

### FOR VHF CONVERTER APPLICATIONS

## DESCRIPTION AND RATING

The 6CG8-A is a miniature tube containing a medium-mu triode and a sharp-cutoff pentode. It is designed primarily for use as a combined triode oscillator and pentode mixer in VHF television receivers.

### GENERAL

#### ELECTRICAL

Cathode—Coated Unipotential

Heater Characteristics and Ratings

|                               | Series<br>Heater<br>Operation | Parallel<br>Heater<br>Operation |         |
|-------------------------------|-------------------------------|---------------------------------|---------|
| Heater Voltage, AC or DC..... | 6.3                           | 6.3 ± 0.6*                      | Volts   |
| Heater Current.....           | 0.45 ± 0.03*                  | 0.45†                           | Amperes |
| Heater Warm-up Time‡.....     | 11                            | .....                           | Seconds |

Direct Interelectrode Capacitances

|                                                  | With<br>Shield§ | Without<br>Shield |    |
|--------------------------------------------------|-----------------|-------------------|----|
| <b>Pentode Section</b>                           |                 |                   |    |
| Grid-Number 1 to Plate:<br>(Pg1 to Pp), max..... | 0.02            | 0.04              | pf |
| Input: Pg1 to (h+k+Pg2+Pg3).....                 | 4.8             | 4.6               | pf |
| Output: Pp to (h+k+Pg2+Pg3).....                 | 1.6             | 0.9               | pf |
| <b>Triode Section</b>                            |                 |                   |    |
| Grid to Plate: (Tg to Tp).....                   | 1.5             | 1.5               | pf |
| Input: Tg to (h+k+Pg3).....                      | 2.4             | 2.0               | pf |
| Output: Tp to (h+k+Pg3).....                     | 1.0             | 0.5               | pf |
| <b>Pentode-Grid Number 1 to</b>                  |                 |                   |    |
| Triode Plate: (Pg1 to Tp), max.....              | 0.04            | 0.05              | pf |
| <b>Pentode Plate to Triode Plate:</b>            |                 |                   |    |
| (Pp to Tp), max.....                             | 0.008           | 0.05              | pf |
| Heater to Cathode: (h to k).....                 | 6.5#            | 6.5               | pf |

#### MECHANICAL

Mounting Position—Any

Envelope—T-6½, Glass

Base—E9-1, Small Button 9-Pin

Outline Drawing—EIA 6-2

Maximum Diameter..... 7/8 Inches

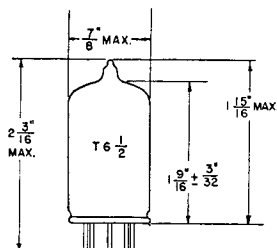
Maximum Over-all Length 2 3/16 Inches

Maximum Seated Height.. 1 1/8 Inches

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#### PHYSICAL DIMENSIONS

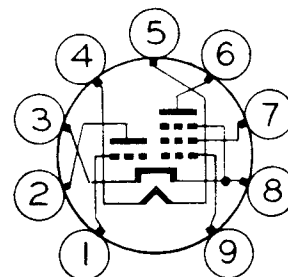


EIA 6-2

#### TERMINAL CONNECTIONS

- Pin 1—Triode Grid
- Pin 2—Triode Plate
- Pin 3—Cathode
- Pin 4—Heater
- Pin 5—Heater
- Pin 6—Pentode Plate
- Pin 7—Pentode Grid Number 2 (Screen)
- Pin 8—Cathode and Pentode Grid Number 3 (Suppressor)
- Pin 9—Pentode Grid Number 1

#### BASING DIAGRAM



EIA 9GF

## MAXIMUM RATINGS

### DESIGN-MAXIMUM VALUES

|                                         | Pentode<br>Section | Triode<br>Section |
|-----------------------------------------|--------------------|-------------------|
| Plate Voltage.....                      | 275                | 275 Volts         |
| Screen Supply Voltage.....              | 275                | .... Volts        |
| Screen Voltage—See Screen Rating Chart  |                    |                   |
| Positive DC Grid-Number 1 Voltage.....  | 0                  | 0 Volts           |
| Plate Dissipation.....                  | 2.3                | 1.7 Watts         |
| Screen Dissipation.....                 | 0.45               | .... Watts        |
| Heater-Cathode Voltage                  |                    |                   |
| Heater Positive with Respect to Cathode |                    |                   |
| DC Component.....                       | 100                | 100 Volts         |
| Total DC and Peak.....                  | 200                | 200 Volts         |
| Heater Negative with Respect to Cathode |                    |                   |
| Total DC and Peak.....                  | 200                | 200 Volts         |

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

## CHARACTERISTICS AND TYPICAL OPERATION

### AVERAGE CHARACTERISTICS

|                                    | Pentode<br>Section | Triode<br>Section |
|------------------------------------|--------------------|-------------------|
| Plate Voltage.....                 | 100 125            | 125 Volts         |
| Screen Voltage.....                | 70 125             | .... Volts        |
| Grid-Number 1 Voltage.....         | 0 -1.0             | -1.0 Volts        |
| Amplification Factor.....          | ....               | 40                |
| Plate Resistance, approximate..... | 300000             | 6000 Ohms         |
| Transconductance.....              | 5700 5500          | 6500 Micromhos    |
| Plate Current.....                 | 9.0                | 12 Milliamperes   |
| Screen Current.....                | 2.2                | .... Milliamperes |
| Grid-Number 1 Voltage, approximate |                    |                   |
| Ib = 20 Microamperes.....          | -6.5               | -7 Volts          |

## FOOTNOTES

\* For series heater operation, the equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance. For parallel heater operation, the equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.

† Heater current of a bogey tube at Ef = 6.3 volts.

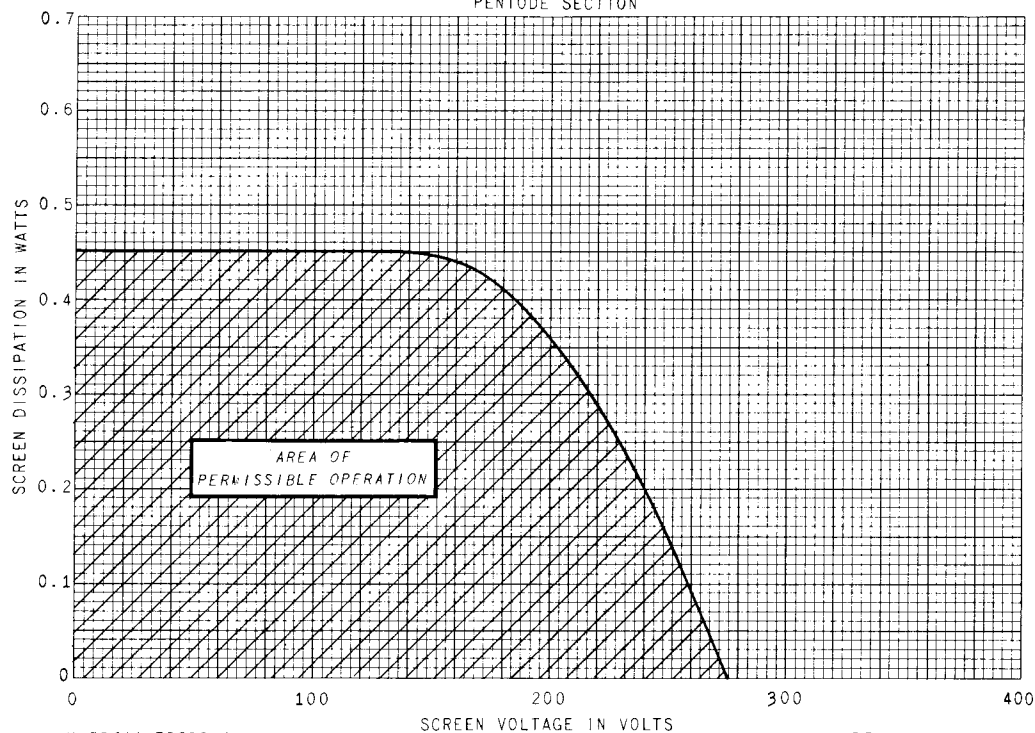
‡ The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

§ With external shield (EIA 315) connected to cathode unless otherwise indicated.

# With external shield (EIA 315) connected to ground.

## SCREEN RATING CHART

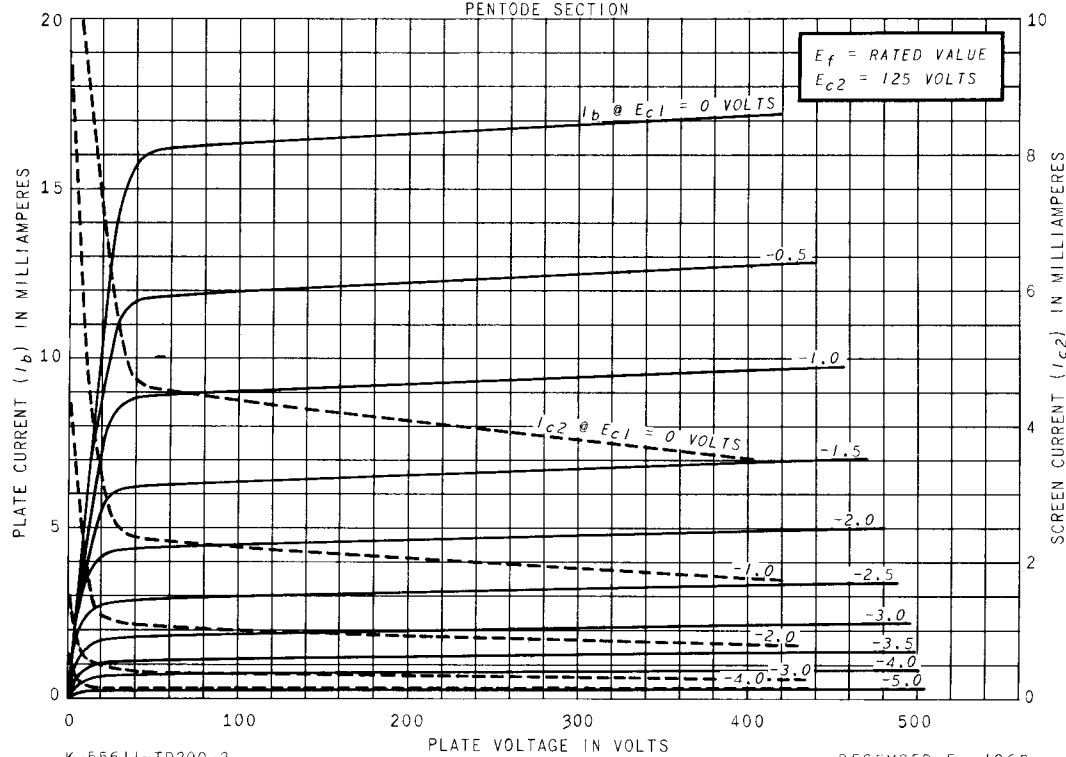
PENTODE SECTION



DECEMBER 5, 1962

## AVERAGE PLATE CHARACTERISTICS

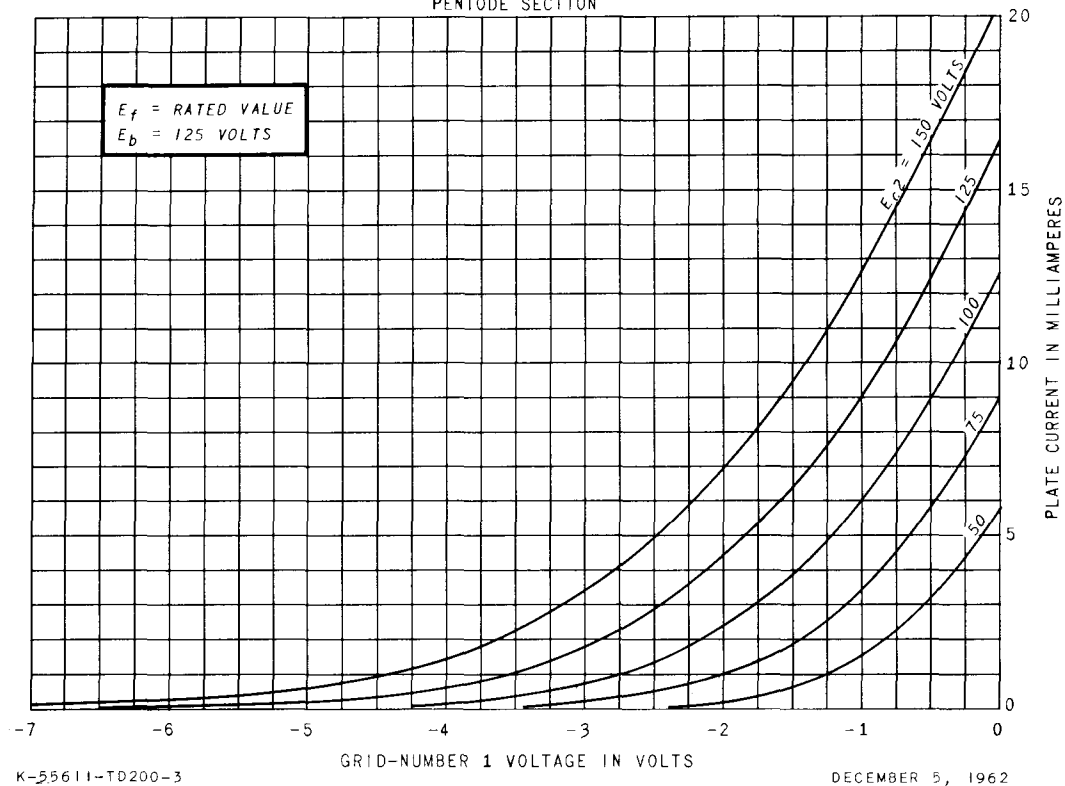
PENTODE SECTION



DECEMBER 5, 1962

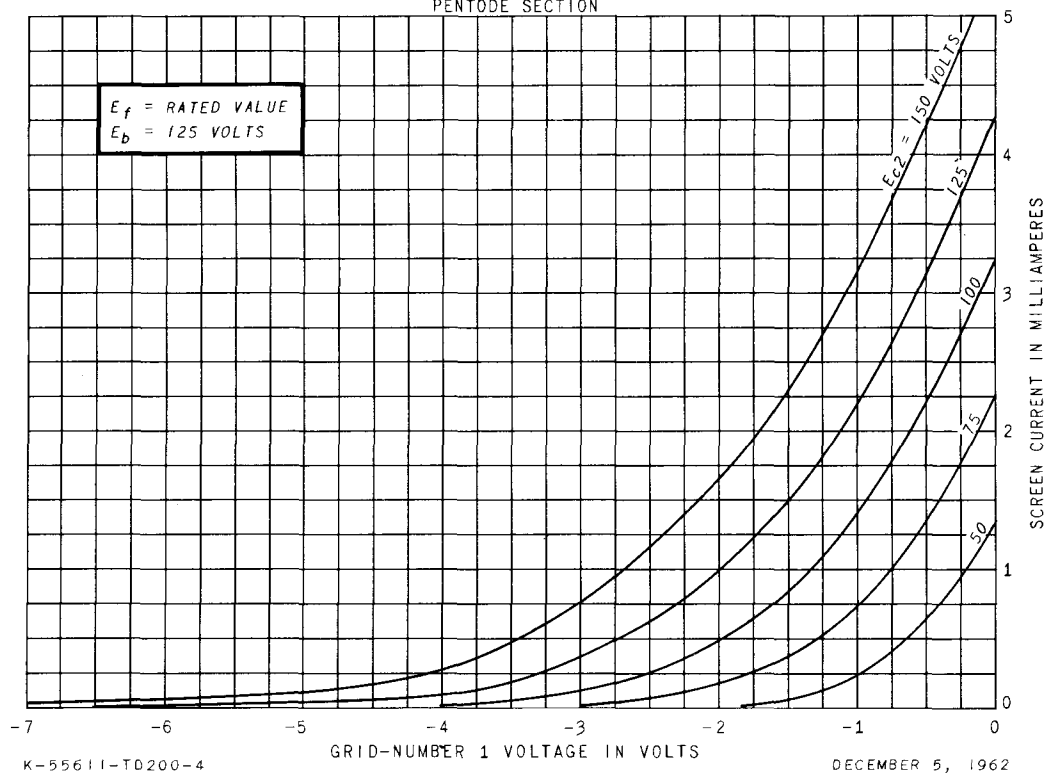
## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION

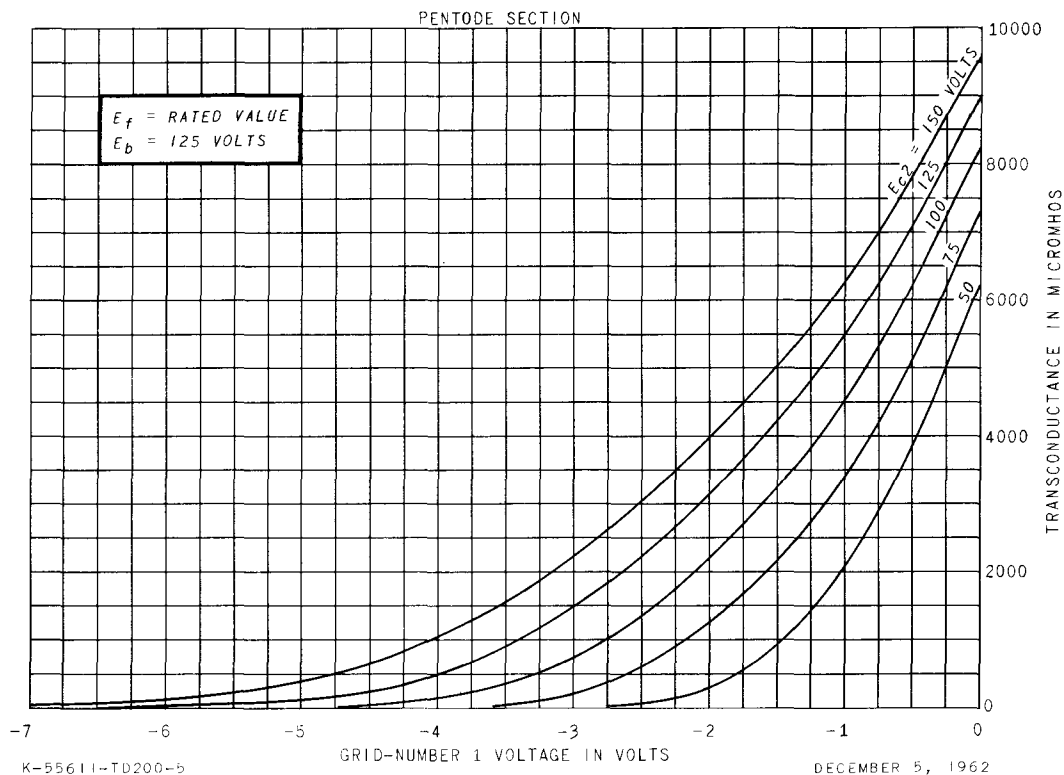


## AVERAGE TRANSFER CHARACTERISTICS

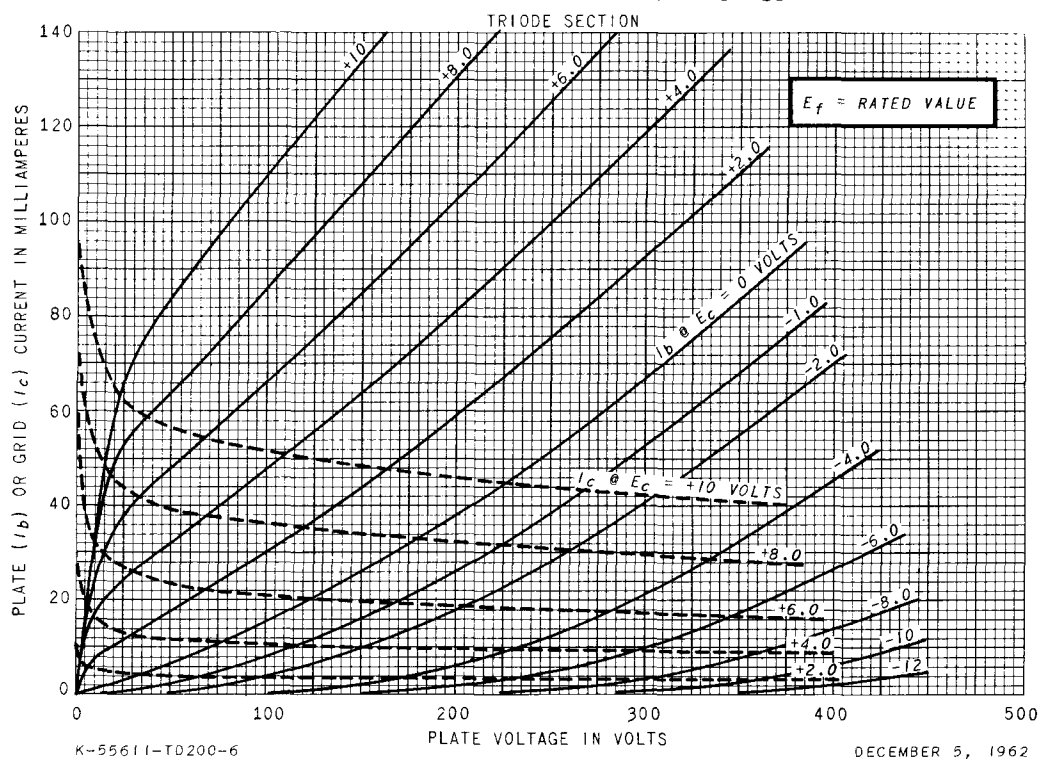
PENTODE SECTION



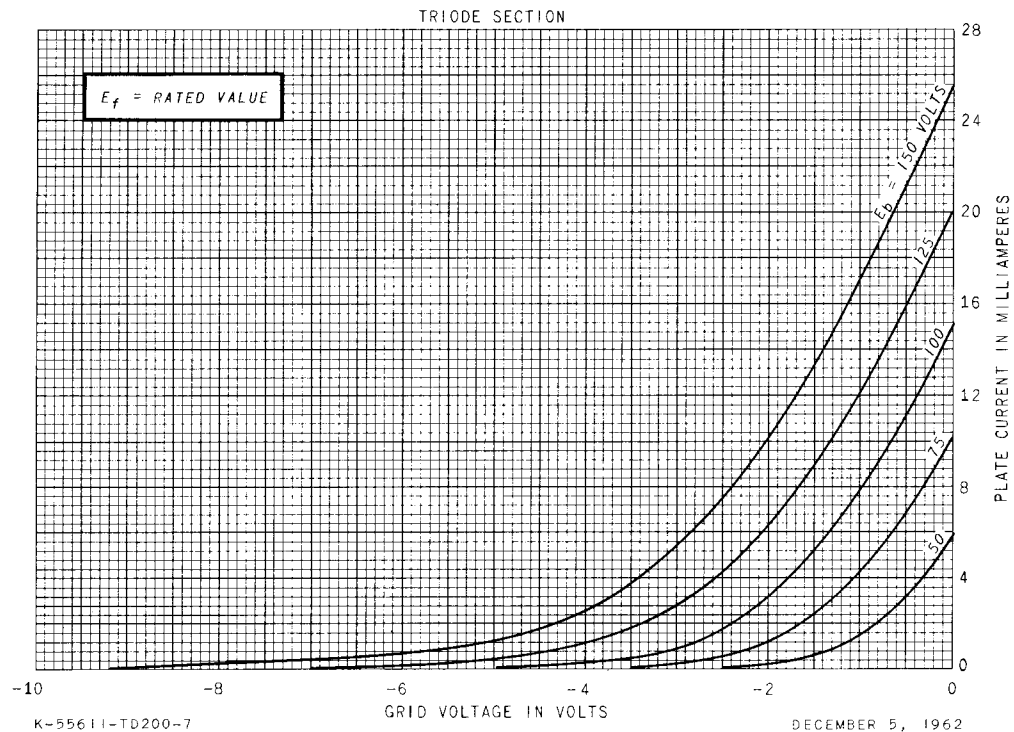
## AVERAGE TRANSFER CHARACTERISTICS



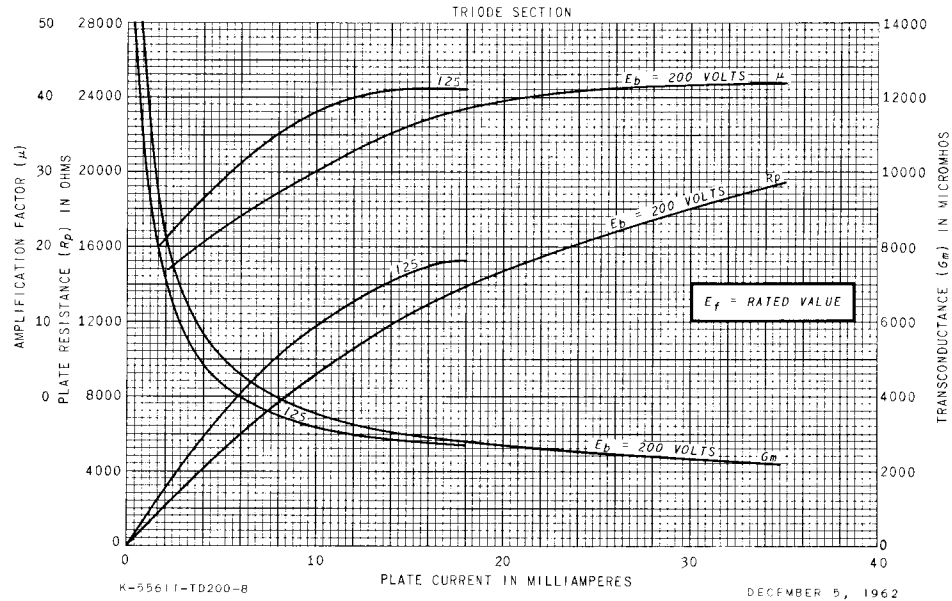
## AVERAGE PLATE CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS



AVERAGE CHARACTERISTICS



RECEIVING TUBE DEPARTMENT



Owensboro, Kentucky