



ELECTRONIC TUBE REFERENCE

2EG4

Nuvistor Tubes (all numbers) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

TRIODE

High-mu Nuvistor triode used as a grounded-cathode neutralized RF amplifier in VHF tuner service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12AQ	BASE PINS	5
NOMINAL HEATER	1.7 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
PLATE RESISTANCE	7000 Ω
TRANSCONDUCTANCE	0.009 S
AMPLIFICATION FACTOR	63
MAXIMUM PLATE VOLTAGE	135 V
MAXIMUM PLATE DISSIPATION	1.5 W
MAXIMUM CATHODE CURRENT	5 mA
<i>Promoted from semantically identified published ratings/characteristics; additional values preserved as section parameters.</i>	

2EG4 — 1.7-Volt High-Mu Nuvistor VHF RF Amplifier

Compact metal-shell triode for grounded-cathode, neutralized VHF amplification in television and FM receiver tuners.

Overview

The **2EG4** is a **high-mu Nuvistor triode** designed for **neutralized grounded-cathode radio-frequency amplification** in the VHF tuner stages of television and FM receivers. RCA's receiving-tube manuals document the type directly, including its distinctive **1.7 V / 0.60 A heater**, small interelectrode capacitances, high transconductance, operating characteristics, and design-maximum ratings.

Its principal application is as a sensitive receiving front-end RF amplifier. The Nuvistor metal-shell construction and specialized socket distinguish it from conventional glass miniature receiving triodes.

Construction, Heater, and Basing

The 2EG4 is a **single triode** with a cathode, control grid, and plate, enclosed in a compact metal-shell Nuvistor package. RCA specifies **12AQ basing** and a dedicated Nuvistor socket; the base illustration identifies an index lug and a shortened pin to establish the proper orientation.

Heater property	Value
Nominal heater voltage	1.7 V
Nominal heater current	0.60 A
Average heater warm-up time	8 seconds
Calculated heater power	1.02 W
Heater supply	AC or DC
Maximum peak heater-to-cathode voltage	±100 V

The 1.7 V heater is a distinctive characteristic of the 2EG4 and must not be confused with the heater ratings of other Nuvistor types having similar RF characteristics.

Intended VHF Amplifier Application

RCA describes the 2EG4 as suitable for **grounded-cathode, neutralized RF amplifier** service in **television and FM receiver VHF tuners**.

In grounded-cathode operation, the control grid receives the radio-frequency signal and the plate circuit provides the amplified output. At VHF, the grid-to-plate capacitance can create an undesired feedback path; the explicitly specified neutralized circuit arrangement addresses this interaction.

The datasheets establish the application but do not specify a universal tuned-circuit design or guaranteed overall receiver gain. Such performance depends on the surrounding tuner circuitry.

Electrical Characteristics

RCA provides two representative sets of typical characteristics and operating conditions:

Characteristic	Typical characteristics	Typical operation
Plate supply voltage	110 V	70 V
Cathode-bias resistor	130 Ω	—
Grid resistor	—	47 k Ω
Amplification factor	63	68
Plate resistance	7,000 Ω	5,440 Ω
Transconductance	9,000 μmhos	12,500 μmhos
Plate current	6.5 mA	7.0 mA

These values demonstrate a high- μ receiving triode with appreciable transconductance and moderate internal plate resistance.

The figures are consistent with the triode relationship $\mu \approx g_m \times r_p$: $0.009 \text{ S} \times 7,000 \Omega \approx 63$, and $0.0125 \text{ S} \times 5,440 \Omega \approx 68$.

The RCA sheets also give approximate control-grid voltages of **−5 V** at **100 μA** plate current and **−6.8 V** at **10 μA** plate current under the stated characteristic conditions. These low-current test points describe the approach to cutoff rather than a universal grid cutoff independent of plate voltage.

Design-Maximum Ratings

Rating	Maximum
Plate voltage	135 V
Plate supply voltage, conditional	300 V
Plate dissipation	1.5 W
Cathode current	15 mA
Maximum negative grid voltage	55 V
Peak or DC positive grid voltage	0 V
Grid-circuit resistance, fixed bias	2.2 MΩ , as printed
Grid-circuit resistance, cathode bias	0.5 MΩ , as printed

The **300 V plate-supply rating is conditional**: RCA requires a sufficiently large plate-circuit resistor to limit plate dissipation to **1.5 W** under every operating condition. It does not permit 300 V continuously at the plate electrode.

The RCA sheets state that these ratings apply at metal-shell temperatures up to **135°C**.

The grid-circuit resistance limits are reproduced according to the 2EG4 sheets. Their ordering differs from the values printed for some related Nuvistor families and should be checked against the manufacturer's actual application conditions rather than silently replaced by a family-wide assumption.

Direct Interelectrode Capacitances

Measurement	Approximate capacitance
Grid to plate	0.92 pF
Grid to cathode, heater, and shell	4.3 pF
Plate to cathode, heater, and shell	1.8 pF
Plate to cathode	0.18 pF
Heater to cathode	1.6 pF

These capacitances are relevant to VHF tuned-circuit loading and input-to-output coupling. The grid-to-plate capacitance is especially important to the neutralized amplifier application.

The grouped input and output measurements include the electrode and shell connections identified in the manufacturer definitions.

Relationship to Other Nuvistor RF Triodes

The 2EG4's published RF characteristics are close to those of other high-mu Nuvistor tuner triodes, including members of the CW4 and DS4 families. Nevertheless, the **2EG4 is a distinct designation with a 1.7 V / 0.60 A heater** and its own RCA rating table.

Similarity in RF characteristics does not by itself establish socket, heater, or full electrical interchangeability. The heater requirements and any manufacturer-specific maximum ratings must be respected.

Technical Summary

The **2EG4** is a **1.7 V / 600 mA high-mu Nuvistor triode** intended for **grounded-cathode, neutralized VHF RF amplification in television and FM receivers**. It offers a typical amplification factor of **63-68**, transconductance of **9-12.5 mA/V**, plate resistance of **5.44-7 kΩ**, and plate current of approximately **6.5-7 mA** at its published operating points.

Its **1.5 W plate-dissipation rating**, small electrode capacitances, and compact metal-shell construction characterize it as a specialized receiving-tuner amplifier rather than an audio power or transmitting tube.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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
Hester Voltage (ac/dc)	1.7 V	Published in approved target datasheet entry
Heater Current	600 mA	Published in approved target datasheet entry
Heater Warm-up Time (Average)	8 seconds	Published in approved target datasheet entry
Peak Heater-Cathode Voltage	100 V	Published in approved target datasheet entry
Plate Voltage	135 V	Published in approved target datasheet entry
Peak or dc positive value	0 V	Published in approved target datasheet entry
Cathode Current I	5 mA	Published in approved target datasheet entry
Plate Supply Voltage 110	70 V	Published in approved target datasheet entry
Grid Supply Voltage –	0 V	Published in approved target datasheet entry
Plate Resistance (Approx.) 7000	5440 ohm	Published in approved target datasheet entry
Transconductance 9000	12500 μS	Published in approved target datasheet entry
Grid Voltage (Approx.) for plate current of	10 uA	Published in approved target datasheet entry
Plate Current 6.5	7 mA	Published in approved target datasheet entry
For fixed-bias operation	2.2 Mohm	Published in approved target datasheet entry
For cathode-bias operation	0.5 Mohm	Published in approved target datasheet entry
A plate supply voltage of	300 V	Published in approved target datasheet entry
used in the plate circuit to limit the plate dissipation to	1.5 W	Published in approved target datasheet entry

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Plate 0	-92 pF	Published in approved target datasheet entry
Grid to Cathode, Heater, and Shell	4.3 pF	Published in approved target datasheet entry
Plate to Cathode, Heater, and Shell 1	-8 pF	Published in approved target datasheet entry
Plate to Cathode	0.18 pF	Published in approved target datasheet entry
Heater to Cathode I	6 pF	Published in approved target datasheet entry