

ELECTRONIC TUBE REFERENCE

1622

Power - Beam (NOT sweep) electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
BEAMPOWER

6L6-related octal beam-power output tube documented for push-pull Class-A1 audio service, producing about 10 watts from two tubes at the published operating point.

GENERAL CHARACTERISTICS

BASE DESIGNATION	7AC	BASE PINS	7
NOMINAL HEATER	6.3 V / 900 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

7AC - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1 – Pin 1	–	–	NC · verified
PIN2 – Pin 2	–	H – Heater	CONNECTED · verified
PIN3 – Pin 3	A	P – Plate (Anode)	CONNECTED · verified
PIN4 – Pin 4	A	G2 – Screen Grid	CONNECTED · verified
PIN5 – Pin 5	A	G1 – Control Grid	CONNECTED · verified
PIN7 – Pin 7	–	H – Heater	CONNECTED · verified
PIN8 – Pin 8	A	BP – Beam-Forming Plate	CONNECTED · verified
PIN8 – Pin 8	A	K – Cathode	CONNECTED · verified

SECTION1 Beam Power	
PLATE RESISTANCE	4000 Ω
TRANSCONDUCTANCE	0.004 S
MAXIMUM PLATE VOLTAGE	300 V
MAXIMUM SCREEN VOLTAGE	250 V
MAXIMUM PLATE DISSIPATION	13.8 W
MAXIMUM SCREEN DISSIPATION	1.4 W
<i>Published promoted values applied where semantically applicable; additional table values retained in section parameters.</i>	

1622 — Beam Power Amplifier

A metal-envelope, indirectly heated beam power tube designed specifically for applications requiring high continuity of service and reliable operation.

Overview

The **1622** is a specialized beam power amplifier designed for industrial, commercial, or military applications where operational reliability and continuity of service are paramount. It is structurally and electrically similar to the standard **6L6** beam power tube but is rated conservatively to ensure long life and stable performance.

The tube features a coated unipotential cathode, a metal shell envelope, and a small wafer octal 7-pin base. It is primarily intended for use in push-pull Class A1 audio-frequency power amplifiers, where a pair of these tubes can deliver clean power output with exceptionally low harmonic distortion.

Construction, Physical Specifications, and Pinout

The 1622 is housed in a robust metal shell (MT-10 bulb designation) with an outline drawing reference of 10-1. This construction provides excellent self-shielding and physical durability.

Physical Dimensions

- **Maximum Overall Length:** 4-5/16 inches
- **Maximum Seated Height:** 3-3/4 inches
- **Maximum Diameter:** 1-9/16 inches (with an allowable tolerance of $\pm 1/16$ inch)
- **Mounting Position:** The tube can be operated in any mounting position.

Base Connection and Pinout

The tube utilizes a small wafer octal 7-pin base. The electrical connections, viewed from the bottom of the base (7AC diagram), are assigned as follows:

Pin Number	Electrode Connection
Pin 1	Metal Shell
Pin 2	Heater
Pin 3	Plate
Pin 4	Screen Grid (Grid No. 2)
Pin 5	Control Grid (Grid No. 1)
Pin 7	Heater
Pin 8	Cathode

Heater Ratings and Operating Limits

The indirectly heated cathode is powered by a heater designed for either alternating current (AC) or direct current (DC) operation.

- **Nominal Heater Voltage:** 6.3 V
- **Nominal Heater Current:** 0.9 A
- **Calculated Heater Power:** 5.67 W (calculated as the product of the nominal 6.3 V heater voltage and the 0.9 A heater current)
- **Voltage Fluctuation Limit:** The heater supply must be regulated so that the voltage never fluctuates to exceed 7.0 V.
- **Heater-Cathode Potential:** To prevent insulation breakdown and minimize noise, the potential difference between the heater and the cathode must be kept as low as possible.

Direct Interelectrode Capacitances

The approximate capacitances of the tube, measured with the metal shell (Pin 1) connected directly to the cathode (Pin 8), are:

- **Grid to Plate (Input to Output):** 0.4 μF
- **Input (Grid to Cathode, Heater, and Screen):** 10 μF
- **Output (Plate to Cathode, Heater, and Screen):** 12 μF

Maximum Ratings (Design-Center Values)

The maximum ratings for the 1622 are established under the Design-Center Rating System. These values represent limits that should not be exceeded under normal operating conditions:

- **Maximum Plate Voltage:** 300 V
- **Maximum Screen (Grid No. 2) Voltage:** 250 V
- **Maximum Plate Dissipation:** 13.8 W
- **Maximum Screen (Grid No. 2) Dissipation / Input:** 1.4 W

These ratings are more conservative than those of standard commercial 6L6 variants, reflecting the design focus on longevity and continuous-duty service.

Typical Operation and Class A1 Push-Pull Amplifier Service

The 1622 is optimized for push-pull Class A1 amplifier service. Under typical operating conditions, the parameters for a two-tube configuration are defined as follows:

Operating Conditions (For Two Tubes)

- **Plate Voltage:** 300 V
- **Screen (Grid No. 2) Voltage:** 250 V
- **D-C Grid (Grid No. 1) Voltage:** -20 V
- **Peak A-F Grid-to-Grid Voltage:** 40 V
- **Zero-Signal Plate Current:** 86 mA
- **Maximum-Signal Plate Current:** 125 mA
- **Zero-Signal Screen Current:** 4 mA
- **Maximum-Signal Screen Current:** 10.5 mA
- **Load Resistance (Plate-to-Plate):** 4000 Ω
- **Total Harmonic Distortion:** 1%
- **Power Output:** 10 W

Grid Circuit and Coupling Requirements

To maintain continuity of service and prevent thermal runaway or grid emission issues, the input coupling circuit must not introduce excessive resistance:

- **Coupling Methods:** Transformer- or impedance-coupling devices are highly recommended.
- **Fixed-Bias Operation:** Fixed bias may be used only if the grid circuit resistance does not exceed 0.1 M Ω .
- **Cathode-Bias Operation:** If the grid circuit resistance exceeds 0.1 M Ω , cathode bias is mandatory. Under cathode-bias conditions, the grid circuit resistance is permitted to be as high as 0.5 M Ω , provided that the heater voltage is tightly controlled and not allowed to rise more than 10% above its rated value (6.3 V) under any operating condition.

Characteristic Curves and Relationship to Type 6L6

The 1622 is classified as a special version of the [6L6](#) beam power tube. Consequently, the family of characteristic curves published for the standard Type [6L6](#) applies directly to the 1622. However, when interpreting these curves for circuit design, engineers must strictly observe the lower maximum ratings of the 1622 (such as the 300 V plate limit and 13.8 W plate dissipation limit) to ensure the tube operates within its safe, high-reliability envelope.

Technical Summary

The **1622** is a high-reliability, metal-shell beam power amplifier designed for continuous-duty applications. Operating with a 6.3 V, 0.9 A heater, it is optimized for push-pull Class A1 service. A pair of 1622 tubes under typical operating conditions delivers 10 watts of output power into a 4000-ohm plate-to-plate load with only 1% total harmonic distortion. Its design emphasizes strict grid-circuit resistance limits, heater voltage stability, and conservative maximum ratings (300 V plate, 250 V screen) to ensure long-term operational stability.

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 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	300 V	ClassA
Screen voltage	250 V	ClassA
Control-grid voltage	-20 V	ClassA
Plate current	86 mA	ClassA
Screen current	4 mA	ClassA
Load resistance	4000 Ω	ClassA
Power output	10 W	ClassA

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	4000 μS	ClassA

SOURCE OPERATING CONDITIONS

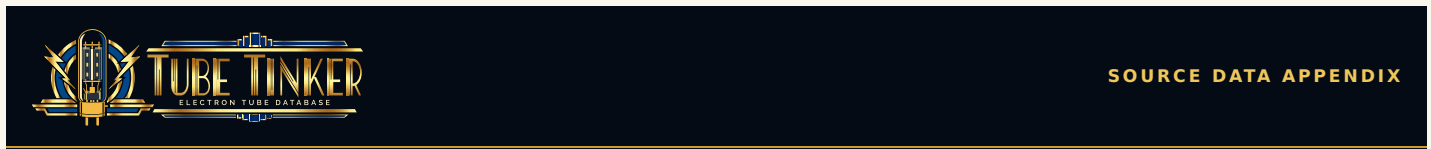
[SOURCE PDF](#)

1960 RCA Industrial and Communications Types

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

1960 RCA INDUSTRIAL AND COMMUNICATIONS TYPES

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	300 V	PushPull;ClassA1;TwoTubes
Screen supply	250 V	PushPull;ClassA1;TwoTubes
Grid bias	-20 V	PushPull;ClassA1;TwoTubes
Screen current	4 mA	PushPull;ClassA1;TwoTubes
Plate current	86 mA	PushPull;ClassA1;TwoTubes
Load resistance	4000 Ohm	PushPull;PlateToPlate
Power output	10 W	PushPull;ClassA1;TwoTubes



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 RCA HB3 Binder 3 of 7

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

1971 RCA HB3 BINDER 3 OF 7

Section 1 · Beam Power

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Voltage	6.3 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Current	0.9	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Grid to Plate	0.4	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Pin 1 -Shell – published value 1	1	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Pin 1 -Shell – published value 2	5	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Pin 2 -Heater – published value 1	2	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Pin 2 -Heater – published value 2	7	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Pin 3 -Plate	3	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Pin 4 -Screen – published value 1	4	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Pin 4 -Screen – published value 2	0	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Plate Dissipation	13.8 mA	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Plate Voltage	300 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Screen Voltage	250 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
D-C Grid Voltage ~	-20 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Peak A-F Grid-to-Grid Voltage	40 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Zero-Sig. Screen Current	4 mA	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Load Resistance (plate to plate)	4000 ohm	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Power Output	10 W	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
' The heater volts a should never fluctuate so that it exceeds 7 volts	7 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
sistance not to ezc eetl 0.5 megohm, provitled the heater voltage is not	0.5 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage	300 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Screen Voltage	250 V	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Screen Dissipation	1.4 mA	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Max.-Si9. Plate Current	125 mA	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Max.-Sig. Screen Current	10.5 mA	Published datasheet value; multiple numbers on one source row represent separate limits or operating conditions.