



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 ⁽¹⁾						
100 V/ μ s	300 V	300 V	350 V	400 V	450 V	475 V
1000 V/ μ 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 ⁽¹⁾						
100 V/ μ s	550 V	600 V	650 V	675 V	725 V	850 V
1000 V/ μ s	800 V	875 V	925 V	950 V	1000 V	1100 V

⁽¹⁾ 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	~ 70 V
Arc Voltage	> 1 A	~ 10 V
Glow-Arc Transition Current		< 0.5 A
Capacitance	1 MHz	< 1 pF
DC Holdover Voltage ⁽²⁾	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 μ s ⁽³⁾	1 operation minimum
	10000 A, 8/20 μ s	> 10 operations
	2500 A, 10/350 μ s	2 operations
	500 A, 10/1000 μ s	> 400 operations
	100 A, 10/1000 μ s or 10/700 μ 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.

⁽²⁾ Network applied.

⁽³⁾ 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.

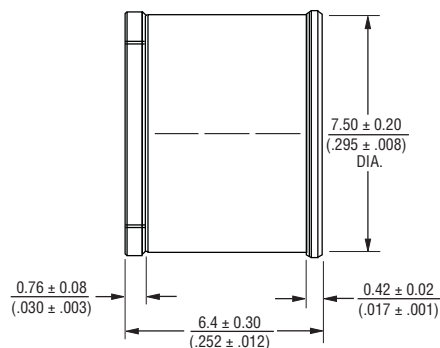
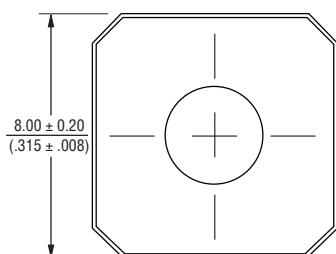
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

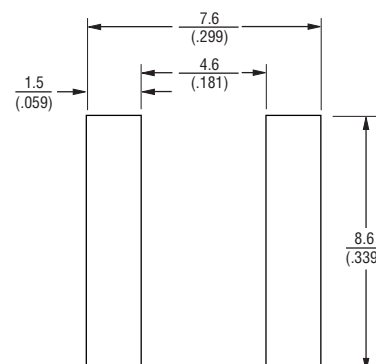
2027-xx-SM Precision Gas Discharge Tube Surge Protector

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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 assembly, showing a side view and a cross-section A-A.

Side View Dimensions:

- Top edge thickness: 0.41 ± 0.10 (0.02 $\pm$ 0.004)
- Top edge width: 8.48 (0.334)
- Top edge angle: 33°
- Top edge height: 8.08 (0.32)
- Bottom edge angle: 7°
- Bottom edge width: 8.48 (0.334)

Cross-section A-A Dimensions:

- Top edge thickness: 1.75 (0.07)
- Top edge width: 11.5 (0.45)
- Top edge height: 24.0 (0.94)
- Top edge angle: 33°
- Bottom edge angle: 7°
- Bottom edge width: 8.48 (0.334)
- Bottom edge height: 8.08 (0.32)
- Bottom edge angle: 7°
- Bottom edge width: 8.48 (0.334)

Other Dimensions:

- Top edge thickness: 2.00 (0.079)
- Top edge width: 16.00 (0.630)
- Top edge height: 4.00 (0.157)
- Top edge angle: 33°
- Bottom edge angle: 7°
- Bottom edge width: 7.11 (0.28)
- Bottom edge height: 7.51 (0.296)
- Bottom edge angle: 7°
- Bottom edge width: 7.51 (0.296)

Section A-A:

- Section A-A is a cross-section of the tape assembly, showing the internal structure and the top edge.
- The section is labeled "SECTION A-A" at the bottom left.
- The section shows a central rectangular opening with a circular hole in the center.
- The section is labeled "PART ORIENTATION IN TAPE" at the top left.
- The section is labeled "1.50 (0.059) DIA." at the top right.
- The section is labeled "A" at the bottom right.

Technical drawing of a tape reel showing top, side, and end views with dimensions in inches and millimeters.

Top View Dimensions:

- Overall width: 16.00 (".630")
- Overall length: 8.41 (".331")
- Distance from left edge to first hole center: 4.00 (0.157")
- Distance between hole centers: 7.95 (".374")
- Distance from last hole center to right edge: 3.20 (".126")
- Radius of outer corner: 0.76 (".030") R
- Radius of inner corner: 0.95 (".037") R

Side View Dimensions:

- Overall height: 6.85 (".270")
- Distance from top edge to bottom edge of tape: 5.19 (".204")

End View Dimensions:

- Overall width: 8.41 (".331")
- Distance from left edge to center of tape: 3.60 (".142")
- Distance from center of tape to right edge: 4.81 (".193")

Labels:

- PART ORIENTATION IN TAPE

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

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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