



ELECTRONIC TUBE REFERENCE

1AC5

Power - Pentode (NOT beam) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
PENTODE

Ultra-low-power directly heated pentode for battery audio-output service from plate supplies as low as 45-67.5 V.

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

SECTION 1 Pentode	
PLATE RESISTANCE	150000 Ω
TRANSCONDUCTANCE	0.00075 S
MAXIMUM PLATE VOLTAGE	67.5 V
MAXIMUM SCREEN VOLTAGE	67.5 V
<i>Power amplifier pentode.</i>	

1AC5 — Subminiature Power Amplifier Pentode

The **1AC5** is a subminiature power amplifier pentode designed for low-power applications. It features a directly heated filamentary cathode designed for efficient DC operation, making it suitable for compact, battery-operated equipment where power consumption must be minimized.

Construction, Filament, and Base Configuration

The 1AC5 is constructed in a subminiature envelope, designated by outline drawing 3-5. It utilizes a directly heated filament cathode that operates on a nominal DC supply.

Filament Parameter	Value
Filament Voltage (DC)	1.25 V
Filament Current	0.04 A (40 mA)
Calculated Filament Power	0.05 W (50 mW)

The calculated filament power is derived from the nominal ratings: $\text{Power} = 1.25 \text{ V} \times 0.04 \text{ A} = 0.05 \text{ W}$

The tube features an **8CP** base connection. The pin assignments, viewed from the bottom of the base, are as follows:

Pin Number	Electrode Connection
Pin 1	Filament Negative (F-)
Pin 2	Grid No. 1 (G1)
Pin 3	Grid No. 2 (G2)
Pin 5	Plate (P)
Pin 8	Filament Positive (F+)

Maximum Ratings

The maximum ratings for the 1AC5 are established under the Absolute Maximum System. Operating the device beyond these limits may impair its performance or longevity.

Parameter	Absolute Maximum Rating
Plate Voltage	67.5 V max
Screen Voltage (Grid No. 2)	67.5 V max

Typical Operation and Electrical Characteristics

The 1AC5 is designed to operate as a Class A amplifier. The electrical characteristics and performance vary depending on the chosen operating voltage. Three typical operating conditions are documented, demonstrating the tube's performance at plate and screen potentials ranging from 30 V to 67.5 V.

Parameter	Operating Condition 1	Operating Condition 2	Operating Condition 3
Plate Voltage	67.5 V	45 V	30 V
Screen Voltage	67.5 V	45 V	30 V
Negative Grid Voltage	4.5 V	3.0 V	2.0 V
Plate Current	2.0 mA	1.0 mA	0.5 mA
Screen Current	0.4 mA	0.2 mA	0.1 mA
Plate Resistance (R_p)	~150,000 Ω	~170,000 Ω	~200,000 Ω
Transconductance (G_m)	750 μ mhos	600 μ mhos	450 μ mhos
Load Resistance	25,000 Ω	40,000 Ω	50,000 Ω
Power Output	0.050 W (50 mW)	0.015 W (15 mW)	0.005 W (5 mW)

As the operating voltages are reduced, the plate resistance increases from approximately 150,000 Ohms to 200,000 Ohms, while the transconductance decreases from 750 μ mhos to 450 μ mhos. This shift requires a higher load resistance (up to 50,000 Ohms at 30 V) and results in a lower power output, dropping from 50 mW at the maximum typical operating point to 5 mW at the lowest typical operating point.

Technical Summary

The **1AC5** is a subminiature, directly heated power amplifier pentode. It operates with a highly efficient **1.25 V, 40 mA** DC filament. Utilizing an **8CP** base connection, it provides reliable Class A audio or power amplification at low plate and screen voltages up to an absolute maximum of **67.5 V**. Depending on the operating point, it delivers between **5 mW and 50 mW** of power output into loads ranging from **25,000 Ω to 50,000 Ω** , making it an optimized choice for low-drain, low-voltage subminiature 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 · Pentode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	67.5 V	ClassA
Screen voltage	67.5 V	ClassA
Grid voltage	-4.5 V	ClassA
Plate current	2 mA	ClassA
Screen current	0.4 mA	ClassA
Load resistance	25000 ohm	ClassA
Power output	0.05 W	ClassA
Plate voltage	45 V	ClassA
Screen voltage	45 V	ClassA
Grid voltage	-3 V	ClassA
Plate current	1 mA	ClassA
Screen current	0.2 mA	ClassA
Plate resistance	170000 ohm	ClassA
Transconductance	600 uS	ClassA
Load resistance	40000 ohm	ClassA
Power output	0.015 W	ClassA
Plate voltage	30 V	ClassA
Screen voltage	30 V	ClassA
Grid voltage	-2 V	ClassA
Plate current	0.5 mA	ClassA
Screen current	0.1 mA	ClassA

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	200000 ohm	ClassA
Transconductance	450 uS	ClassA
Load resistance	50000 ohm	ClassA
Power output	0.005 W	ClassA