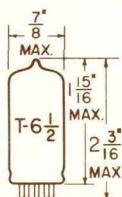


## TUNG-SOL

## DUPLEX-DIODE TRIODE

MINIATURE TYPE



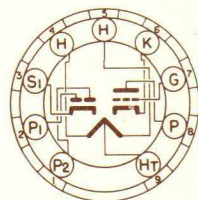
GLASS BULB

COATED UNIPOTENTIAL CATHODE

| SERIES     | HEATER | PARALLEL  |
|------------|--------|-----------|
| 8.4 VOLTS  |        | 4.2 VOLTS |
| 0.225 AMP. |        | 0.45 AMP. |

AC OR DC

ANY MOUNTING POSITION

CONTROL OF HEATER WARM-UP TIME  
APPLIES ONLY TO PARALLEL CONNECTION.

BOTTOM VIEW

SMALL BUTTON  
9 PIN BASE

9EN

THE 8CN7 IS A DUPLEX DIODE HIGH-MU TRIODE IN WHICH SEPARATE CATHODES ARE PROVIDED FOR THE DIODE AND TRIODE SECTIONS. IT IS INTENDED PRIMARILY FOR SERVICE AS A COMBINED HORIZONTAL PHASE DETECTOR AND REACTANCE TUBE IN TELEVISION RECEIVERS. THERMAL CHARACTERISTICS OF THE HEATER ARE CONTROLLED SUCH THAT HEATER VOLTAGE SURGES DURING THE WARM-UP CYCLE ARE MINIMIZED PROVIDED IT IS USED WITH OTHER TYPES WHICH ARE SIMILARLY CONTROLLED. EXCEPT FOR HEATER RATINGS, THE 8CN7 IS IDENTICAL TO THE 6CN7.

## DIRECT INTERELECTRODE CAPACITANCES

WITHOUT EXTERNAL SHIELD

|                                            |       |                  |
|--------------------------------------------|-------|------------------|
| TRIODE GRID TO PLATE                       | 1.8   | $\mu\mu\text{f}$ |
| TRIODE INPUT                               | 1.5   | $\mu\mu\text{f}$ |
| TRIODE OUTPUT                              | 0.5   | $\mu\mu\text{f}$ |
| GRID TO EACH DIODE PLATE                   | 0.006 | $\mu\mu\text{f}$ |
| DIODE #1 PLATE TO DIODE CATHODE AND HEATER | 3.6   | $\mu\mu\text{f}$ |
| DIODE #2 PLATE TO DIODE CATHODE AND HEATER | 3.6   | $\mu\mu\text{f}$ |

## RATINGS

INTERPRETED ACCORDING TO DESIGN CENTER SYSTEM

|                                                              |      |     |         |
|--------------------------------------------------------------|------|-----|---------|
| HEATER VOLTAGE                                               | 8.4  | 4.2 | VOLTS   |
| MAXIMUM PLATE VOLTAGE                                        | 300  |     | VOLTS   |
| MAXIMUM POSITIVE DC GRID VOLTAGE                             | 0    |     | VOLTS   |
| MAXIMUM PLATE DISSIPATION                                    | 1.0  |     | WATTS   |
| MAXIMUM HEATER-CATHODE VOLTAGE                               |      |     |         |
| HEATER POSITIVE WITH RESPECT TO CATHODE                      |      |     |         |
| DC COMPONENT                                                 | 100  |     | VOLTS   |
| TOTAL DC AND PEAK                                            | 200  |     | VOLTS   |
| HEATER NEGATIVE WITH RESPECT TO CATHODE                      |      |     |         |
| TOTAL DC AND PEAK                                            | 200  |     | VOLTS   |
| MAXIMUM DIODE CURRENT FOR CONTINUOUS OPERATION, (EACH DIODE) | 5.0  |     | MA.     |
| HEATER WARM-UP TIME*                                         | 11.0 |     | SECONDS |

\* 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

## TUNG-SOL

CONTINUED FROM PRECEDING PAGE

## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A<sub>1</sub> AMPLIFIER

|                                    |        |      |        |      |       |
|------------------------------------|--------|------|--------|------|-------|
| PLATE VOLTAGE                      | 8.4    | 4.2  | 8.4    | 4.2  | VOLTS |
| PLATE CURRENT                      | 0.225  | 0.45 | 0.225  | 0.45 | AMP.  |
| PLATE VOLTAGE                      | 100    |      | 250    |      | VOLTS |
| GRID VOLTAGE                       | -1.0   |      | -3.0   |      | VOLTS |
| AMPLIFICATION FACTOR               | 70     |      | 70     |      |       |
| PLATE RESISTANCE (APPROX.)         | 54 000 |      | 58 000 |      | OHMS  |
| TRANSCONDUCTANCE                   | 1 300  |      | 1 200  |      | μMHOS |
| PLATE CURRENT                      | 0.8    |      | 1.0    |      | MA.   |
| AVERAGE DIODE CURRENT (EACH DIODE) |        |      |        |      |       |
| WITH 5.0 VOLTS DC APPLIED          |        |      | 20     |      | MA.   |

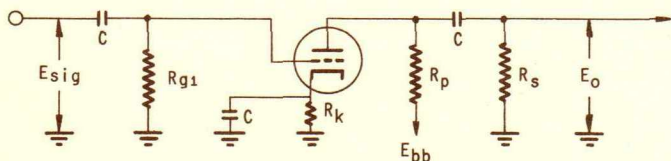
## CLASS A RESISTANCE - COUPLED AMPLIFIER

| R <sub>p</sub><br>Meg. | R <sub>s</sub><br>Meg. | R <sub>g1</sub><br>Meg. | E <sub>bb</sub> = 90 Volts |      |                | E <sub>bb</sub> = 180 Volts |      |                | E <sub>bb</sub> = 300 Volts |      |                |
|------------------------|------------------------|-------------------------|----------------------------|------|----------------|-----------------------------|------|----------------|-----------------------------|------|----------------|
|                        |                        |                         | R <sub>k</sub>             | Gain | E <sub>o</sub> | R <sub>k</sub>              | Gain | E <sub>o</sub> | R <sub>k</sub>              | Gain | E <sub>o</sub> |
| 0.10                   | 0.10                   | 0.10                    | 5700                       | 21   | 7.0            | 2400                        | 29   | 18             | 1800                        | 33   | 35             |
| 0.10                   | 0.24                   | 0.10                    | 6100                       | 26   | 9.0            | 2700                        | 34   | 23             | 2000                        | 38   | 42             |
| 0.24                   | 0.24                   | 0.10                    | 9100                       | 30   | 10             | 4300                        | 40   | 24             | 3000                        | 44   | 43             |
| 0.24                   | 0.51                   | 0.10                    | 10000                      | 34   | 13             | 4700                        | 45   | 31             | 3300                        | 49   | 52             |
| 0.51                   | 0.51                   | 0.10                    | 15000                      | 37   | 14             | 7500                        | 47   | 28             | 5600                        | 51   | 50             |
| 0.51                   | 1.0                    | 0.10                    | 16000                      | 40   | 16             | 8200                        | 50   | 35             | 6200                        | 55   | 60             |
| 0.24                   | 0.24                   | 10                      | 0                          | 31   | 5.0            | 0                           | 44   | 19             | 0                           | 48   | 40             |
| 0.24                   | 0.51                   | 10                      | 0                          | 37   | 7.0            | 0                           | 49   | 25             | 0                           | 52   | 52             |
| 0.51                   | 0.51                   | 10                      | 0                          | 39   | 7.5            | 0                           | 51   | 22             | 0                           | 54   | 44             |
| 0.51                   | 1.0                    | 10                      | 0                          | 42   | 10             | 0                           | 54   | 28             | 0                           | 58   | 56             |

E<sub>o</sub> IS MAXIMUM RMS VOLTAGE OUTPUT FOR FIVE PERCENT TOTAL HARMONIC DISTORTION.

GAIN MEASURED AT 2.0 VOLTS RMS OUTPUT.

FOR ZERO-BIAS DATA, GENERATOR IMPEDANCE IS NEGLIGIBLE.

NOTE: COUPLING CAPACITORS (C) SHOULD BE SELECTED TO GIVE DESIRED FREQUENCY RESPONSE. R<sub>k</sub> SHOULD BE ADEQUATELY BY-PASSED.

