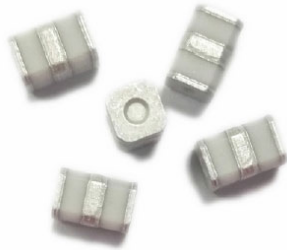


### Gas Discharge Tubes(GDT)



#### Description

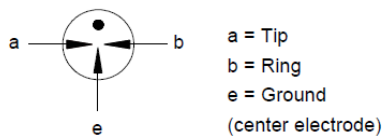
Gas discharge tubes (GDT) use noble gasses enclosed in ceramic tubes to provide an alternate circuit path for voltage spikes. The ceramic envelope and with nickel connectors allow for high loads.

3RB-5SS Gas Discharge Tubes (GDT) series has a surge rating of 10kA, 8/20 $\mu$ s. Offered in a Squared Surface Mount package, which helps to make pick and place on PCB process easier.

This GDT series is perfectly suited for broadband equipment applications. The GDT's low off-state capacitance is compatible with high bandwidth applications and this capacitance loading value does not vary if the voltage across the GDT changes.

3RB-5SS Gas Discharge Tube (GDT) series are specifically designed for protection of electrical, multimedia, and communication equipment against over voltage transients in surface mount assembly applications.

#### Electrical symbol



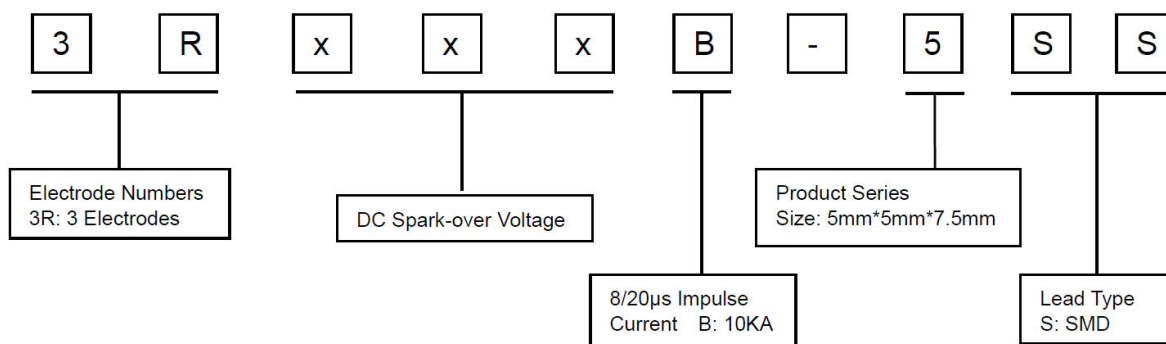
#### Features

- ◆ Excellent response to fast rising transients
- ◆ Stable breakdown voltage
- ◆ GHz working frequency
- ◆ 8/20 $\mu$ s Impulse current capability: 10KA
- ◆ Surface Mount package
- ◆ Non-Radioactive
- ◆ Ultra Low capacitance(<1pF)
- ◆ High insulation resistance
- ◆ Lead-free and RoHS compliant
- ◆ Size: 5mm\*5mm\*7.5mm
- ◆ Storage and operational temperature: -40~+90°C

#### Applications

- ◆ Communication equipment
- ◆ CATV equipment
- ◆ Test equipment
- ◆ Data lines
- ◆ Power supplies
- ◆ Telecom SLIC protection
- ◆ Medical Electronics
- ◆ ADSL equipment, including ADSL2+
- ◆ XDSL equipment
- ◆ Satellite and CATV equipment

#### Part Number Code



### Gas Discharge Tubes(GDT)

#### Electrical Characteristics

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

| Part Number | DC Spark-over Voltage <sup>1) 2) 3)</sup><br>@100V/S | Impulse Spark-over Voltage <sup>3)</sup> |              | Insulation Resistance <sup>4)</sup> | Capacitance<br>@1 MHz | Life Ratings   |            |  |               |     |
|-------------|--|--|--------------|-------------------------------------|-----------------------|--|------------|--|---------------|-----|
|             |  | 100V/ $\mu$ S                            | 1KV/ $\mu$ S |                                     |                       | Impulse Discharge Current<br>@8/20 $\mu$ S <sup>5)</sup> |            | Impulse Life<br>@10/1000 $\mu$ S<br>200A <sup>5)</sup> |               |     |
|             |  | Max                                      | Max          |                                     |                       | Min  | Max        | Nominal<br>$\pm$ 5 times                               | Max<br>1 time | Min |
|             |  | V  | V            |                                     |                       | V  | G $\Omega$ | pF   | KA            | KA  |
| 3R075B-5SS  | 75 $\pm$ 20%   | 500                                      | 600          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R090B-5SS  | 90 $\pm$ 20%   | 500                                      | 600          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R150B-5SS  | 150 $\pm$ 20%  | 500                                      | 600          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R200B-5SS  | 200 $\pm$ 20%  | 600                                      | 700          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R230B-5SS  | 230 $\pm$ 20%  | 600                                      | 700          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R250B-5SS  | 250 $\pm$ 20%  | 600                                      | 700          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R350B-5SS  | 350 $\pm$ 20%  | 800                                      | 900          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R400B-5SS  | 400 $\pm$ 20%  | 850                                      | 950          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R420B-5SS  | 420 $\pm$ 20%  | 850                                      | 950          | 1                                   | 1                     | 10   | 12         | 300  |               |     |
| 3R470B-5SS  | 470 $\pm$ 20%  | 900                                      | 1000         | 1                                   | 1                     | 10   | 12         | 300  |               |     |

Glow Voltage at 10mA..... ~60V  
 Arc Voltage at 1A..... ~10V  
 Glow to Arc transition Current..... ~0.3A  
 Operation and storage temperature..... -40~+90°C  
 Climatic category (IEC 60068-1)..... 40/90/21  
 Marking..... Without

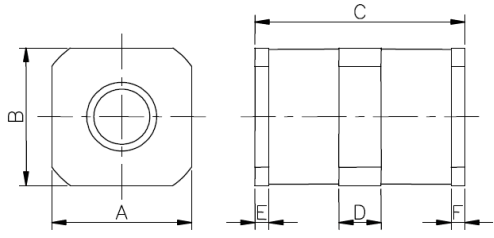
Notes :

- 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 at DC 25V  
 90V~150V at DC 50V  
 Other at DC 100V
- 5) Total current through center electrode, half value through tip respectively ring electrode.

### Gas Discharge Tubes(GDT)

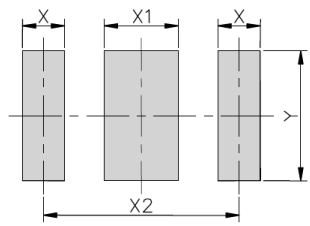
#### Dimensions

| Symbol | Millimeters | Inches      |
|--------|-------------|-------------|
| A      | 5.0±0.2     | 0.197±0.008 |
| B      | 5.0±0.2     | 0.197±0.008 |
| C      | 7.5±0.3     | 0.295±0.012 |
| D      | 1.5±0.1     | 0.059±0.004 |
| E      | 0.5±0.1     | 0.020±0.004 |
| F      | 0.5±0.1     | 0.020±0.004 |

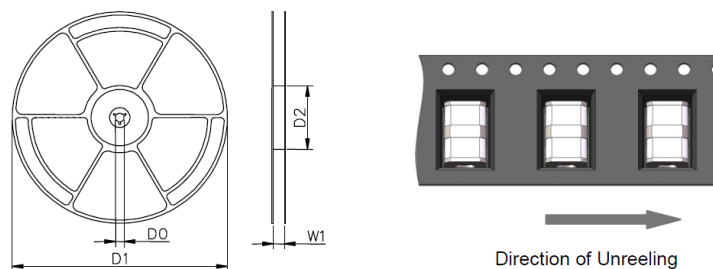
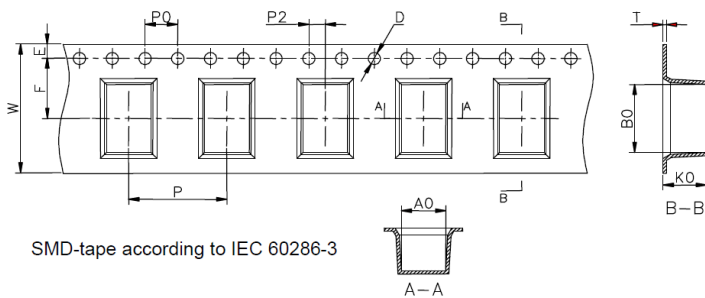


#### Recommended Pad Layout

| Symbol | Millimeters | Inches |
|--------|-------------|--------|
| X      | 1.6         | 0.063  |
| X1     | 2.8         | 0.110  |
| X2     | 7.4         | 0.291  |
| Y      | 5.0         | 0.197  |



#### Taping and Reel Specifications



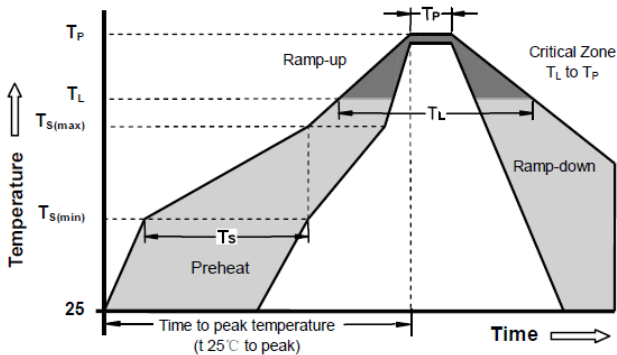
| Symbol | Millimeters  | Inches             |
|--------|--------------|--------------------|
| W      | 16±0.3       | 0.630±0.012        |
| A0     | 5.4±0.1      | 0.213±0.004        |
| B0     | 8.4±0.1      | 0.331±0.004        |
| K0     | 5.3±0.1      | 0.209±0.004        |
| P      | 12±0.1       | 0.472±0.004        |
| F      | 7.5±0.1      | 0.295±0.004        |
| E      | 1.75±0.1     | 0.069±0.004        |
| D      | 1.5+0.1/-0.0 | 0.059+0.004/-0.0   |
| P0     | 4±0.1        | 0.157±0.004        |
| P2     | 2±0.1        | 0.079±0.004        |
| T      | 0.4±0.1      | 0.016±0.004        |
| D0     | 13.3±0.15    | 0.524±0.006        |
| D1     | 330±2        | 12.992±0.079       |
| D2     | 100+1/-2     | 3.937+0.039/-0.079 |
| W1     | 16.5±0.4     | 0.65±0.016         |

### Gas Discharge Tubes(GDT)

#### Packaging Quantity

- 1,000 PCS per reel (13")
- 3 reels per inner box
- 3,000 PCS per inner box

#### Soldering Parameters - Reflow Soldering (Surface Mount Devices)



| Reflow Condition                                     |                                   | Pb - Free assembly |
|--|-----------------------------------|--------------------|
| Pre Heat   | -Temperature Min ( $T_{S(min)}$ ) | 150°C              |
|  | -Temperature Max ( $T_{S(max)}$ ) | 200°C              |
|  | -Time (min to max) ( $t_s$ )      | 60 -180 Seconds    |
| Average ramp up rate ( Liquids Temp $T_L$ ) to peak  |                                   | 3°C/second max     |
| $T_{S(max)}$ to $T_L$ - Ramp-up Rate                 |                                   | 5°C/second max     |
| Reflow   | - Temperature ( $T_L$ ) (Liquids) | 217°C              |
|  | - Time (min to max) ( $t_s$ )     | 60 -150 Seconds    |
| Peak Temperature ( $T_P$ )                           |                                   | 260 +0/-5°C        |
| Time within 5°C of actual peak Temperature ( $t_p$ ) |                                   | 10 - 30 Seconds    |
| Ramp-down Rate                                       |                                   | 6°C/second max     |
| Time 25°C to peak Temperature ( $T_P$ )              |                                   | 8 minutes Max      |
| Do not exceed  |                                   | 260°C              |