



## ELECTRONIC TUBE REFERENCE

## 2A7

Voltage Radio Detector Converter electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

HEPTODE

Pentagrid oscillator-converter for early superheterodyne receivers. It combines local oscillation and mixing in one multi-grid tube, providing useful conversion gain in early AC-powered radio equipment.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | 7CI               | BASE PINS            | 7             |
| NOMINAL HEATER      | 2.5 V / 800 mA    | PARALLEL HEATER      | – / –         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Similar       |

## SECTION RATINGS

|                                                                                                                                 |                 |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------|
| SECTION 1 Heptode                                                                                                               |                 |
| PLATE RESISTANCE                                                                                                                | 360000 $\Omega$ |
| TRANSCONDUCTANCE                                                                                                                | 0.00055 S       |
| MAXIMUM PLATE VOLTAGE                                                                                                           | 300 V           |
| MAXIMUM SCREEN VOLTAGE                                                                                                          | 100 V           |
| MAXIMUM PLATE DISSIPATION                                                                                                       | 1 W             |
| MAXIMUM SCREEN DISSIPATION                                                                                                      | 0.3 W           |
| <i>Pentagrid-converter section; conversion transconductance is preserved as parameters rather than promoted as ordinary gm.</i> |                 |

Pentagrid converter for frequency-conversion 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 · Heptode

| OTHER                    |                 |                            |
|--------------------------|-----------------|----------------------------|
| PARAMETER                | PUBLISHED VALUE | CONDITION / NOTE           |
| Maximum plate voltage    | 250 V           | Published datasheet rating |
| Maximum screen voltage   | 100 V           | Published datasheet rating |
| Plate voltage            | 250 V           | ClassA                     |
| Screen voltage           | 100 V           | ClassA                     |
| Control-grid bias        | 3 V             | ClassA                     |
| Plate current            | 3.5 mA          | ClassA                     |
| Screen current           | 2.7 mA          | ClassA                     |
| Anode-grid voltage       | 100 V           | Converter Oscillator       |
| Oscillator grid resistor | 50000 ohm       | Converter Oscillator       |
| Oscillator grid current  | 0.4 mA          | Converter Oscillator       |

| CHARACTERISTIC              |                 |                                    |
|-----------------------------|-----------------|------------------------------------|
| PARAMETER                   | PUBLISHED VALUE | CONDITION / NOTE                   |
| Plate resistance            | 300000 ohm      | Published datasheet characteristic |
| Transconductance            | 550 $\mu$ S     | Published datasheet characteristic |
| Heater/filament voltage     | 2.5 V           | Published heater/filament rating   |
| Heater/filament current     | 800 mA          | Published heater/filament rating   |
| Conversion transconductance | 550 $\mu$ S     | Converter                          |

| CAPACITANCE               |                 |                       |
|---------------------------|-----------------|-----------------------|
| PARAMETER                 | PUBLISHED VALUE | CONDITION / NOTE      |
| Input capacitance         | 8.5 pF          | Published capacitance |
| Output capacitance        | 8 pF            | Published capacitance |
| Grid-to-plate capacitance | 0.3 pF          | Published capacitance |



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## 1940 RCA

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1940 RCA

## Section 1 · Heptode

| OTHER                                            |                 |                                                                                       |
|--------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|
| PARAMETER                                        | PUBLISHED VALUE | CONDITION / NOTE                                                                      |
| iYe MA!."                                        | 1 mA            | iYe MA!."1                                                                            |
| a-c receivers having a                           | 2.5 V           | a-c receivers having a 2.5-volt heater supply.<br>For general discussion of pentagrid |
| HEATER VOLTAGE (A. C.or<br>D.C).u.vvvviinn       | 2.5 V           | HEATER VOLTAGE (A. C.or D.C).u.vvvviinn...<br>2.5 Volts                               |
| HEATER CURRENT<br>...iiiiinnnnnnnennnerennnnnnns | 800 mA          | HEATER CURRENT<br>...iiiiinnnnnnnennnerennnnnnns 0.8 Ampere                           |
| OUTPUT €,C                                       | 0 pF            | OUTPUT €,C2:€5:Cg:C7 = 0.1 PF                                                         |
| R} =                                             | 0.1 ohm         | R} = 250000 OHMS, 0.1 WATT                                                            |
| R2= 10000 ~5C000 OHMS, 0.)<br>WATT               | 0 ohm           | R2= 10000 ~5C000 OHMS, 0.) WATT                                                       |
| R4= 150~300 OHMS, 0.] WATT                       | 0 ohm           | R4= 150~300 OHMS, 0.] WATT                                                            |
| TRACKING CONO.(!                                 | 7300 pF         | . TRACKING CONO.(! 17 D f 400 BPf 1070 Upf<br>2900 LBF   7300 UUF                     |



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## 1950 Sylvania

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1950 SYLVANIA

| CHARACTERISTIC                            |                 |                                        |
|-------------------------------------------|-----------------|----------------------------------------|
| PARAMETER                                 | PUBLISHED VALUE | CONDITION / NOTE                       |
| Tension de chauffage ... ..<br>2,5 volts  | 2.5 V           | Tension de chauffage ... .. 2,5 volts  |
| Courant de chauffage ... ..<br>0,8 ampère | 800 mA          | Courant de chauffage ... .. 0,8 ampère |



SOURCE DATA APPENDIX

## SOURCE OPERATING CONDITIONS

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# 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 · Heptode

| OTHER                              |                 |                  |
|------------------------------------|-----------------|------------------|
| PARAMETER                          | PUBLISHED VALUE | CONDITION / NOTE |
| Oscillator-grid current            | 0.4 mA          | Converter        |
| Oscillator-grid resistor           | 50000 $\Omega$  | Converter        |
| Plate voltage                      | 250 V           | Converter        |
| Screen voltage                     | 100 V           | Converter        |
| Control-grid voltage               | -3 V            | Converter        |
| Plate current                      | 3.5 mA          | Converter        |
| Screen current                     | 2.7 mA          | Converter        |
| Oscillator-plate voltage           | 250 V           | Converter        |
| Oscillator-plate series resistance | 20000 $\Omega$  | Converter        |
| Oscillator-plate current           | 4 mA            | Converter        |

| CHARACTERISTIC              |                   |                  |
|-----------------------------|-------------------|------------------|
| PARAMETER                   | PUBLISHED VALUE   | CONDITION / NOTE |
| Plate resistance            | 360000 $\Omega$   | Converter        |
| Conversion transconductance | 550 $\mu\text{S}$ | Converter        |

## 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 · Heptode

| OTHER                               |                 |                  |
|-------------------------------------|-----------------|------------------|
| PARAMETER                           | PUBLISHED VALUE | CONDITION / NOTE |
| OscillatorAnodeSupplyVoltageMaximum | 300 V           | —                |
| OscillatorAnodeVoltageMaximum       | 200 V           | —                |
| OscillatorAnodeDissipationMaximum   | 0.75 W          | —                |

| CAPACITANCE                  |                 |                  |
|------------------------------|-----------------|------------------|
| PARAMETER                    | PUBLISHED VALUE | CONDITION / NOTE |
| RF Input Capacitance         | 8.5 pF          | —                |
| Oscillator Input Capacitance | 7 pF            | —                |
| OscillatorOutputCapacitance  | 5.5 pF          | —                |
| MixerOutputCapacitance       | 9 pF            | —                |

| CHARACTERISTIC              |                 |                  |
|-----------------------------|-----------------|------------------|
| PARAMETER                   | PUBLISHED VALUE | CONDITION / NOTE |
| Conversion Transconductance | 360 $\mu$ S     | ConverterService |