



**ELECTRONIC
INNOVATIONS**
IN ACTION

TUBES

—PRODUCT INFORMATION—

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8AL9

Compactron Triode-Pentode

■ COLOR TV TYPE

■ HIGH-G_m (30000 MICROMHOS), FRAME-GRID PENTODE

■ HIGH-MU, HIGH-G_m TRIODE

The 8AL9 is a compactron containing a sharp-cutoff, high-transconductance, frame-grid pentode and a triode. The pentode is intended for video amplifier service and the triode for general-purpose applications in color television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC*..... 8.6 Volts

Heater Current..... 0.6±0.04 Amperes

Heater Warm-up Time, average▲..... 11 Seconds

Direct Interelectrode Capacitances♦

Pentode Section

Grid-Number 1 to Plate: (Pg1 to Pp)..... 0.16 pf

Input: Pg1 to (h + Pk + Pg2 + Pg3 + i.s.)..... 17 pf

Output: Pp to (h + Pk + Pg2 + Pg3 + i.s.)..... 6.4 pf

Triode Section

Grid to Plate: (Tg to Tp)..... 2.8 pf

Input: Tg to (h + Tk + i.s.)..... 3.6 pf

Output: Tp to (h + Tk + i.s.)..... 2.2 pf

Coupling

Triode Grid to Pentode Plate:

(Tg to Pp), maximum..... 0.7 pf

Pentode Grid Number 1 to Triode Plate:

(Pg1 to Tp), maximum..... 0.02 pf

Pentode Plate to Triode Plate:

(Pp to Tp), maximum..... 0.4 pf

MECHANICAL

Operating Position - Any

Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

Outline Drawing - EIA 9-59

Maximum Diameter..... 1.188 Inches

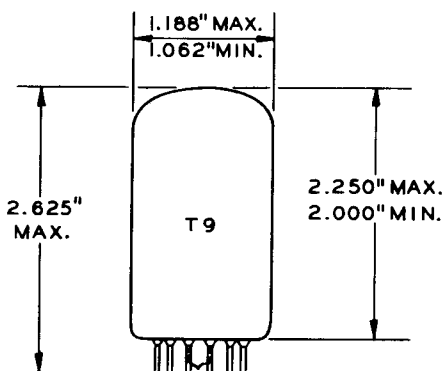
Minimum Diameter..... 1.062 Inches

Maximum Over-all Length..... 2.625 Inches

Maximum Seated Height..... 2.250 Inches

Minimum Seated Height..... 2.000 Inches

PHYSICAL DIMENSIONS



EIA 9-59

TERMINAL CONNECTIONS

Pin 1 - Heater

Pin 2 - Pentode Plate

Pin 3 - No Connection

Pin 4 - Pentode Grid Number 3
(Suppressor)

Pin 5 - Triode Grid

Pin 6 - Triode Cathode

Pin 7 - Triode Plate

Pin 8 - Internal Shield

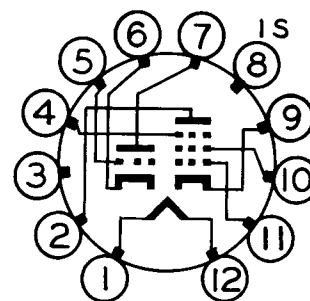
Pin 9 - Pentode Cathode

Pin 10 - Pentode Grid Number 2 (Screen)

Pin 11 - Pentode Grid Number 1

Pin 12 - Heater

BASING DIAGRAM



EIA 12HE

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GENERAL ELECTRIC

Supersedes PI Sheet dated 10-68

MAXIMUM RATINGS**DESIGN-MAXIMUM VALUES**

	Pentode Section	Triode Section	
Plate Voltage.....	330	330	Volts
Screen Voltage.....	200	---	Volts
Positive DC Grid-Number 1 Voltage.....	0	0	Volts
Plate Dissipation.....	10	1.5	Watts
Screen Dissipation.....	1.5	---	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
Grid-Number 1 Circuit Resistance			
With Fixed Bias.....	0.1	0.5	Megohms
With Cathode Bias.....	0.25	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	Triode Section	
Plate Voltage.....	55 250	200	Volts
Screen Voltage.....	125 150	---	Volts
Grid-Number 1 Voltage.....	0 ---	---	Volts
Cathode-Bias Resistor.....	---	56 270	Ohms
Amplification Factor.....	---	---	59
Plate Resistance, approximate.....	40000	9200	Ohms
Transconductance.....	30000	6300	Micromhos
Plate Current.....	56 28	7.6	Milliamperes
Screen Current.....	21 5.6	---	Milliamperes
Grid-Number 1 Voltage, approximate			
Ib = 100 Microamperes.....	---	-5.4 -6.3	Volts

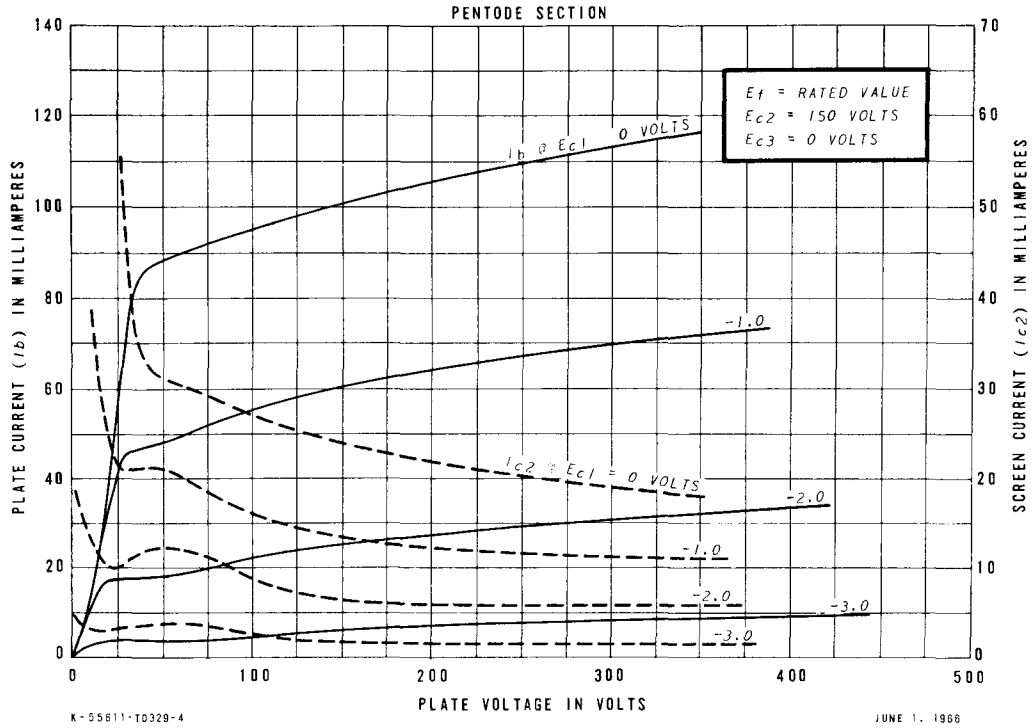
NOTES

- * Heater voltage for a bogey tube at $I_f = 0.6$ amperes.
- 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.
- ▲ The time required for the voltage across the heater to reach

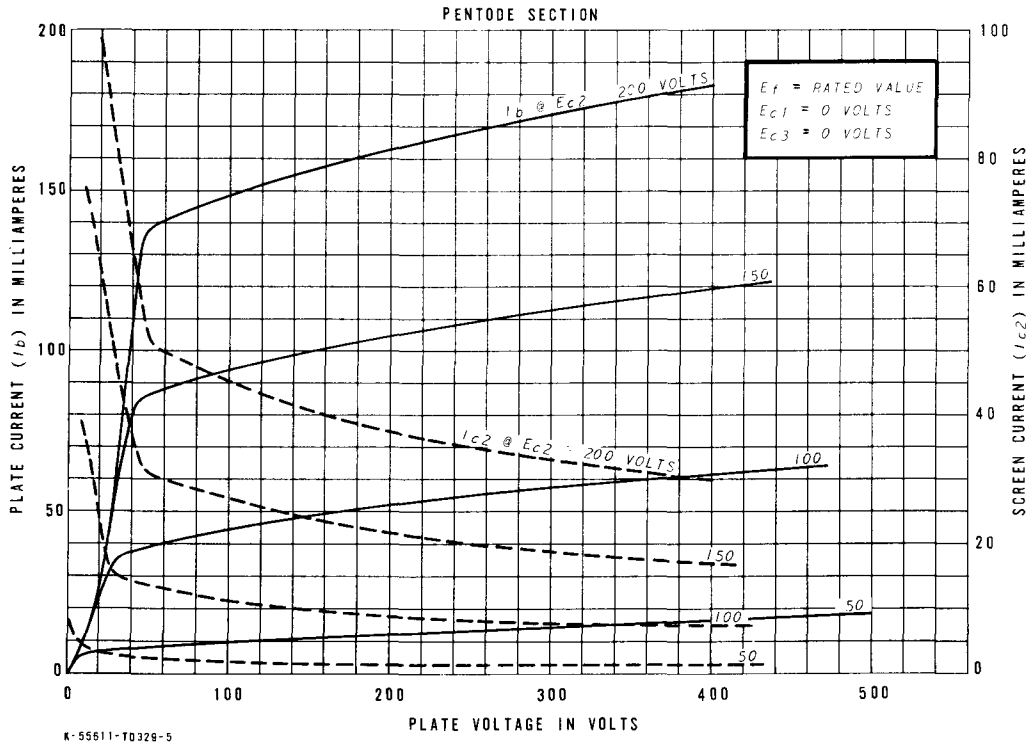
80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.

- ♦ Without external shield.

AVERAGE PLATE CHARACTERISTICS

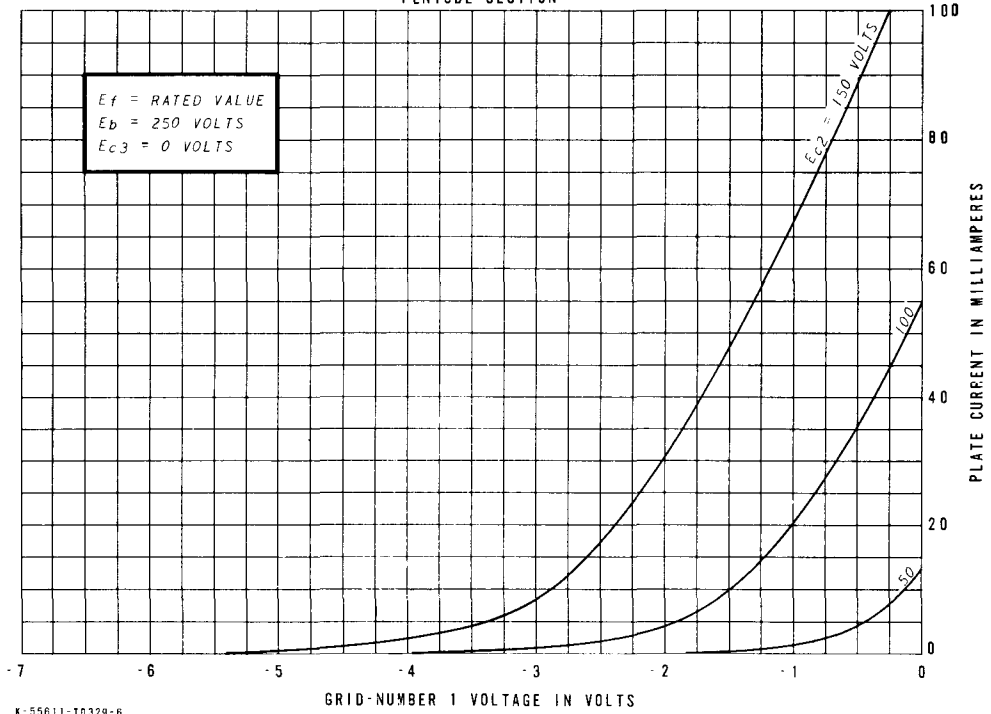


AVERAGE PLATE CHARACTERISTICS



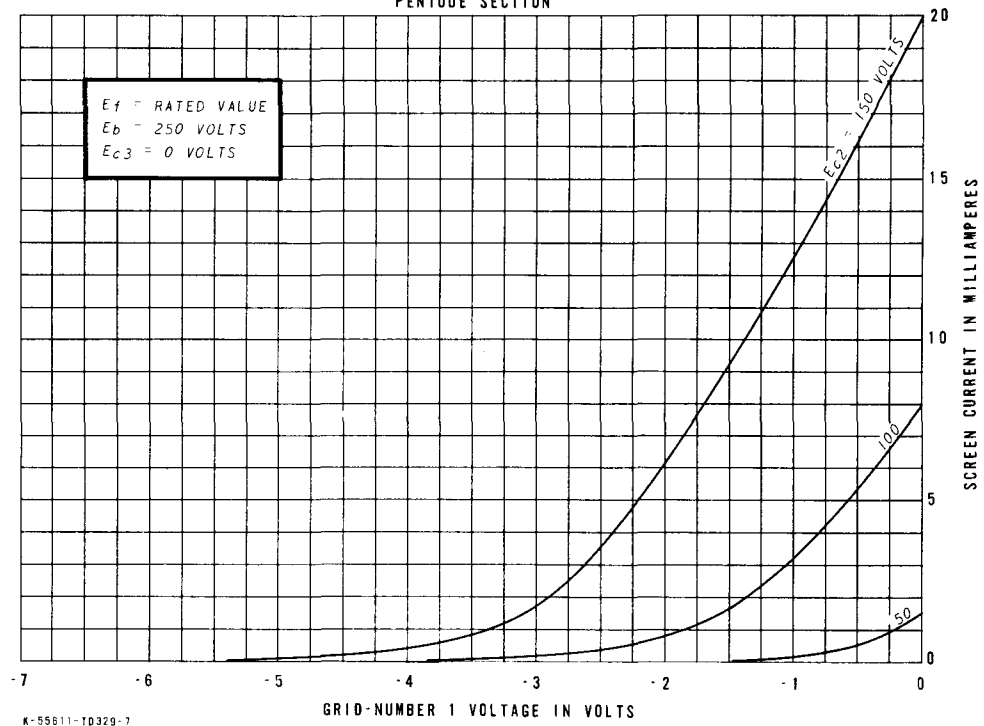
AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION

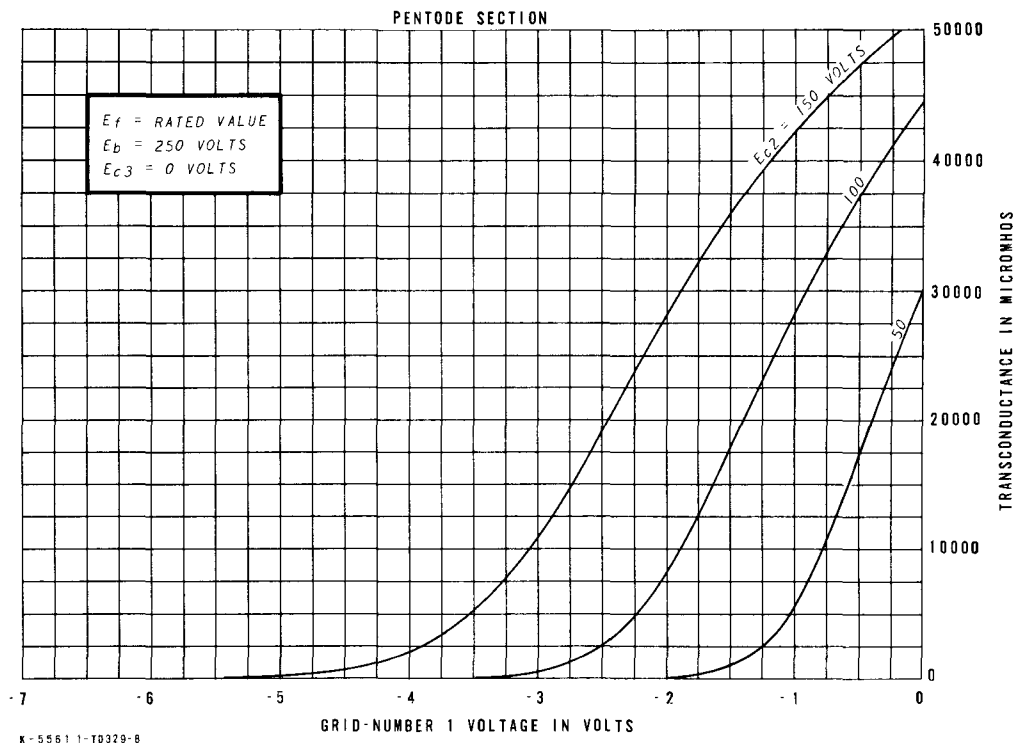


AVERAGE TRANSFER CHARACTERISTICS

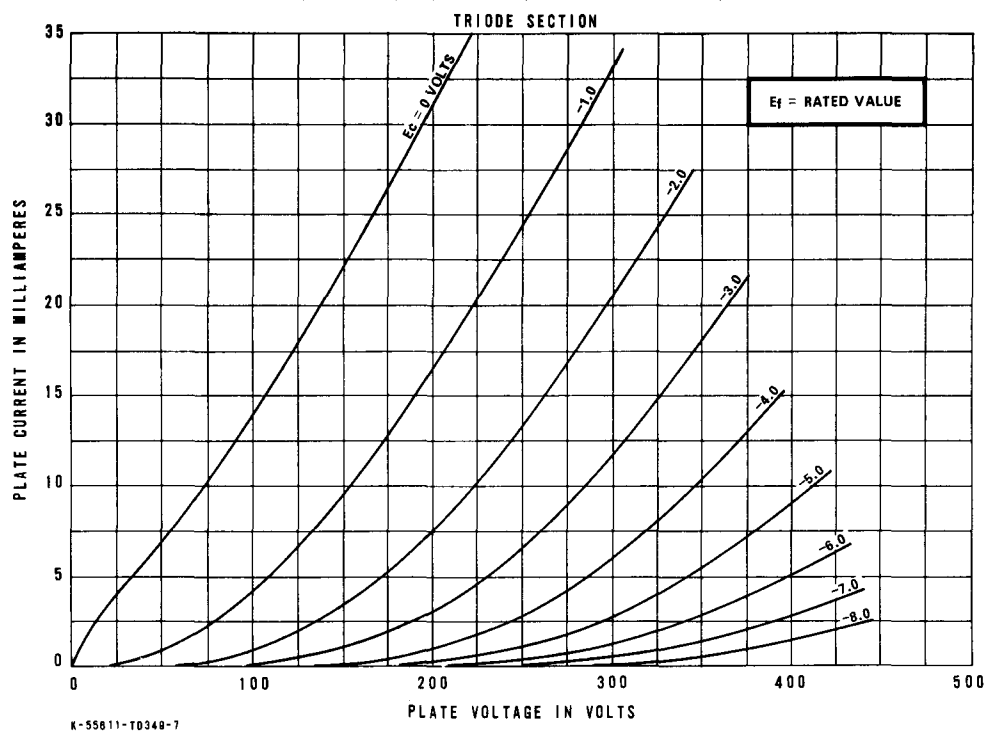
PENTODE SECTION



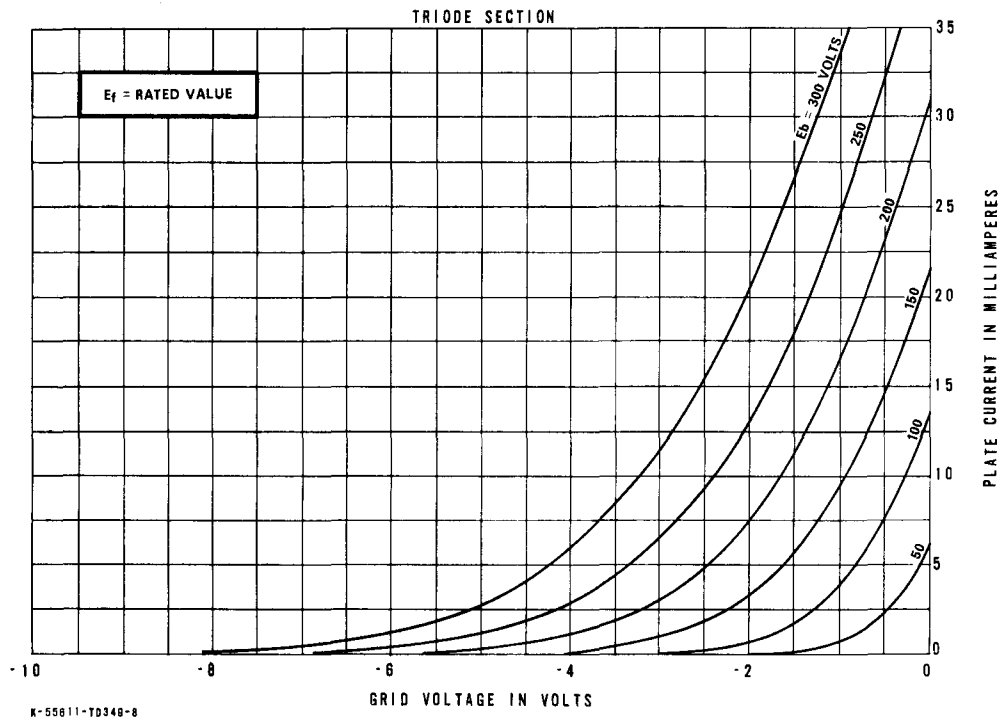
AVERAGE TRANSFER CHARACTERISTICS



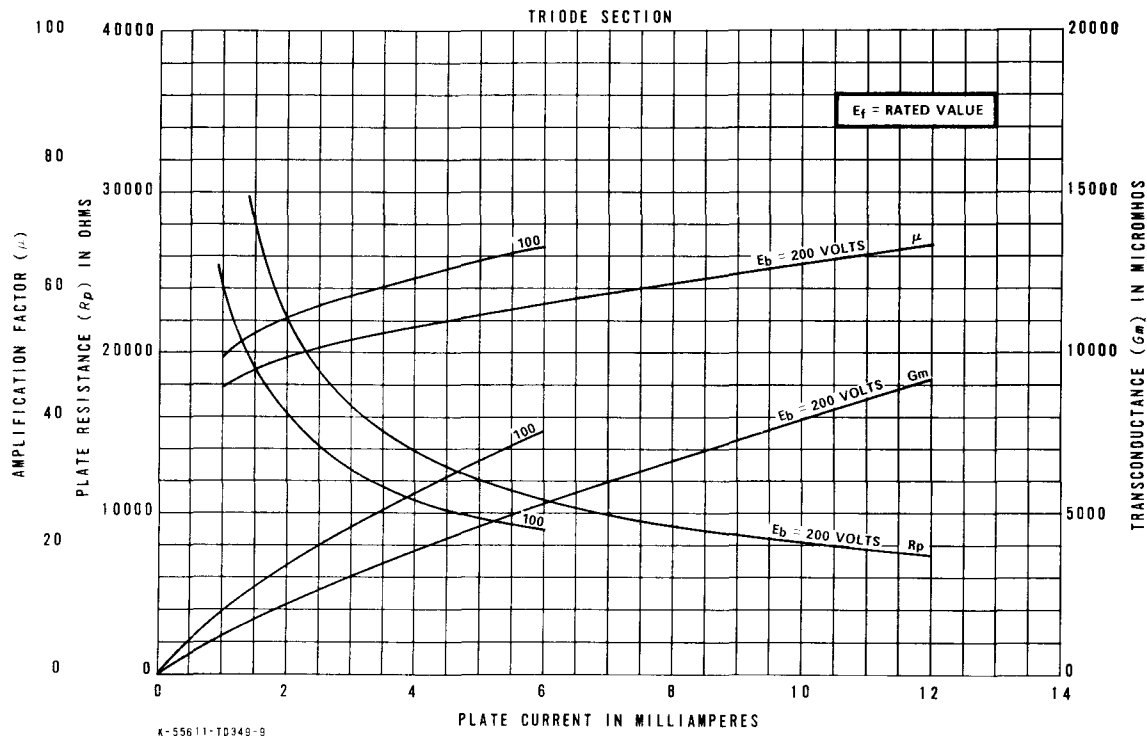
AVERAGE PLATE CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS



AVERAGE CHARACTERISTICS



TUBE PRODUCTS DEPARTMENT

GENERAL ELECTRIC

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