



BEAM POWER TUBE

DESCRIPTION

The GL-1624 is a beam-power transmitting tube which can be operated at maximum ratings in all classes of service at frequencies as high as sixty megacycles. Since the cathode is the quick-heating

filamentary type, and since the tube has high power sensitivity it is particularly suited as a radio-frequency or audio-frequency amplifier in applications requiring rapid on-and-off operation.

TECHNICAL INFORMATION

These data are for reference only. For design information see the specifications.

GENERAL CHARACTERISTICS

Number of electrodes.....	5
Electrical	
Cathode—filamentary	
Voltage.....	2.5 volts
Current.....	2.0 amperes
Transconductance, approximate, $I_b = 50$ milliamperes.....	4000
Direct interelectrode capacitances	
Grid-plate, with external shielding.....	0.25 micromicrofarads
Input.....	11 micromicrofarads
Output.....	7.5 micromicrofarads
Frequency for maximum ratings.....	60 megacycles

GENERAL  ELECTRIC


Electronic
TUBE

TECHNICAL INFORMATION (CONT'D)

Mechanical

Type of cooling—convection

Net weight, approximate.....4 ounces

Shipping weight, approximate.....3 pounds

Mounting position.....vertical or horizontal

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

	Typical Operation	Maximum Ratings	
CLASS AB ₂ PUSH-PULL AMPLIFIER (TWO TUBES)			
D-c plate voltage.....	400	600	600 volts
Max signal plate current, per tube*.....			90 milliamperes
D-c max signal plate, input, per tube*.....			54 watts
Plate dissipation, per tube*.....			25 watts
D-c grid voltage $\phi_1^\dagger$	—16.5	—25	volts
D-c screen voltage.....	300	300	300 volts
Positive d-c grid voltage.....	300	300	300 volts
Peak a-f grid-to-grid voltage.....	77	106	volts
Zero signal plate current.....	75	42	milliamperes
Max signal plate current.....	150	180	milliamperes
Zero signal screen current.....	6.5	5.0	milliamperes
Max signal screen grid current.....	11.5	15	milliamperes
Screen grid input, per tube*.....			3.5 watts
Peak grid input power.....	0.4	1.2	watts
Load resistance, per tube.....	1500	1870	ohms
Effective load, plate to plate.....	6000	7500	ohms
Max signal plate power output, approximate $\ddagger$	36	72	watts

CLASS C GRID-MODULATED R-F POWER AMPLIFIER

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

D-c plate voltage.....	400	600	600 volts
D-c grid voltage.....	—50 π	—60 π	—200 volts
D-c screen grid voltage.....	250 $\S$	300 $\S$	300 volts
D-c grid current, approximate.....	1.2	0	milliamperes
D-c plate current.....	31	40	75 milliamperes
D-c screen grid current.....	1.5	2.5	milliamperes
Plate input.....			37.5 watts
Screen grid input.....			2.5 watts
Plate dissipation.....			25 watts
Peak r-f grid input voltage.....	58	58	volts
Peak a-f grid voltage.....	30	30	volts
Driving power, approximate Z	0.25	0.4	watts
Plate power output, approximate.....	3.8	8	watts

CLASS C PLATE-MODULATED R-F POWER AMPLIFIER AND OSCILLATOR

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

D-c plate voltage.....	325	500	500 volts
D-c grid voltage.....	—50	—50	—200 volts
From a grid resistor of π	18000	15000	ohms
D-c screen voltage.....	$\P$ 285	$\P$ 275	300 volts
D-c plate current.....	62	75	75 milliamperes
D-c grid current, approximate.....	2.8	3.3	5 milliamperes
D-c screen grid current.....	7.5	9	milliamperes
Plate input.....			37.5 watts
Screen grid input.....			2.5 watts
Plate dissipation.....			16.5 watts
Peak r-f grid input voltage, approximate.....	70	80	volts
Driving power, approximate.....	0.18	0.25	watts
Plate power output, approximate.....	13	24	watts

TECHNICAL INFORMATION (CONT'D)

CLASS C R-F POWER AMPLIFIER AND OSCILLATOR

Key down conditions per tube without modulation ◆

D-c plate voltage.....	400	600	600 volts
D-c grid voltage π			-200 volts
From a fixed supply of.....	-55	-60	volts
From a cathode resistor of.....	610	570	ohms
From a grid resistor of.....	11000	12000	ohms
D-c screen grid voltage Δ	300	300	300 volts
D-c plate current.....	75	90	90 milliamperes
D-c grid current, approximate.....	5	5	5 milliamperes
D-c screen grid current.....	10.5	10	milliamperes
Plate input.....			54 watts
Plate dissipation.....			25 watts
Screen grid input.....			3.5 watts
Peak r-f grid input voltage.....	80	95	volts
Driving power, approximate.....	0.36	0.43	watts
Plate power output, approximate.....	19.5	35	watts

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

ϕ Driver stage should be capable of supplying the grids of the Class AB₂ stage with the specified peak grid voltage at low distortion. The effective resistance per grid circuit should be kept below 500 ohms and the effective impedance at 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, screen-voltage regulation, and grid-bias regulation should not be greater than 5 per cent, 5 per cent, and 3 per cent, respectively.

π The total effective grid-circuit resistance should not exceed 25,000 ohms.

§ Obtained from a fixed supply or from a separate source.

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

¶ Obtained preferably from a modulated fixed 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.

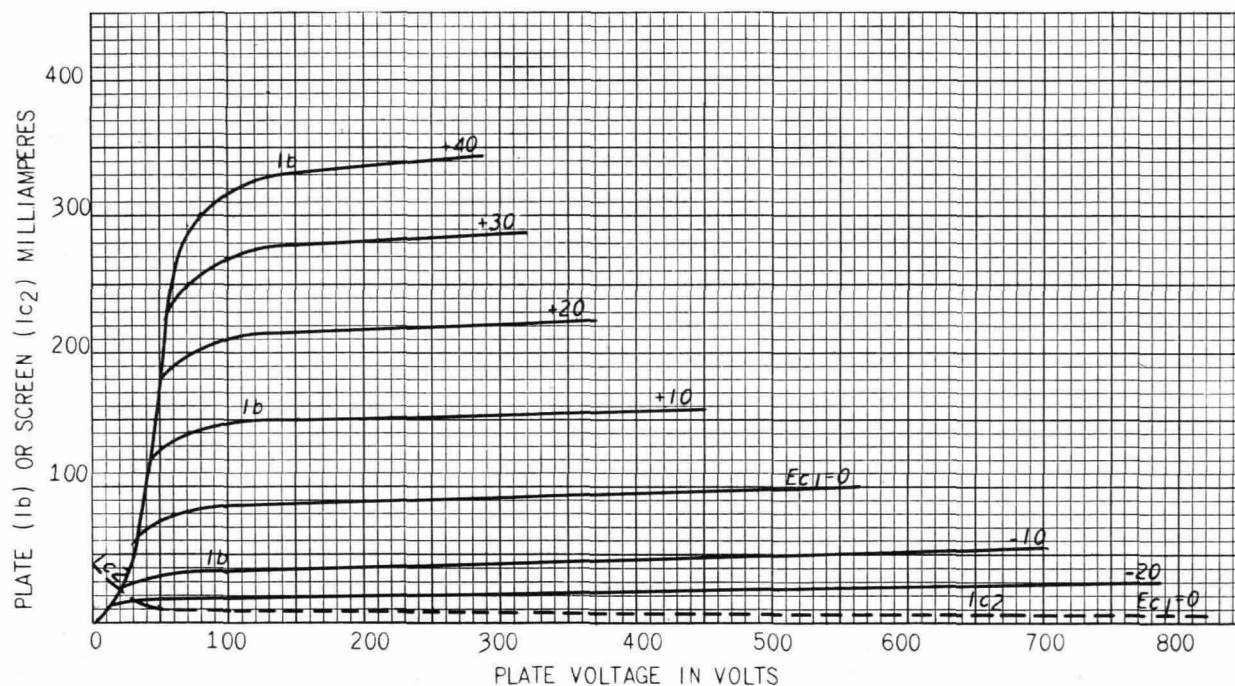
Δ Obtained preferably from a fixed supply of value shown.

APPLICATION NOTES

The GL-1624 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 above.) 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 services. 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.....	100	90	75 per cent
Class C Grid modulated.....	100	90	75 per cent
Plate modulated.....	100	80	55 per cent
Unmodulated.....	100	80	55 per cent

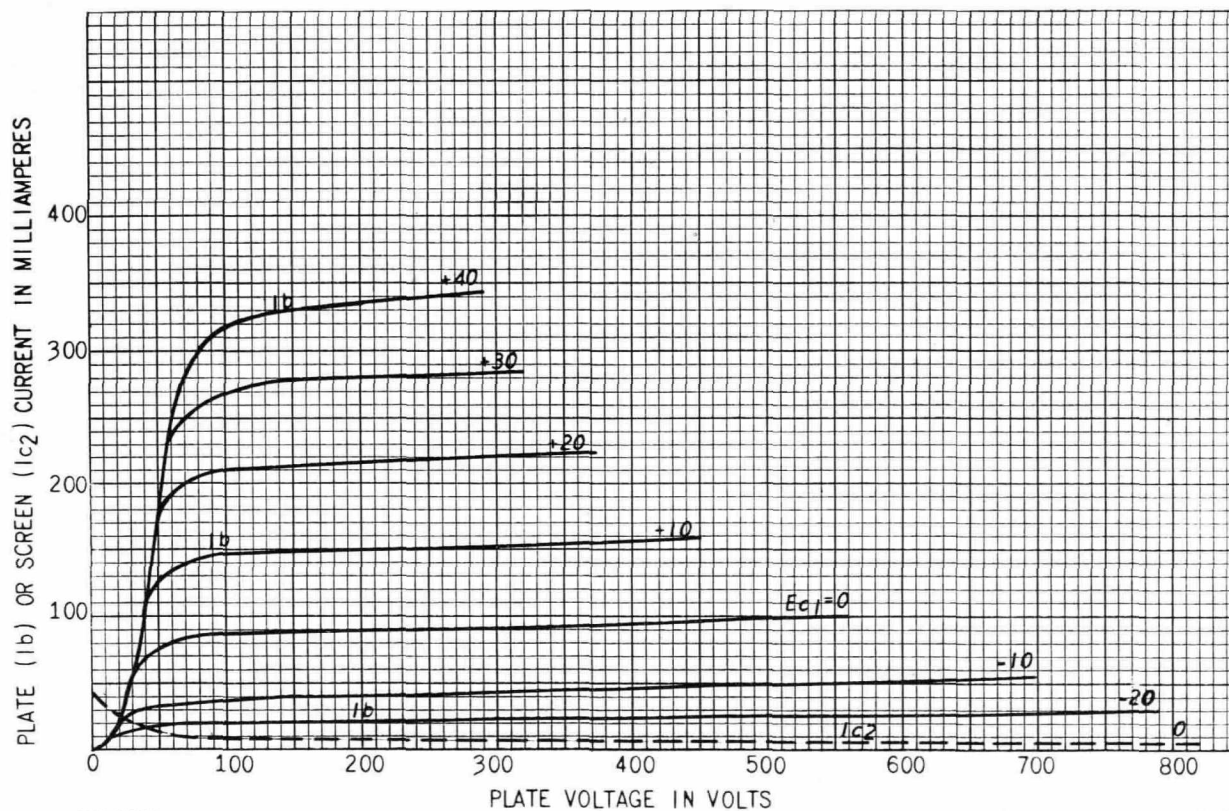
GL-1624 AVERAGE PLATE CHARACTERISTICS

 $E_i = 2.5$ VOLTS, SCREEN VOLTS = 250

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GL-1624 AVERAGE PLATE CHARACTERISTICS

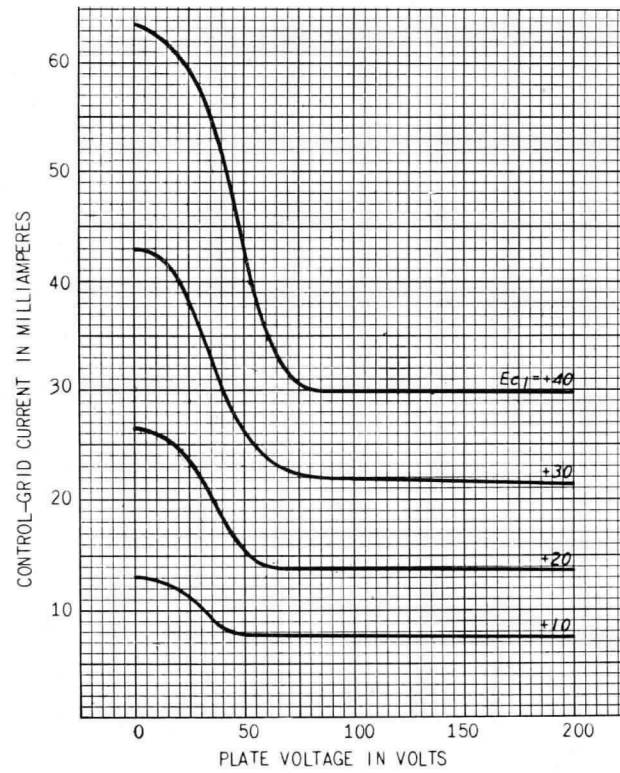
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GL-1624 TYPICAL CHARACTERISTICS

$E_i = 2.5$ VOLTS, SCREEN VOLTS = 250

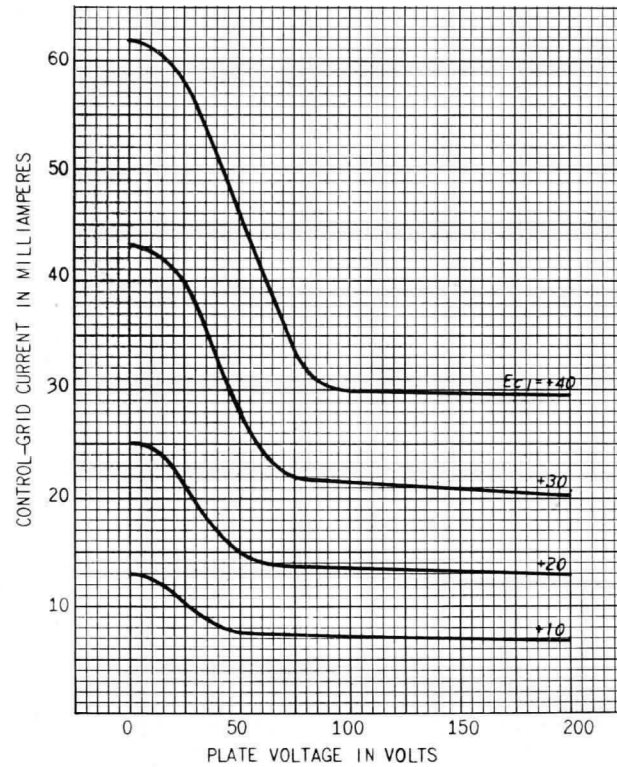


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GL-1624 TYPICAL CHARACTERISTICS

$E_i = 2.5$ VOLTS, SCREEN VOLTS = 300



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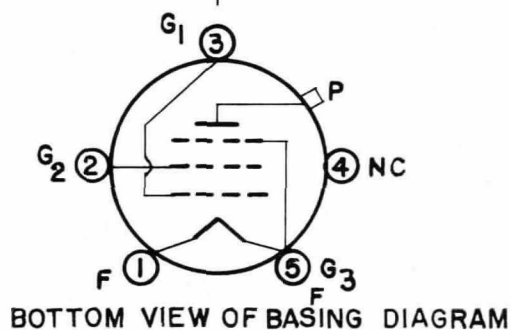
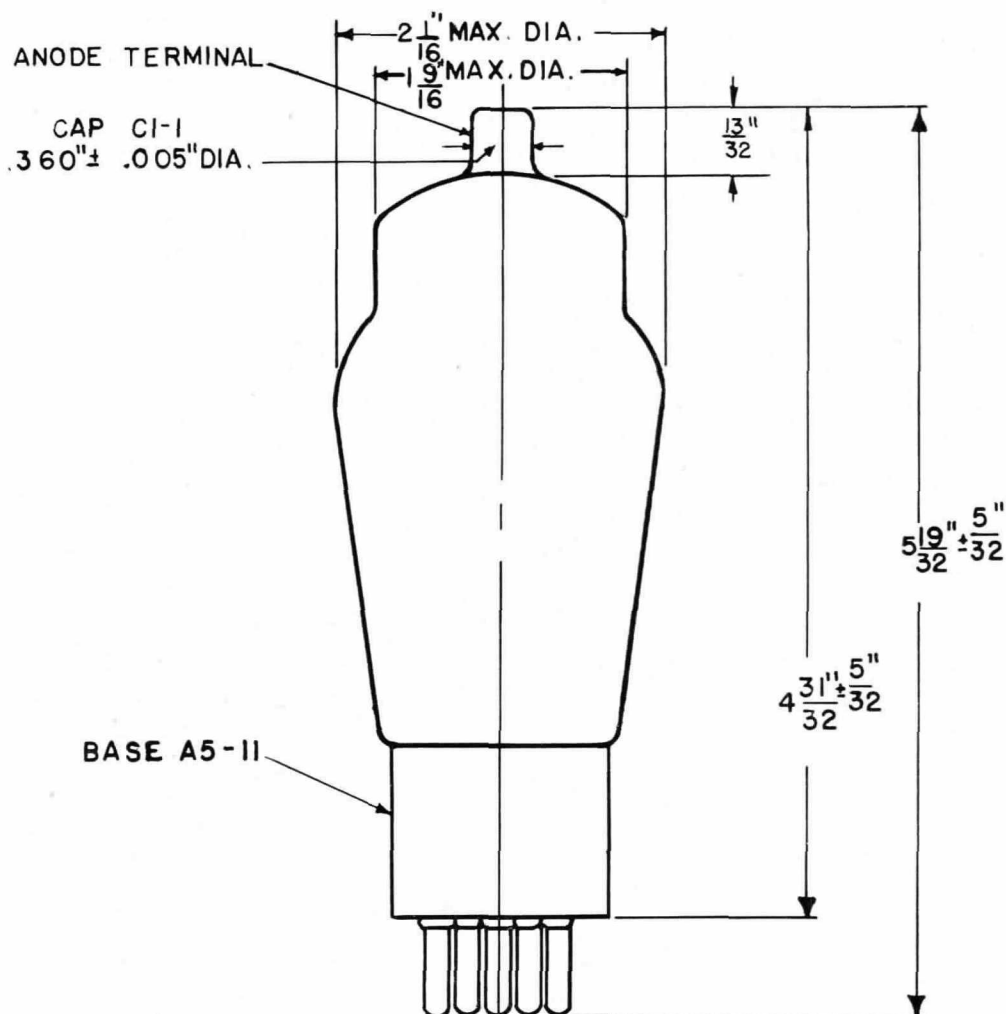
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GL-1624 OUTLINE

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