### Description

Bourns® Sparctube® Switching Spark Gap Series is a range of switching spark gaps designed specifically for voltage controlled switching of capacitive discharge circuits where a high energy, low loss, fast rate of switching is required. This series is ideally suited for applications where a capacitive discharge is utilized with a transformer to obtain pulses of very high voltage levels in the order of several thousand volts.

### Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Values:</strong></td>
<td></td>
</tr>
<tr>
<td>Static Breakdown Voltage @ 800 V/s</td>
<td>&lt; 500 V</td>
</tr>
<tr>
<td>First Ignition Values</td>
<td></td>
</tr>
<tr>
<td>Following Ignition Values</td>
<td>400 V ±12%</td>
</tr>
<tr>
<td><strong>Electrical Life:</strong></td>
<td></td>
</tr>
<tr>
<td>Minimum Number of Switching Cycles</td>
<td>2x10^5</td>
</tr>
<tr>
<td>Peak Current (Approx.)</td>
<td>500 A</td>
</tr>
<tr>
<td>Maximum Switching Frequency</td>
<td>200 Hz</td>
</tr>
<tr>
<td>Breakdown Characteristics @ 500 V Limit</td>
<td></td>
</tr>
<tr>
<td>First Ignition Values</td>
<td>≤ V 500</td>
</tr>
<tr>
<td>Delay Time</td>
<td>&lt; 60 ms</td>
</tr>
<tr>
<td>Following Ignition Values</td>
<td>400 V ±15%</td>
</tr>
<tr>
<td><strong>General Data:</strong></td>
<td></td>
</tr>
<tr>
<td>Insulation Resistance @100 Vdc</td>
<td>&gt; 100 megohms</td>
</tr>
<tr>
<td>Share of Early Ignition Values (&lt; 340 V)</td>
<td>&lt; 1 %</td>
</tr>
<tr>
<td>Breakdown Time</td>
<td>&lt; 50 ns</td>
</tr>
<tr>
<td>Capacitance</td>
<td>&lt; 1 pF</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-40 °C to +160 °C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-65 °C to +125 °C</td>
</tr>
<tr>
<td>Weight (Approx.)</td>
<td>2.3 g</td>
</tr>
<tr>
<td>Testing</td>
<td>100 %</td>
</tr>
<tr>
<td>Robustness of Terminations</td>
<td>IEC 60068-2-21</td>
</tr>
</tbody>
</table>

### Notes:

1. At delivery AQL 0.65 Level II, DIN ISO 2859.
2. The maximum switching frequency is 100 Hz at circuit capacitance >470 nF ~ 680 nF.
3. Distribution of switchings: maximum 20 % above +125 °C and 20 % below +20°C.
4. Test Ua1 (tensile), Ua2 (thrust), Ub (bending) and Uc (torsion).

### Basic Application Circuit

![Sparctube® Switching Spark Gap Device](image)

**Notes:**


Specifications are subject to change without notice. Users should verify actual device performance in their specific applications.

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## Sparctube® Switching Spark Gap ST-0400 Series

### Product Dimensions

**ST-0400-BLx**
- CERAMIC INSULATOR
- METAL ELECTRODE
- TINNED LEADS
- **Dimension**: 8.0 ±0.1/0.3
  - **DIA.**: (315 ± 0.04−0.012)
- **Diameter**: 8.0 ±0.1/0.3
  - **DIA.**: (315 ± 0.04−0.012)
- **Height**: 60.0−62.0
  - **(2.362−2.428)**

**ST-0400-BCx**
- CERAMIC INSULATOR
- METAL ELECTRODE
- **Dimension**: 8.0 ±0.1/0.3
  - **DIA.**: (315 ± 0.04−0.012)
- **Diameter**: 8.0 ±0.1/0.3
  - **DIA.**: (315 ± 0.04−0.012)

**ST-0400-BBx**
- CERAMIC INSULATOR
- METAL ELECTRODE
- **Dimension**: 5.8 ±0.3
  - **DIA.**: (228 ± 0.012)
- **Diameter**: 5.8 ±0.3
  - **DIA.**: (228 ± 0.012)
- **Height**: 1.00
  - **(0.039)**
- **Approx.**: 0.20
  - **(0.008)**

**Dimensions**: **MM (INCHES)**

### How to Order

**ST - 0400 - B x x - STD**

- **Series Designator**: ST-0400
- **Switching Voltage**: 0400 = 400 V
- **Tolerance**: B = 12%
- **Lead Shape**: B = Bent Leads
  - C = No Leads*
  - L = Straight Leads
- **Packaging**: B = Bulk
  - T = Tape & Reel*
- **Standard or Modified Product Indicator**: STD = Standard
  - Leadless version available in bulk packaging only.

**Typical Part Marking**

ST 0400 wwy ...... “wwy” = Week and year of production

**Recommended Pad Layout**

**Test Circuit**

![Test Circuit Diagram]

- **Uo**......500 V
- **R**......See Note
- **C**......470 nF
- **L**......0.5 μH
- **DUT**......Device Under Test
- **Us**......Breakdown Voltages

**NOTE:** Uo and R are set to provide suitable conditions for different measurements.

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Sparctube® Switching Spark Gap ST-0400 Series

Packaging Specifications

Models ST-0400-BBB, ST-0400-BLB and ST-0400-BCB* ship standard bulk pack, 1,000 pcs./bag. The optional tape and reel packaging contains 1,000 pcs./reel for Model ST-0400-BLT; 500 pcs./reel for Model ST-0400-BBT.

* Available in bulk packaging only.

ST-0400-BLT

ST-0400-BBT
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