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 µf
Input: g1 to (h+k+g2+b.p.) ........................................ 15 µf
Output: p to (h+k+g2+b.p.) ........................................ 7.0 µf

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

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GENERAL ELECTRIC
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

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Plate Voltage</th>
<th>Screen Voltage</th>
<th>Grid-Number 1 Voltage</th>
<th>Plate Resistance, approximate</th>
<th>Transconductance</th>
<th>Plate Current</th>
<th>Screen Current</th>
<th>Grid-Number 1 Voltage, approximate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5000</td>
<td>150</td>
<td>0.0</td>
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<td>—</td>
<td>6600</td>
<td>345</td>
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<td>60</td>
<td>150</td>
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<td>30</td>
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<td>150</td>
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<td>—</td>
<td>—</td>
<td>6600</td>
<td>75</td>
<td>30</td>
</tr>
</tbody>
</table>

* 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 Eb = Ec2 = 150 volts, and Ec1 = −22.5 volts.
AVERAGE PLATE CHARACTERISTICS

$E_f = $ RATED VALUE
$E_{c2} = 150$ VOLTS

$1_b = E_{c1} = 0$ VOLTS

$1_{c2} = E_{c1} = 0$ VOLTS

$-5.0$ $-10$ $-15$

$-5.0$ $-20$ $-22.5$ $-25$

$-10$ $-20$ $-30$ $-40$

PLATE CURRENT $1_b$ IN MILLIAMPERES

PLATE VOLTAGE IN VOLTS

SCREEN CURRENT $1_{c2}$ IN MILLIAMPERES

K-55611-TD79-1A

FEBRUARY 5, 1960

AVERAGE PLATE CHARACTERISTICS

$E_f = $ RATED VALUE
$E_{c1} = 0$ VOLTS

$1_b = E_{c2} = 200$ VOLTS

$1_{c2} = E_{c2} = 200$ VOLTS

$175$ $150$ $125$

$175$ $100$

$150$ $75$

$125$ $50$

$100$ $75$

$75$

$50$

$0$

PLATE CURRENT $1_b$ IN MILLIAMPERES

PLATE VOLTAGE IN VOLTS

SCREEN CURRENT $1_{c2}$ IN MILLIAMPERES

K-55611-TD79-2A

FEBRUARY 5, 1960