



PLIOTRON

DESCRIPTION

The 807 is a beam power transmitting tube of the heater-cathode type having a maximum plate dissipation rating of 30 watts (ICAS). The high power sensitivity of this tube makes it especially useful in frequency-multiplier service where high

harmonic output is essential. The 807 may also be used as a crystal oscillator and buffer amplifier in medium-power transmitters using up to a half-kilowatt input. Neutralization is generally unnecessary in adequately shielded circuits.

TECHNICAL INFORMATION

These data are for reference only. For design information refer to specifications.

GENERAL CHARACTERISTICS

Number of electrodes	5
Electrical	
Filament voltage \uparrow	6.3 volts
Filament current	0.9 ampere
Average characteristics	
Grid-plate transconductance, $I_b = 72$ ma.	6000 micromhos
Grid-screen amplification factor	8
Direct interelectrode capacitance	
Grid-plate, with external shielding	0.2 micromicrofarads
Input	11 micromicrofarads
Output	7 micromicrofarads



TECHNICAL INFORMATION (CONT'D)

Mechanical

Base description	medium 5-pin
Net weight, approx	3 ounces
Shipping weight, approx	3 pounds
Mounting position	vertical or horizontal

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

CLASS AB ₂ ^φ AUDIO-FREQUENCY POWER AMPLIFIER (TWO TUBES)	Typical Operation				Maximum Ratings	
	CCS	CCS	ICAS	CCS	ICAS	
D-c plate voltage	400	500	600	750	600	750 volts
Max signal plate current (per tube)†					120	120 milliamperes
D-c max signal plate input (per tube)†					60	90 watts
Plate dissipation (per tube)†					25	30 watts
D-c grid voltage	-25	-25	-30	-32		volts
Positive d-c grid voltage	300	300	300	300	300	300 volts
Peak a-f grid input voltage (grid to grid) ..	78	78	78	92		volts
Zero signal plate current	100	100	60	60		milliamperes
Max signal plate current	240	240	200	240		milliamperes
Max signal screen grid current	10	10	10	10		milliamperes
Screen grid input†					3.5	3.5 watts
Peak grid input power †	0.35	0.6	0.4	0.5		watt
Load resistance (per tube)	800	1060	1600	1740		ohms
Effective load (plate to plate)	3200	4240	6400	6960		ohms
Max signal plate power output §	55	75	80	120		watts

CLASS B RADIO-FREQUENCY POWER AMPLIFIER

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

	CCS	CCS	ICAS	CCS	ICAS	
D-c plate voltage	400	500	600	750	600	750 volts
D-c grid voltage	-25	-25	-25	-35		volts
D-c screen grid voltage	250	250	250	300	300	300 volts
D-c grid current	0	0	0	0		milliampere
D-c plate current	75	75	62.5	60	80	90 milliamperes
D-c screen grid current	4	4	3	3		milliamperes
Plate input					37.5	45 watts
Screen grid input					2.5	2.5 watts
Plate dissipation					25	30 watts
Peak r-f grid input voltage	30	30	20	27		volts
Driving power ♦, approx	0.25	0.25	0.2	0.12		watt
Plate power output	9	12.5	12.5	15		watts

CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—PLATE MODULATED

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

	CCS	CCS	ICAS	CCS	ICAS	
D-c plate voltage	325	400	475	600	475	600 volts
D-c grid voltage	-75	-80	-85	-90	-200	-200 volts
From a grid resistor of	25000	22800	21300	22500		ohms
D-c screen voltage	225	225	225	275	300	300 volts
From a series resistor of Δ	20000	30000	50000	50000		ohms
D-c plate current	80	80	83	100	83	100 milliamperes
D-c grid current, approx	3	3.5	4	4	5	5 milliamperes
D-c screen grid current	5	5.75	5	6.5		milliamperes
Plate input					40	60 watts
Screen grid input					2.5	2.5 watts
Plate dissipation					16.5	25 watts
Peak r-f grid input voltage, approx	90	95	110	115		volts
Driving power, approx	0.25	0.3	0.4	0.4		watts
Plate power output	17.5	22.5	27.5	42.5		watts

CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR

(Key down conditions per tube without modulation) †

	CCS	ICAS	CCS	ICAS	CCS	ICAS
D-c plate voltage	400	500	600	750	600	750 volts
D-c grid voltage					-200	-200 volts
From a fixed supply of	-45	-45	-45	-45		volts
From a cathode resistor of	410	410	410	410		ohms
From a grid resistor of	12800	12800	12800	12800		ohms
D-c screen grid voltage					300	300 volts
From a fixed supply of	250	250	250	250		volts
From a series resistor of	20000	42000	50000	85000		ohms
D-c plate current	100	100	100	100	100	100 milliamperes
D-c grid current, approx.	3.5	3.5	3.5	3.5	5	5 milliamperes
D-c screen grid current	7.5	6	7	6		milliamperes
Plate input					60	75 watts
Plate dissipation					25	30 watts
Screen grid input					3.5	3.5 watts
Peak r-f grid input voltage, approx.	65	65	65	65		volts
Driving power, approx.	0.2	0.2	0.2	0.2		watt
Plate power output	25	30	40	50		watts

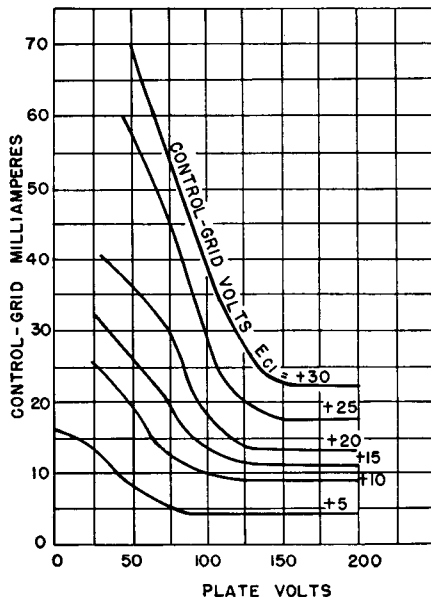
- † Averaged over any audio-frequency cycle of sine-wave form.
- + Modulation, essentially negative, may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.
- φ Subscript (2) indicates that grid current flows during some part of input cycle.
- ¶ Heater voltage fluctuations should not exceed +10 or -5 per cent from the rated value.
- ‡ Driver stage should be capable of supplying the grids of the Class AB₂ stage with the specified peak values at low distortion. The effective resistance per grid circuit of the Class AB₂ stage should be kept below 500 ohms and the effective impedance of the highest desired response frequency should not exceed 700 ohms.
- § With zero-impedance driver and perfect regulation, plate circuit distortion does not exceed 2 per cent. In practice, plate-voltage regulation, positive grid voltage regulation, and grid bias regulation should not be greater than 5 per cent, 5 per cent, and 3 per cent, respectively.
- ◆ At crest of a-f cycle with modulation factor of 1.0.
- △ Connected to modulated plate-voltage supply.

APPLICATION NOTES

The GL-807 can be operated at frequencies as high as 60 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced as the frequency is raised. (Other maximum ratings are the same as shown under

TECHNICAL INFORMATION.) The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used up to 125 megacycles for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	60	80	125 megacycles
Max permissible percentage of maximum rated plate voltage and plate input			
Class B, r-f	100	90	75 per cent
Class C, plate-modulated	100	80	55 per cent
Class C, telegraphy	100	80	55 per cent

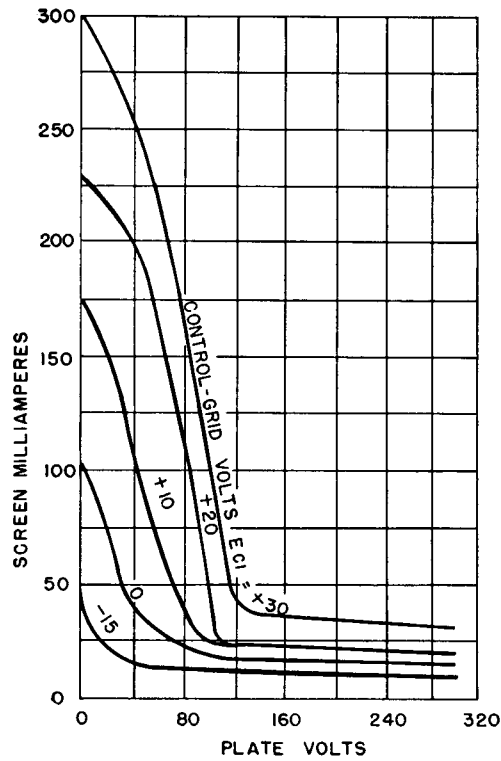


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GL-807 TYPICAL CHARACTERISTICS (E_r = 6.3 VOLTS, SCREEN VOLTS = 300)

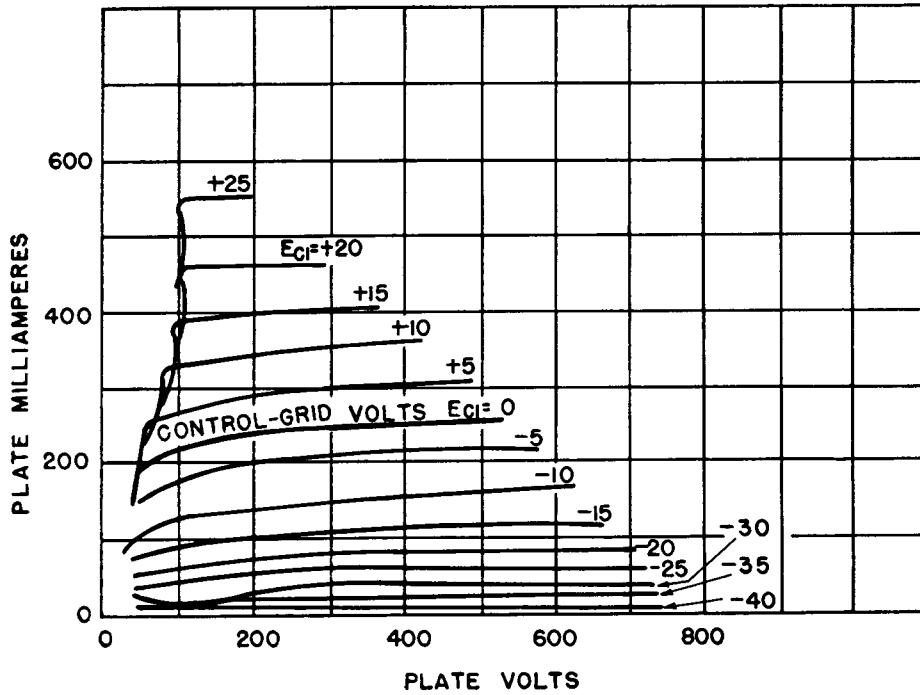
GL-807 AVERAGE CHARACTERISTICS
($E_f = 6.3$ VOLTS, SCREEN VOLTS = 300)



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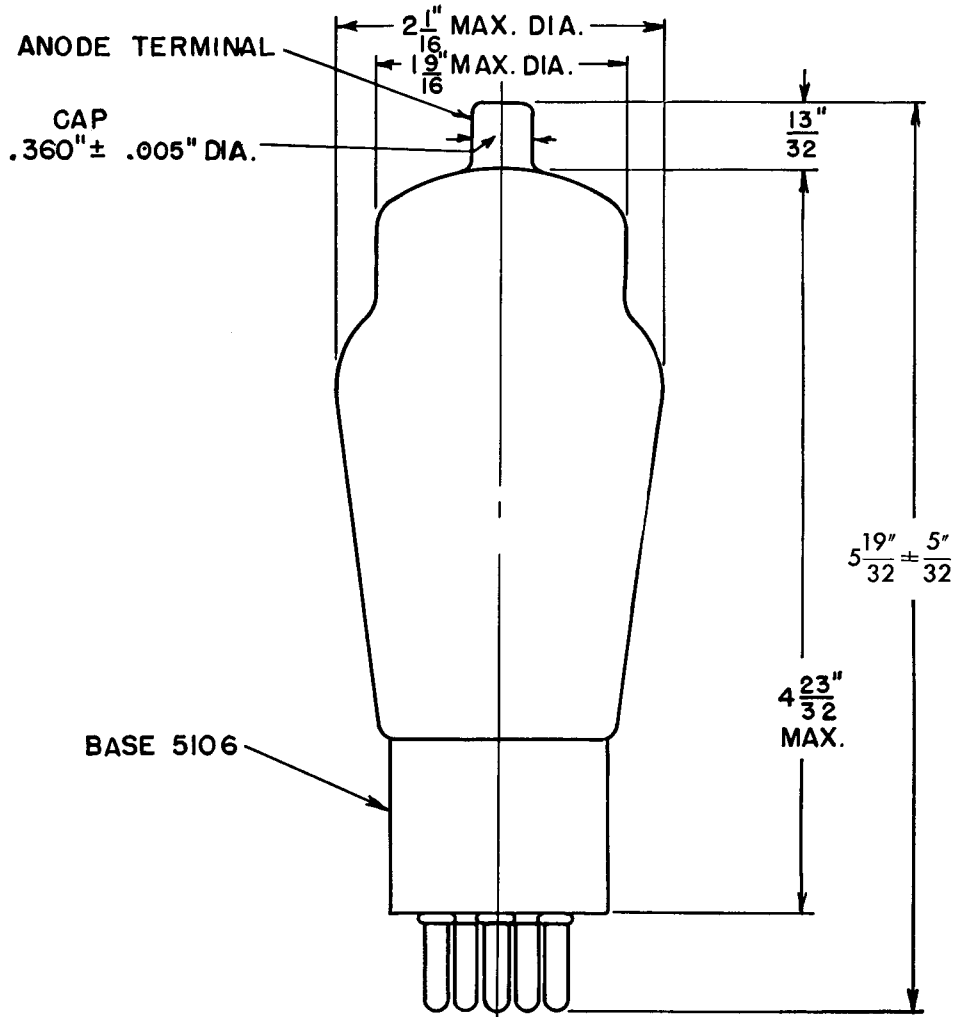
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GL-807 AVERAGE PLATE CHARACTERISTICS WITH E_{c1} AS VARIABLE
($E_f = 6.3$ VOLTS, SCREEN VOLTS = 300)

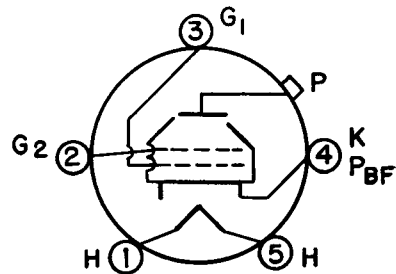


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P = ANODE
G ₂ = SCREEN
G ₁ = GRID
K = CATHODE
H = HEATER
P _{BF} = BEAM - FORMING PLATES



BOTTOM VIEW OF
 SOCKET CONN.

K-8639602

OUTLINE
 GL-807 PIOTRON

9-23-44

Electronics Department
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