



ELECTRONIC TUBE REFERENCE

8058

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

Power transmitting triode for RF amplification, oscillation, modulation, or related high-power electronic service.

GENERAL CHARACTERISTICS

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

SECTION RATINGS

SECTION 1 Triode	
PLATE RESISTANCE	5600 Ω
TRANSCONDUCTANCE	0.0124 S
AMPLIFICATION FACTOR	70
MAXIMUM PLATE VOLTAGE	150 V
MAXIMUM PLATE DISSIPATION	1.5 W
MAXIMUM CATHODE CURRENT	15 mA
<i>Published promoted values applied where semantically applicable; additional source-table values retained in TUBE_SECTION_PARAMETER.</i>	

8058 — High-Mu UHF Cathode-Drive Nuvistor Triode

A high-transconductance, low-noise metal-shell Nuvistor designed for grounded-grid RF amplification up to 1,200 MHz and stable oscillator operation.

Overview

The **8058** is a **high-mu Nuvistor triode** developed for **cathode-drive radio-frequency amplification at frequencies up to 1,200 MHz**, as well as oscillator applications requiring stability over a wide frequency range. RCA explicitly specifies the 1,200 MHz application, while Siemens describes a steep-slope, low-noise UHF Nuvistor with **three externally connected cathode terminals**, particularly suited to **common-grid amplifiers** and stable oscillators.

The distinctive construction includes a **plate top cap**, metal-shell grid connection, and multiple cathode terminals. These features distinguish the 8058 from more conventional Nuvistor receiving triodes.

Construction, Heater, and Basing

The 8058 uses a coated, indirectly heated unipotential cathode in an **MT4 metal-shell Nuvistor** envelope. Its specialized **E5-79 ceramic-wafer base** has **12CT basing**. The metal shell serves as the grid connection and the **top cap is the plate**.

RCA's basing diagram identifies **pins 2, 4, and 8 as cathode**, and **pins 10 and 12 as heater**. Other indexed positions are not general-purpose connections.

Heater and mechanical property	Value
Heater voltage	6.3 V , range 5.7–6.9 V
Heater current	135 mA
Calculated heater power	0.85 W
Peak heater-to-cathode voltage	±100 V
Maximum overall length	0.985 in
Maximum seated length	0.780 in
Maximum diameter	0.440 in
Approximate weight	2.2 g
Mounting position	Any

The specialized electrode and connection arrangement is intended for high-frequency circuit layouts where connection geometry and grounding are important.

Cathode-Drive RF Amplifier Performance

RCA gives specific cathode-drive amplifier examples at three frequencies:

Parameter	450 MHz	700 MHz	1,200 MHz
Plate supply	110 V	110 V	110 V

Parameter	450 MHz	700 MHz	1,200 MHz
Cathode resistor	47 Ω	47 Ω	47 Ω
Average plate current	10 mA	10 mA	10 mA
Bandwidth	6 MHz	12 MHz	12 MHz
Power gain	16.5 dB	12.5 dB	10.5 dB
Noise factor	6.5 dB	9.5 dB	12.2 dB

These are representative circuit operating results; actual gain, bandwidth, and noise depend on the tuned amplifier arrangement.

The noise figures are based on an argon noise source with the input tuned for optimum value. They are circuit-specific measurements rather than intrinsic noise figures independent of the surrounding amplifier.

Class A1 Electrical Characteristics

Characteristic	Typical value
Plate supply voltage	110 V
Grid supply voltage	0 V
Cathode resistor	47 Ω
Plate current	10 mA
Transconductance	12,400 μmhos (12.4 mA/V)
Amplification factor	70
Plate resistance	Approximately 5,600 Ω
Grid voltage at 10 μA plate current	Approximately -5 V

The figures satisfy the approximate triode relationship $\mu \approx g_m \times r_p$: $0.0124 \text{ S} \times 5,600 \Omega \approx 69.4$.

RCA specifies initial transconductance acceptance limits of **10-14.8 mA/V** and amplification factor **54-86**.

Maximum Ratings

Parameter	Maximum
Plate supply voltage	330 V

Parameter	Maximum
Actual DC plate voltage	150 V
Plate dissipation	1.5 W
Average cathode current	15 mA
Positive DC grid voltage	0 V
Negative DC grid voltage	55 V
Fixed-bias grid-circuit resistance	0.5 MΩ
Cathode-bias grid-circuit resistance	1 MΩ

The plate-supply and actual plate-electrode limits must be distinguished. Grid-circuit resistance ratings depend on the metal-shell temperature; RCA provides a temperature-dependent rating chart.

Interelectrode Capacitances

Measurement	Value
Cathode to grid, shell, and heater	6.0 pF
Plate to grid, shell, and heater	1.3 pF
Cathode to plate	≤0.046 pF
Heater to cathode	1.4 pF

The extremely small **cathode-to-plate capacitance** is particularly relevant to the common-grid cathode-drive amplifier configuration because it limits direct input-output electrode coupling.

Industrial Qualification

RCA documents **1,000 g impact-shock testing**, variable-frequency vibration tests, low-pressure breakdown tests, heater cycling, shorts testing, and 1,000-hour conduction-life evaluation.

The variable-frequency vibration test specifies maximum output disturbances of **35 mV RMS at 50-3,000 Hz**, **80 mV peak at 3-6 kHz**, and **700 mV peak at 6-15 kHz**, under the stated 1 g test arrangement.

The low-pressure test simulates **100,000 feet altitude** using **250 V RMS** applied between plate and other electrodes. RCA also specifies at least **2,000 heater cycling operations** under the defined test.

Siemens separately describes long-life and reliability characteristics, including a service-life specification exceeding **10,000 hours** under its quality requirements.

Technical Summary

The **8058** is a **6.3 V / 135 mA high-mu UHF Nuvistor triode** for **cathode-drive common-grid RF amplification up to 1,200 MHz** and stable oscillator service. It has approximately **70 amplification factor**, **12.4 mA/V transconductance**, **5.6 kΩ plate resistance**, and **10 mA plate current** at its principal operating point.

Its **top-cap plate**, **metal-shell grid**, **three cathode terminals**, extremely small cathode-to-plate capacitance, and extensive industrial qualification make it a specialized high-frequency amplifier tube.



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	12400 μ S	Nominal/Bogey



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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
Heater Voltage, AC or DC	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
/~" \ – published value 1	6.3 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
/~" \ – published value 2	135 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to plate	0.046 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater to cathode	1.4 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Amplification Factor	70	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Resistance (Approx.)	5600	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance	12400	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
DC Plate Current	10 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Cutoff DC Grid Voltage for Ib = 10 μ A – published value 1	10 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Cutoff DC Grid Voltage for Ib = 10 μ A – published value 2	-5 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Voltage	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Supply Voltage	10 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 Supply Voltage	330 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
DC Plate Voltage	150 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Peak Heater-Cathode Voltage	100 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage, AC or DC – published value 1	5.7 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Voltage, AC or DC – published value 2	6.9 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Average Cathode Current	15 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
For fixed-bias operation	0.5	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.
Frequency – published value 1	450	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Frequency – published value 2	700	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Frequency – published value 3	1200	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Voltage – published value 1	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Voltage – published value 2	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Voltage – published value 3	6.3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Supply Voltage – published value 1	10 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Supply Voltage – published value 2	10 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Supply Voltage – published value 3	10 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Average Plate Current – published value 1	10 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Average Plate Current – published value 2	10 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Average Plate Current – published value 3	10 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 1	0	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 2	125	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 3	0	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater Current – published value 4	145	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Cathode to plate – published value 1	2 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Cathode to plate – published value 2	0.046 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
and heater – published value 1	2 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
and heater – published value 2	5 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
and heater – published value 3	7 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
and heater – published value 1	2 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
and heater – published value 2	1.5 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater to cathode – published value 1	2 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Heater to cathode – published value 2	1.7 pF	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (I) – published value 1	1 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (I) – published value 2	3 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (I) – published value 3	7.8 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Plate Current (I) – published value 4	13.2 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 (I) – published value 1	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (I) – published value 2	3	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Transconductance (I) – published value 3	10000	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Transconductance (I) – published value 4	14800	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	8700	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Reverse Grid Current – published value 1	6	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Reverse Grid Current – published value 2	0	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Reverse Grid Current – published value 3	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Current – published value 1	1	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Current – published value 2	7	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
Current – published value 3	5	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
current issue of EIA Standard RS-191,	191	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(1) with the addition of a plate-load resistor of 2000 ohms – published value 1	1 ohm	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(1) with the addition of a plate-load resistor of 2000 ohms – published value 2	2000 ohm	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
tube must not show an output voltage in excess of: (1) 35 – published value 1	1 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
tube must not show an output voltage in excess of: (1) 35 – published value 2	35 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
= 7.5 cycled one minute on end two minutes off; heater 100 – published value 1	7.5	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
= 7.5 cycled one minute on end two minutes off; heater 100 – published value 2	100	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
dissipation and with a metal-shell temperature of 150 °C; then	150	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(ac or dc) = 6. 3, plate volts = 300 negative with respect to – published value 1	6 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(ac or dc) = 6. 3, plate volts = 300 negative with respect to – published value 2	3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(ac or dc) = 6. 3, plate volts = 300 negative with respect to – published value 3	300 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(ac or dc) = 6. 3, grid volts = 100 negative with respect to – published value 1	6 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(ac or dc) = 6. 3, grid volts = 100 negative with respect to – published value 2	3 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.
(ac or dc) = 6. 3, grid volts = 100 negative with respect to – published value 3	100 V	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
tubes are operated for 1000 hours at maximum-rated plate	1000 mA	Published datasheet value; multiple numbers on a source row represent separate limits or operating conditions.