




## Features

- Balanced Mini-TRIGARD™ Series (5 mm diameter, 7.3 mm length)
- Ideal for board level protection of broadband circuits
- Leadless, surface mount for economical assembly
- Stable breakdown throughout life
- High surge current rating, low insertion loss
-  UL Recognized
- RoHS compliant\* version available

## 2036-xx-SM Precision Gas Discharge Tube Surge Protector

Bourns now offers a surface mount (SM) 3-electrode Gas Discharge Tube (GDT) surge protection device. The industry-leading quality and features of the Bourns® miniature 2036 TRIGARD™ series GDT continues in this new SM version for “pick and place” manufacturing techniques. The 2036 SM device is ideal for board level protection of high bandwidth applications such as xDSL, cable broadband and high speed Ethernet, due to its high energy handling capability, long and stable life performance and low capacitance of less than 2 pF. Bourns subminiature family of GDTs measure only 5 mm in diameter and are the smallest high performance GDTs in the telecom industry. Bourns® GDTs are designed to prevent damage from transient disturbances by acting as a “crowbar” in creating a short-to-ground circuit during conduction. When a voltage transient surge exceeds the defined breakdown voltage level of the GDT, the device becomes ionized and conduction takes place within a fraction of a microsecond. When the surge passes and system voltage returns to normal levels, the GDT returns to its high-impedance (off) state.

### Characteristics

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

| Characteristic                    | Model No. |         |         |         |         |         |
|-----------------------------------|-----------|---------|---------|---------|---------|---------|
|                                   | 2036-07   | 2036-09 | 2036-15 | 2036-20 | 2036-23 | 2036-25 |
| DC Sparkover $\pm 20\%$ @ 100 V/s | 75 V      | 90 V    | 150 V   | 200 V   | 230 V   | 250 V   |
| Impulse Sparkover <sup>(1)</sup>  |           |         |         |         |         |         |
| 100 V/ $\mu$ s                    | 250 V     | 250 V   | 350 V   | 425 V   | 450 V   | 475 V   |
| 1000 V/ $\mu$ s                   | 525 V     | 550 V   | 500 V   | 575 V   | 600 V   | 625 V   |

| Characteristic                    | Model No. |         |         |         |         |         |
|-----------------------------------|-----------|---------|---------|---------|---------|---------|
|                                   | 2036-30   | 2036-35 | 2036-40 | 2036-42 | 2036-47 | 2036-60 |
| DC Sparkover $\pm 20\%$ @ 100 V/s | 300 V     | 350 V   | 400 V   | 420 V   | 470 V   | 600 V   |
| Impulse Sparkover <sup>(1)</sup>  |           |         |         |         |         |         |
| 100 V/ $\mu$ s                    | 500 V     | 600 V   | 650 V   | 675 V   | 750 V   | 850 V   |
| 1000 V/ $\mu$ s                   | 650 V     | 750 V   | 825 V   | 850 V   | 950 V   | 1100 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 (50 V for Model 2036-07 & 2036-09) ..... | > $10^{10} \Omega$  |
| Glow Voltage .....                       | 10 mA.....                                     | ~ 70 V              |
| Arc Voltage .....                        | 1 A.....                                       | ~ 10 V              |
| Glow-Arc Transition Current .....        |  | < 0.5 A             |
| Capacitance.....                         | 1 MHz .....                                    | < 2 pF              |
| DC Holdover Voltage <sup>(2)</sup> ..... | >135 V, (52 V for Model 2036-07, & -09, .....  | < 150 ms            |
|  | 80 V for Model 2036-15)                        |                     |
| Impulse Discharge Current.....           | 20000 A, 8/20 $\mu$ s <sup>(3)</sup> .....     | 1 operation minimum |
|  | 10000 A, 8/20 $\mu$ s.....                     | > 10 operations     |
|  | 200 A, 10/1000 $\mu$ s .....                   | > 300 operations    |
|  | 2000 A, 10/350 $\mu$ s.....                    | 1 operation         |
|  | 200 A, 10/700 $\mu$ s .....                    | > 500 operations    |
| Alternating Discharge Current .....      | 20 Arms, 1 s <sup>2</sup> .....                | 1 operation minimum |
|  | 10 Arms, 1 s.....                              | > 10 operations     |
| Operating Temperature.....               |  | -55 to +85 °C       |
| Climatic Category (IEC 60068-1).....     |  | 40/90/21            |

### Notes:

- **UL Recognized component, UL File E153537.**
- No model number marking on tube; date code and voltage only: month year digits, xxxV (e.g. 0209 400V).
- The rated discharge current for Mini-TRIGARD™ GDTs is the total current equally divided between each line to ground.
- Surface Mount (SM) parts may show a temporary increase in DCBD after the solder reflow process. Most devices will recover within 24 hours time. It should be noted that there is no quality defect nor change in protection levels during the temporary change in DCBD.
- Sparkover limits after life  $\pm 25\%$  (-25 %, +30 % for Model 2036-07, 2036-09 and 2036-60), IR  $> 10^8 \Omega$ .
- Operating characteristics per RUS PE-80 and Telcordia GR 1361 available on request.
- Line to Line voltage is approximately 1.8 to 2 times the stated Line to Ground breakdown voltage.
- At delivery AQL 0.65 Level II, DIN ISO 2859.
- Bourns recommends reflowing surface mount devices per IPC/JEDEC J-STD-020 rev D.
- <sup>(2)</sup> Network applied.
- <sup>(3)</sup> DC Sparkover may exceed  $\pm 25\%$  but will continue to protect without venting.

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

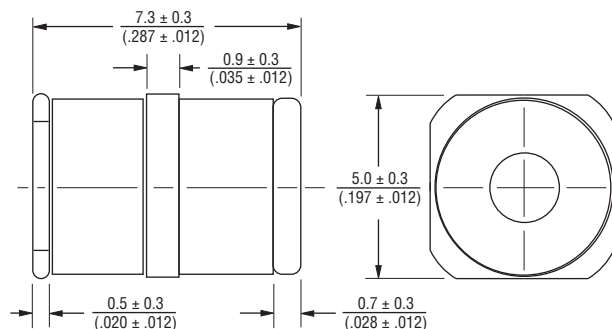
Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.

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**BOURNS®**

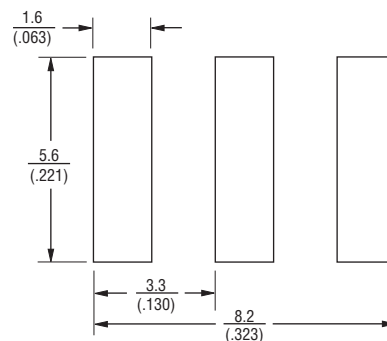
### Product Dimensions



DIMENSIONS: MILLIMETERS

DIMENSION TOLERANCE: .X ± 0.25

### Recommended Pad Layout



### How to Order

**2036 - xx - SM - RP LF**

**Model Number Designator**

**Voltage** (Divided by 10)

**Surface Mount**

**Packaging Options\***

Blank = Bulk Packaging (Standard)

RP = Reelpack - 1000 pcs./reel (Optional)

RP2 = Reelpack - 1000 pcs./reel (Optional)

**RoHS Compliant Option**

Blank = Standard Product

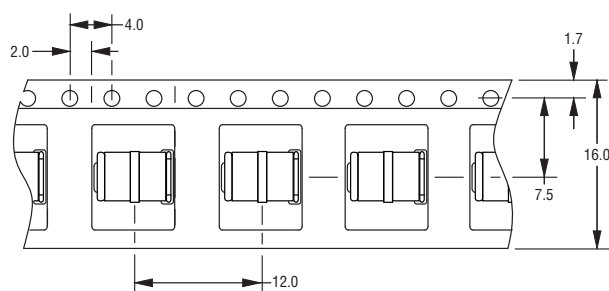
LF = RoHS Compliant Product

\* The optional -RP & -RP2 reelpacks contain 1000 pcs./reel.  
The reels are 330 mm in diameter. The -RP reelpack is 16 mm wide.  
The -RP2 reelpack is 24 mm wide.

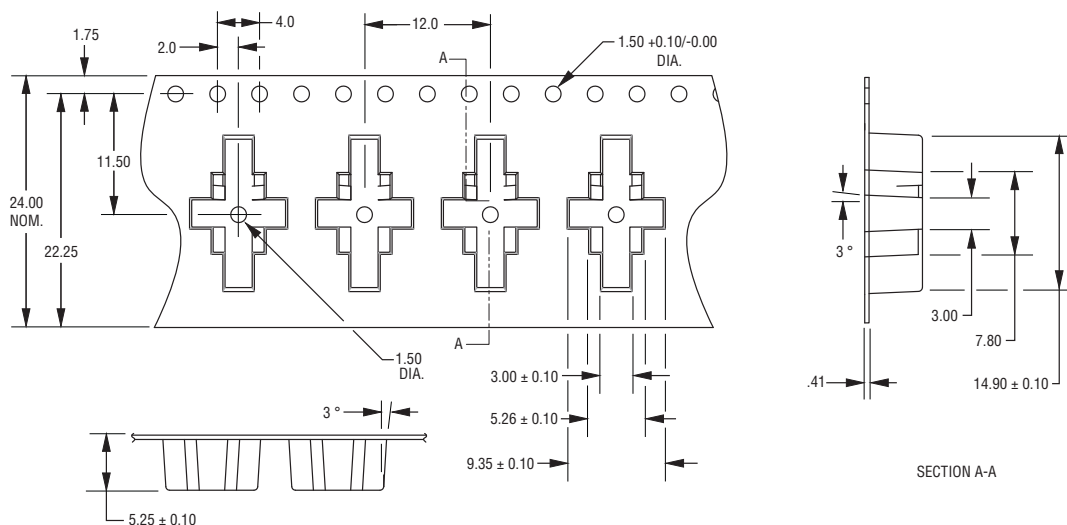
**BOURNS®**

The Model 2036-xx-SM ships standard bulk pack, 250 pieces per bag, 4 bags per box.

-RP



-RP2



TOLERANCES: 0.13 UNLESS OTHERWISE NOTED

**DIMENSIONS: MILLIMETERS**

REV. R 08/15

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