



TRIODE

DESCRIPTION

The GL-211 is a general-purpose three-electrode transmitting tube designed for use as a Class A, B or C radio-frequency power amplifier. This tube

can be operated at maximum ratings at frequencies as high as 15 megacycles and at frequencies up to 80 megacycles at reduced ratings.

TECHNICAL INFORMATION

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

GENERAL CHARACTERISTICS

Number of electrodes.....3

Electrical

Cathode—Filamentary

Filament voltage.....10 volts

Filament current.....3.25 amperes

Amplification factor.....12

Grid-plate transconductance, $I_b = 60$ ma.....3600 micromhos

Direct interelectrode capacitances

Grid-plate.....14.0 micromicrofarads

Input.....5.4 micromicrofarads

Output.....4.8 micromicrofarads

Frequency for maximum ratings.....15 megacycles



GENERAL  ELECTRIC

TECHNICAL INFORMATION (CONT'D)

Mechanical

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

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

Class A Audio-frequency Amplifier and Modulator

Maximum Ratings, Absolute Values

D-c plate voltage.....	1250 volts
Plate dissipation.....	75 watts

Typical Operation

Filament voltage.....	10	volts
D-c plate voltage.....	750	1000 1250 volts
D-c grid voltage.....	-46	-61 -80 volts
Peak grid swing, approx.....	41	56 75 volts
D-c plate current.....	34	53 60 milliamperes
Plate resistance.....	4400	3800 3600 ohms
Load resistance.....	8800	7600 9200 ohms
Plate power output, 5% second harmonic.....	5.6	12 19.7 watts

Class B Audio-frequency Power Amplifier (Two Tubes)

Maximum Ratings, Absolute Values

D-c plate voltage.....	1250 volts
Max signal plate current, per tube§.....	0.175 ampere
D-c max signal plate input, per tube§.....	220 watts
Plate dissipation, per tube§.....	100 watts

Typical Operation

Filament voltage.....	10	volts
D-c plate voltage.....	1000	1250 volts
D-c grid voltage.....	-72	-95 volts
Peak a-f grid input voltage.....	380	410 volts
Zero signal plate current.....	20	20 milliamperes
Max signal plate current.....	320	320 milliamperes
Max signal driving power, approx.....	7.5	8 watts
Effective load, plate-to-plate.....	6900	9000 ohms
Max signal plate power output.....	200	260 watts

Class B Radio-frequency Power Amplifier

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

Maximum Ratings, Absolute Values

D-c plate voltage.....	1250 volts
D-c plate current.....	0.150 ampere
Plate input.....	150 watts
Plate dissipation.....	100 watts

Typical Operation

Filament voltage.....	10	volts
D-c plate voltage.....	1000	1250 volts
D-c grid voltage.....	-72	-95 volts
D-c plate current.....	0.130	0.106 ampere
Peak r-f grid input voltage.....	125	125 volts
D-c grid current, approx.....	5	1 milliampere
Driving power†, approx.....	10	7.5 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 maximum modulation factor of 1.0

Maximum Ratings, Absolute Values

D-c plate voltage.....	1000 volts
D-c grid voltage.....	-400 volts
D-c plate current.....	0.175 ampere
D-c grid current, approx.....	0.50 ampere
Plate input.....	175 watts
Plate dissipation.....	67 watts

Typical Operation

Filament voltage.....	10	volts
D-c plate voltage.....	750	1000 volts
D-c grid voltage.....	-200	-260 volts
D-c plate current.....	0.150	0.150 ampere
D-c grid current, approx.....	0.035	0.035 ampere
Peak r-f grid input voltage, approx.....	350	410 volts
Driving power, approx.....	12	14 watts
Plate power output.....	65	100 watts

CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR

Key down conditions per tube without modulation†

Maximum Ratings, Absolute Values

D-c plate voltage.....	1250 volts
D-c grid voltage.....	-400 volts
D-c plate current.....	0.175 ampere
D-c grid current, approx.....	0.050 ampere
Plate input.....	220 watts
Plate dissipation.....	100 watts

Typical Operation

Filament voltage.....	10	volts
D-c plate voltage.....	750	1000 1250 volts
D-c grid voltage.....	-135	-175 -225 volts
D-c plate current.....	0.150	0.150 0.150 ampere
D-c grid current, approx.....	0.018	0.018 0.018 ampere
Peak r-f grid input voltage, approx.....	275	315 375 volts
Driving power, approx.....	5	6 7 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

The normal value of grid leak, when the tube is used as an oscillator or radio-frequency power amplifier (Class C), is in the neighborhood of 5000 ohms, although this may be replaced by a suitable fixed bias. If self-bias is used the cathode resistor should be approximately 1000 ohms.

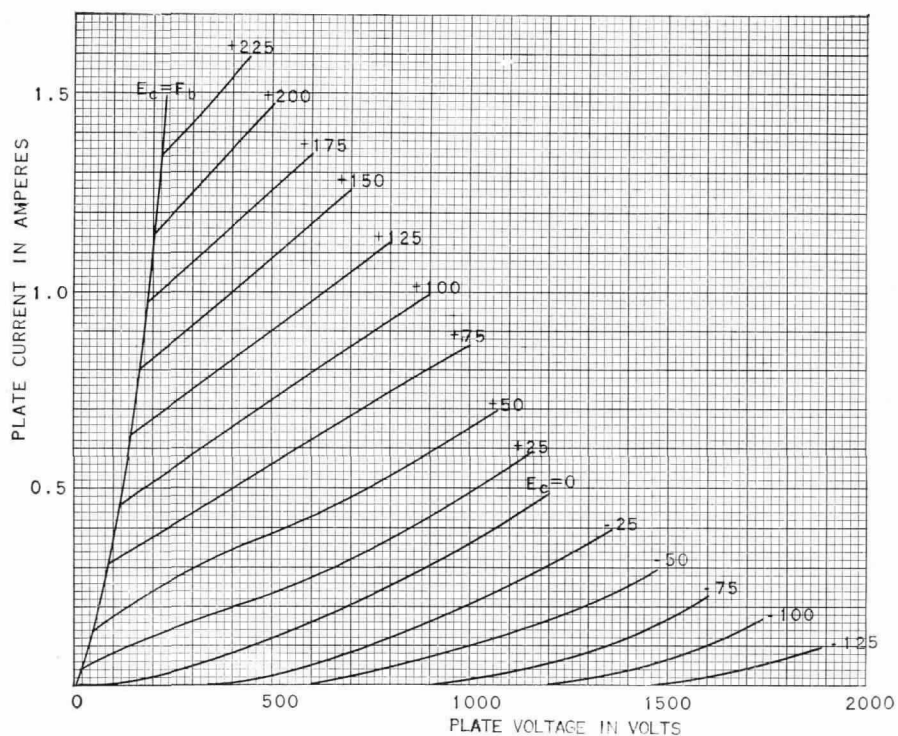
The 211 can be operated at frequencies as high as 15 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced as the frequency is raised (other maximum ratings are the same as shown above). The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used up to 80 megacycles for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency.....	15	30	80 megacycles
Percentage of maximum rated plate voltage and plate input			
Class B.....	100	88	70 per cent
Class C.....	100	80	50 per cent

The resonant frequency of the grid-plate circuit is approximately 100 megacycles.

GL-211 AVERAGE PLATE CHARACTERISTICS

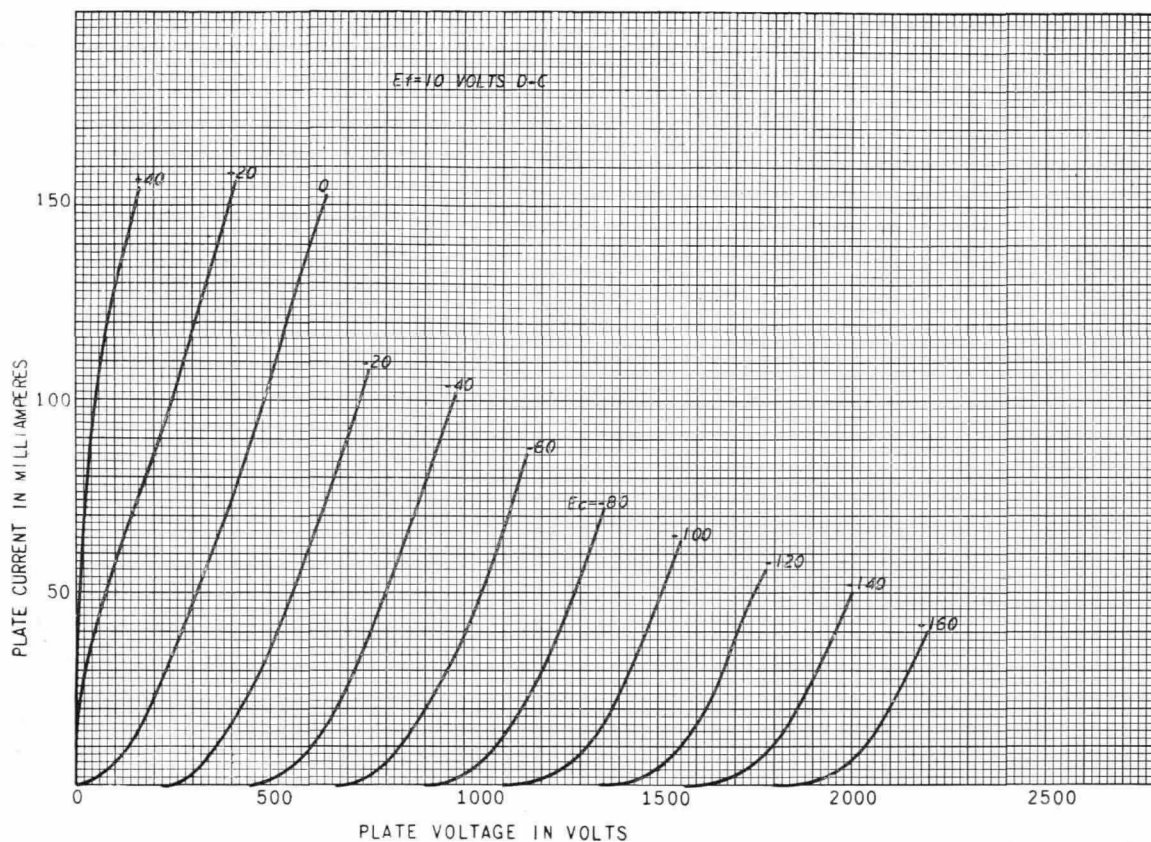
$E_f = 10$ VOLTS A-C



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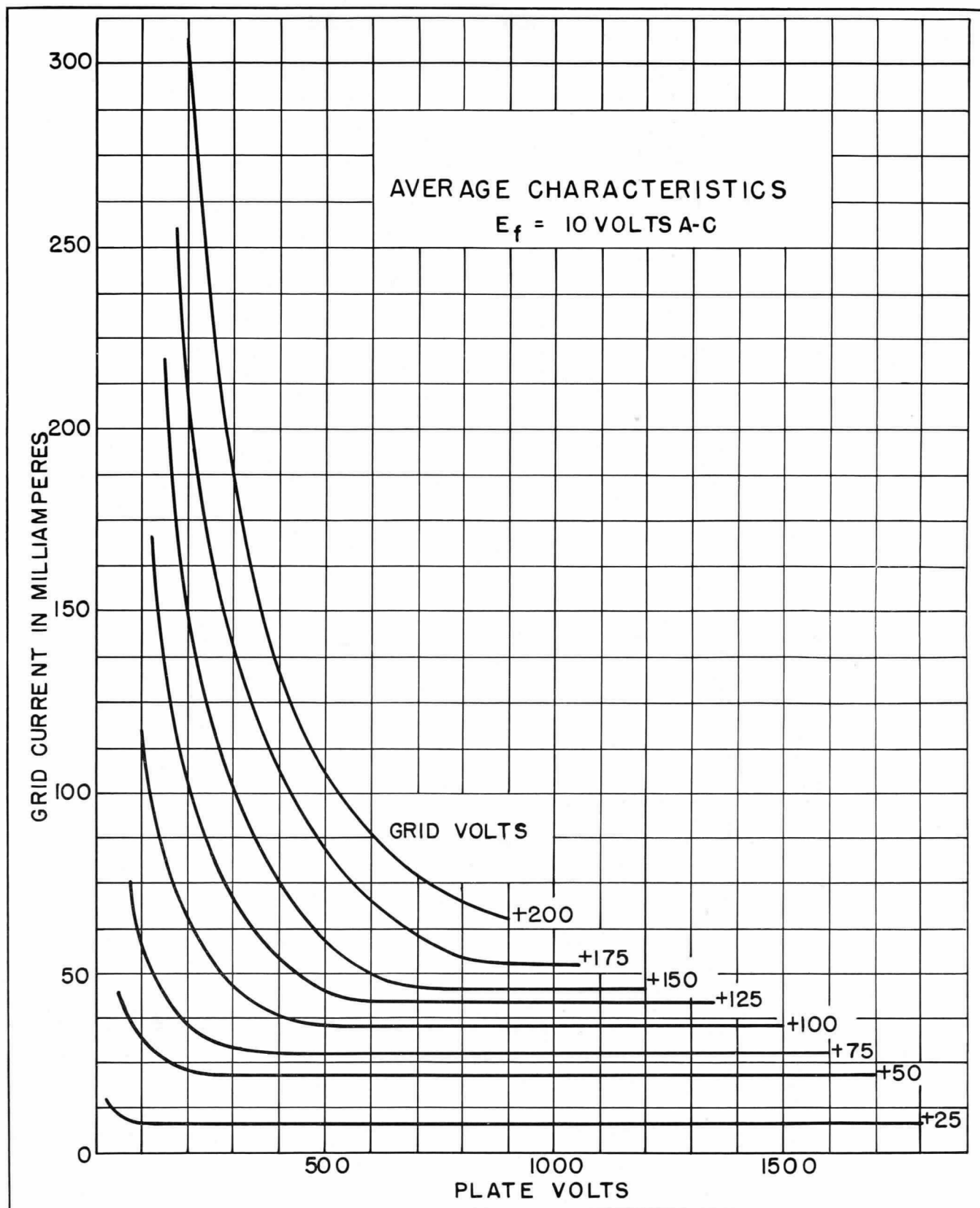
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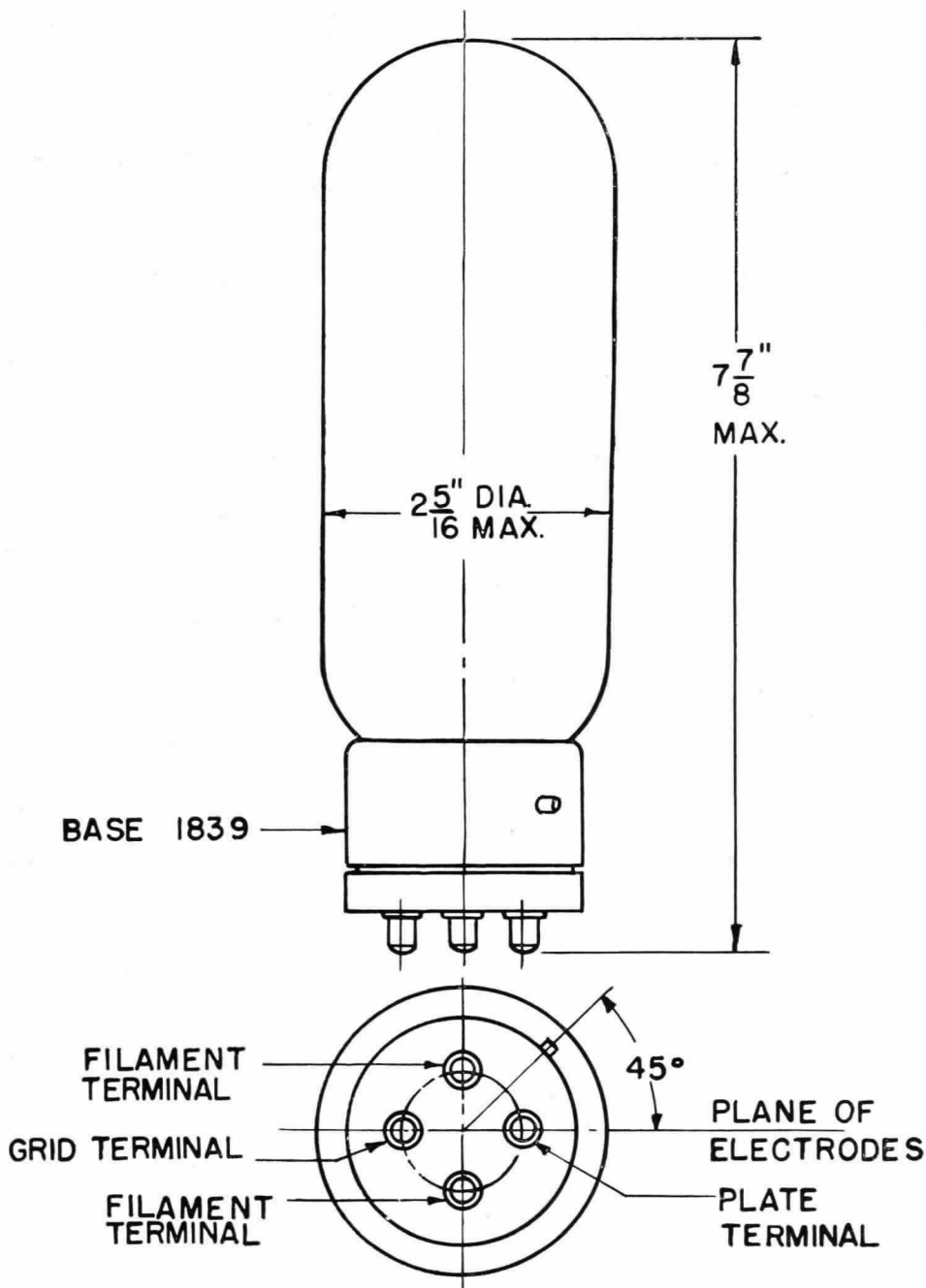
GL-211 AVERAGE PLATE CHARACTERISTICS



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GL-211 OUTLINE

K-4909036

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Electronics Department
GENERAL  ELECTRIC
 Schenectady, N. Y.