | 700 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R350TD-8 | 3R350TD-8F | 3R350TD-8T | 350±20% | 800 | 900 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R400TD-8 | 3R400TD-8F | 3R400TD-8T | 400±20% | 850 | 950 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R420TD-8 | 3R420TD-8F | 3R420TD-8T | 420±20% | 850 | 950 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R470TD-8 | 3R470TD-8F | 3R470TD-8T | 470±20% | 900 | 1000 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R600TD-8 | 3R600TD-8F | 3R600TD-8T | 600±20% | 1100 | 1200 | 1 | 1.5 | 20 | 25 | 20 | 200 |
| 3R800TD-8 | 3R800TD-8F | 3R800TD-8T | 800±20% | 1400 | 1500 | 1 | 1.5 | 20 | 25 | 20 | 200 |

| | |
|---|---|
| Glow Voltage at 10mA..... | ~60V |
| Arc Voltage at 1A..... | ~10V |
| Glow to Arc transition Current…….. | ~1A |
| Operation and storage temperature……..….. | -40~+90°C |
| Climatic category (IEC60068-1)…….. | 40/90/21 |
| Marking, red negative..…… | **RUILON**<br>**xxx Y**<br>xxx -Nominal voltage<br>Y -Year of production |
| Weight…….. | DIP ~2.10g<br>DIP-F ~2.35g<br>DIP-T ~2.15g |
| Surface treatment……...…… | DIP -Nickel Plated |

1) At delivery AQL 0.65 level II, DIN ISO 2859

2) In ionized mode

3) Tip or ring electrode to center electrode

4) Insulation Resistance Measuring Voltage:
75V~150V at DC 50V
Other at DC 100V

5) Total current through center electrode, half value through tip respectively ring electrode.

Terms in accordance with ITU-T Rec. K.12, IEC 61643-311, GB/T18802.311, GB/T 9043.

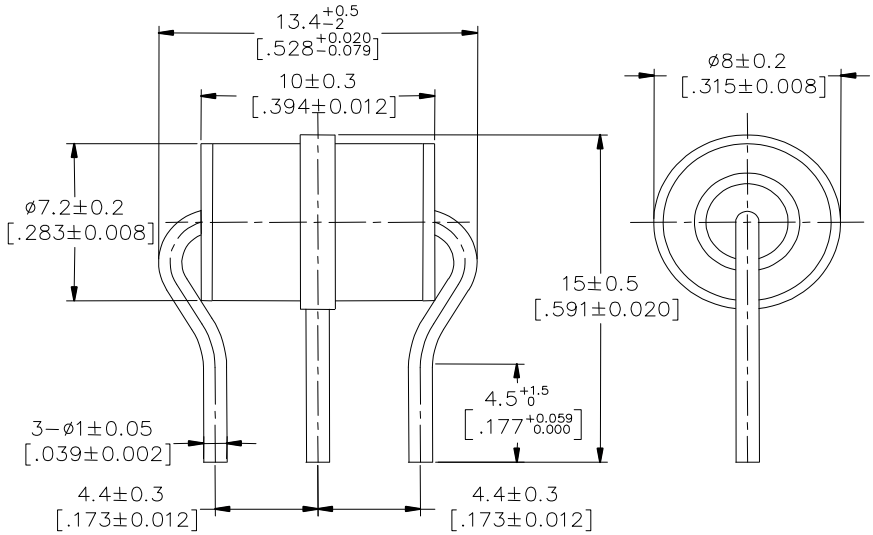
## Certifications table

| Part Number | UL497B |
|---|---|
| 3R075TD-8 | ● |
| 3R090TD-8 | ● |
| 3R150TD-8 | ● |
| 3R200TD-8 | -- |
| 3R230TD-8 | ● |
| 3R250TD-8 | -- |
| 3R350TD-8 | ● |
| 3R400TD-8 | ● |
| 3R420TD-8 | ● |
| 3R470TD-8 | ● |
| 3R600TD-8 | ● |
| 3R800TD-8 | -- |

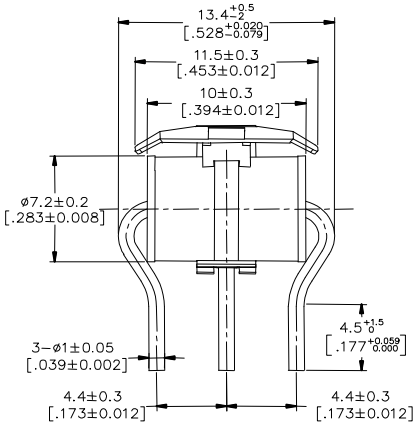
Notes:
1. ● indicates that the product has passed the certification.
2. -- indicates that the product is not certified.

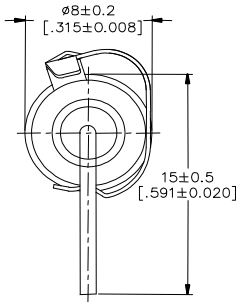
## Dimensions (Unit: mm/inch)

### DIP Series (3RxxxTD-8)

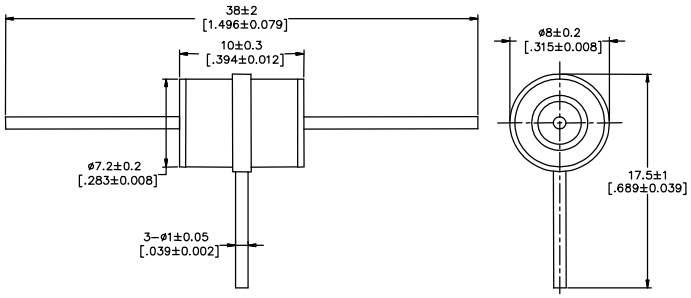


**DIP-F Series (3RxxxTD-8F)**



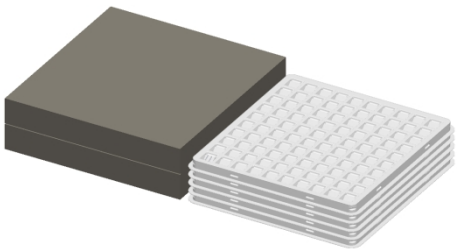
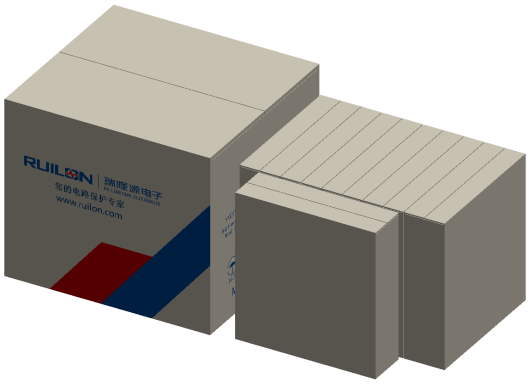




**DIP-T Series (3RxxxTD-8T)**

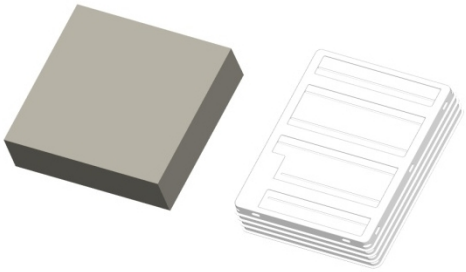
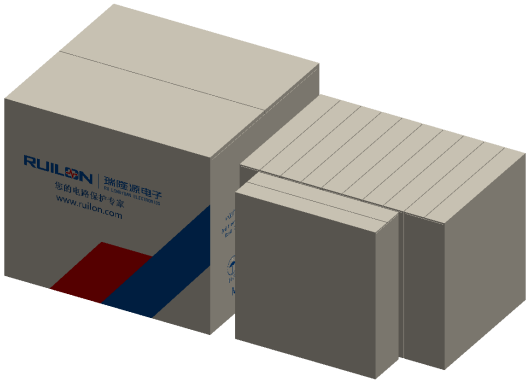



## Packaging Information

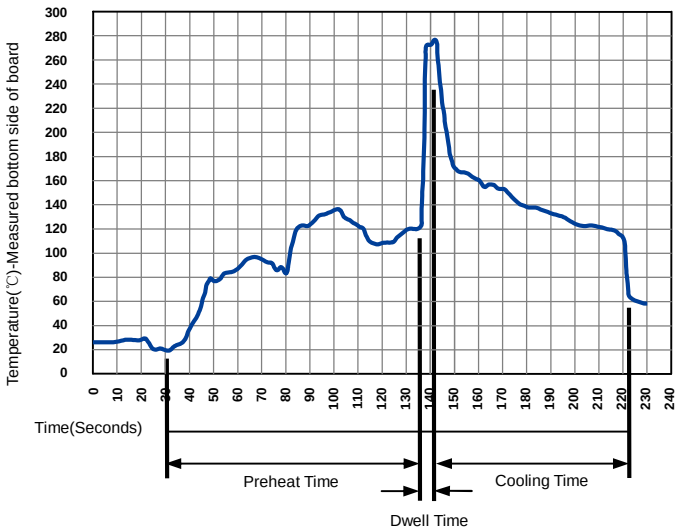
### "DIP Series" and "DIP-F Series" Packaging (Bulk)

| | PVC tray | Inner Box | Carton |
|---|---|---|---|
| Size | 220×210×12mm | 225×215×62mm | 315×290×272mm |
| Quantity | MPQ: 1 tray=100pcs | MOQ: 1 Inner Box=5 trays=500pcs | 1 Carton=6 Inner boxes=3,000pcs |
| Photos |  |  |  |

## "DIP-T Series" Packaging

| | PVC tray | Inner Box | Carton |
|---|---|---|---|
| Size | 258×205×16.2mm | 225×215×62mm | 315×290×272mm |
| Quantity | MPQ: 1 tray=50pcs | MOQ: 1 Inner Box=4 trays=200pcs | 1 Carton=6 Inner boxes=2,000pcs |
| Photos |  |  |  |

## Soldering Parameters - Wave soldering (Thru-Hole Devices)




| Wave Soldering Condition | | Pb-Free assembly |
|---|---|---|
| Preheat | Temperature Min | 100°C |
| | Temperature Max | 150°C |
| | Time (Min to Max) | 60-180 Seconds |
| Solder Pot Temperature | | 280°C Max |
| Solder Dwell Time | | 2-5 Seconds |

## Terms and definitions

| NO. | Item | Definitions |
|---|---|---|
| 1 | **Gas discharge tube(GDT)** | A gap, or several gaps, in an enclosed discharge medium, other than air at atmospheric pressure, designed to protect apparatus or personnel, or both, from high transient voltages. Also referred to as "gas tube surge arrester". |
| 2 | **DC Spark-over Voltage** | The voltage at which the gas discharge tube sparks over with slowly increasing d.c. voltage. |
| 3 | **Impulse Spark-over Voltage** | The highest voltage which appears across the terminals of a gas discharge tube in the period between the application of an impulse of given wave-shape and the time when current begins to flow. |
| 5 | **Arc voltage** | Voltage drop across the GDT during arc current flow. |
| 6 | **Glow voltage** | Peak value of voltage drop across the GDT when a glow current is flowing. |
| 7 | **Impulse discharge current 8/20μs** | Current impulse with a nominal virtual front time of 8 μs and a nominal time to half-value of 20 μs. |
| 8 | **Alternating Discharge Current** | The rms value of an approximately sinusoidal alternating current passing through the gas discharge tube. |
| 9 | **Insulation Resistance** | Insulation resistance shall be measured from each terminal to every other terminal of the GDT. The test is performed with DC50V when normal spark-over Voltage 70~150V, others with DC100V. |
| 10 | **Capacitance** | The capacitance shall be measured once at 1 MHz between all terminals unless otherwise specified. |

## Cautions and warnings

- Do not operate surge arresters in power supply networks, whose maximum operating voltage exceeds the minimum spark-over voltage of the surge arresters.
- Surge arresters may become hot in the event of longer periods of current stress (burn risk). In the event of overload the connectors may fail or the component may be destroyed.
- If the contacts of the surge arresters are defective, current load can cause sparks and loud noises.
- Surge arresters must be handled with care and must not be dropped.
- Do not continue to use damaged surge arresters.