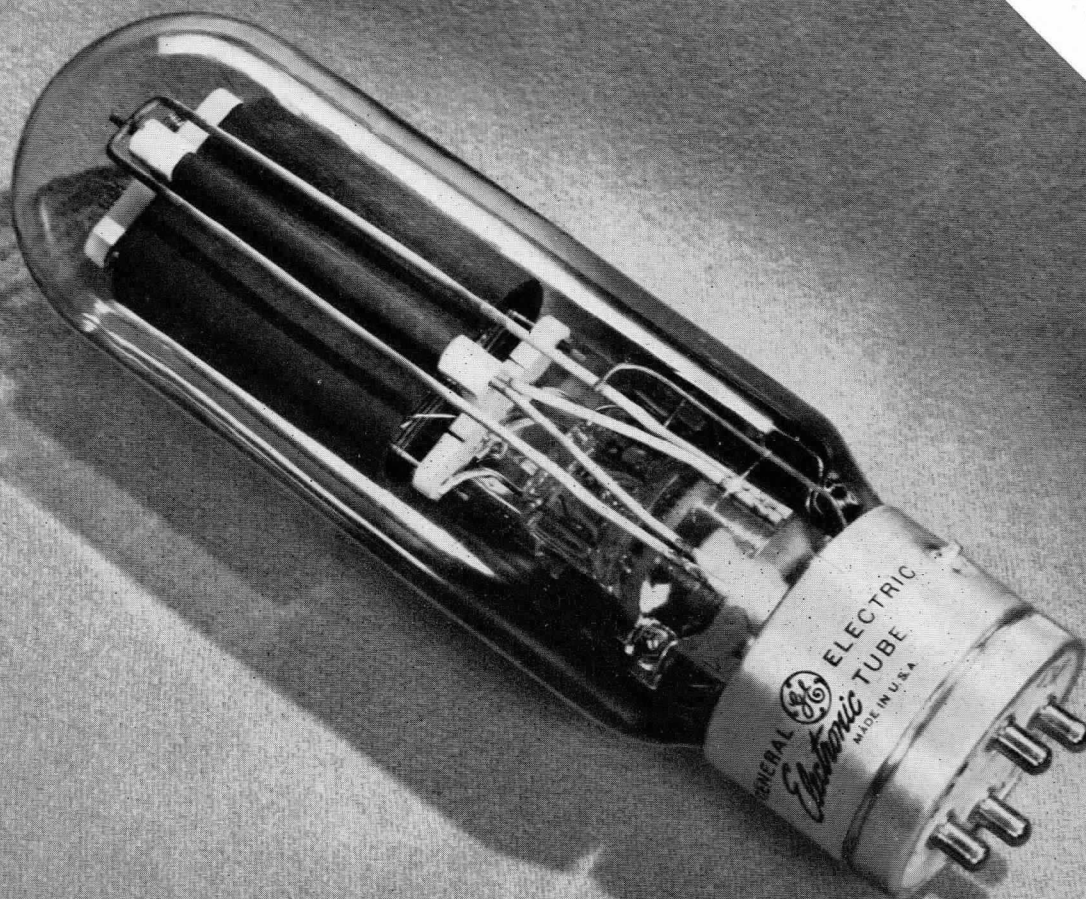




TRIODE

DESCRIPTION

The GL-838, a high-mu, three-electrode tube, is especially designed for use as a zero-bias Class B audio-frequency power amplifier. The grid is designed so that the amplification factor of the tube varies with the amplitude of the input

signal. This feature is valuable in the design of Class B amplifiers since it facilitates their ability to give high output with low distortion. The GL-838 may be used at maximum ratings at frequencies as high as 30 megacycles.

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.....8 micromicrofarads

Input.....6.5 micromicrofarads

Output.....5 micromicrofarads

Frequency for maximum ratings.....30 megacycles



GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)

Mechanical

Base description.....	jumbo 4-large pin
Net weight, approx.....	8 ounces
Shipping weight, approx.....	7 pounds
Mounting position.....	vertical, base up or down—horizontal, plate in vertical plane

	Typical Operation	Maximum Ratings	
CLASS B AUDIO-FREQUENCY POWER AMPLIFIER (TWO TUBES)			
D-c plate voltage.....	1000	1250	1250 volts
Maximum signal plate current, per tube*.....			175 milliamperes
D-c maximum signal plate input, per tube*.....			220 watts
Plate dissipation, per tube*.....			100 watts
D-c grid voltage.....	0	0	volts
Peak a-f grid input voltage.....	200	200	volts
Zero signal plate current.....	106	148	milliamperes
Maximum signal plate current.....	320	320	milliamperes
Maximum signal plate input*.....	320	400	watts
Maximum signal driving power, approx.....	7	7.5	watts
Effective load, plate-to-plate.....	6900	9000	ohms
Maximum signal plate power output.....	200	260	watts

CLASS B RADIO-FREQUENCY POWER AMPLIFIER

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

D-c plate voltage.....	1000	1250	1250 volts
D-c grid voltage.....	0	0	volts
D-c plate current.....	130	106	150 milliamperes
Plate input.....			150 watts
Plate dissipation.....			100 watts
Peak r-f grid input voltage.....	70	60	volts
D-c grid current, approx.....	15	15	milliamperes
Driving power, approx**.....	8	6	watts
Plate power output.....	40	42.5	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

D-c plate voltage.....	750	1000	1000 volts
D-c grid voltage.....	—100	—135	—400 volts
D-c plate current.....	150	150	175 milliamperes
D-c grid current, approx.....	60	60	70 milliamperes
Plate input.....			175 watts
Plate dissipation.....			67 watts
Peak r-f grid input voltage, approx.....	220	255	volts
Driving power, approx.....	14	16	watts
Plate power output.....	65	100	watts

CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR

Key down conditions per tube without modulation†

D-c plate voltage.....	750	1000	1250	1250 volts
D-c grid voltage.....	—80	—85	—90	—400 volts
D-c plate current.....	150	150	150	175 milliamperes
D-c grid current, approx.....	30	30	30	70 milliamperes
Plate input.....				220 watts
Plate dissipation.....				100 watts
Peak r-f grid input voltage, approx.....	190	195	200	volts
Driving power, approx.....	6	6	6	watts
Plate power output.....	65	100	130	watts

* Averaged over any audio-frequency cycle.

** At crest of audio-frequency cycle.

† 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.

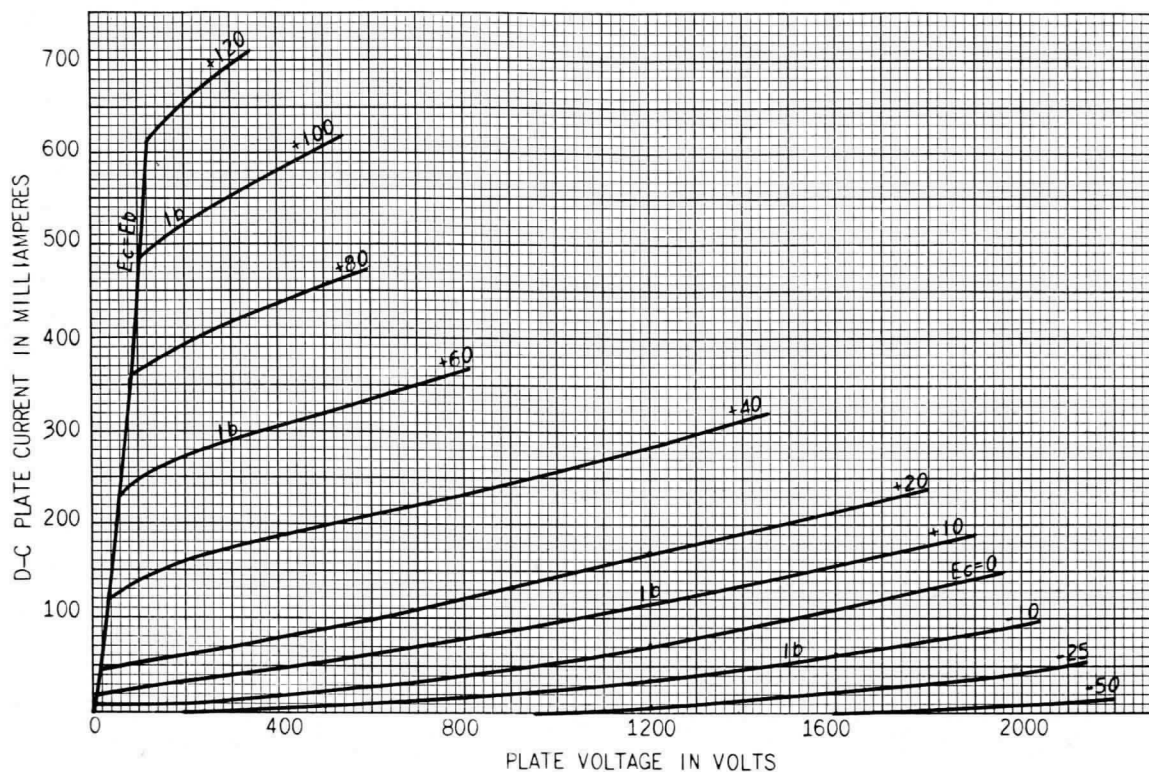
APPLICATION NOTES

GL-838 can be operated at maximum ratings in all classes of service at frequencies as high as 30 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 CHARACTERISTICS). The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used up to 120 megacycles for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	30	60	120 megacycles
Maximum permissible percentage of maximum rated plate voltage and plate input			
Class B telephony	100	85	70 per cent
Class C { telephony	100	75	per cent
{ telegraphy			

GL-838

AVERAGE PLATE CHARACTERISTICS

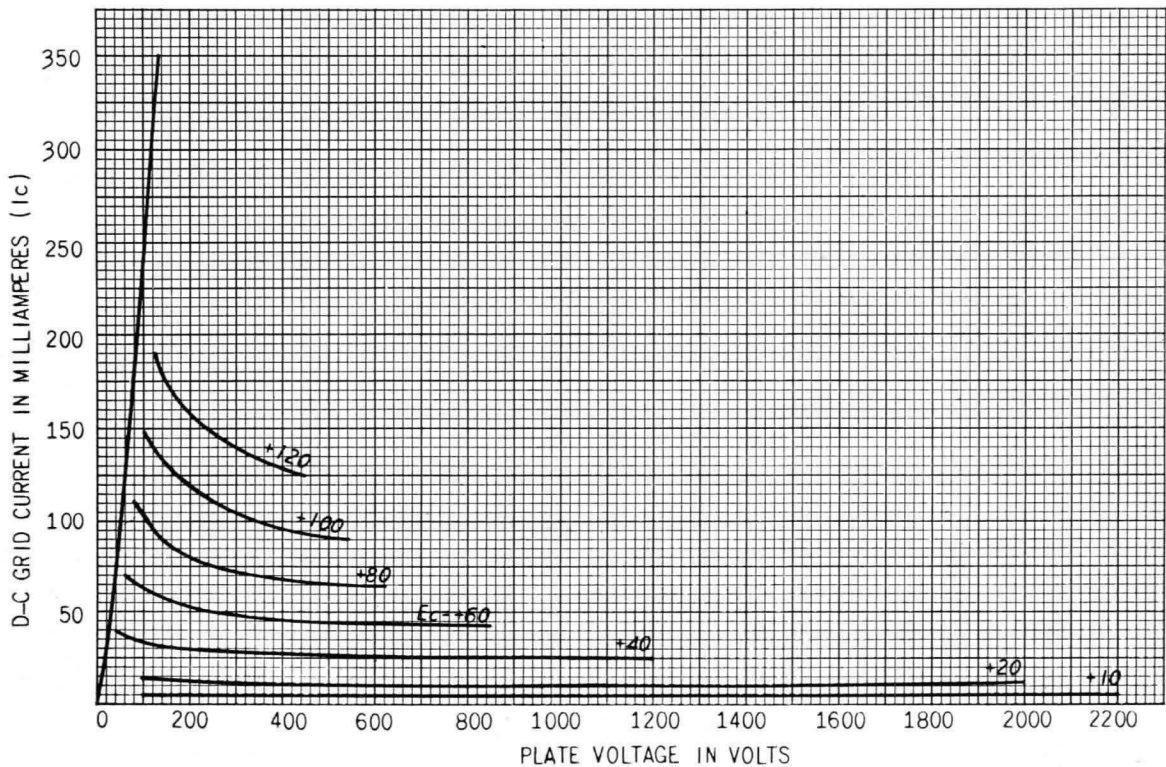
 $E_c = 10$ VOLTS A-C

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GL-838 AVERAGE PLATE CHARACTERISTICS

$E_i = 10$ VOLTS A-C

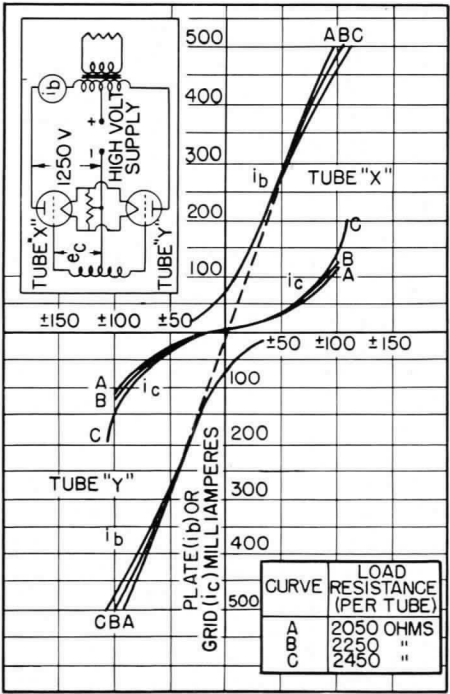


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GL-838 DYNAMIC TRANSFER CHARACTERISTICS

$E_i = 10$ VOLTS A-C, PLATE VOLTS = 1250, D-C GRID BIAS VOLTS = 0



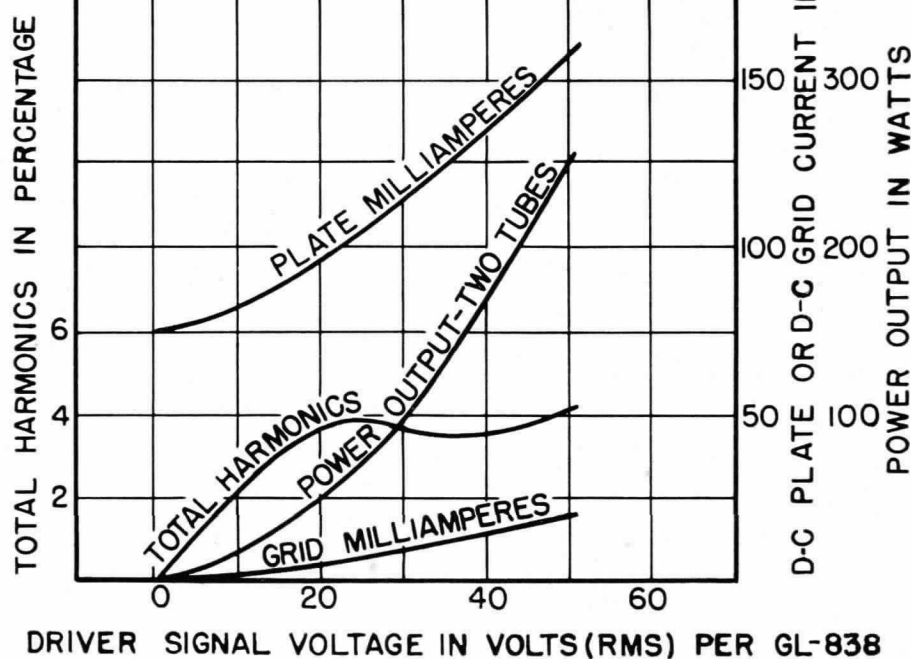
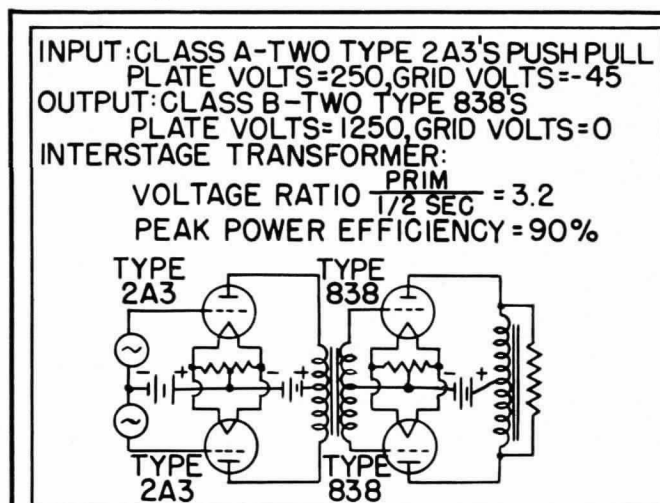
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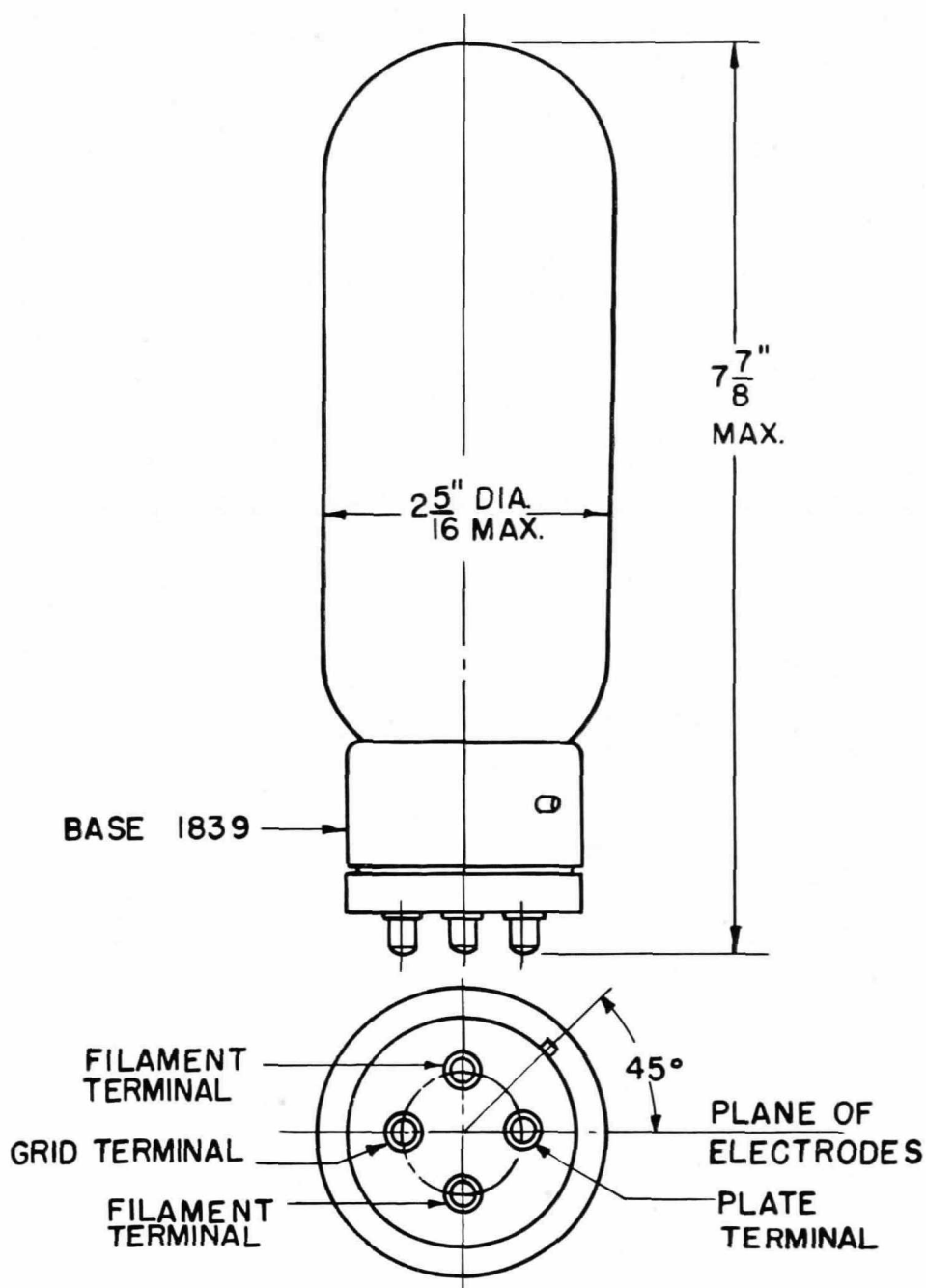
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GL-838

OPERATION CHARACTERISTICS

$$E_f = \begin{cases} 10 \text{ VOLTS AC FOR 838'S,} \\ 2.5 \text{ VOLTS AC FOR 2A3'S} \end{cases}$$





GL-838 OUTLINE

K-4909036

12-11-44