



ELECTRONIC TUBE REFERENCE

7586

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Industrial medium-mu Nuvistor triode for general-purpose amplifier and oscillator service extending into UHF.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 140 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
PLATE RESISTANCE	3000 Ω
TRANSCONDUCTANCE	0.0115 S
AMPLIFICATION FACTOR	35
MAXIMUM PLATE VOLTAGE	110 V
MAXIMUM PLATE DISSIPATION	1 W
MAXIMUM CATHODE CURRENT	20 mA
<i>Nuvistor triode.</i>	

7586 — Special-Quality Medium-Mu Industrial Nuvistor Triode

A compact all-metal-and-ceramic receiving triode for low-noise amplification and stable oscillator service into the UHF region, with stringent industrial reliability testing.

Overview

The **7586** is a **medium-mu, general-purpose Nuvistor triode** intended for critical industrial amplifier and oscillator applications. RCA, Siemens, and Philips documentation emphasizes compact construction, low noise, stability, controlled characteristics, mechanical ruggedness, and operation across frequencies extending into the **ultra-high-frequency (UHF)** region.

The 7586 is not simply an ordinary receiving triode in a small package. RCA describes an all-ceramic-and-metal structure with cantilever-supported cylindrical electrodes and its **Dark Heater** construction. Siemens identifies long service life, resistance to vibration and shock, and special cathode characteristics. Philips describes it as a **special-quality, shock- and vibration-resistant triode**.

Mechanical Construction and Heater

The 7586 uses a metal-shell **MT4 Nuvistor** envelope with a ceramic-wafer **E5-65 five-contact base**, requiring a Nuvistor socket. The tube has a coated, indirectly heated cathode and may operate in any mounting position.

Property	Manufacturer value
Heater voltage	6.3 V , RCA tolerance ± 0.6 V
Heater current	0.135 A nominal
Calculated heater power	0.85 W
Maximum overall length	0.800 in
Maximum seated length	0.625 in
Maximum diameter	0.440 in
Approximate mass	1.9-2 g
Peak heater-to-cathode voltage	± 100 V

The heater accepts AC or DC supply. Siemens additionally documents heater switching endurance, with a minimum of **2,000 on/off cycles** under its stated test conditions.

Amplifier and Oscillator Applications

The 7586 is intended for **low-noise voltage amplification, industrial signal amplification, and stable oscillator circuits**, including frequencies in the UHF region. The manufacturer descriptions emphasize stable performance and tight tolerances in demanding equipment.

Siemens publishes an approximately **4 dB noise figure at 200 MHz** under noise-matched conditions. This is a defined measurement rather than a universal noise figure across all operating frequencies.

Electrical Characteristics

RCA and Philips document several Class A1 operating points:

Characteristic	Low-voltage point	Intermediate point	Cathode-bias point
Plate voltage	26.5 V	40 V	Supply 75 V
Grid resistor	0.5 MΩ	0.5 MΩ	—
Cathode resistor	—	—	100 Ω
Plate current	2.8 mA	approximately 6.8-7.5 mA	10.5 mA
Amplification factor	31	35	35
Plate resistance	4.4 kΩ	approximately 3.0-3.2 kΩ	3.0 kΩ
Transconductance	7.0 mA/V	approximately 11-11.5 mA/V	11.5 mA/V

The published values are consistent with the triode relationship $\mu \approx g_m \times r_p$. The nominal amplification factor around **35** places the tube in the medium-mu category.

The industrial tolerance data include **9-12.5 mA plate current**, **10-13 mA/V transconductance**, and **28-42 amplification factor** under specified acceptance conditions.

Maximum Industrial Ratings

Parameter	Maximum
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	4 V
Grid current	2 mA
Grid-circuit resistance, fixed bias	0.5 MΩ
Grid-circuit resistance, cathode bias	1 MΩ

Parameter	Maximum
Metal-shell temperature	150°C , for stated rating conditions

The 330 V supply allowance is not an unrestricted 330 V operating plate voltage. Grid-circuit resistance ratings also depend on metal-shell temperature; RCA supplies a dedicated temperature-dependent rating chart.

Interelectrode Capacitances

Measurement	RCA / Philips nominal
Grid to plate	2.2 pF
Grid to cathode, heater, and shell	4.2 pF
Plate to cathode, heater, and shell	1.6 pF
Plate to cathode	0.26 pF
Heater to cathode	1.4 pF

The capacitances contribute to input loading and feedback in high-frequency circuits. Siemens publishes its own capacitance definitions and tolerance values, which should be compared under matching measurement conditions.

Industrial Reliability and Special-Quality Testing

The 7586 has unusually extensive manufacturer test documentation. RCA specifies **1,000 g peak-impact shock testing, 2.5 g fatigue vibration for 48 hours at 60 Hz**, variable-frequency vibration-noise tests, low-pressure breakdown tests, electrical insulation tests, and production-life testing.

The vibration-noise limits include **25 mV RMS over 3-6 kHz** and **500 mV over 6-15 kHz** under the prescribed test arrangement, with separate post-stress acceptance limits.

RCA documents early-hour stabilization testing, 100-hour survival testing, 1,000-hour intermittent-conduction testing, and 1,000-hour standby-life testing. These are qualification procedures and should not be interpreted as a single guaranteed service-life figure.

Siemens separately describes **service life exceeding 10,000 hours** under its quality specification and provides reliability and insulation requirements. Philips emphasizes special-quality shock and vibration resistance.

Related Type 8393

RCA identifies the **8393** as a related medium-mu industrial Nuvistor triode. The two are described as corresponding types differing in **heater ratings and interelectrode capacitances**.

Type	Heater voltage	Heater current
7586	6.3 V	0.135 A
8393	13.5 V	0.060 A

They must not be substituted without considering their heater and capacitance differences.

Technical Summary

The **7586** is a **6.3 V / 135 mA medium-mu industrial Nuvistor triode** with approximately **35 amplification factor**, **11.5 mA/V transconductance**, and **3 kΩ plate resistance** at a principal Class A1 operating point.

Its defining qualities are **low-noise UHF-capable amplification, oscillator stability, compact metal-ceramic construction, controlled electrical tolerances, and extensive shock, vibration, insulation, and life testing**. The 7586 is particularly suited to critical industrial equipment requiring small size and dependable performance.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1960 RCA Industrial and Communications Types

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

1960 RCA INDUSTRIAL AND COMMUNICATIONS TYPES

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HeaterOrFilamentVoltage	6.3 V	—
HeaterOrFilamentCurrent	140 mA	—



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	140 mA	—



1964 RMA EIA

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

1964 RMA EIA

Section 1 · Triode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	135 mA	—
Grid To Plate Capacitance	2.2 pF	—
Input Capacitance	4.2 pF	—
Output Capacitance	1.6 pF	—
CathodeToPlateCapacitance	0.26 pF	—
Heater To Cathode Capacitance	1.4 pF	—
Plate Voltage	40 V	—
Plate Current	7.5 mA	—
Plate Resistance	3000 ohm	—
Transconductance	11500 uS	—
Amplification Factor	35	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Supply Voltage Maximum	330 V	—
Plate Voltage Maximum	110 V	—
GridNegativeBiasMaximum	55 V	—
PeakPositiveGridVoltageMaximum	4 V	—
GridCurrentMaximum	2 mA	—
Cathode Current Maximum	15 mA	—
Plate Dissipation Maximum	1 W	—



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

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	135 mA	—
Plate supply voltage	75 V	ClassA
Plate voltage	40 V	ClassA
Cathode resistor	100 ohm	ClassA
Plate current	10.5 mA	ClassA
Maximum plate supply voltage	330 V	—
Maximum plate voltage	110 V	—
Maximum plate dissipation	1 W	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate resistance	3000 ohm	ClassA
Transconductance	11500 uS	ClassA
Amplification factor	35	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	2.2 pF	—
Input capacitance	4.2 pF	—
Output capacitance	1.6 pF	—



TUBE TINKER
ELECTRON TUBE DATABASE

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

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	75 V	ClassA
Typical Plate Current	10.5 mA	ClassA



SOURCE DATA APPENDIX

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

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	135 mA	—
Internal resistance	3 kΩ	—
Amplification factor	35	—
Mutual conductance	11.5 mA/V	—
Grid to Plate Capacitance	1.6 pF	PublishedLine: Grid to Plate Capacitance = 1.6 pF
Cathode to heater Cxr	1.4 pF	PublishedLine: Cathode to heater Cxr = 1.4 pF

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode current Iz	-12.5 mA	PublishedLine: Anode current Iz = 10.5! 9.0-12,5 mA
Anode current Ig	6.8 mA	PublishedLine: Anode current Ig = 6.8 mA
Cathode capacitor Ck	1000 uF	PublishedLine: Cathode capacitor Ck = 1000 : uF

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage maximum	110 V	—
Anode dissipation maximum	1 W	—
Cathode current maximum	15 mA	—
Grid current Ig max	2 mA	PublishedLine: Grid current Ig = max. 2 mA
Cathode current Ix max	15 mA	PublishedLine: Cathode current Ix = max, 15 mA

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