



## Features

- Leadless, surface mount for economical assembly
- Low capacitance and insertion loss
- High surge current rating
- Fast response to transients
- Compact "mini" size
- RoHS compliant\* version available

## 2039-xxx-SM Precision, Fast Responding, High Voltage Gas Discharge Tube

Bourns now offers miniature Surface Mount (SM) 2-electrode GDT surge protectors with sparkover voltage up to 1100 V. Compatible with "pick and place" assembly systems and only 5 mm in diameter, the 2039 Series is ideal for board level protection of high bandwidth applications such as xDSL, cable broadband and high speed Ethernet. The 2039 Series features high energy-handling capability, long and stable life performance and low capacitance of less than 1 pF.

Bourns® GDTs are designed to prevent damage from transient disturbances by acting as a "crowbar" to create a short-to-ground circuit during conduction. When an electrical surge exceeds the defined breakdown voltage level of the GDT, the device becomes ionized and conduction takes place within a fraction of a microsecond. When the surge passes and system voltage returns to normal levels, the GDT returns to its high-impedance (off) state.


## Characteristics

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

Characteristic	Model No.	
	2039-80-SM	2039-110-SM
DC Sparkover $\pm 20\%$ @ 100 V/s	800 V	1100 V
Impulse Sparkover <sup>(1)</sup> @ 1000V/ $\mu$ s	1250 V	1500 V

Insulation Resistance (IR) .....	100 V .....	> $10^9 \Omega$
Arc Voltage .....	1 A .....	~ 10 V
Glow-Arc Transition Current .....		< 0.5 A
Capacitance.....	1 MHz .....	< 1 pF
DC Holdover Voltage <sup>(2)</sup> .....	135 V .....	< 150 ms
Max. Single Discharge <sup>(3)</sup> .....	5 kA .....	> 1 operation
Impulse Discharge Current.....	2.5 kA, 8/20 $\mu$ s <sup>(3)</sup> .....	> 10 operations
	100 A, 10/1000 $\mu$ s .....	> 100 operations
	10 A, 10/1000 $\mu$ s .....	> 1500 operations
Alternating Discharge Current .....	2.5 Arms, 1 s .....	> 10 operations
Operating and Storage Temperature .....		-55 to +85 °C
Climatic Category (IEC 60068-1).....		40/90/21

### Notes:

- 2039-80 & 2039-110 UL Recognized  file E313168 (UL 1449).
- 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 +30/-25 %, IR >  $10^8 \Omega$ .
- 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>(1)</sup> Impulse Sparkover voltage is defined as typical values of distribution.

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

<sup>(3)</sup> DC Sparkover may exceed +30/-25 % but will continue to protect without venting.

## How to Order

	2039	- xx	- SM	- RP	LF
Model Number Designator					
Voltage (Divided by 10)					
Surface Mount					
Packaging Options					
Blank = Bulk Packaging (Standard)					
RP = Reelpack (Optional)					
RP3 = Reelpack (Optional)					
RoHS Compliant Option					
Blank = Standard Product					
LF = RoHS Compliant Product					

**BOURNS®**

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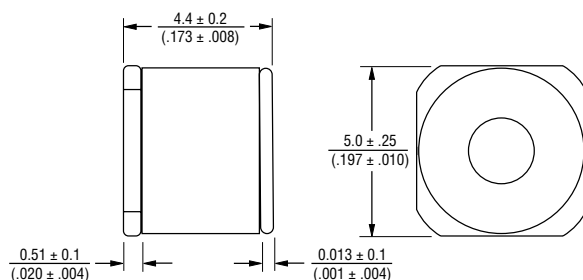
**www.bourns.com**

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

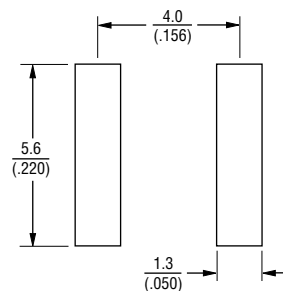
Specifications are subject to change without notice.

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.

**Product Dimensions**

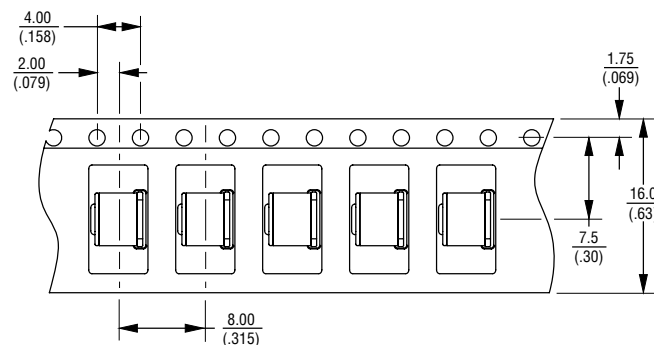
TOLERANCE: .n = ±0.25 mm

**Recommended Pad Layout**DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$ **Packaging Specifications**

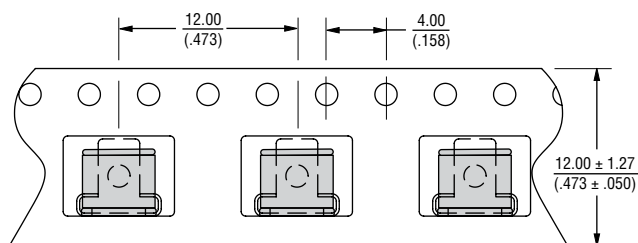
The Model 2039-xxx-SM ships standard bulk pack, 250 pieces per bag, 4 bags per box.

**-RP**

The optional reelpack (-RP) contains 1,500 pieces per reel. Reel is 13 inches in diameter and 3/4 inch wide.

**-RP3**

The optional -RP3 reelpack contains 1,000 pieces per reel. Reel is 13 inches in diameter and 11/16 inch wide.

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.