



ELECTRONIC TUBE REFERENCE

1AB5

Voltage - Pentode Remote Cutoff (single) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Remote-cutoff RF pentode using a 1.2 V, 0.13 A filament. Designed for variable-gain radio-frequency amplification, its remote-cutoff characteristic makes it particularly suitable for controlled RF/IF stages in low-voltage equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8BR	BASE PINS	8
NOMINAL HEATER	1.2 V / 130 mA	PARALLEL HEATER	– / –
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Pentode	
PLATE RESISTANCE	125000 Ω
TRANSCONDUCTANCE	0.00135 S
MAXIMUM PLATE VOLTAGE	150 V
MAXIMUM SCREEN VOLTAGE	150 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM SCREEN DISSIPATION	0.3 W
Remote-cutoff RF pentode.	

1AB5 — Remote-Cutoff RF Pentode

The **1AB5** is a filamentary, remote-cutoff RF pentode designed primarily for use as a mixer or radio-frequency (RF) amplifier. It is particularly suited for applications requiring higher transconductance than

the [1LN5](#). Featuring a coated filament designed for low-power DC operation, the 1AB5 is constructed in a compact glass envelope and is documented with both five-pin and eight-pin lock-in base configurations.

Mechanical Construction, Base, and Pinout

The 1AB5 is constructed with a T-9 glass bulb and can be operated in any mounting position. Its physical dimensions include a maximum overall length of 2-9/32 inches, a maximum seated height of 1-3/4 inches, and a maximum diameter of 1-3/16 inches.

The tube is documented with two distinct base and pinout configurations:

5BP Base Connection

In this configuration, the tube utilizes a 5-pin arrangement designated as 5BP:

- **Pin 1:** Filament Negative (F-)
- **Pin 2:** Plate (P)
- **Pin 3:** Grid #2 ([G2](#) / Screen Grid)
- **Pin 4:** Grid #1 (G1 / Control Grid)
- **Pin 5:** Filament Positive (F+)

5BF Lock-In Base Connection

Alternatively, the tube is available in an 8-pin lock-in construction designated as 5BF:

- **Pin 1:** Filament Positive (F+)
- **Pin 2:** Plate (P)
- **Pin 3:** Grid #2 ([G2](#) / Screen Grid)
- **Pin 4:** No Connection (NC)
- **Pin 5:** No Connection (NC)
- **Pin 6:** Grid #1 (G1 / Control Grid)
- **Pin 7:** Filament Negative (F-)
- **Pin 8:** Filament Negative (F-)

Filament and Interelectrode Capacitances

The 1AB5 features a coated filament designed for battery-operated or low-power portable equipment.

Filament Parameter	Value
Filament Voltage (DC)	1.2 V
Filament Current	0.130 A (130 mA)

Direct interelectrode capacitances are measured with an RMA Shield #308 connected to the negative filament terminal:

- **Grid to Plate (G1 to P):** 0.25 pF (maximum)
- **Input (G1 to F + G2 + G3):** 2.8 pF
- **Output (P to F + G2 + G3):** 4.2 pF

Maximum Ratings

The maximum ratings for the 1AB5 are established under the RMA Standard MB-210 system:

Rating Parameter	Absolute Maximum
Plate Voltage	150 V
Grid #2 (Screen) Voltage	150 V
Positive DC Grid #1 Voltage	0 V
Plate Dissipation	1.0 W
Grid #2 Dissipation	0.3 W

Typical Operating Conditions and Characteristics

The 1AB5 can be operated under Class A (or Class A1) amplifier conditions. Two typical operating points are documented, representing operation at 90 V and 150 V:

Parameter	90 V Operating Point	150 V Operating Point
Filament Voltage (DC)	1.2 V	1.2 V
Filament Current	130 mA	130 mA
Plate Voltage	90 V	150 V
Grid #2 (Screen) Voltage	90 V	150 V
Grid #1 (Control Grid) Voltage	0 V	-1.5 V
Grid #1 Resistor (Self Bias)	1.0 M Ω	170 Ω
Plate Current	3.5 mA	6.8 mA
Grid #2 Current	0.8 mA	2.0 mA
Plate Resistance (Approx.)	275,000 Ω	125,000 Ω
Transconductance	1100 μ mhos	1350 μ mhos

Remote-Cutoff Characteristics

As a remote-cutoff pentode, the transconductance of the 1AB5 decreases gradually as negative grid bias is increased. The control grid voltage required to reduce transconductance to specific levels is documented as follows:

- **At 90 V operation:**
 - Grid #1 voltage for a transconductance of 725 μmhos : -3 V (approximate)
 - Grid #1 voltage for a transconductance of 10 μmhos : -14 V (approximate)
- **At 150 V operation:**
 - Grid #1 voltage for a transconductance of 725 μmhos : -6 V (approximate)
 - Grid #1 voltage for a transconductance of 10 μmhos : -23 V (approximate)

Analysis of Characteristic Curves

The behavior of the 1AB5 across varying electrode potentials is illustrated by its characteristic curves:

- **Plate Characteristics ($E_{c2} = 150 \text{ V}$):** The plate current curves flatten significantly once the plate voltage rises above approximately 50 V, demonstrating the high plate resistance characteristic of a pentode. Grid #1 current is plotted for a positive bias of +2 V. The screen grid current is high at low plate voltages but drops to a stable, lower level once the plate voltage exceeds 50 V.
- **Plate Characteristics ($E_{c2} = 90 \text{ V}$):** These curves exhibit a similar profile to the 150 V curves, with both plate and screen currents scaled down proportionally.
- **Transfer Characteristics:** The curves plotting plate current, screen current, transconductance, and plate resistance against Grid #1 voltage show that transconductance peaks near 0 V bias, reaching up to 2000 μmhos . Conversely, the plate resistance drops sharply as the control grid bias approaches 0 V.

Technical Summary

The **1AB5** is a filamentary remote-cutoff RF pentode designed for mixer and RF amplifier applications. Operating with a 1.2 V, 130 mA DC filament, it provides a higher transconductance than the **1LN5**. The tube is housed in a T-9 glass envelope with either a 5-pin (5BP) or an 8-pin lock-in (5BF) base. Under typical Class A1 conditions at 150 V, it delivers a transconductance of 1350 μmhos and a plate resistance of 125,000 Ω , with remote-cutoff characteristics extending down to -23 V for a transconductance of 10 μmhos .

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	2.8 pF	—
Output capacitance	4.2 pF	—
Grid-to-plate capacitance	0.25 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	150 V	ClassA
Screen voltage	150 V	ClassA
Grid voltage	-1.5 V	ClassA
Plate current	6.8 mA	ClassA
Screen current	2 mA	ClassA
Plate voltage	90 V	ClassA
Screen voltage	90 V	ClassA
Grid resistor	1 Mohm	ClassA
Plate current	3.5 mA	ClassA
Screen current	0.8 mA	ClassA
Plate resistance	275000 ohm	ClassA
Transconductance	1100 uS	ClassA

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	150 V	ClassA
Grid 2 voltage	150 V	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to plate	0.025 pF	—

TUBE TINKER

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