



**TUBES**

# Triode-Pentode

## 6LR8

**FOR TV VERTICAL-DEFLECTION OSCILLATOR  
AND AMPLIFIER APPLICATIONS**

■ COLOR TV TYPE

■ T-12 ENVELOPE

■ TRIODE-PENTODE

The 6LR8 is a triode-pentode containing a high- $\mu$  triode and a beam pentode. The triode is designed for service as a vertical-deflection oscillator, and the pentode as a vertical-deflection amplifier in television receivers. The 6LR8 utilizes a T-12 bulb and features a 9-pin glass button base with a 0.687-inch pin circle.

### GENERAL

#### ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

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

Heater Current ●..... 1.5 Amperes

Direct Interelectrode Capacitances ▲

**Pentode Section**

Grid-Number 1 to Plate: maximum (Pg1 to Pp) 0.7 pf

Input: Pg1 to (h+Pk+Pg2+b.p.)..... 16 pf

Output: Pp to (h+Pk+Pg2+b.p.) ..... 9.0 pf

**Triode Section**

Grid to Plate: (Tg to Tp) ..... 6.0 pf

Input: Tg to (h+Tk) ..... 6.5 pf

Output: Tp to (h+Tk) ..... 1.6 pf

#### Coupling

Pentode Grid-Number 1 to Triode Plate:

(Pg1 to Tp) ..... 0.12 pf

Pentode Plate to Triode Plate:

(Pp to Tp), maximum..... 0.32 pf

#### MECHANICAL

Operating Position - Any

Envelope - T-12, Glass

Base - E9-88, Button 9-Pin

Outline Drawing - EIA 12-96

Maximum Diameter ..... 1.562 Inches

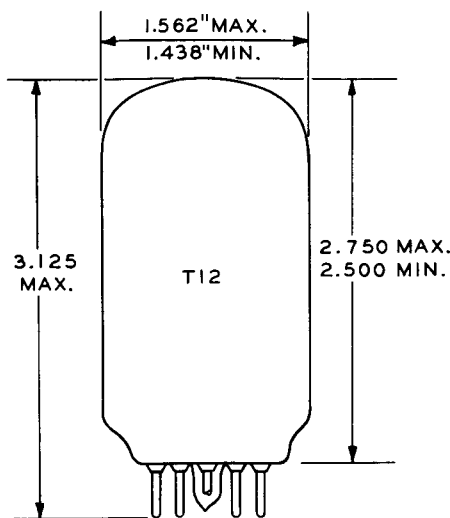
Minimum Diameter ..... 1.438 Inches

Maximum Over-all Length ..... 3.125 Inches

Maximum Seated Height..... 2.750 Inches

Minimum Seated Height ..... 2.500 Inches

#### PHYSICAL DIMENSIONS

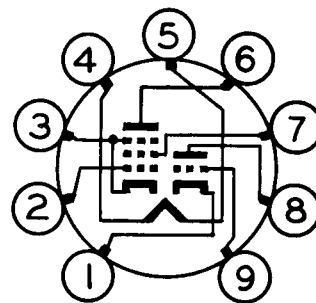


EIA 12-96

#### TERMINAL CONNECTIONS

- Pin 1 - Triode Cathode
- Pin 2 - Pentode Grid-Number 1
- Pin 3 - Pentode Cathode and Beam Plates
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Pentode Plate
- Pin 7 - Pentode Grid-Number 2 (Screen)
- Pin 8 - Triode Plate
- Pin 9 - Triode Grid

#### BASING DIAGRAM



EIA 90T

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## MAXIMUM RATINGS

### DESIGN-MAXIMUM VALUES

	Vertical Oscillator Service †	Vertical Deflection Amplifier †	
Plate Voltage .....	400	400	Volts
Screen Voltage .....	---	300	Volts
Peak Positive Pulse Plate Voltage .....	---	2500	Volts
Peak Negative Grid-Number 1 Voltage .....	400	250	Volts
Plate Dissipation § .....	2.5	14	Watts
Screen Dissipation § .....	---	2.75	Watts
Average Cathode Current .....	30	75	Milliamperes
Peak Cathode Current .....	105	260	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 .....	---	1.0	Megohm
With Cathode Bias .....	2.2	2.2	Megohms
Bulb Temperature at Hottest Point* .....		210	°C

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

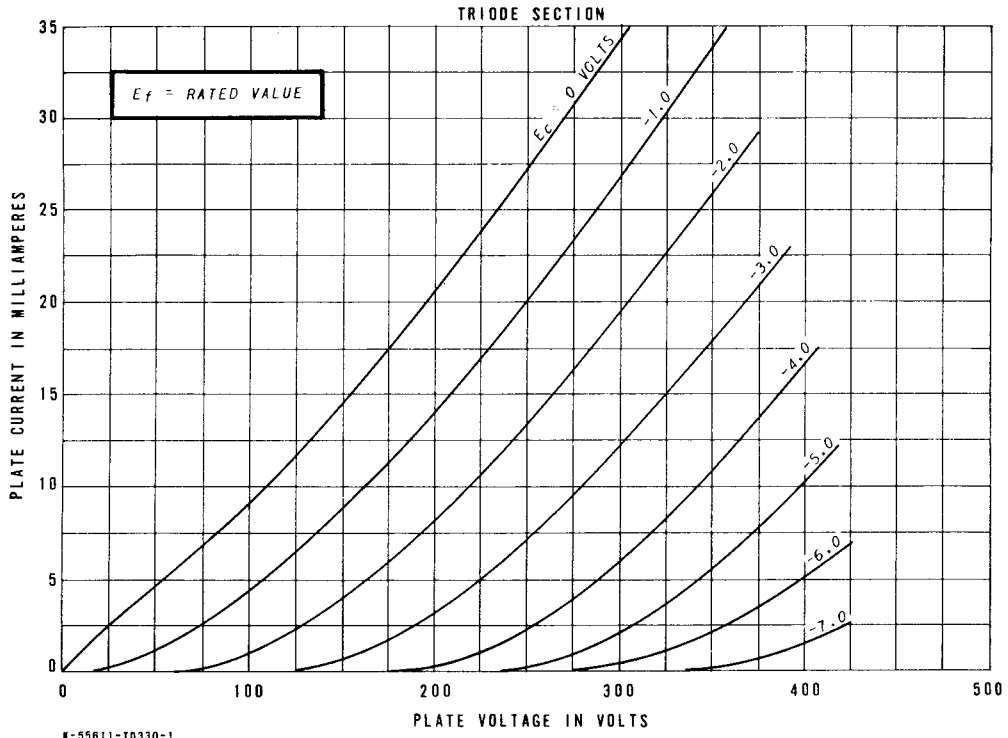
	Triode Section	Pentode Section	
Plate Voltage .....	250	45    135	Volts
Screen Voltage .....	---	125   120	Volts
Grid-Number 1 Voltage .....	-4	0□   -10	Volts
Plate Current .....	2.3	200   56	Milliamperes
Screen Current .....	---	20    3.0	Milliamperes
Transconductance .....	3600	---	9300
Amplification Factor .....	58	---	6.5†
Plate Resistance, approximate .....	16000	---	12000
Grid Voltage, approximate			
I <sub>b</sub> = 10 Microamperes .....	-6.6	---	Volts
Grid-Number 1 Voltage, approximate			
I <sub>b</sub> = 1.0 Milliampere .....	---	---	-26   Volts
Grid-Number 1 Voltage, approximate			
I <sub>b</sub> = 100 Microamperes .....	---	---	-30   Volts

### NOTES

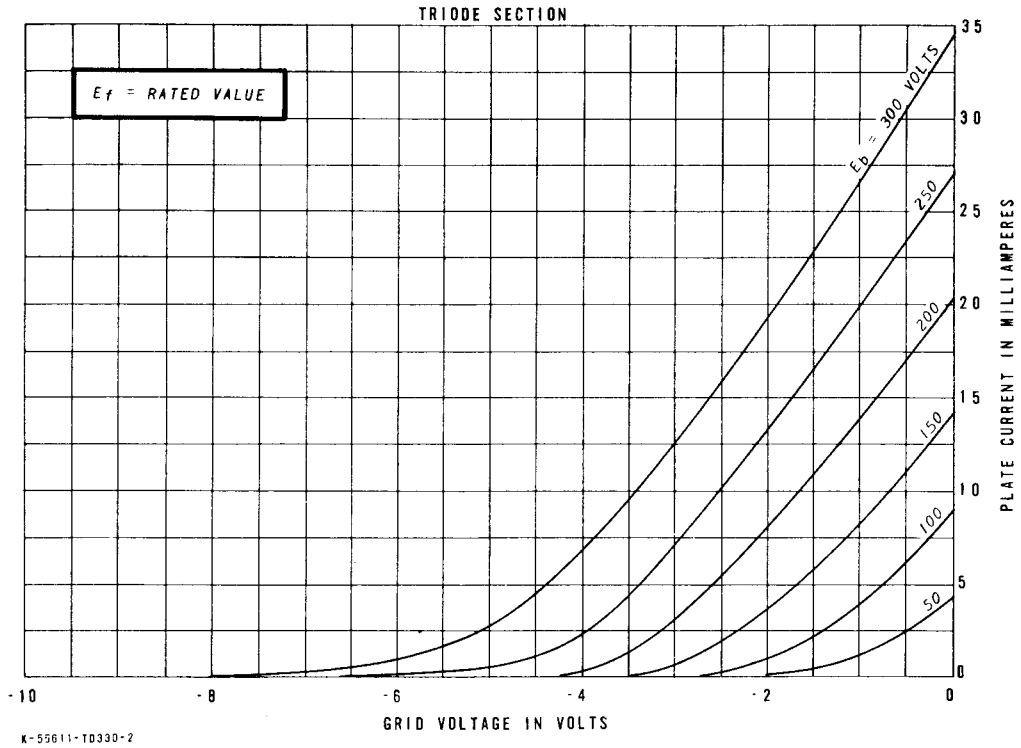
- \* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.
- Heater current of a bogey at E<sub>f</sub> = 6.3 volts.
- ▲ Without external shield.
- ♦ 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.
- § 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.
- ⊕ Measured with an infrared thermometer, Ircon Model 700 BC or equivalent, at an ambient temperature of 40° C.
- Applied for short interval (two seconds maximum) so as not to damage tube.
- † Triode connection (screen tied to plate) with E<sub>b</sub> = E<sub>c2</sub> = 120 volts, and E<sub>c1</sub> = -10 volts.

### AVERAGE PLATE CHARACTERISTICS



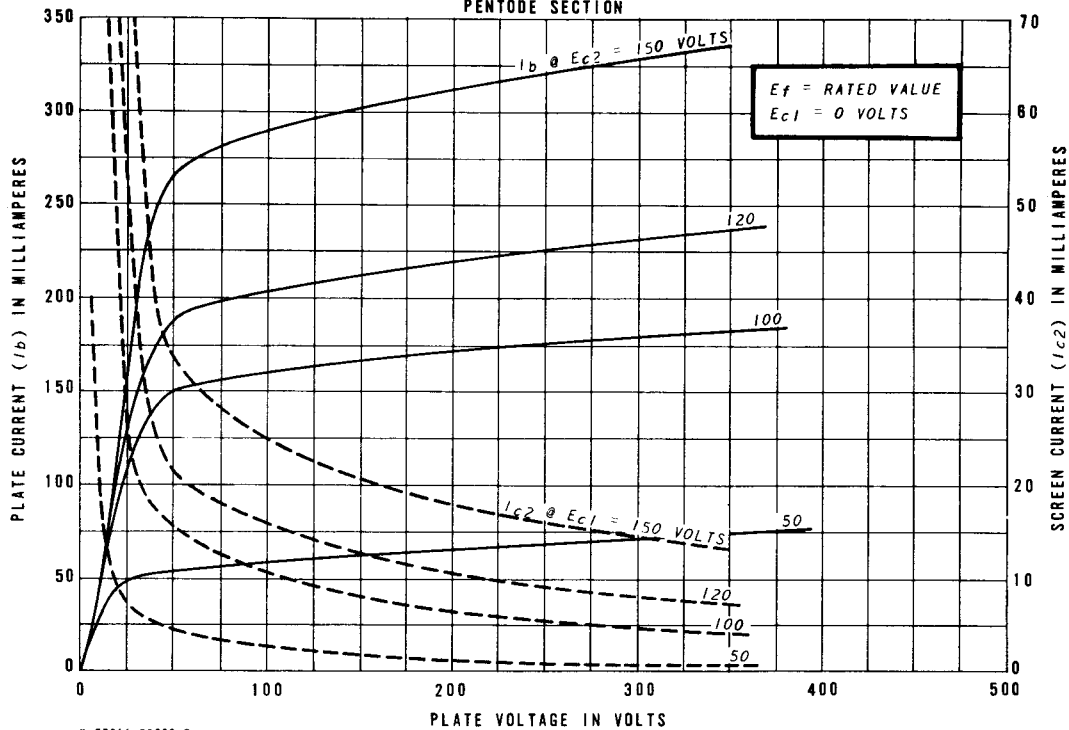
### AVERAGE TRANSFER CHARACTERISTICS





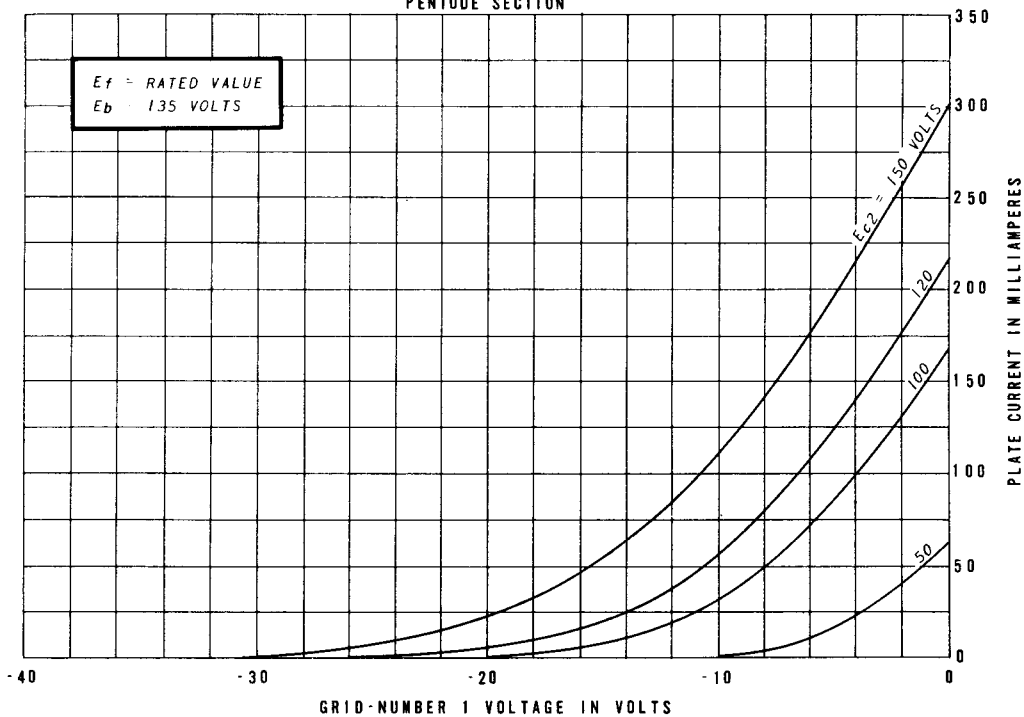
AVERAGE PLATE CHARACTERISTICS

PENTODE SECTION



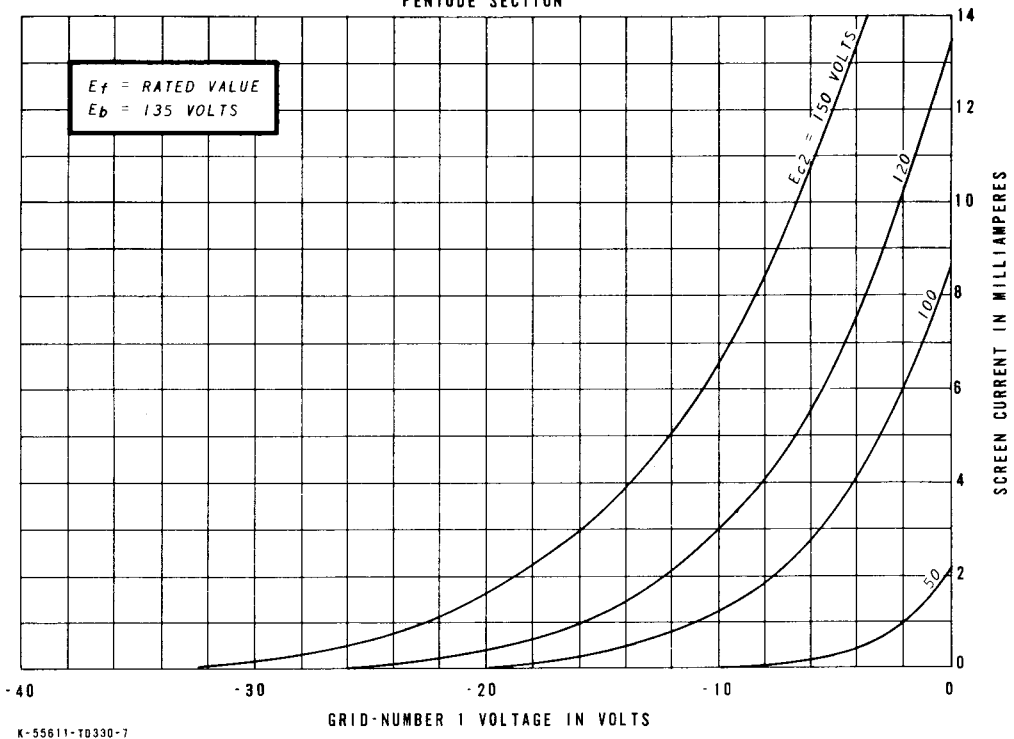
AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



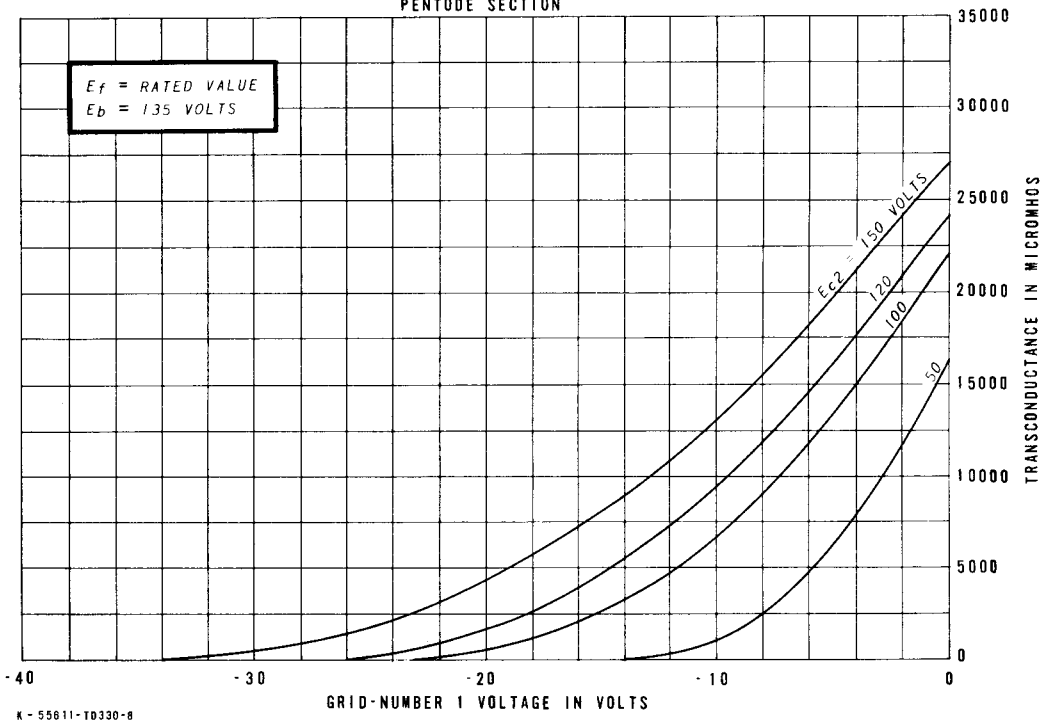
## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



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