



## Features

- Size: 8 mm diameter, 10 mm length
- Balanced and symmetrical TRIGARD® design
- High surge current rating
- Stable breakdown throughout life
- Long life
- Fail-Short available
- RoHS compliant\*



This series is obsolete and not recommended for new designs.

## Applications

- Telecommunications electronics
- Industrial electronics
- Consumer electronics

## 2028 Series Long Life Heavy-Duty 3-Electrode Gas Discharge Tube

### Characteristics

Test Methods per ITU-T K.12, IEEE C62.31 and IEC 61643-311 GDT standards.

| Characteristic                    | Model No.     |               |               |                 |
|-----------------------------------|---------------|---------------|---------------|-----------------|
|                                   | 2028-23       | 2028-25       | 2028-35       | 2028-42         |
| DC Sparkover $\pm 20\%$ @ 100 V/s | 230 V         | 250 V         | 350 V         | 420 V           |
| Impulse Sparkover <sup>(1)</sup>  |               |               |               |                 |
| 100 V/ $\mu$ s (Typical/99 %)     | < 450 V/550 V | < 450 V/550 V | < 700 V/800 V | < 850 V/950 V   |
| 1000 V/ $\mu$ s (Typical/99 %)    | < 650 V/750 V | < 650 V/750 V | < 850 V/950 V | < 1050 V/1150 V |

<sup>(1)</sup> Impulse Sparkover voltage is defined as typical values of distribution.

|                                                |                               |                 |
|------------------------------------------------|-------------------------------|-----------------|
| Impulse Transverse Delay .....                 | 1000 V/ $\mu$ s .....         | < 75 ns         |
| Insulation Resistance (IR) .....               | 100 V .....                   | > 1 G $\Omega$  |
| Capacitance .....                              | 1 MHz .....                   | < 2 pF          |
| Glow Voltage .....                             | 10 mA .....                   | ~ 70 V          |
| Arc Voltage .....                              | 1 A .....                     | ~ 10 V          |
| DC Holdover Voltage <sup>(2)</sup> .....       | 135 V .....                   | < 150 ms        |
| Impulse Discharge Current <sup>(3)</sup> ..... | 30,000 A, 8/20 $\mu$ s .....  | 1 operation     |
|                                                | 20,000 A, 8/20 $\mu$ s .....  | 10 operations   |
|                                                | 5,000 A, 10/350 $\mu$ s ..... | 1 operation     |
|                                                | 200 A, 10/1000 $\mu$ s .....  | 300 operations  |
|                                                | 20 A, 10/1000 $\mu$ s .....   | 1500 operations |
| Alternating Discharge Current .....            | 20 Arms, 1 second .....       | 10 operations   |
| Operating Temperature .....                    |                               | -55 to +85 °C   |
| Climatic Category (IEC 60068-1) .....          |                               | 40 / 90 / 21    |
| Moisture Sensitivity Level .....               |                               | 1               |
| ESD Classification (HBM) .....                 |                               | 6               |

An optional Switch-Grade Fail-Short device is available. The optional Fail-Short assembly will activate at a temperature of 215 °C – 217 °C to provide a high conductive path to ground in case of a thermal overload. GDTs equipped with the optional Fail-Short device should be soldered either manually at a temperature that is below the activation temperature of the Fail-Short mechanism, or using a selective soldering process that does not exceed 210 °C.

### Notes:

<sup>(2)</sup> Network applied.

<sup>(3)</sup> The Rated Impulse Discharge Current for TRIGARD® GDTs is the total current equally divided between each line to ground.

- At delivery AQL 0.65 Level II, DIN ISO 2859.

### How to Order

Model Number \_\_\_\_\_

Designator \_\_\_\_\_

Voltage (Divided by 10) \_\_\_\_\_

23 = 230 V 35 = 350 V

25 = 250 V 42 = 420 V

Leads \_\_\_\_\_

A = No Leads / Cassette Applications

C = 1.0 mm

Lead Shape \_\_\_\_\_

(See Product Dimension Drawings)

Fail-Short Option \_\_\_\_\_

Blank = Standard Product

F = With Fail-Short Mechanism

RoHS Compliancy \_\_\_\_\_

LF = RoHS Compliant Product

2028 - nn - x n F LF

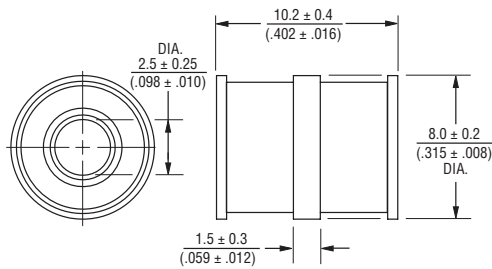
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# 2028 Series Long Life Heavy-Duty 3-Electrode Gas Discharge Tube

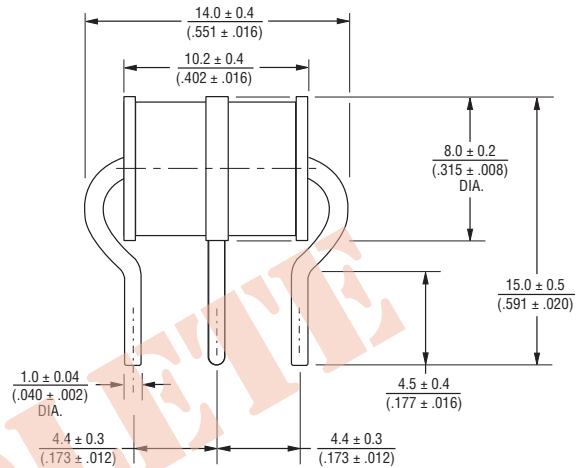
**BOURNS®**

## Product Dimensions

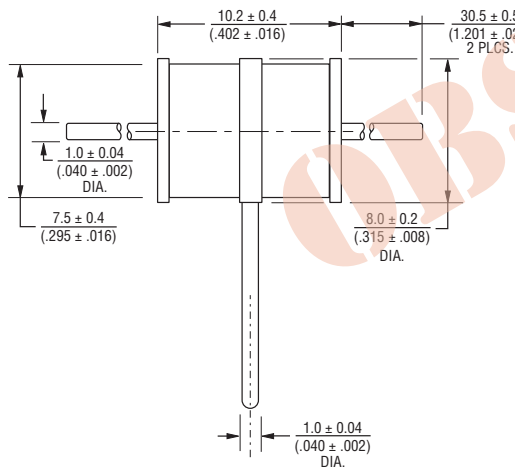
**2028-xx-A**



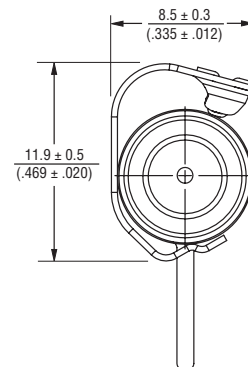
**2028-xx-C2**



**2028-xx-C**  
1.0 mm dia. lead wire



**2028-xx-C2F**  
WITH FAIL-SHORT OPTION



DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Packaging Specifications

| Model       | Standard Packaging Quantity |      |      |
|-------------|-----------------------------|------|------|
|             | Bulk (Bag)                  | Tray | Box  |
| 2028-XX-A   | 250                         |      | 1000 |
| 2028-XX-C   | 50                          |      | 300  |
| 2028-XX-C2  |                             | 100  | 1000 |
| 2028-XX-C2F |                             | 100  | 1000 |

REV. G 06/18

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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