



# 12GC6

## BEAM PENTODE

FOR TV HORIZONTAL-DEFLECTION AMPLIFIER APPLICATIONS

### DESCRIPTION AND RATING

The 12GC6 is a beam-power pentode primarily designed for use as the horizontal-deflection amplifier in television receivers. Its high zero-bias plate current at low plate and screen voltages makes the tube well suited for use in receivers that operate at low plate-supply voltages.

#### GENERAL

##### ELECTRICAL

Cathode—Coated Unipotential		
Heater Voltage, AC or DC	12.6	Volts
Heater Current	0.6 ± 6%	Amperes
Heater Warm-up Time*	11	Seconds
Direct Interelectrode Capacitances, approximate†		
Grid-Number 1 to Plate: (g1 to p)	0.55	μμf
Input: g1 to (h+k+g2+b.p.)	15	μμf
Output: p to (h+k+g2+b.p.)	7.0	μμf

##### MECHANICAL

Mounting Position—Any  
 Envelope—T-12, Glass  
 Base—B6-122, Short Medium-Shell Octal 6-Pin  
 Top Cap—C1-3, Skirted Miniature

#### MAXIMUM RATINGS

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

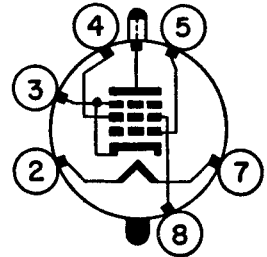
DC Plate-Supply Voltage (Boost+DC Power Supply)	770	Volts
Peak Positive Pulse Plate Voltage	6500	Volts
Peak Negative Pulse Plate Voltage	1500	Volts
Screen Voltage	220	Volts
Peak Negative Grid-Number 1 Voltage	330	Volts
Plate Dissipation§	17.5	Watts
Screen Dissipation	4.5	Watts
DC Cathode Current	175	Milliamperes
Peak Cathode Current	550	Milliamperes

(Continued on Page 2)

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#### BASING DIAGRAM

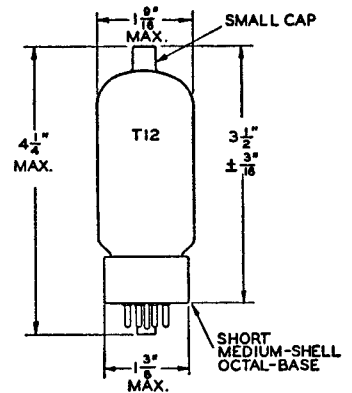


EIA 8JX

#### TERMINAL CONNECTIONS

- Pin 2—Heater
- Pin 3—Cathode and Beam Plates
- Pin 4—Grid Number 2 (Screen)
- Pin 5—Grid Number 1
- Pin 7—Heater
- Pin 8—Grid Number 2 (Screen)
- Cap—Plate

#### PHYSICAL DIMENSIONS



EIA 12-19

## MAXIMUM RATINGS (Cont'd)

### 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

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

These values are chosen by the tube manufacturer to provide acceptable serviceability of the tube, taking responsibility 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, variation in characteristics of all other tubes in the equipment, equipment control adjustment, load variation, signal variation, and environmental conditions.

## CHARACTERISTICS AND TYPICAL OPERATION

### AVERAGE CHARACTERISTICS

Plate Voltage . . . . .	5000	60	250	Volts
Screen Voltage . . . . .	150	150	150	Volts
Grid-Number 1 Voltage . . . . .	—	0 <sup>¶</sup>	-22.5	Volts
Plate Resistance, approximate . . . . .	—	—	20,000	Ohms
Transconductance . . . . .	—	—	6600	Micromhos
Plate Current . . . . .	—	345	75	Milliamperes
Screen Current . . . . .	—	30	2.4	Milliamperes
Grid-Number 1 Voltage, approximate				
$I_b = 1.0$ Milliampere . . . . .	-100	—	-46	Volts
Triode Amplification Factor # . . . . .	—	—	4.1	

\* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

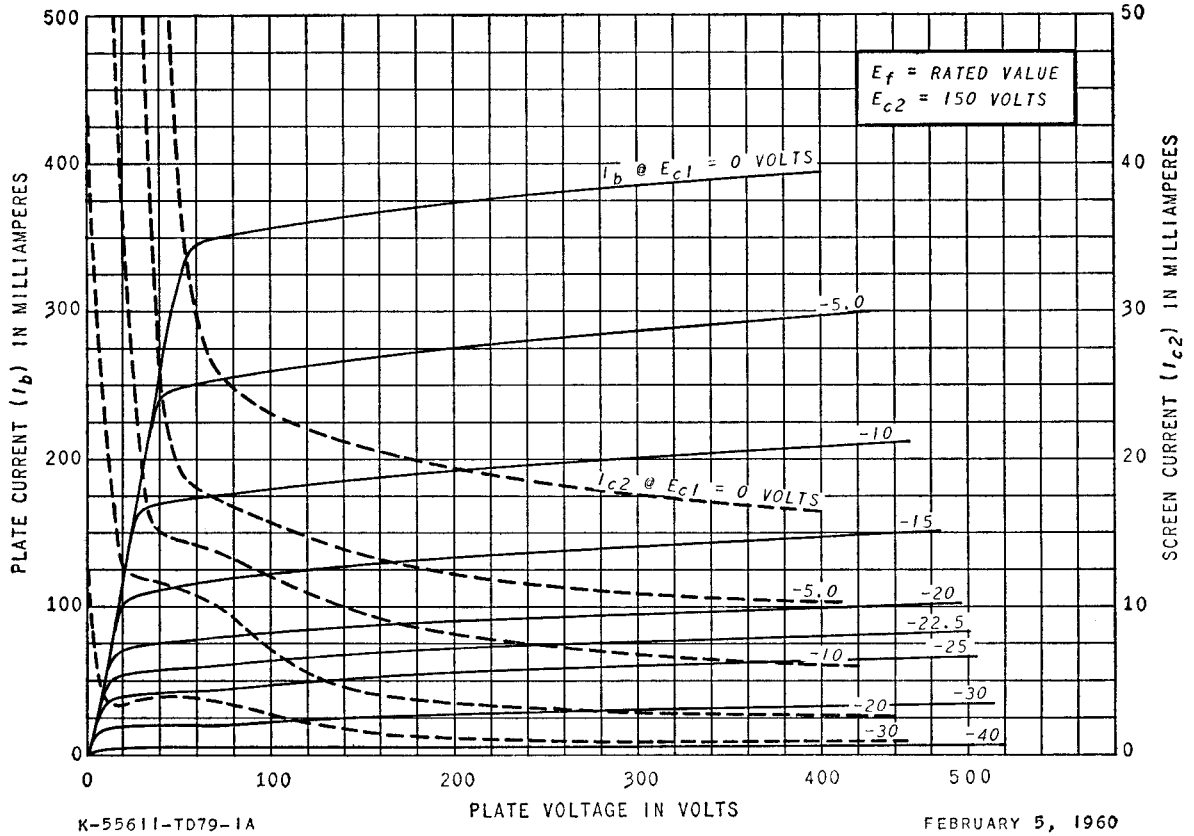
‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ 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.

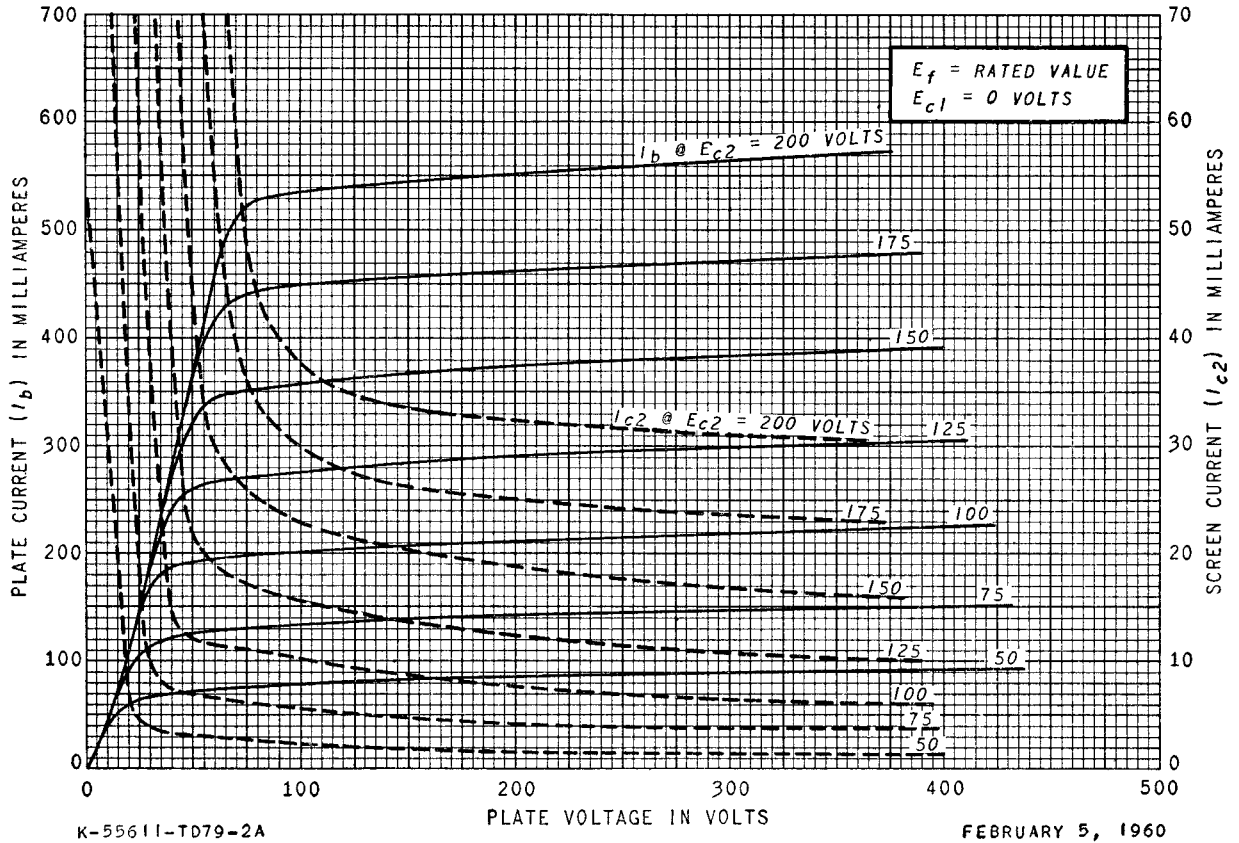
¶ Applied for short interval (two seconds maximum) so as not to damage tube.

# Triode Connection (screen tied to plate) with  $E_b = E_{c2} = 150$  volts, and  $E_{c1} = -22.5$  volts.

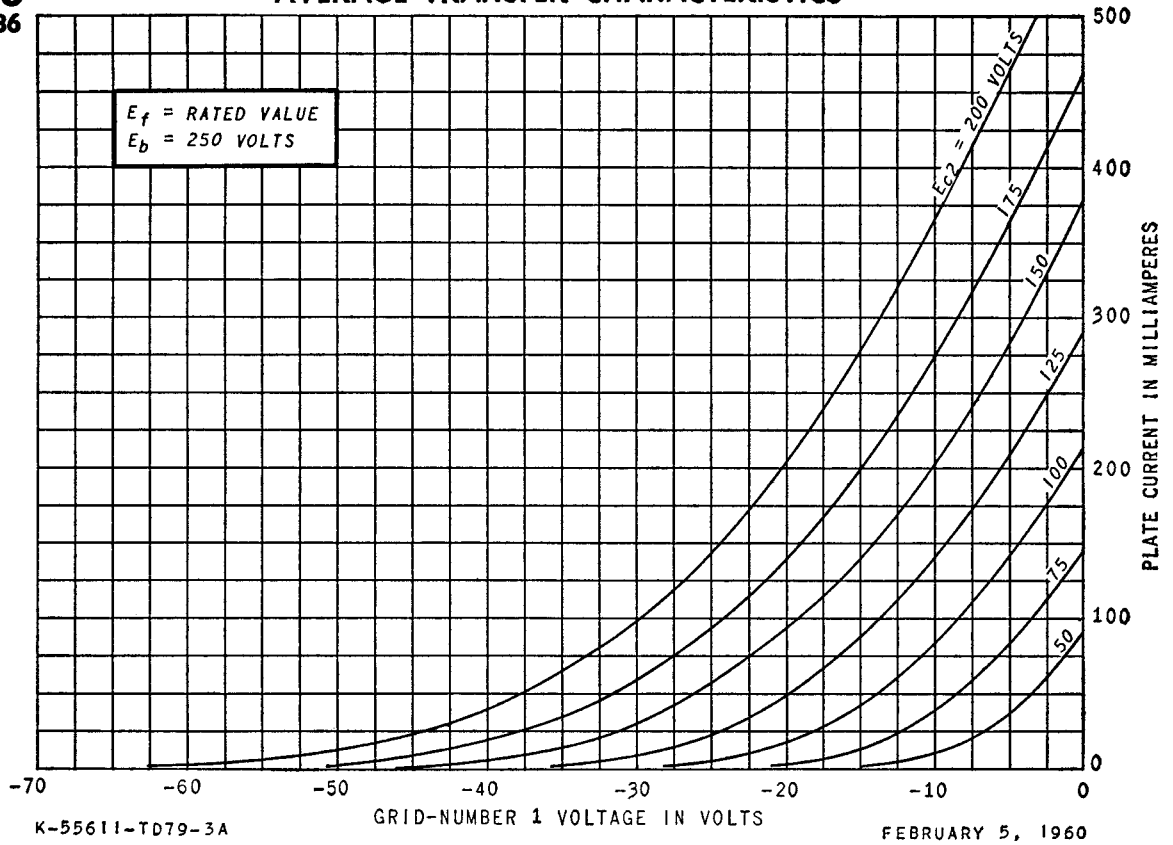
**AVERAGE PLATE CHARACTERISTICS**



**AVERAGE PLATE CHARACTERISTICS**



### AVERAGE TRANSFER CHARACTERISTICS



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