

ELECTRONIC TUBE REFERENCE

1633

Voltage - Dual Triode (similar) electronic tube

CONSOLIDATED TECHNICAL DATA
2 SECTIONS
CONSTRUCTION
TRIODE-TRIODE

Medium-mu twin triode with a 25 V, 150 mA heater, intended for Class-A voltage-amplifier service in series-heater receiving equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8BD	BASE PINS	8
NOMINAL HEATER	25 V / 150 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

8BD - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – 2G1	B	G1 – Control Grid	CONNECTED
PIN2 – 2P	B	P – Plate (Anode)	CONNECTED
PIN3 – 2K	B	K – Cathode	CONNECTED
PIN4 – 1G1	A	G1 – Control Grid	CONNECTED
PIN5 – 1P	A	P – Plate (Anode)	CONNECTED
PIN6 – 1K	A	K – Cathode	CONNECTED
PIN7 – H	–	H – Heater	CONNECTED
PIN8 – H	–	H – Heater	CONNECTED

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	6900 Ω
TRANSCONDUCTANCE	0.0026 S
AMPLIFICATION FACTOR	18
MAXIMUM PLATE VOLTAGE	300 V
<i>Promoted from printed maximum-rating/characteristic columns; additional published values retained in TUBE_SECTION_PARAMETER.</i>	

SECTION2 Triode	
PLATE RESISTANCE	6900 Ω
TRANSCONDUCTANCE	0.0026 S
AMPLIFICATION FACTOR	18
MAXIMUM PLATE VOLTAGE	300 V
<i>Physical section restored under current one-row-per-physical-section policy.</i>	

1633 — Medium-Mu Twin Triode Vacuum Tube

The **1633** is an indirectly heated, medium-mu twin triode vacuum tube designed for Class A amplifier service. It features two independent triode sections enclosed within a single envelope, sharing a common heater but having separate cathode, grid, and plate connections. The tube is characterized by its 25.0 V heater, octal base configuration, and moderate amplification factor, making it suitable for various voltage amplification and driver applications where a dual-triode configuration is advantageous.

Construction, Heater, and Base Connections

The 1633 is constructed with two electrically independent triode units. Each section has its own separate cathode, control grid, and plate, allowing them to be operated in independent circuits or in cascade. The cathodes are indirectly heated, coated unipotential types.

The heater is designed for series-string or high-voltage heater circuits, requiring a nominal voltage of **25.0 V** and a current of **0.15 A**. This corresponds to a calculated heater power consumption of:

$$\text{Heater Power} = 25.0 \text{ V} \times 0.15 \text{ A} = 3.75 \text{ W}$$

The tube utilizes an **8BD** octal base connection scheme and is housed in an envelope designated by outline drawing **9-11**. The 8BD basing arrangement provides symmetrical pin assignments for the two triode sections, viewed from the bottom of the base:

Pin Number	Electrode Connection
Pin 1	Heater

Pin Number	Electrode Connection
Pin 2	Plate (Triode Section 2)
Pin 3	Grid (Triode Section 2)
Pin 4	Cathode (Triode Section 2)
Pin 5	Cathode (Triode Section 1)
Pin 6	Grid (Triode Section 1)
Pin 7	Plate (Triode Section 1)
Pin 8	Heater

This symmetrical layout places the heater connections on the outer pins (Pins 1 and 8) adjacent to the locating key, while the active electrodes for Triode 1 are on Pins 5, 6, and 7, and those for Triode 2 are on Pins 2, 3, and 4.

Electrical Characteristics and Operating Points

The 1633 is rated for a maximum plate voltage of **300 V**. Under typical Class A amplifier operating conditions, each individual triode section exhibits the following electrical characteristics:

Parameter	Value (Per Section)
Plate Voltage	250 V
Negative Grid Voltage	-8 V
Plate Current	11.5 mA
Plate Resistance (r_p)	6,900 Ω (approximate)
Transconductance (g_m)	2,600 μmhos (2.6 mA/V)
Amplification Factor (μ)	18

The relationship between the amplification factor (μ), transconductance (g_m), and plate resistance (r_p) can be verified mathematically using the standard triode formula:

$$\mu \approx g_m \times r_p$$

Using the typical values provided:

$$0.0026 \text{ S} \times 6,900 \Omega = 17.94$$

This calculated value closely aligns with the published nominal amplification factor of 18. The moderate plate resistance of approximately 6,900 Ω combined with a transconductance of 2,600 μmhos allows each section to deliver clean voltage amplification with reasonable drive capability.

Technical Summary

The **1633** is an octal-based, indirectly heated medium-mu twin triode featuring a **25.0 V, 0.15 A** heater and a maximum plate voltage rating of **300 V**. With its independent triode sections, the tube provides versatile performance in Class A amplifier service. At a typical operating point of 250 V on the plate and a -8 V grid bias, each section draws 11.5 mA of plate current, providing an amplification factor of 18, a transconductance of 2,600 μmhos , and an approximate plate resistance of 6,900 Ω . Its symmetrical 8BD base connection simplifies circuit layout for dual-channel or cascaded amplifier designs.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

195X General Electric Essential Characteristics

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

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA;EachSection
Control-grid voltage	-8 V	ClassA;EachSection
Plate current	1.5 mA	ClassA;EachSection

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	6900 Ω	EachSection
Transconductance	2600 μS	EachSection
Amplification factor	18	EachSection

TUBE TINKER

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and their source documents.

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