




## Features

- Surface mount for economical assembly
- High surge current rating
- Low capacitance and insertion loss
- Stable breakdown throughout life
- 8 mm diameter, 6 mm long
- UL Recognized 

## Applications

- Telecommunications
- Industrial electronics
- Commercial electronics
- Automotive, aircraft, military electronics

## 2027-xx-SM Precision Gas Discharge Tube Surge Protector

Bourns offers an 8 x 6 mm Surface Mount (SM) 2-electrode GDT surge protection device. The industry-leading quality and features of Bourns® 2027 Series GDT continue in this new SM version. Compatible with “pick and place” assembly systems, the 2027-SM is ideal for compact applications such as PCBs for telecommunications, commercial and industrial applications.

### Characteristics

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

Characteristic	Model No.					
	2027-07-SM	2027-09-SM	2027-15-SM	2027-20-SM	2027-23-SM	2027-25-SM
DC Sparkover $\pm 15\%$ ( $\pm 20\%$ for Models 2027-07-SM & 2027-09-SM) @ 100 V/s	75 V	90 V	150 V	200 V	230 V	250 V
Impulse Sparkover <sup>(1)</sup>						
100 V/ $\mu$ s	300 V	300 V	350 V	400 V	450 V	475 V
1000 V/ $\mu$ s	500 V	500 V	575 V	600 V	675 V	700 V

Characteristic	Model No.					
	2027-30-SM	2027-35-SM	2027-40-SM	2027-42-SM	2027-47-SM	2027-60-SM
DC Sparkover $\pm 15\%$ @ 100 V/s	300 V	350 V	400 V	420 V	470 V	600 V
Impulse Sparkover <sup>(1)</sup>						
100 V/ $\mu$ s	550 V	600 V	650 V	675 V	725 V	850 V
1000 V/ $\mu$ s	800 V	875 V	925 V	950 V	1000 V	1100 V

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

Insulation Resistance .....	100 V (50 V for Models 2027-07-SM & 2027-09-SM) .....	$> 10^{10} \Omega$
Glow Voltage .....	10 mA .....	$\sim 70$ V
Arc Voltage .....	$> 1$ A .....	$\sim 10$ V
Glow-Arc Transition Current .....	.....	$< 0.5$ A
Capacitance .....	1 MHz .....	$< 1$ pF
DC Holdover Voltage <sup>(2)</sup> .....	135 V, (52 V for Models 2027-07-SM & 2027-09-SM; 80 V for Model 2027-15-SM) ...	$< 150$ ms
Impulse Discharge Current .....	25000 A, 8/20 $\mu$ s <sup>(3)</sup> .....	1 operation minimum
	10000 A, 8/20 $\mu$ s .....	$> 10$ operations
	2500 A, 10/350 $\mu$ s .....	2 operations
	500 A, 10/1000 $\mu$ s .....	$> 400$ operations
	100 A, 10/1000 $\mu$ s or 10/700 $\mu$ s .....	$> 1000$ operations
Alternating Discharge Current .....	65 Arms, 11 cycles*** .....	1 operation minimum
	10 Arms, 1 s .....	$> 10$ operations
Operating Temperature .....	.....	-55 to +125 °C
Climatic Category (IEC 60068-1) .....	.....	40/90/21

### Notes:

- UL recognized component, UL File E153537.
- Model number marking on tube: 27-xxxV.
- 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  $\pm 20\%$  after life, IR  $> 10^8 \Omega$  (-25 %, +30 % for Models 2027-07-SM, 2027-09-SM and 2027-60-SM).
- 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  $\pm 20\%$  after discharge, 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.

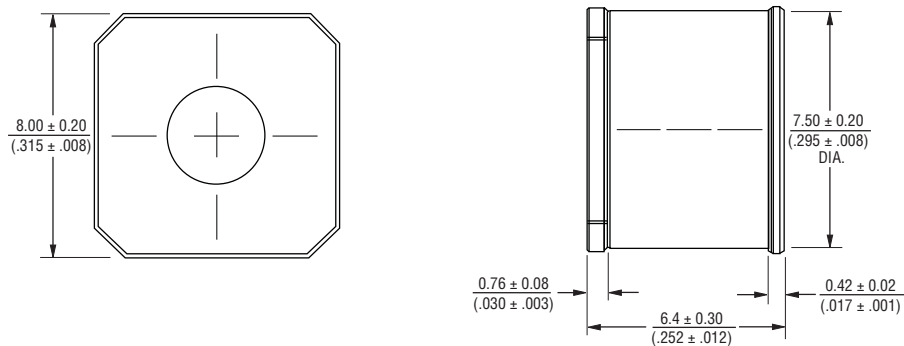
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

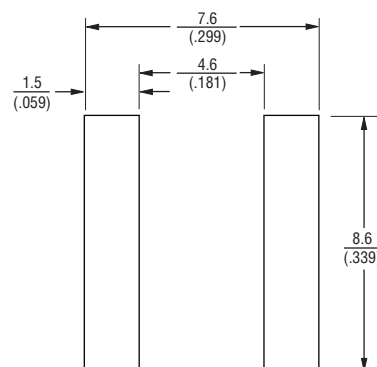
## 2027-xx-SM Precision Gas Discharge Tube Surge Protector

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### Product Dimensions



### Recommended Pad Layout



### How to Order

**2027 - xx - SM - RP LF**

Model Number Designator

Voltage (Divided by 10)

07 = 75 V    30 = 300 V  
 09 = 90 V    35 = 350 V  
 15 = 150 V    40 = 400 V  
 20 = 200 V    42 = 420 V  
 23 = 230 V    47 = 470 V  
 25 = 250 V    60 = 600 V

Surface Mount

Packaging Option

Blank = Bulk Packaging (Standard)  
 RP = 24 mm Reelpack (Optional)  
 RP2 = 16 mm Reelpack (Optional)  
 RP3 = 16 mm Reelpack / Vertical part alignment in tape (Optional)

RoHS Compliant Option

Blank = Standard Product  
 LF = RoHS Compliant Product

### Packaging Specifications

Model	Standard Packaging Quantity			
	Bulk (Bag)	Tray	Box	Reel
2027-xx-SM	250		1000	
2027-xx-SM-RP				500
2027-xx-SM-RP2				500

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The optional reelpacks (-RP, -RP2, -RP3) are 33 cm in diameter and 3 cm wide.

Technical drawing of a tape reel showing dimensions in inches and millimeters. The drawing includes a side view on the left and a top view on the right. Key dimensions include:

- Side View (Left):**
  - Overall height: 5.19 (.204)
  - Height of the top flange: 6.85 (.270)
  - Height of the bottom flange: 8.41 (.331)
  - Width of the top flange: .36 (.014)
- Top View (Right):**
  - Overall width: 4.00 (.157)
  - Width of the central section: 7.95 (.374)
  - Width of the bottom section: 9.51 (.374)
  - Height of the top flange: 6.85 (.270)
  - Height of the central section: 16.0 (.630)
  - Height of the bottom section: 3.20 (.126)
  - Radius of the top flange: 0.76 (.030) R
  - Radius of the bottom section: 0.95 (.037) R
- Labels:**
  - "PART ORIENTATION IN TAPE" points to a feature on the top view.

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

Technical drawing of a tape reel showing dimensions for a 150mm diameter reel. The drawing includes a side view of the tape and a top view of the reel. Dimensions are given in millimeters with tolerances in parentheses.

**Side View Dimensions:**

- Tape width: 8.40 ± 0.05 (mm)
- Tape thickness: 0.40 ± 0.05 (mm)
- Reel diameter: 150.0 ± 0.1 (mm)

**Top View Dimensions:**

- Reel diameter: 150.0 ± 0.1 (mm)
- Distance between holes: 12.00 ± 0.10 (mm)
- Distance between slots: 7.9 ± 0.1 (mm)
- Slot width: 0.5 ± 0.1 (mm)
- Slot depth: 0.5 ± 0.1 (mm)
- Distance from edge to first hole: 12.00 ± 0.10 (mm)
- Distance from edge to first slot: 7.9 ± 0.1 (mm)
- Distance from edge to last slot: 9.5 ± 0.1 (mm)
- Distance from edge to last hole: 12.00 ± 0.10 (mm)
- Distance between holes: 12.00 ± 0.10 (mm)
- Distance between slots: 7.9 ± 0.1 (mm)
- Slot width: 0.5 ± 0.1 (mm)
- Slot depth: 0.5 ± 0.1 (mm)
- Distance from edge to first hole: 12.00 ± 0.10 (mm)
- Distance from edge to first slot: 7.9 ± 0.1 (mm)
- Distance from edge to last slot: 9.5 ± 0.1 (mm)
- Distance from edge to last hole: 12.00 ± 0.10 (mm)

Unless otherwise specified, tolerances in decimals  
are .X ± 0.3, .XX ± 0.15 for lengths in millimeters and ±1 ° for degrees.

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