

## TUNG-SOL

## TWIN TRIODE

## MINIATURE TYPE

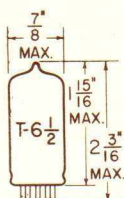
## COATED UNIPOTENTIAL CATHODE

## HEATER

SERIES  
6.3 VOLTS  
0.3 AMP.

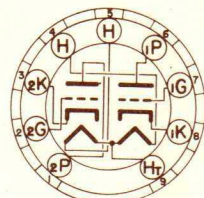
PARALLEL  
3.15 VOLTS  
0.6 AMP.

AC OR DC



GLASS BULB

FOR 32.6 VOLT OPERATION APPLY HEATER VOLTAGE BETWEEN PINS #4 AND #5. FOR 6.3 VOLT OPERATION APPLY HEATER VOLTAGE BETWEEN PIN #9 AND PINS #4 AND #5 CONNECTED TOGETHER.



BOTTOM VIEW  
MINIATURE BUTTON  
9 PIN BASE  
9A

THE 6AU7 IS A MEDIUM-MU TWIN TRIODE IN THE 9 PIN MINIATURE CONSTRUCTION. IT IS INTENDED FOR USE IN 600 MILLIAMPERE SERIES STRING TV APPLICATIONS. EXCEPT FOR HEATER RATINGS AND HEATER WARM-UP TIME, THE 6AU7 IS IDENTICAL TO THE 12AU7.

## DIRECT INTERELECTRODE CAPACITANCES

## TRIODE UNIT 1

GRID TO PLATE: (G TO P)

INPUT: G TO (H+K)

OUTPUT: P TO (H+K)

## TRIODE UNIT 2

GRID TO PLATE: (G TO P)

INPUT: G TO (H+K)

OUTPUT: P TO (H+K)

WITH SHIELD<sup>A</sup>

WITHOUT SHIELD

|     |      |    |
|-----|------|----|
| 1.5 | 1.5  | μf |
| 1.8 | 1.6  | μf |
| 2.0 | 0.40 | μf |
| 1.5 | 1.5  | μf |
| 1.8 | 1.6  | μf |
| 2.0 | 0.32 | μf |

<sup>A</sup> EXTERNAL SHIELD #315 CONNECTED TO CATHODE OF UNIT UNDER TEST.

## RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

## EACH TRIODE UNIT

|                                                           | CLASS A <sub>1</sub> <sup>B</sup><br>AMPLIFIER | VERTICAL<br>DEFLECTION<br>AMPLIFIER |         |
|-----------------------------------------------------------|------------------------------------------------|-------------------------------------|---------|
| HEATER VOLTAGE                                            | 6.3                                            | 3.15                                | VOLTS   |
| MAXIMUM HEATER-CATHODE VOLTAGE:                           |                                                |                                     |         |
| HEATER NEGATIVE WITH RESPECT TO CATHODE:                  |                                                |                                     |         |
| TOTAL DC AND PEAK                                         | 200                                            | 200                                 | VOLTS   |
| HEATER POSITIVE WITH RESPECT TO CATHODE:                  |                                                |                                     |         |
| DC                                                        | 100                                            | 100                                 | VOLTS   |
| TOTAL DC AND PEAK                                         | 200                                            | 200                                 | VOLTS   |
| MAXIMUM PLATE VOLTAGE                                     | 300                                            | 300                                 | VOLTS   |
| MAXIMUM PEAK POSITIVE PLATE VOLTAGE<br>(ABSOLUTE MAXIMUM) | ---                                            | 1200                                | VOLTS   |
| MAXIMUM PLATE DISSIPATION: <sup>C</sup>                   |                                                |                                     |         |
| EACH PLATE                                                | 2.75                                           | 2.75                                | WATTS   |
| BOTH PLATES                                               | 5.5                                            | 5.5                                 | WATTS   |
| MAXIMUM PEAK NEGATIVE GRID VOLTAGE                        | ---                                            | 250                                 | VOLTS   |
| MAXIMUM CATHODE CURRENT                                   | 20                                             | 20                                  | MA.     |
| MAXIMUM PEAK-CATHODE CURRENT                              | ---                                            | 60                                  | MA.     |
| MAXIMUM GRID CIRCUIT RESISTANCE                           |                                                |                                     |         |
| FIXED BIAS OPERATION                                      | 0.25                                           | ---                                 | MEGOHM  |
| CATHODE BIAS OPERATION                                    | 1.0                                            | 2.2                                 | MEGOHMS |
| HEATER WARM-UP TIME (APPROX.) <sup>*</sup>                |                                                | 11.0                                | SECONDS |

<sup>B</sup> FOR OPERATION IN A 525-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.

<sup>C</sup> 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.

CONTINUED ON FOLLOWING PAGE

## TUNG-SOL

CONTINUED FROM PRECEDING PAGE

## RATINGS (CONT'D)

EACH TRIODE UNIT

|                                          | VERTICAL <sup>D</sup><br>DEFLECTION<br>OSCILLATOR | HORIZONTAL <sup>D</sup><br>DEFLECTION<br>OSCILLATOR |         |
|------------------------------------------|---------------------------------------------------|-----------------------------------------------------|---------|
| MAXIMUM HEATER-CATHODE VOLTAGE:          |                                                   |                                                     |         |
| HEATER NEGATIVE WITH RESPECT TO CATHODE: |                                                   |                                                     |         |
| TOTAL DC AND PEAK                        | 200                                               | 200                                                 | VOLTS   |
| HEATER POSITIVE WITH RESPECT TO CATHODE: |                                                   |                                                     |         |
| DC                                       | 100                                               | 100                                                 | VOLTS   |
| TOTAL DC AND PEAK                        | 200                                               | 200                                                 | VOLTS   |
| MAXIMUM DC PLATE VOLTAGE                 | 300                                               | 300                                                 | VOLTS   |
| MAXIMUM PLATE DISSIPATION:               |                                                   |                                                     |         |
| EACH PLATE                               | 2.75                                              | 2.75                                                | WATTS   |
| BOTH PLATES                              | 5.5                                               | 5.5                                                 | WATTS   |
| MAXIMUM PEAK NEGATIVE GRID VOLTAGE       | 400                                               | 600                                                 | VOLTS   |
| MAXIMUM AVERAGE CATHODE CURRENT          | 20                                                | 20                                                  | MA.     |
| MAXIMUM PEAK CATHODE CURRENT             | 60                                                | 300                                                 | MA.     |
| MAXIMUM GRID CIRCUIT RESISTANCE          | 2.2                                               | 2.2                                                 | MEGOHMS |

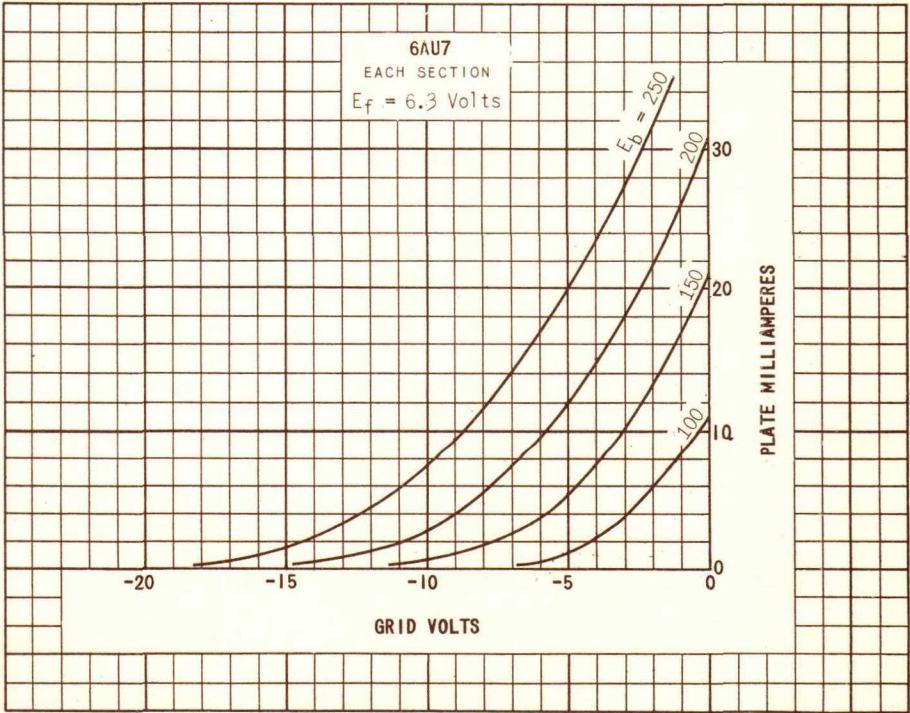
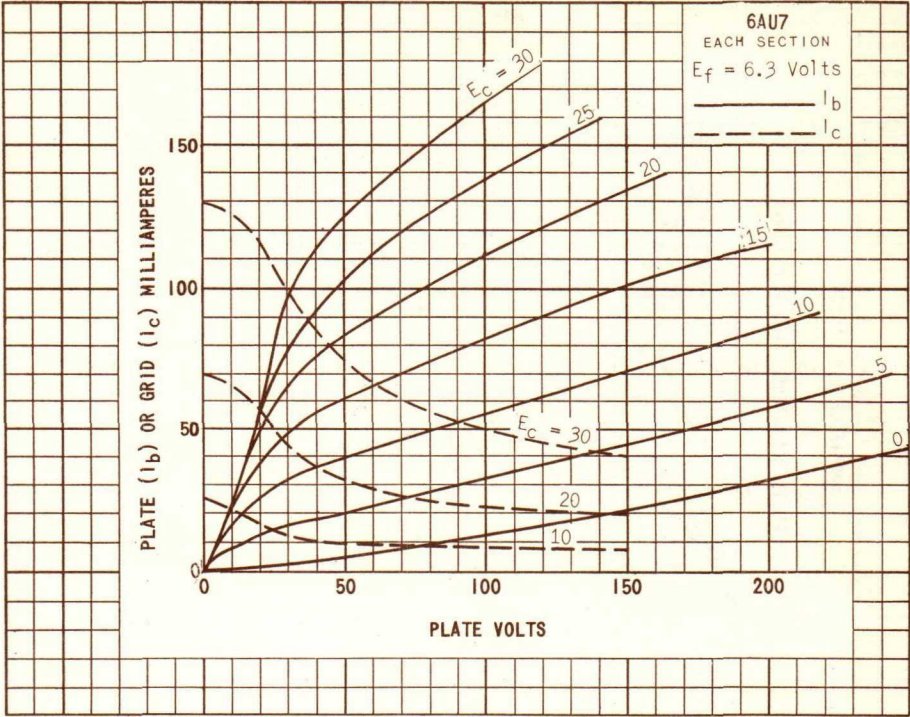
<sup>D</sup> FOR OPERATION IN A 525-LINE, 30-FRAME SYSTEM AS DESCRIBED IN "STANDARDS OF GOOD ENGINEERING PRACTICE FOR TELEVISION BROADCASTING STATIONS; FEDERAL COMMUNICATIONS COMMISSION". THE DUTY CYCLE OF THE VOLTAGE PULSE NOT TO EXCEED 15 PERCENT OF A SCANNING CYCLE.

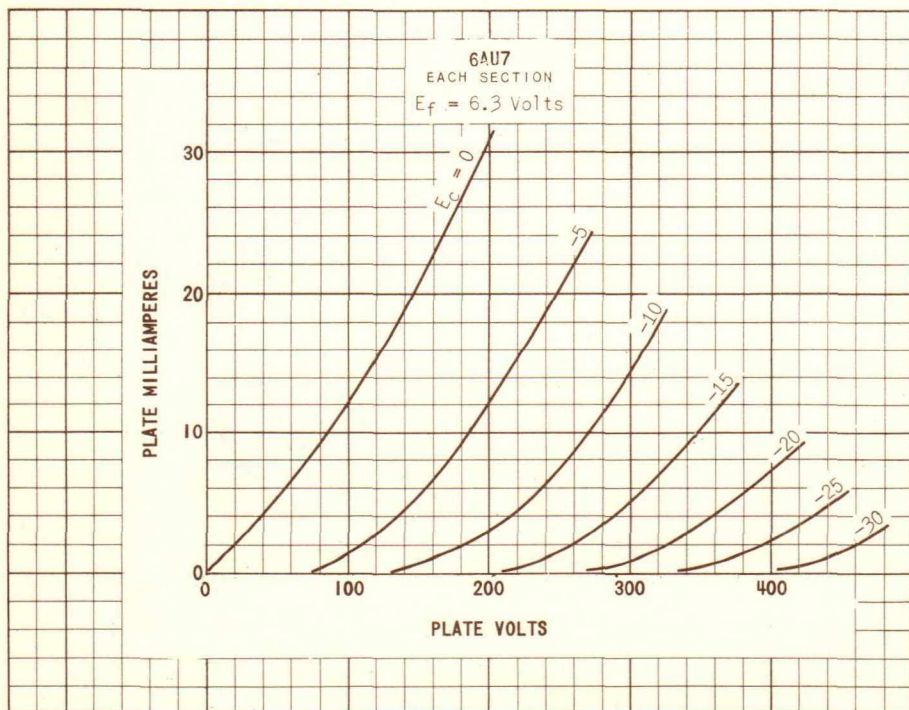
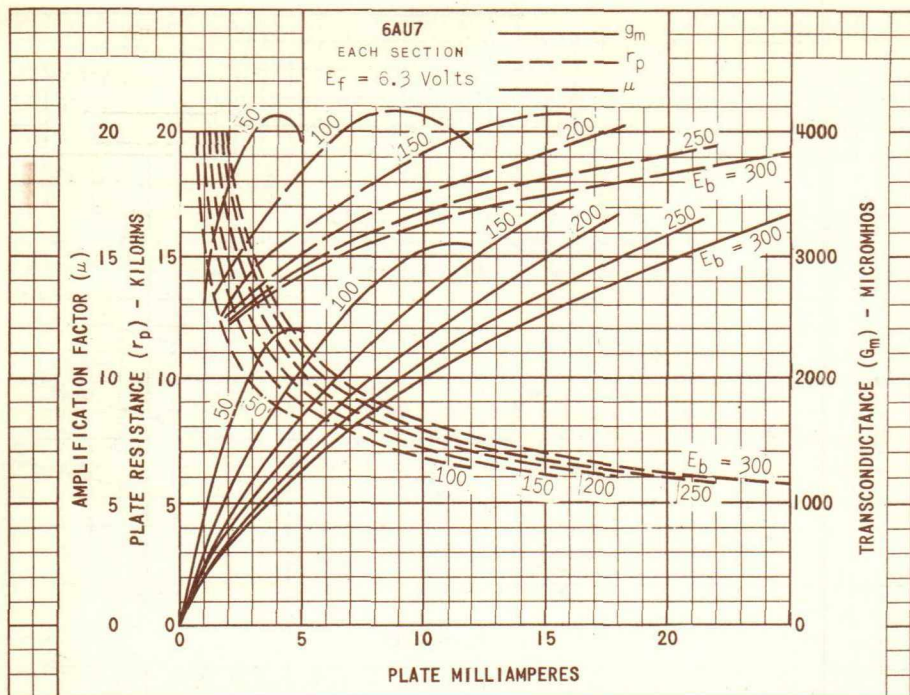
## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A<sub>1</sub> AMPLIFIER - EACH TRIODE UNIT

|                                                    |       |       |       |
|----------------------------------------------------|-------|-------|-------|
| PLATE VOLTAGE                                      | 100   | 250   | VOLTS |
| GRID VOLTAGE                                       | 0     | -8.5  | VOLTS |
| PLATE CURRENT                                      | 11.8  | 10.5  | MA.   |
| PLATE RESISTANCE (APPROX.)                         | 6 500 | 7 700 | OHMS  |
| TRANSCONDUCTANCE                                   | 3 100 | 2 200 | μMHOS |
| AMPLIFICATION FACTOR                               | 20    | 17    |       |
| GRID VOLTAGE FOR I <sub>b</sub> = 10 μA. (APPROX.) | ---   | - 24  | VOLTS |

\*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.



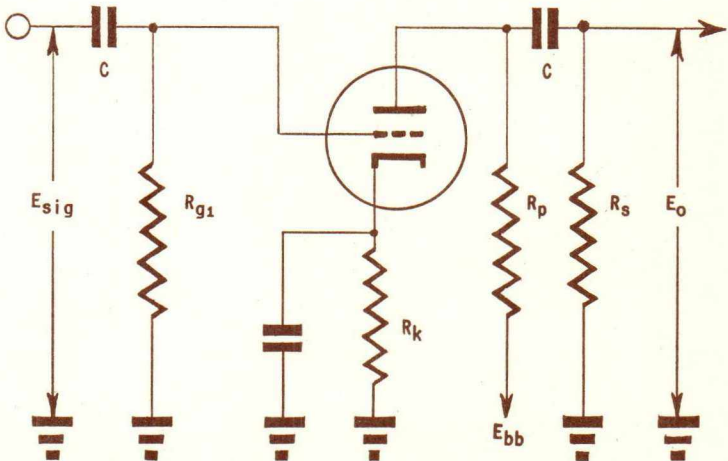


TUNG-SOL

RESISTANCE COUPLED AMPLIFIER  
EACH SECTION

| $R_p$<br>MEG. | $R_a$<br>MEG. | $R_{g1}$<br>MEG. | $E_{bb} = 90 \text{ VOLTS}$ |      |       | $E_{bb} = 180 \text{ VOLTS}$ |      |       | $E_{bb} = 300 \text{ VOLTS}$ |      |       |
|---------------|---------------|------------------|-----------------------------|------|-------|------------------------------|------|-------|------------------------------|------|-------|
|               |               |                  | $R_k$                       | GAIN | $E_o$ | $R_k$                        | GAIN | $E_o$ | $R_k$                        | GAIN | $E_o$ |
| 0.10          | 0.10          | 0.10             | 3300                        | 14   | 13    | 2200                         | 14   | 26    | 1800                         | 14   | 40    |
| 0.10          | 0.24          | 0.10             | 3600                        | 14   | 16    | 2700                         | 15   | 33    | 2200                         | 15   | 51    |
| 0.24          | 0.24          | 0.10             | 7500                        | 14   | 16    | 5100                         | 15   | 30    | 4300                         | 15   | 44    |
| 0.24          | 0.51          | 0.10             | 9100                        | 14   | 19    | 6800                         | 15   | 39    | 5100                         | 15   | 54    |
| 0.51          | 0.51          | 0.10             | 13000                       | 14   | 16    | 9100                         | 15   | 30    | 6800                         | 16   | 40    |
| 0.51          | 1.0           | 0.10             | 15000                       | 14   | 19    | 10000                        | 16   | 32    | 7500                         | 16   | 45    |
| 0.24          | 0.24          | 10               | 0                           | 15   | 13    | 0                            | 16   | 33    | 0                            | 17   | 46    |
| 0.24          | 0.51          | 10               | 0                           | 16   | 17    | 0                            | 17   | 38    | 0                            | 18   | 62    |
| 0.51          | 0.51          | 10               | 0                           | 16   | 14    | 0                            | 18   | 32    | 0                            | 18   | 53    |
| 0.51          | 1.0           | 10               | 0                           | 17   | 18    | 0                            | 18   | 41    | 0                            | 19   | 68    |

- NOTES:
1.  $E_o$  IS MAXIMUM RMS VOLTAGE OUTPUT FOR FIVE PERCENT (5%) TOTAL HARMONIC DISTORTION.
  2. GAIN MEASURED AT 2.0 VOLTS RMS OUTPUT.
  3. FOR ZERO-BIAS DATA, GENERATOR IMPEDANCE IS NEGLIGIBLE.



- NOTES:
1. COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE.
  2.  $R_k$  SHOULD BE ADEQUATELY BY-PASSED

100-100000

