



ELECTRONIC TUBE REFERENCE

7895

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Industrial high-mu Nuvistor triode intended for a wide variety of industrial amplifier and control applications.

GENERAL CHARACTERISTICS

BASE DESIGNATION	TWELVAR 5 pin	BASE PINS	—
NOMINAL HEATER	6.3 V / 135 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Triode	
PLATE RESISTANCE	6800 Ω
TRANSCONDUCTANCE	0.0094 S
AMPLIFICATION FACTOR	64
MAXIMUM PLATE VOLTAGE	125 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	15 mA
<i>Published promoted values applied where semantically applicable; additional source-table values retained in TUBE_SECTION_PARAMETER.</i>	

7895 — Special-Quality High-Mu Industrial Nuvistor Triode

Compact metal-ceramic receiving triode for low-noise industrial amplification, with controlled electrical tolerances and extensive shock, vibration, insulation, and life testing.

Overview

The **7895** is a **high-mu Nuvistor triode** intended for a wide range of industrial applications. RCA, Siemens, and Philips describe a compact metal-shell device capable of substantial voltage amplification while maintaining close electrical tolerances, low noise, and mechanical robustness. The Siemens document describes universal high-mu operation and emphasizes long life, reliability, shock resistance, and vibration resistance. Philips identifies the 7895 as a special-quality industrial triode.

The tube's characteristic operating point uses a **110 V plate supply**, **150 Ω cathode resistor**, and approximately **7 mA plate current**, with an amplification factor of **64** and transconductance of **9.4 mA/V**.

Construction and Heater

The 7895 uses an indirectly heated coated cathode in a compact **metal-shell Nuvistor** envelope. Its base is the **E5-65 medium ceramic-wafer five-contact Twelvar arrangement**, with **12AQ basing**. RCA specifies an indexed Nuvistor socket.

Property	Manufacturer value
Heater voltage	6.3 V , ±10% in RCA data
Heater current	135 mA nominal
Heater current production range	125-145 mA
Calculated heater power	0.85 W
Maximum overall length	0.800 in
Maximum seated length	0.625 in
Maximum diameter	0.440 in
Approximate weight	1.9-2 g
Mounting position	Any

The heater can operate from AC or DC. The maximum peak heater-to-cathode voltage is **±100 V**.

Base connections

The RCA underside-view drawing identifies **pin 2 as plate**, **pin 4 as control grid**, **pin 8 as cathode**, and **pins 10 and 12 as heater**. Pin 1 and its associated internally connected positions must not be used as external circuit terminals. The large index lug and shortened pin establish orientation.

Typical Class A1 Characteristics

Characteristic	Value
Plate supply voltage	110 V
Grid supply voltage	0 V
Cathode resistor	150 Ω
Plate current	7.0 mA
Transconductance	9,400 μmhos (9.4 mA/V)
Amplification factor	64
Plate resistance	Approximately 6,800 Ω
Grid voltage at 10 μA plate current	Approximately -4 V

The approximate triode relationship $\mu \approx g_m \times r_p$ gives $0.0094 \text{ S} \times 6,800 \Omega \approx 64$. The amplification factor is an intrinsic small-signal characteristic; loaded voltage gain depends on the external circuit.

RCA's equipment-design limits include **5.5-8.8 mA plate current**, **7.9-10.9 mA/V transconductance**, and **54-74 amplification factor** at its defined acceptance conditions.

High-Frequency and Noise Characteristics

Siemens publishes a **4.7 dB noise figure at 200 MHz** under noise-matched conditions and an equivalent input noise resistance of approximately **0.8 k Ω** at that frequency. These are specific high-frequency measurements, not universal values for every amplifier configuration.

The low interelectrode capacitances and metal-ceramic construction support the high-frequency industrial amplifier applications documented by the manufacturers.

Direct Interelectrode Capacitances

Measurement	Nominal
Grid to plate	0.9 pF
Grid to cathode, shell, and heater	4.2 pF
Plate to cathode, shell, and heater	1.7 pF
Plate to cathode	0.22 pF
Heater to cathode	1.3 pF

Philips and RCA give production ranges of **0.8-1.0 pF grid-to-plate**, **3.4-5.0 pF input**, **1.3-2.1 pF output**, and **1.0-1.6 pF heater-to-cathode capacitance**.

Industrial Maximum Ratings

Parameter	Limit
Plate supply voltage	330 V
Plate voltage	110 V
Plate dissipation	1 W
Cathode current	15 mA
Negative grid voltage	55 V
Peak positive grid voltage	2 V
Grid current	2 mA
Grid-circuit resistance, fixed bias	0.5 MΩ
Grid-circuit resistance, cathode bias	1 MΩ
Metal-shell temperature	150°C under specified ratings

The higher plate-supply limit must not be confused with the maximum permissible actual plate voltage.

Industrial Reliability Qualification

RCA's detailed technical sheet specifies **1,000 g peak-impact shock testing**, **2.5 g fatigue vibration for 48 hours at 60 Hz**, variable-frequency vibration-noise measurements, low-pressure voltage breakdown testing, heater cycling, and multiple life-performance tests.

Under specified 1 g vibration testing, RCA limits RMS output noise to **35 mV at 50-1,000 Hz**, **60 mV at 3-6 kHz**, and **500 mV at 6-15 kHz**. The low-pressure test simulates altitudes up to **100,000 feet**.

RCA specifies at least **2,000 heater on/off cycles** in its heater-cycling qualification. Its life tests include 20-hour stabilization, 100-hour survival, and 1,000-hour conduction and standby evaluations. Siemens separately describes service life exceeding **10,000 hours** under its quality specification.

These are manufacturer-specific qualification and reliability statements rather than a single unconditional guaranteed service-life rating.

Technical Summary

The **7895** is a **6.3 V / 135 mA high-mu Nuvistor industrial triode**, with approximately **64 amplification factor**, **9.4 mA/V transconductance**, **6.8 kΩ plate resistance**, and **7 mA plate current** at the principal Class A1 test point.

Its compact metal-ceramic construction, low interelectrode capacitances, documented 200 MHz noise characteristics, and extensive industrial quality testing make it a specialized receiving amplifier for applications requiring reliable, stable electrical performance.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Siemens

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

1963 SIEMENS

Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	135 mA	—

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance	9400 μ S	Nominal/Bogey
Amplification factor	64	Nominal/Bogey



SOURCE OPERATING CONDITIONS

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1971 RCA HB3 Binder 3 of 7

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

1971 RCA HB3 BINDER 3 OF 7

Section 1 · Triode

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Current at 6.3 volts – published value 1	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Current at 6.3 volts – published value 2	0.135 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to plate	0.9	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Grid to cathode, shell, and heater	4.2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate to cathode, shell, and heater	1.7	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate to cathode	0.22	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater to cathode	1.3	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Supply Voltage	110 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Grid Supply Voltage	0 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Resistance (Approx)	6800 ohm	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance	9400	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current	7 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Pin 2 –Plate	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Pin 4 –Grid	4	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Pin 10 –Heater	10	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Pin 12 –Heater	12	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PLATE VOLTAGE	110 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 1	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 2	0.125	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 3	0.145	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Grid to plate – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Grid to plate – published value 2	0.8	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Grid to plate – published value 3	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
heater – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
heater – published value 2	3.4	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
heater – published value 3	5	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
heater – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
heater – published value 2	1.3	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
heater – published value 3	2.1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater to cathode – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater to cathode – published value 2	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater to cathode – published value 3	1.6	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate to cathode – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate to cathode – published value 2	0.16	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate to cathode – published value 3	0.28	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (1) – published value 1	1 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (1) – published value 2	3 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (1) – published value 3	5.5 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (1) – published value 4	8.8 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (2) – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (2) – published value 2	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (2) – published value 3	4	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (2) – published value 4	50	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (1) – published value 1	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance (1) – published value 2	3	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (1) – published value 3	7900	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (1) – published value 4	10900	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (2) – published value 1	2	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (2) – published value 2	3	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (2) – published value 3	5	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (2) – published value 4	6900	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Reverse Grid Current – published value 1	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Reverse Grid Current – published value 2	6	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Reverse Grid Current – published value 3	0.1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Amplification Factor – published value 1	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Amplification Factor – published value 2	3	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Amplification Factor – published value 3	54	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Amplification Factor – published value 4	74	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Note 1 – published value 1	1 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Note 1 – published value 2	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Note 3 – published value 1	3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Note 3 – published value 2	110 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Note 3 – published value 3	150 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
and cathode–Dyp ass capacitor = 1000 µf	1000	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Note 5 – published value 1	5 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Note 5 – published value 2	5.7 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Nate 6 – published value 1	6 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Nate 6 – published value 2	150 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Nate 6 – published value 3	1 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Nate 6 – published value 4	7 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PLATE SUPPLY VOLTAGE	330 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Negative-bias value	55 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
GRID CURRENT	2 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
PLATE CURRENT	20 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
CATHODE CURRENT	15 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
PLATE DISSIPATION	1 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater negative with respect to cathode	100 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater positive with respect to cathode	100 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
For fixed-bias operation – published value 1	0 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
For fixed-bias operation – published value 2	5 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
For cathode-bias operation	1 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.



SOURCE OPERATING CONDITIONS

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1975 RCA RC30

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

1975 RCA RC30

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Plate Capacitance	1.6 pF	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Supply Voltage	330 V	—
Typical Plate Supply Voltage	110 V	ClassA
Typical Plate Current	7 mA	ClassA



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

1999 Philips 0-D

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

1999 PHILIPS 0-D
Section 1 · Triode

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage in cold condition	—330 V	Published datasheet value

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Typical anode current	7 mA	Published datasheet value
Anode current range	5.5–8.8 mA	Published datasheet value
Transconductance range	7.9–10.9 mA/V	Published datasheet value
Amplification factor range	54–74	Published datasheet value
Plate resistance	6.8 kΩ	Published datasheet value
Grid-to-other capacitance	4.2 pF	Published datasheet value
Anode-to-other capacitance	1.7 pF	Published datasheet value
Anode-grid capacitance	0.9 pF	Published datasheet value
Anode-cathode capacitance	0.22 pF	Published datasheet value

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode-heater capacitance	1.3 pF	Published datasheet value