



ELECTRONIC TUBE REFERENCE

1B32

Specialized - Switching Tube electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

SURGEPROTECTOR

Two-electrode gas-filled spark-gap protective tube with approximately 1 kV initial breakdown voltage, intended for overvoltage protection rather than commanded pulse switching.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	— / —	PARALLEL HEATER	— / —
HEATING	Indirect; cold cathode	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 SurgeProtector	
STARTING VOLTAGE	1000 V
MAINTAINING VOLTAGE	350 V
<i>Published electrical limits promoted from the source. Passive microwave reference cavities have their electrical frequency/Q values in TUBE_SECTION_PARAMETER because no applicable promoted frequency field exists in the fixed section schema.</i>	

1B32 — Gas-Filled Spark Gap Tube

A two-electrode, gas-filled spark gap device designed for voltage-limiting and surge-protection applications.

Overview

The **1B32** (also designated as the **1B32/532A**) is a gas-filled spark gap tube containing two electrodes. As a cold-cathode, gas-discharge device, it does not utilize a heater or filament. Instead, it relies on the ionization of its internal gas medium to transition from a non-conducting state to a conducting state when

the voltage across its terminals exceeds a specific breakdown threshold. The tube is designed to be mounted in any position and operates over a wide ambient temperature range.

Mechanical and Physical Construction

The 1B32 features a compact, robust physical design with two primary terminals. The device is constructed with a cylindrical body and specific terminal dimensions to facilitate secure electrical and mechanical connections:

- **Maximum Overall Length:** 2-13/16 inches
- **Maximum Body Length:** 1-5/8 inches
- **Maximum Body Diameter:** 1-1/4 inches
- **Top Terminal:** A threaded terminal with a diameter of $0.375" \pm 0.005"$, a length of 1/4", and a 10-32 thread specification (10-32 THD).
- **Bottom Terminal:** A terminal with a diameter of $0.375" \pm 0.005"$ and a maximum length of 3/8".
- **Bottom Collar/Extension:** Measures 3/8" in length.

The physical design allows the tube to be installed in any orientation ("Any" mounting position), providing flexibility in chassis layout and equipment design.

Electrical Characteristics and Ratings

The electrical behavior of the 1B32 is defined by its breakdown voltage, operating voltage drop, and interelectrode capacitance. Because it is a gas-filled spark gap, its primary function is to remain non-conductive until a specific voltage threshold is reached, at which point the gas ionizes and establishes a low-impedance path.

Breakdown Voltage

The instantaneous breakdown voltage of the 1B32 varies depending on whether the voltage pulse is an initial event or part of a recurrent cycle:

- **Initial Peak Breakdown Voltage:** 1000 Volts
- **Recurrent Peak Breakdown Voltage:** 875 Volts

These values indicate the voltage levels required to initiate ionization and spark-over. The lower recurrent peak voltage reflects the effect of residual ionization or thermal changes from preceding discharges.

Voltage Drop and Capacitance

Once breakdown occurs and the spark gap is conducting, the voltage drop across the electrodes decreases significantly from the breakdown level to a steady-state operating value:

- **Voltage Drop:** 150 to 350 Volts

Before breakdown, the tube presents a very low capacitance to the circuit, minimizing its loading effect in high-frequency or sensitive applications:

- **Interelectrode Capacitance:** 1 to 1.6 μF (micro-microfarads, equivalent to picofarads)

Environmental Ratings

The 1B32 is rated to operate reliably across a broad thermal envelope, making it suitable for demanding environmental conditions:

- **Ambient Temperature Range:** -50 to +100°C

Technical Summary

The **1B32/532A** is a two-electrode, gas-filled spark gap tube designed for overvoltage protection and voltage-limiting service. It features an initial peak breakdown voltage of 1000 V, a recurrent peak breakdown voltage of 875 V, and an active voltage drop between 150 and 350 V during conduction. With an extremely low interelectrode capacitance of 1 to 1.6 μF , it introduces minimal capacitive loading when non-conducting. The mechanical design includes a threaded top terminal (10-32 THD) and a solid bottom terminal, allowing for secure mounting in any position. It is rated for operation in ambient temperatures ranging from -50 to +100°C.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1947 Westinghouse

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1947 WESTINGHOUSE

Section 1 · SurgeProtector

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
BreakdownOrStartingVoltage	1000 V	—

CHARACTERISTIC

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MaintainingOrVoltageDrop	350 V	—
RecurrentBreakdownVoltage	875 V	—
VoltageDropMinimum	150 V	—

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