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*

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

CIRCUIT DIAGRAM
Note: Gas discharge tubes are bidirectional and non-polarized

HOW TO ORDER
Description  GDT = Gas Discharge Tube - Next-Generation Series
Electrodes  2 = 2-Electrode
Size  5 = 5 mm Diameter
Voltage  
07 = 75 V
09 = 90 V
35 = 350 V
60 = 600 V
Package Designator  S1 = S x 4.1 mm SMD (Standard)
Packaging Options  RP = Reel Pack (Standard)
Blank = Cut Tape
BK = Bulk

GDT 2 5 - xx - S1 - RP

TBU-CA065-200-WH
SMBJ26CA
RS-232
ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Part Number (10)</th>
<th>Device Specifications @ 25 °C (1) (7) (9)</th>
<th>Life Ratings</th>
<th>Nominal AC Discharge Current</th>
<th>AC Discharge Current</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC Breakdown (6) Impulse Breakdown (2) Insulation Resistance</td>
<td>Impulse Discharge Current (3) (5) (8) Nominal AC Discharge Current</td>
<td>AC Discharge Current</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 V/S 100 V/µs 1000 V/µs</td>
<td>8/20 µs 8/20 µs 10/1000 µs 10/350 µs</td>
<td>1 Sec. @ 50 - 60 Hz 11 Cycles @ 60 Hz</td>
<td></td>
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<tr>
<td></td>
<td>20 % 99 %</td>
<td>1 kHz</td>
<td>11 Cycles @ 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Min. Nom. Max. Max.</td>
<td>Max.</td>
<td>Max.</td>
<td>1 kHz</td>
<td>11 Cycles @ 60 Hz</td>
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<tr>
<td>GDT25-07</td>
<td>60 75 90 350 600</td>
<td>10 kA</td>
<td>7 kA</td>
<td>300 Operations</td>
</tr>
<tr>
<td>GDT25-09</td>
<td>72 90 108 350 500</td>
<td>1 kA</td>
<td>7 Arms</td>
<td></td>
</tr>
<tr>
<td>GDT25-35</td>
<td>280 350 420 650 800</td>
<td>1 kA</td>
<td>7 Arms</td>
<td></td>
</tr>
<tr>
<td>GDT25-60</td>
<td>480 600 720 1000 1100</td>
<td>1 kA</td>
<td>7 Arms</td>
<td></td>
</tr>
</tbody>
</table>

Other voltages available upon request.

Notes:
(1) Initial device specifications
(2) Impulse Sparkover voltage is expressed as a maximum value, with a 99 % probability of measured values within.
(3) IR limits after Life Ratings > 100 MΩ
(4) Network applied per ITU-R K.12
(5) DC Sparkover limits after Life Ratings may exceed ±20 % but will continue to protect without venting per ITU-R K.12
(6) DC and Impulse Sparkover values are in ionized mode
(7) At delivery AQL 0.65 Level II, DIN ISO 285
(8) Test conducted in alternating polarity +------
(9) Specifications in accordance with ITU-R, K.12, IEC 61663-2 and IEC 61643-311
(10) Other voltages available upon request - please contact Bourns Customer Service for details

Impulse Comparison, 1 kV/µs 75 V Models

Impulse Comparison, 1 kV/µs 90 V Models

Impulse Comparison, 1 kV/µs 350 V Models

Impulse Comparison, 1 kV/µs 600 V Models

Other voltages available upon request.