Series SW-50K

High Precision Spark Gap Switches

For use in:

- ***Laser Drivers***
- ***Marx Generators***
- ***Capacitor Banks***
- ***Current Injectors***
- ***Pulse-forming Networks***
- ***High-voltage Switching***

General Description

The SW-50Ks are compact, high-voltage, pressurized spark gaps designed for use in systems where minimum size, low inductance, and precision triggering are required. UV illumination in the trigger electrode provides particularly reliable triggering. Graphite electrodes are available for applications requiring very precise breakdown characteristics. Because of their rugged construction, the SW-50Ks can operate continuously at modest repetition rates. Although typically operated surrounded by an insulating gas or oil, they can develop full voltage in free air. These spark gaps can operate over a particularly broad range of both the charge voltage and the trigger pulse voltage. The simplicity of the design of these switches and their long-term reliability make them extremely useful in a variety of high-voltage applications.

Applications

These switches are particularly well-suited to compact, modest-energy systems which require very low timing jitter. They are used in laser drivers, Marx generators, capacitor banks, current injectors, pulse-forming networks, and other high-voltage switching applications.

Specifications

Voltage Range:	10 - 50 kV	Maximum Peak Current:	50 kA
Maximum Charge Transfer:	0.25 Coulomb	Maintenance Interval at Full Ratings:	> 10,000 Shots
Jitter:	1 ns RMS	Dielectric Gas:	Dry Air or SF_6
Inductance:	100 nH	Minimum Trigger Voltage:	> 30% Charge Voltage
Maximum Repetition Rate:	10 Hz	Weight:	1 lb

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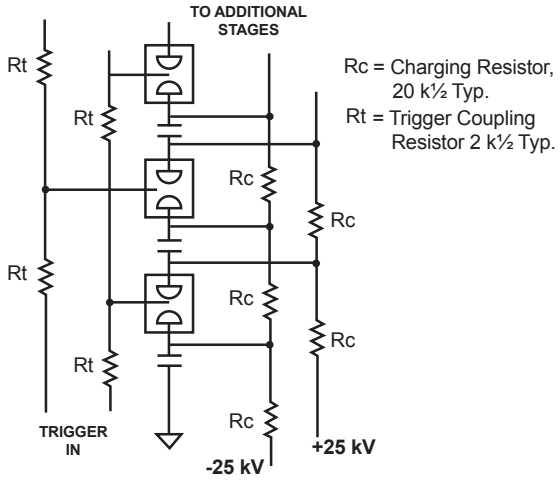
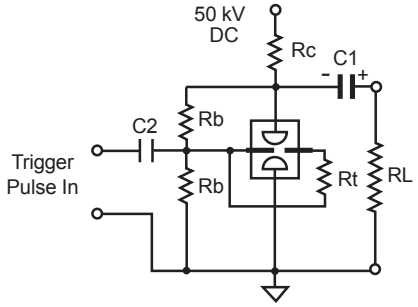
Typical Installations

Marx Generator Circuit



Rc = Charging Resistor, 20 k½ Typ.
Rt = Trigger Coupling Resistor 2 k½ Typ.

Current Injection Pulser



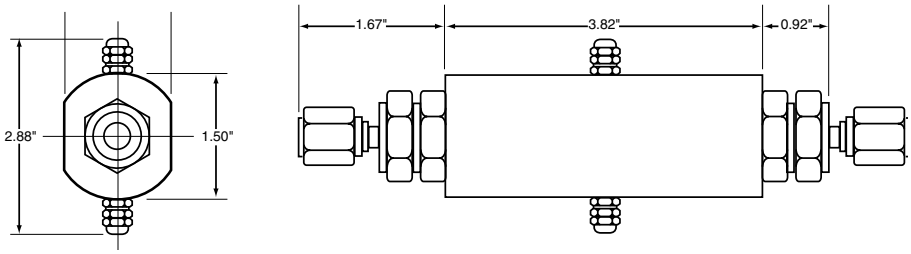
Components

C1 Energy Discharge Capacitor
C2 Trigger Isolation Capacitor
Rb Trigger Bias Resistor
Rc Charge Current Limiting Resistor
RL Load Resistance
Rt Illuminator Shunt Resistor

Note:

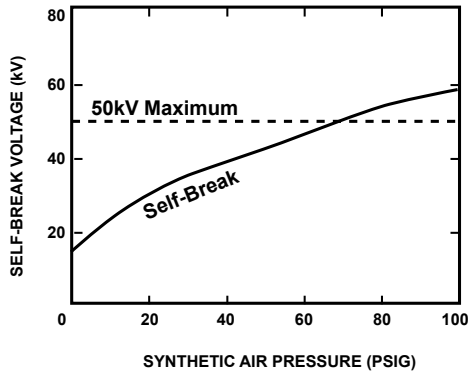
Negative charging voltage produces produces positive pulse output. Reverse charging polarity for negative output.

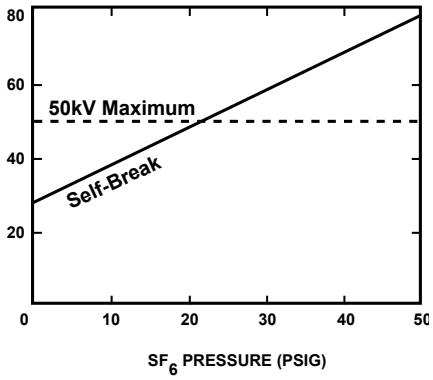
Dimensions and Mounting



Mounting and electrode connection is provided by the 5/8-20 UNF on either end of the SW50K.The unit should be mounted coaxially if lowest inductance is required. The gas ports are standard 1/4-inch tubing swage fittings.

Self-breakdown Voltage Versus Pressure





These curves depict the self-breakdown parameters of the SW50K. The operating voltage should be approximately 75% of the self-breakdown levels. Triggering is accomplished by applying a voltage to the mid-plane electrode.The trigger pulse should be a minimum of 50% of the gap operating voltage – 100% is recommended

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