



ELECTRONIC TUBE REFERENCE

150B3

Voltage Regulator electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

VOLTAGEREGULATOR

Miniature 150 V gas voltage stabilizer with auxiliary priming electrode for dependable ignition and operation over approximately 2-20 mA.

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

SECTION 1 Voltage Regulator	
MINIMUM REGULATOR CURRENT	2 mA
MAXIMUM REGULATOR CURRENT	20 mA
STARTING VOLTAGE	170 V
MAINTAINING VOLTAGE	152.5 V
<i>Published Mullard/Ferranti ratings and characteristics promoted where applicable; additional electrical values retained as parameters.</i>	

150B3 — Miniature Gas-Filled Voltage Stabiliser

The **150B3** is a miniature, cold-cathode, gas-filled voltage stabiliser tube designed to provide a regulated voltage output. It incorporates an auxiliary ignition electrode (priming anode) to ensure reliable striking and stable operation.

Construction, Physical Dimensions, and Base Connection

The 150B3 is constructed in a miniature glass envelope. As a cold-cathode, gas-filled device, it does not contain a heater or filament.

Physical Dimensions

- **Maximum overall length:** 54.5 mm
- **Maximum seated height:** 47.5 mm
- **Maximum bulb diameter:** 19 mm

Base and Pin Configuration

The tube features a standard **B7G** miniature 7-pin base. The internal electrodes are connected to multiple pins to facilitate circuit layout and mechanical mounting:

- **Cathode (k):** Pins 1, 2, and 3 (internally common)
- **Auxiliary Ignition Electrode / Priming Anode (a_ign):** Pin 4
- **Anode (a):** Pins 5, 6, and 7 (internally common)

Electrical Characteristics and Operating Conditions

The 150B3 is designed to maintain a stable voltage across its terminals over a specified range of operating currents. Its characteristics are measured at a nominal current of 10 mA.

Ignition and Burning Characteristics

- **Maximum Ignition Voltage:** 170 V. This is the maximum voltage required to initiate conduction (strike the tube) under normal ambient light conditions of 5 to 50 foot-candles. A supply voltage of at least this value must be available to ensure reliable ignition. In complete darkness, a delay in igniting the tube may occur.
- **Burning Voltage:** 145 V to 160 V. This is the operating voltage across the tube once ignition has occurred, with variation from tube to tube falling within this range.
- **Voltage Regulation:** The maximum variation in burning voltage over the entire operating current range of 2.0 mA to 20 mA is 5.0 V.
- **Noise Generation:** The noise voltage generated by the tube over a frequency range of 50 to 5,000 Hz (c/s) at any constant current between 2.0 mA and 20 mA is less than 15 mV r.m.s.

Auxiliary Ignition Electrode (Priming Anode) Operation

The auxiliary ignition electrode is used to lower the main ignition voltage and ensure reliable starting.

- **Standard Connection:** The auxiliary ignition electrode (priming anode) is typically connected to a 240 V line through a nominal **270 kΩ** resistor.

- **Alternative Connection (Unused Priming Anode):** If the auxiliary ignition electrode is not utilized in its standard configuration, it must be connected to the main anode through a **68 kΩ** resistor. Under this alternative condition, a line voltage of at least 240 V is required to strike the tube.
- **Maximum Auxiliary Anode Current:** 0.5 mA.
- **Maximum Auxiliary Anode Ignition Voltage:** 240 V.

Limiting Values (Absolute Ratings)

To ensure proper operation and prevent damage to the tube, the following absolute maximum and minimum limits must be observed:

Parameter	Value
Minimum voltage necessary for ignition	170 V
Maximum burning current	20 mA
Minimum burning current	2.0 mA
Maximum auxiliary anode current	0.5 mA
Maximum inverse voltage (to prevent reverse current)	140 V

To obtain a good operating life, reverse current must not be drawn from the tube. This condition is satisfied if any inverse voltage applied to the tube does not exceed 140 V.

Technical Summary

The **150B3** is a miniature gas-filled voltage stabiliser featuring a B7G base and an auxiliary ignition electrode. It provides a stable burning voltage between 145 V and 160 V over a current range of 2.0 mA to 20 mA, with a maximum regulation variation of 5.0 V. The inclusion of the priming anode allows for reliable ignition at 170 V under typical ambient light, while requiring a 240 V line when configured with a 270 kΩ or 68 kΩ resistor. With low noise generation (under 15 mV r.m.s.) and strict limits on inverse voltage (140 V maximum) and operating currents, the 150B3 is a highly specialized component for voltage regulation applications.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Mullard

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

1963 MULLARD

Section 1 · Voltage Regulator

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition voltage minimum	170 V	—
Burning current maximum	20 mA	—
Burning current minimum	2 mA	—
Auxiliary anode current maximum	0.5 mA	—
Auxiliary-anode ignition voltage maximum	240 V	—
Ignition voltage maximum	170 V	—
Auxiliary ignition series resistor nominal	68 kohm	—

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Burning voltage range	145 to 160 V	—
Burning-voltage change maximum over 2-20 mA	5 V	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Primed gas voltage stabilizer	—