TRIODE - TWIN PENTODE

COATED UNIPOTENTIAL CATHODE

FOR
VERTICAL DEFLECTION OSCILLATOR
AND COMBINED SYNC-AGC
APPLICATIONS IN TV CIRCUITS
ANY MOUNTING POSITION

GLASS BULB
BUTTON
12 PIN BASE E12.70
OUTLINE DRAWING
JEDEC 9-38

THE 6BA11 IS A TRIODE-TWIN PENTODE IN A COMPACTRON STRUCTURE. THE MEDIUM MU TRIODE
MAY BE USED AS A VERTICAL DEFLECTION OSCILLATOR. THE TWIN PENTODE CONSISTS OF A
COMMON CATHODE, FIRST CONTROL GRID AND SCREEN GRID, WITH SEPARATE SECOND CONTROL
GRIDS AND PLATES AND IS INTENDED FOR COMBINED SYNC-AGC APPLICATIONS IN TV CIRCUITS.
AN INTERNAL GRID SHIELD IS CONNECTED TO THE GRID 2 OF THE PENTODES. AN INTERSECTION
SHIELD BETWEEN PENTODES AND TRIODE IS CONNECTED TO PIN 8.

DIRECT INTERELECTRODE CAPACITANCES
WITHOUT EXTERNAL SHIELD

PENTODE:
GRID 3 TO PLATE, EACH SECTION
GRID 1 TO ALL
GRID 3 (EACH PENTODE) TO ALL
PLATE (EACH PENTODE) TO ALL
GRID 3 (PENTODE 1) TO GRID 3 (PENTODE 2) MAX.

TRIODE:
GRID TO PLATE, G TO P
INPUT: G TO (K+H)
OUTPUT: P TO (K+H+I.S.)

HEATER CHARACTERISTICS AND RATINGS

AVERAGE CHARACTERISTICS
6.3 VOLTS
HEATER WARM-UP TIME
600 MA.
11 SECONDS
LIMITS OF APPLIED VOLTAGE
6.350.6 VOLTS
LIMITS OF SUPPLIED CURRENT
MAXIMUM HEATER-CATHODE VOLTAGE (BOTH SECTIONS)
HEATER NEGATIVE WITH RESPECT TO CATHODE
TOTAL DC AND PEAK
200 VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE
DC
TOTAL DC AND PEAK
100 VOLTS
200 VOLTS
MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>SECTION:</th>
<th>TRIODE</th>
<th>PENTODE</th>
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<tbody>
<tr>
<td>PLATE VOLTAGE</td>
<td>300</td>
<td>300</td>
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<tr>
<td>GRID 2 VOLTAGE</td>
<td>150</td>
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<tr>
<td>POSITIVE DC GRID 3 VOLTAGE</td>
<td>3.0</td>
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<tr>
<td>NEGATIVE DC GRID 3 VOLTAGE</td>
<td>50</td>
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<tr>
<td>PEAK POSITIVE GRID 3 VOLTAGE</td>
<td>50</td>
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<tr>
<td>NEGATIVE DC GRID 1 VOLTAGE</td>
<td>5.0</td>
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<tr>
<td>PLATE DISSIPATION (EACH PLATE)</td>
<td>1.1</td>
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<tr>
<td>GRID 2 DISSIPATION</td>
<td>0.75</td>
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<tr>
<td>DC CATHODE CURRENT</td>
<td>12</td>
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<tr>
<td>GR3 CIRCUIT RESISTANCE (EACH GRID)</td>
<td>0.5</td>
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<tr>
<td>GR1 CIRCUIT RESISTANCE</td>
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<tr>
<td>FIXED BIAS</td>
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<tr>
<td>CATHODE BIAS</td>
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MEGOMHS

TYPICAL OPERATING CHARACTERISTICS

<table>
<thead>
<tr>
<th>AVERAGE CHARACTERISTICS</th>
<th>TRIODE</th>
<th>PENTODE</th>
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<tr>
<td>EACH SECTION ( A )</td>
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<tr>
<td>PLATE VOLTAGE</td>
<td>250</td>
<td>100</td>
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<tr>
<td>GRID 2 VOLTAGE</td>
<td>67.5</td>
<td>67.5</td>
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<td>GRID 3 VOLTAGE</td>
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<tr>
<td>GRID 1 VOLTAGE</td>
<td>-11</td>
<td>-10</td>
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<tr>
<td>PLATE CURRENT</td>
<td>5.0</td>
<td>2.5</td>
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<tr>
<td>GRID 2 CURRENT</td>
<td>0</td>
<td>0</td>
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<tr>
<td>GR1 TRANSCONDANCE</td>
<td>1800</td>
<td>1700</td>
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<tr>
<td>AMPLIFICATION FACTOR</td>
<td>18</td>
<td>450</td>
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<tr>
<td>GR3 TRANSCONDANCE</td>
<td>-18</td>
<td>2.3</td>
</tr>
<tr>
<td>GR1 VOLTAGE (APPROX.)</td>
<td>-3.2</td>
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VOLTS

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<tr>
<th>BOTH SECTIONS ( C )</th>
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<tr>
<td>PLATE VOLTAGE</td>
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<tr>
<td>GRID 2 VOLTAGE</td>
<td>67.5</td>
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<tr>
<td>GRID 3 VOLTAGE</td>
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<tr>
<td>GRID 1 VOLTAGE</td>
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<td>0</td>
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<tr>
<td>PLATE CURRENT</td>
<td>2.5</td>
<td>2.5</td>
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<tr>
<td>GRID 2 CURRENT</td>
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<tr>
<td>GR1 TRANSCONDANCE</td>
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<td>4.4</td>
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<tr>
<td>AMPLIFICATION FACTOR</td>
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<tr>
<td>GR3 TRANSCONDANCE</td>
<td>-18</td>
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</tr>
<tr>
<td>FOR ( I_b = 100 \mu A )</td>
<td>-3.2</td>
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VOLTS

\( \mu \text{HOS} \)

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 THREE TIMES THE NOMINAL HEATER OPERATING RESISTANCE.

A. PLATE AND GRID 3 OF OPPOSITE SECTION GROUNDED.

B. GRID 1 VOLTAGE ADJUSTED SO THAT \( |e| = 100 \mu A \) DC.

C. VOLTAGES AND PLATE CURRENT APPLY TO EACH SECTION.
6BA11
TRIODE SECTION

6BA11
PENTODE SECTION
Ec3 = 67.5 Volts
Ic1 = 0.1 Ma.
#1 PLATE WITH #2 GRID 3 AND
#2 PLATE GROUNDED OR VICE VERSA
6BA11
PENTODE SECTION
Ec2 = 67.5 VOLTS
Ec3 = 0 VOLTS
#1 PLATE WITH #2 GRID 3 AND
#2 PLATE GROUNDED OR VICE VERSA

PLATE MILLIAMPERES

0 1 2 3 4 5

0 50 100 150 200 250 300 350

PLATE VOLTS

Ec1 = ±1.0 V

6BA11
PENTODE SECTION
Ec2 = 67.5 VOLTS
Ec3 = 0 VOLTS
#1 PLATE WITH #2 GRID 3 AND
#2 PLATE GROUNDED OR VICE VERSA

PLATE MILLIAMPERES

0 0.01 0.05 0.10 0.25

0 50 100 150 200 250 300 350

PLATE VOLTS

Ic1 = 0.50 MA
6BA11
PENTODE SECTION
E_b = 150 VOLTS
E_c3 = 0 VOLTS
#1 PLATE WITH #2 GRID 3 AND
#2 PLATE GROUNDED OR VICE VERSA