Compactron Beam Pentode

6KD6

FOR TV HORIZONTAL-DEFLECTION AMPLIFIER APPLICATIONS

- **COLOR TV TYPE**
- **33 WATTS PLATE DISSIPATION**
- **280 VOLTS B+**
- **400 MILLIAMPERES DC CATHODE CURRENT**
- **OVER 1 AMPERE PEAK CURRENT**

The 6KD6 is a compactron beam-power pentode primarily designed for use as the horizontal-deflection amplifier in color television receivers. It is characterized by having a very low knee with a very high peak current of over an ampere. This results in a basic capability to scan 90-degree large screen color picture tubes at 25 KV from 280-volt power supplies. Its low knee minimizes "snivets" without the necessity of supplying special voltages to the beam plates.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC*	6.3±0.6	Volts
Heater Current‡	2.85	Amperes

Direct Interelectrode Capacitances, approximate§

Grid-Number 1 to Plate:		
(g1 to p)	0.8	pf
Input: g1 to (h + k + g2 + b.p.)	40	pf
Output: p to (h + k + g2 + b.p.)	16	pf

MECHANICAL

Operating Position - Any
Envelope - T-12, Glass
Base - E12-74, Button 12-Pin
Top Cap - C1-2, Skirted Miniature
Outline Drawing - EIA 12-118

Maximum Diameter	1.563	Inches
Minimum Diameter	1.437	Inches
Maximum Over-all Length	4.625	Inches
Maximum Seated Height	4.250	Inches
Minimum Seated Height	4.000	Inches

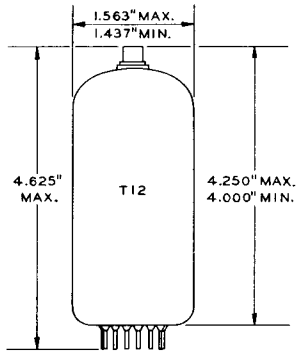
MAXIMUM RATINGS

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

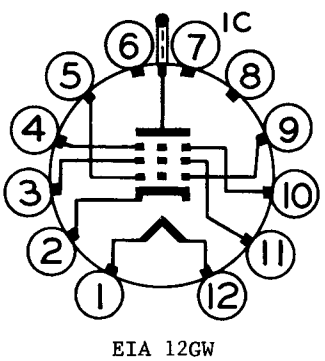


EIA 12-118

TERMINAL CONNECTIONS

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

BASING DIAGRAM



EIA 12GW

GENERAL ELECTRIC

Supersedes Pages 1 and 2 of 6KD6 PI Sheet dated 1-67

MAXIMUM RATINGS (Cont'd)

HORIZONTAL-DEFLECTION AMPLIFIER SERVICE¶ —
DESIGN-MAXIMUM VALUES UNLESS OTHERWISE INDICATED

DC Plate-Supply Voltage (Boost + DC Power Supply)	990	Volts
Peak Positive Pulse Plate Voltage	7000	Volts
Positive DC Beam Plate Voltage	20	Volts
Screen Voltage	200	Volts
Peak Negative Grid-Number 1 Voltage	250	Volts
Plate Dissipation# (Absolute-Maximum Value)	33	Watts
Screen Dissipation	5.0	Watts
DC Cathode Current	400	Milliamperes
Peak Cathode Current	1400	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	2.2	Megohms
Beam Plate Circuit Resistance	0.01	Megohms
Bulb TemperatureΔ	225	C

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Plate Voltage	5000	45	60	150	Volts
Beam Plates Connected to Cathode at Socket					
Screen Voltage	110	160	110	110	Volts
Grid-Number 1 Voltage	---	0	0	-22.5	Volts
Plate Resistance, approximate	---	---	---	6000	Ohms
Transconductance	---	---	---	14000	Micromhos
Plate Current	---	1100**	780**	100	Milliamperes
Screen Current	---	110**	44**	2.0	Milliamperes
Grid-Number 1 Voltage, approximate Ib = 1.0 Milliamperes	-125	---	---	-40	Volts
Triode Amplification Factor‡‡	---	---	---	4.0	

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 tube at Ef = 6.3 volts.

§ Without external shield.

¶ For operation in a 525-line, 30-frame television system 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.

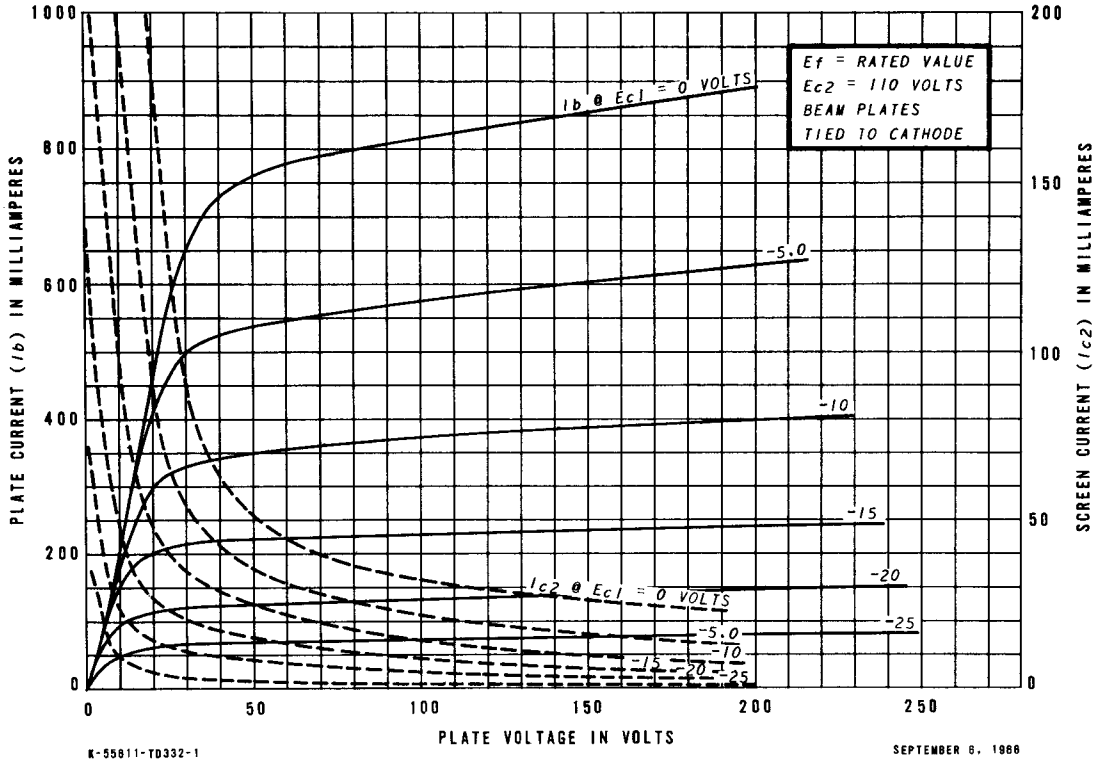
\# In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

Δ Measured using a thermocouple attached to a 0.1-inch wide phosphor-bronze ring placed at the hottest location on the bulb.

** Values measured by a method involving a recurrent waveform such that the plate and screen dissipations will be kept within ratings in order to prevent damage to the tube.

‡‡ Triode connection (screen tied to plate) with Eb = Ec2 = 150 volts, and Ec1 = -22.5 volts.

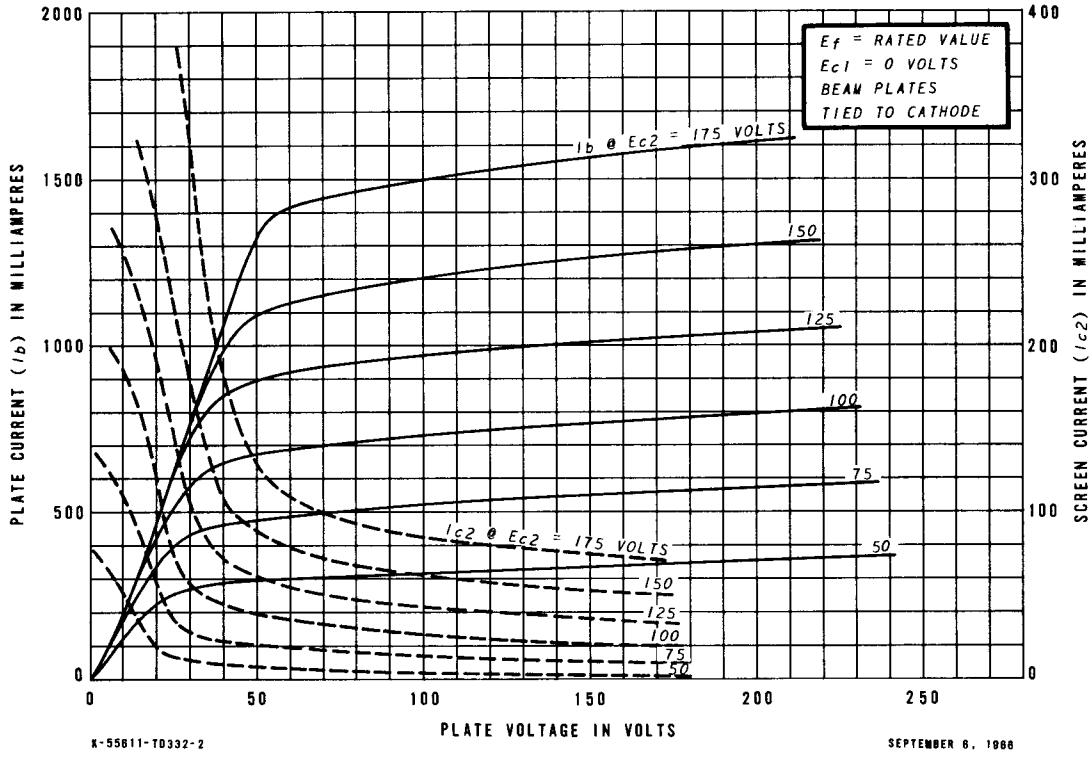
AVERAGE PLATE CHARACTERISTICS



K-55811-TD332-1

SEPTEMBER 6, 1966

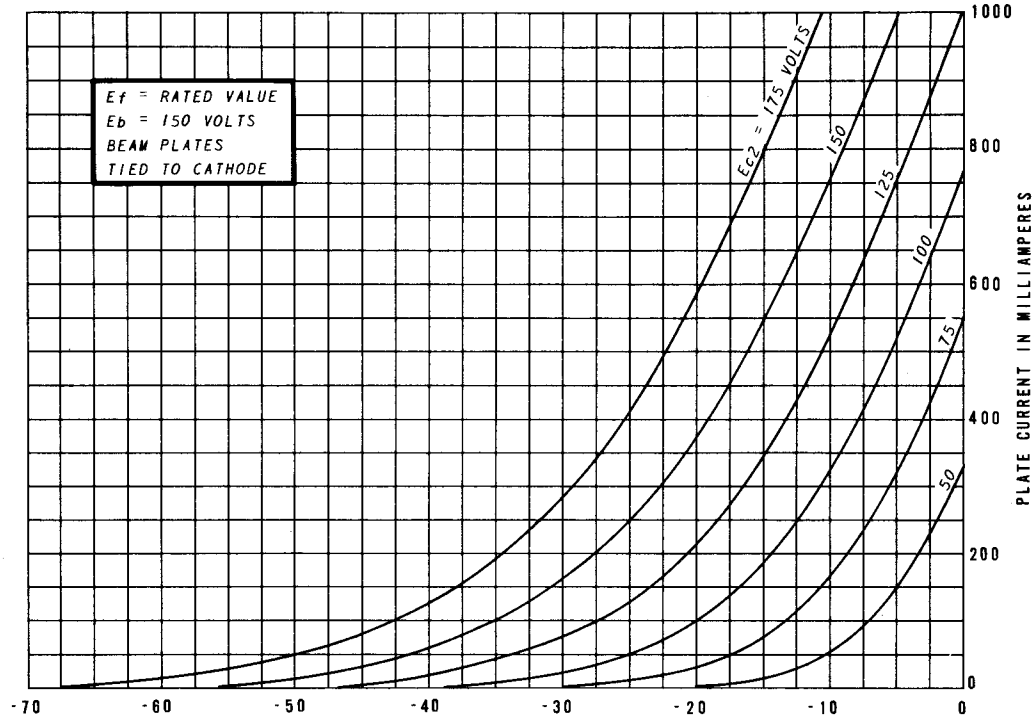
AVERAGE PLATE CHARACTERISTICS



K-55811-TD332-2

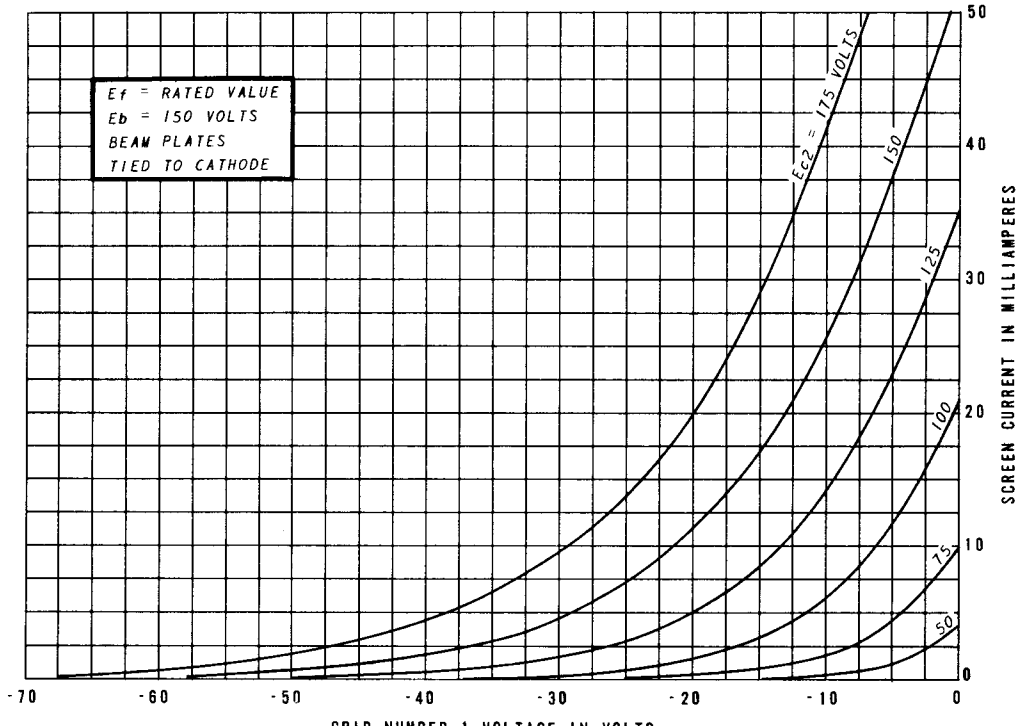
SEPTEMBER 6, 1966

AVERAGE TRANSFER CHARACTERISTICS



K-55811-TD332-3 SEPTEMBER 6, 1966

AVERAGE TRANSFER CHARACTERISTICS



K-55611-TD332-4 SEPTEMBER 6, 1966

TUBE DEPARTMENT

GENERAL ELECTRIC

Owensboro, Kentucky