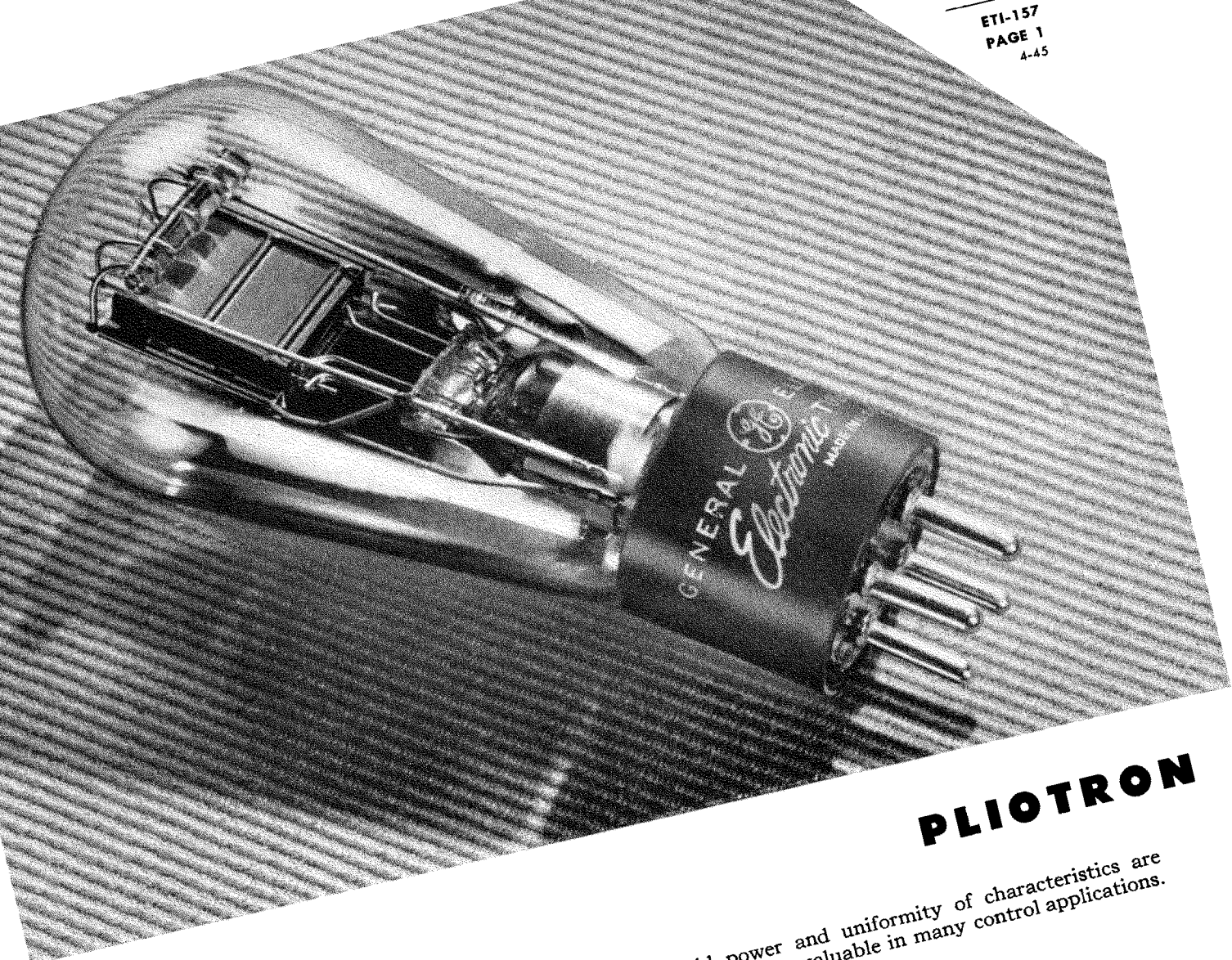




# PLIOTRON

## DESCRIPTION

The PJ-7 is a high-vacuum tube designed for use in amplification and relay applications. The low grid power and uniformity of characteristics are particularly valuable in many control applications.

## TECHNICAL INFORMATION

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

## GENERAL CHARACTERISTICS

### Electrical

|                                                                                                 |                      |
|-------------------------------------------------------------------------------------------------|----------------------|
| Number of electrodes                                                                            | 3                    |
| Filament voltage                                                                                | 4.5 volts            |
| Filament current                                                                                | 1.1 amperes          |
| Average characteristics when $e_b = 350$ volts, $i_b = 4.5$ milliamperes, $e_f = 4.5$ volts d-c |                      |
| Grid voltage                                                                                    | -4 volts             |
| Amplification factor                                                                            | 30                   |
| Grid-plate transconductance                                                                     | 1120 micromhos       |
| Direct interelectrode capacitance                                                               | 8.5 micromicrofarads |
| Grid-plate                                                                                      | 3.0 micromicrofarads |
| Grid-cathode                                                                                    | 4.0 micromicrofarads |
| Plate-cathode                                                                                   |                      |

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## TECHNICAL INFORMATION (CONT'D)

### Mechanical

|                               |                                                          |
|-------------------------------|----------------------------------------------------------|
| Base .....                    | medium 4-pin bayonet                                     |
| Net weight, approx. ....      | 2 ounces                                                 |
| Shipping weight, approx. .... | 3 pounds                                                 |
| Operating position .....      | vertical or horizontal with plane of electrodes vertical |

## MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

### CLASS A AUDIO-FREQUENCY AMPLIFIER AND MODULATOR

|                                                        | Typical Operation | Maximum Ratings  |
|--------------------------------------------------------|-------------------|------------------|
| D-c plate voltage .....                                | 350               | 350 volts        |
| Plate dissipation .....                                | ...               | 7.5 watts        |
| D-c grid voltage .....                                 | -6                | ... volts        |
| Peak grid swing, approx. ....                          | 6                 | ... volts        |
| D-c plate current .....                                | 2.8               | ... milliamperes |
| Load resistance .....                                  | 40,000            | ... ohms         |
| Plate power output, less than 5% second harmonic ..... | 58                | ... volts        |

### CLASS B RADIO-FREQUENCY POWER AMPLIFIER

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

|                         |     |                 |
|-------------------------|-----|-----------------|
| D-c plate voltage ..... | 350 | 350 volts       |
| D-c grid voltage .....  | -10 | ... volts       |
| D-c plate current ..... | 32  | 35 milliamperes |
| R-f grid current .....  | ... | 2.5 amperes     |
| Plate dissipation ..... | 9   | 10 watts        |
| Output, approx. ....    | 2   | ... 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

|                                  |     |                 |
|----------------------------------|-----|-----------------|
| D-c plate voltage .....          | 300 | 300 volts       |
| D-c grid voltage .....           | -40 | -100 volts      |
| D-c plate current .....          | 35  | 40 milliamperes |
| D-c grid current, approx. ....   | 8   | 15 milliamperes |
| R-f grid current .....           | ... | 2 amperes       |
| Plate dissipation .....          | 5.5 | 10 watts        |
| Plate power output, approx. .... | 5   | ... watts       |

### CLASS C RADIO-FREQUENCY POWER AMPLIFIER AND OSCILLATOR

Key-down conditions per tube without modulation\*

|                                  |     |                 |
|----------------------------------|-----|-----------------|
| D-c plate voltage .....          | 350 | 350 volts       |
| D-c grid voltage .....           | -25 | -100 volts      |
| D-c plate current .....          | 35  | 40 milliamperes |
| D-c grid current, approx. ....   | 5   | 15 milliamperes |
| R-f grid current .....           | ... | 3 amperes       |
| Plate dissipation .....          | 6   | 10 watts        |
| Plate power output, approx. .... | 6   | ... watts       |

\* 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

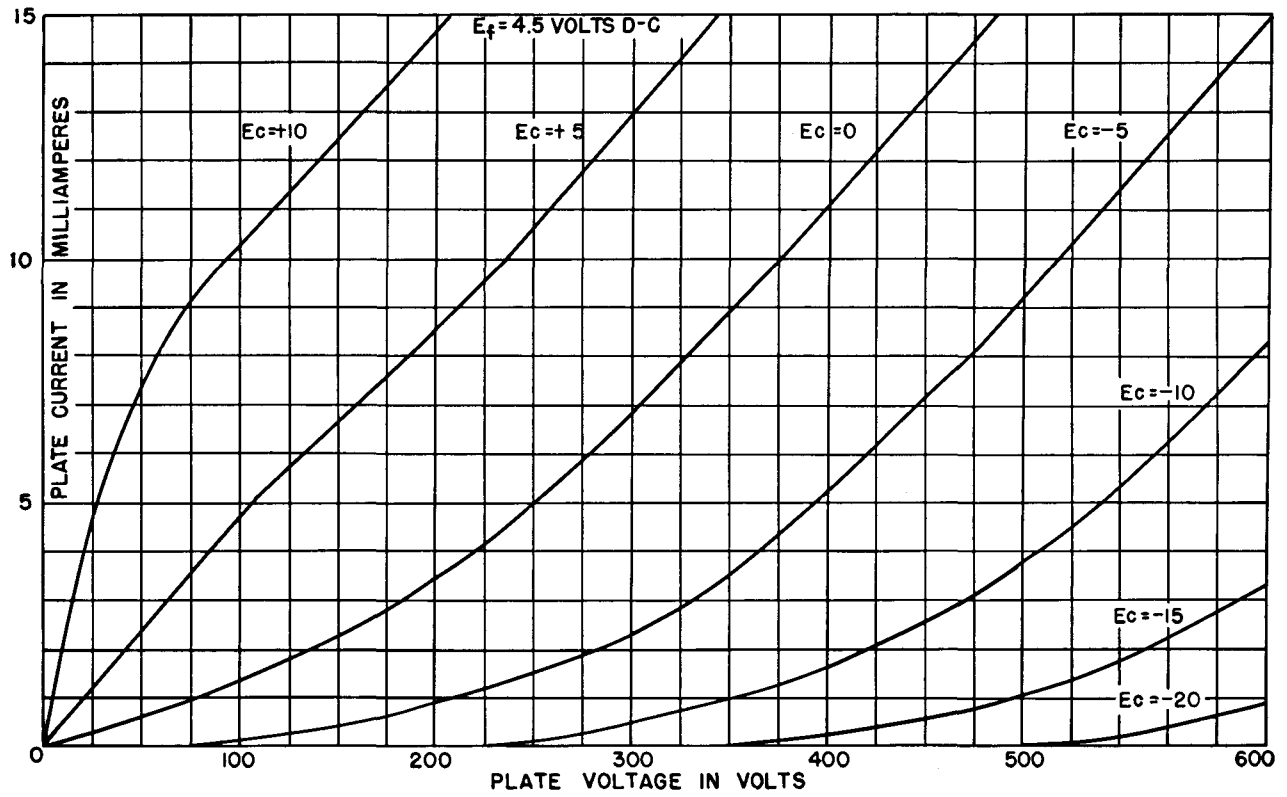
The PJ-7 can be operated at frequencies as high as six megacycles, and may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced as the frequency is raised (other maximum ratings are the same as shown above). The tabulation

below shows the highest percentage of maximum plate voltage and power input that can be used up to 170 megacycles for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

|                                               |     |    |                |
|-----------------------------------------------|-----|----|----------------|
| Frequency .....                               | 6   | 45 | 170 megacycles |
| Class B, r-f .....                            | 100 | 75 | 50 per cent    |
| Class C, plate modulated or unmodulated ..... | 100 | 75 | 50 per cent    |

The normal value of grid leak, when the tube is used as an oscillator or r-f power amplifier (Class c), is in the neighborhood of 5000 ohms, although this may be replaced

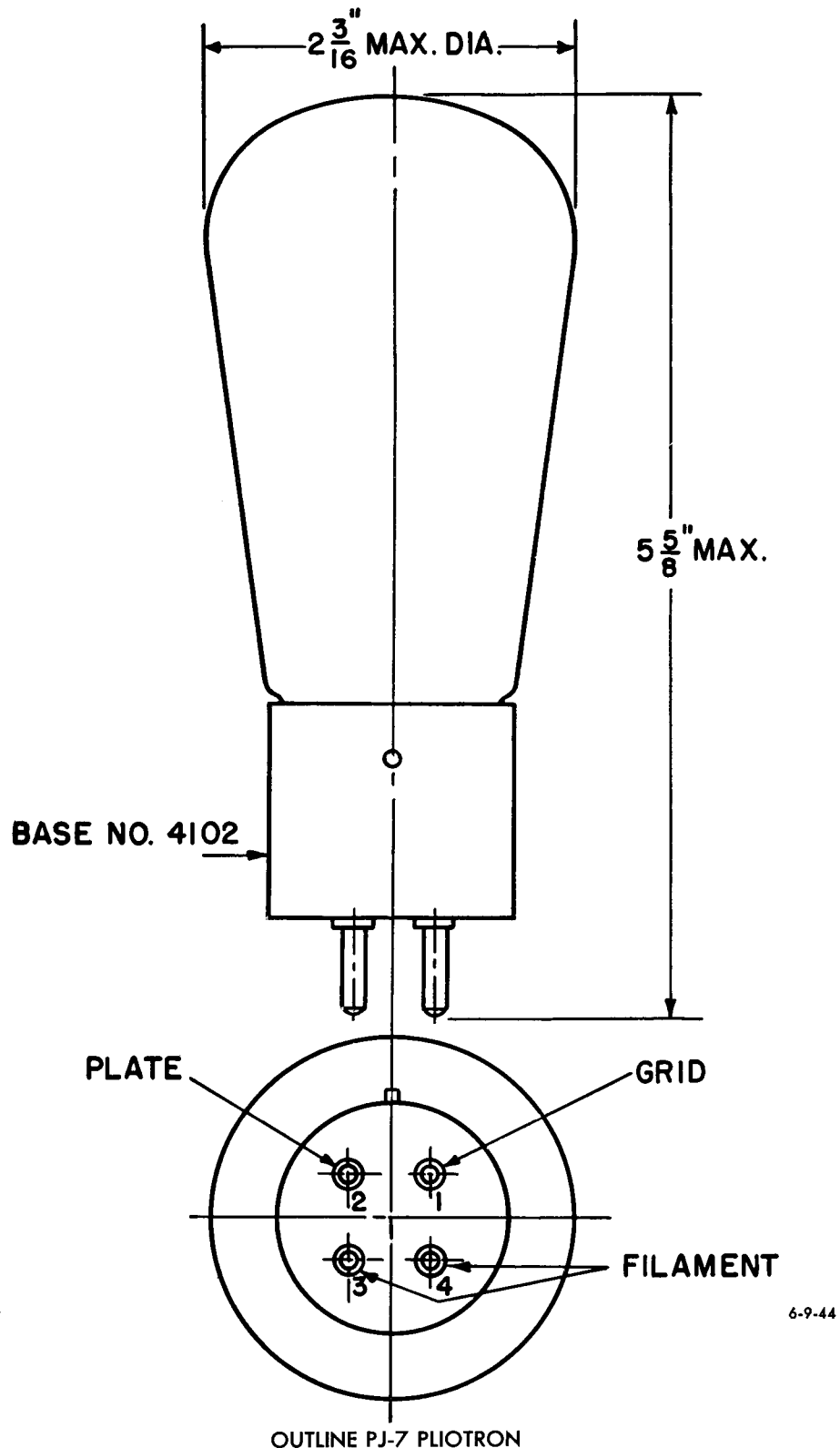
by a suitable fixed bias. If self-bias is used, the cathode resistor should be approximately 600 ohms.



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PJ-7 AVERAGE STATIC CHARACTERISTICS



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