



## ELECTRONIC TUBE REFERENCE

89

Power - Pentode (NOT beam) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

PENTODE

Three-grid audio power-amplifier tube usable in pentode or triode connection for Class A and Class B service.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | 6F                | BASE PINS            | 6             |
| NOMINAL HEATER      | 6.3 V / 400 mA    | PARALLEL HEATER      | – / –         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

## SECTION RATINGS

|                                                                                                  |                |
|--------------------------------------------------------------------------------------------------|----------------|
| SECTION 1 Pentode                                                                                |                |
| PLATE RESISTANCE                                                                                 | 70000 $\Omega$ |
| TRANSCONDUCTANCE                                                                                 | 0.0018 S       |
| MAXIMUM PLATE VOLTAGE                                                                            | 260 V          |
| MAXIMUM SCREEN VOLTAGE                                                                           | 250 V          |
| <i>Published promoted fields populated semantically; identical repeated sections compressed.</i> |                |

Three-grid power amplifier tube usable in triode-connected Class A or Class B power-amplifier service.

## SOURCE OPERATING CONDITIONS

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# 1937 Raytheon Radio Receiving Tubes

Published test conditions and operating points. Values on this page are preserved as reported by this source.

## 1937 RAYTHEON RADIO RECEIVING TUBES

## Section 1 · Pentode

| OTHER                |                 |                          |
|----------------------|-----------------|--------------------------|
| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE         |
| Plate voltage        | 160 V           | ClassA;TriodeConnection  |
| Control-grid voltage | -20 V           | ClassA;TriodeConnection  |
| Plate current        | 17 mA           | ClassA;TriodeConnection  |
| Load resistance      | 7000 Ω          | ClassA;TriodeConnection  |
| Power output         | 0.3 W           | ClassA;TriodeConnection  |
| Plate voltage        | 250 V           | ClassA;TriodeConnection  |
| Control-grid voltage | -31 V           | ClassA;TriodeConnection  |
| Plate current        | 22 mA           | ClassA;TriodeConnection  |
| Load resistance      | 5500 Ω          | ClassA;TriodeConnection  |
| Power output         | 0.9 W           | ClassA;TriodeConnection  |
| Plate voltage        | 100 V           | ClassA;PentodeConnection |
| Screen voltage       | 100 V           | ClassA;PentodeConnection |
| Control-grid voltage | -10 V           | ClassA;PentodeConnection |
| Plate current        | 9.5 mA          | ClassA;PentodeConnection |
| Screen current       | 1.6 mA          | ClassA;PentodeConnection |
| Load resistance      | 10700 Ω         | ClassA;PentodeConnection |
| Power output         | 0.33 W          | ClassA;PentodeConnection |
| Plate voltage        | 250 V           | ClassA;PentodeConnection |
| Screen voltage       | 250 V           | ClassA;PentodeConnection |
| Control-grid voltage | -25 V           | ClassA;PentodeConnection |
| Plate current        | 32 mA           | ClassA;PentodeConnection |
| Screen current       | 5.5 mA          | ClassA;PentodeConnection |
| Load resistance      | 6750 Ω          | ClassA;PentodeConnection |

| PARAMETER                        | PUBLISHED VALUE | CONDITION / NOTE                 |
|----------------------------------|-----------------|----------------------------------|
| Power output                     | 3.4 W           | ClassA;PentodeConnection         |
| Peak plate current maximum       | 90 mA           | ClassB;TwoTubes;TriodeConnection |
| Average grid dissipation maximum | 0.35 W          | ClassB;TwoTubes;TriodeConnection |

| CHARACTERISTIC       |                    |                          |
|----------------------|--------------------|--------------------------|
| PARAMETER            | PUBLISHED VALUE    | CONDITION / NOTE         |
| Plate resistance     | 3300 $\Omega$      | ClassA;TriodeConnection  |
| Transconductance     | 1425 $\mu\text{S}$ | ClassA;TriodeConnection  |
| Amplification factor | 4.7                | ClassA;TriodeConnection  |
| Plate resistance     | 2600 $\Omega$      | ClassA;TriodeConnection  |
| Transconductance     | 1800 $\mu\text{S}$ | ClassA;TriodeConnection  |
| Amplification factor | 4.7                | ClassA;TriodeConnection  |
| Plate resistance     | 104000 $\Omega$    | ClassA;PentodeConnection |
| Transconductance     | 1200 $\mu\text{S}$ | ClassA;PentodeConnection |
| Amplification factor | 125                | ClassA;PentodeConnection |
| Plate resistance     | 70000 $\Omega$     | ClassA;PentodeConnection |
| Transconductance     | 1800 $\mu\text{S}$ | ClassA;PentodeConnection |
| Amplification factor | 125                | ClassA;PentodeConnection |



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

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# 1940 RCA

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1940 RCA

Section 1 · Pentode

| OTHER                       |                 |                                                                               |
|-----------------------------|-----------------|-------------------------------------------------------------------------------|
| PARAMETER                   | PUBLISHED VALUE | CONDITION / NOTE                                                              |
| ; 3 AMPLIFIER               | 3 A             | ; 3 AMPLIFIER                                                                 |
| ers with                    | 6.3 V           | ers with 6.3-volt heater supply. The                                          |
| A Power-Amplifier Triode, ( | 3 A             | A Power-Amplifier Triode, (2) a Class A Power-Output Pentode, and (3) a Class |

| PARAMETER                                        | PUBLISHED VALUE | CONDITION / NOTE                                                   |
|--------------------------------------------------|-----------------|--------------------------------------------------------------------|
| HEATER VOLTAGE (A. C.or D.C).ovvviinennnnen      | <b>6.3 V</b>    | HEATER VOLTAGE (A. C.or D.C).ovvviinennnnen 6.3 Volts              |
| HEATER CURRENT<br>...cvtivervncnrnanssaannns     | <b>400 mA</b>   | HEATER CURRENT<br>...cvtivervncnrnanssaannns 0.4 Ampere            |
| PLATE VOLTAGE .....ccoveueu-s                    | <b>250 V</b>    | PLATE VOLTAGE .....ccoveueu-s. 160 180 250 max. Volts              |
| GRD VOLTAGE (Grid No                             | <b>-31 V</b>    | GRD VOLTAGE (Grid No. 1)..... -20 -22.5 -31 Volts                  |
| PLATE CURRENT ...vvvenrnnennna                   | <b>32 mA</b>    | PLATE CURRENT ...vvvenrnnennna 17 20 32 Milliamperes               |
| SELF-BrAs RESISTOR                               | <b>970 ohm</b>  | SELF-BrAs RESISTOR .....000vunn 1180 112% 970 Ohms                 |
| UnNpisTORTED PowerR OuTPUT                       | <b>0.9 W</b>    | UnNpisTORTED PowerR OuTPUT..... 0.3 0.4 0.9 Watt                   |
| PLATE VOLTAGE                                    | <b>250 V</b>    | PLATE VOLTAGE ..... 100 135 180 250 max. Volts                     |
| ScREEN VOLTAGE (Grid No                          | <b>250 V</b>    | ScREEN VOLTAGE (Grid No. 2) 100 135 180 250 max. Volts             |
| GrID VOLTAGE (Grid No                            | <b>25 V</b>     | GrID VOLTAGE (Grid No. 1).. -10 -13.5 -18 =25 Volts                |
| PLATE CURRENT                                    | <b>32 mA</b>    | PLATE CURRENT ..... 9.5 14 20 32 Milliamperes                      |
| SCREEN CURRENT                                   | <b>5.5 mA</b>   | SCREEN CURRENT ..... 1.6 2.2 3.0 5.5 Milliamperes                  |
| AMPLIFICATION PACTOR                             | <b>125 A</b>    | AMPLIFICATION PACTOR ..... 125 125 125 125                         |
| Power OutPuT*                                    | <b>3.4 W</b>    | Power OutPuT* ..... 0.33 0.75 1.5 3.4 Watts                        |
| PLATE VOLTAGE<br>...vviinrnninnncnenecennnanrnnn | <b>250 V</b>    | PLATE VOLTAGE<br>...vviinrnninnncnenecennnanrnnn 250 max. Volts    |
| PEAR PLATE<br>CURRENT.....ovvvevenvnnnaneanns    | <b>90 mA</b>    | PEAR PLATE<br>CURRENT.....ovvvevenvnnnaneanns 90 max. Milliamperes |
| AVERAGE GRID DissiPATION (Grids No               | <b>0.35 W</b>   | AVERAGE GRID DissiPATION (Grids No. 1 and No. 2) 0.35 max. Watt    |
| Plate Voltage<br>.....covvvivuiinnrnnennnnensn   | <b>180 V</b>    | Plate Voltage<br>.....covvvivuiinnrnnennnnensn 180 Volts           |
| Grid Voltage<br>.....covvvieunecneiarnannnnns    | <b>0 V</b>      | Grid Voltage<br>.....covvvieunecneiarnannnnns 0 Volts              |
|                                                  |                 |                                                                    |

| PARAMETER                                           | PUBLISHED VALUE | CONDITION / NOTE                                                               |
|-----------------------------------------------------|-----------------|--------------------------------------------------------------------------------|
| Zero-Signal Plate Current.<br>.....o0vivercvcaacens | <b>6 mA</b>     | Zero-Signal Plate Current.<br>.....o0vivercvcaacens 6 Milliamperes             |
| Power Output<br>{Approximate}).....cecoeeunaenes    | <b>3.5 W</b>    | Power Output<br>{Approximate}).....cecoeeunaenes 3.5<br>Watts                  |
| Eg=                                                 | <b>6.3 V</b>    | Eg= 6.3 VOLTS                                                                  |
| PLATE VOLTS=                                        | <b>-20 V</b>    | PLATE VOLTS= 160 GRID VOLTS =-20                                               |
| suppressor, while the other two<br>grids (No        | <b>0 V</b>      | suppressor, while the other two grids (No.<br>1 PLATE VOLTS =160 GRD VOLTS=0 M |
| be employed, provided the heater<br>voltage does ;  | <b>0 V</b>      | be employed, provided the heater voltage<br>does ; .8 7 &54 8 w10 %            |
| the grid (No                                        | <b>3 V</b>      | the grid (No. 3) adjacent to the plate is<br>tied DRIVER SIGNAL VOLTS (RMS)    |

| CHARACTERISTIC                                        |                  |                                                                  |
|-------------------------------------------------------|------------------|------------------------------------------------------------------|
| PARAMETER                                             | PUBLISHED VALUE  | CONDITION / NOTE                                                 |
| AMPLIFICATION FACTOR                                  | <b>4.7 A</b>     | AMPLIFICATION FACTOR ..... 4.7 4.7 4.7                           |
| PLATE RESISTANCE<br>.....c0cvenn                      | <b>2600 ohm</b>  | PLATE RESISTANCE .....c0cvenn. 3300 3000<br>2600 Ohms            |
| TRANSCONDUCTANCE .<br>....vevanenn,                   | <b>1800 μS</b>   | TRANSCONDUCTANCE . ....vevanenn, 1425<br>1550 1800 Micromhos     |
| LoAp RESISTANCE*                                      | <b>5500 ohm</b>  | LoAp RESISTANCE* ..... 7000 6500 5500<br>Ohms                    |
| PLATE RESISTANCE                                      | <b>70000 ohm</b> | PLATE RESISTANCE ..... 104000 92500<br>80000 '70000 Ohms         |
| TRANSCONDUCTANCE                                      | <b>1800 μS</b>   | TRANSCONDUCTANCE ..... 1200 1350 1550<br>1800 Micromhos          |
| LoAD RESISTANCE                                       | <b>6750 ohm</b>  | LoAD RESISTANCE ..... 10700 9200 8000<br>6750 Ohms               |
| Effective Load Resistance<br>(Plate-to-plate)..... «o | <b>9400 ohm</b>  | Effective Load Resistance (Plate-to-plate)..... «o.<br>9400 Ohms |
| ling is used, a resistance<br>of                      | <b>1 ohm</b>     | ling is used, a resistance of 1.0 megohm may                     |



# 1950 Sylvania

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1950 SYLVANIA  
Section 1 · Pentode

| CHARACTERISTIC       |                 |                  |
|----------------------|-----------------|------------------|
| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE |
| Plate Resistance     | 2600 ohm        | —                |
| Transconductance     | 1800 μS         | —                |
| Amplification Factor | 4.7             | —                |

| OTHER                 |                 |                                           |
|-----------------------|-----------------|-------------------------------------------|
| PARAMETER             | PUBLISHED VALUE | CONDITION / NOTE                          |
| Maximum Plate Voltage | 250 V           | —                                         |
| Power Output          | 3.5 W           | ClassB,PushPull,TwoTubes,TriodeConnection |



SOURCE DATA APPENDIX

# 195X General Electric Essential Characteristics

Published test conditions and operating points. Values on this page are preserved as reported by this source.

195X GENERAL ELECTRIC ESSENTIAL CHARACTERISTICS  
Section 1 · Pentode

| OTHER                  |                 |                           |
|------------------------|-----------------|---------------------------|
| PARAMETER              | PUBLISHED VALUE | CONDITION / NOTE          |
| Maximum plate voltage  | 250 V           | Published handbook rating |
| Maximum screen voltage | 250 V           | Published handbook rating |
| Plate voltage          | 250 V           | ClassA                    |
| Screen voltage         | 250 V           | ClassA                    |
| Control-grid bias      | 25 V            | ClassA                    |
| Plate current          | 32 mA           | ClassA                    |

| PARAMETER                      | PUBLISHED VALUE | CONDITION / NOTE        |
|--------------------------------|-----------------|-------------------------|
| Load resistance                | 6750 ohm        | ClassA                  |
| Power output                   | 3.4 W           | ClassA                  |
| Triode-connected plate voltage | 250 V           | TriodeConnection ClassA |
| Triode-connected plate current | 31 mA           | TriodeConnection ClassA |
| Triode-connected power output  | 3.4 W           | TriodeConnection ClassA |

| CHARACTERISTIC                    |                 |                                   |
|-----------------------------------|-----------------|-----------------------------------|
| PARAMETER                         | PUBLISHED VALUE | CONDITION / NOTE                  |
| Plate resistance                  | 70000 ohm       | Published handbook characteristic |
| Transconductance                  | 1800 $\mu$ S    | Published handbook characteristic |
| Heater/filament voltage           | 6.3 V           | Published heater/filament rating  |
| Heater/filament current           | 400 mA          | Published heater/filament rating  |
| Triode-connected transconductance | 5500 $\mu$ S    | TriodeConnection                  |
| Triode-connected plate resistance | 70000 ohm       | TriodeConnection                  |



SOURCE DATA APPENDIX

## SOURCE OPERATING CONDITIONS

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# 1961 Tung Sol

Published test conditions and operating points. Values on this page are preserved as reported by this source.

## 1961 TUNG SOL

### Section 1 · Pentode

| OTHER        |                 |                           |
|--------------|-----------------|---------------------------|
| PARAMETER    | PUBLISHED VALUE | CONDITION / NOTE          |
| Power Output | 5.4 W           | ClassA1;PentodeConnection |
| Power Output | 900 mW          | ClassA1;TriodeConnection  |