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Switching Gas Discharge Tubes

Gas Plasma Voltage Dependent Switches

RoHS VS Series

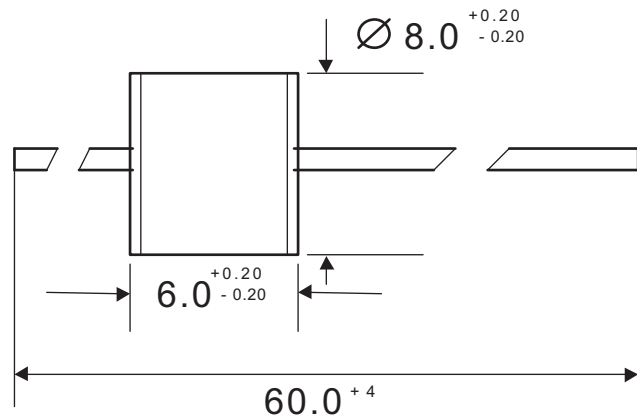
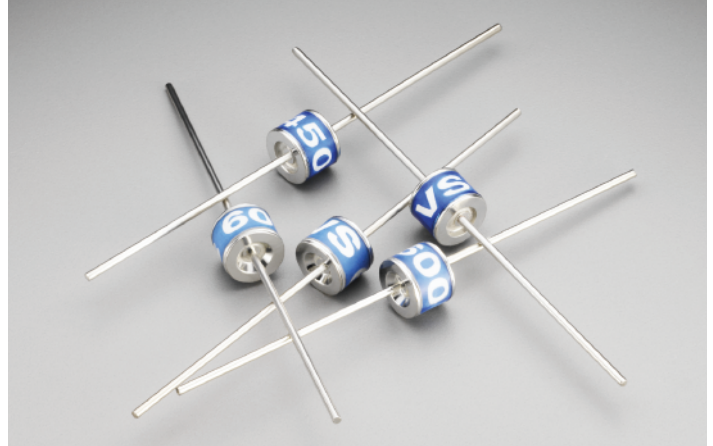
The VS Series is a 2-terminal bi-directional, voltage triggered switch designed for gas fuel ignition systems and similar circuits. Switching voltages for the devices are fixed depending on the part number selected. The gas plasma trigger technology offers very fast switching speeds, resulting in significantly better di/dt values when compared to silicon based SIDAC devices. Due to the high switching voltage of the devices, step-up transformer sizes and specifications can be reduced saving cost, size and weight.

Features

- RoHS compliant
- Ceramic chamber for ultimate reliability.
- Very high switching speed once switching voltage has been reached, resulting in high di/dt to be generated enabling the best performance to be extracted from ignition transformers.

Applications

- For switching stored electrical energy (such as capacitive discharge) at predetermined voltages.
- Designed for in gas fuel ignition systems and similar circuits.



Mechanical Specifications:

- Weight:** 1.42g (0.049oz.)
Materials: Electrode Base: Copper alloy
 Electrode Plating material: Bright Sn
 Body: Ceramic
Device Marking: Littelfuse 'LF' marking, voltage and product code

Switching Gas Discharge Tubes

Gas Plasma Voltage Dependent Switches

RoHS VS Series

Device Ratings and Specifications

| Part Number | $V_{BO}^{(1)}$ (V) | V_T | $I_{DRM}^{(2)}$ (A) | $I_{BO}^{(3)}$ (mA) | Capacitance | V_{BO} to V_T (nS) |
|-------------|--------------------|-------|---------------------|---------------------|-------------|------------------------|
| VS230 | 200 – 255 | 15 | 1.0 | 50 | 2.0 | 25 |
| VS450 | 350 – 550 | 15 | 1.0 | 50 | 2.0 | 25 |
| VS600 | 400 – 750 | 15 | 1.0 | 50 | 2.0 | 25 |

Electrical Life:

Maximum Increase in $V_{BO}^{(1)}$ 25 V
 Switching Operations ⁽⁶⁾ 1,000,000

Maximum Ratings:

Surge On-State Current ⁽⁵⁾ 1000A
 Storage Temperature T_{STG} -40 - +150°C
 Operating Temperature -40 - +150°C

Notes:

- (1) Measured on recommended test circuit (fig 1.)
- (2) Measured @ 100 Volts DC
- (3) Current required for transition to on-state
- (4) Measured @ 1 MHz, zero Volt bias
- (5) Using 8/20μs double exponential pulse
- (6) Measured on recommended test circuit (fig 2.)

Definitions:

- V_{BO} – Breakover Voltage
- V_T – Voltage when device is fully conduction – arc voltage
- I_{DRM} – Off-state Current
- I_{BO} – Nominal Breakover Current
- V_{BO} to V_T – Max switching time from V_{BO} to V_T

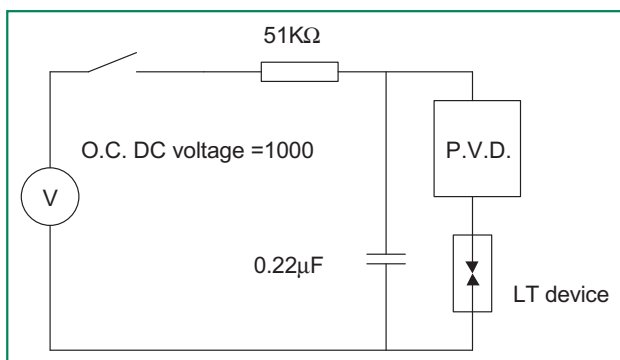


Fig 1. Recommended breakover voltage test circuit
 (Discharge current = 10-20mA; Sensitivity of peak voltage detect = 10-30mA)

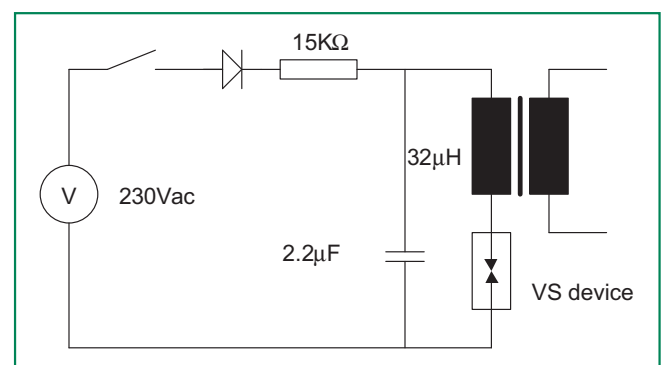


Fig 2. Recommended Life Test Circuit