

ELECTRONIC TUBE REFERENCE

150C1

Voltage Regulator electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

VOLTAGEREGULATOR

Cold-cathode gas voltage stabilizer providing a nominal 150 V reference or regulated supply over approximately 5-40 mA.

GENERAL CHARACTERISTICS

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

SECTION RATINGS

SECTION1 Voltage Regulator	
REGULATOR VOLTAGE	150 V
MINIMUM REGULATOR CURRENT	5 mA
MAXIMUM REGULATOR CURRENT	40 mA
STARTING VOLTAGE	205 V
MAINTAINING VOLTAGE	150 V
DYNAMIC IMPEDANCE	200 Ω
Cold-cathode gas-filled Philips voltage stabilizer/reference tube.	

150C1 and 150C1K Voltage Stabiliser Tubes

Overview

The **150C1** and its variant **150C1K** are voltage stabiliser tubes designed to maintain a constant voltage across a specified current range. Manufactured by Philips, these tubes serve to regulate voltage in

electronic circuits. The family includes two distinct physical configurations: the standard 150C1, which utilizes a "P" base, and the [150C1K](#), which features an 8-pin Octal base.

Physical Construction and Basing

The 150C1 and [150C1K](#) differ primarily in their base types and physical dimensions. Both variants share a maximum bulb diameter of 43 mm (with some documentation specifying up to 44 mm for the 150C1) and a maximum seated height of 99 mm. The [150C1K](#) variant, due to its octal base, has a specified maximum overall height of 114 mm.

The electrical connections for the two variants are assigned as follows:

150C1 (P Base)

The 150C1 uses a "P" type base. The active pin connections are:

- **Pin 5:** Cathode (k)
- **Pin 8:** Anode (a)

150C1K (Octal 8-Pin Base)

The [150C1K](#) uses an 8-pin Octal base. The active pin connections are:

- **Pin 2:** Cathode (k)
- **Pin 5:** Anode (a)

Electrical Characteristics

The electrical specifications of the 150C1 series are documented across different production eras, showing slight variations in typical operating parameters.

Ignition and Operating Voltages

To initiate conduction, the tube requires a starting (ignition) voltage (Vign) of less than or equal to 205 V. This ignition characteristic is sensitive to environmental conditions: in the presence of some ambient illumination, the maximum ignition voltage is 205 V, but in complete darkness, a considerable delay in igniting the tube may occur.

Once ignited, the tube exhibits the following voltage characteristics:

- **Average Operating Voltage (Va):** 150 V
- **Operating Voltage Range (at Ia = 20 mA):** Minimum of 144 V to a maximum of 164 V (with some specifications listing a range of 146 V to 166 V)
- **A.C. Resistance:** 200 Ω

Regulation and Current Range

The tube is designed to operate within a current range of 5 mA to 40 mA. Within this range, the regulation characteristics are defined as:

- **Average Voltage Variation ($I_a = 5 - 40$ mA):** 2.5 V typical, with a maximum variation of 8 V.
- **Mean Current (I_a):** Recommended maximum of 20 mA for typical operation.

Parameter	Value / Range	Conditions / Notes
Starting Voltage (Vign)	≤ 205 V	Requires ambient light; delayed in darkness
Average Operating Voltage (Va)	150 V	Typical
Operating Voltage ($I_a = 20$ mA)	144 V to 164 V	Minimum / Maximum limits
Voltage Regulation ($I_a = 5 - 40$ mA)	≤ 8 V	Maximum variation (2.5 V typical)
A.C. Resistance	200..	Typical

Limiting Values and Operating Precautions

To ensure proper operation and prevent damage, the following absolute limiting values and operating conditions must be strictly observed:

- **Maximum Operating Current (I_a):** 40 mA (absolute maximum)
- **Minimum Operating Current (I_a):** 5 mA (absolute minimum)
- **Polarity:** The tube must be operated exclusively with the cathode connected to the negative terminal and the anode connected to the positive terminal.
- **Mechanical Stress:** The tube must not be subjected to severe shock or continuous vibration.

Technical Summary

The **150C1** and **150C1K** are specialized voltage stabiliser tubes designed to provide a stable nominal operating voltage of 150 V. Operating within a current range of 5 mA to 40 mA, they offer a maximum voltage variation of 8 V (typically 2.5 V) and an AC resistance of 200.. The 150C1 utilizes a P-type base, while the **150C1K** uses an 8-pin Octal base. Proper operation requires correct polarity (negative cathode, positive anode), ambient light to prevent ignition delays, and protection from mechanical shock and vibration.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1957 Philips Receiving and Amplifying Tubes

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

1957 PHILIPS RECEIVING AND AMPLIFYING TUBES

Section 1 · Voltage Regulator

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Operating Voltage	150 V	—
Regulation	8 V	Published current range

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Ignition Voltage Maximum	205 V	—
Minimum Operating Current	5 mA	—
Maximum Operating Current	40 mA	—

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Philips Electron Tubes Handbook V2

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

1963 PHILIPS ELECTRON TUBES HANDBOOK V2

Section 1 · Voltage Regulator

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maintaining voltage at 20 mA	144–164 V	—
Voltage regulation	—8 V	I _a =5-40mA

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1999 Philips 0-D

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

1999 PHILIPS 0-D

Section 1 · Voltage Regulator

CHARACTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Average operating voltage	150 V	—
Maximum regulation variation	8 V	—
Dynamic AC resistance	200 ohm	—
Operating voltage range	146-166 V	—

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum starting voltage	205 V	—
Minimum operating current	5 mA	—
Maximum operating current	40 mA	—

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