The 12AF6 is a miniature pentode intended for use as a radio-frequency or intermediate-frequency amplifier in automobile radio receivers. The tube is specially designed to operate with plate and screen voltages supplied directly from a 12-volt storage battery.

**DIRECT INTERELECTRODE CAPACITANCES**

<table>
<thead>
<tr>
<th>Capacitance</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid #1 to Plate, (Max.)</td>
<td>0.006</td>
<td>μF</td>
</tr>
<tr>
<td>Input</td>
<td>5.5</td>
<td>μF</td>
</tr>
<tr>
<td>Output</td>
<td>4.8</td>
<td>μF</td>
</tr>
</tbody>
</table>

**RATINGS**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Voltage</td>
<td>12.6</td>
</tr>
<tr>
<td>Maximum Plate Voltage</td>
<td>16</td>
</tr>
<tr>
<td>Maximum Screen Voltage</td>
<td>16</td>
</tr>
<tr>
<td>Maximum Positive DC Grid #1 Voltage</td>
<td>0</td>
</tr>
<tr>
<td>Maximum Heater-Cathode Voltage</td>
<td>16</td>
</tr>
<tr>
<td>Heater Positive with Respect to Cathode</td>
<td>16</td>
</tr>
<tr>
<td>Heater Negative with Respect to Cathode</td>
<td></td>
</tr>
<tr>
<td>Maximum Grid #1 Circuit Resistance</td>
<td>2.2</td>
</tr>
</tbody>
</table>

*When used in automotive service from a 12-volt source, under no circumstances should the heater voltage be less than 10.0 volts or more than 15.9 volts. These extreme variations in heater voltage may be tolerated for short periods; however, operation at or near these absolute limits in heater voltage necessarily involves sacrifice in performance at low heater voltage and in life expectancy at high heater voltage. Equipment reliability can be significantly increased with improved supply-voltage regulation.*

Design-Maximum ratings are the limiting values expressed with respect to bogie tubes at which satisfactory tube life can be expected to occur. To obtain satisfactory circuit performance, therefore, the equipment designer must establish the circuit design so that no design-maximum value is exceeded with a bogie tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, and environmental conditions.
TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS
CLASS A1 AMPLIFIER

HEATER VOLTAGE 12.6 VOLTS
HEATER CURRENT 0.15 AMP.
PLATE VOLTAGE 12.6 VOLTS
SUPPRESSOR VOLTAGE 0 VOLTS
SCREEN VOLTAGE 12.6 VOLTS
GRID #1 SUPPLY VOLTAGE 0 VOLTS
GRID #1 RESISTOR (BYPASSED) 2.2 MEGOHMS
PLATE RESISTANCE (APPROX.) → 0.35 MEGOHMS
TRANS CONDUCTANCE → 1900 μMHO
PLATE CURRENT → 1.1 MA.
SCREEN CURRENT → 0.49 MA.
GRID #1 VOLTAGE (APPROX.) $g_m = 40 \mu$MHO
GRID #1 VOLTAGE (APPROX.) MEASURED *
WITH GRID #1 TIED TO GRID #3,
$R_{g1} = 0$, $g_m = 10 \mu$MHO

-3.5 VOLTS

* INDICATES AN ADDITION.
→ INDICATES A CHANGE.

I2AF6
PENTODE
$E_f = 12.6$ Volts
$E_{C3} = 0$ Volts
$E_{C2} = 12.6$ Volts
$R_{g1} = 2.2$ Megohms (Bypassed)
I2AF6
PENTODE

$E_f = 12.6$ Volts
$E_{c3} = 0$ Volts
$E_{c2} = 12.6$ Volts
$R_{g1} = 2.2$ Megohms (Bypassed)

GRID #2 MILLIAMPERES

PLATE VOLTS

I2AF6
PENTODE

$E_f = 12.6$ Volts
$E_b = 12.6$ Volts
$E_{c1} = 0$ Volts
$E_{c2} = 12.6$ Volts
$R_{g1} = 2.2$ Megohms (Bypassed)

$\frac{I_b}{I_{c2}}$
$G_m$

TRANSCONDUCTANCE ($g_m$) - MICROMOS

PLATE VOLTS

GRID #1 SUPPLY VOLTS

TURG-SOL ELECTRIC INC. ELECTRON TUBE DIVISION BLOOMFIELD, NEW JERSEY, U.S.A. APRIL 1, 1956 PLATE #628