Electronic TUBES

5DH8

TRIODE-PENTODE

DESCRIPTION AND RATING

The 5DH8 is a miniature tube which contains a sharp-cutoff pentode and a high-mu triode in one envelope. The pentode section is intended for use as a video intermediate-frequency amplifier or as an audio intermediate-frequency amplifier. Provided the cathode is grounded, the triode section may be used as vertical oscillator, sync amplifier, sync separator, or sync clipper.

The 5DH8 features an internal connection between the pentode suppressor and the triode cathode, to enable the grounding of the suppressor when a cathode-bias resistor is employed for the pentode section. The tube also has a controlled heater warm-up characteristic which makes it especially suited for use in television receivers that employ 600-milliampere, series-connected heaters.

GENERAL

ELECTRICAL

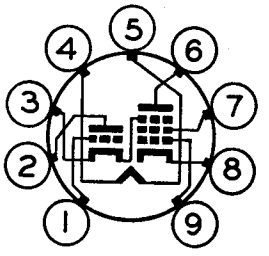
Cathode—Coated Unipotential

Heater Voltage, AC or DC	5.2 Volts
Heater Current	0.6 ± 6% Amperes
Heater Warm-up Time*	11 Seconds
Direct Interelectrode Capacitances†	
Pentode Section	
Grid-Number 1 to Plate, maximum	0.03 μμf
Input (Grid Number 1 to Cathode, Screen, and Heater)	6.5 μμf
Output (Plate to Cathode, Screen, Suppressor, Triode Cathode, Internal Shield, and Heater)	2.2 μμf
Plate to Cathode, Screen, and Heater	4.2 μμf
Triode Section	
Grid to Plate	1.6 μμf
Input (Grid to Cathode, Pentode Suppressor, Internal Shield and Heater)	2.4 μμf
Output (Plate to Cathode, Pentode Suppressor, Internal Shield, and Heater)	1.4 μμf
Pentode Grid Number 1 to Triode Plate	0.008 μμf
Triode Grid to Pentode Plate	0.005 μμf
Pentode Plate to Triode Plate	0.04 μμf

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

BASING DIAGRAM



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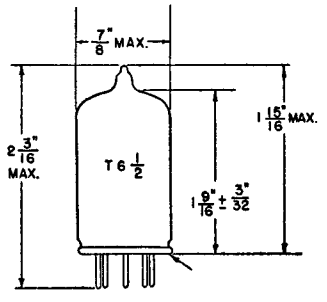
TERMINAL CONNECTIONS

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

PHYSICAL DIMENSIONS



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GENERAL ELECTRIC

MAXIMUM RATINGS

CLASS A_1 AMPLIFIER SERVICE—DESIGN-MAXIMUM VALUES

	Pentode Section	Triode Section	
Plate Voltage	300	300	Volts
Screen-Supply Voltage	300	...	Volts
Screen Voltage—See Screen Rating Chart			
Positive DC Grid-Number 1 Voltage	0	0	Volts
Plate Dissipation	2.2	2.0	Watts
Screen Dissipation	0.55	...	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	0.25	0.5	Megohms
With Cathode Bias	1.0	1.0	Megohms

VERTICAL OSCILLATOR SERVICE‡, TRIODE SECTION—DESIGN-MAXIMUM VALUES

DC Plate Voltage	300	Volts
Peak Negative Grid Voltage	400	Volts
Plate Dissipation	1.0	Watts
DC Cathode Current	12	Milliamperes
Peak Cathode Current	35	Milliamperes
Heater-Cathode Voltage		
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
Grid Circuit Resistance		
With Fixed Bias	2.2	Megohms
With Cathode Bias	2.2	Megohms
With Grid-Leak Bias	2.2	Megohms

Design-Maximum Ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur for the types of service for which the tube is rated. Therefore, the equipment designer must establish the circuit design so that initially and throughout equipment life no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.

CHARACTERISTICS AND TYPICAL OPERATION

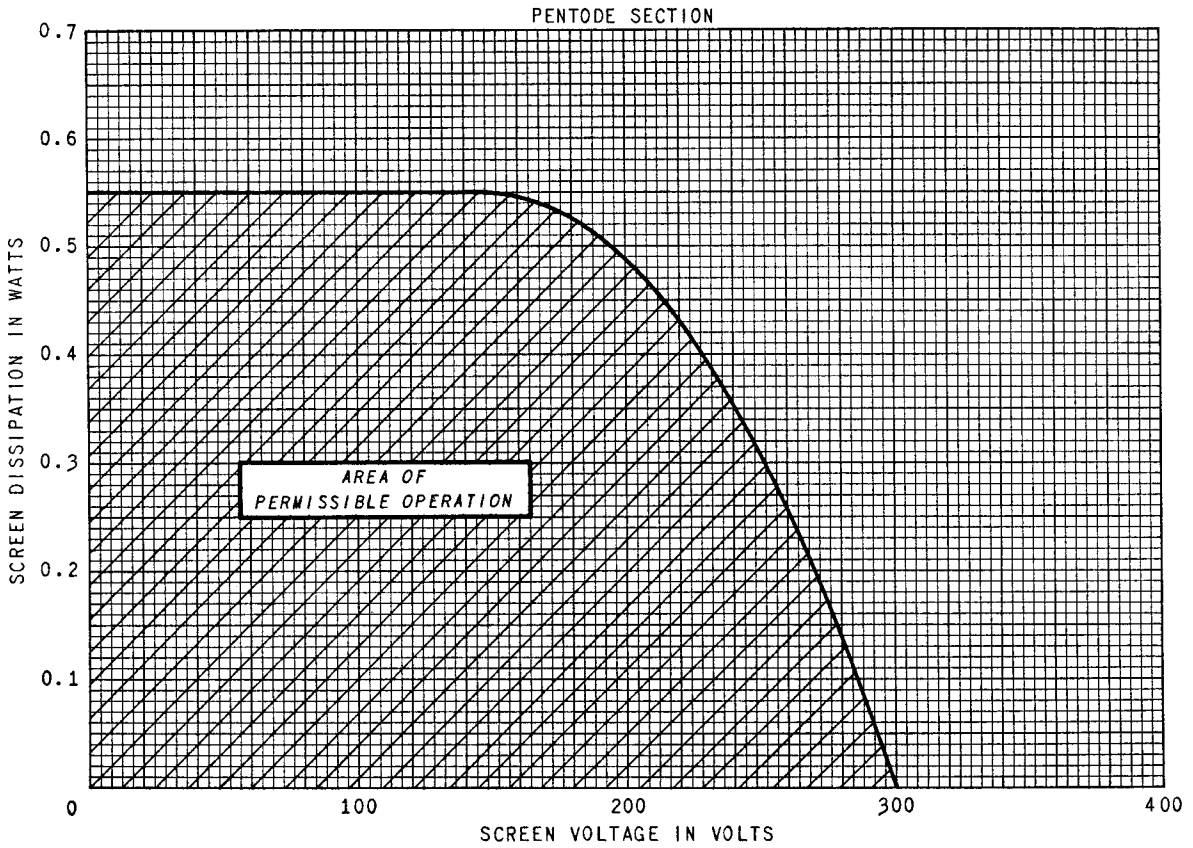
	Pentode Section	Triode Section	
Plate Voltage	125	250	Volts
Screen Voltage	125	...	Volts
Grid-Number 1 Voltage	.....	...	Volts
Cathode-Bias Resistor	56	390	Ohms
Amplification Factor	.....	53	
Plate Resistance, approximate	150000	12000	Ohms
Transconductance	8600	4400	Micromhos
Plate Current	13.5	7.3	Milliamperes
Screen Current	3.8	.....	Milliamperes
Grid-Number 1 Voltage, approximate			
Ib = 10 Microamperes	.....	−10	Volts
Ib = 20 Microamperes	−6	.....	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.

† Without external shield.

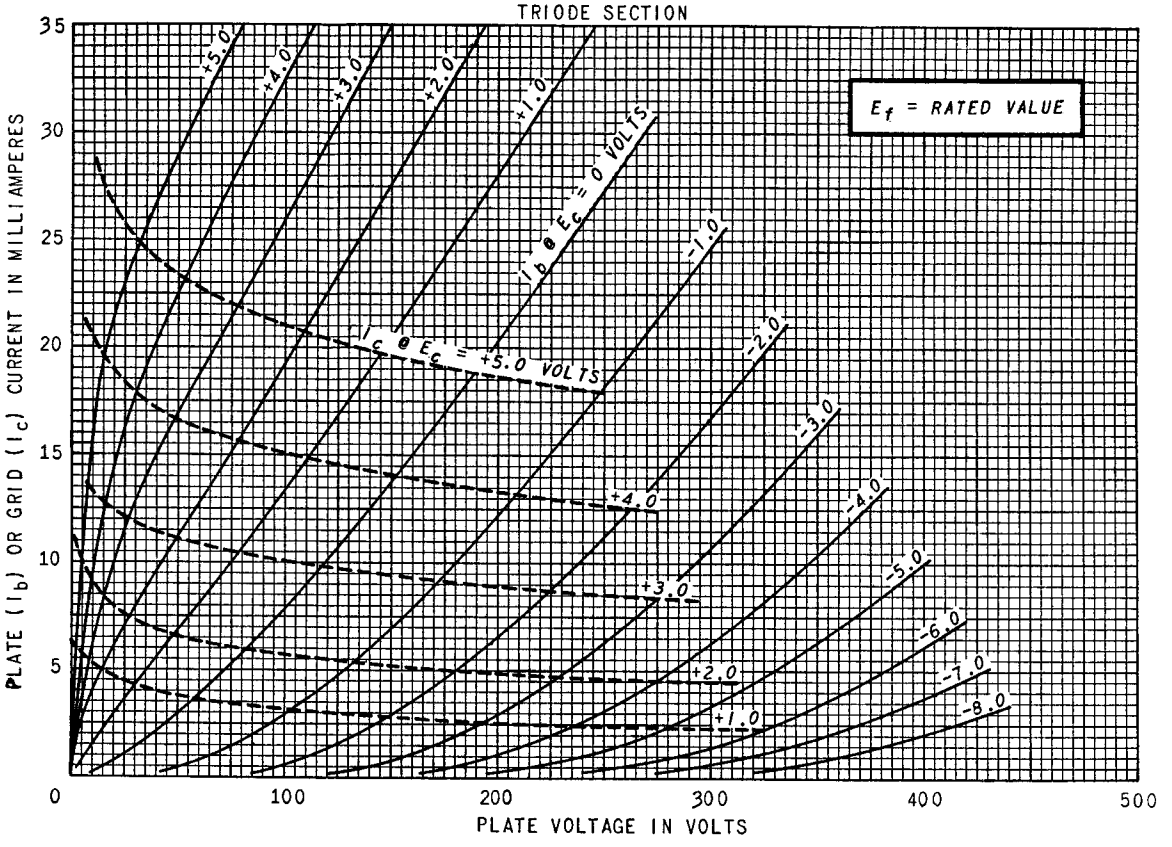
‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

SCREEN RATING CHART



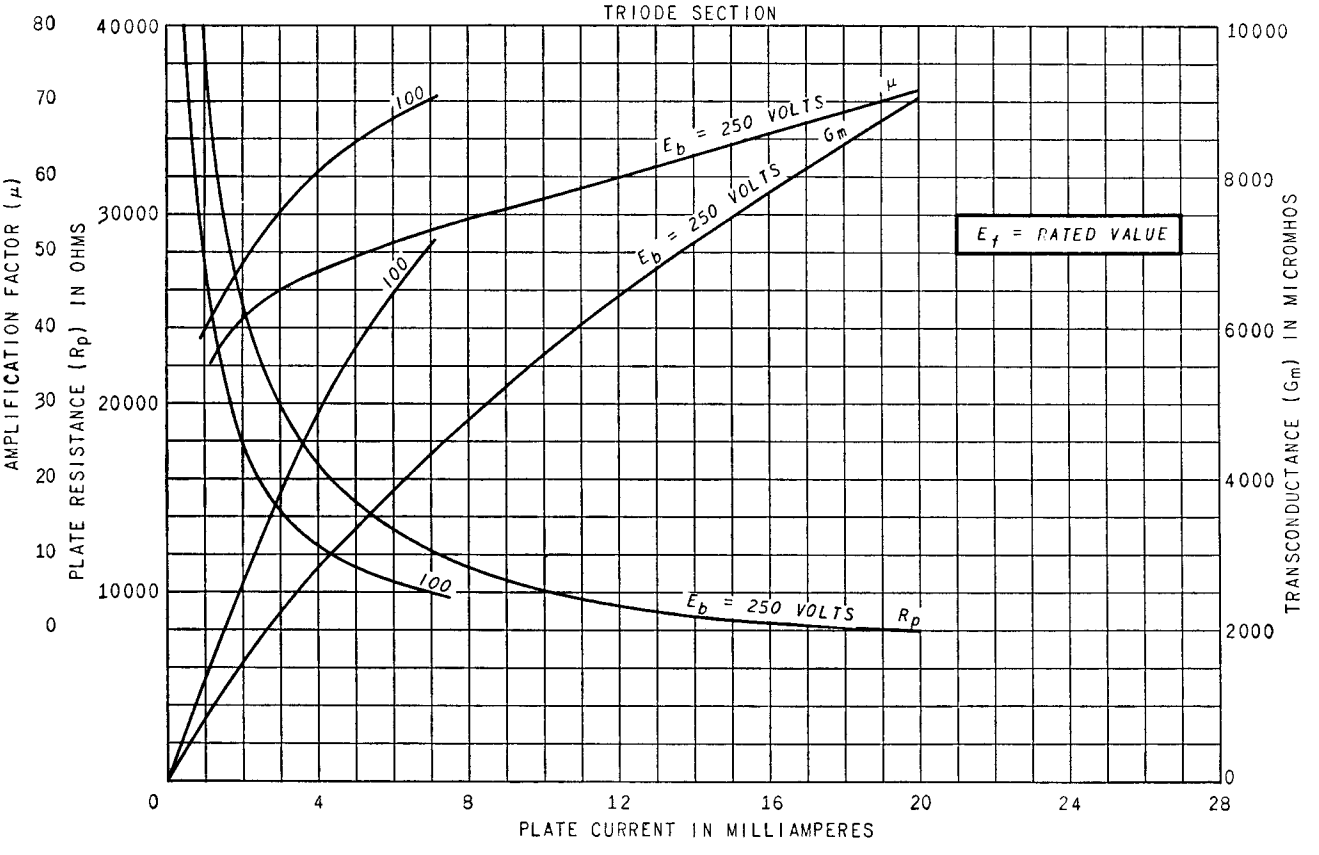
AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION



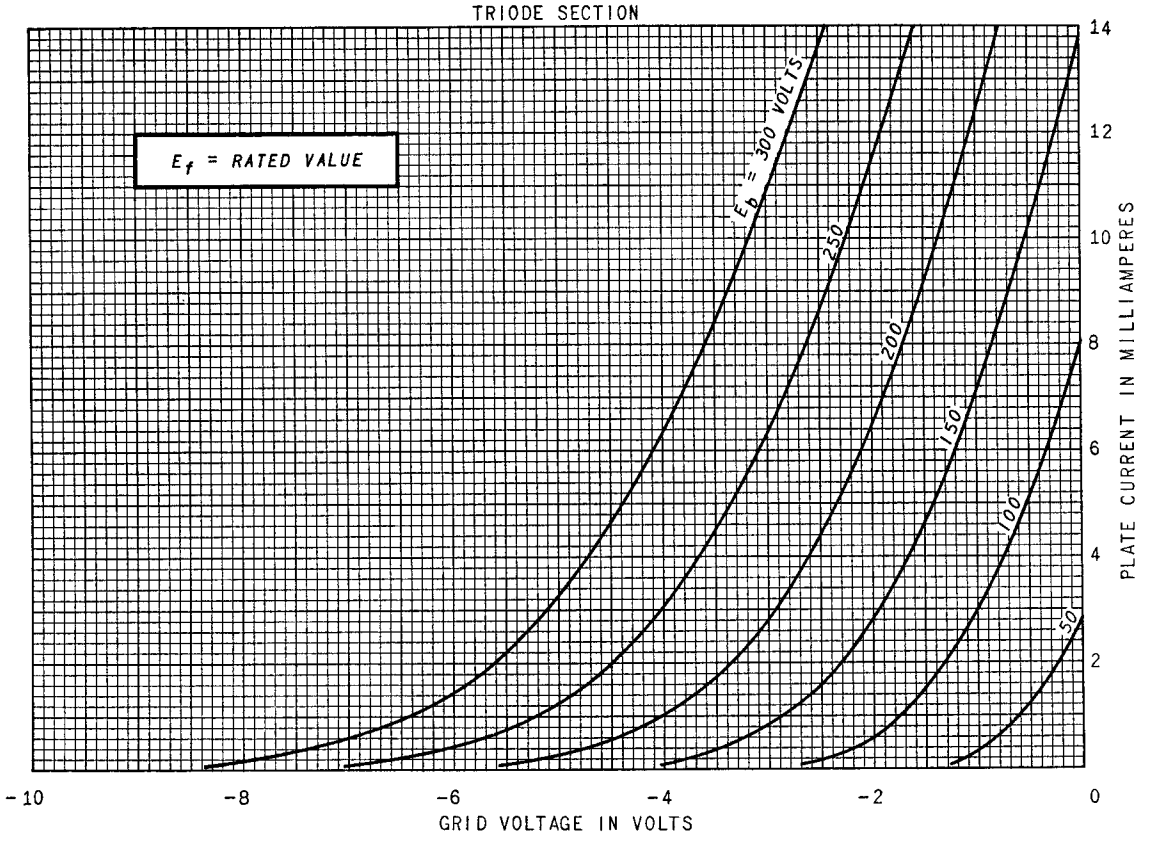
AVERAGE CHARACTERISTICS

TRIODE SECTION



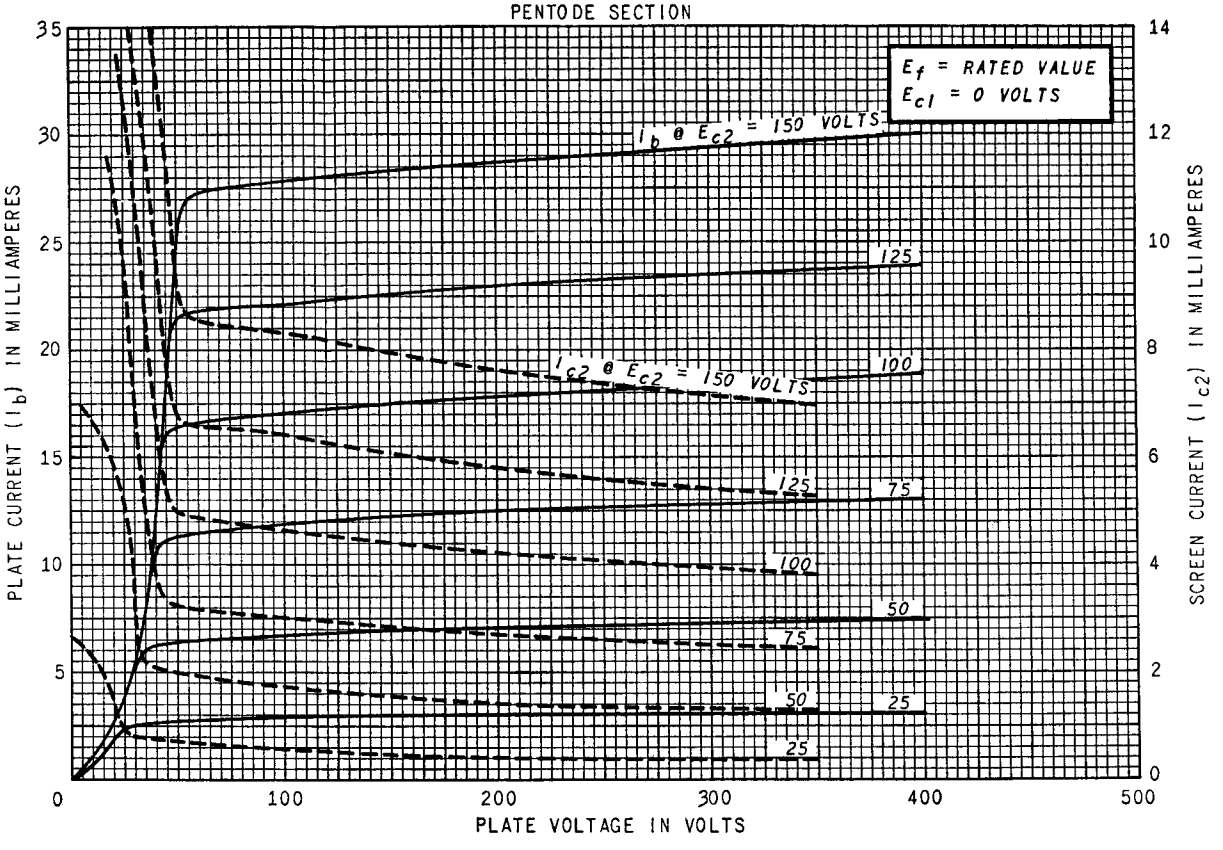
AVERAGE TRANSFER CHARACTERISTICS

TRIODE SECTION



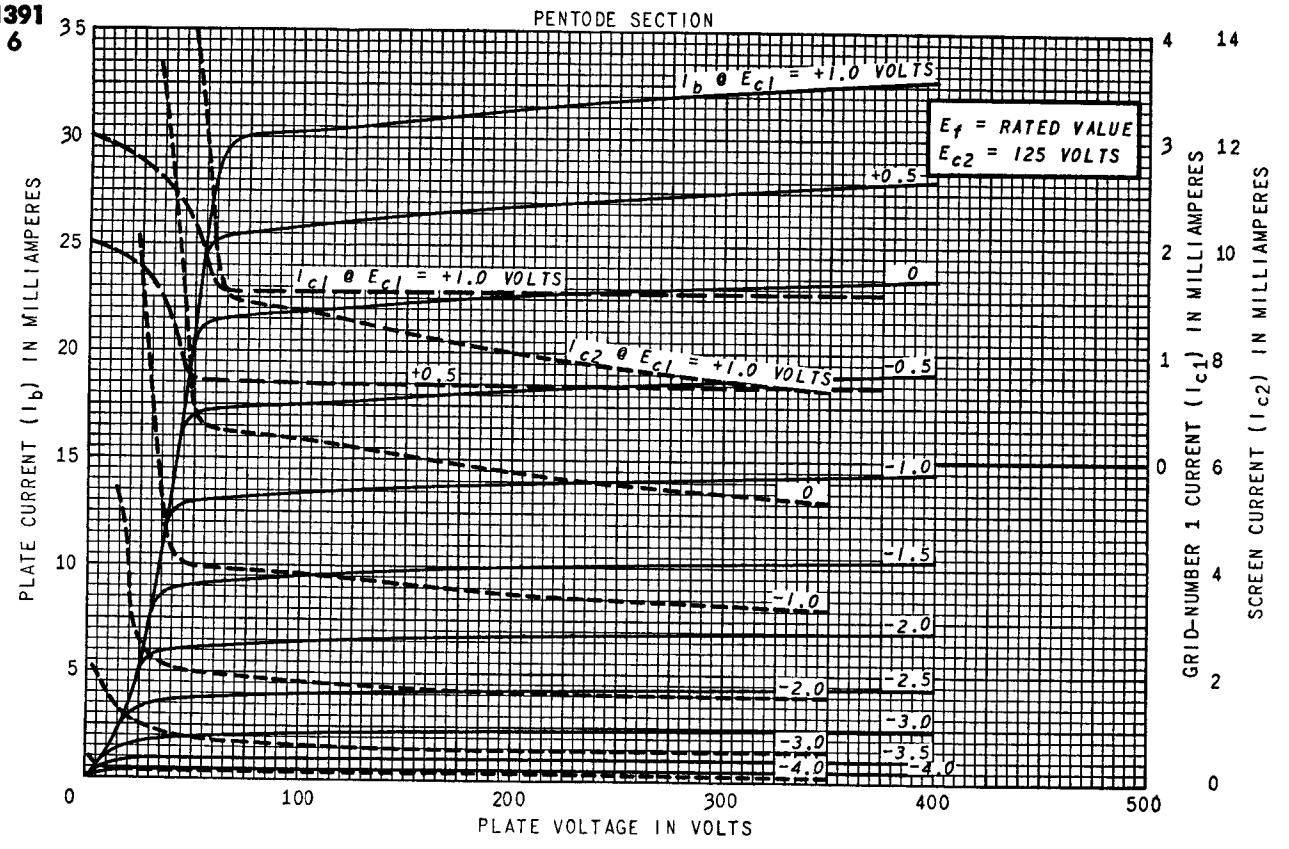
AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



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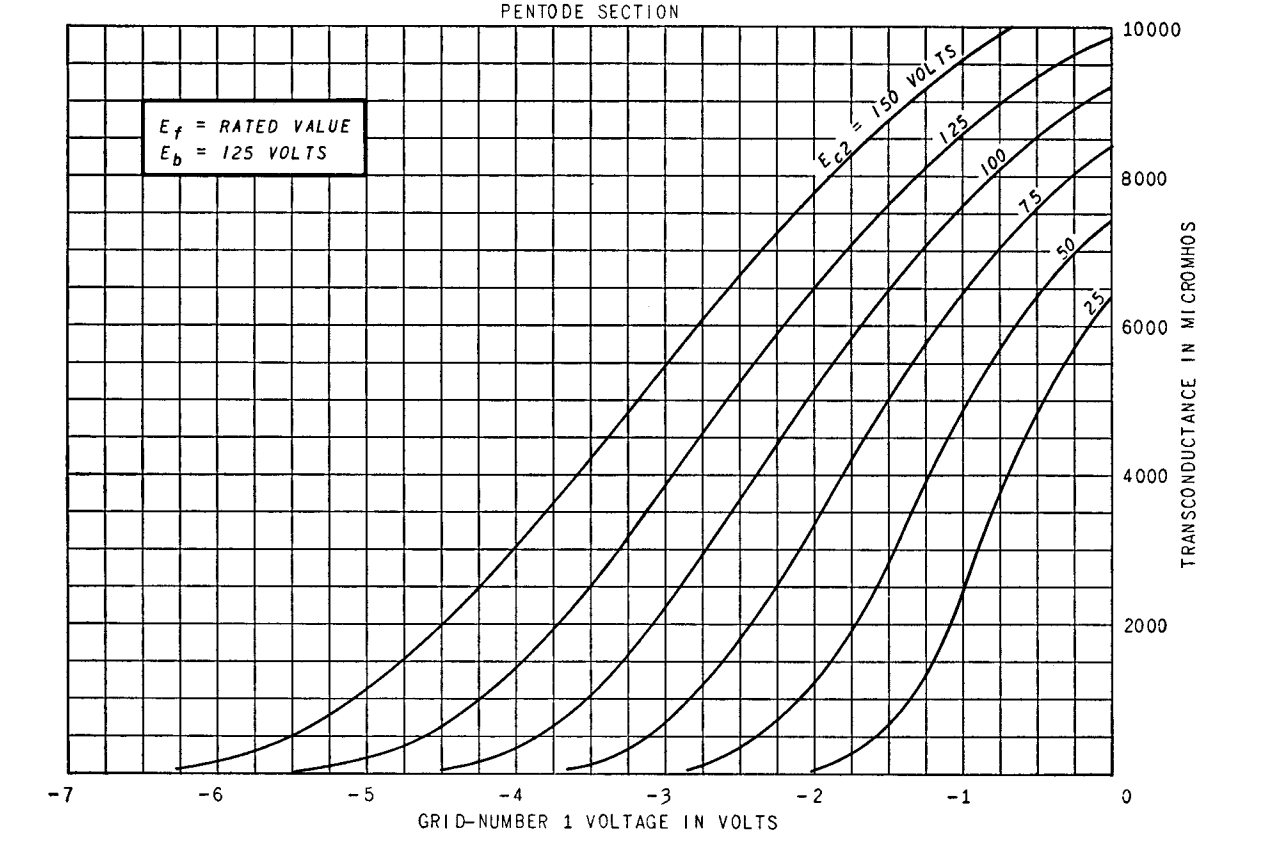

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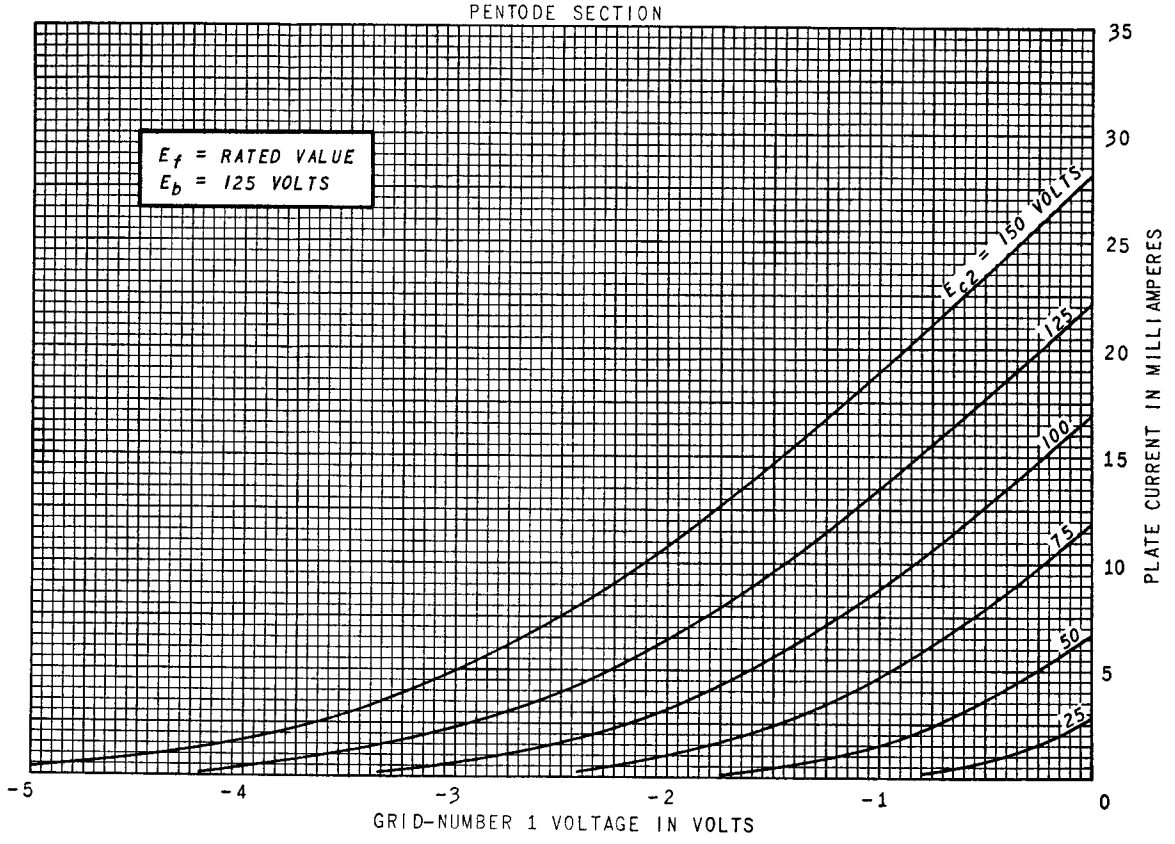

AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION