

# 6J6—5J6—19J6

## TWIN TRIODE

### DESCRIPTION AND RATING

The 6J6 is a miniature medium-mu twin triode designed for use as a radio-frequency amplifier, oscillator, or mixer. With the grids connected in push-pull and the plates connected in parallel, each type may be used as a mixer at frequencies as high as 600 megacycles.

The 5J6, 6J6, and 19J6 are alike except for heater ratings and heater-cathode ratings. The 5J6, in addition, exhibits a controlled heater warm-up characteristic which makes the tube especially suited for use in television receivers which employ series-connected heaters. When the 5J6 is used in conjunction with other 600-milliamperere types which exhibit essentially the same heater warm-up characteristic, heater voltage surges across the individual tubes are minimized during the warm-up period.

### GENERAL

#### ELECTRICAL

Cathode—Coated Unipotential

|                          | 5J6 | 6J6  | 19J6         |
|--------------------------|-----|------|--------------|
| Heater Voltage, AC or DC | 4.7 | 6.3  | 18.9 Volts   |
| Heater Current           | 0.6 | 0.45 | 0.15 Amperes |
| Heater Warm-up Time*     | 11  | .... | .... Seconds |

#### Direct Interelectrode Capacitances

|                             | With Shield† | Without Shield       |
|-----------------------------|--------------|----------------------|
| Grid to Plate, Each Section | 1.5          | 1.6 $\mu\mu\text{f}$ |
| Input, Each Section         | 2.6          | 2.2 $\mu\mu\text{f}$ |
| Output, Section 1           | 1.6          | 0.4 $\mu\mu\text{f}$ |
| Output, Section 2           | 1.0          | 0.4 $\mu\mu\text{f}$ |

#### MECHANICAL

Mounting Position—Any

Envelope—T-5½, Glass

Base—E7-1, Miniature Button 7-Pin

### MAXIMUM RATINGS

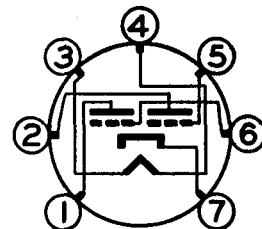
| DESIGN-CENTER VALUES, EACH SECTION | Class A <sub>1</sub><br>Amplifier | Class C<br>Telegraphy |
|------------------------------------|-----------------------------------|-----------------------|
| Plate Voltage                      | 300                               | 300 Volts             |
| Positive DC Grid Voltage           | 0                                 | 0 Volts               |
| Negative DC Grid Voltage           | ...                               | 40 Volts              |
| Plate Input                        | ...                               | 4.5 Watts             |
| Plate Dissipation                  | 1.5                               | 1.5 Watts             |
| DC Plate Current                   | ...                               | 15 Milliamperes       |
| DC Grid Current                    | ...                               | 8.0 Milliamperes      |

5J6 6J6 19J6 5J6 6J6 19J6

#### Heater-Cathode Voltage

|                                         |     |     |     |     |         |
|-----------------------------------------|-----|-----|-----|-----|---------|
| Heater Positive with Respect to Cathode |     |     |     |     |         |
| DC Component                            | 100 | ... | 100 | ... | Volts   |
| Total DC and Peak                       | 200 | 100 | 200 | 100 | Volts   |
| Heater Negative with Respect to Cathode |     |     |     |     |         |
| Total DC and Peak                       | 200 | 100 | 200 | 100 | Volts   |
| Grid Circuit Resistance                 |     |     |     |     |         |
| With Cathode Bias†                      | 0.5 | 0.5 | ... | ... | Megohms |

### BASING DIAGRAM

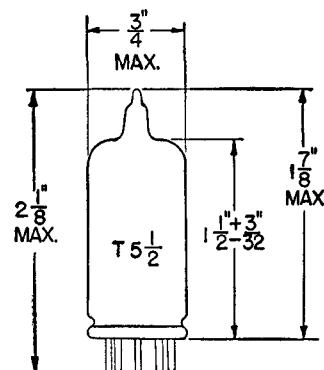


RETMA 78F

### TERMINAL CONNECTIONS

- Pin 1—Plate (Section 2)
- Pin 2—Plate (Section 1)
- Pin 3—Heater
- Pin 4—Heater
- Pin 5—Grid (Section 1)
- Pin 6—Grid (Section 2)
- Pin 7—Cathode

### PHYSICAL DIMENSIONS



RETMA 5-2

**GENERAL ELECTRIC**

Supersedes ET-T835 dated 2-54

## CHARACTERISTICS AND TYPICAL OPERATION

### CLASS A<sub>1</sub> AMPLIFIER, EACH SECTION§

|                                         |      |              |
|-----------------------------------------|------|--------------|
| Plate Voltage . . . . .                 | 100  | Volts        |
| Cathode-Bias Resistor . . . . .         | 50   | Ohms         |
| Amplification Factor . . . . .          | 38   |              |
| Plate Resistance, approximate . . . . . | 7100 | Ohms         |
| Transconductance . . . . .              | 5300 | Micromhos    |
| Plate Current . . . . .                 | 8.5  | Milliamperes |

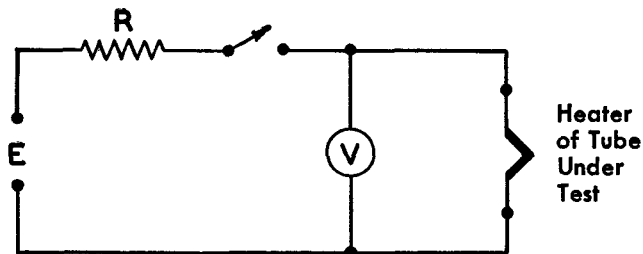
### CLASS C TELEGRAPHY, RF POWER AMPLIFIER AND OSCILLATOR—BOTH SECTIONS IN PUSH-PULL

|                                           |      |              |
|-------------------------------------------|------|--------------|
| DC Plate Voltage . . . . .                | 150  | Volts        |
| DC Grid Voltage $\pi$ . . . . .           | -10  | Volts        |
| DC Plate Current . . . . .                | 30   | Milliamperes |
| DC Grid Current, approximate . . . . .    | 16   | Milliamperes |
| Grid Driving Power, approximate . . . . . | 0.35 | Watts        |
| Power Output, approximate . . . . .       | 3.5  | Watts        |

### MIXER SERVICE, EACH SECTION△

|                                         |       |              |
|-----------------------------------------|-------|--------------|
| Plate Voltage . . . . .                 | 150   | Volts        |
| Cathode-Bias Resistor . . . . .         | 810   | Ohms         |
| Oscillator Peak Voltage . . . . .       | 3.0   | Volts        |
| Plate Resistance, approximate . . . . . | 10200 | Ohms         |
| Conversion Transconductance . . . . .   | 1900  | Micromhos    |
| Plate Current . . . . .                 | 4.8   | Milliamperes |

\* Heater warm-up time is defined as the time required in the circuit shown at the right for the voltage across the heater terminals to increase from zero to the heater test voltage ( $V_1$ ). For this type,  $E=18.7$  volts (RMS or DC),  $V_1=3.73$  volts (RMS or DC), and  $R=23.5$  ohms.



† With external shield (RETMA 316) connected to pin 7.

‡ Operation with fixed bias is not recommended.

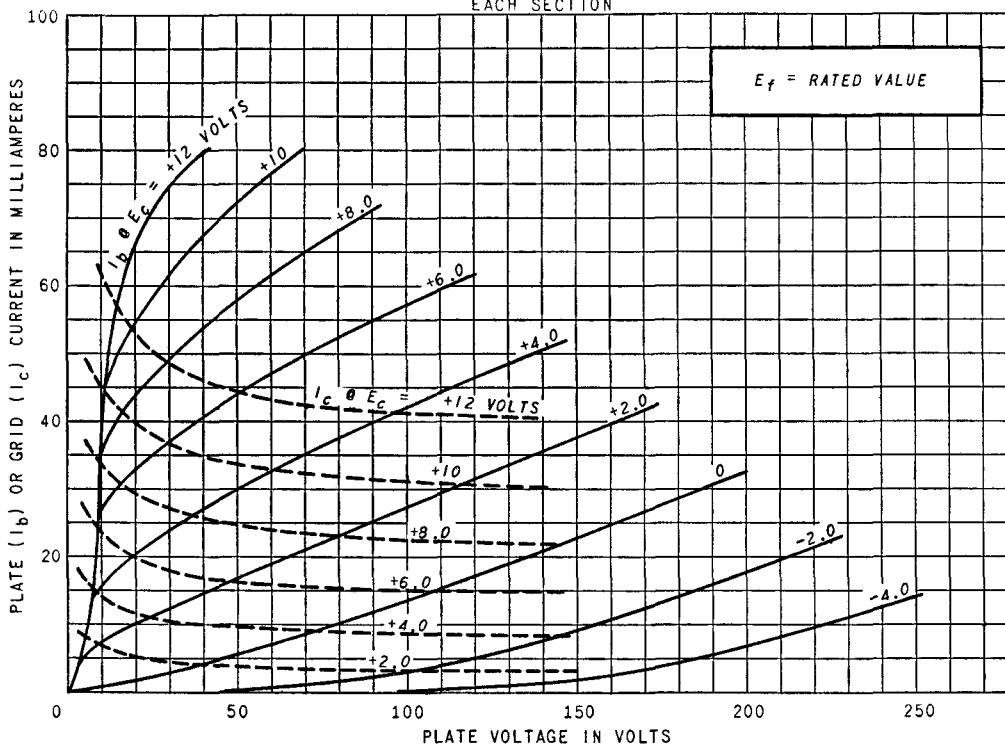
§ Each section separately with specified voltages applied to both sections.

$\pi$  Obtained by a 625-ohm grid resistor, a 220-ohm cathode resistor, or a fixed-voltage supply.

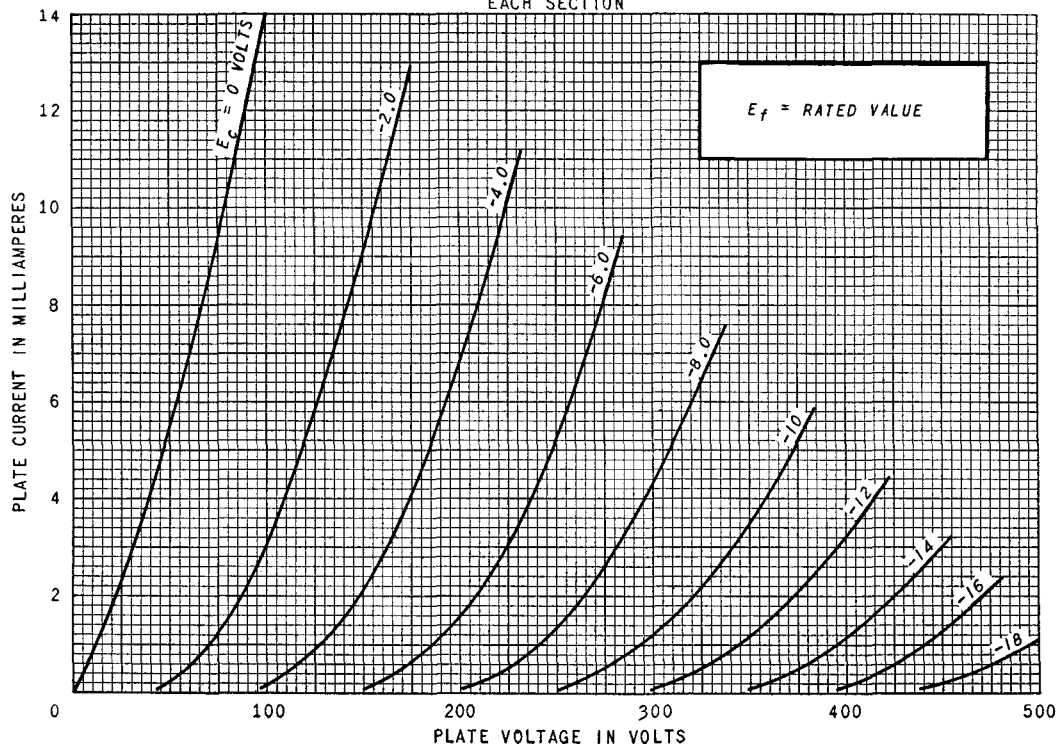
△Each section separately with grid and plate of opposite section grounded. In actual service, the value of the cathode-bias resistor is determined by the total cathode current of both sections.

Note: Approximately 1.0 watt can be obtained when the tube is operated as a push-pull oscillator at 250 megacycles with a plate voltage of 150 volts, with maximum rated plate dissipation, and with a grid resistor of 2000 ohms common to both sections.

# AVERAGE PLATE CHARACTERISTICS EACH SECTION

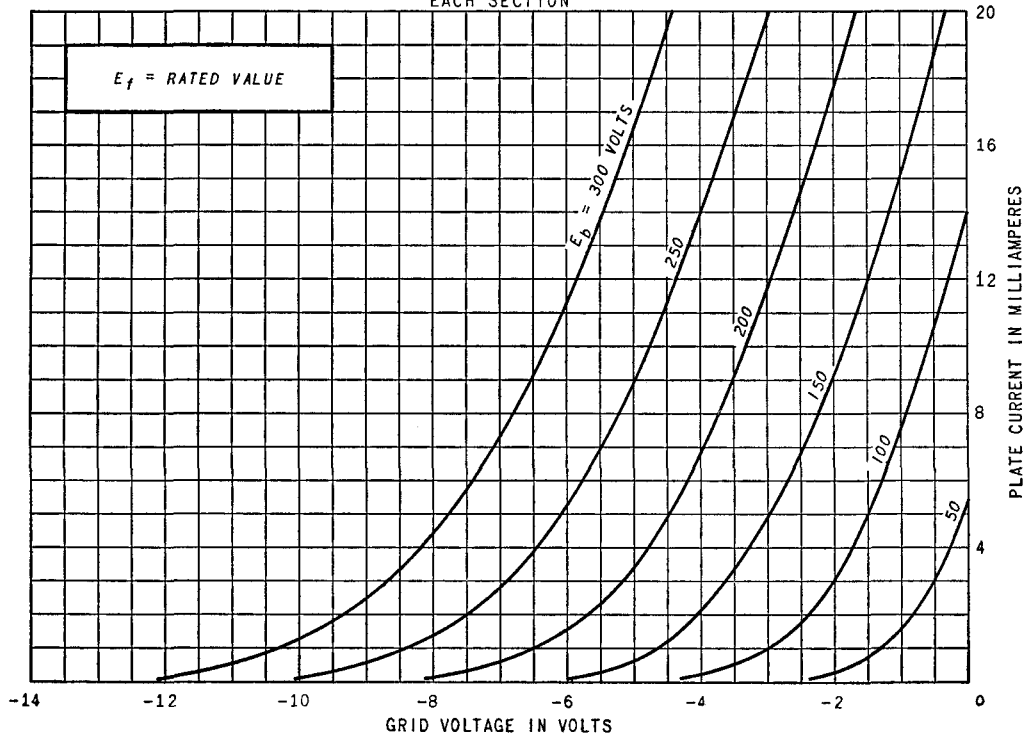


# AVERAGE PLATE CHARACTERISTICS EACH SECTION



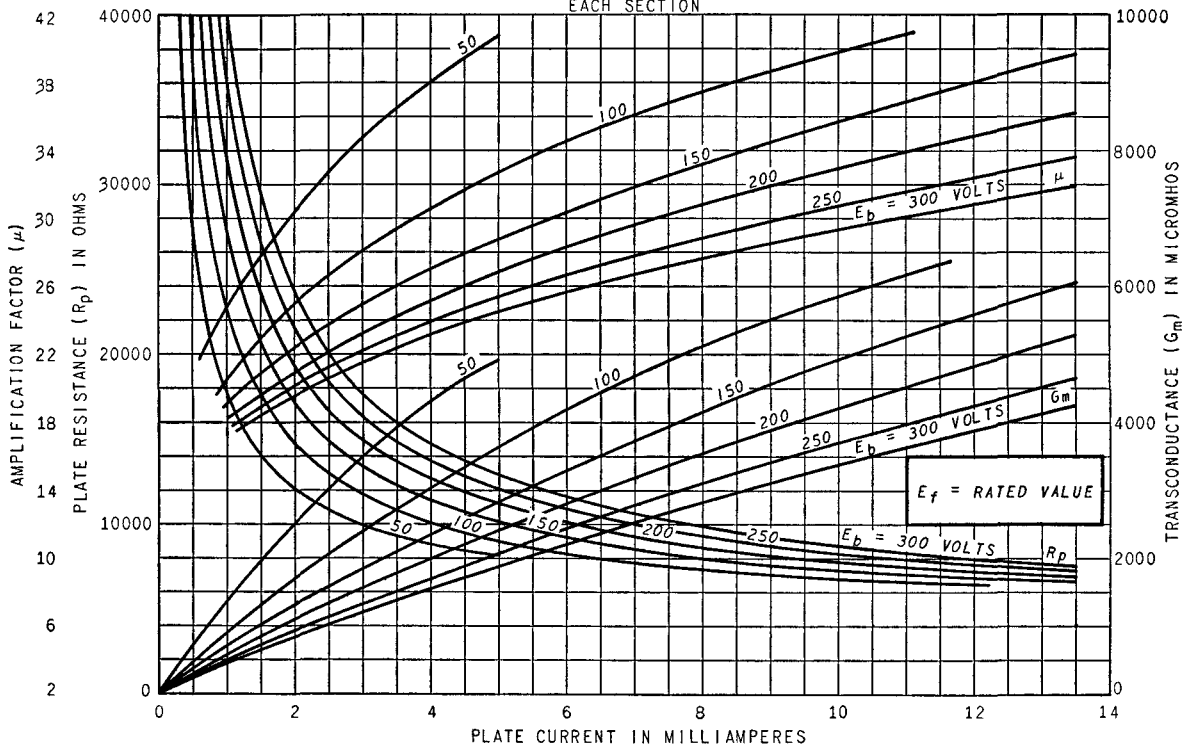
# AVERAGE TRANSFER CHARACTERISTICS

EACH SECTION



# AVERAGE CHARACTERISTICS

EACH SECTION



TUBE DEPARTMENT

**GENERAL**  **ELECTRIC**

Schenectady 5, N. Y.