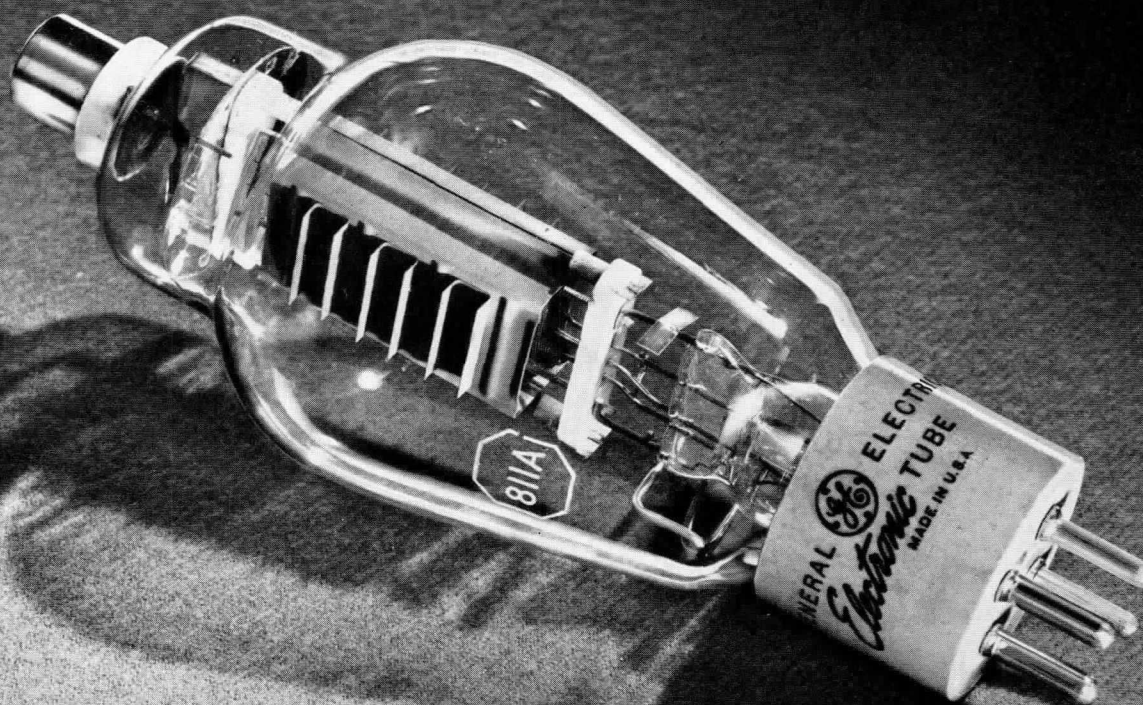




TRIODE

DESCRIPTION

The GL-811-A is a three-electrode tube designed for use as a class B audio-frequency power amplifier and modulator. It is well suited also for class C telephony, telegraphy, and self-rectifying service. In class B service and in unmodulated class C service, the GL-811-A has a maximum plate dissipation of 65 watts (ICAS).

Because of its high perveance, the GL-811-A operates at high efficiency and with low driving power. A pair of GL-811-A's in class B audio-frequency service with a plate input of 470 watts (ICAS) requires a driving power of only 4.4 watts, and can modulate 100 per cent a radio-frequency amplifier having an input of 680 watts.

In class C telegraph service under ICAS conditions, two GL-811-A's can be operated with a plate input of 520 watts and with the exceptionally low driving power at the tubes of only about 14 watts.

The GL-811-A may be operated at maximum ratings in all classes of r-f service at frequencies as high as 30 megacycles and with reduced ratings up to 100 megacycles.

Design features of the GL-811-A include a large zirconium-coated plate with radiating fins to give remarkably effective heat dissipation, heavy internal leads to grid and plate with resultant low radio-frequency losses, and a low-loss micanol base.

Supersedes ETX-151 dated 5-46

GENERAL  ELECTRIC


Electronic
TUBE

◆ TECHNICAL INFORMATION

GENERAL

Electrical Data

Filament Voltage (a-c or d-c).....	6.3 ± 0.3	Volts
Filament Current, at $E_f = 6.3$ v.....	4	Amperes
Amplification Factor.....	160	
Direct Interelectrode Capacitances (With No External Shield)		
Grid-Plate.....	5.6	uuf
Grid-Filament.....	5.9	uuf
Plate-Filament.....	0.7	uuf

Mechanical Data

Mounting Position—Vertical, Base down; horizontal, With pins 1 and 4 in vertical plane	
Cap —Medium No. C1-5	
Base —Medium-shell small 4-pin, micanol with bayonet No. A4-10	

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

AUDIO-FREQUENCY POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum ratings, absolute values	CCS*			ICAS**		
D-c plate voltage.....	1250	max		1500	max	volts
Maximum signal d-c plate current†.....	175	max		175	max	milliamperes
Maximum signal d-c plate input†.....	165	max		235	max	watts
Plate dissipation†.....	45	max		65	max	watts
Typical operation						
Unless otherwise specified, values are for two tubes						
	CCS*			ICAS*		
D-c plate voltage.....	750	1250	1000	1250	1500	volts
D-c grid voltage‡.....	0	0	0	0	−4.5	volts
Peak A-F grid-to-grid voltage.....	197	145	185	175	170	volts
Zero-signal d-c plate current.....	32	50	44	54	32	milliamperes
Maximum signal d-c plate current.....	350	260	350	350	313	milliamperes
Effective load resistance, plate to plate.....	5100	12400	7400	9200	12400	ohms
Maximum signal driving power, approximate.....	9.7	3.8	7.5	6	4.4	watts
Maximum signal power output, approximate.....	178	235	248	310	340	watts

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

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

Maximum ratings, absolute values	CCS*		ICAS**	
D-c plate voltage.....	1000	max	1250	max volts
D-c grid voltage.....	−200	max	−200	max volts
D-c plate current.....	125	max	150	max milliamperes
D-c grid current.....	50	max	50	max milliamperes
Plate input.....	115	max	175	max watts
Plate dissipation.....	30	max	45	max watts
Typical operation				
D-c plate voltage.....	1000		1250	volts
D-c grid voltage.....	−55		−120	volts
From a grid resistor of.....	1200		2700	ohms
Peak R-F grid voltage.....	150		250	volts
D-c plate current.....	115		140	milliamperes
D-c grid current, approximate.....	45		45	milliamperes
Driving power, approximate.....	6.1		10	watts
Power output, approximate.....	88		135	watts

RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR—CLASS C TELEGRAPHY

Key-down conditions per tube without amplitude modulation†

Maximum ratings, absolute values	CCS*		ICAS**	
D-c plate voltage.....	1250	max	1500	max volts
D-c grid voltage.....	−200	max	−200	max volts
D-c plate current.....	175	max	175	max milliamperes
D-c grid current.....	50	max	50	max milliamperes
Plate input.....	175	max	260	max watts
Plate dissipation.....	45	max	65	max watts

TECHNICAL INFORMATION (CONT'D)

Typical operation

D-c plate voltage.....	1250	1500 volts
D-c grid voltage.....	-50	-70 volts
From a grid resistor of.....	1100	1750 ohms
From a cathode resistor of.....	270	330 ohms
Peak r-f grid voltage.....	140	175 volts
D-c plate current.....	140	173 milliamperes
D-c grid current, approximate.....	45	40 milliamperes
Driving power, approximate.....	5.7	7.1 watts
Power output, approximate.....	135	200 watts

SELF-RECTIFYING AMPLIFIER§—CLASS C

Maximum ratings, absolute values

A-c plate voltage (rms).....	1750	max volts
D-c grid voltage.....	-125	max volts
D-c plate current.....	65	max milliamperes
D-c grid current.....	25	max milliamperes
Plate input.....	125	max watts
Plate dissipation.....	45	max watts

Typical operation in push-pull circuit at 27 megacycles

Unless otherwise specified, values are for two tubes

A-c plate voltage (rms).....	1750	volts
D-c grid voltage.....	-70	volts
From a grid resistor of.....	1500	ohms
D-c plate current.....	130	milliamperes
D-c grid current, approximate.....	46	milliamperes
Driving power, approximate ‡.....	12	watts
Power output, approximate.....	175	watts
Useful power output, approximate 75% circuit efficiency.....	130	watts

AMPLIFIER§—CLASS C

With separate, rectified, unfiltered, single-phase, full-wave plate supply

Maximum ratings, absolute values

D-c plate voltage.....	1125	max volts
D-c grid voltage.....	-125	max volts
D-c plate current.....	160	max milliamperes
D-c grid current.....	45	max milliamperes
Plate input.....	175	max watts
Plate dissipation.....	45	max watts

Typical operation

D-c plate voltage.....	1125	volts
D-c grid voltage.....	-35	volts
From a grid resistor of.....	1400	ohms
D-c plate current.....	125	milliamperes
D-c grid current, approximate.....	25	milliamperes
Driving power, approximate △.....	3	watts
Power output, approximate.....	135	watts

◆ Technical information completely revised.

*Continuous Commercial Service.

**Intermittent Commercial and Amateur Service.

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

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

¶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.

§The GL-811-A is not recommended for oscillator service in applications involving wide variation in load. For such applications, the GL-812-A with its low amplification factor is preferred because of its ability to oscillate over a wide range of load variation.

#From a self-rectifying driver.

▲From a driver with a rectified, unfiltered, single-phase, full-wave plate supply.

GL-811-A

EXT-151A

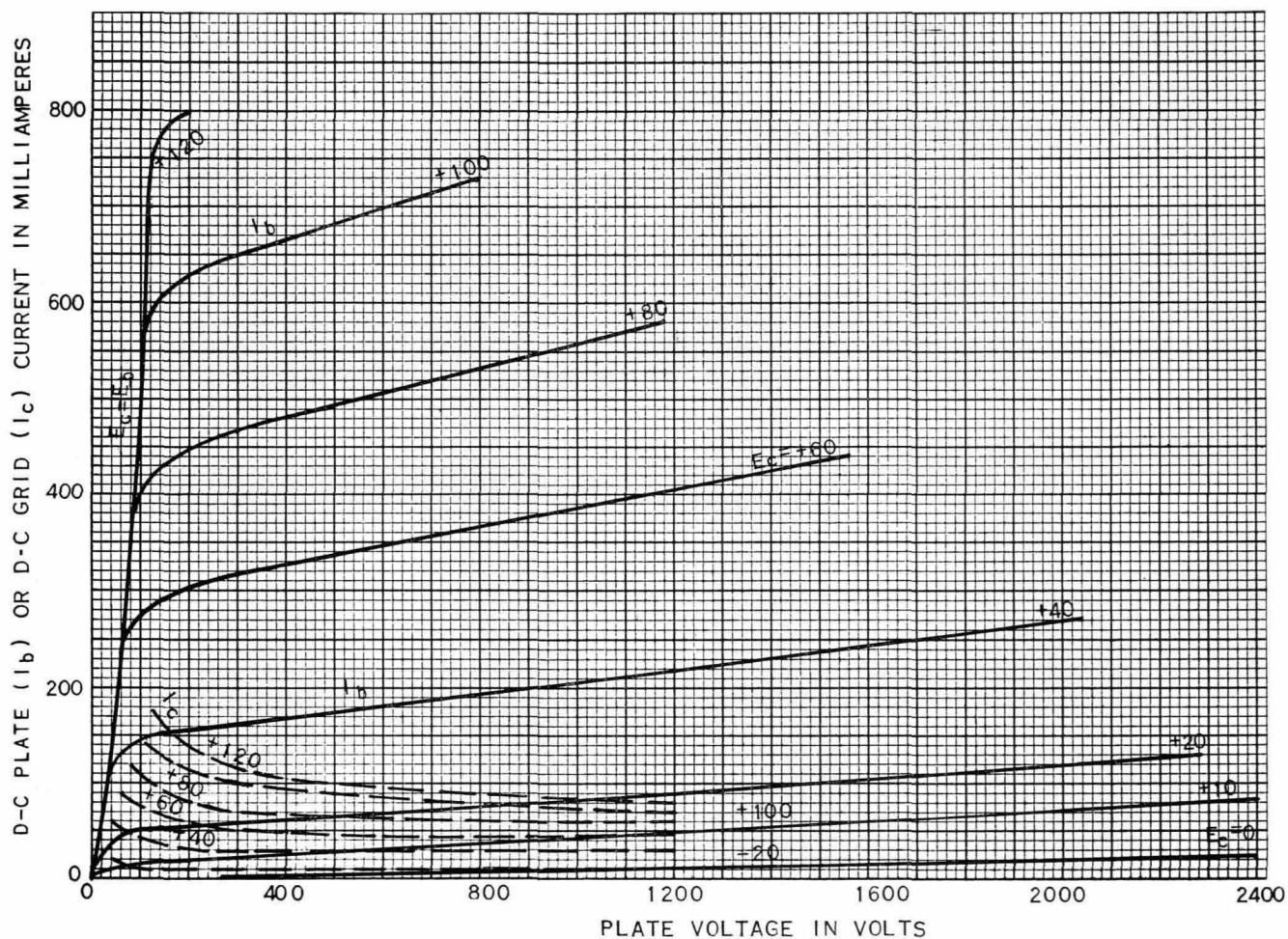
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Maximum ratings apply up to 30 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the tabulation below (other maximum ratings are the same as shown above). Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency.....	30	60	80	100 megacycles
Percentage of maximum rated plate voltage and plate input				
Class C plate modulated.....	100	89	70	55 per cent
Class C unmodulated.....	100	89	70	55 per cent

◆GL-811-A AVERAGE PLATE CHARACTERISTICS $E_f = 6.3$ VOLTS D-C

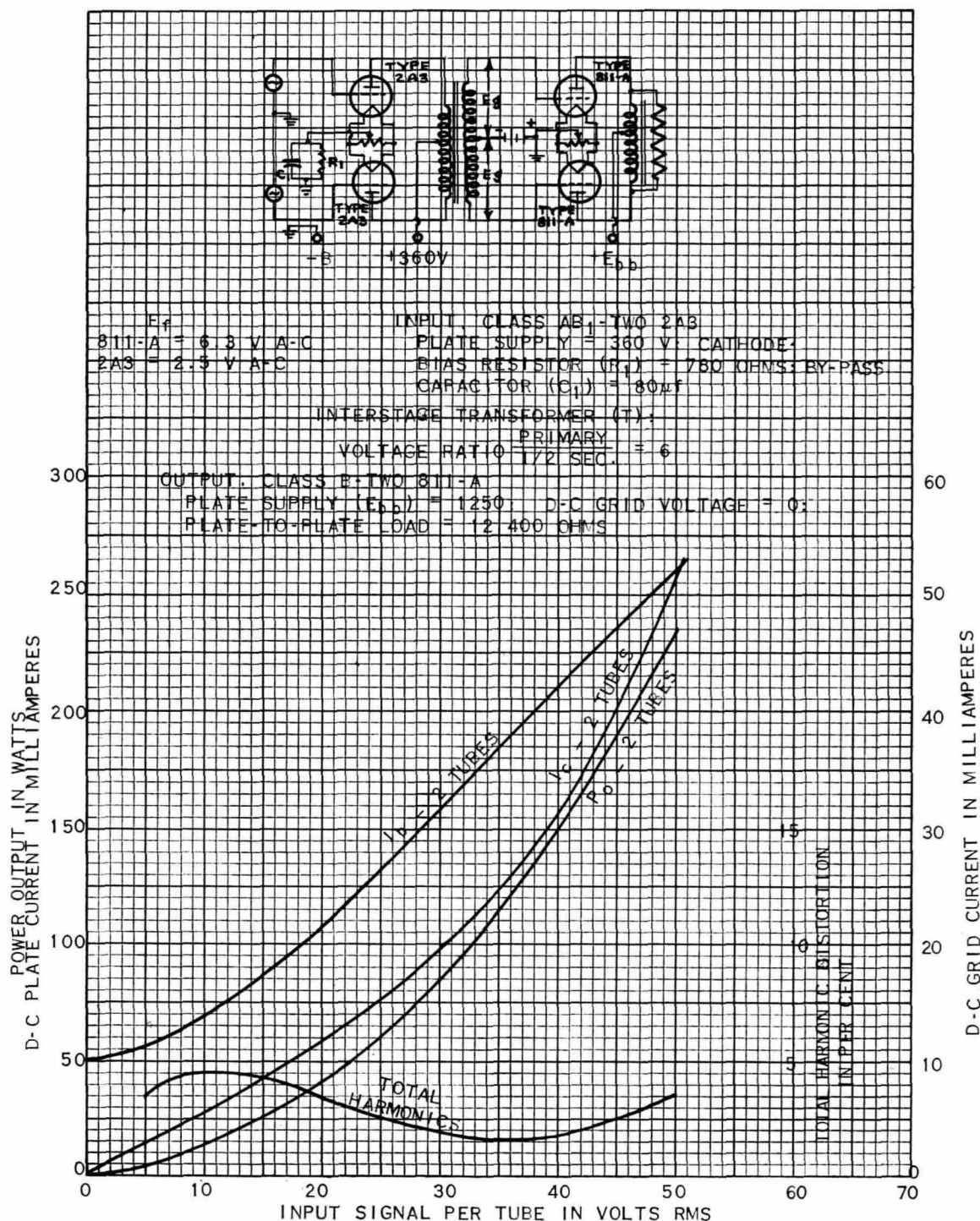


K-69087-72A320

◆ New drawing

11-14-49

◆ GL-811-A
OPERATION CHARACTERISTICS



GL-811-A

ETX-151A

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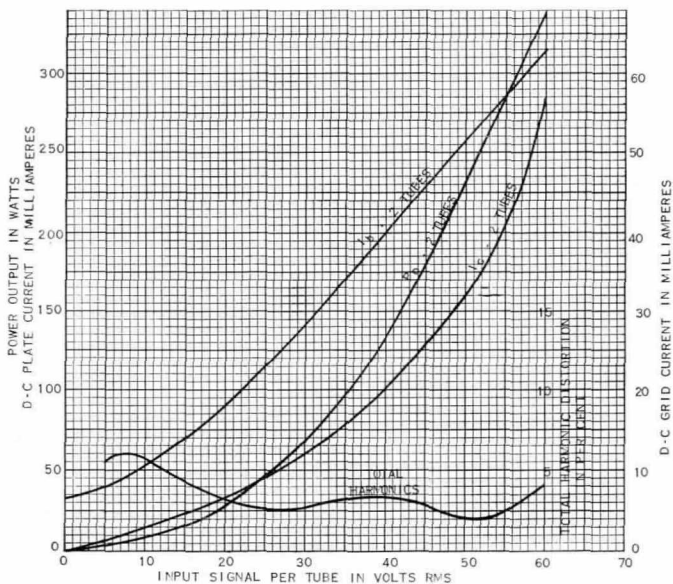
◆GL-811-A

OPERATION CHARACTERISTICS

E_f GL-811-A=6.3 VOLTS 2A3=2.5 VOLTS
CIRCUIT SAME AS THAT ON DRAWING K-69087-72A318
INPUT, CLASS AB₁—TWO 2A3, PLATE SUPPLY=360 VOLTS
CATHODE BIAS RESISTOR (R_f)=780 OHMS: BY-PASS CAPACITOR (C_1)=80 μ f

INTERSTAGE TRANSFORMER (T): VOLTAGE RATIO $\frac{\text{PRIMARY}}{\frac{1}{2} \text{ SEC.}} = 6$

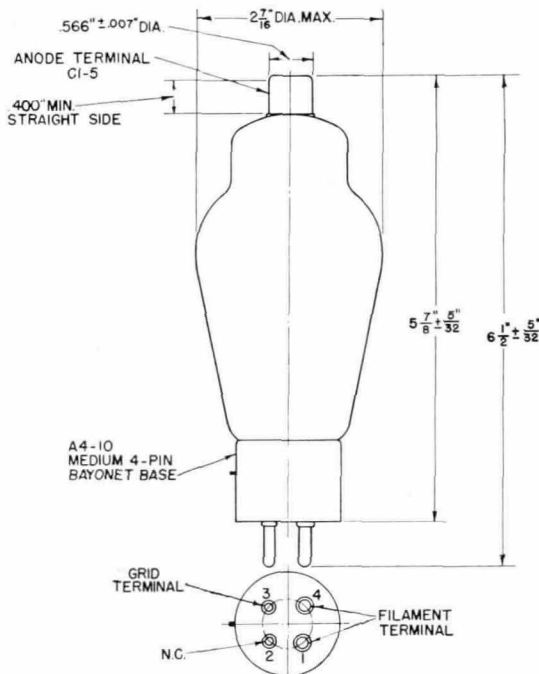
OUTPUT, CLASS B—TWO 811-A, PLATE SUPPLY (E_{bb})=1500.
D-C GRID VOLTAGE= -4.5: PLATE-TO-PLATE LOAD=12400 OHMS



K-69087-72A319
◆New drawing

11-14-49

◆OUTLINE GL-811-A



N-15158A2
◆Revised drawing

11-18-49

Electronics Department
GENERAL ELECTRIC
Schenectady, N. Y.