

NEW PRODUCT BRIEF



Bourns® Next-Generation 2-Electrode Gas Discharge Tube

INTRODUCTION

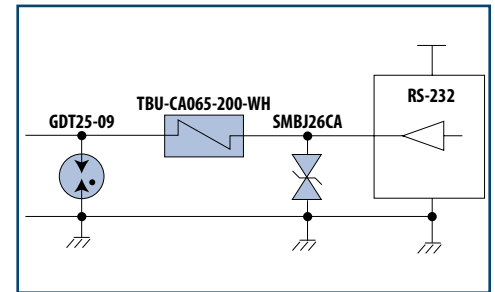
Bourns® next generation surface mount 2-electrode gas discharge tube (GDT) achieves state-of-the-art performance, representing the latest in GDT technology. The next-generation series continues the Bourns legacy of quality, innovation and design in GDT overvoltage surge arrestors. This next-generation GDT provides significant improvements in protection from voltage transients caused by lightning and accidental contact with AC power lines. With improvements driven by computer modeling simulations, the Model GDT25 Series provides an enhanced level of voltage limiting during

fast rising events, resulting in less stress on downstream components. In addition, the new series has superior current handling capabilities and a wide operating temperature range.

Bourns® next-generation series' low capacitance and insertion loss make it an ideal solution for protection of high speed information and communication technology (ICT) equipment as well industrial communication. The next-generation series is RoHS compliant and UL recognized.

WHY FASTER IS BETTER

Gas tube devices are traditionally used as primary stage protectors in a multi-staged protection topology.



In the circuit diagram shown above, the next-generation model GDT25-09 gas tube is used in conjunction with a model SMBJ26CA TVS diode and a model TBU-CA065-200-WH high-speed protector (HSP) to protect a sensitive line driver in an environment with exposure to induced lightning transients.

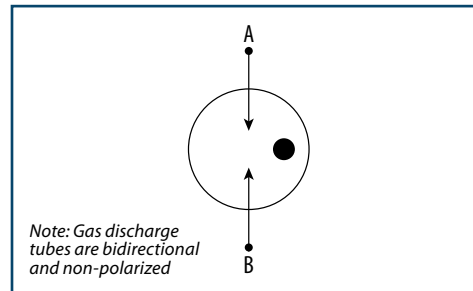
When this circuit is exposed to a transient event, the TVS diode will clamp the voltage, preventing damage to the RS-232 transceiver. The TBU® device senses the excessive current flowing in the TVS diode and immediately transitions to high impedance, limiting power to the TVS diode. With the TBU® device safely disconnecting the TVS diode and RS-232 transceiver from the surge, the GDT will be triggered by the rising voltage to switch on, limiting the voltage applied to the TBU® device to a safe level.

In this example, the best-in-class impulse voltage rating on the next-generation model GDT25-09 provides excellent design margin against the 650 V voltage withstand rating of the TBU® High-Speed Protector.

FEATURES

- -55 °C to + 125 °C operation
- Fast response time
- High surge current rating
- Low capacitance and insertion loss
- Stable performance throughout life
- UL recognized
- RoHS compliant*

CIRCUIT DIAGRAM



BENEFITS

- Long service life
- Supports high data rates
- Suitable for exposed circuits
- Enhanced voltage protection

APPLICATIONS

- Set top boxes
- Industrial communications
- HVAC controls
- xDSL, POTS, G.Fast
- Antennae

HOW TO ORDER

Description	GDT 2 5 - xx - S1 - RP
GDT = Gas Discharge Tube - Next-Generation Series	
Electrodes	2 = 2-Electrode
Size	5 = 5 mm Diameter
Voltage	07 = 75 V 09 = 90 V 15 = 150 V 23 = 230 V 35 = 350 V 42 = 420 V 47 = 470 V 60 = 600 V
Package Designator	S1 = 5 x 4.1 mm SMD (Standard)
Packaging Options	RP = Reel Pack (Standard) Blank = Cut Tape BK = Bulk



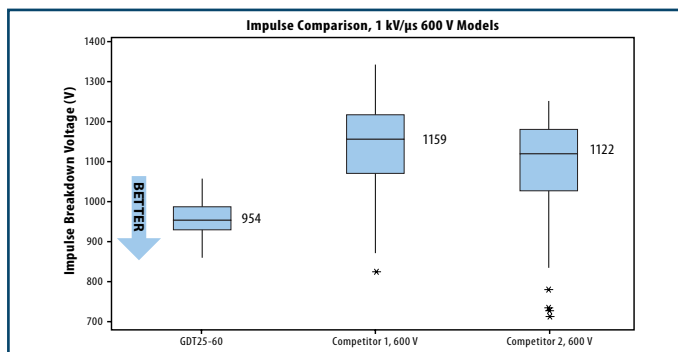
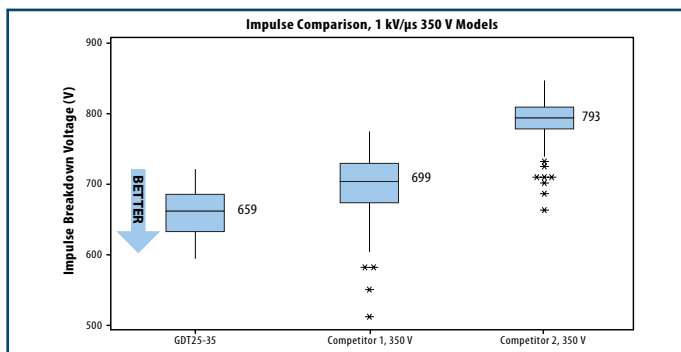
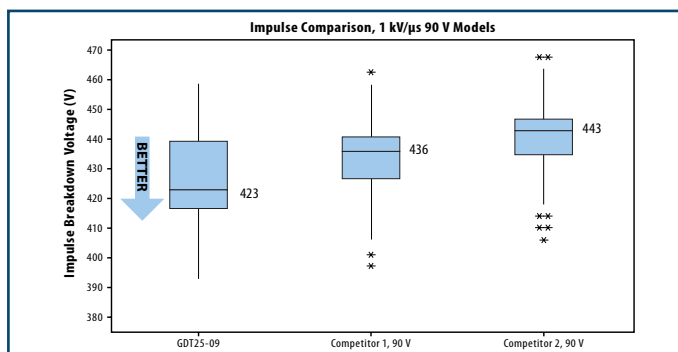
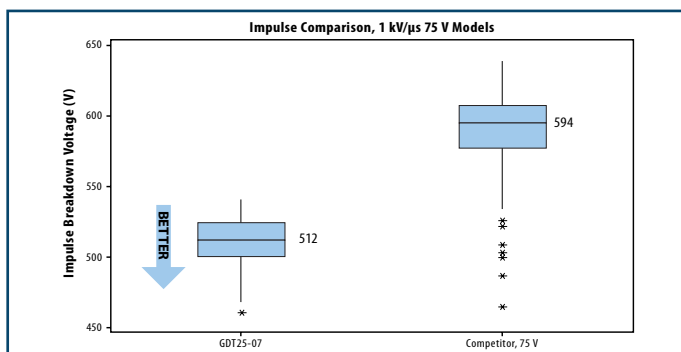
Bourns® Next-Generation 2-Electrode Gas Discharge Tube

ELECTRICAL CHARACTERISTICS

Part Number ⁽¹⁾	Device Specifications ⁽¹⁾								
	DC Sparkover Voltage $\pm 20\%$ ^{(2) (3) (4)}	Impulse Sparkover Voltage ^{(2) (5)}		Insulation Resistance (IR) ⁽⁶⁾	Glow Voltage	Arc Voltage	Glow to Arc Transition Current	Capacitance	DC Holdover Voltage ⁽⁴⁾
	100 V/s	100 V/ μ s	1 kV/ μ s	⁽⁷⁾	10 mA	> 1 A		1 MHz	< 150 ms
GDT25-07	75 V	350 V	600 V	2 G Ω	~ 70 V	~ 5 V	< 1 A	< 0.6 pF	52 V
GDT25-09	90 V	350 V	500 V						135 V
GDT25-15	150 V	415 V	615 V						
GDT25-23	230 V	500 V	700 V						
GDT25-35	350 V	650 V	800 V						
GDT25-42	420 V	720 V	900 V						
GDT25-47	470 V	790 V	950 V						
GDT25-60	600 V	1000 V	1100 V						

Other voltages available upon request.

Part Number	Life Ratings					
	Max. Surge Current	Nominal Impulse Discharge Current			Nominal AC Discharge Current	
	8/20 μ s	8/20 μ s	10/350 μ s	10/1000 μ s	11 Cycles @ 60 Hz	1 Second
GDT25-07	10 kA 1 Operation	7 kA 10 Operations	1 kA 1 Operation	100 A 300 Operations	20 Arms, 1 Operation	7 Arms 10 Operations
GDT25-09					25 Arms, 1 Operation	
GDT25-15					20 Arms, 1 Operation	
GDT25-23					20 Arms, 1 Operation	
GDT25-35					20 Arms, 1 Operation	
GDT25-42					20 Arms, 1 Operation	
GDT25-47					20 Arms, 1 Operation	
GDT25-60					25 Arms, 1 Operation	



Notes:

- (1) At delivery AQL 0.65 Level II, DIN ISO 2859.
- (2) DC and Impulse Sparkover values are in ionized mode @ 25 °C.
- (3) Bourns recommends reflowing surface mount devices per IPC/EDEC J-STD-020 rev. D.
- (4) Surface mount GDTs may exhibit a temporary increase in the DC Sparkover Voltage after the solder reflow process. The DC Sparkover Voltage will recover within 24 hours. There is no quality defect nor change in protection levels during the temporary increase in DC Sparkover Voltage.
- (5) Impulse Sparkover voltage is expressed as a maximum value, with a 99% probability of measured values within limit.
- (6) IR limits after Life Ratings > 100 M Ω .
- (7) IR Test Voltage: 50 V for GDT25-07 and GDT25-09, 100 V for GDT25-35 and GDT25-60.
- (8) Network applied (per IEC 61646-1:2011 Edition 9.0, Section 7).
- (9) DC Sparkover Voltage limits after Life Ratings may exceed +20% but will continue to protect without venting (per IEC 61646-1:2011 Edition 9.0, Section 6, where applicable).



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