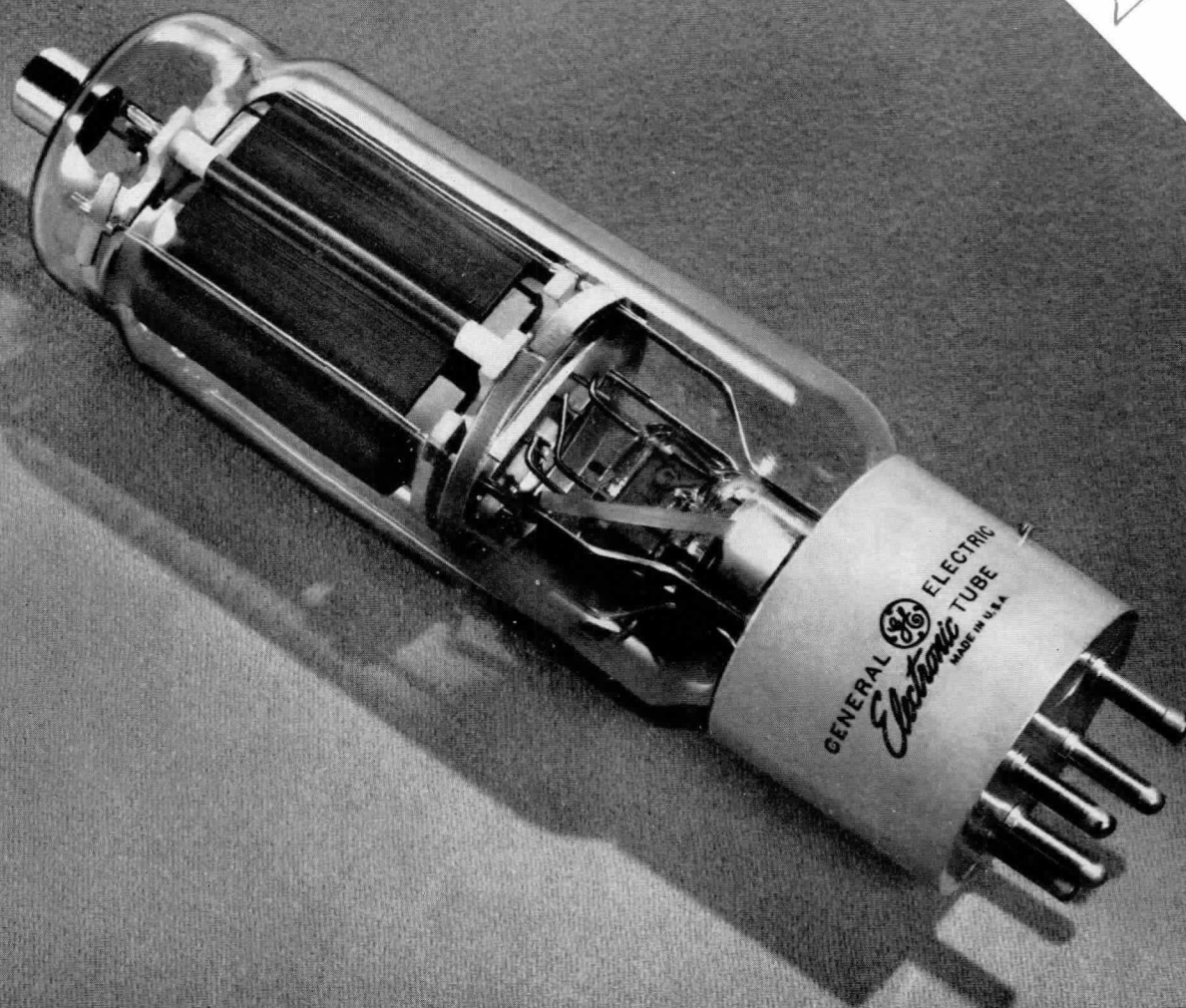




PENTODE

DESCRIPTION

The GL-803 is a pentode transmitting tube of the thoriated-tungsten filament type for use as a radio-frequency amplifier, frequency multiplier, oscillator, and suppressor-, grid-, or plate-modulated amplifier. The tube has a maximum plate dissipation of 125 watts. The plate connection is brought

out through a separate seal at the top of the bulb to maintain low grid-plate capacitance. Neutralization is unnecessary in adequately shielded circuits. The suppressor is connected to its individual base pin. The 803 may be operated at maximum ratings at frequencies as high as 20 megacycles.

TECHNICAL INFORMATION

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

GENERAL CHARACTERISTICS

Number of electrodes.....	5
Electrical	
Cathode—Filamentary	
Filament voltage, a-c or d-c.....	10.0 volts
Filament current.....	5 amperes
Transconductance, for plate current of 62.5 ma.....	4000 micromhos
Direct interelectrode capacitances	
Grid-plate, with external shielding.....	0.15 max micromicrofarad
Input.....	17.5 micromicrofarads
Output.....	29 micromicrofarads
Frequency for maximum ratings.....	20 megacycles



GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)

Mechanical

Cap.	medium metal
Base.	giant 5-pin ceramic, bayonet
Net weight, approximate.	10 ounces
Shipping weight, approximate.	3 pounds
Mounting position.	vertical, base up or down

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AS RADIO-FREQUENCY POWER AMPLIFIER PENTODE—CLASS B TELEPHONY

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

D-c plate voltage.	1250	1500	2000	2000	volts
D-c suppressor voltage, Grid No. 3.	40	40	40	500	volts
D-c screen voltage, Grid No. 2.	500	550	600	600	volts
D-c grid voltage, Grid No. 1*.	-30	-35	-40		volts
Peak r-f grid voltage.	90	70	55		volts
D-c plate current.	130	110	80	160	milliamperes
Plate input.				180	watts
Suppressor input.				10	watts
Screen input.				20	watts
Plate dissipation.				125	watts
D-c screen current.	33	30	20		milliamperes
D-c grid current, approximate.	8	5	3		milliamperes
Driving power, approximate†.	4.5	3	1.5		watts
Power output, approximate.	52	53	53		watts

AS SUPPRESSOR-MODULATED RADIO-FREQUENCY POWER AMPLIFIER—CLASS C TELEPHONY

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

D-c plate voltage.	1250	1500	2000	2000	volts
Dc suppressor voltage, Grid No. 3.	-70	-90	-110		volts
D-c grid voltage.				-500	volts
From a fixed supply of.	-110	-100	-100		volts
From a grid resistor of.	5000	5000	7000		ohms
Peak r-f grid voltage.	200	190	170		volts
Peak a-f suppressor voltage.	110	130	150		volts
D-c plate current.	100	100	80	110	milliamperes
D-c screen current.	70	70	48		milliamperes
D-c grid current, approximate.	22	20	15	50	milliamperes
Screen resistor.	13000	17000	35000		ohms
Driving power, approximate.	4	3.5	2.5		watts
Power output, approximate.	40	50	53		watts
D-c screen voltage, Grid No. 2.				600	volts
Plate input.				180	watts
Screen input.				30	watts
Plate dissipation.				125	watts

AS GRID-MODULATED RADIO-FREQUENCY POWER AMPLIFIER PENTODE—CLASS C TELEPHONY

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

D-c plate voltage.	1250	1500	2000	2000	volts
D-c suppressor voltage, Grid No. 3.	40	40	40	500	volts
D-c screen voltage, Grid No. 2.	500	550	600	600	volts
D-c grid voltage, Grid No. 1.	-100	-90	-80	-500	volts
Peak r-f grid voltage.	160	130	100		volts
Peak a-f grid voltage.	75	65	50		volts
D-c plate current.	130	110	80	160	milliamperes
D-c screen current.	30	25	20		milliamperes
D-c grid current, approximate.	8	6	4		milliamperes
Driving power, approximate†.	4	3	2		watts
Power output, approximate.	52	53	53		watts
Plate input.				180	watts
Suppressor input.				10	watts
Screen input.				20	watts
Plate dissipation.				125	watts

TECHNICAL INFORMATION (CONT'D)

AS PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER PENTODE—CLASS C TELEPHONY

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

D-c plate voltage.....	1250	1600	1600	volts
D-c suppressor voltage, Grid No. 3.....	100	100	500	volts
D-c screen voltage, Grid No. 2.....	400	500	500	volts
D-c grid voltage, Grid No. 1.....			—500	volts
From a fixed supply of.....	—80	—80		volts
From a grid resistor of.....	4000	4000		ohms
Peak r-f grid voltage.....	180	180		volts
D-c plate current.....	150	150	160	milliamperes
D-c screen current.....	55	55		milliamperes
D-c grid current, approximate.....	20	20	50	milliamperes
Screen resistor†.....	16000	20000		ohms
Driving power, approximate.....	4	4		watts
Power output, approximate.....	125	155		watts
Plate input.....			250	watts
Suppressor input.....			10	watts
Screen input.....			20	watts
Plate dissipation.....			85	watts

AS PLATE-MODULATED RADIO-FREQUENCY POWER AMPLIFIER TETRODE—CLASS C TELEPHONY

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

Grids No. 2 and No. 3 connected together

D-c plate voltage.....	1250	1600	1600	volts
D-c screen voltage, Grids No. 2 and 3.....	130	130	500	volts
D-c grid voltage, Grid No. 1.....			—500	volts
From a fixed supply of.....	—180	—180		volts
From a grid resistor of.....	4000	4000		ohms
Peak r-f grid voltage.....	305	320		volts
D-c plate current.....	150	150	160	milliamperes
D-c screen current.....	75	75		milliamperes
D-c grid current, approximate.....	45	45	50	milliamperes
Screen resistor§.....	15000	20000		ohms
Driving power, approximate.....	15	15		watts
Power output, approximate.....	125	155		watts
Plate input.....			250	watts
Screen input.....			30	watts
Plate dissipation.....			85	watts

AS RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR PENTODE—CLASS C TELEGRAPHY

Key-down conditions per tube without modulation ♦

D-c plate voltage.....	1250	1500	2000	2000	volts
D-c suppressor voltage, Grid No. 3.....	40	40	40	500	volts
D-c screen voltage, Grid No. 2.....	500	500	500	600	volts
D-c grid voltage, Grid No. 1.....				—500	volts
From a fixed supply of.....	—90	—90	—90		volts
From a cathode resistor of.....	415	415	415		ohms
From a grid resistor of.....	7500	7500	7500		ohms
Peak r-f grid voltage.....	175	175	175		volts
D-c plate current.....	160	160	160	175	milliamperes
D-c screen current.....	45	45	45		milliamperes
D-c grid current, approximate.....	12	12	12	50	milliamperes
Screen resistor.....				not recommended	
Driving power, approximate.....	2	2	2		watts
Power output, approximate.....	130	160	210		watts
Plate input.....				350	watts
Suppressor input.....				10	watts
Screen input.....				30	watts
Plate dissipation.....				125	watts

TECHNICAL INFORMATION (CONT'D)

AS RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR TETRODE—CLASS C TELEGRAPHY

Key-down conditions per tube without modulation ♦

Grids No. 2 and No. 3 connected together

D-c plate voltage.....	1250	1500	2000	2000	volts
D-c screen voltage, Grids No. 2 and 3.....	150	150	150	600	volts
D-c grid voltage, Grid No. 1.....				-500	volts
From a fixed supply of.....	-90	-90	-90		volts
From a cathode resistor of.....	445	445	445		ohms
From a grid resistor of.....	3500	3500	3500		ohms
Peak r-f grid voltage.....	190	190	190		volts
D-c plate current.....	160	160	160	175	milliamperes
D-c screen current.....	15	15	15		milliamperes
D-c grid current, approximate.....	28	27	26	50	milliamperes
Screen resistor.....					not recommended
Driving power, approximate.....	4.6	4.4	4.4		watts
Power output, approximate.....	130	160	210		watts
Plate input.....				350	watts
Screen input.....				30	watts
Plate dissipation.....				125	watts

* Grid voltages are given with respect to the midpoint of filament operated on alternating current. If direct current is used, each stated value of grid voltage should be decreased by one-half the filament voltage and the circuit returns connected to the negative end of the filament.

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

‡ Connected to modulated plate-voltage supply.

§ Connected to unmodulated plate-voltage supply.

♦ 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.

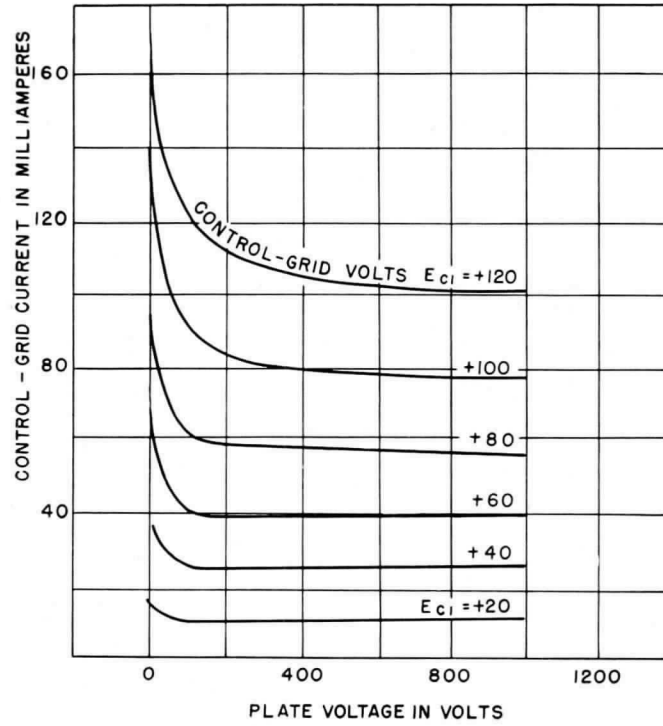
APPLICATION NOTES

The maximum ratings apply only at frequencies below 20 megacycles. For operation at higher frequencies, adequate ventilation and normal ambient temperatures must be maintained, and the plate voltage must be reduced as indicated.

Frequency.....	20	40	60	megacycles
Percentage of maximum rated plate voltage and plate input				
Class B, r-f.....	100	86	80	per cent
Class C, grid- or suppressor-modulation.....	100	86	80	per cent
Class C, plate-modulation.....	100	77	60	per cent
Class C, telegraphy.....	100	77	60	per cent

GL-803 AVERAGE CHARACTERISTICS

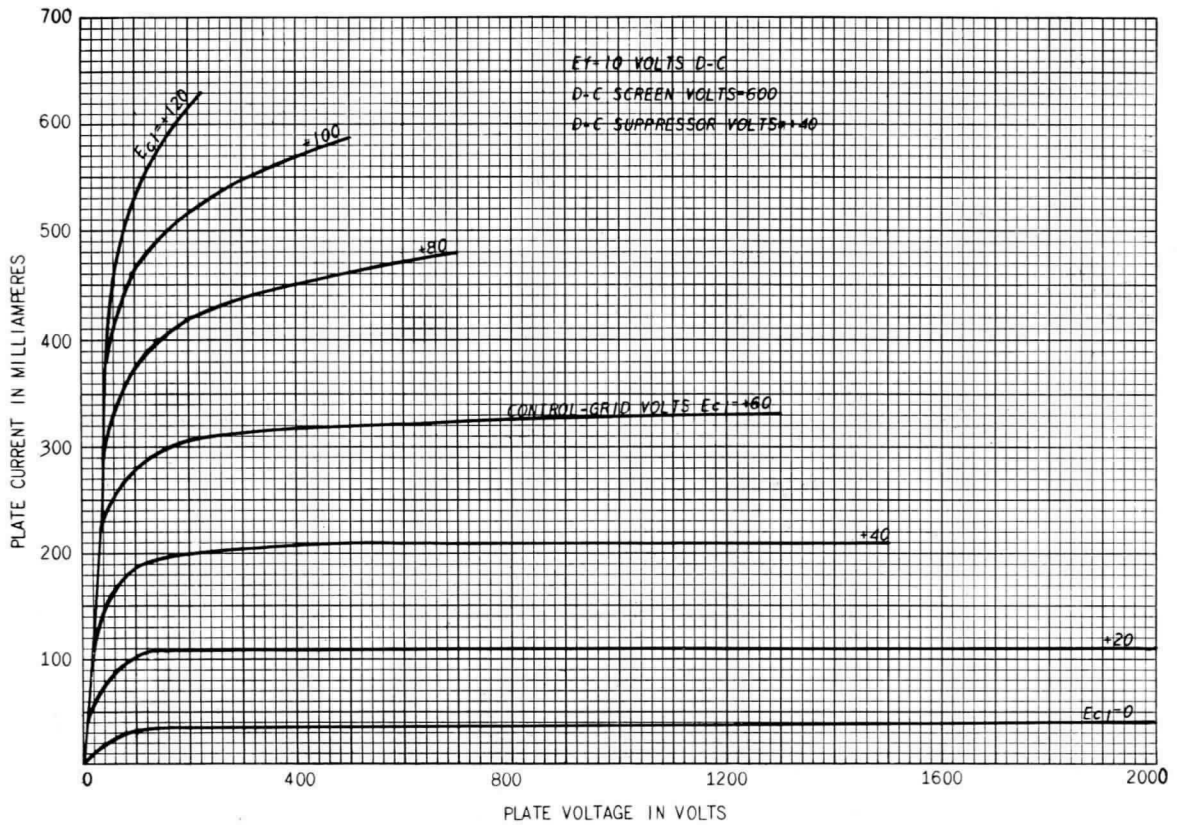
($E_f = 10$ VOLTS D-C, D-C SCREEN VOLTS = 600, D-C SUPPRESSOR VOLTS = +40)



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10-8-45

GL-803 AVERAGE PLATE CHARACTERISTICS

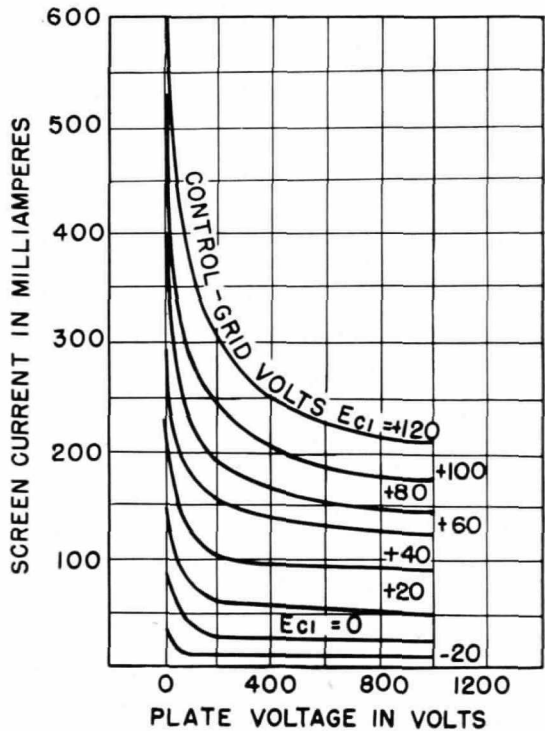


K-9186057

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GL-803 AVERAGE CHARACTERISTICS

($E_f=10$ VOLTS D-C, D-C SCREEN VOLTS=600, D-C SUPPRESSOR VOLTS=+40)

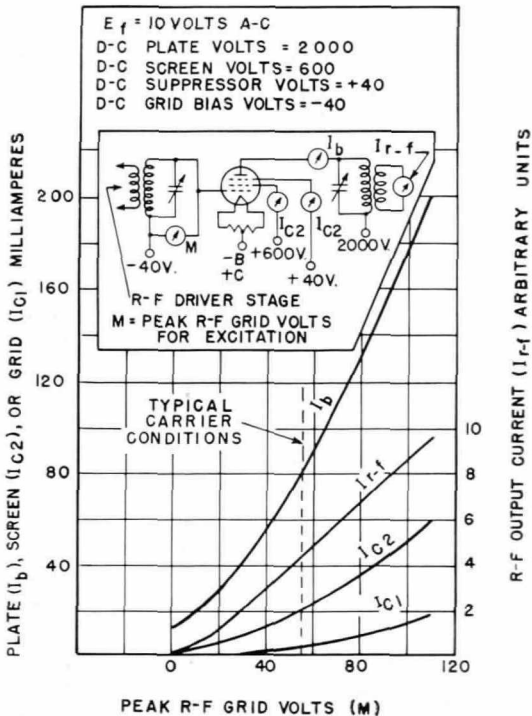


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GL-803 OPERATION CHARACTERISTICS

CLASS B R-F AMPLIFIER

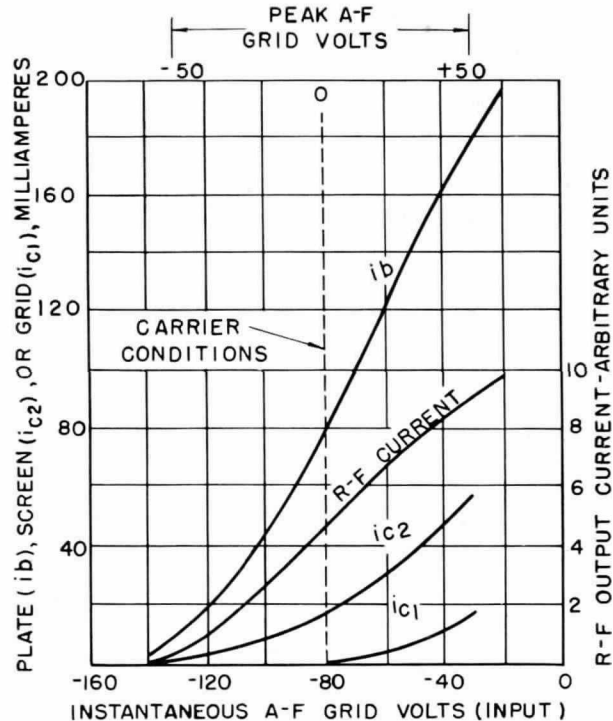


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GL-803 GRID-MODULATION CHARACTERISTICS

($E_f=10$ VOLTS A-C, D-C PLATE VOLTS=2000, D-C SCREEN VOLTS=600)
 (D-C SUPPRESSOR VOLTS=+40, D-C GRID BIAS VOLTS=-80, PEAK R-F GRID VOLTS=100)
 Note: Instantaneous Values Ignore Instantaneous R-f Components

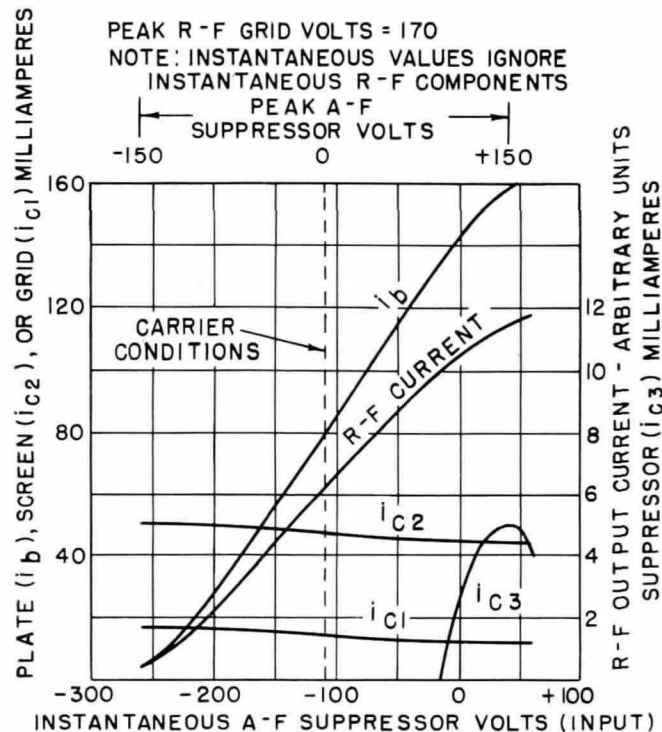


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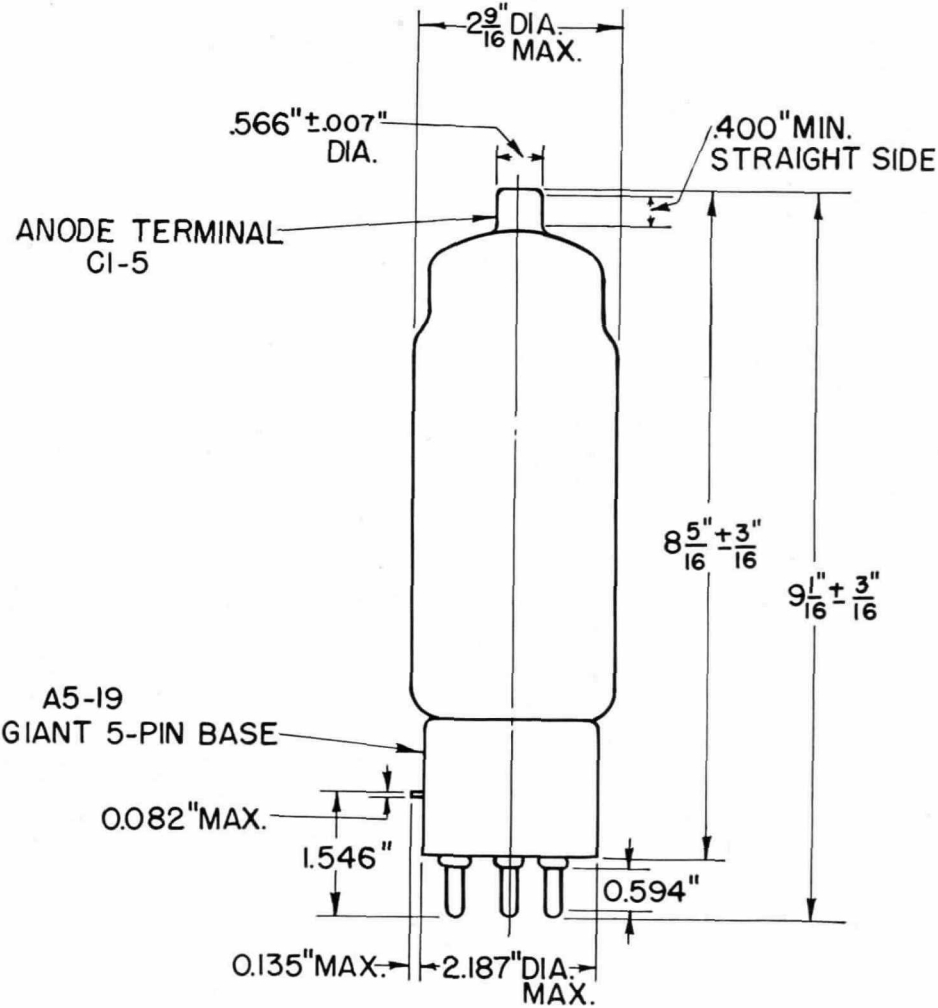
GL-803 SUPPRESSOR MODULATION CHARACTERISTICS

($E_f=10$ VOLTS A-C, D-C PLATE VOLTS=2000, D-C SCREEN VOLTS=2000 MINUS DROP IN SERIES SCREEN*RESISTOR OF 3500 OHMS
 (D-C SUPPRESSOR VOLTS=110, D-C GRID BIAS VOLTS=VALVE SUPPLIED BY 7000-OHM GRID LEAK, PEAK R-F GRID VOLTS=170)
 Note: Instantaneous Values Ignore Instantaneous R-f Components

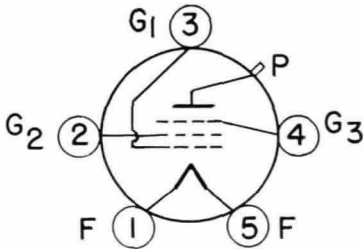


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BOTTOM VIEW
BASING DIAGRAM



GL-803 OUTLINE

K-9033887

7-10-45



TRIODE

DESCRIPTION

The 805 is a high-mu, three-electrode tube designed for use as a radio-frequency amplifier, Class B modulator and oscillator. Valuable characteristics of this tube are high-power output at relatively low

plate voltage and unusually low grid-bias requirements. This tube may be operated at maximum ratings at frequencies as high as 30 megacycles and up to 80 megacycles at reduced ratings.

TECHNICAL INFORMATION

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

GENERAL CHARACTERISTICS

Number of electrodes.....	3
Electrical	
Cathode—Filamentary	
Filament voltage.....	10.0 volts
Filament current.....	3.25 amperes
Direct interelectrode capacitances:	
Grid-plate.....	6.5 micromicrofarads
Input.....	8.5 micromicrofarads
Output.....	10.5 micromicrofarads
Frequency for maximum ratings.....	30 megacycles

