TUNG-SOL

BEAM PENTODE

COATED UNIPOTENTIAL CATHODE

HEATER
12.6 VOLTS 0.6 AMP.
AC OR DC
ANY MOUNTING POSITION

GLASS BULB

THE 12BQ6GT IS A BEAM PENTODE DESIGNED FOR USE IN 600 MA. SERIES HEATER OPERATED RECEIVERS. IT IS SPECIFICALLY INTENDED FOR USE AS A HORIZONTAL DEFLECTION AMPLIFIER IN TELEVISION RECEIVERS USING MAGNETIC DEFLECTION. THE PLATE IS BROUGHT OUT TO A TOP CAP FOR ISOLATION OF THE HIGH VOLTAGE AND CONVENIENCE IN A CIRCUIT LAYOUT. ITS ELECTRICAL CHARACTERISTICS ARE SUCH AS TO PROVIDE GOOD PERFORMANCE WHERE THE SUPPLY VOLTAGES ARE LIMITED. THERMAL CHARACTERISTICS OF THE HEATER HAVE BEEN CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TUBES WHICH ARE SIMILARLY CONTROLLED. EXCEPT FOR HEATER RATINGS, IT IS IDENTICAL TO THE 6BQ6GT.

DIRECT INTERELECTRODE CAPACITANCES

GRID #1 TO PLATE: \((G_4 \text{ TO } P)\)
0.6 \(\mu\)F

INPUT: \( G_4 \text{ TO } (H+K+G_2+BP)\)
15 \(\mu\)F

OUTPUT: \( P \text{ TO } (H+K+G_2+BP)\)
7.5 \(\mu\)F

RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

HORIZONTAL DEFLECTION AMPLIFIER

HEATER VOLTAGE
12.6 VOLTS

MAXIMUM HEATER-CATHODE VOLTAGE:
- HEATER NEGATIVE WITH RESPECT TO CATHODE:
  - TOTAL DC AND PEAK
  - DC
- HEATER POSITIVE WITH RESPECT TO CATHODE:
  - TOTAL DC AND PEAK
  - DC

MAXIMUM DC PLATE SUPPLY VOLTAGE (BOOST + POWER SUPPLY)
200 VOLTS

MAXIMUM PEAK POSITIVE PLATE VOLTAGE (ABSOLUTE MAXIMUM)
1900 VOLTS

MAXIMUM PEAK NEGATIVE PLATE VOLTAGE
1250 VOLTS

MAXIMUM PLATE DISSIPATION\(^B\)
11 WATTS

MAXIMUM PEAK NEGATIVE GRID #1 VOLTAGE
300 VOLTS

MAXIMUM DC GRID #2 VOLTAGE
175 VOLTS

MAXIMUM GRID #2 DISSIPATION
2.5 WATTS

MAXIMUM AVERAGE CATHODE CURRENT
110 MA.

MAXIMUM PEAK CATHODE CURRENT
400 MA.

MAXIMUM GRID #1 CIRCUIT RESISTANCE
0.47 MEGOHM

MAXIMUM BULB TEMPERATURE (AT HOTTEST POINT)
220\(^0\) CENTIGRADE

HEATER WARM-UP TIME (APPROX.)\(^A\)
11.0 SECONDS

\(^A\) FOR OPERATION IN A 325-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCASTING STATIONS; FEDERAL COMMUNICATIONS COMMISSION". THE DUTY CYCLE OF THE VOLTAGE PULSE NOT TO EXCEED 15 PERCENT OF A SCANNING CYCLE.

\(^B\) 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.

\(^C\) HEATER WARM-UP TIME IS DEFINED AS THE TIME REQUIRED FOR THE VOLTAGE ACROSS THE HEATER TO REACH 80\% OF ITS RATED VOLTAGE AFTER APPLYING 4 TIMES RATED HEATER VOLTAGE TO A CIRCUIT CONSISTING OF THE TUBE HEATER IN SERIES WITH A RESISTANCE OF VALUE 3 TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

CONTINUED ON FOLLOWING PAGE
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS
CLASS A\textsubscript{1} AMPLIFIER

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEATER VOLTAGE</td>
<td>12.6 VOLTS</td>
</tr>
<tr>
<td>HEATER CURRENT</td>
<td>0.6 AMP.</td>
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<tr>
<td>PENTODE CONNECTION:\textsuperscript{C}</td>
<td></td>
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<tr>
<td>PLATE CURRENT</td>
<td>55 MA.</td>
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<tr>
<td>GRID #2 CURRENT</td>
<td>2.1 MA.</td>
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<tr>
<td>TRANSCONDUCTANCE</td>
<td>5 900 UMHOS</td>
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<tr>
<td>PLATE RESISTANCE</td>
<td>20 000 OHMS</td>
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<tr>
<td>ZERO-BIAS:\textsuperscript{D}</td>
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<tr>
<td>PLATE CURRENT</td>
<td>225 MA.</td>
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<tr>
<td>GRID #2 CURRENT</td>
<td>25 MA.</td>
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<tr>
<td>CUT-OFF:\textsuperscript{E}</td>
<td></td>
</tr>
<tr>
<td>GRID #4 VOLTAGE (APPROX.)</td>
<td>-46 VOLTS</td>
</tr>
<tr>
<td>TRIODE AMPLIFICATION FACTOR:\textsuperscript{F}</td>
<td>4.3</td>
</tr>
</tbody>
</table>

\textsuperscript{C} WITH $E_b = 250$ VOLTS, $E_{C2} = 150$ VOLTS AND $E_{C1} = -22.5$ VOLTS.

\textsuperscript{D} WITH $E_b = 60$ VOLTS AND $E_{C2} = 150$ VOLTS.

\textsuperscript{E} FOR $I_b = 1$ MA. WITH $E_b = 250$ VOLTS AND $E_{C2} = 150$ VOLTS

\textsuperscript{F} WITH $E_b = E_{C2} = 150$ VOLTS AND $E_{C1} = -22.5$ VOLTS.

INDICATES A CHANGE OR ADDITION.
12BQ6GT
PENTODE CONNECTION

$E_f = 12.6 \text{ Volts}$
$E_{C2} = 100 \text{ Volts DC}$

$E_{CA} = 0$  
$-5$  
$-10$  
$-15$  
$-20$

PLATE Volts

PLATE ($I_b$) OR GRID $V_2$ ($I_{C2}$) MILLIAMPERES

0 50 100 150 200 250 300

$E_{CA} = 0$
$-5$
$-10$
$-15$
$-20$
$-25$
$-30$

PLATE Volts