Electronic TUBES

6CQ8

TRIODE—TETRODE

DESCRIPTION AND RATING

The 6CQ8 is a miniature tube which contains a sharp-cutoff tetrode and a medium-mu triode in one envelope. Each section has a separate cathode and is electrically independent. The tube is intended primarily for service as a combined triode oscillator and tetrode mixer in television and FM receivers, although it is also suitable for a wide variety of general-purpose applications.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	6.3	Volts
Heater Current	0.45 ± 6%	Amperes
Heater Warm-up Time*	11	Seconds

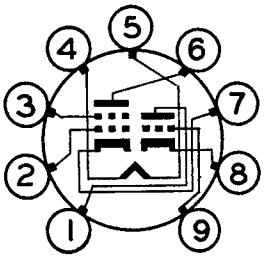
Direct Interelectrode Capacitances

	With Shield†	Without Shield	
Tetrode Section			
Grid-Number 1 to Plate: (Tegl to Tep), max.	0.015	0.019	μμf
Input: Tegl to (H+Tek+Teg2+I.S.)	5.0	5.0	μμf
Output: Tep to (H+Tek+Teg2+I.S.)	3.3	2.5	μμf
Triode Section			
Grid to Plate: (Tg to Tp)	1.8	1.8	μμf
Input: Tg to (H+Tk)	2.7	2.7	μμf
Output: Tp to (H+Tk)	1.2	0.4	μμf
Tetrode Plate to Triode Plate: (Tep to Tp), max.	0.01	0.07	μμf
Heater to Cathode, each section	3.0‡	3.0	μμf

MECHANICAL

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

BASING DIAGRAM



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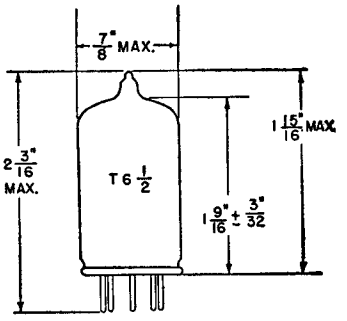
TERMINAL CONNECTIONS

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

PHYSICAL DIMENSIONS



EIA 6-2

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GENERAL ELECTRIC

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES	Tetrode Section	Triode Section	
Plate Voltage	330	330	Volts
Screen Supply Voltage	330	——	Volts
Screen Voltage—See Screen Rating Chart			
Positive DC Grid-Number 1 Voltage	0	0	Volts
Plate Dissipation	3.2	3.1	Watts
Screen Dissipation	——	——	Watts
Grid-Number 1 Input	——	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

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

These values are chosen by the tube manufacturer to provide acceptable serviceability of the tube, taking responsibility 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, variation in characteristics of all other tubes in the equipment, equipment control adjustment, load variation, signal variation, and environmental conditions.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A_1 AMPLIFIER	Tetrode Section	Triode Section	
Plate Voltage	125	125	Volts
Screen Voltage	125	——	Volts
Grid-Number 1 Voltage	−1.0	——	Volts
Cathode-Bias Resistor	——	56	Ohms
Amplification Factor	——	40	
Plate Resistance, approximate	140000	5000	Ohms
Transconductance	5800	8000	Micromhos
Plate Current	12	15	Milliamperes
Screen Current	4.2	——	Milliamperes
Grid-Number 1 Voltage, approximate			
Ib = 100 Microamperes	−7	−7	Volts

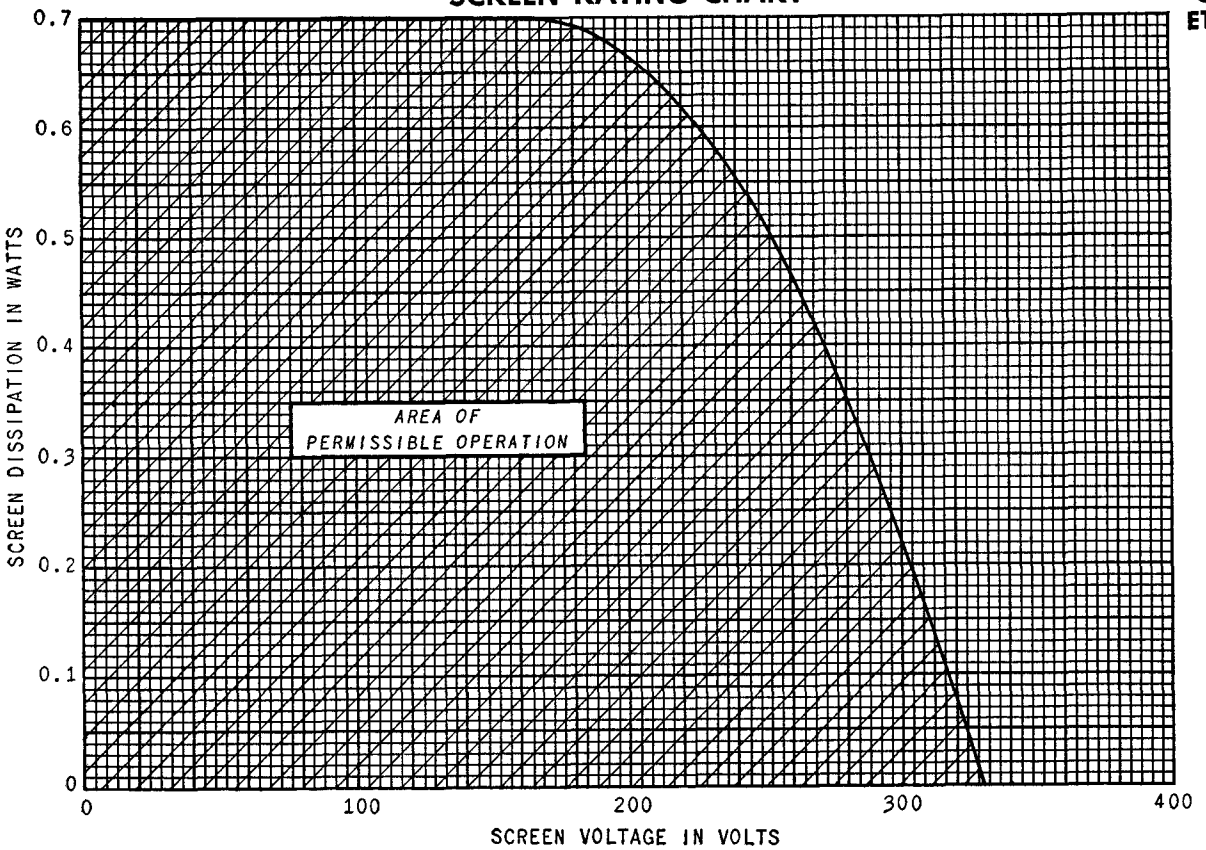
* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† With external shield (EIA 315) connected to cathode of unit under test unless otherwise indicated.

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

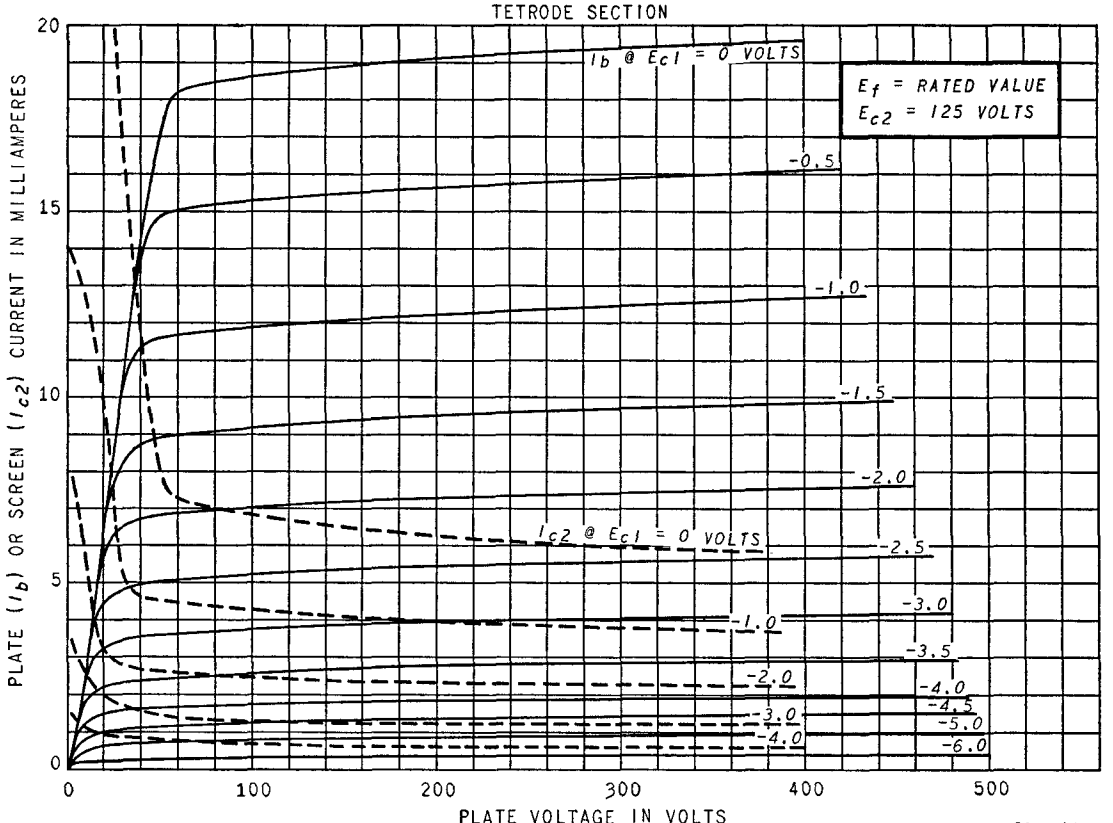
The DC Component must not exceed 100 volts.

SCREEN RATING CHART



AVERAGE PLATE CHARACTERISTICS

TETRODE SECTION



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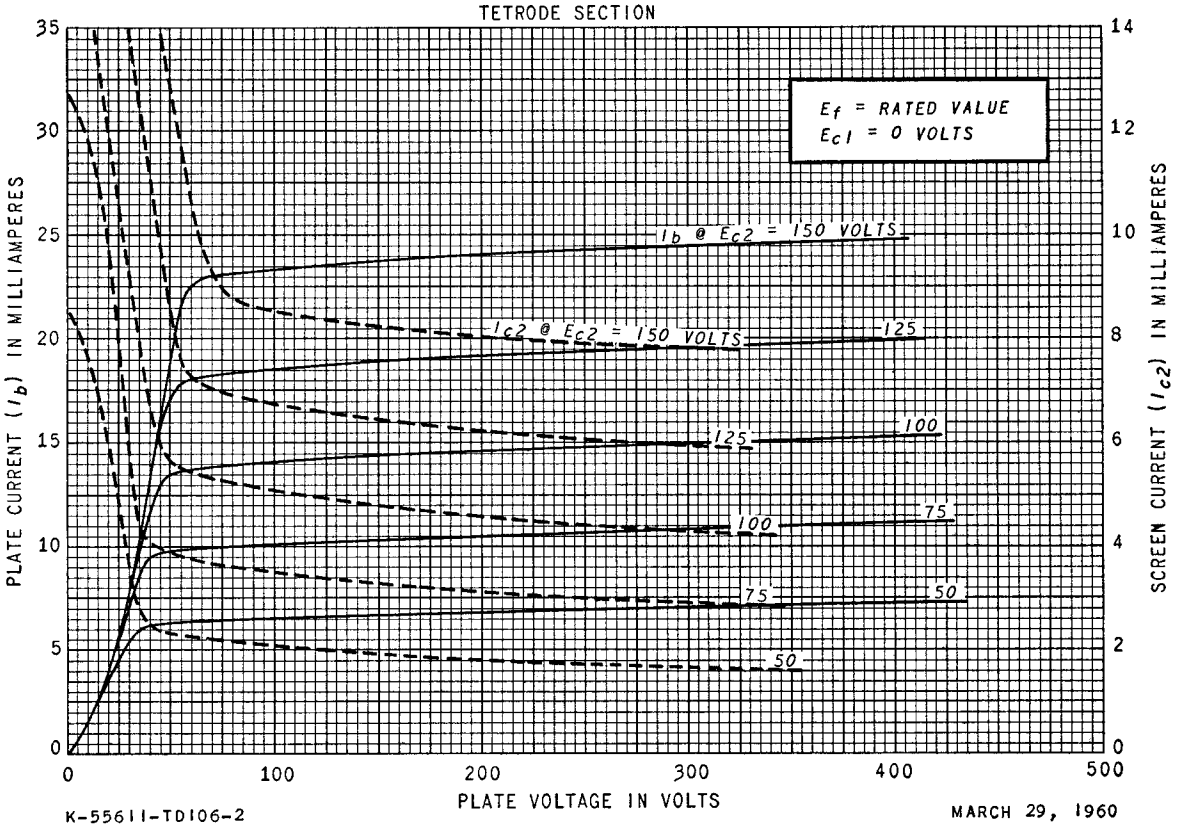
MARCH 29, 1960

AVERAGE PLATE CHARACTERISTICS

TETRODE SECTION



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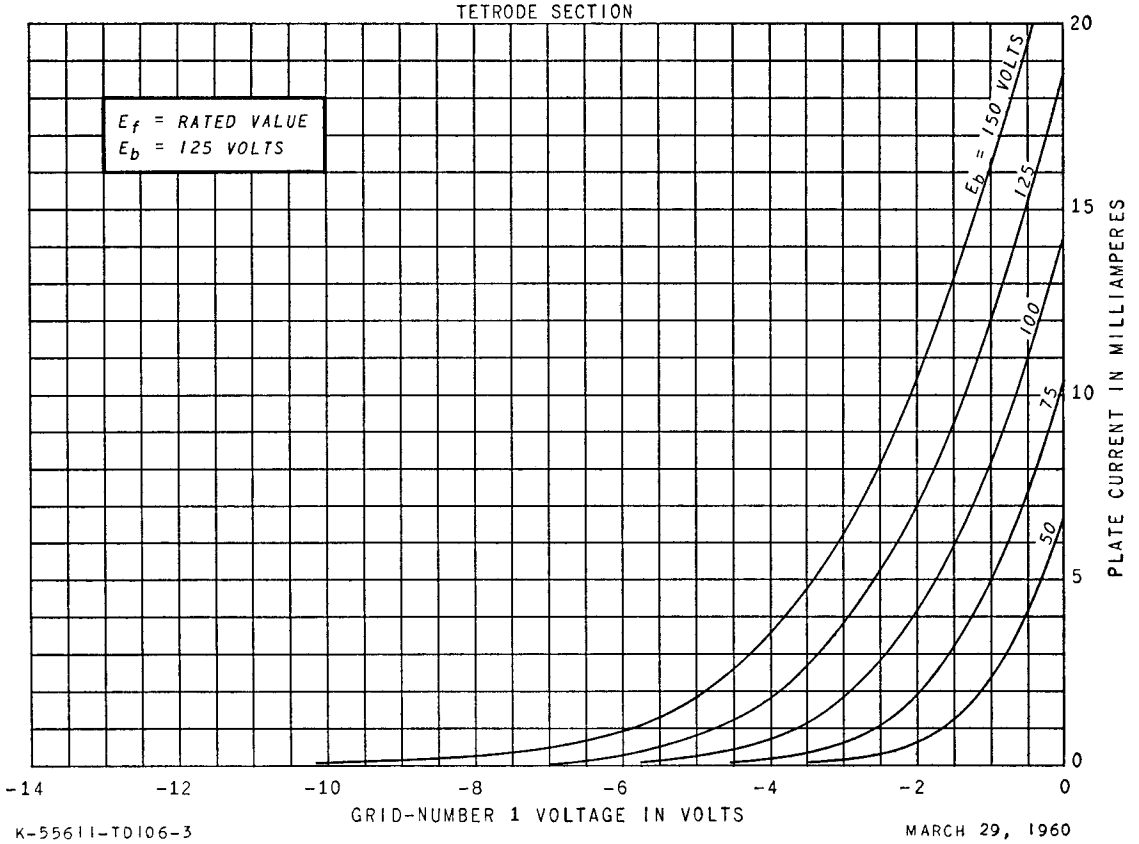
AVERAGE TRANSFER CHARACTERISTICS

TETRODE SECTION



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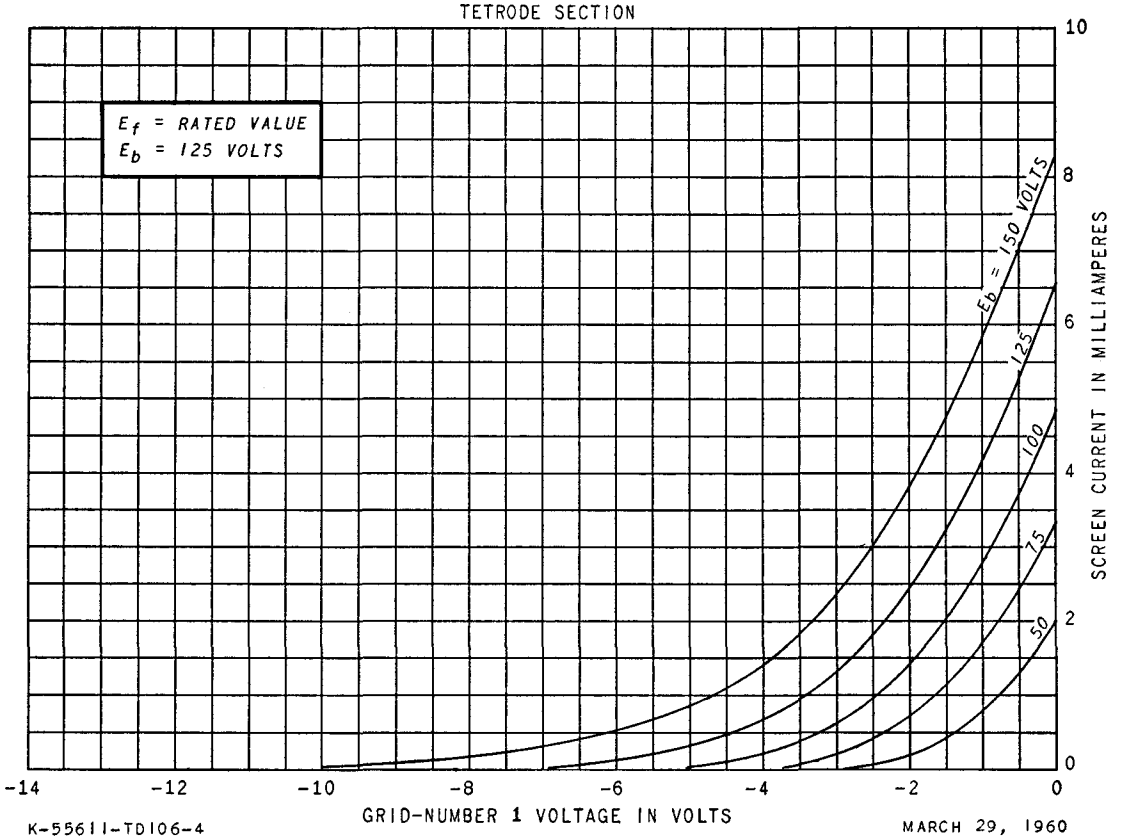
AVERAGE TRANSFER CHARACTERISTICS

TETRODE SECTION



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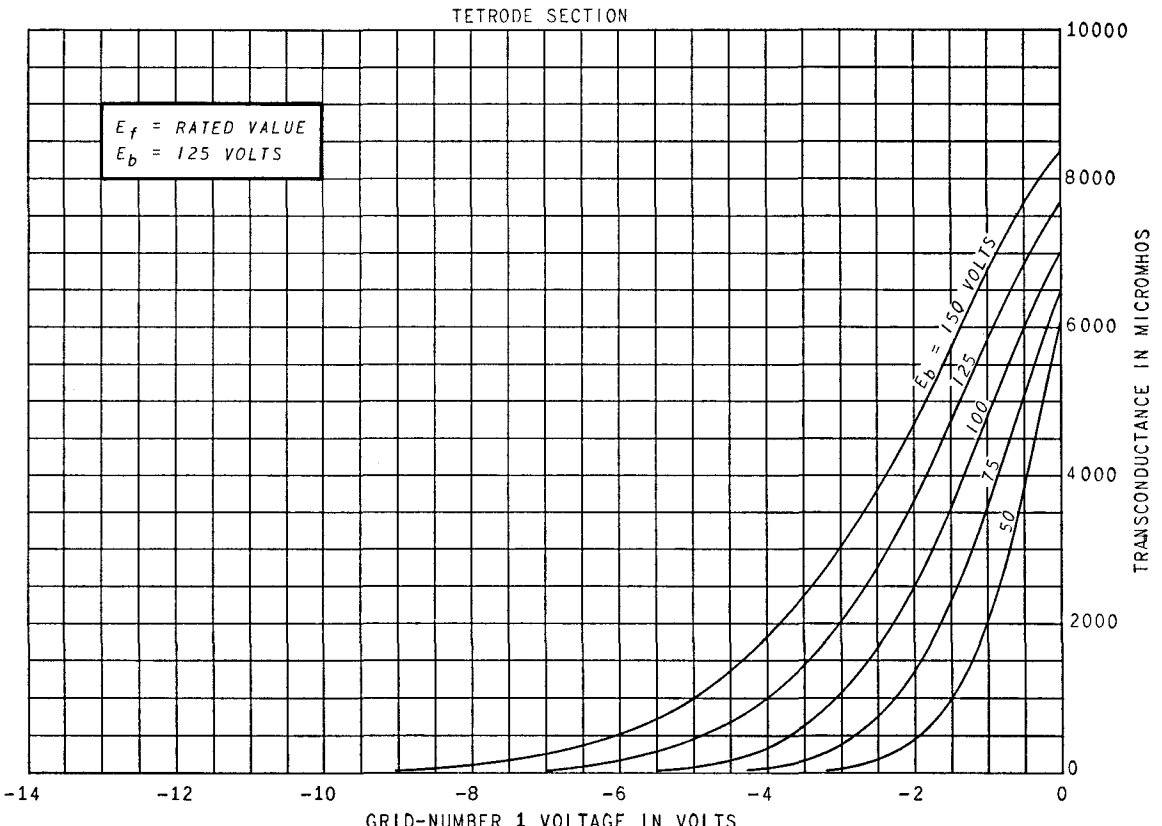
AVERAGE TRANSFER CHARACTERISTICS

TETRODE SECTION



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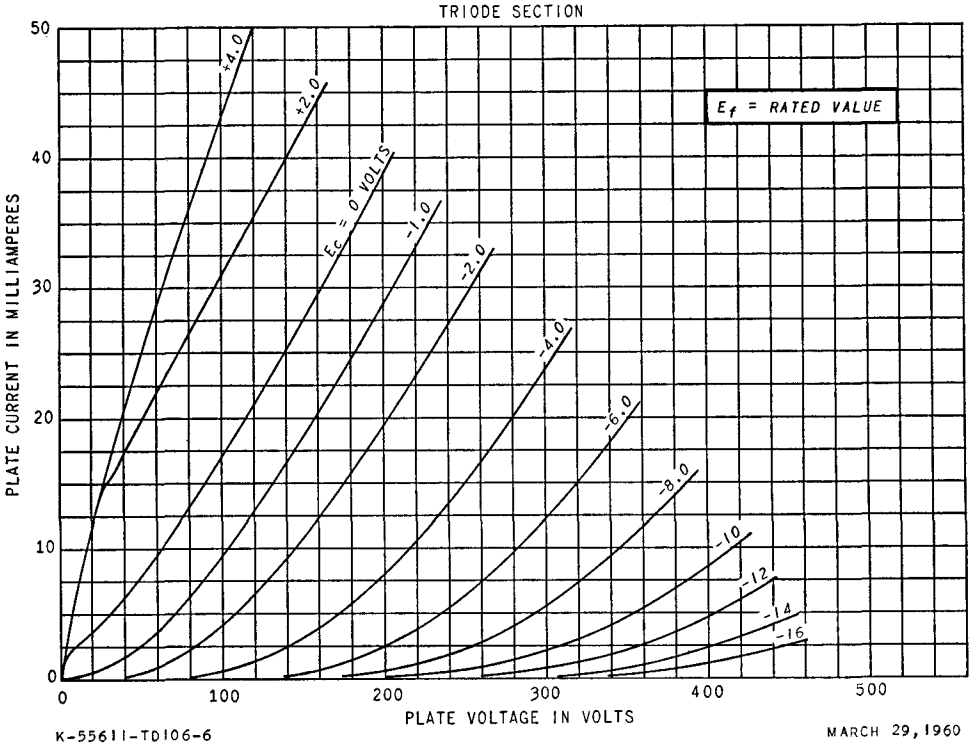
AVERAGE PLATE CHARACTERISTICS

TRIODE SECTION



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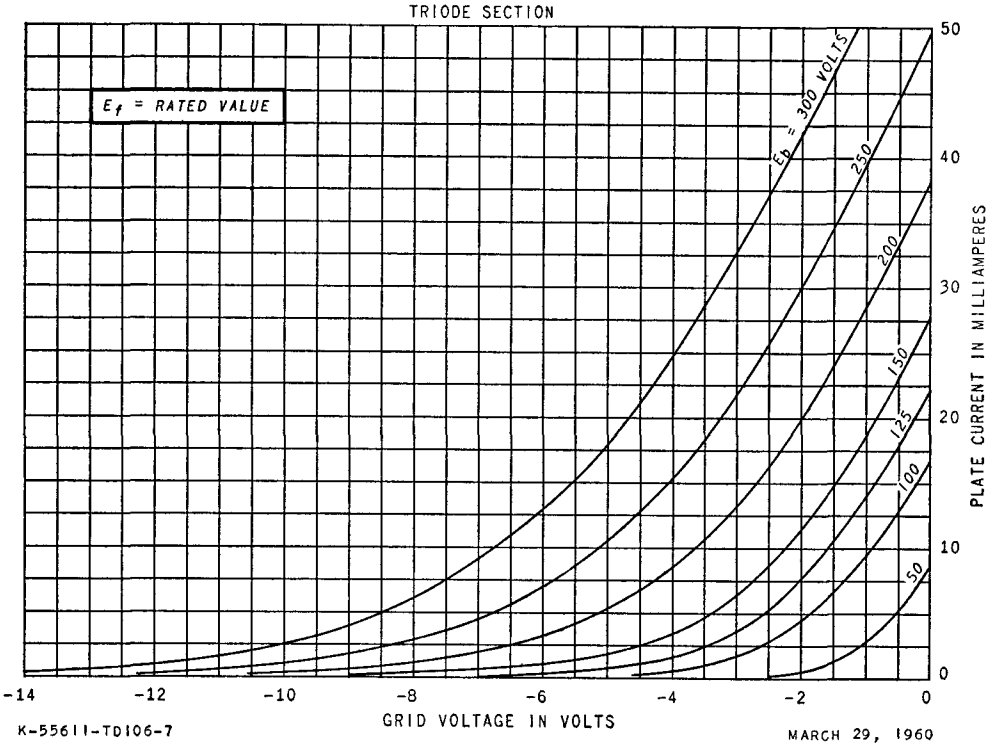
AVERAGE TRANSFER CHARACTERISTICS

TRIODE SECTION



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