

— PRODUCT INFORMATION —

# Compactron Beam Pentode

**12JF5**

FOR TV HORIZONTAL-DEFLECTION  
AMPLIFIER APPLICATIONS

The 12JF5 is a compactron beam-power pentode primarily designed for use as the horizontal-deflection amplifier in color television receivers.

## GENERAL

### ELECTRICAL

Cathode - Coated Unipotential	
Heater Characteristics and Ratings	
Heater Voltage, AC or DC *	12.6 Volts
Heater Current ●	0.6±0.04 Amperes
Heater Warm-up Time, average ▲	11 Seconds
Direct Interelectrode Capacitances, approximate ◆	
Grid-Number 1 to Plate: (g1 to p)	0.55 pf
Input: g1 to (h+k+g2+b.p.)	15.6 pf
Output: p to (h+k+g2+b.p.)	6.4 pf

### MECHANICAL

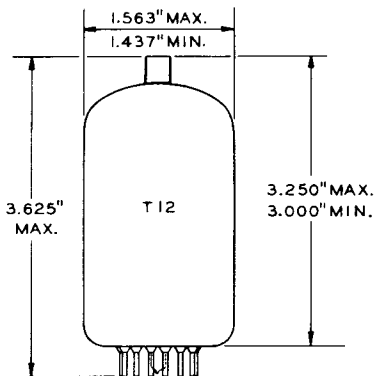
Mounting Position - Any	
Envelope - T-12, Glass	
Base - E12-74, Button 12-Pin	
Top Cap - C1-1, Small	
Outline Drawing - EIA 12-87	
Maximum Diameter	1.563 Inches
Minimum Diameter	1.437 Inches
Maximum Over-all Length	3.625 Inches
Maximum Seated Height	3.250 Inches
Minimum Seated Height	3.000 Inches

## MAXIMUM RATINGS

### HORIZONTAL-DEFLECTION AMPLIFIER SERVICE § — DESIGN-MAXIMUM VALUES

DC Plate-Supply Voltage (Boost + DC Power Supply)	770	Volts
Peak Positive Pulse Plate Voltage	6500	Volts
Peak Negative Pulse Plate Voltage	0	Volts
Screen Voltage	220	Volts
Peak Negative Grid-Number 1 Voltage	330	Volts
Plate Dissipation ¶	17.5	Watts
Screen Dissipation	3.5	Watts
DC Cathode Current	175	Milliamperes
Peak Cathode Current	550	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-Number 1 Circuit Resistance	1.0	Megohms
Bulb Temperature at Hottest Point □	220	°C

### PHYSICAL DIMENSIONS

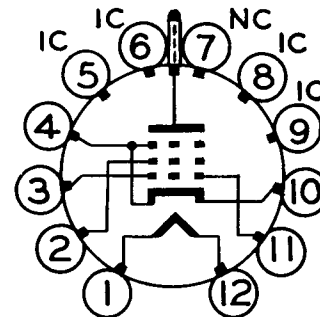


EIA 12-87

### TERMINAL CONNECTIONS

- Pin 1 - Heater
- Pin 2 - Grid-Number 2 (Screen)
- Pin 3 - Grid-Number 1
- Pin 4 - Cathode and Beam Plates
- Pin 5 - Internal Connection - Do Not Use
- Pin 6 - Internal Connection - Do Not Use
- Pin 7 - No Connection
- Pin 8 - Internal Connection - Do Not Use
- Pin 9 - Internal Connection - Do Not Use
- Pin 10 - Cathode and Beam Plates
- Pin 11 - Grid-Number 1
- Pin 12 - Heater
- Cap - Plate

### BASING DIAGRAM



EIA 12JH

## MAXIMUM RATINGS (Cont'd)

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

Plate Voltage .....	5000	60	250	Volts
Screen Voltage .....	150	150	150	Volts
Grid-Number 1 Voltage .....	---	0†	-22.5	Volts
Plate Resistance, approximate .....	---	---	18000	Ohms
Transconductance .....	---	---	7300	Micromhos
Plate Current .....	---	345	65	Milliamperes
Screen Current .....	---	27	1.8	Milliamperes
Grid-Number 1 Voltage, approximate I <sub>b</sub> = 1.0 Milliamperes .....	-80	---	-42	Volts
Triode Amplification Factor‡ .....	---	---	4.4	

### MINIMUM RECOMMENDED GRID DRIVE

Peak Positive Pulse Plate Voltage .....	3500	5000	6000	Volts
Peak Negative Grid-Number 1 Voltage for E <sub>g2</sub> = 150 Volts .....	-100	-118	-130	Volts
Peak Negative Grid-Number 1 Voltage for E <sub>g2</sub> = 200 Volts .....	-120	-138	-150	Volts

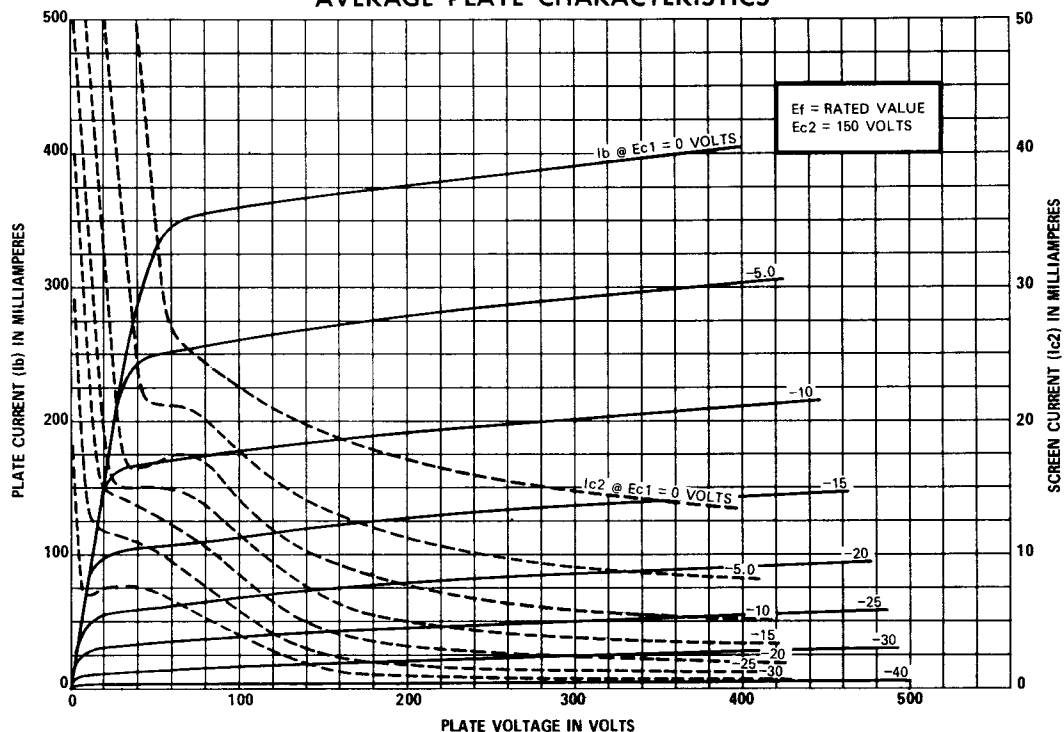
### NOTES

- \* Heater voltage for a bogey tube at I<sub>f</sub> = 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.
- § 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.

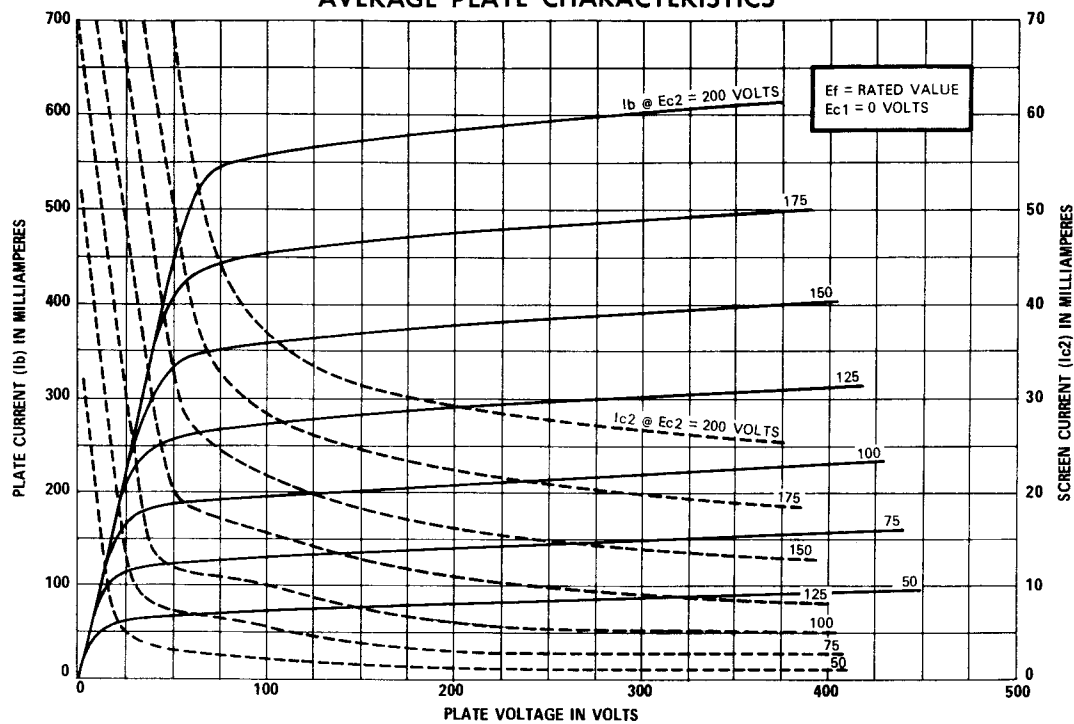
- ⊕ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.
- Measured with an infrared thermometer, Ircon Model 700 BC or equivalent, at an ambient temperature of 40° C.
- † Applied for short interval (two seconds maximum) so as not to damage tube.
- ‡ Triode connection (screen tied to plate) with E<sub>b</sub> = E<sub>c2</sub> = 150 volts, and E<sub>c1</sub> = -22.5 volts.

## AVERAGE PLATE CHARACTERISTICS



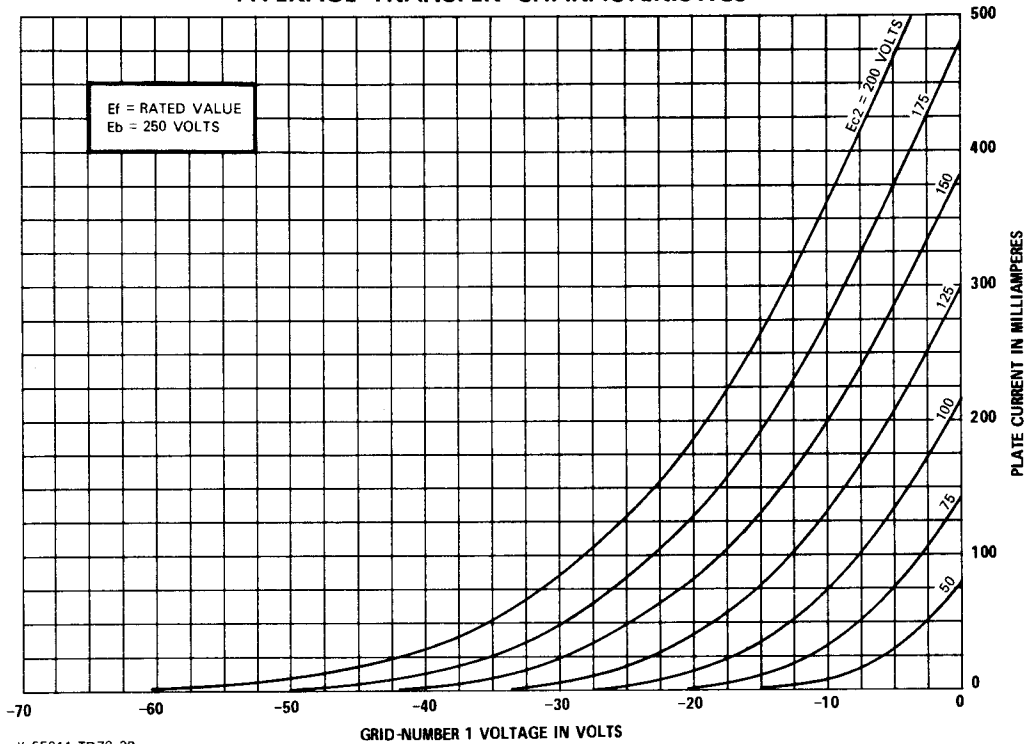
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## AVERAGE PLATE CHARACTERISTICS

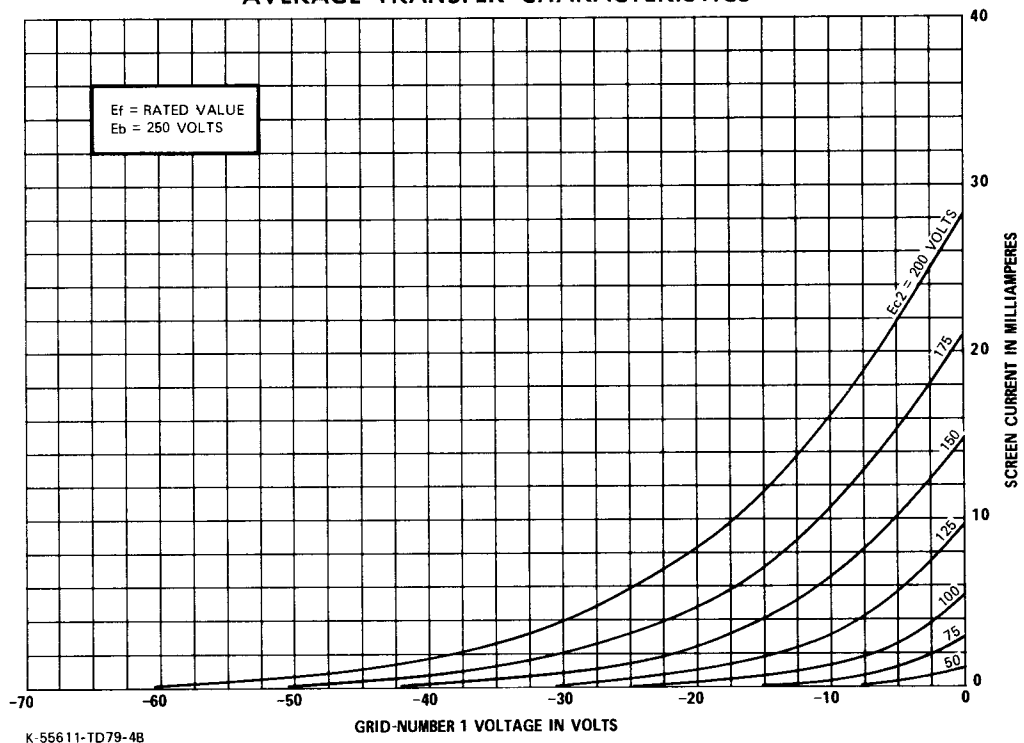


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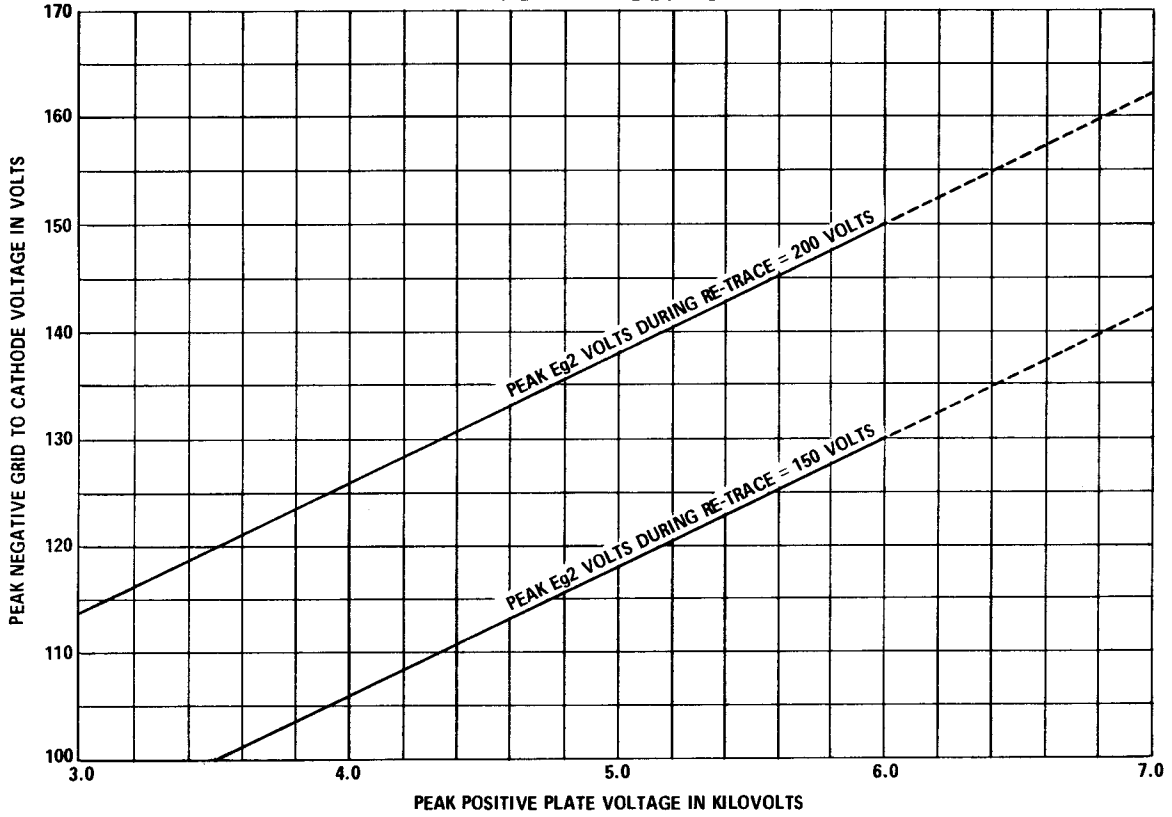
## AVERAGE TRANSFER CHARACTERISTICS



## AVERAGE TRANSFER CHARACTERISTICS



**RECOMMENDED MINIMUM PEAK NEGATIVE  
GRID VOLTAGE vs PEAK POSITIVE PULSE  
PLATE VOLTAGE**



**12JF5**

Page 6

5-73

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**GENERAL  ELECTRIC**