

# Compactron Dissimilar-Double-Triode Pentode

**6CA11**

- COLOR TV TYPE
- MULTI-FUNCTION
- FRAME-GRID VIDEO AMPLIFIER
- HIGH TRANSCONDUCTANCE TRIODES
- 21200 MICROMHOS

The 6CA11 is a multifunction compactron containing a high-gain, frame-grid video amplifier pentode which is particularly well suited for color television use. It also contains two high-mu, high-transconductance triodes designed for cathode follower and video amplifier applications.

## GENERAL

### ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC\* . . . 6.3±0.6 Volts

Heater Current† . . . 1.02 Amperes

Direct Interelectrode Capacitances‡

**Triode (Section 1)**

Grid to Plate: (1Tg to 1Tp). . . 2.7 pf

Input: 1Tg to (1Tk + 2Tk + Pg3 + h + i.s.). . . 4.7 pf

Output: 1Tp to (1Tk + 2Tk + Pg3 + h + i.s.). . . 4.0 pf

**Triode (Section 2)**

Grid to Plate: (2Tg to 2Tp). . . 2.1 pf

Input: 2Tg to (2Tk + 1Tk + Pg3 + h + i.s.). . . 2.8 pf

Output: 2Tp to (2Tk + 1Tk + Pg3 + h + i.s.). . . 2.0 pf

**Pentode Section**

Grid-Number 1 to Plate:

(Pg1 to Pp) . . . 0.13 pf

Input: Pg1 to (Pk + 2Tk + Pg2 + Pg3 + h + i.s.). . . 12.3 pf

Output: Pp to (Pk + 2Tk + Pg2 + Pg3 + h + i.s.). . . 4.6 pf

### Coupling

Pentode Plate to Triode Plate

(Section 2): (Pp to 2Tp),  
maximum . . . 0.04 pf

Triode Plate (Section 1) to  
Triode Plate (Section 2):  
(1Tp to 2Tp), maximum. . . 0.10 pf

### MECHANICAL

Operating Position - Any

Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

Outline Drawing - EIA 9-58

Maximum Diameter . . . 1.188 Inches

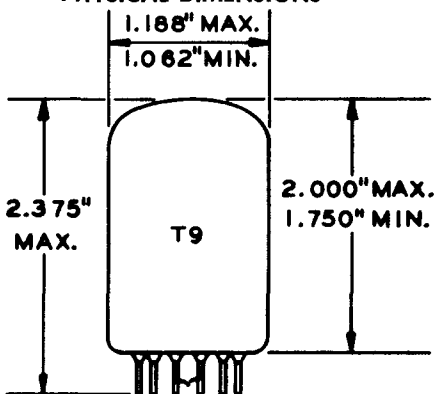
Minimum Diameter . . . 1.062 Inches

Maximum Over-all Length . . . 2.375 Inches

Maximum Seated Height. . . 2.000 Inches

Minimum Seated Height. . . 1.750 Inches

### PHYSICAL DIMENSIONS

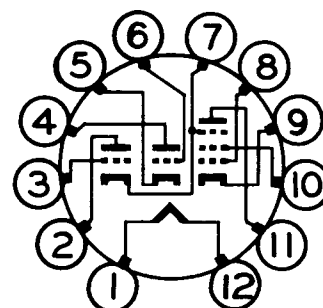


EIA 9-58

### TERMINAL CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Triode Plate (Section 2)
- Pin 3 - Triode Grid (Section 2)
- Pin 4 - Triode Plate (Section 1)
- Pin 5 - Triode Cathode (Section 1)
- Pin 6 - Triode Grid (Section 1)
- Pin 7 - Triode Cathode (Section 2), Pentode Grid Number 3, and Internal Shield
- Pin 8 - Pentode Grid Number 1
- Pin 9 - Pentode Cathode
- Pin 10 - Pentode Grid Number 2 (Screen)
- Pin 11 - Pentode Plate
- Pin 12 - Heater

### BASING DIAGRAM



EIA 12HN

**MAXIMUM RATINGS****DESIGN-MAXIMUM VALUES****Pentode Section**

|                                             |        |       |
|---------------------------------------------|--------|-------|
| Plate Voltage . . . . .                     | 330    | Volts |
| Screen Supply Voltage . . . . .             | 330    | Volts |
| Screen Voltage - See Screen Rating Chart    |        |       |
| Positive DC Grid-Number 1 Voltage . . . . . | 0      | Volts |
| Plate Dissipation . . . . .                 | 5.0    | Watts |
| Screen Dissipation . . . . .                | 1.0    | Watts |
| <b>Heater-Cathode Voltage</b>               |        |       |
| Heater Positive with Respect to Cathode     |        |       |
| DC Component . . . . .                      | 100    | Volts |
| Total DC and Peak . . . . .                 | 200    | Volts |
| Heater Negative with Respect to Cathode     |        |       |
| Total DC and Peak . . . . .                 | 200    | Volts |
| <b>Grid-Number 1 Circuit Resistance</b>     |        |       |
| With Fixed Bias . . . . .                   | 50000  | Ohms  |
| With Cathode Bias . . . . .                 | 100000 | Ohms  |

**Triode (Section 1)**

|                                         |     |         |
|-----------------------------------------|-----|---------|
| Plate Voltage . . . . .                 | 330 | Volts   |
| Positive DC Grid Voltage . . . . .      | 0   | Volts   |
| Plate Dissipation . . . . .             | 1.5 | Watts   |
| <b>Heater-Cathode Voltage</b>           |     |         |
| Heater Positive with Respect to Cathode |     |         |
| DC Component . . . . .                  | 100 | Volts   |
| Total DC and Peak . . . . .             | 200 | Volts   |
| Heater Negative with Respect to Cathode |     |         |
| Total DC and Peak . . . . .             | 200 | Volts   |
| <b>Grid-Circuit Resistance</b>          |     |         |
| With Fixed Bias . . . . .               | 0.5 | Megohms |
| With Cathode Bias . . . . .             | 1.0 | Megohms |

**Triode (Section 2)**

|                                         |     |         |
|-----------------------------------------|-----|---------|
| Plate Voltage . . . . .                 | 330 | Volts   |
| Positive DC Grid Voltage . . . . .      | 0   | Volts   |
| Plate Dissipation . . . . .             | 1.5 | Watts   |
| <b>Heater-Cathode Voltage</b>           |     |         |
| Heater Positive with Respect to Cathode |     |         |
| DC Component . . . . .                  | 100 | Volts   |
| Total DC and Peak . . . . .             | 200 | Volts   |
| Heater Negative with Respect to Cathode |     |         |
| Total DC and Peak . . . . .             | 200 | Volts   |
| <b>Grid-Circuit Resistance</b>          |     |         |
| With Fixed Bias . . . . .               | 0.5 | Megohms |
| With Cathode Bias . . . . .             | 1.0 | Megohms |

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 Section

|                                                                       |      |        |              |
|-----------------------------------------------------------------------|------|--------|--------------|
| Plate Voltage. . . . .                                                | 40   | 200    | Volts        |
| Screen Voltage . . . . .                                              | 120  | 120    | Volts        |
| Grid-Number 1 Voltage . . . . .                                       | 0    | ---    | Volts        |
| Cathode-Bias Resistor . . . . .                                       | ---  | 65     | Ohms         |
| Plate Resistance, approximate . . . . .                               | ---  | 490000 | Ohms         |
| Transconductance. . . . .                                             | ---  | 21200  | Micromhos    |
| Plate Current. . . . .                                                | 68   | 27.5   | Milliamperes |
| Screen Current . . . . .                                              | 17.6 | 4.9    | Milliamperes |
| Grid-Number 1 Voltage, approximate<br>Ib = 100 Microamperes . . . . . | ---  | -5.0   | Volts        |

#### Triode (Section 1)

|                                                              |      |              |
|--------------------------------------------------------------|------|--------------|
| Plate Voltage. . . . .                                       | 200  | Volts        |
| Cathode-Bias Resistor . . . . .                              | 270  | Ohms         |
| Amplification Factor . . . . .                               | 59   |              |
| Plate Resistance, approximate . . . . .                      | 9200 | Ohms         |
| Transconductance. . . . .                                    | 6300 | Micromhos    |
| Plate Current. . . . .                                       | 7.6  | Milliamperes |
| Grid Voltage, approximate<br>Ib = 100 Microamperes . . . . . | -6.3 | Volts        |

#### Triode (Section 2)

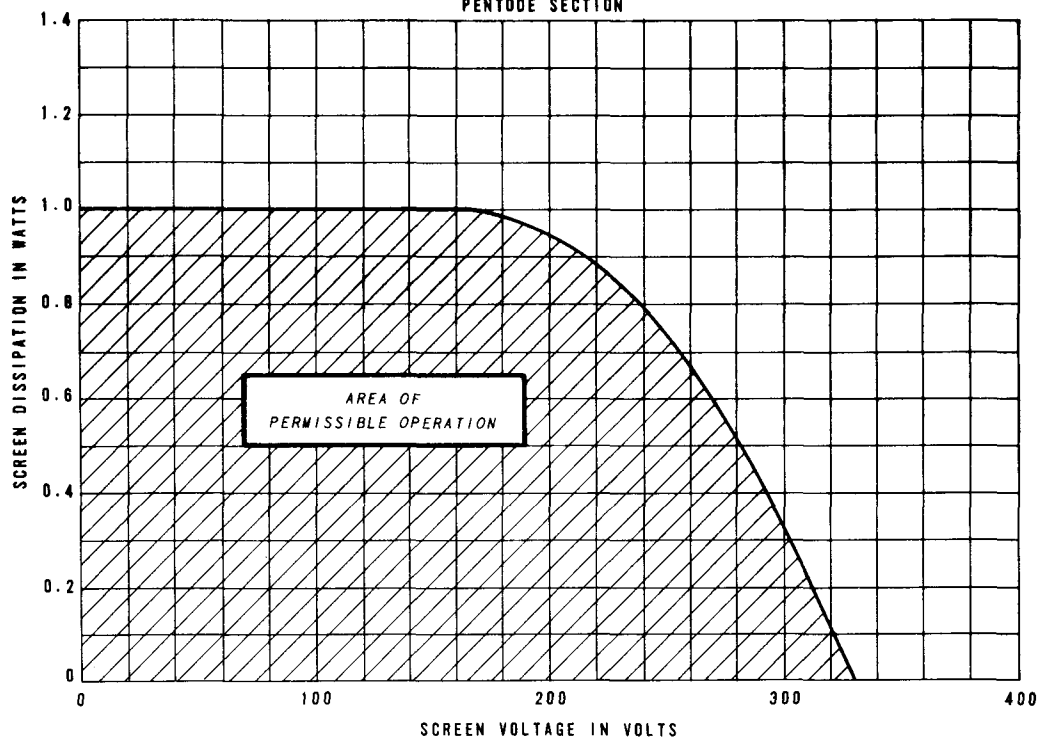
|                                                              |       |              |
|--------------------------------------------------------------|-------|--------------|
| Plate Voltage. . . . .                                       | 200   | Volts        |
| Cathode-Bias Resistor . . . . .                              | 270   | Ohms         |
| Amplification Factor . . . . .                               | 69    |              |
| Plate Resistance, approximate . . . . .                      | 12400 | Ohms         |
| Transconductance. . . . .                                    | 5500  | Micromhos    |
| Plate Current. . . . .                                       | 7.1   | Milliamperes |
| Grid Voltage, approximate<br>Ib = 100 Microamperes . . . . . | -5.5  | Volts        |

## NOTES

- \* 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.
- § Without external shield.

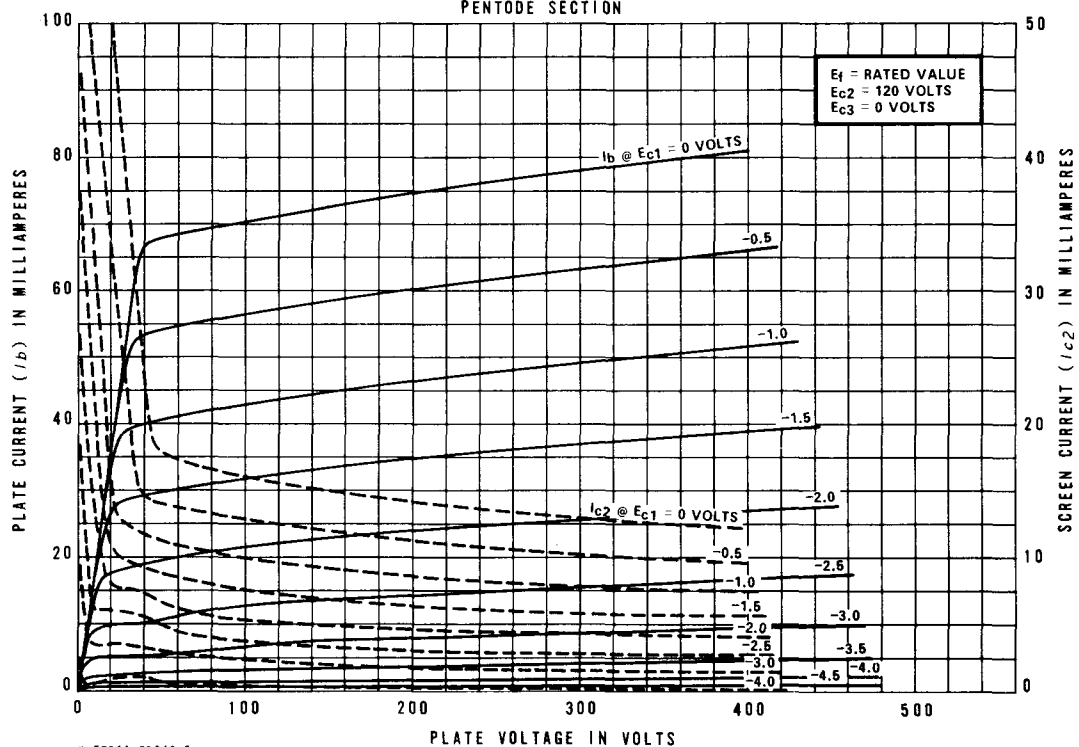
# SCREEN RATING CHART

PENTODE SECTION



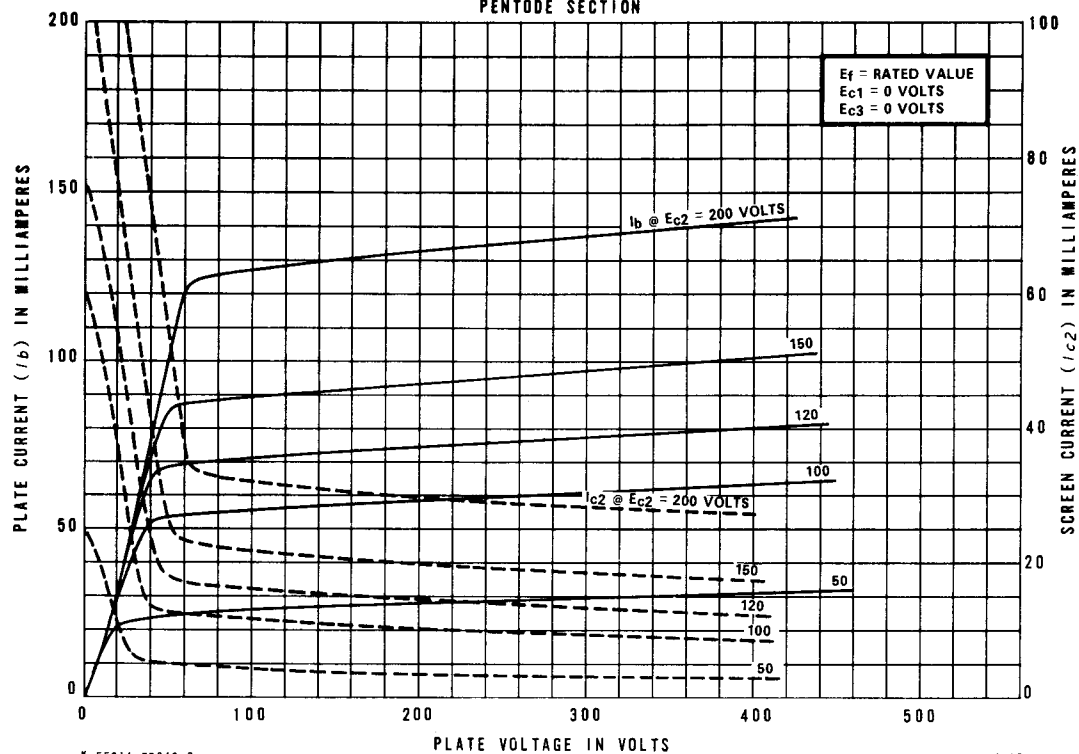
## AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



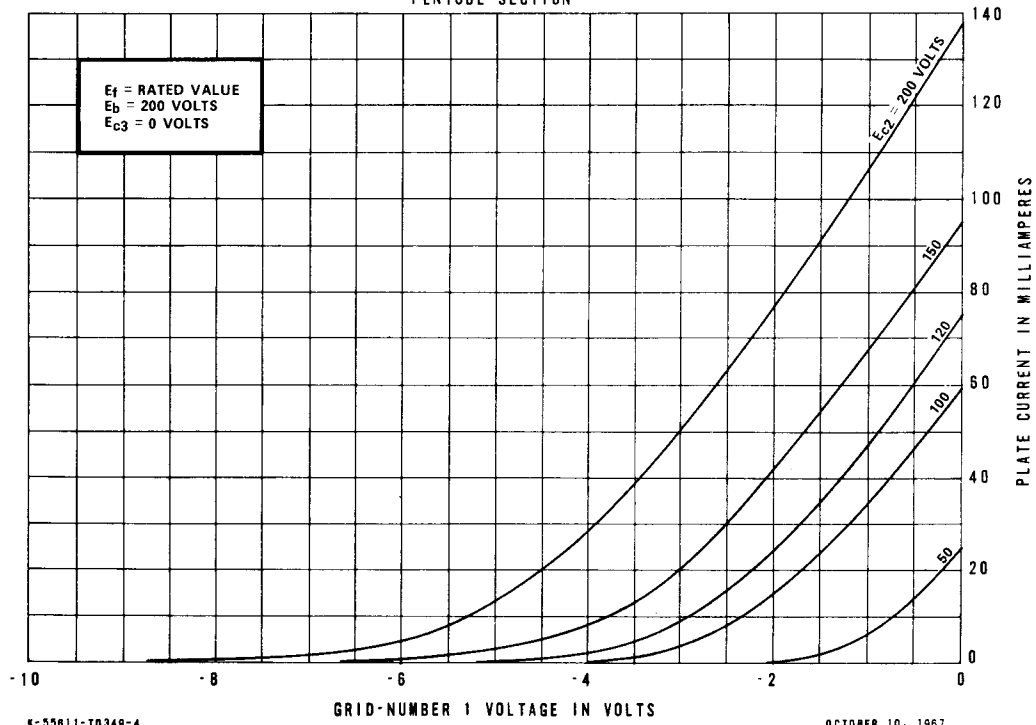
## AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



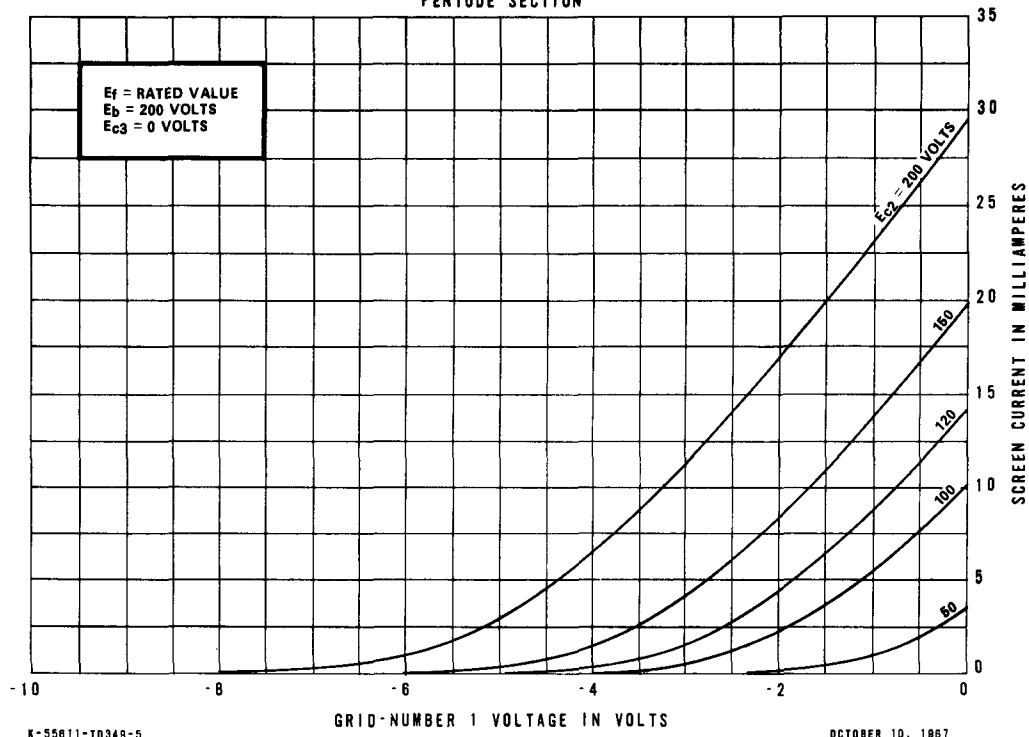
## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



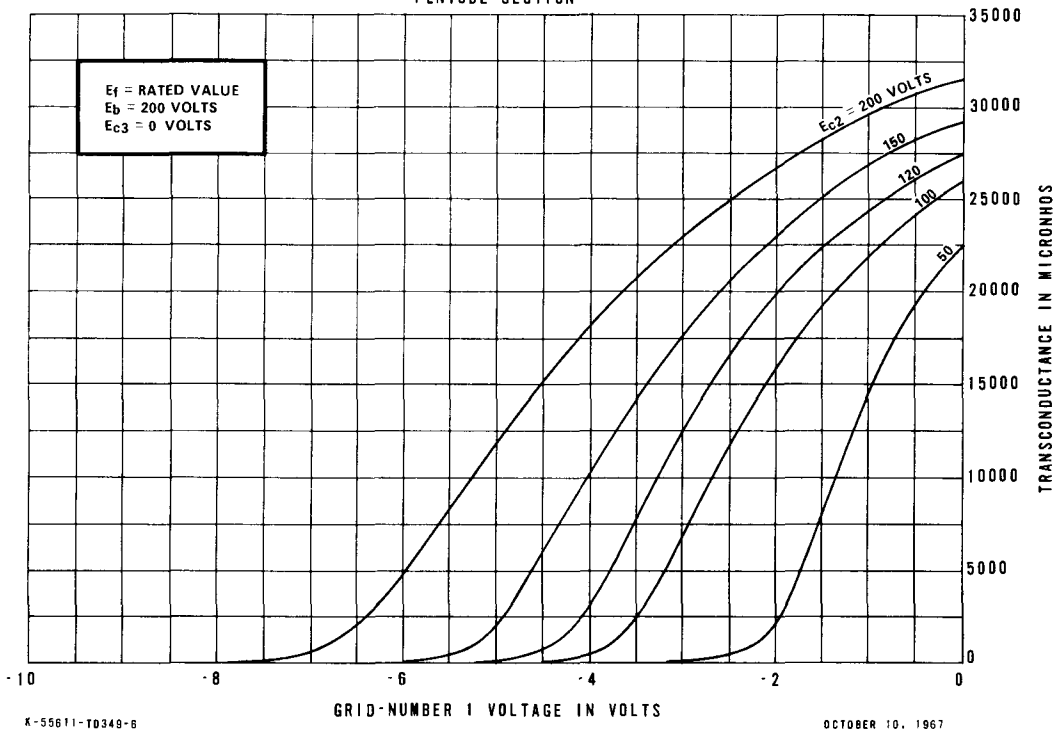
## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION

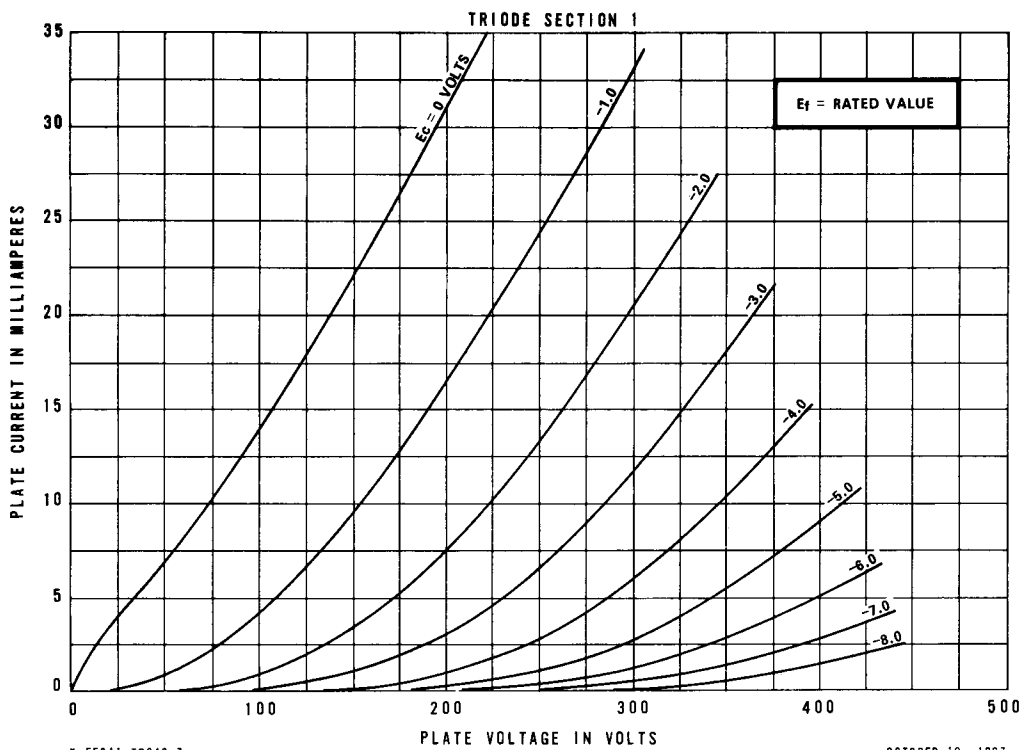


## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



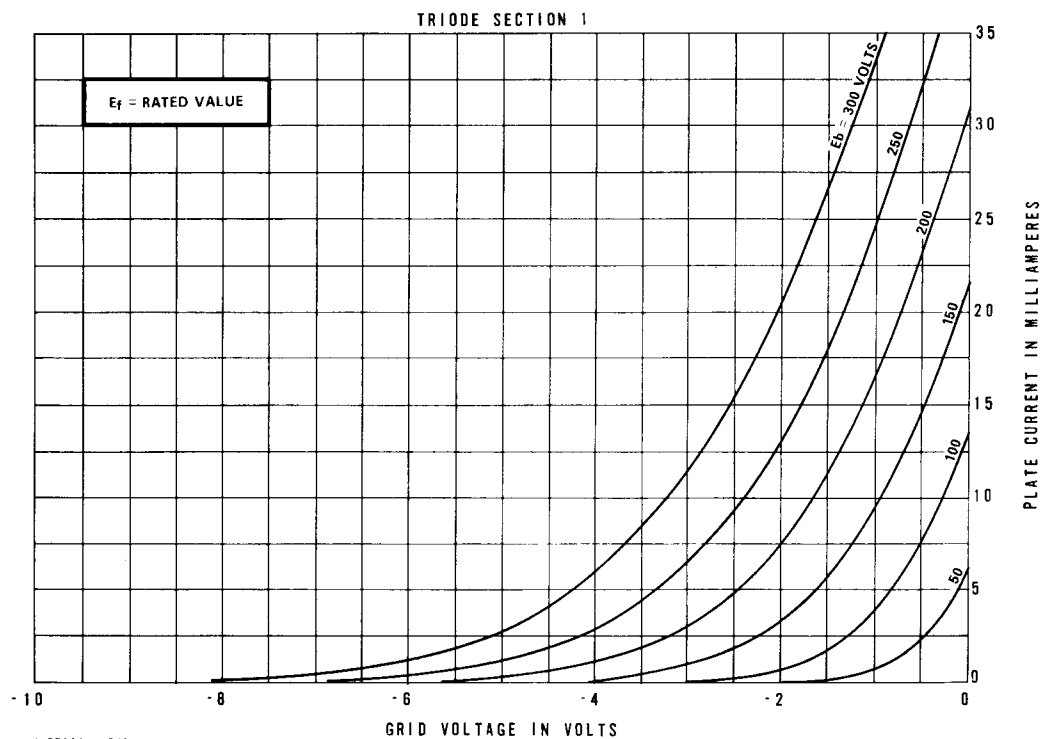
# AVERAGE PLATE CHARACTERISTICS



K-55611-T0349-7

OCTOBER 10, 1967

# AVERAGE TRANSFER CHARACTERISTICS

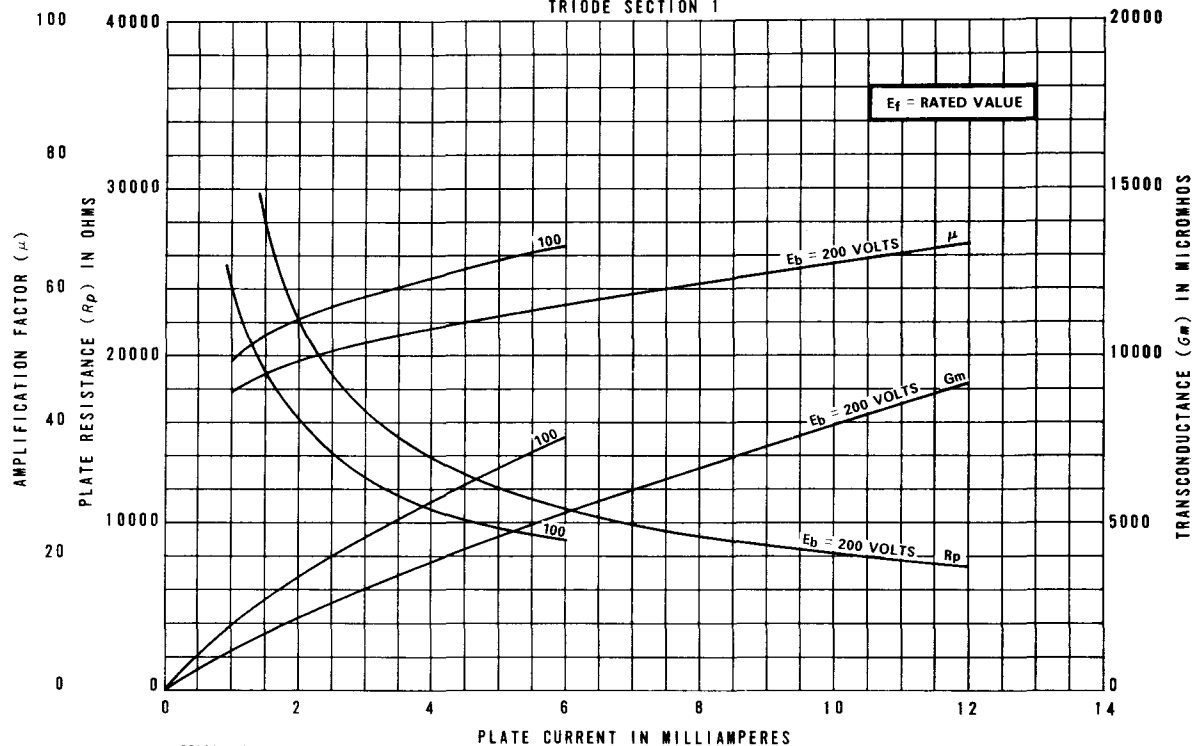


K-55611-T0349-8

OCTOBER 10, 1967

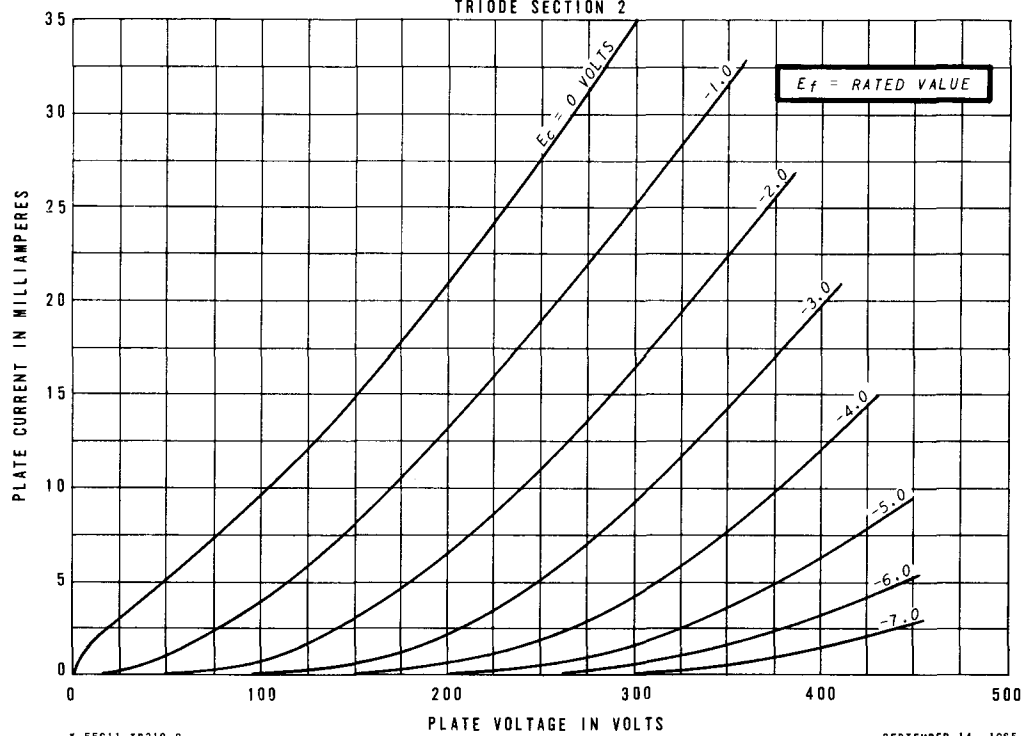
## AVERAGE CHARACTERISTICS

TRIODE SECTION 1



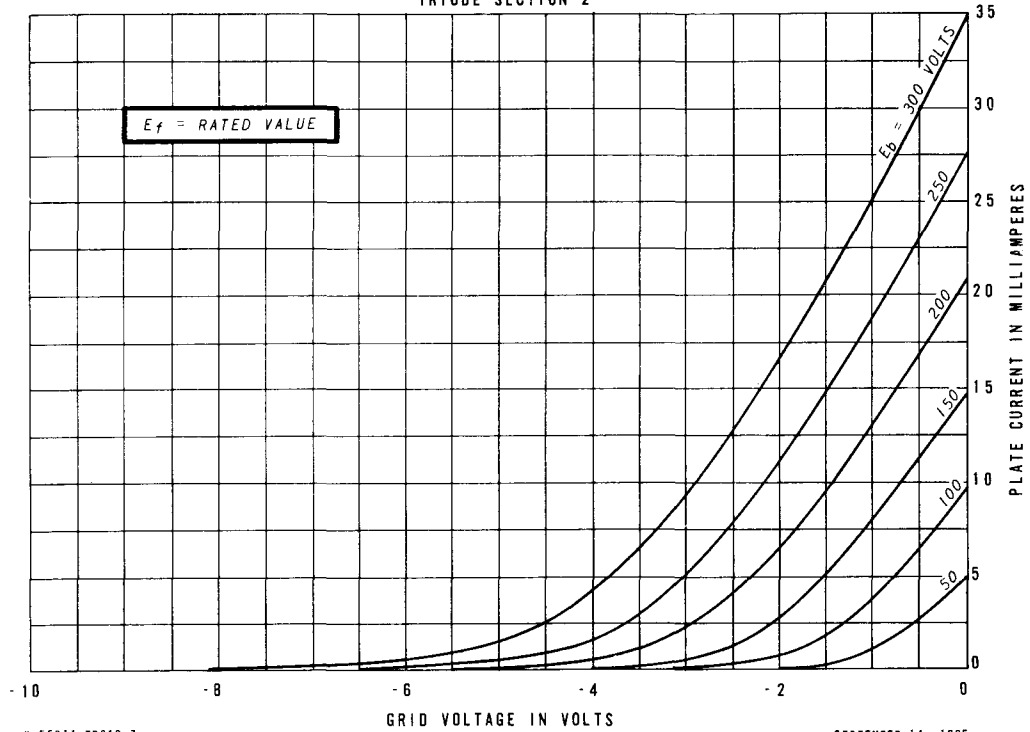
## AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION 2



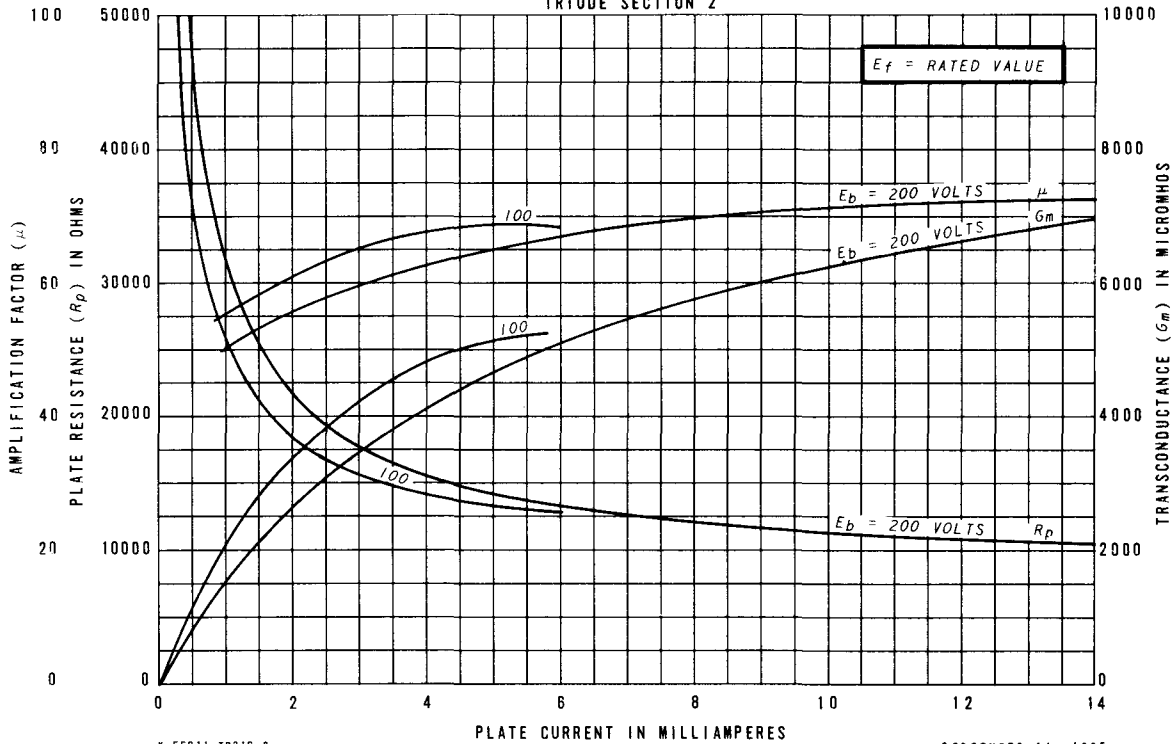
## AVERAGE TRANSFER CHARACTERISTICS

TRIODE SECTION 2



## AVERAGE CHARACTERISTICS

TRIODE SECTION 2



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**GENERAL**  **ELECTRIC**  
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