

RCA-809

R-F Power Amplifier, Oscillator, Class B Modulator

Illustrated on page 70

RCA-809 is a three-electrode, high-mu, transmitting tube of the thoriated-tungsten filament type for use as a radio-frequency amplifier, oscillator, or class B modulator. Because of its high perveance, the 809 can be operated at high plate efficiency with low driving power. The plate connection is brought out through a separate seal at the top of the bulb to provide good insulation. The internal structure of the 809 permits operation at maximum ratings at frequencies as high as 60 megacycles. The maximum plate dissipation is 25 watts for class C telegraph and class B services. RCA-809 has a ceramic base.

TENTATIVE CHARACTERISTICS AND RATINGS

Filament Volts (a-c or d-c).....	6.3	Grid-Plate Capacitance	6.7 μ f
Filament Amperes	2.5	Grid-Filament Capacitance	5.7 μ f
Amplification Factor	50	Plate-Filament Capacitance	0.9 μ f

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

As A-F Power Amplifier and Modulator—Class B

D-C PLATE VOLTAGE	750 max. Volts
MAX.-SIGNAL D-C PLATE CURRENT*	100 max. Milliamperes
MAX.-SIGNAL PLATE INPUT*	75 max. Watts
PLATE DISSIPATION*	25 max. Watts

TYPICAL OPERATION:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	500	750	Volts
D-C Grid Voltage [§]	0	-5	Volts
Peak A-F Grid-to-Grid Voltage	135	140	Volts
Zero-Sig. D-C Plate Current	40	35	Milliamperes
Max.-Sig. D-C Plate Current	200	200	Milliamperes
Load Resistance (Per tube)	1300	2100	Ohms
Effective Load Res. (Plate-to-plate)	5200	8400	Ohms
Max.-Sig. Driving Power (Approx.)	2.4	2.4	Watts
Max.-Sig. Power Output (Approx.)	60	100	Watts

As R-F Power Amplifier—Class B Telephony

Carrier conditions per tube for use with a max. modulation factor of 1.0

D-C PLATE VOLTAGE	750 max. Volts
D-C PLATE CURRENT	50 max. Milliamperes
PLATE INPUT	37.5 max. Watts
PLATE DISSIPATION	25 max. Watts

TYPICAL OPERATION:

D-C Plate Voltage	500	750	Volts
D-C Grid Voltage [§]	-5	-10	Volts
Peak R-F Grid Voltage	35	40	Volts
D-C Plate Current	50	50	Milliamperes
D-C Grid Current (Approx.)	6	5	Milliamperes
Driving Power (Approx.) [†]	1.4	1.5	Watts
Power Output (Approx.)	7.5	12.5	Watts

* , § , † : see next page.

As Plate-Modulated R-F Power Amplifier—Class C Telephony

Carrier conditions per tube for use with a max. modulation factor of 1.0

D-C PLATE VOLTAGE	600 max.	Volts
D-C GRID VOLTAGE	-200 max.	Volts
D-C PLATE CURRENT	83 max.	Milliamperes
D-C GRID CURRENT	35 max.	Milliamperes
PLATE INPUT	50 max.	Watts
PLATE DISSIPATION	17.5 max.	Watts

TYPICAL OPERATION:

D-C Plate Voltage	500	600	Volts
D-C Grid Voltage	-160	-160	Volts
Peak R-F Grid Voltage	250	250	Volts
D-C Plate Current	83	83	Milliamperes
D-C Grid Current (Approx.)	32	32	Milliamperes
Grid Resistor	5000	5000	Ohms
Driving Power (Approx.)	7.2	7.2	Watts
Power Output (Approx.)	30	38	Watts

As R-F Power Amplifier and Oscillator—Class C Telegraphy

Key-down conditions per tube without modulation††

D-C PLATE VOLTAGE	750 max.	Volts
D-C GRID VOLTAGE	-200 max.	Volts
D-C PLATE CURRENT	100 max.	Milliamperes
D-C GRID CURRENT	35 max.	Milliamperes
PLATE INPUT	75 max.	Watts
PLATE DISSIPATION	25 max.	Watts

TYPICAL OPERATION:

D-C Plate Voltage	500	750	Volts
D-C Grid Voltage	-50	-60	Volts
Peak R-F Grid Voltage	135	140	Volts
D-C Plate Current	100	100	Milliamperes
D-C Grid Current (Approx.)	20	20	Milliamperes
Grid Resistor	2500	3000	Ohms
Driving Power (Approx.)	2.5	2.5	Watts
Power Output (Approx.)	35	55	Watts

* Averaged over any audio-frequency cycle of sine-wave form.

§ Grid voltages are given with respect to the mid-point of filament operated on a.c. If d.c. is used, each stated value of grid voltage should be decreased by 4.5 volts and the circuit returns made to the negative end of the filament.

† At crest of audio-frequency cycle with modulation factor of 1.0.

†† Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

INSTALLATION AND APPLICATION

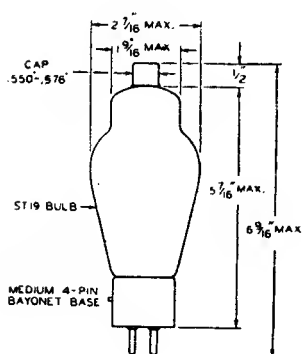
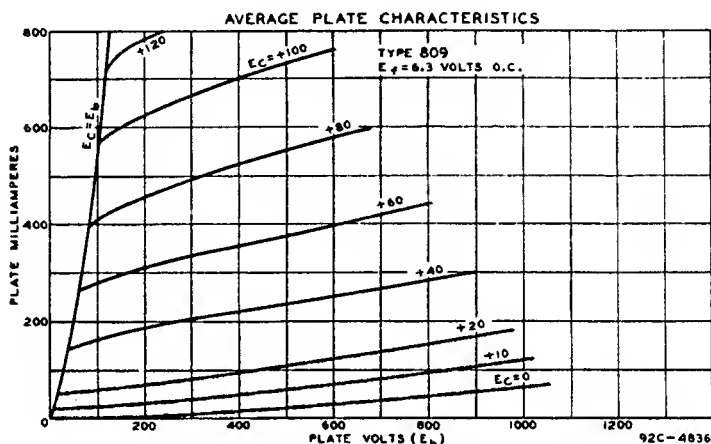
The base pins of the RCA-809 fit the standard 4-contact socket, such as the RCA type UR-542A. The socket should be installed so that the tube will operate in a vertical position with the base down. If it is necessary to place the tube in a horizontal position, the socket should be mounted with the filament-pin openings one vertically above the other so that the plate will be in a vertical plane (on edge).

The plate of the 809 shows no color at the maximum plate-dissipation rating for each class of service.

The grid-leak method of supplying bias is particularly suited for use with the 809 in class C telegraph service. If the grid excitation is accidentally removed, the high plate resistance of the tube serves to protect the tube from overheating due to accidental overloads.

For high-frequency operation above 60 megacycles, see page 144.

For additional information, see chapters on INSTALLATION and APPLICATION.



Top View of Socket Connections

