



**THE DATASHEET OF**  
**2036-20-SM-RP**



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



\*RoHS COMPLIANT

### Features

- Balanced Mini-TRIGARD™ Series (5 mm diameter, 7.3 mm length)
- Ideal for board level protection of broadband circuits
- Leadless, surface mount configuration for economical assembly
- Stable breakdown throughout life
- High surge current rating, low insertion loss
- UL Recognized per UL 4978
- RoHS compliant\*

### Applications

- Set top boxes
- Industrial communications
- HVAC controls
- xDSL, POTS, G.fast
- Antennas
- PoE

### Sustainability

- Small size reduces material use
- Corrosion-resistant for longevity
- ISO 14001, low-impact energy
- Responsibly sourced and produced

Check out Bourns® [GDT35 Series](#) for enhanced next-generation surge protection performance

### Product Overview

The Bourns® miniature 2036 TRIGARD™ Series Gas Discharge Tube (GDT) is a well-established surge protection solution with a long track record in demanding communication applications. The surface mount (SM) version extends the same proven performance and reliability of the 2036 family to automated pick-and-place manufacturing processes.

Designed for board-level protection in high-bandwidth systems such as xDSL, cable broadband, and high-speed Ethernet, the 2036-SM Series combines high surge energy handling capability with

long-term performance stability. Its low capacitance of less than 2 pF helps preserve signal integrity, while the compact 5 mm diameter package supports high-density designs.

As part of the Bourns® TRIGARD™ GDT portfolio, the 2036-SM Series protects sensitive circuitry from transient overvoltage events by transitioning from a high-impedance state to a controlled low-impedance conduction path when required, and returning to its high-impedance state once normal operating conditions are restored.

### 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 ±20 % @ 100 V/s	75 V	90 V	150 V	200 V	230 V	250 V
Impulse Sparkover <sup>(1)</sup>	250 V	250 V	350 V	420 V	450 V	475 V
1000 V/μs	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 ±20 % @ 100 V/s	300 V	350 V	400 V	420 V	470 V	600 V
Impulse Sparkover <sup>(1)</sup>	500 V	600 V	650 V	675 V	750 V	850 V
1000 V/μs	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.

### Contact Information

<a href="http://www.bourns.com">www.bourns.com</a>	Phone	Email
Asia-Pacific	+886-2 2562-4117	<a href="mailto:asiacus@bourns.com">asiacus@bourns.com</a>
Europe	+36 88 885 877	<a href="mailto:euocus@bourns.com">euocus@bourns.com</a>

<a href="http://www.bourns.com">www.bourns.com</a>	Phone	Email
Mexico	+52 614 478 0400	<a href="mailto:mexicus@bourns.com">mexicus@bourns.com</a>
The Americas	+1-951 781-5500	<a href="mailto:americus@bourns.com">americus@bourns.com</a>

\* RoHS Directive 2015/863, Mar 31, 2015 and Annex. Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).



#### Characteristics (Continued)

Characteristic	Value
Impulse Transverse Delay 1000 V/ $\mu$ s	< 75 ns
Insulation Resistance (IR) 100 V 50 V (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 (2036-07, 2036-09) 80 V (2036-15)	< 150 ms
Impulse Discharge Current 20,000 A, 8/20 $\mu$ s <sup>(3)</sup> 10,000 A, 8/20 $\mu$ s 200 A, 10/1000 $\mu$ s 2,000 A, 10/350 $\mu$ s 200 A, 10/700 $\mu$ s	1 operation min. 10 operations 300 operations 1 operation 500 operations
Alternating Discharge Current 20 Arms, 1 s <sup>(2)</sup> 10 Arms, 1 s	1 operation min. 10 operations
Operating Temperature	-55 to +105 °C
Storage Temperature	-55 to +105 °C
Climatic Category (IEC 60068-1)	55/105/21
Moisture Sensitivity Level	1
ESD Classification (HBM)	N/A

#### Notes:

- UL Recognized per UL 497B, file [E153537](#).
- No model number marking on tube; date code and voltage only: month year digits, xxxV (e.g. 0226 600V).
- The rated discharge current for Mini-TRIGARD™ Gas Discharge Tubes 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, contact factory.
- Line to Line voltage is approximately 1.8 to 2 times the stated Line to Ground breakdown voltage.
- Bourns recommends reflowing surface mount devices per IPC/JEDEC J-STD-020 rev E 2015-02-03.
- At delivery AQL 0.65 Level II, DIN ISO 2859.

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

<sup>(3)</sup> DC Sparkover may exceed  $\pm 25\%$  but will continue to protect without venting.

#### How to Order

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

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

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

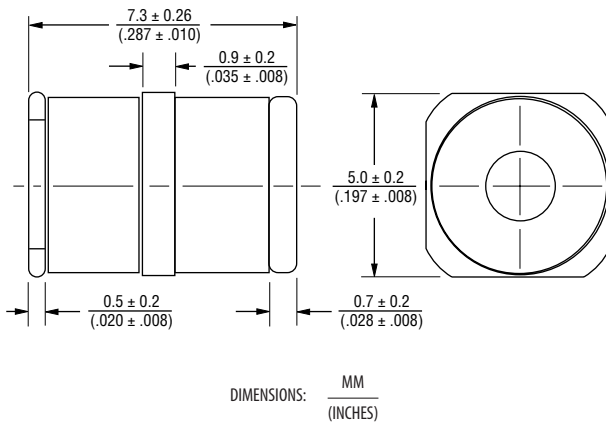
Surface Mount \_\_\_\_\_

Packaging Options \_\_\_\_\_

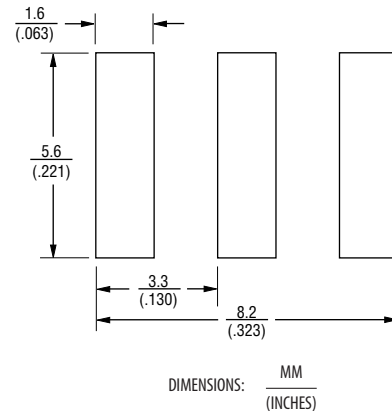
Blank = Bulk Packaging (Standard)  
RP = Reelpack (Optional)  
RP2 = Reelpack (Optional)

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

#### Product Dimensions



#### Recommended Pad Layout



Specifications are subject to change without notice.  
Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

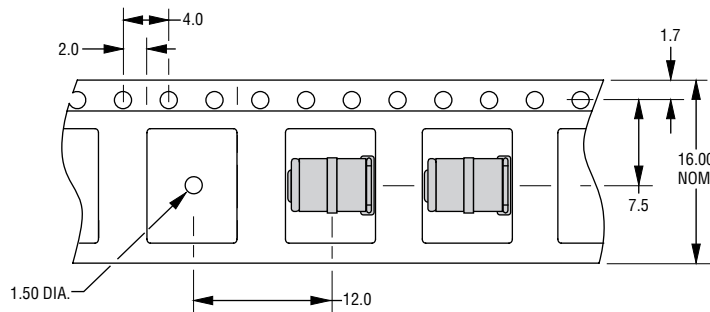


#### Packaging Specifications

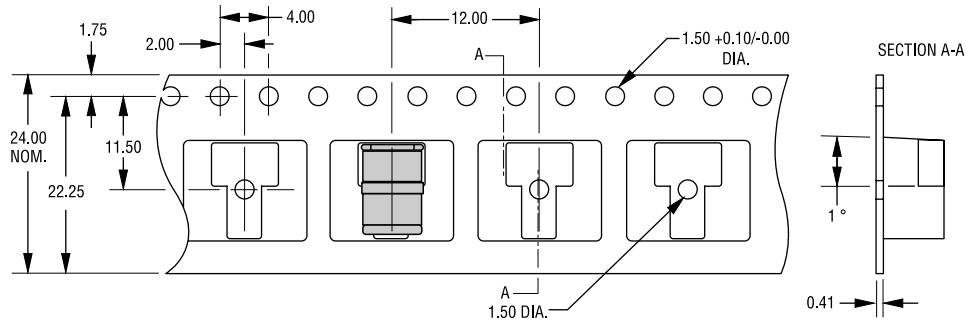
Model	Standard Packaging Quantity			
	Bulk (Bag)	Tray	Box	Reel
2036-xx-SM	250 pcs.		1000 pcs.	
2036-xx-SM-RP				1000 pcs.
2036-xx-SM-RP2				1000 pcs.

The optional -RP & -RP2 reels are 330 mm in diameter and 23 mm wide.

-RP



-RP2



TOLERANCES:  $\pm 0.13$  UNLESS OTHERWISE SPECIFIED  
DIMENSIONS: MILLIMETERS

"Mini-TRIGARD™" is a trademark of Bourns, Inc.

REV. AB 01/26  
Specifications are subject to change without notice.  
Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).

This legal disclaimer applies to purchasers and users of Bourns® products manufactured by or on behalf of Bourns, Inc. and its affiliates (collectively, "Bourns").

Unless otherwise expressly indicated in writing, Bourns® products and data sheets relating thereto are subject to change without notice. Users should check for and obtain the latest relevant information and verify that such information is current and complete before placing orders for Bourns® products.

The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions, and statements regarding the suitability of products for certain types of applications are based on Bourns' knowledge of typical requirements in generic applications. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to (i) the combination of the Bourns® product with other components in the user's application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Users should always verify the actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments regarding the amount of additional test margin to design into their device or application to compensate for differences between laboratory and real world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., ISO/TS 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet the requirements of such industry standard or particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or applications.

Bourns® products are not recommended, authorized or intended for use in nuclear, lifesaving, life-critical or life-sustaining applications, nor in any other applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any Bourns® products in such unauthorized applications might not be safe and thus is at the user's sole risk. Life-critical applications include devices identified by the U.S. Food and Drug Administration as Class III devices and generally equivalent classifications outside of the United States.

Bourns expressly identifies those Bourns® standard products that are suitable for use in automotive applications on such products' data sheets in the section entitled "Applications." Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard products in an automotive application might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk. If Bourns expressly identifies a sub-category of automotive application in the data sheet for its standard products (such as infotainment or lighting), such identification means that Bourns has reviewed

its standard product and has determined that if such Bourns® standard product is considered for potential use in automotive applications, it should only be used in such sub-category of automotive applications. Any reference to Bourns® standard product in the data sheet as compliant with the AEC-Q standard or "automotive grade" does not by itself mean that Bourns has approved such product for use in an automotive application.

Bourns® standard products are not tested to comply with United States Federal Aviation Administration standards generally or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aircraft or space applications. Bourns expressly identifies Bourns® standard products that are suitable for use in aircraft or space applications on such products' data sheets in the section entitled "Applications." Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard product in an aircraft or space application might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk.

The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the above provisions applicable to Bourns® standard products shall also apply to such Bourns® custom products.

Users shall not sell, transfer, export or re-export any Bourns® products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or missiles, nor shall they use Bourns® products or technology in any facility which engages in activities relating to such devices. The foregoing restrictions apply to all uses and applications that violate national or international prohibitions, including embargos or international regulations. Further, Bourns® products and Bourns technology and technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes. Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party not eligible to receive U.S. commodities, software, and technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability for special, punitive, consequential, incidental or indirect damages or lost revenues or lost profits, and (ii) any and all implied warranties, including implied warranties of fitness for particular purpose, non-infringement and merchantability.

*For your convenience, copies of this Legal Disclaimer Notice with German, Spanish, Japanese, Traditional Chinese and Simplified Chinese bilingual versions are available at:*

*Web Page: <http://www.bourns.com/legal/disclaimers-terms-and-policies>*

*PDF: <http://www.bourns.com/docs/Legal/disclaimer.pdf>*



## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View 2036-20-SM-RP](#) on WIN SOURCE

 [Bourns Inc.](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management