

## SHARP-CUTOFF PENTODE TYPES 3AU6, 4AU6, 6AU6, 6AU6-A AND 12AU6

The 3AU6, 4AU6, 6AU6, 6AU6-A and 12AU6 are 7-pin miniature sharp-cutoff pentode types designed for service as a wide-band, high gain, high frequency amplifier. The low grid-plate capacity and high transconductance of these types allows good performance as an intermediate frequency amplifier. They are also commonly employed as audio voltage amplifiers.

The 3AU6, 4AU6 and 6AU6-A have been designed for use in receivers which employ series-connected heaters, especially in television receivers where the picture-tube heater is in series with other heaters. When each is employed in this type of circuit with other tubes similarly designed, heater voltage surges across individual tubes are minimized inasmuch as the heater warm-up characteristic is controlled.

### ELECTRICAL

Cathode..... Coated Unipotential  
Heater:

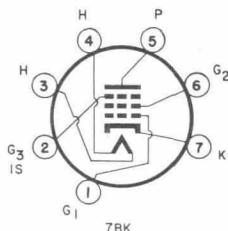
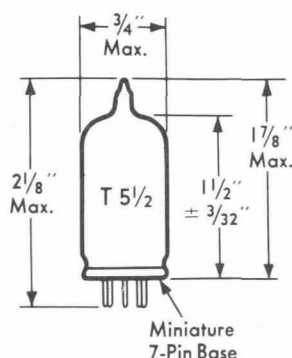
|                                 | 3AU6 | 4AU6 | 6AU6 | 6AU6-A | 12AU6 |         |
|---------------------------------|------|------|------|--------|-------|---------|
| Voltage (ac or dc) . . . . .    | 3.15 | 4.2  | 6.3  | 12.6   |       | Volts   |
| Current . . . . .               | 0.60 | 0.45 | 0.30 | 0.15   |       | Ampere  |
| Warm-up Time (Note 1) . . . . . | 11   | 11   | 11   | --     |       | Seconds |

### Direct Interelectrode Capacitances:

| Pentode Connection:            | Unshielded | Shielded (Note 2) |                  |
|--------------------------------|------------|-------------------|------------------|
| Grid to Plate (Max.) . . . . . | 0.0035     | 0.0035            | $\mu\mu\text{f}$ |
| Input . . . . .                | 5.5        | 5.5               | $\mu\mu\text{f}$ |
| Output . . . . .               | 5.0        | 5.0               | $\mu\mu\text{f}$ |
| Triode Connection (Note 3):    |            |                   |                  |
| Grid to Plate . . . . .        | 2.6        | 2.6               | $\mu\mu\text{f}$ |
| Input . . . . .                | 3.2        | 3.2               | $\mu\mu\text{f}$ |
| Output . . . . .               | 1.2        | 8.5               | $\mu\mu\text{f}$ |

### MECHANICAL

|                             |                              |
|-----------------------------|------------------------------|
| Bulb . . . . .              | T-5½                         |
| Base . . . . .              | Miniature 7-Pin (JEDEC E7-1) |
| Outline . . . . .           | 5-2                          |
| Basing . . . . .            | 7BK                          |
| Mounting Position . . . . . | Any                          |



### MAXIMUM RATINGS

Design Maximum Values

|                                               | Triode Connection | Pentode Connection            |            |
|-----------------------------------------------|-------------------|-------------------------------|------------|
| Plate Voltage . . . . .                       | 275               | 330                           | max. Volts |
| Grid 2 Supply Voltage . . . . .               | (Note 3)          | 330                           | max. Volts |
| Grid 2 Voltage . . . . .                      | (Note 3)          | See Grid 2 Input Rating Chart |            |
| Plate Dissipation . . . . .                   | 3.5               | 3.5                           | max. Watts |
| Grid 2 Dissipation . . . . .                  | —                 | 0.75                          | max. Watts |
| Grid 1 Voltage, Positive Bias Value . . . . . | 0                 | 0                             | max. Volts |
| Heater-Cathode Voltage:                       |                   |                               |            |
| Heater Negative with Respect to Cathode       |                   |                               |            |
| Total DC + Peak . . . . .                     | 200               |                               | max. Volts |
| Heater Positive with Respect to Cathode       |                   |                               |            |
| DC Component . . . . .                        | 100               |                               | max. Volts |
| DC + Peak . . . . .                           | 200               |                               | max. Volts |

### AMPLIFIER - CLASS A

### CHARACTERISTICS AND TYPICAL OPERATION

|                                       |                      |      |      |                  |
|---------------------------------------|----------------------|------|------|------------------|
| Plate Voltage . . . . .               | 100                  | 250  | 250  | Volts            |
| Grid 2 Voltage . . . . .              | 100                  | 125  | 150  | Volts            |
| Grid 3 Voltage . . . . .              | Connected to Cathode |      |      |                  |
| Cathode Resistor . . . . .            | 150                  | 100  | 68   | Ohms             |
| Transconductance . . . . .            | 3900                 | 4500 | 5200 | $\mu\text{mhos}$ |
| Plate Resistance . . . . .            | 0.5                  | 1.5  | 1.0  | Megohm           |
| Grid 1 Cutoff Bias (Note 4) . . . . . | -4.2                 | -5.5 | -6.5 | Volts            |
| Plate Current . . . . .               | 5.0                  | 7.6  | 10.6 | Ma.              |
| Grid 2 Current . . . . .              | 2.1                  | 3.0  | 4.3  | Ma.              |

### CHARACTERISTICS (Triode Connected)

|                                      |       |                  |
|--------------------------------------|-------|------------------|
| Plate Voltage . . . . .              | 250   | Volts            |
| Cathode Resistor . . . . .           | 330   | Ohms             |
| Amplification Factor . . . . .       | 36    | —                |
| Plate Resistance (Approx.) . . . . . | .0075 | Megohm           |
| Transconductance . . . . .           | 4800  | $\mu\text{mhos}$ |
| Plate Current . . . . .              | 12.2  | Ma.              |

### NOTES

1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying four times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three times rated heater voltage divided by rated heater current.
2. With JEDEC shield No. 316 connected to cathode.
3. Grids 2 and 3 connected to plate.
4. For Plate Current of 10  $\mu\text{a}$ .

