

ELECTRONIC TUBE REFERENCE

13D1

Voltage - Dual Triode (similar) electronic tube

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
TRIODE-TRIODE

Twin triode intended for general voltage-amplifier and related signal applications, using two triode sections in a series-heater form suited to equipment with controlled heater strings.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	9
NOMINAL HEATER	25 V / 150 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	7700 Ω
TRANSCONDUCTANCE	0.0026 S
AMPLIFICATION FACTOR	20
Representative of two identical sections.	

SECTION2 Triode	
PLATE RESISTANCE	7700 Ω
TRANSCONDUCTANCE	0.0026 S
AMPLIFICATION FACTOR	20
Second identical physical triode section; added to align rows with SectionCount.	

13D1 — Industrial Double Triode Vacuum Tube

An industrial-grade, indirectly heated double triode featuring separate cathodes and an octal base, designed for high-reliability applications in aircraft and industrial equipment.

Overview

The **13D1** is a specialized double triode vacuum tube designed by Brimar for use in aircraft and industrial systems where operational reliability is critical. It was introduced as a direct replacement for and supersedes the **25SN7GT** designation.

The 13D1 contains two independent triode sections with separate cathodes, sharing a common heater. Except for its specific heater ratings, the electrical characteristics of the 13D1 are nominally identical to those of the standard **6SN7GT** twin triode. This allows the 13D1 to be used in similar circuit topologies—such as voltage amplifiers, phase inverters, and oscillators—provided the heater supply is configured for its specific voltage and current requirements.

Construction, Physical Dimensions, and Pinout

The 13D1 is constructed with two separate triode structures housed in a glass envelope with an eight-pin octal base. The separate cathodes allow each triode section to be biased independently, preventing unwanted coupling between stages.

Physical Dimensions

- **Maximum Overall Height:** 2 7/8 inches (73 mm)
- **Maximum Diameter:** 1 5/16 inches (33.3 mm)

Heater Ratings

The heater of the 13D1 is designed for series-string or higher-voltage industrial power supplies, distinguishing it from the 6.3 V heater of the **6SN7GT**.

- **Heater Voltage:** 25 V
- **Heater Current:** 0.15 A
- **Calculated Heater Power:** 3.75 W (calculated as 25 V × 0.15 A)

Pin Connections

The tube utilizes a standard octal base with the following pin assignments (viewed from the underside of the base):

Pin	Electrode Connection	Symbol
1	Grid, Triode Section 2	g''

Pin	Electrode Connection	Symbol
2	Anode, Triode Section 2	a''
3	Cathode, Triode Section 2	k''
4	Grid, Triode Section 1	g'
5	Anode, Triode Section 1	a'
6	Cathode, Triode Section 1	k'
7	Heater	h
8	Heater	h

Electrical Characteristics and Operating Points

The 13D1 operates as a medium-mu double triode. The manufacturer specifies two typical Class A operating points for each individual triode section:

Parameter	Operating Point A	Operating Point B
Anode Voltage	100 V	250 V
Grid Voltage	0 V	-8 V
Cathode Bias Resistor	—	1,100 Ω
Anode Current	10.6 mA	9.0 mA
Anode Impedance	8,000 Ω	7,700 Ω
Mutual Conductance	2.5 mA/V	2.6 mA/V
Amplification Factor (μ)	20	20

The relationship between the parameters is consistent with standard triode operation, where the amplification factor (μ) is approximately equal to the product of mutual conductance (g_m) and anode impedance (r_p). For Operating Point B, this is illustrated by the calculation:

$$\mu \approx 0.0026 \text{ A/V} \times 7,700 \text{ } \Omega = 20.02$$

For further detailed characteristic curves and extended operating data, the tube shares nominal behavior with the [6SN7GT](#).

Related Designations and Applications

The 13D1 was specifically engineered to meet the demanding environmental and reliability requirements of aviation and industrial systems. It directly supersedes the [25SN7GT](#) and can be used as a drop-in

replacement in any circuit designed for that type.

Because its electrical characteristics (excluding the heater) are nominally identical to the [**6SN7GT**](#), the 13D1 can perform the same circuit functions—such as voltage amplification, phase inversion, and oscillation—provided the power supply is configured to deliver the required 25 V, 0.15 A heater service instead of the 6.3 V, 0.6 A service required by the [6SN7GT](#).

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1958 Brimar Radio Valve No 7

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

1958 BRIMAR RADIO VALVE NO 7

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Voltage	250 V	Each section
Anode Current	9 mA	Each section
Grid Voltage	-8 V	Each section
Cathode Bias Resistor	1100 ohm	Each section

TUBE TINKER

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