

## BEAM PENTODE

### DESCRIPTION AND RATING

The 6V6-GT is a beam-power pentode designed for use in the audio-frequency power output stage of television and radio receivers. In this application, it is capable of supplying high power output with high sensitivity, high efficiency, and low third and higher-order harmonic distortion. The 6V6-GT may also be used as a triode-connected vertical-deflection amplifier in television receivers.

Except for heater ratings, the 5V6-GT is identical to the 6V6-GT. In addition, the 5V6-GT, as a result of its controlled heater warm-up characteristic, is especially suited for use in television receivers which employ series-connected heaters. When the 5V6-GT is used in conjunction with other 600-milliamperre types which exhibit essentially the same heater warm-up characteristic, heater voltage surges across the individual tubes are minimized during the warm-up period.

### GENERAL

#### ELECTRICAL

Cathode—Coated Unipotential	<b>5V6-GT</b>	<b>6V6-GT</b>
Heater Voltage, AC or DC	4.7	6.3 Volts
Heater Current	0.6	0.45 Amperes
Heater Warm-up Time*	11	— Seconds
Direct Interelectrode Capacitances, approximate†		
Grid-Number 1 to Plate	0.7	μμf
Input	9.0	μμf
Output	7.5	μμf

#### MECHANICAL

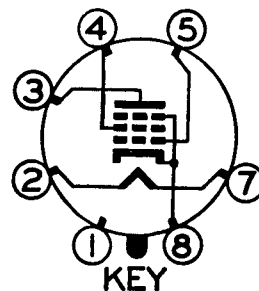
Mounting Position—Any  
Envelope—T-9, Glass  
Base—B6-81 or B7-7, Intermediate Shell Octal  
or B6-84 or B7-59, Short Intermediate Shell Octal

### MAXIMUM RATINGS

#### DESIGN-CENTER VALUES UNLESS OTHERWISE INDICATED

	Class A <sub>1</sub> Amplifier	Vertical-Deflection Amplifier‡ (Triode Connection) ¶
DC Plate Voltage	315	315 Volts
Peak Positive Pulse Plate Voltage	—	1200▲ Volts
Screen-Supply Voltage	315	— Volts
Screen Voltage	285	— Volts
Peak Negative Grid-Number 1 Voltage	—	250 Volts
Plate Dissipation♦	12	9.0 Watts
Screen Dissipation	2.0	— Watts
DC Cathode Current	—	35 Milliamperes
Peak Cathode Current	—	105 Milliamperes
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	— Megohms
With Cathode Bias	0.5	2.2 Megohms

### BASING DIAGRAM



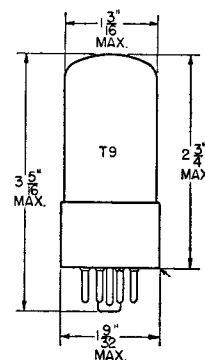
RETMA 7AC

### TERMINAL CONNECTIONS

Pin 1—No Connection‡  
Pin 2—Heater  
Pin 3—Plate  
Pin 4—Grid Number 2  
(Screen)  
Pin 5—Grid Number 1  
Pin 7—Heater  
Pin 8—Cathode and Beam  
Plates

‡ Pin 1 omitted on bases B6-81 and B6-84.

### PHYSICAL DIMENSIONS



RETMA 9-11  
or 9-41

**CHARACTERISTICS AND TYPICAL OPERATION**

**CLASS A<sub>1</sub> AMPLIFIER**

Plate Voltage . . . . .	180	250	315	Volts
Screen Voltage . . . . .	180	250	225	Volts
Grid-Number 1 Voltage . . . . .	-8.5	-12.5	-13.0	Volts
Peak AF Grid-Number 1 Voltage . . . . .	8.5	12.5	13.0	Volts
Plate Resistance, approximate . . . . .	50000	50000	80000	Ohms
Transconductance . . . . .	3700	4100	3750	Micromhos
Zero-Signal Plate Current . . . . .	29	45	34	Milliamperes
Maximum-Signal Plate Current . . . . .	30	47	35	Milliamperes
Zero-Signal Screen Current . . . . .	3.0	4.5	2.2	Milliamperes
Maximum-Signal Screen Current . . . . .	4.0	7.0	6.0	Milliamperes
Load Resistance . . . . .	5500	5000	8500	Ohms
Total Harmonic Distortion, approximate . . . . .	8	8	12	Percent
Maximum-Signal Power Output . . . . .	2.0	4.5	5.5	Watts

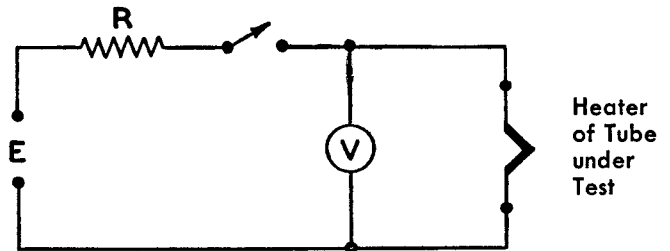
**PUSH-PULL CLASS AB<sub>1</sub> AMPLIFIER, VALUES FOR TWO TUBES**

Plate Voltage . . . . .	250	285	Volts
Screen Voltage . . . . .	250	285	Volts
Grid-Number 1 Voltage . . . . .	-15	-19	Volts
Peak AF Grid-to-Grid Voltage . . . . .	30	38	Volts
Zero-Signal Plate Current . . . . .	70	70	Milliamperes
Maximum-Signal Plate Current . . . . .	79	92	Milliamperes
Zero-Signal Screen Current . . . . .	5.0	4.0	Milliamperes
Maximum-Signal Screen Current . . . . .	13	13.5	Milliamperes
Effective Load Resistance, Plate-to-Plate . . . . .	10000	8000	Ohms
Total Harmonic Distortion . . . . .	5	3.5	Percent
Maximum-Signal Power Output . . . . .	10	14	Watts

**AVERAGE CHARACTERISTICS, TRIODE CONNECTION †**

Plate Voltage . . . . .	250	Volts
Grid-Number 1 Voltage . . . . .	-12.5	Volts
Amplification Factor . . . . .	9.8	
Plate Resistance, approximate . . . . .	1960	Ohms
Transconductance . . . . .	5000	Micromhos
Plate Current . . . . .	49.5	Milliamperes
Grid-Number 1 Voltage, approximate $I_b = 0.5$ Milliampere . . . . .	-36	Volts

\* Heater warm-up time is defined as the time required in the circuit shown at the right for the voltage across the heater terminals to increase from zero to the heater test voltage ( $V_1$ ). For this type,  $E = 18.7$  volts (RMS or DC),  $V_1 = 3.73$  volts (RMS or DC), and  $R = 23.5$  ohms.



† Without external shield.

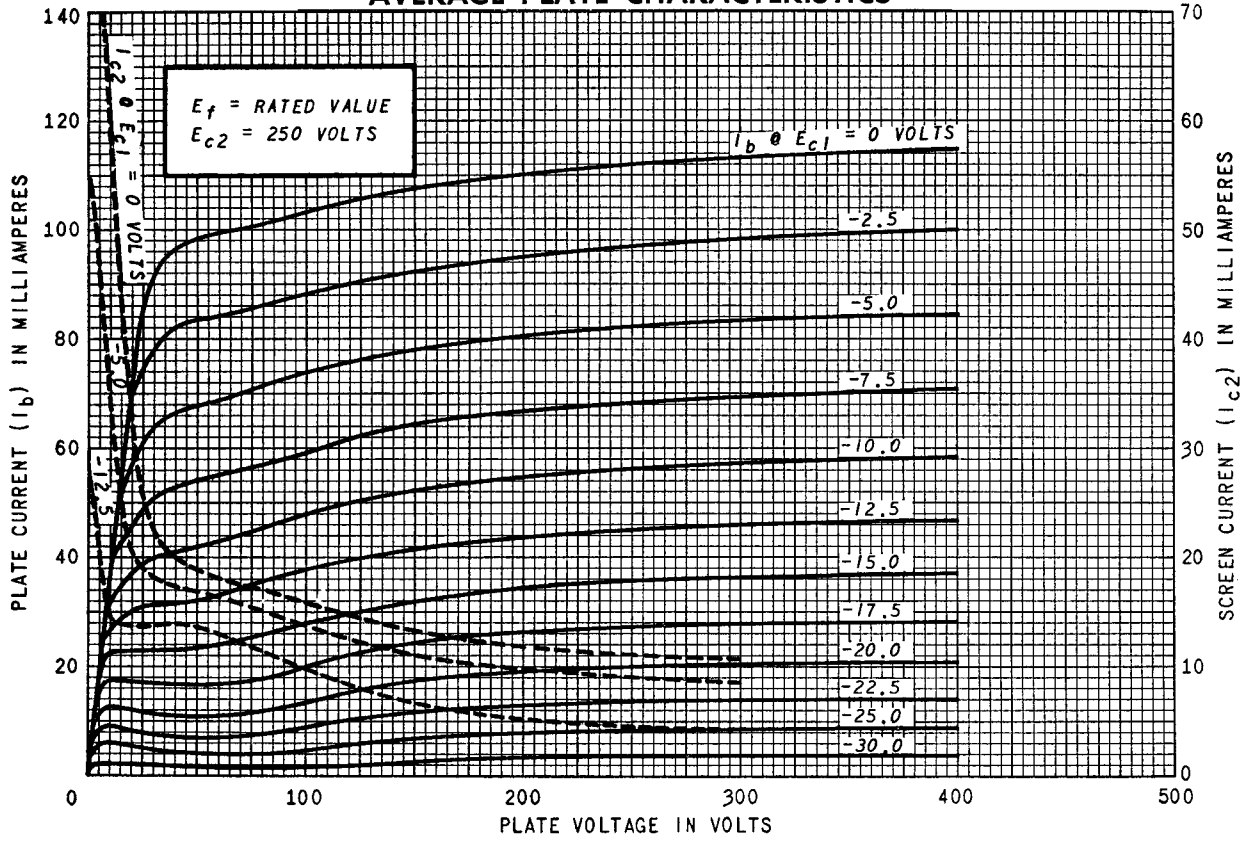
§ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

π With screen connected to plate.

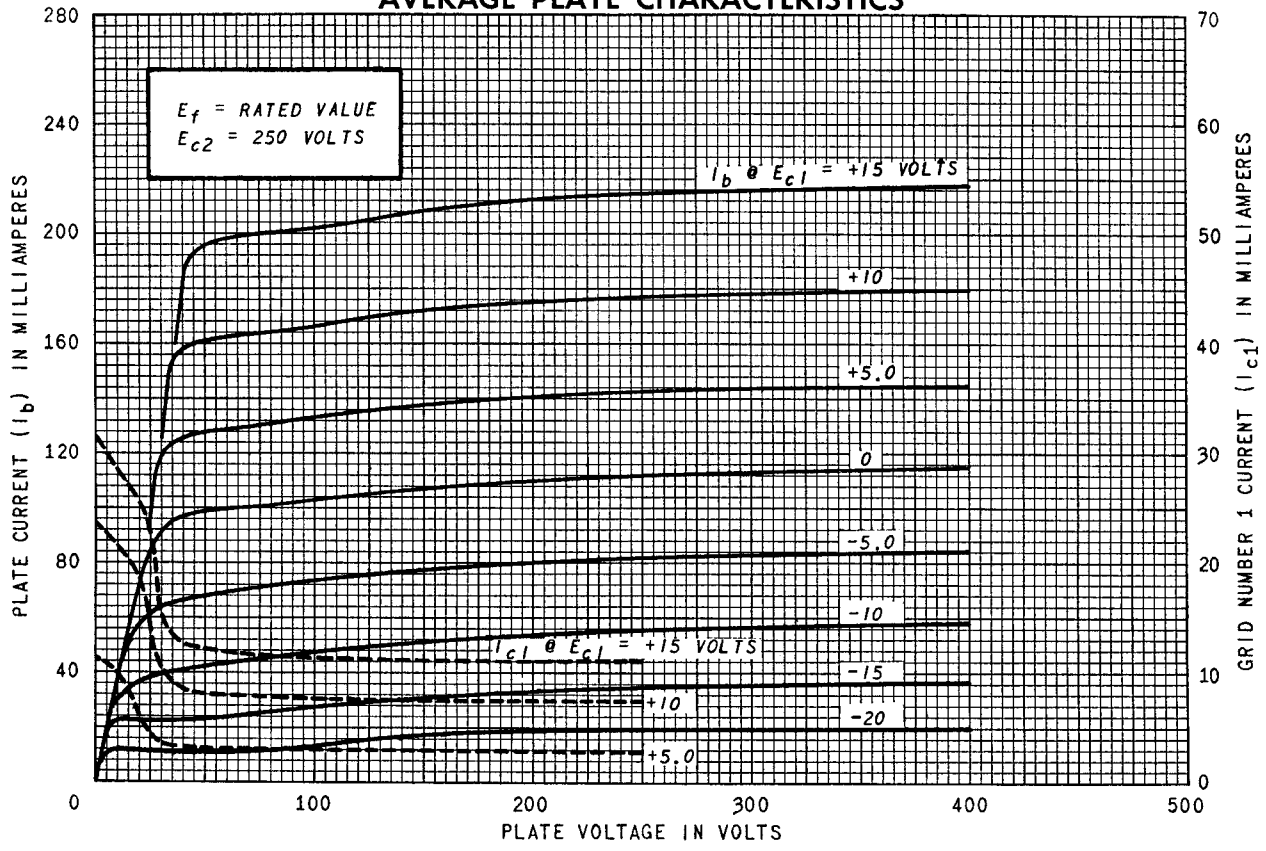
▲ Value given is to be considered as an Absolute Maximum Rating. In this case, the combined effect of supply voltage variation, manufacturing variation including components in the equipment, and adjustment of equipment controls should not cause the rated value to be exceeded.

◆ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

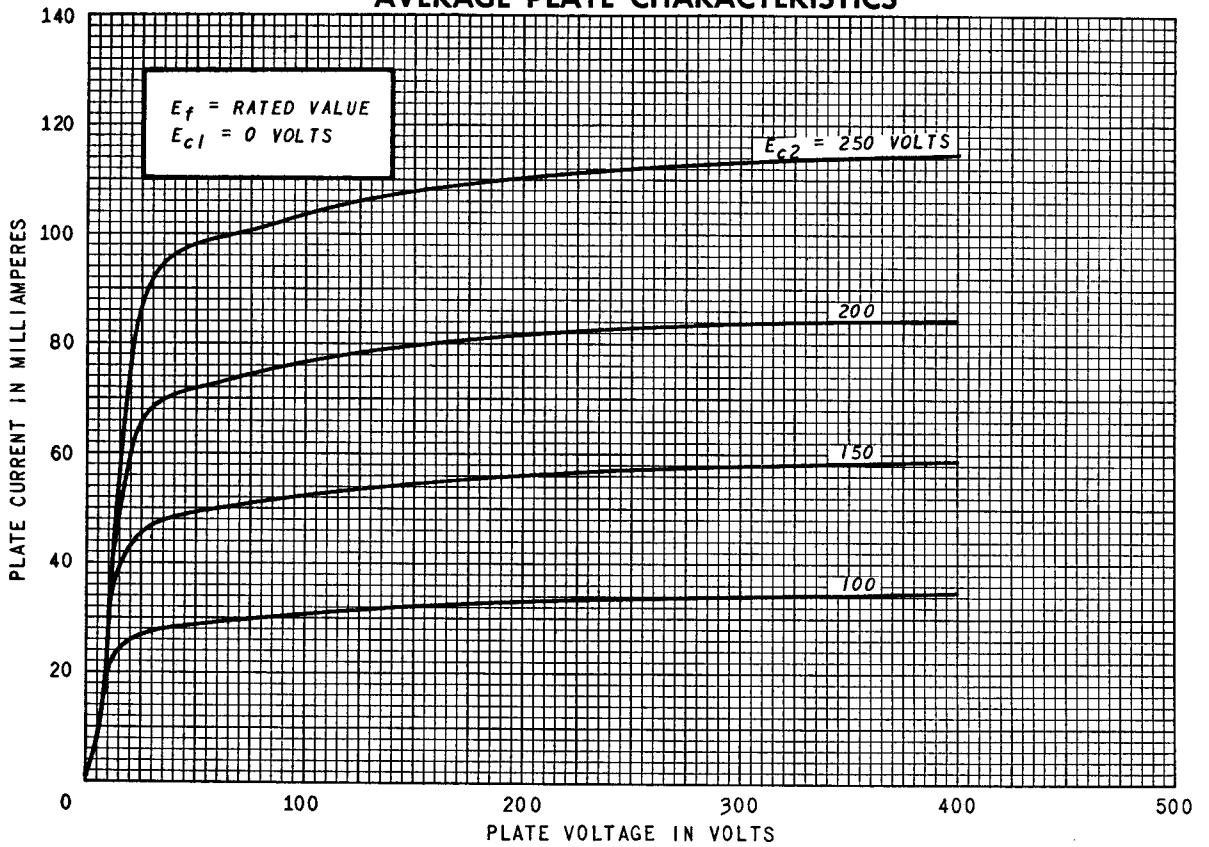
**AVERAGE PLATE CHARACTERISTICS**



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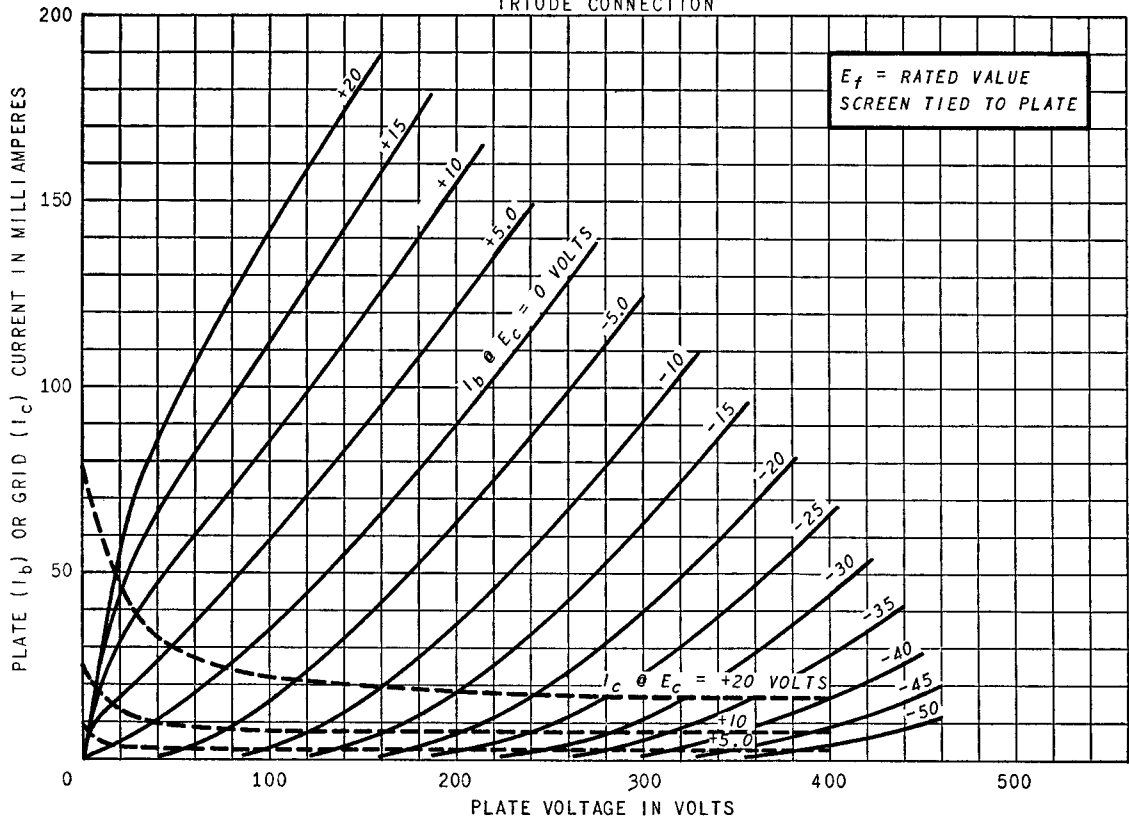


**AVERAGE PLATE CHARACTERISTICS**

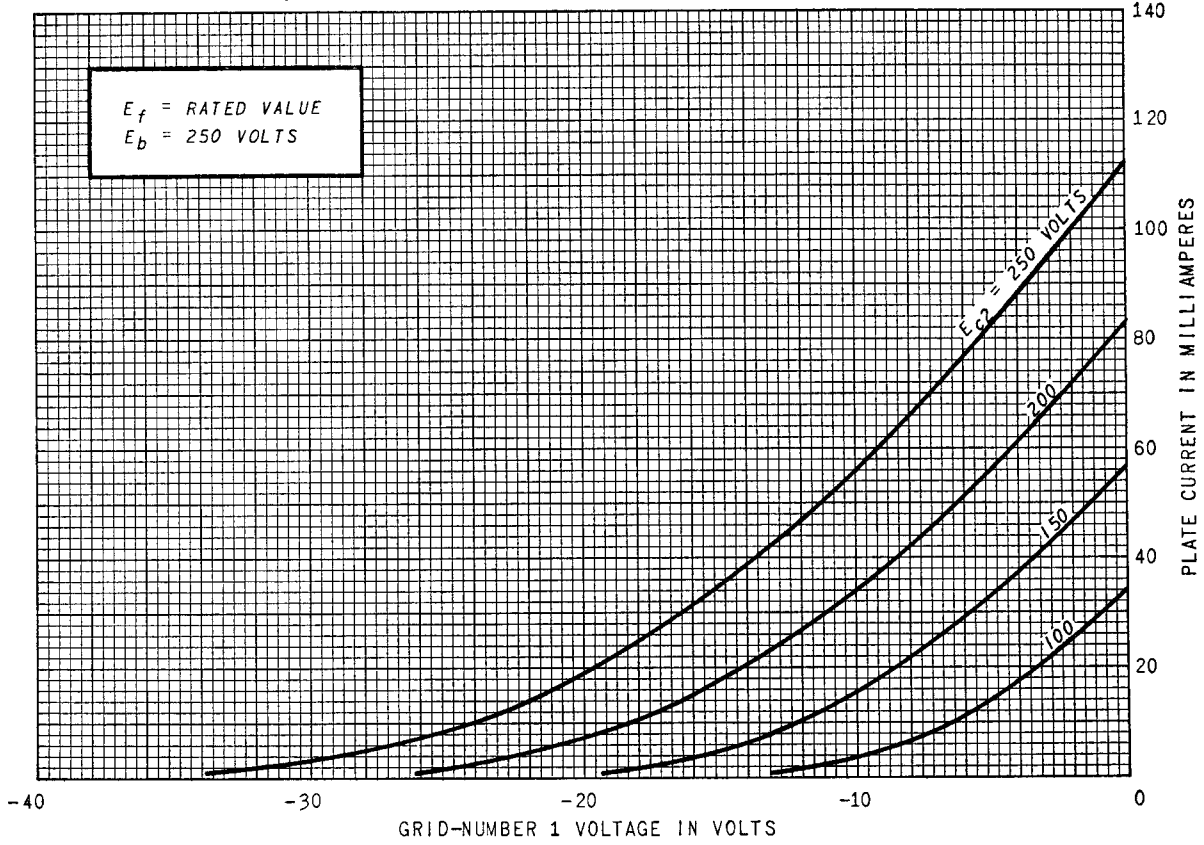


**AVERAGE PLATE CHARACTERISTICS**

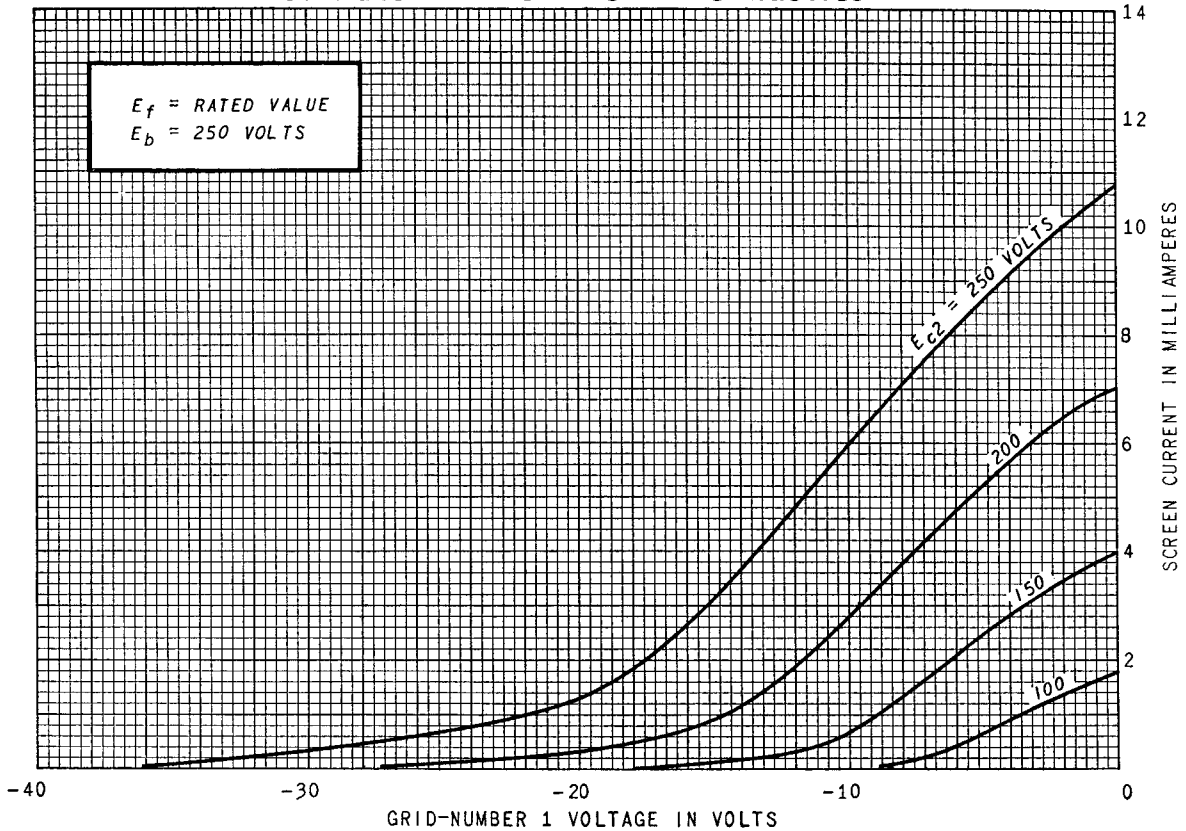
TRIODE CONNECTION



**AVERAGE TRANSFER CHARACTERISTICS**



**AVERAGE TRANSFER CHARACTERISTICS**



### OPERATION CHARACTERISTICS

