

# Switching Gas Discharge Tubes

## Gas Plasma Voltage Dependent Switches

### RoHS XT Series

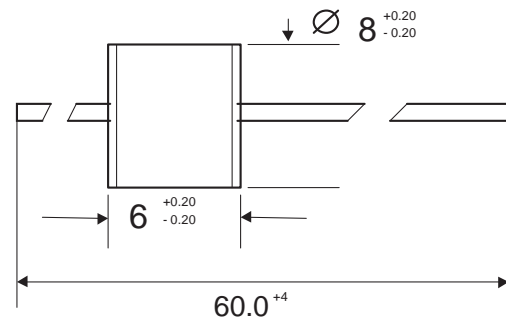
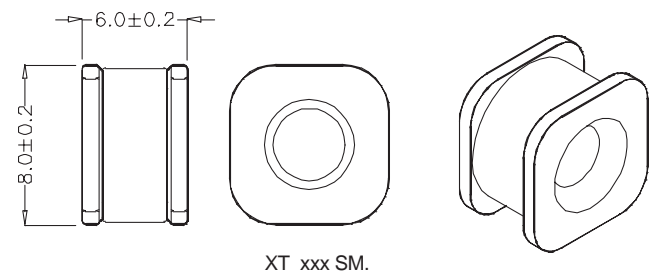
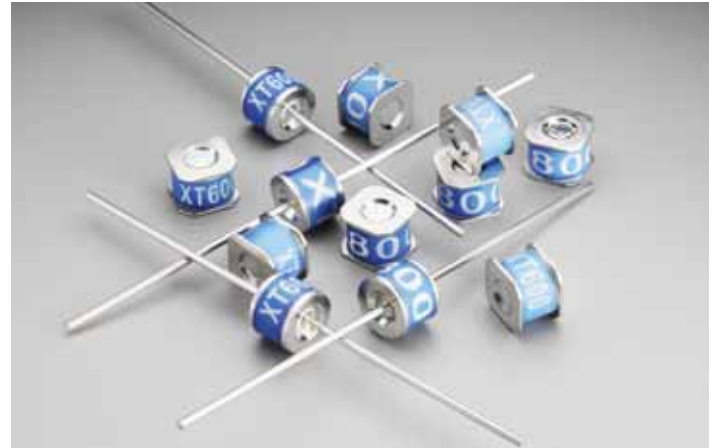
The XT Series is a 2-terminal bi-directional, voltage triggered switch designed for Xenon HID 'hot re-strike' circuits such as those found in automobiles. Switching voltages for the devices are fixed depending on the part number selected. The gas plasma trigger technology offers very fast switching speeds, 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
- 2 terminal configuration.
- 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.
- High lifetime and stability.
- Switching performance is virtually unaffected by changes in ambient temperature.
- Tape and Reel to EIA 481-1

#### Applications

- This product is optimised for Xenon HID 'Hot re-strike' circuits which require a very high number of operations at high current levels. The switching time is typically 10nS for the best possible efficiency.

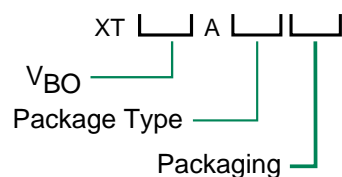


Dimensions in mm

#### Mechanical Specifications:

- Weight (ballast circuit only):** 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

#### ORDERING INFORMATION



A= Axial lead tape and reel  
SM= Surface Mount

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#### Device Ratings and Specifications

Part Number	$V_{BO}^{(1) (7)}$ (V)	Max Ignition	$V_T @ 5A$ (V)	$I_{DRM}^{(2)}$ (A)	$I_{BO}^{(2)}$ (mA)	$C_O^{(4)}$ (pF)	$V_{BO}$ to $V_T$ (ns)	$R_S$ (M)
XT350	297 – 403	463	15	1.0	5	1.5	25	>1
XT600	510 – 690	750	15	1.0	5	1.5	25	>1
XT800	680 – 920	1000	15	1.0	5	1.5	25	>1

#### Electrical Life:

Switching Cycles <sup>(5)</sup> ..... 150,000

#### Maximum Ratings:

Max Switching Frequency<sup>(6)</sup> ..... 400 Hz

Storage Temperature TSTG ..... -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) Measured on recommended test circuit (fig 2.)
- (6) Duty Cycle: 1sec on, 10 sec off.
- (7) Will retain these limits during life cycle

#### Definitions:

$V_{BO}$  – Breakover Voltage

$V_T @ 5A$  – Nominal Off-state Voltage at 5A

$I_{DRM}$  – Off-state Current

$I_{BO}$  – Nominal Breakover Current

$C_O$  - Max Capacitance

$V_{BO}$  to  $V_T$  – Max switching time from  $V_{BO}$  to  $V_T$

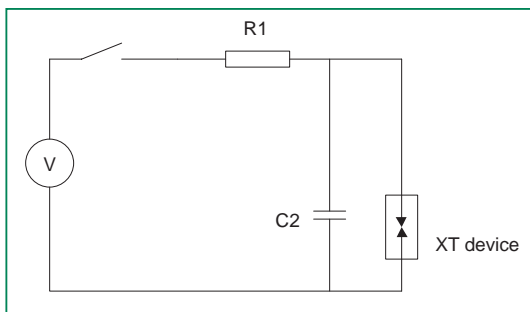


Fig 1. Recommended breakover voltage test circuit

V: open circuit DC voltage =500 (1000V for 600 and 800Vparts)  
 R1 =51KΩ  
 C1 =220nF

Discharge current =10 mAmps ( approx )

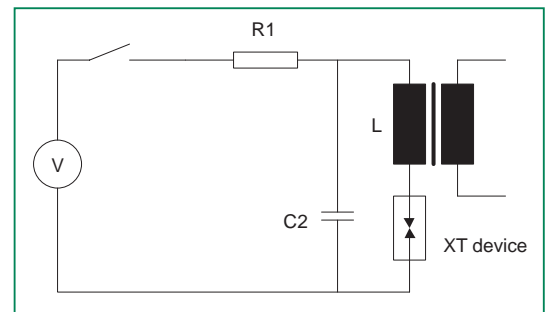


Fig 2. Recommended life test circuit

V: open circuit DC voltage =500 (1000V for 600 and 800V parts)  
 R1 =10KΩ  
 C1 =680nF  
 L =0.5μH

Discharge current =500Amps ( approx )