
## 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
- AEC-Q200 compliant
- UL Recognized

## Additional Information

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

# 2027-A-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 Model 2027-A-xx-SM Series is ideal for compact applications such as PCBs for telecommunications, commercial and industrial applications. This series is AEC-Q200 compliant.

## Characteristics

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

| Characteristic | Model No. | | | | | |
|---|---|---|---|---|---|---|
| | 2027-A-07-SM | 2027-A-09-SM | 2027-A-15-SM | 2027-A-20-SM | 2027-A-23-SM | 2027-A-25-SM |
| DC Sparkover ±15 % (1) (2) | 75 V | 90 V | 150 V | 200 V | 230 V | 250 V |
| Impulse Sparkover (3) | | | | | | |
| 100 V/μs | 300 V | 300 V | 350 V | 400 V | 450 V | 475 V |
| 1000 V/μs | 500 V | 500 V | 575 V | 600 V | 675 V | 700 V |

| Characteristic | Model No. | | | | | |
|---|---|---|---|---|---|---|
| | 2027-A-30-SM | 2027-A-35-SM | 2027-A-40-SM | 2027-A-42-SM | 2027-A-47-SM | 2027-A-60-SM |
| DC Sparkover ±15 % @ 100 V/s | 300 V | 350 V | 400 V | 420 V | 470 V | 600 V |
| Impulse Sparkover (3) | | | | | | |
| 100 V/μs | 550 V | 600 V | 650 V | 675 V | 725 V | 850 V |
| 1000 V/μs | 800 V | 875 V | 925 V | 950 V | 1000 V | 1100 V |

(1) In ionized mode
(2) ±20 % for Models 2027-07-SM & 2027-09-SM @ 100 V/s
(3) Impulse Sparkover voltage is defined as typical values of distribution

| | | |
|---|---|---|
| Insulation Resistance | 100 V (50 V for Models 2027–A-07-SM & 2027-A-09-SM) | > $10^9$ Ω |
| Glow Voltage | 10 mA | ~ 70 V |
| Arc Voltage | > 1A | ~ 10 V |
| Glow-Arc Transition Current | | < 0.5 A |
| Capacitance | 1 MHz | < 1 pF |
| DC Holdover Voltage (4) | 135 V, (52 V for Models 2027-A-07-SM & 2027-A-09-SM; 80 V for Model 2027-A-15-SM) | < 150 ms |
| Impulse Discharge Current | 25000 A, 8/20 μs (5) | 1 operation minimum |
| | 10000 A, 8/20 μs | > 10 operations |
| | 2000 A, 10/350 μs | 2 operations |
| | 500 A, 10/1000 μs | > 400 operations |
| | 100 A, 10/1000 μs or 10/700 μs | > 1000 operations |
| Alternating Discharge Current | 65 Arms, 11 cycles*** | 1 operation minimum |
| | 10 Arms, 1 s | > 10 operations |
| Operating Temperature | | -40 to +125 °C |
| Climatic Category (IEC 60068-1) | | 40/125/21 |

**Notes:**

- **UL recognized component, UL File E153537.**
- 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 ±20 % after life, IR >$10^8$ Ω (-25 %, +30 % for Models 2027-A-07-SM, 2027-A-09-SM and 2027-A-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.

(4) Network applied.
(5) DC Sparkover may exceed ±20 % after life, but will continue to protect without venting (per ITU-T K.12 Edition 9.0, Section 6, where applicable.

**WARNING**
**Cancer and Reproductive Harm**
www.P65Warnings.ca.gov

*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.

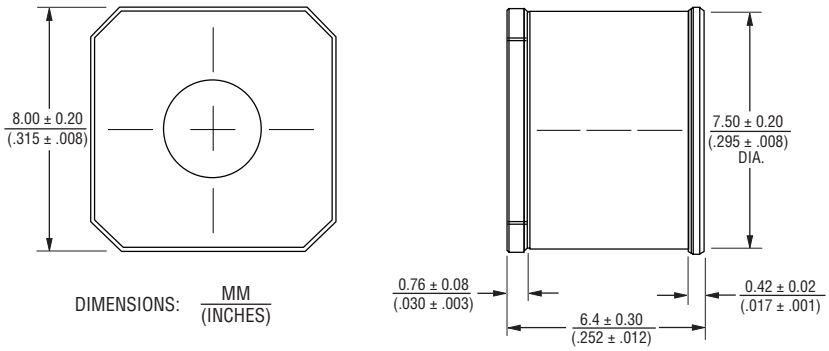
## Applications

- Telecommunications
- Industrial electronics
- Commercial electronics

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

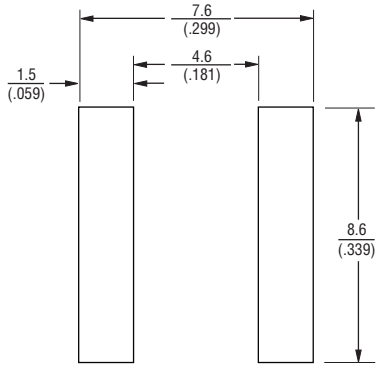
BOURNS®

### Product Dimensions




DIMENSIONS: MM / (INCHES)

### Recommended Pad Layout




### How to Order

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

Model Number Designator

AEC-Compliancy Designator
A = AEC-Q200 Compliant

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)

RoHS Compliant Option
Blank = Standard Product
LF = RoHS Compliant Product

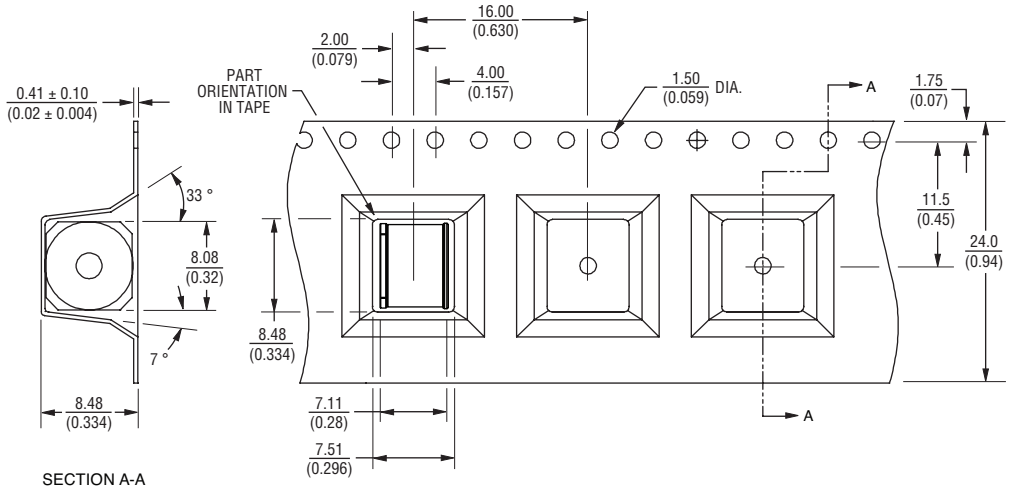
### Packaging Specifications

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

## Packaging Specifications (Continued)

The optional reelpack (-RP) is 33 cm in diameter and 3 cm wide.

**-RP**




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

DIMENSIONS: MM / (INCHES)

## Environmental Characteristics

| Characteristic | Test Condition |
|---|---|
| High Temperature Exposure | Dry heat (+150 °C ± 3 °C)<br>Exposure time 1000 hrs.<br>STP: MIL-STD-202 Method 108 |
| Low Temperature Exposure | Cold (-40°C ± 3 °C)<br>Exposure time 100 hrs.<br>STP: IEC 60068-2-1 |
| Temperature Cycling | 1000 cycles (-40 °C to +125 °C) unpowered<br>STP: JESD22 Method JA-104 |
| Humidity Bias | 1000 hours 85 °C ± 3 °C / RH 85 % ± 3 %<br>Rated 1 kVrms @ 1 mA<br>STP: MIL-STD-202 Method 103 |
| High Temperature Operating Life | 1000 hours ($T_A$ = 125 °C)<br>Rated 1 kVrms @ 1 mA<br>STP: MIL-STD-202 Method 108 |
| Terminal Strength | Test leaded device lead integrity only<br>Conditions: A (2.27 kg), C (227 g)<br>STP: MIL-STD-202 Method 211 |
| Resistance to Solvents | Also, aqueous wash chemical - OKEM Clean or equivalent<br>STP: MIL-STD-202 Method 215 |
| Mechanical Shock | Figure 1 of Method 213<br>LEADED: Condition C<br>STP: MIL-STD-202 Method 213 |
| Vibration | 5 g's for 20 minutes, 12 cycles each of 3 orientations, test from 10-2000 Hz<br>STP: MIL-STD-202 Method 204 |
| Resistance to soldering Heat | LEADED<br>Condition B No Pre-Heat of samples<br>STP: MIL-STD-202 Method 210 |
| ESD | AEC-Q200-002 or ISO/DIS10605 |
| Solderability | LEADED<br>Method A @ 235 °C, Category 3<br>STP: J-STD-002 |
| Flammability | V-0<br>STP: UL-94 |

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