

ELECTRONIC TUBE REFERENCE

1AD5

Voltage - Pentode or Tetrode (under 100V) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Directly heated sharp-cutoff RF pentode for economical battery-operated receiver amplification with a 1.25 V, 40 mA filament.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8CP	BASE PINS	8
NOMINAL HEATER	1.25 V / 40 mA	PARALLEL HEATER	– / –
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Pentode	
PLATE RESISTANCE	700000 Ω
TRANSCONDUCTANCE	0.000735 S
MAXIMUM PLATE VOLTAGE	67.5 V
MAXIMUM SCREEN VOLTAGE	67.5 V
Sharp-cutoff RF pentode.	

1AD5 — Subminiature Sharp-Cutoff RF Pentode

The **1AD5** is a subminiature, directly heated sharp-cutoff radio frequency (RF) pentode. Designed for low-power applications, it is primarily utilized as an RF pentode and Class A amplifier in compact electronic equipment where space and power consumption are critical constraints.

Physical Construction and Filament Ratings

The 1AD5 features a subminiature envelope with a physical configuration defined by the 3-5 outline drawing. It utilizes a directly heated filamentary cathode designed for low-voltage DC operation, making it highly suitable for battery-operated devices.

Filament Parameter	Value
Filament Voltage (DC)	1.25 V
Filament Current	0.04 A
Calculated Filament Power	0.05 W

The calculated filament power of 0.05 W (50 mW) is derived directly from the nominal filament voltage of 1.25 V and the nominal current of 0.04 A ($1.25\text{ V} \times 0.04\text{ A}$).

Base Connection and Pinout

The tube utilizes an **8CP** base connection. The pinout configuration provides dual connections for both the control grid (Grid 1) and the screen grid (Grid 2). The pin assignments, viewed from the bottom of the tube, are as follows:

Pin Number	Electrode Connection
1	Filament negative (F-)
2	Grid 1 (G1)
3	Grid 3 (G3)
4	Grid 2 (<u>G2</u>)
5	Plate (P)
6	Grid 2 (<u>G2</u>)
7	Grid 1 (G1)
8	Filament positive (F+)

Interelectrode Capacitances

The internal shielding and electrode geometry of the 1AD5 result in very low grid-to-plate capacitance, which is essential for stable RF amplification. The typical direct interelectrode capacitances are:

- **Input Capacitance:** 1.9 μF
- **Output Capacitance:** 3.0 μF
- **Grid-to-Plate Capacitance:** 0.009 μF

Maximum Ratings

To ensure reliable operation and prevent premature failure, the operating voltages of the 1AD5 must be maintained within the specified maximum limits. These maximum ratings are absolute values:

- **Maximum Plate Voltage:** 67.5 V
- **Maximum Screen (Grid 2) Voltage:** 67.5 V

Typical Operation and Electrical Characteristics

The 1AD5 is characterized for Class A amplifier service under two distinct operating conditions, representing high-voltage and low-voltage configurations. In both typical operating points, the control grid (Grid 1) is operated at zero bias.

Parameter	Condition 1 (High Voltage)	Condition 2 (Low Voltage)
Plate Voltage	67.5 V	30 V
Screen Voltage (Grid 2)	67.5 V	30 V
Grid Voltage (Grid 1)	0 V	0 V
Plate Current	1.85 mA	0.45 mA
Screen Current	0.75 mA	0.16 mA
Plate Resistance (R_p)	~700,000 Ω	~700,000 Ω
Transconductance (G_m)	735 μ mhos	430 μ mhos

Under both operating conditions, the plate resistance remains approximately 700,000 Ω , while the transconductance scales from 430 μ mhos at 30 V up to 735 μ mhos at 67.5 V.

Technical Summary

The **1AD5** is a subminiature, directly heated sharp-cutoff RF pentode featuring an 8CP base and a highly efficient 1.25 V, 0.04 A filamentary cathode. With maximum plate and screen ratings of 67.5 V, it is optimized for low-voltage Class A RF amplification. Its dual-pin connections for Grid 1 and Grid 2, combined with an extremely low grid-to-plate capacitance of 0.009 μ F, make it a robust choice for high-frequency applications within its power class.

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 · Pentode

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Input capacitance	1.9 pF	—
Output capacitance	3 pF	—
Grid-to-plate capacitance	0.009 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	67.5 V	ClassA
Screen voltage	67.5 V	ClassA
Grid voltage	0 V	ClassA
Plate current	1.85 mA	ClassA
Screen current	0.75 mA	ClassA
Plate voltage	30 V	ClassA
Screen voltage	30 V	ClassA
Grid voltage	0 V	ClassA
Plate current	0.45 mA	ClassA
Screen current	0.16 mA	ClassA
Transconductance	430 uS	ClassA

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