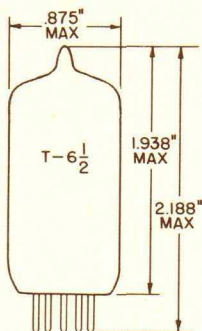


## TUNG-SOL

## TRIODE PENTODE

MINIATURE TYPE

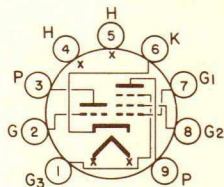


GLASS BULB  
MINIATURE BUTTON  
9 PIN BASE E9-1  
OUTLINE DRAWING  
JEDEC 6-2

COATED UNIPOTENTIAL CATHODE

FOR USE AS A COMBINED  
OSCILLATOR AND MIXER  
IN AM-FM RECEIVERS

ANY MOUNTING POSITION



BOTTOM VIEW  
BASING DIAGRAM  
JEDEC 9AK

THE 5X8 IS A MULTI-UNIT TUBE USING THE 9 PIN MINIATURE CONSTRUCTION. IT CONTAINS A MEDIUM-MU TRIODE AND A SHARP CUTOFF PENTODE IN ONE ENVELOPE. IT IS DESIGNED PRIMARILY FOR USE AS A COMBINED OSCILLATOR AND MIXER TUBE IN 600 MA. SERIES HEATER OPERATED TELEVISION RECEIVERS UTILIZING AN INTERMEDIATE FREQUENCY IN THE ORDER OF 40 MC/S. IT IS ESPECIALLY USEFUL IN AM/FM 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.

## DIRECT INTERELECTRODE CAPACITANCES

|                                                    | WITH <sup>A</sup><br>SHIELD | WITHOUT<br>SHIELD |    |
|----------------------------------------------------|-----------------------------|-------------------|----|
| PENTODE GRID 1 TO PENTODE PLATE:<br>PG1 TO PP MAX. | 0.06                        | 0.09              | pf |
| PENTODE INPUT: PG1 TO (H+K+PG2+PG3)                | 4.8                         | 4.6               | pf |
| PENTODE OUTPUT: PP TO (H+K+PG2+PG3)                | 1.6                         | 0.9               | pf |
| CATHODE TO HEATER: K TO H                          | 6.0 <sup>B</sup>            | 6.0               | pf |
| TRIODE GRID TO TRIODE PLATE: TG TO TP              | 1.5                         | 1.5               | pf |
| TRIODE INPUT: TG TO (H+K)                          | 2.4                         | 2.0               | pf |
| TRIODE OUTPUT: TP TO (H+K)                         | 1.0                         | 0.5               | pf |
| PENTODE GRID 1 TO TRIODE PLATE:<br>PG1 TO TP MAX.  | 0.04                        | 0.05              | pf |
| PENTODE PLATE TO TRIODE PLATE: PP TO TP MAX.       | 0.008                       | 0.05              | pf |

<sup>A</sup> EXTERNAL SHIELD 315 CONNECTED TO PIN 6.

<sup>B</sup> EXTERNAL SHIELD 315 CONNECTED TO PIN 9.

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

HEATER CHARACTERISTICS AND RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

|                                         |           |        |         |
|-----------------------------------------|-----------|--------|---------|
| AVERAGE CHARACTERISTICS                 | 4.7 VOLTS | 600    | MA.     |
| HEATER WARM-UP TIME <sup>C</sup>        |           | 11     | SECONDS |
| HEATER SUPPLY LIMITS:                   |           |        |         |
| CURRENT OPERATION                       |           | 600±40 | 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   |

MAXIMUM RATINGS

DESIGN MAXIMUM VALUES - SEE EIA STANDARD RS-239

|                                       |                  |       |
|---------------------------------------|------------------|-------|
| PENTODE PLATE VOLTAGE                 | 275              | VOLTS |
| TRIODE PLATE VOLTAGE                  | 275              | VOLTS |
| GRID 2 SUPPLY VOLTAGE                 | 275              | VOLTS |
| GRID 2 VOLTAGE                        | SEE RATING CHART |       |
| PENTODE PLATE DISSIPATION             | 2.3              | WATTS |
| GRID 2 DISSIPATION - SEE RATING CHART | 0.45             | WATT  |
| POSITIVE DC GRID 1 VOLTAGE            | 0                | VOLTS |
| POSITIVE DC TRIODE GRID VOLTAGE       | 0                | VOLTS |
| TRIODE PLATE DISSIPATION              | 1.7              | WATTS |

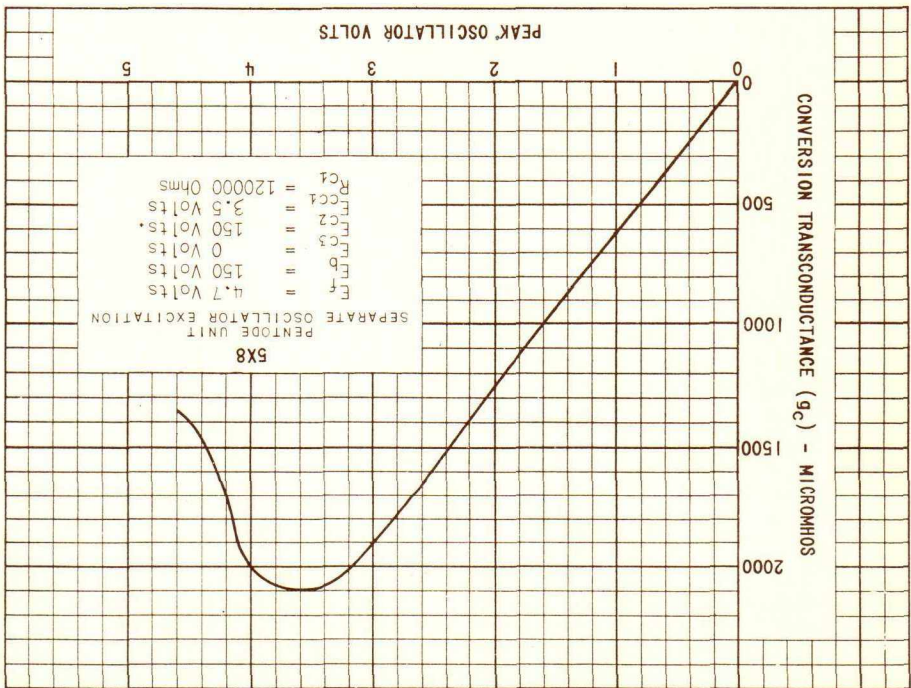
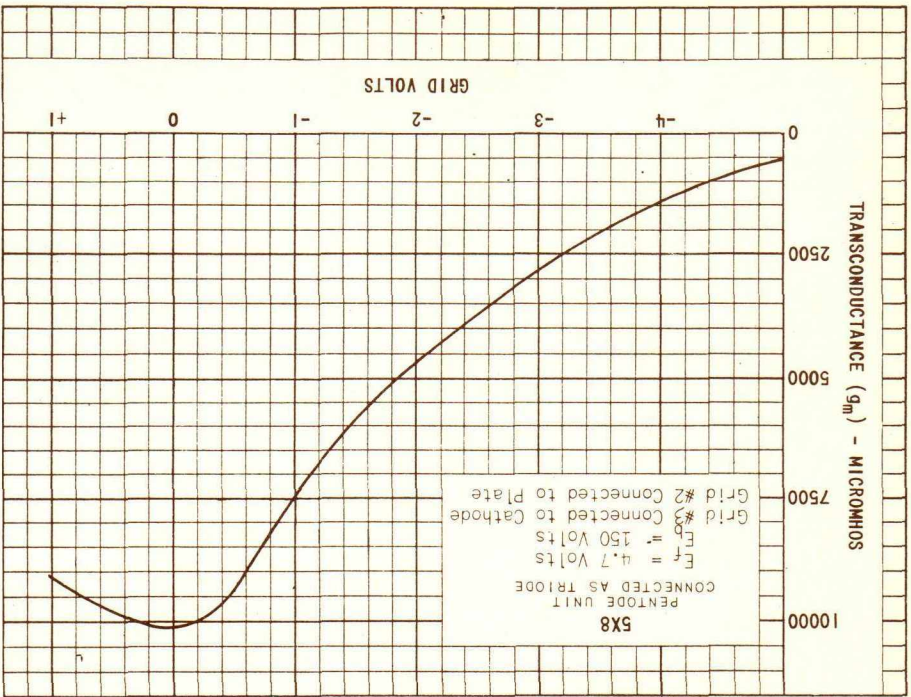
TYPICAL OPERATING CHARACTERISTICS

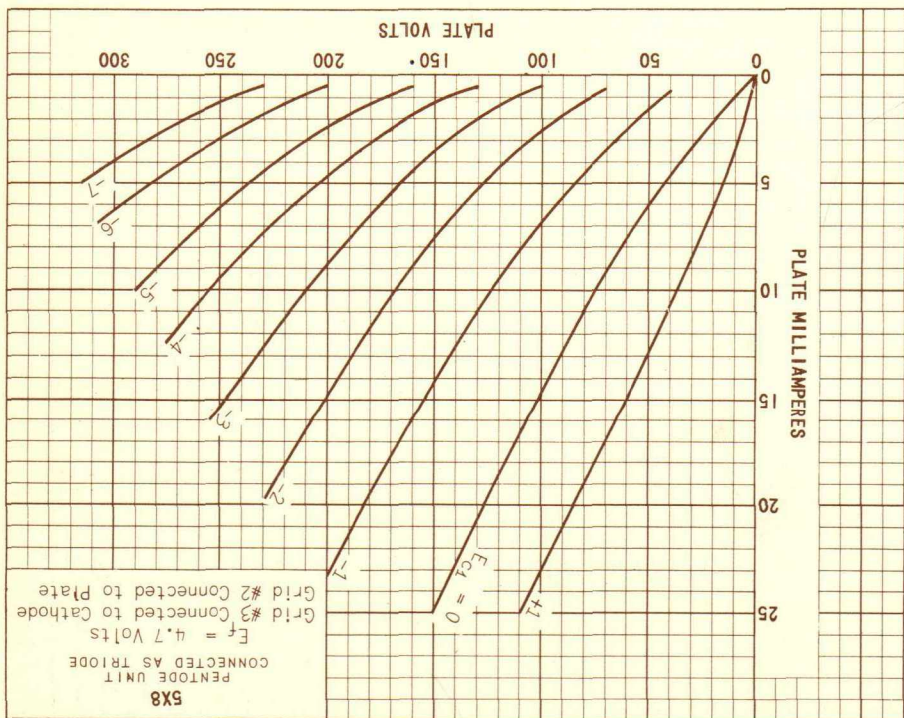
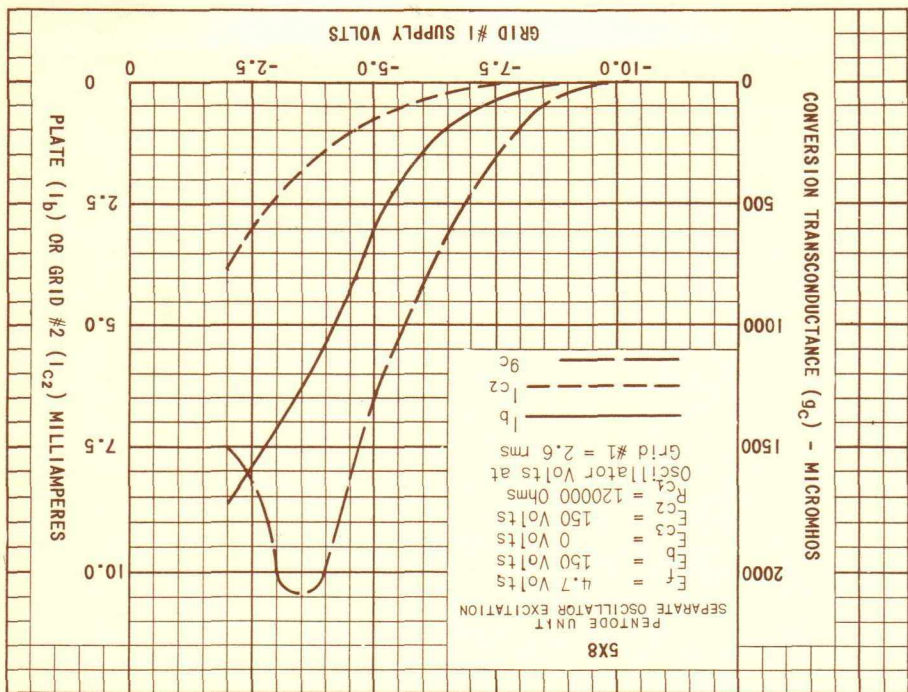
CLASS A1 AMPLIFIER

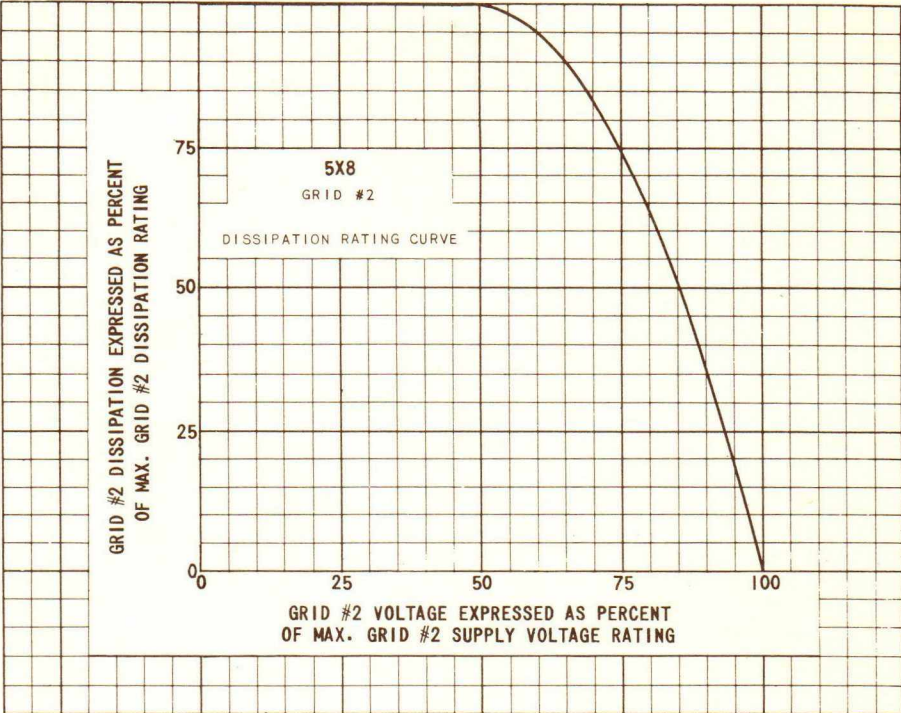
|                                        | TRIODE | PENTODE |       |
|----------------------------------------|--------|---------|-------|
| PLATE VOLTAGE                          | 125    | 125     | VOLTS |
| GRID 3 VOLTAGE                         |        |         |       |
| GRID 2 VOLTAGE                         |        | 125     | VOLTS |
| GRID 1 VOLTAGE                         | -1.0   | -1.0    | VOLTS |
| GRID 2 CURRENT                         |        | 2.2     | MA.   |
| PLATE CURRENT                          | 12.0   | 9.0     | MA.   |
| TRANSCONDUCTANCE                       | 6500   | 5500    | μMHOS |
| AMPLIFICATION FACTOR                   | 40     | -----   |       |
| PLATE RESISTANCE (APPROX.)             | 6000   | 300,000 | OHMS  |
| GRID 1 VOLTAGE (APPROX.) FOR Ib=20 μA. | -7     | -6.5    | VOLTS |
| ZERO BIAS TRANSCONDUCTANCE             |        |         |       |
| (WITH Eb=100 V., Ec2=70 V)             | -----  | 5700    | μMHOS |

C

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.







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