



ELECTRONIC TUBE REFERENCE

1608

Power - Triode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

RCA transmitting power triode for RF power and oscillator service, with Class B audio/modulator operation also specified. Rated for 20 W plate dissipation and full-rating high-frequency operation to approximately 45 MHz.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	4
NOMINAL HEATER	2.5 V / 2.5 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
AMPLIFICATION FACTOR	20
MAXIMUM PLATE VOLTAGE	425 V
MAXIMUM PLATE DISSIPATION	20 W
<i>Published maximum ratings and characteristic values promoted from the approved source.</i>	

1608 — Power Triode Transmitting Tube

The **1608** is a three-electrode transmitting tube of the coated filament type designed for use as an r-f power amplifier, oscillator, and class B modulator. It is engineered to deliver relatively high power output at low plate voltages. In radio-frequency service, the tube can be operated at its maximum ratings at frequencies up to 45 megacycles, and with reduced input up to 100 megacycles.

Mechanical Design, Base, and Mounting

The 1608 is constructed with an ST15 glass bulb and features a ceramic base. The base is a medium 4-pin bayonet type. The tube is designed to fit a standard 4-contact socket, such as the RCA type UR-542A, or a small four-contact socket.

Physical Dimensions

- **Maximum overall length:** 5-3/8 inches
- **Maximum seated height:** 4-3/4 inches
- **Maximum bulb diameter:** 2-1/16 inches
- **Maximum base diameter:** 1-9/16 inches

Mounting Position

There are differing specifications regarding the permissible mounting orientation of the 1608:

- One specification permits mounting the tube in any position.
- Another specification restricts mounting to either a vertical position with the base down, or a horizontal position where pins 1 and 4 are oriented in a vertical plane.

Pin Connections

The pinout configuration, viewed from the top of the socket, is as follows:

- **Pin 1:** Filament (+)
- **Pin 2:** Plate
- **Pin 3:** Grid
- **Pin 4:** Filament (-)

A bayonet pin is located on the side of the base, positioned between Pin 4 and Pin 1.

Filament and Electrical Characteristics

The 1608 utilizes a coated filament that can be operated from either an alternating current (AC) or direct current (DC) supply.

Parameter	Value
Filament Voltage (AC or DC)	2.5 V
Filament Current	2.5 A
Calculated Filament Power	6.25 W
Amplification Factor	20

The calculated filament power is derived as: $\text{Power} = 2.5 \text{ V} \times 2.5 \text{ A} = 6.25 \text{ W}$

Direct Interelectrode Capacitances

- **Grid-to-Plate (g to p):** 9 μF (pF)
- **Grid-to-Filament (g to f):** 8.5 μF (pF)
- **Plate-to-Filament (p to f):** 3 μF (pF)

Maximum Ratings and Operating Conditions

The 1608 is rated for several distinct classes of service. Under all maximum continuous commercial service (CCS) ratings, the plate of the 1608 is designed to show no color.

Class B Audio-Frequency Power Amplifier and Modulator

The maximum ratings for Class B audio-frequency modulator or power amplifier service (with values averaged over any audio-frequency cycle of sine-wave form) are:

- **D-C Plate Voltage:** 425 max. Volts
- **Max.-Signal D-C Plate Current:** 95 max. Milliamperes
- **Max.-Signal Plate Input:** 40 max. Watts
- **Plate Dissipation:** 20 max. Watts

RF Power Amplifier and Oscillator (CCS Ratings)

For continuous commercial service (CCS) as an RF power amplifier and oscillator, the absolute maximum ratings are:

- **D-C Plate Voltage:** 425 max. Volts
- **D-C Grid Voltage:** -200 max. Volts
- **D-C Plate Current:** 95 max. Milliamperes
- **D-C Grid Current:** 25 max. Milliamperes
- **Plate Input:** 40 max. Watts
- **Plate Dissipation:** 20 max. Watts

Specific RF Operating Services

The tube can be operated under several specific RF configurations, each with its own set of maximum ratings:

Parameter	Class B Telephony	Class C Telephony	Class C Telegraphy
D-C Plate Voltage	425 V	350 V	425 V
D-C Grid Voltage	—	-200 V	-200 V
D-C Plate Current	70 mA	70 mA	70 mA
D-C Grid Current	—	25 mA	25 mA

Parameter	Class B Telephony	Class C Telephony	Class C Telegraphy
Plate Input	30 W	30 W	40 W
Plate Dissipation	20 W	13.5 W	20 W

- **Class B Telephony:** Carrier conditions per tube for use with a maximum modulation factor of 1.0.
- **Class C Telephony:** Carrier conditions per tube for use with a maximum modulation factor of 1.0.
- **Class C Telegraphy:** Key-down conditions per tube without modulation. Amplitude modulation that is essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

High-Frequency Operation

In radio-frequency service, the 1608 can be operated at its maximum ratings at frequencies as high as 45 megacycles. For operation at higher frequencies, the input must be reduced. The tube is rated for operation with reduced input up to 100 megacycles.

Technical Summary

The **1608** is a versatile, low-voltage, coated-filament power triode transmitting tube. It features a ceramic base, an ST15 glass envelope, and a standard 4-pin bayonet base. With a 2.5 V, 2.5 A filament and an amplification factor of 20, it is capable of delivering high power output at low plate voltages. The tube is rated for Class B audio-frequency modulator service, as well as Class B and Class C RF power amplification and oscillation. It can be operated at full ratings up to 45 Mc and with reduced input up to 100 Mc. In later commercial listings, the 1608 is designated as a discontinued type for reference only.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1938 RCA Transmitting Tubes

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

1938 RCA TRANSMITTING TUBES

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterVoltageNominal	2.5 V	Nominal
HeaterCurrentNominal	2.5 A	Nominal
Maximum Plate Voltage	425 V	—
Maximum Plate Dissipation	20 W	—
Maximum Frequency	45 MHz	Published full-rating frequency guidance
PlateInputMaximum	40 W	ClassB audio/modulator

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Amplification Factor	20	Typical



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1956 RCA Transmitting Tubes

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

1956 RCA TRANSMITTING TUBES

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate/Inverse Voltage	425 V	Source rating
Maximum Plate Dissipation	20 W	—