



## ELECTRONIC TUBE REFERENCE

## ECL84

Voltage - Triode Pentode electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

PENTODE-TRIODE

High-mu triode plus sharp-cutoff pentode for television sync/noise circuits and video-output service; pentode dissipation is about 4 watts.

## GENERAL CHARACTERISTICS

|                     |                   |                      |               |
|---------------------|-------------------|----------------------|---------------|
| BASE DESIGNATION    | 9HX               | BASE PINS            | 9             |
| NOMINAL HEATER      | 6.3 V / 720 mA    | PARALLEL HEATER      | – / –         |
| HEATING             | Indirect          | SERIES OPERATION     | Not specified |
| CATHODE ARRANGEMENT | Separate cathodes | SECTION CONSTRUCTION | Dissimilar    |

## 9HX - TERMINAL PINOUT

| TERMINAL | SECTION | ELEMENT              | STATUS    |
|----------|---------|----------------------|-----------|
| PIN1     | B       | G1 – Control Grid    | CONNECTED |
| PIN2     | B       | P – Plate (Anode)    | CONNECTED |
| PIN3     | B       | K – Cathode          | CONNECTED |
| PIN4     | –       | H – Heater           | CONNECTED |
| PIN5     | –       | H – Heater           | CONNECTED |
| PIN6     | A       | P – Plate (Anode)    | CONNECTED |
| PIN7     | A       | G3 – Suppressor Grid | CONNECTED |
| PIN7     | A       | K – Cathode          | CONNECTED |
| PIN7     | –       | IS – Internal Screen | CONNECTED |
| PIN8     | A       | G1 – Control Grid    | CONNECTED |
| PIN9     | A       | G2 – Screen Grid     | CONNECTED |

## SECTION RATINGS

| SECTION1 Triode                                                        |                |
|------------------------------------------------------------------------|----------------|
| PLATE RESISTANCE                                                       | 20000 $\Omega$ |
| TRANSCONDUCTANCE                                                       | 0.0045 S       |
| AMPLIFICATION FACTOR                                                   | 65             |
| MAXIMUM PLATE VOLTAGE                                                  | 250 V          |
| MAXIMUM PLATE DISSIPATION                                              | 1 W            |
| MAXIMUM CATHODE CURRENT                                                | 15 mA          |
| <i>Published maximum ratings/characteristics promoted from source.</i> |                |

| SECTION2 Pentode                                                       |                |
|------------------------------------------------------------------------|----------------|
| PLATE RESISTANCE                                                       | 18000 $\Omega$ |
| TRANSCONDUCTANCE                                                       | 0.0104 S       |
| AMPLIFICATION FACTOR                                                   | 36             |
| MAXIMUM PLATE VOLTAGE                                                  | 550 V          |
| MAXIMUM SCREEN VOLTAGE                                                 | 250 V          |
| MAXIMUM PLATE DISSIPATION                                              | 4 W            |
| MAXIMUM SCREEN DISSIPATION                                             | 1.7 W          |
| MAXIMUM CATHODE CURRENT                                                | 40 mA          |
| <i>Published maximum ratings/characteristics promoted from source.</i> |                |

High-mu triode plus sharp-cutoff pentode used in television sync/noise circuits and video-output service.

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 195X Tesla

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

## 195X TESLA

## Section 1 · Triode

| OTHER                     |                 |                  |
|---------------------------|-----------------|------------------|
| PARAMETER                 | PUBLISHED VALUE | CONDITION / NOTE |
| HeaterVoltageNominal      | 6.3 V           | Nominal          |
| HeaterCurrentNominal      | 720 mA          | Nominal          |
| Maximum Plate Voltage     | 250 V           | —                |
| Maximum Plate Dissipation | 1 W             | —                |

| CHARACTERISTIC       |                 |                  |
|----------------------|-----------------|------------------|
| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE |
| Transconductance     | 4500 $\mu$ S    | Typical          |
| Amplification Factor | 65              | Typical          |

## 195X TESLA

## Section 2 · Pentode

| OTHER                     |                 |                  |
|---------------------------|-----------------|------------------|
| PARAMETER                 | PUBLISHED VALUE | CONDITION / NOTE |
| HeaterVoltageNominal      | 6.3 V           | Nominal          |
| HeaterCurrentNominal      | 720 mA          | Nominal          |
| Maximum Plate Voltage     | 550 V           | —                |
| Maximum Screen Voltage    | 250 V           | —                |
| Maximum Plate Dissipation | 4 W             | —                |

| CHARACTERISTIC       |                 |                  |
|----------------------|-----------------|------------------|
| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE |
| Transconductance     | 10400 $\mu$ S   | Typical          |
| Amplification Factor | 36              | Typical          |

## SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

# 1963 Amperex Condensed

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

## 1963 AMPEREX CONDENSED

## Section 1 · Triode

| OTHER                    |                 |                        |
|--------------------------|-----------------|------------------------|
| PARAMETER                | PUBLISHED VALUE | CONDITION / NOTE       |
| Triode plate voltage     | 200 V           | TriodeSection KeyedAGC |
| Triode control-grid bias | -1.7 V          | TriodeSection KeyedAGC |
| Triode plate current     | 3 mA            | TriodeSection KeyedAGC |

| CHARACTERISTIC              |                 |                        |
|-----------------------------|-----------------|------------------------|
| PARAMETER                   | PUBLISHED VALUE | CONDITION / NOTE       |
| Triode amplification factor | 65              | TriodeSection KeyedAGC |

## 1963 AMPEREX CONDENSED

## Section 2 · Pentode

| CHARACTERISTIC           |                 |                            |
|--------------------------|-----------------|----------------------------|
| PARAMETER                | PUBLISHED VALUE | CONDITION / NOTE           |
| Heater voltage           | 6.3 V           | Published heater rating    |
| Heater current           | 720 mA          | Published heater rating    |
| Pentode plate resistance | 3000 ohm        | PentodeSection VideoOutput |
| Pentode transconductance | 9700 $\mu$ S    | PentodeSection VideoOutput |

| OTHER                  |                 |                            |
|------------------------|-----------------|----------------------------|
| PARAMETER              | PUBLISHED VALUE | CONDITION / NOTE           |
| Pentode screen voltage | 220 V           | PentodeSection VideoOutput |
| Pentode plate current  | 18 mA           | PentodeSection VideoOutput |
| Pentode screen current | 3.1 mA          | PentodeSection VideoOutput |

# 1963 Philips Electron Tubes Handbook V1a

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

1963 PHILIPS ELECTRON TUBES HANDBOOK V1A

## Section 1 · Triode

| CHARACTERISTIC              |                 |                         |
|-----------------------------|-----------------|-------------------------|
| PARAMETER                   | PUBLISHED VALUE | CONDITION / NOTE        |
| Heater voltage              | 6.3 V           | Published heater rating |
| Heater current              | 720 mA          | Published heater rating |
| Triode transconductance     | 4000 µS         | TriodeSection           |
| Triode amplification factor | 65              | TriodeSection           |
| Pentode transconductance    | 10400 µS        | PentodeSection          |

| OTHER                  |                 |                  |
|------------------------|-----------------|------------------|
| PARAMETER              | PUBLISHED VALUE | CONDITION / NOTE |
| Triode plate voltage   | 200 V           | TriodeSection    |
| Triode grid bias       | -1.7 V          | TriodeSection    |
| Triode plate current   | 3 mA            | TriodeSection    |
| Pentode plate voltage  | 200 V           | PentodeSection   |
| Pentode screen voltage | 200 V           | PentodeSection   |
| Pentode plate current  | 18 mA           | PentodeSection   |



TUBE TINKER  
ELECTRON TUBE DATABASE

SOURCE DATA APPENDIX

# 1972 Philips Receiving Tubes

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

1972 PHILIPS RECEIVING TUBES

## Section 1 · Triode

| OTHER                     |                 |                  |
|---------------------------|-----------------|------------------|
| PARAMETER                 | PUBLISHED VALUE | CONDITION / NOTE |
| HeaterVoltageNominal      | 6.3 V           | Nominal          |
| HeaterCurrentNominal      | 720 mA          | Nominal          |
| Maximum Plate Voltage     | 250 V           | —                |
| Maximum Plate Dissipation | 1 W             | —                |
| Maximum Cathode Current   | 15 mA           | —                |

| CHARACTERISTIC       |                 |                  |
|----------------------|-----------------|------------------|
| PARAMETER            | PUBLISHED VALUE | CONDITION / NOTE |
| Transconductance     | 4500 $\mu$ S    | Typical          |
| Amplification Factor | 65              | Typical          |
| Plate Resistance     | 20000 ohm       | Typical          |

1972 PHILIPS RECEIVING TUBES

## Section 2 · Pentode

| OTHER                      |                 |                  |
|----------------------------|-----------------|------------------|
| PARAMETER                  | PUBLISHED VALUE | CONDITION / NOTE |
| HeaterVoltageNominal       | 6.3 V           | Nominal          |
| HeaterCurrentNominal       | 720 mA          | Nominal          |
| Maximum Plate Voltage      | 550 V           | —                |
| Maximum Screen Voltage     | 250 V           | —                |
| Maximum Plate Dissipation  | 4 W             | —                |
| Maximum Screen Dissipation | 1.7 W           | —                |
| Maximum Cathode Current    | 40 mA           | —                |

| CHARACTERISTIC   |                 |                  |
|------------------|-----------------|------------------|
| PARAMETER        | PUBLISHED VALUE | CONDITION / NOTE |
| Transconductance | 10500 $\mu$ S   | Typical          |
| Plate Resistance | 18000 ohm       | Typical          |



SOURCE DATA APPENDIX

# 1975 RCA RC30

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

1975 RCA RC30  
Section 1 · Triode

| OTHER                                                            |                 |                                                              |
|------------------------------------------------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                                                        | PUBLISHED VALUE | CONDITION / NOTE                                             |
| Heater Voltage (ac/dc) 6.3                                       | 10.2 V          | Published in approved ECL84 target datasheet entry; Section1 |
| Heater Current 0.72                                              | 450 mA          | Published in approved ECL84 target datasheet entry; Section1 |
| Plate Supply Voltage 550                                         | 550 V           | Published in approved ECL84 target datasheet entry; Section1 |
| Plate Voltage 300                                                | 300 V           | Published in approved ECL84 target datasheet entry; Section1 |
| Grid-No.2 Voltage                                                | 300 V           | Published in approved ECL84 target datasheet entry; Section1 |
| Cathode Current 12                                               | 40 mA           | Published in approved ECL84 target datasheet entry; Section1 |
| Plate Dissipation 1                                              | 4 W             | Published in approved ECL84 target datasheet entry; Section1 |
| Grid-No.2 Input                                                  | 1.7 W           | Published in approved ECL84 target datasheet entry; Section1 |
| Plate Voltage 200 170 200                                        | 220 V           | Published in approved ECL84 target datasheet entry; Section1 |
| For fixed-bias operation 1                                       | 1 MΩ            | Published in approved ECL84 target datasheet entry; Section1 |
| For cathode-bias operation 3                                     | 2 MΩ            | Published in approved ECL84 target datasheet entry; Section1 |
| • With maximum duty factor of 0.18 and maximum pulse duration of | 18 microseconds | Published in approved ECL84 target datasheet entry; Section1 |
| the frequency range from 470 to                                  | 890 MHz         | Published in approved ECL84 target datasheet entry; Section1 |

| CHARACTERISTIC              |                 |                                                              |
|-----------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                   | PUBLISHED VALUE | CONDITION / NOTE                                             |
| Grid No.1 Voltage -1.7 -2.1 | -3.4 V          | Published in approved ECL84 target datasheet entry; Section1 |

| PARAMETER                             | PUBLISHED VALUE | CONDITION / NOTE                                             |
|---------------------------------------|-----------------|--------------------------------------------------------------|
| Plate Resistance (Approx.) – 0.1 0.13 | <b>0.15 MΩ</b>  | Published in approved ECL84 target datasheet entry; Section1 |
| Transconductance 4000 11000 10400     | <b>10000 μS</b> | Published in approved ECL84 target datasheet entry; Section1 |
| Plate Current 3 18 18                 | <b>18 mA</b>    | Published in approved ECL84 target datasheet entry; Section1 |
| Grid-No.2 Current – 3 3               | <b>3 mA</b>     | Published in approved ECL84 target datasheet entry; Section1 |
| Heater Voltage (ac/dc)                | <b>6.3 V</b>    | Published in approved ECL84 target datasheet entry; Section1 |
| Heater Current                        | <b>225 mA</b>   | Published in approved ECL84 target datasheet entry; Section1 |
| Grid to Plate                         | <b>18 pF</b>    | Published in approved ECL84 target datasheet entry; Section1 |
| Grid to Cathode and Heater            | <b>2.2 pF</b>   | Published in approved ECL84 target datasheet entry; Section1 |
| Plate to Cathode and Heater           | <b>1.3 pF</b>   | Published in approved ECL84 target datasheet entry; Section1 |

1975 RCA RC30

## Section 2 · Pentode

| OTHER                      |                 |                                                              |
|----------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                  | PUBLISHED VALUE | CONDITION / NOTE                                             |
| Heater Voltage (ac/dc) 6.3 | <b>10.2 V</b>   | Published in approved ECL84 target datasheet entry; Section2 |
| Heater Current 0.72        | <b>450 mA</b>   | Published in approved ECL84 target datasheet entry; Section2 |
| Plate Supply Voltage 550   | <b>550 V</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Plate Voltage 300          | <b>300 V</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Grid-No.2 Voltage          | <b>300 V</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Cathode Current 12         | <b>40 mA</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Plate Dissipation 1        | <b>4 W</b>      | Published in approved ECL84 target datasheet entry; Section2 |
| Grid-No.2 Input            | <b>1.7 W</b>    | Published in approved ECL84 target datasheet entry; Section2 |
|                            |                 |                                                              |

| PARAMETER                                                        | PUBLISHED VALUE        | CONDITION / NOTE                                             |
|------------------------------------------------------------------|------------------------|--------------------------------------------------------------|
| Plate Voltage 200 170 200                                        | <b>220 V</b>           | Published in approved ECL84 target datasheet entry; Section2 |
| For fixed-bias operation 1                                       | <b>1 MΩ</b>            | Published in approved ECL84 target datasheet entry; Section2 |
| For cathode-bias operation 3                                     | <b>2 MΩ</b>            | Published in approved ECL84 target datasheet entry; Section2 |
| • With maximum duty factor of 0.18 and maximum pulse duration of | <b>18 microseconds</b> | Published in approved ECL84 target datasheet entry; Section2 |
| the frequency range from 470 to                                  | <b>890 MHz</b>         | Published in approved ECL84 target datasheet entry; Section2 |

| CHARACTERISTIC                        |                 |                                                              |
|---------------------------------------|-----------------|--------------------------------------------------------------|
| PARAMETER                             | PUBLISHED VALUE | CONDITION / NOTE                                             |
| Grid No.1 Voltage -1.7 -2.1           | <b>-3.4 V</b>   | Published in approved ECL84 target datasheet entry; Section2 |
| Plate Resistance (Approx.) – 0.1 0.13 | <b>0.15 MΩ</b>  | Published in approved ECL84 target datasheet entry; Section2 |
| Transconductance 4000 11000 10400     | <b>10000 μS</b> | Published in approved ECL84 target datasheet entry; Section2 |
| Plate Current 3 18 18                 | <b>18 mA</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Grid-No.2 Current – 3 3               | <b>3 mA</b>     | Published in approved ECL84 target datasheet entry; Section2 |
| Heater Voltage (ac/dc)                | <b>6.3 V</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Heater Current                        | <b>225 mA</b>   | Published in approved ECL84 target datasheet entry; Section2 |
| Grid to Plate                         | <b>18 pF</b>    | Published in approved ECL84 target datasheet entry; Section2 |
| Grid to Cathode and Heater            | <b>2.2 pF</b>   | Published in approved ECL84 target datasheet entry; Section2 |
| Plate to Cathode and Heater           | <b>1.3 pF</b>   | Published in approved ECL84 target datasheet entry; Section2 |



SOURCE DATA APPENDIX

# 1999 Philips E-Z

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

1999 PHILIPS E-Z  
Section 1 · Triode

| CHARACTERISTIC    |                 |                           |
|-------------------|-----------------|---------------------------|
| PARAMETER         | PUBLISHED VALUE | CONDITION / NOTE          |
| Heater voltage Vi | 6.3 V           | Published datasheet value |
| Heater current If | 720 mA          | Published datasheet value |

| OTHER                            |                 |                           |
|----------------------------------|-----------------|---------------------------|
| PARAMETER                        | PUBLISHED VALUE | CONDITION / NOTE          |
| Cathode to heater voltage Vs max | 200 V           | Published datasheet value |

## TUBE TINKER

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