



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.

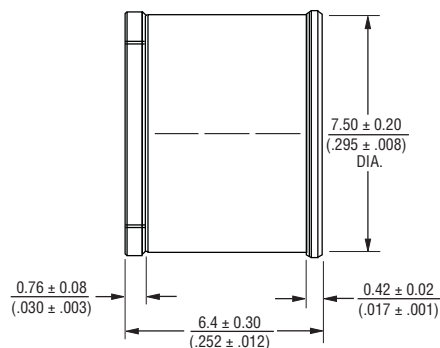
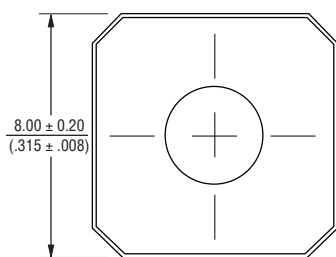
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

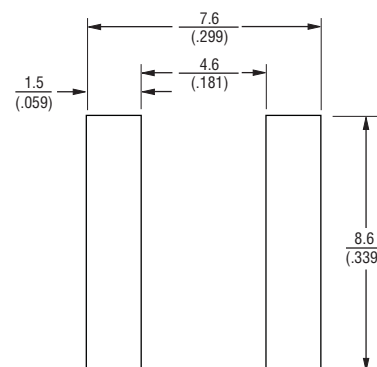
2027-xx-SM Precision Gas Discharge Tube Surge Protector

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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 3D printed part, showing a side view and a cross-section labeled SECTION A-A.

Dimensions (Inches / Millimeters):

- Top edge thickness: 0.41 ± 0.10 (0.02 ± 0.004)
- Top edge width: 8.08 (0.32)
- Top edge chamfer: 33°
- Top edge chamfer angle: 7°
- Top edge width: 8.48 (0.334)
- Top edge width: 7.11 (0.28)
- Top edge width: 7.51 (0.296)
- Top edge width: 16.00 (0.630)
- Top edge width: 2.00 (0.079)
- Top edge width: 4.00 (0.157)
- Top edge width: 1.50 (0.059) DIA.
- Top edge width: 1.75 (0.07)
- Top edge width: 11.5 (0.45)
- Top edge width: 24.0 (0.94)

SECTION A-A

PART ORIENTATION IN TAPE

Technical drawing of a tape assembly. The drawing shows a side view of the tape with dimensions in inches and millimeters. Key dimensions include:

- Top edge: .36 (.014) and 4.00 (.157)
- Bottom edge: 5.19 (.204), 6.85 (.270), 8.41 (.331), 7.95 (.374), 9.51 (.374), 0.95 (.037) R, and 3.20 (.126)
- Right edge: 6.85 (.270) and 16.0 (.630)
- Internal features: 0.76 (.030) R and PART ORIENTATION IN TAPE

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. Key dimensions include:

- Tape width: 5.10 (.201)
- Tape thickness: 0.40 ± 0.05 (.016 ± .002)
- Tape length: 8.40 (.331)
- Reel diameter: 150.0 ± 0.1 (-0.0 / +0.1) DIA.
- Reel hole diameter: 12.00 (.473)
- Reel hole spacing: 7.9 (.311)
- Reel hole offset: 2.00 ± 0.10 (.079 ± .004)
- Reel hole diameter: 1.50 ± 0.1 (-0.0 / +0.1) DIA.
- Reel hole offset: 1.75 ± 0.1 (.069 ± .004)
- Reel hole diameter: 16.0 ± 0.3 (.630 ± .012)
- Reel hole offset: 7.50 ± 0.1 (.295 ± .004)
- Reel hole diameter: 0.5 (.020) TYP.
- Reel hole offset: 9.5 (.374)
- Reel hole diameter: 1.50 ± 0.1 (-0.0 / +0.1) DIA.
- Part orientation in tape: PART ORIENTATION IN TAPE

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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