

## TUNG-SOL

## TRIPLE-DIODE TRIODE

MINIATURE TYPE

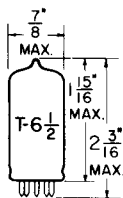
COATED UNIPOTENTIAL CATHODES

HEATER

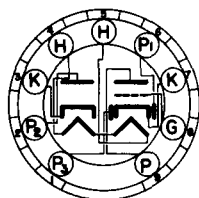
4.7 VOLTS 0.6 AMP.

AC OR DC

ANY MOUNTING POSITION



GLASS BULB



BOTTOM VIEW

MINIATURE GLASS BUTTON  
9 PIN BASE

9E

THE 5T8 COMBINES THREE HIGH PERVEANCE DIODES AND A HIGH- $\mu$  TRIODE IN ONE ENVELOPE WITH THE 9 PIN MINIATURE CONSTRUCTION AND IS DESIGNED FOR USE IN 600 MA. SERIES HEATER OPERATED RECEIVERS. ONE OF THE THREE DIODE PLATES HAS AN INDEPENDENT CATHODE PROVIDING SATISFACTORY OPERATION IN BALANCED LOW IMPEDANCE DETECTOR CIRCUITS. THIS TUBE STRUCTURE PERMITS THE CONSTRUCTION OF AM/FM RECEIVERS WITH A MINIMUM OF SWITCHING. 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. WITH THE EXCEPTION OF HEATER RATINGS, ITS CHARACTERISTICS ARE IDENTICAL TO THE 6T8.

## DIRECT INTERELECTRODE CAPACITANCES

|                                | WITHOUT<br>SHIELD | WITH <sup>A</sup><br>SHIELD |     |
|--------------------------------|-------------------|-----------------------------|-----|
| TRIODE GRID TO PLATE           | 1.7               | 1.7                         | fff |
| TRIODE INPUT                   | 1.6               | 1.7                         | fff |
| TRIODE OUTPUT                  | 1.2               | 2.4                         | fff |
| GRID TO ANY DIODE PLATE (MAX.) | .034              | .034                        | fff |
| INPUT DIODE 1                  | 3.8               | 3.8                         | fff |
| INPUT DIODE 2                  | 3.8               | 3.8 <sup>B</sup>            | fff |
| INPUT DIODE 3                  | 3.4               | 3.6                         | fff |
| DIODE 2 CATHODE TO ALL         | 7.5               | 8.5 <sup>C</sup>            | fff |

## RATINGS

INTERPRETED ACCORDING TO DESIGN MAXIMUM SYSTEM

|                                                            |       |         |
|------------------------------------------------------------|-------|---------|
| HEATER VOLTAGE                                             | 4.7   | VOLTS   |
| MAXIMUM PLATE VOLTAGE                                      | 330 ← | VOLTS   |
| MAXIMUM POSITIVE DC GRID VOLTAGE                           | 0     | VOLTS   |
| MAXIMUM PLATE DISSIPATION                                  | 1.1 ← | WATTS   |
| MAXIMUM DIODE CURRENT FOR CONTINUOUS OPERATION (EA. PLATE) | 5.5 ← | MA.     |
| MAXIMUM HEATER-CATHODE VOLTAGE                             |       |         |
| HEATER NEGATIVE WITH RESPECT TO CATHODE:                   |       |         |
| TOTAL DC AND PEAK                                          | 200   | VOLTS   |
| HEATER POSITIVE WITH RESPECT TO CATHODE:                   |       |         |
| DC                                                         | 100   | VOLTS   |
| TOTAL DC AND PEAK                                          | 200   | VOLTS   |
| HEATER WARM-UP TIME (APPROX.)**                            | 11.0  | SECONDS |

CONTINUED ON FOLLOWING PAGE

## TUNG-SOL

CONTINUED FROM PRECEDING PAGE

## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

CLASS A<sub>1</sub> AMPLIFIER

|                                       |        |        |       |
|---------------------------------------|--------|--------|-------|
| HEATER VOLTAGE                        | 4.7    | 4.7    | VOLTS |
| HEATER CURRENT                        | 0.6±6% | 0.6±6% | AMP.  |
| PLATE VOLTAGE                         | 100    | 250    | VOLTS |
| GRID VOLTAGE                          | -1     | -3     | 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 SECTION) |        |        |       |
| MEASURED WITH 5 VOLTS DC APPLIED      | 20     |        | MA.   |

## TRIODE UNIT AS RESISTANCE COUPLED AMPLIFIER

|                                  |         |         |
|----------------------------------|---------|---------|
| PLATE SUPPLY VOLTAGE             | 90      | VOLTS   |
| CONTROL GRID VOLTAGE             | 0       | VOLTS   |
| PLATE LOAD RESISTOR              | 220 000 | OHMS    |
| CONTROL GRID RESISTOR            | 10.0    | MEGOHMS |
| INPUT CONDENSER                  | 0.01    | μf      |
| OUTPUT CONDENSER                 | 0.01    | μf      |
| GRID RESISTOR OF FOLLOWING STAGE | 470 000 | OHMS    |
| SIGNAL SOURCE IMPEDANCE (MAX.)   | 1 000   | OHMS    |
| DISTORTION                       | 5       | PERCENT |
| OUTPUT VOLTAGE                   | 8.5     | VOLTS   |
| VOLTAGE GAIN AT 400 CPS          | 35      |         |

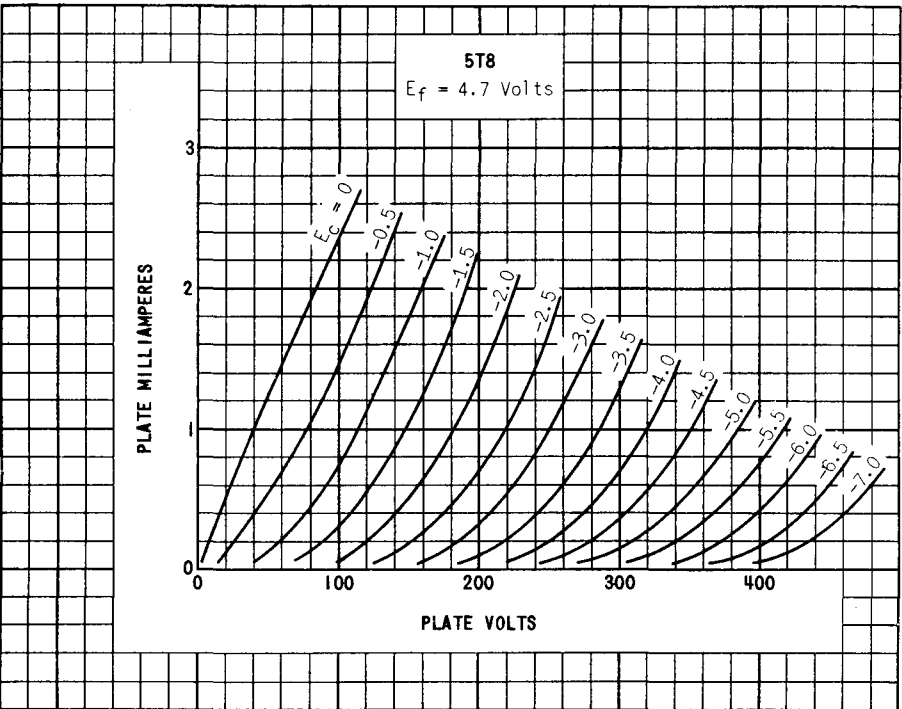
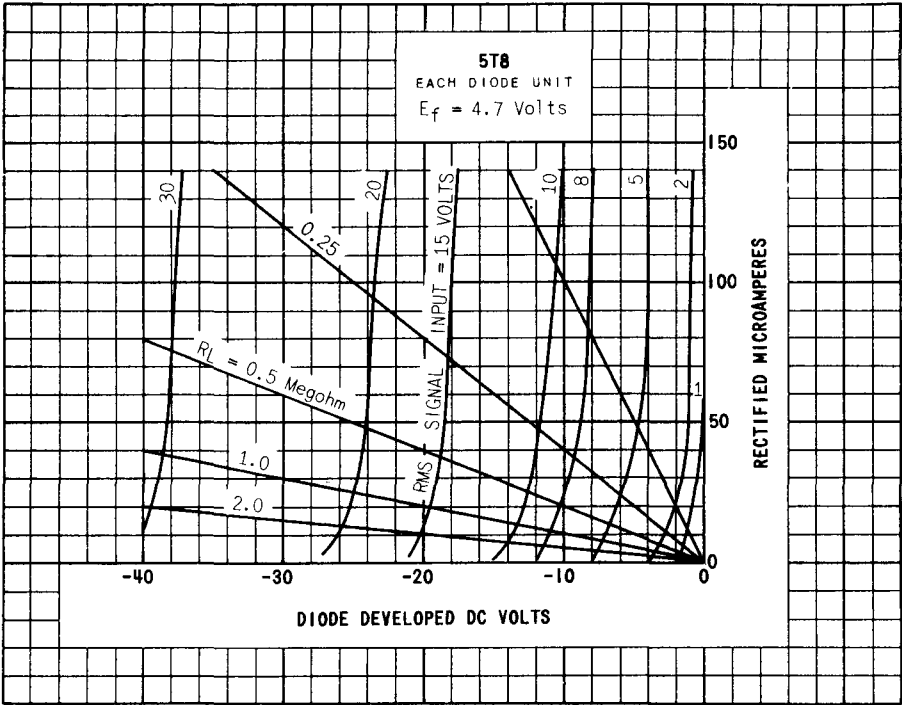
A WITH EXTERNAL SHIELD #315 CONNECTED TO PIN #7.

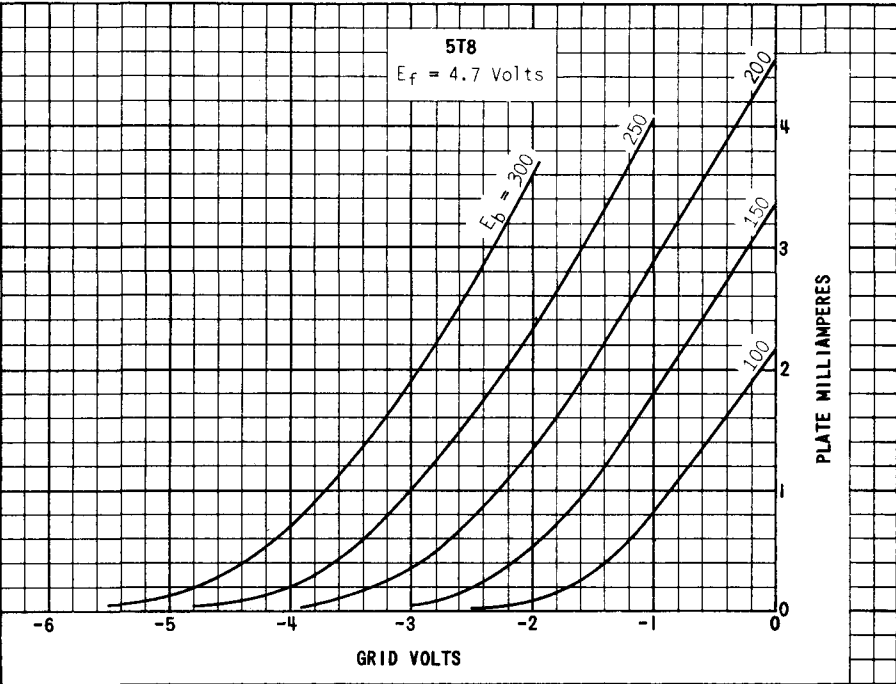
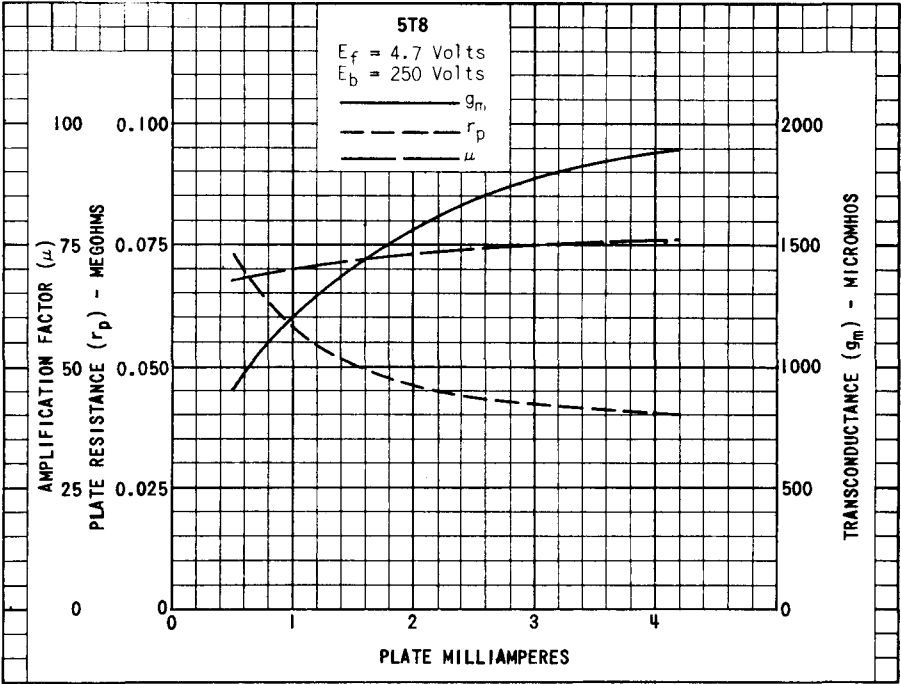
B WITH EXTERNAL SHIELD #315 CONNECTED TO PIN #3.

C WITH EXTERNAL SHIELD #315 CONNECTED TO PINS #4 AND #5.

\*\* 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.

→ INDICATES A CHANGE.





## TUNG-SOL

## RESISTANCE COUPLED AMPLIFIER

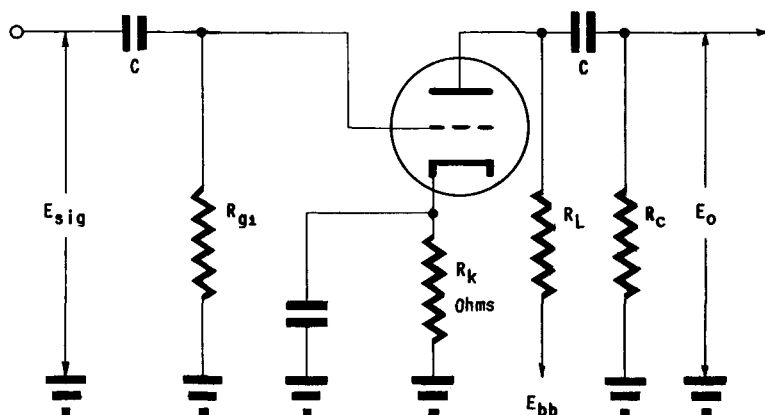
| R <sub>1</sub><br>MEG. | R <sub>g1</sub><br>MEG. | R <sub>c</sub><br>MEG. | E <sub>bb</sub> = 90 VOLTS |      |                | E <sub>bb</sub> = 180 VOLTS |      |                | E <sub>bb</sub> = 300 VOLTS |      |                |
|------------------------|-------------------------|------------------------|----------------------------|------|----------------|-----------------------------|------|----------------|-----------------------------|------|----------------|
|                        |                         |                        | 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                   | A                       | 0.10                   | 5700                       | 21   | 7              | 2400                        | 29   | 18             | 1800                        | 33   | 35             |
| 0.10                   | A                       | 0.24                   | 6100                       | 26   | 9              | 2700                        | 34   | 23             | 2000                        | 38   | 42             |
| 0.24                   | A                       | 0.24                   | 9100                       | 30   | 10             | 4300                        | 40   | 24             | 3000                        | 44   | 43             |
| 0.24                   | A                       | 0.51                   | 10000                      | 34   | 13             | 4700                        | 45   | 31             | 3300                        | 49   | 52             |
| 0.51                   | A                       | 0.51                   | 15000                      | 37   | 14             | 7500                        | 47   | 28             | 5600                        | 51   | 50             |
| 0.51                   | A                       | 1                      | 16000                      | 40   | 16             | 8200                        | 50   | 35             | 6200                        | 55   | 60             |
| 0.24                   | 10                      | 0.24                   | ---                        | 31   | 5.0            | ---                         | 44   | 19             | ---                         | 48   | 40             |
| 0.24                   | 10                      | 0.51                   | ---                        | 37   | 7.0            | ---                         | 49   | 25             | ---                         | 52   | 52             |
| 0.51                   | 10                      | 0.51                   | ---                        | 39   | 7.5            | ---                         | 51   | 22             | ---                         | 54   | 44             |
| 0.51                   | 10                      | 1                      | ---                        | 42   | 10             | ---                         | 54   | 28             | ---                         | 58   | 56             |

A. VALUE OF R<sub>g1</sub> IS NOT CRITICAL.

R<sub>k</sub> TAKEN TO NEAREST RMA VALUE FOR EACH CASE INSTEAD OF ABSOLUTE OPTIMUM VALUE.

E<sub>o</sub> IS RMS OUTPUT AT 5% TOTAL HARMONIC DISTORTION.

GAIN MEASURED AT E<sub>o</sub> = 2.0 VOLTS RMS OUTPUT.



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