

38HK7

Compactron Diode-Pentode

The 38HK7 is a compactron containing a high-perveance diode and a beam-power pentode. The diode is intended for service as the damping diode and the pentode as the horizontal-deflection amplifier in television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC* . . . 37.8 Volts
 Heater Current† . . . 0.45±0.03 Amperes
 Heater Warm-up Time, Average§ . . 11 Seconds
 Direct Interelectrode Capacitances, approximate¶

Diode Section

Cathode to Plate and Heater:
 k to (p + h) . . . 10 pf
 Plate to Cathode and Heater:
 p to (k + h) . . . 9.0 pf
 Heater to Cathode: (h to k). . . 2.0 pf

Pentode Section

Grid-Number 1 to Plate:

(g1 to p) . . . 0.38 pf
 Input: g1 to (h + k +
 g2 + b.p.) . . . 19 pf
 Output: p to (h + k +
 g2 + b.p.) . . . 8.0 pf

MECHANICAL

Operating Position - Any

Envelope - T-12, Glass

Base - E12-74, Button 12-Pin

Outline Drawing - EIA 12-57

Maximum Diameter. . . 1.563 Inches
 Minimum Diameter. . . 1.437 Inches
 Maximum Over-all Length . . 3.125 Inches
 Maximum Seated Height . . 2.750 Inches
 Minimum Seated Height . . 2.500 Inches

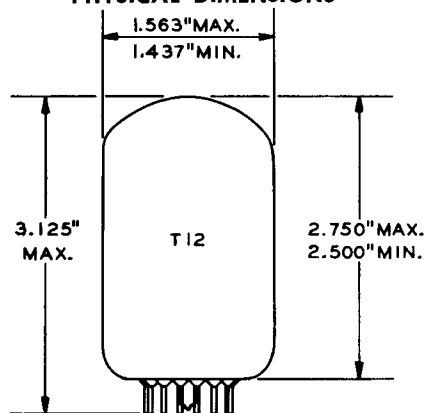
MAXIMUM RATINGS

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.

PHYSICAL DIMENSIONS

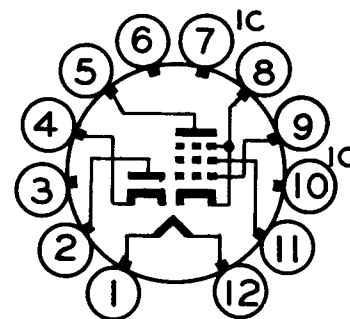


EIA 12-57

TERMINAL CONNECTIONS

Pin 1 - Heater
 Pin 2 - Diode Plate
 #Pin 3 - No Connection
 Pin 4 - Diode Cathode
 Pin 5 - Pentode Plate
 #Pin 6 - No Connection
 #Pin 7 - Internal Connection
 Pin 8 - Pentode Cathode and Beam Plates
 Pin 9 - Pentode Grid Number 1
 #Pin 10 - Internal Connection
 Pin 11 - Pentode Grid Number 2 (Screen)
 Pin 12 - Heater

BASING DIAGRAM



EIA 12FS

MAXIMUM RATINGS (Cont'd)**DESIGN-MAXIMUM VALUES****HORIZONTAL-DEFLECTION AMPLIFIER SERVICE Δ —Pentode Section**

| | | | |
|--|-----------|------|--------------|
| DC Plate-Supply Voltage (Boost + DC Power Supply) | | 500 | Volts |
| Peak Positive Pulse Plate Voltage | | 5000 | Volts |
| Peak Negative Pulse Plate Voltage | | 0 | Volts |
| Screen Voltage | | 150 | Volts |
| Negative DC Grid-Number 1 Voltage | | 55 | Volts |
| Peak Negative Grid-Number 1 Voltage | | 330 | Volts |
| Plate Dissipation** | | 10 | Watts |
| Screen Dissipation | | 3.5 | Watts |
| Screen Dissipation (With Plate Dissipation Limited to 9 Watts or Less) | | 4.0 | Watts |
| DC Cathode Current | | 230 | Milliamperes |
| Peak Cathode Current | | 800 | 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 |

TV DAMPER SERVICE Δ —Diode Section

| | | | |
|---|-----------|------|--------------|
| Peak Inverse Plate Voltage | | 3700 | Volts |
| Steady-State Peak Plate Current | | 1200 | Milliamperes |
| DC Output Current | | 200 | 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 | | | |
| DC Component | | 500 | Volts |
| Total DC and Peak | | 3700 | Volts |
| Bulb Temperature at Hottest Point | | 200 | C |

CHARACTERISTICS AND TYPICAL OPERATION**AVERAGE CHARACTERISTICS****Pentode Section**

| | | | | | |
|------------------------------------|-----------|------|--------------|------|--------------|
| Plate Voltage | | 3500 | 50 | 130 | Volts |
| Screen Voltage | | 130 | 130 | 130 | Volts |
| Grid-Number 1 Voltage | | --- | 0 \ddagger | -22 | Volts |
| Plate Resistance, approximate | | --- | --- | 6200 | Ohms |
| Transconductance | | --- | --- | 8800 | Micromhos |
| Plate Current | | --- | 450 | 60 | Milliamperes |
| Screen Current | | --- | 40 | 2.8 | Milliamperes |
| Grid-Number 1 Voltage, approximate | | | | | |
| Ib = 1.0 Milliamperes | | -66 | --- | -39 | Volts |
| Triode Amplification Factor $\S\S$ | | --- | --- | 4.2 | |

Diode Section

| | | | | | |
|-----------------------|-----------|--|--|----|-------|
| Tube Voltage Drop | | | | | |
| Ib = 350 Milliamperes | | | | 16 | Volts |

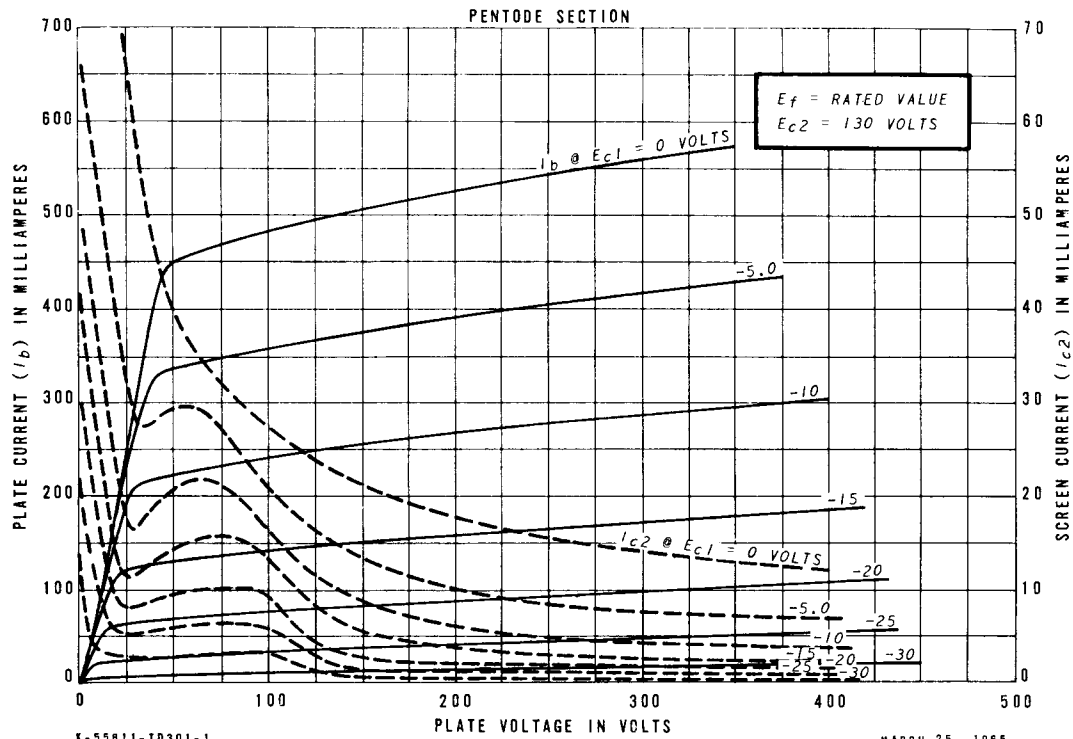
NOTES

- * Heater voltage for a bogey tube at $I_f = 0.45$ 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.
- # Socket terminals 3, 6, 7, and 10 should not be used as tie points.
- △ 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.
- ++ Applied for short interval (two seconds maximum) so as not to damage tube.
- §§ Triode connection (screen tied to plate) with $E_b = E_{c2} = 130$ volts and $E_{c1} = -22$ volts.

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an

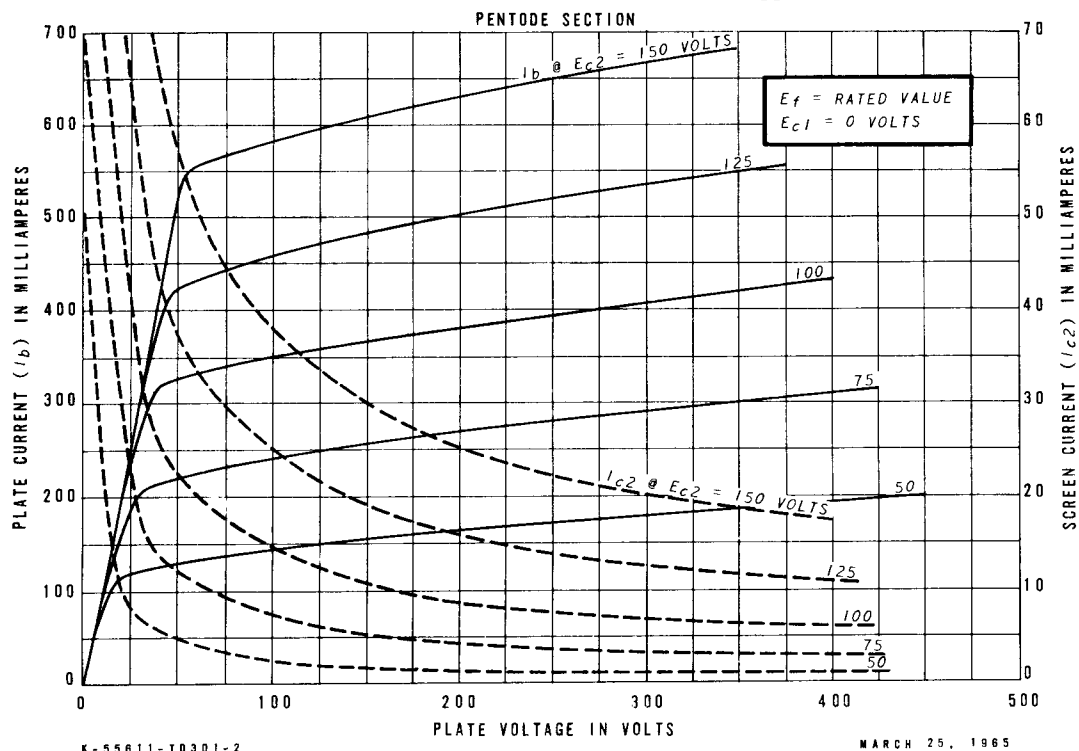
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AVERAGE PLATE CHARACTERISTICS

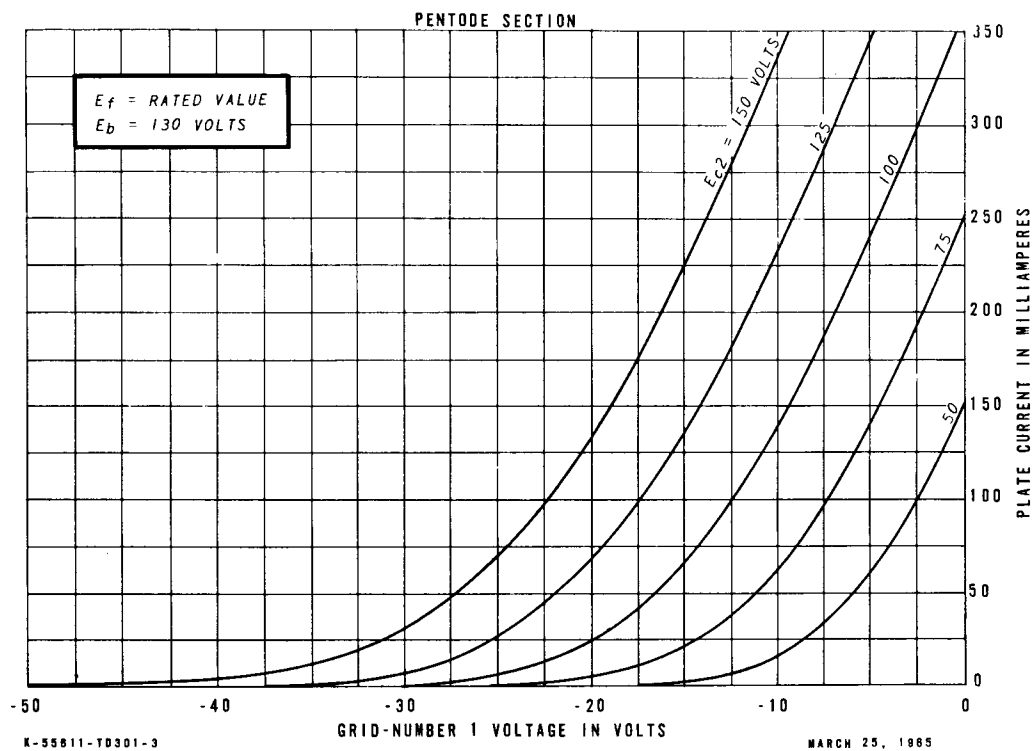


MARCH 25, 1965

AVERAGE PLATE CHARACTERISTICS

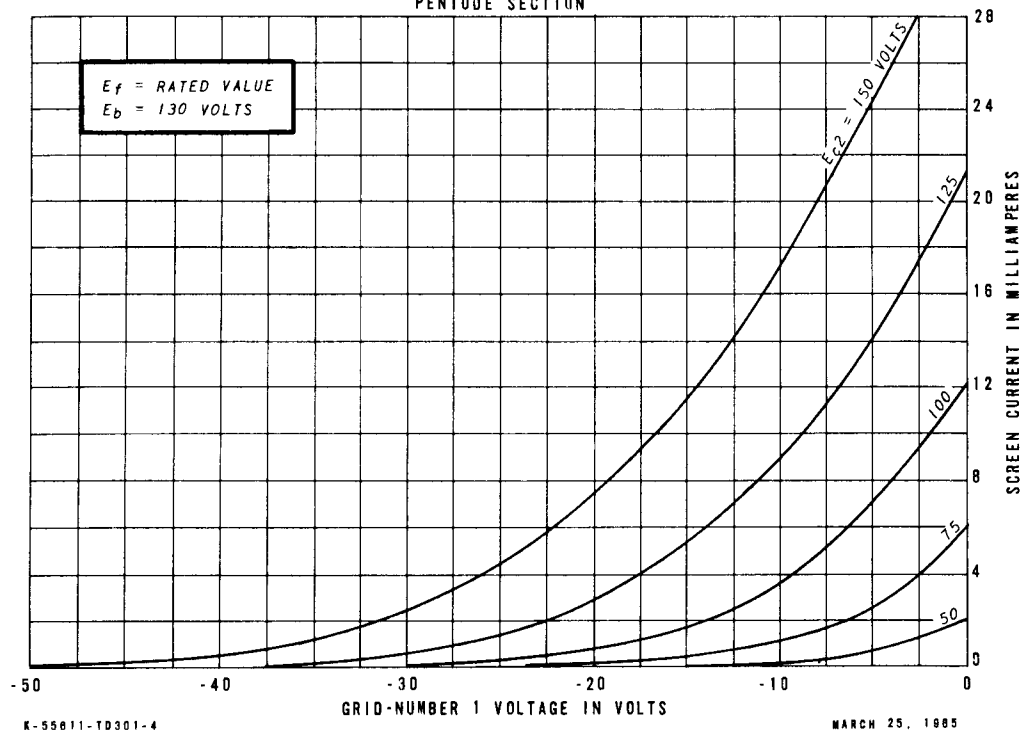


AVERAGE TRANSFER CHARACTERISTICS



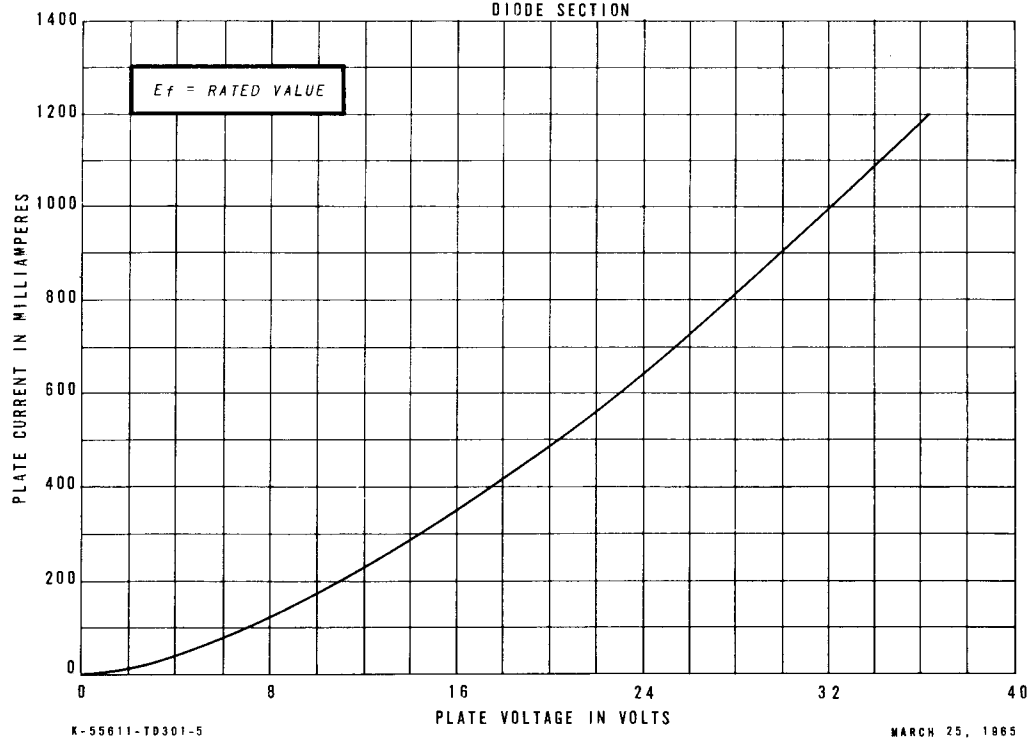
AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



AVERAGE PLATE CHARACTERISTICS

DIODE SECTION



TUBE DEPARTMENT
GENERAL  **ELECTRIC**
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