



ELECTRONIC TUBE REFERENCE

17GT5A

Power - TV Horizontal Output (sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

BEAMPOWER

Novar beam-power tube designed for television horizontal-deflection amplification, with controlled heater warm-up and high pulse-voltage ratings.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9NZ	BASE PINS	9
NOMINAL HEATER	16.8 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Beam Power	
PLATE RESISTANCE	15000 Ω
TRANSCONDUCTANCE	0.0071 S
AMPLIFICATION FACTOR	4.4
MAXIMUM PLATE VOLTAGE	650 V
MAXIMUM SCREEN VOLTAGE	220 V
MAXIMUM PLATE DISSIPATION	17.5 W
MAXIMUM CATHODE CURRENT	550 mA
<i>Promoted from published ratings/characteristics where directly applicable; additional published values retained in TUBE_SECTION_PARAMETER.</i>	

17GT5A — Beam Power Pentode

The **17GT5A** is a Novar-type beam power pentode designed primarily for use as a horizontal-deflection amplifier in television receivers operating under 525-line, 30-frame systems. It features a compact T-12

envelope construction and is electrically identical to the [6GT5A](#), differing only in its heater ratings. It is also closely related to the [17GT5](#), from which it differs by utilizing a shorter bulb and a base configuration that incorporates an exhaust tip at the bottom.

Physical Construction and Basing

The 17GT5A is constructed in a T-12 glass envelope with a Novar Button 9-pin base (designation E9-88), which features an exhaust tip on the base. This design requires a standard Novar 9-contact socket. The physical dimensions of the tube are as follows:

- **Maximum Diameter:** 1.562 inches
- **Maximum Seated Height:** 2.500 inches
- **Maximum Overall Height:** 2.880 inches

The tube utilizes the **9NZ** pin connection diagram, which provides the following pinout configuration:

- **Pin 1:** Grid No. 2 (Screen Grid)
- **Pin 2:** Grid No. 1 (Control Grid)
- **Pin 3:** Cathode, Grid No. 3 (Beam Plates)
- **Pin 4:** Heater
- **Pin 5:** Heater
- **Pin 6:** Grid No. 1 (Control Grid)
- **Pin 7:** Grid No. 2 (Screen Grid)
- **Pin 8:** Internal Connection (IC) — Do not use
- **Pin 9:** Plate

Heater and Capacitance Ratings

The 17GT5A is designed for series or parallel heater arrangements, featuring a controlled warm-up time. Its primary heater and interelectrode capacitance characteristics include:

Parameter	Value
Heater Voltage (AC/DC)	16.8 V
Heater Current	0.45 A
Average Heater Warm-up Time	11 s
Peak Heater-Cathode Voltage	□200 max V
Average Heater-Cathode Voltage	100 max V

Direct Interelectrode Capacitances

- **Grid No. 1 to Plate:** 0.26 pF
- **Grid No. 1 to Cathode, Heater, Grid No. 2, Grid No. 3:** 15 pF

- **Plate to Cathode, Heater, Grid No. 2, Grid No. 3:** 6.5 pF

Class A1 Operating Characteristics

The 17GT5A can be operated in both triode and pentode configurations. Under Class A1 conditions, the typical operating parameters are defined as follows:

Triode Connection

When Grid No. 2 is connected directly to the plate, the operating parameters are:

- **Plate Voltage:** 150 V
- **Grid No. 2 Voltage:** 150 V
- **Grid No. 1 Voltage:** -22.5 V
- **Amplification Factor (Grid No. 2 to Grid No. 1):** 4.4

Pentode Connection

The tube's pentode characteristics are documented under low-voltage and normal-voltage conditions. To prevent exceeding maximum ratings during low-voltage testing, a recurrent waveform method is used to measure peak currents.

Parameter	Low Plate Voltage	Normal Operation
Plate Voltage	60 V	250 V
Grid No. 2 Voltage	150 V	150 V
Grid No. 1 Voltage	0 V	-22.5 V
Plate Resistance (Approx.)	—	15,000 Ω
Transconductance	—	7,100 μmhos
Plate Current	390 mA*	70 mA
Grid No. 2 Current	32 mA*	2.1 mA
Grid No. 1 Cutoff Voltage (for $I_b = 1 \text{ mA}$)	—	-42 V

**Measured using a recurrent waveform method.*

Horizontal-Deflection Service and Maximum Ratings

In horizontal-deflection amplifier service, the 17GT5A is subject to demanding pulse conditions. The design-maximum ratings must not be exceeded under any operating conditions:

- **DC Plate Supply Voltage:** 770 V

- **Peak Positive-Pulse Plate Voltage:** 6,500 V (Pulse duration must not exceed 15% of a horizontal scanning cycle, or 10 μ s)
- **Peak Negative-Pulse Plate Voltage:** 1,500 V
- **DC Grid No. 2 Voltage:** 220 V
- **DC Grid No. 1 Voltage:** -55 V
- **Peak Negative-Pulse Grid No. 1 Voltage:** 330 V
- **Peak Cathode Current:** 550 mA
- **Average Cathode Current:** 175 mA
- **Plate Dissipation:** 17.5 W
- **Grid No. 2 Input:** 3.5 W
- **Maximum Bulb Temperature (at hottest point):** 240 °C

Circuit Design Constraints

When utilizing grid-resistor-bias operation, the maximum allowable **Grid No. 1-circuit resistance is 1.0 M Ω** . To prevent thermal runaway or damage to the tube, a bias resistor or other protective means must be incorporated to safeguard the device in the event that excitation is lost. For average characteristic curves, the behavior of this tube corresponds to that of type [6GW6](#).

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 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Oscillator Voltage	4.5 V	Published in approved 17GT5A target datasheet entry; Section1
Plate Current	12 mA	Published in approved 17GT5A target datasheet entry; Section1
Transconductance	3500 μ S	Published in approved 17GT5A target datasheet entry; Section1
6.3	16.8 V	Published in approved 17GT5A target datasheet entry; Section1
1.2	450 mA	Published in approved 17GT5A target datasheet entry; Section1
Heater Warm-up Time (Average)	11 seconds	Published in approved 17GT5A target datasheet entry; Section1
DC Plate Supply Voltage	770 V	Published in approved 17GT5A target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage#	6500 V	Published in approved 17GT5A target datasheet entry; Section1
Peak Negative-Pulse Plate Voltage	1500 V	Published in approved 17GT5A target datasheet entry; Section1
Peak Negative-Pulse Grid-No.1 Voltage	330 V	Published in approved 17GT5A target datasheet entry; Section1
Peak Cathode Current	550 mA	Published in approved 17GT5A target datasheet entry; Section1
Average Cathode Current	176 mA	Published in approved 17GT5A target datasheet entry; Section1
Plate Dissipation*	17.5 W	Published in approved 17GT5A target datasheet entry; Section1
Grid-No.2 Input	3.6 W	Published in approved 17GT5A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.1-Circuit Resistance, for grid-resistor-bias operation*	1 MΩ	Published in approved 17GT5A target datasheet entry; Section1
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	10 microseconds	Published in approved 17GT5A target datasheet entry; Section1
Heater Voltage (ac/dc) 6.3	8.4 V	Published in approved 17GT5A target datasheet entry; Section1
Heater Current 0.6	450 mA	Published in approved 17GT5A target datasheet entry; Section1
Heater Warm-up Time (Average) 11	11 seconds	Published in approved 17GT5A target datasheet entry; Section1
Plate Voltage	330 V	Published in approved 17GT5A target datasheet entry; Section1
Grid Voltage, Positive-bias value	0 V	Published in approved 17GT5A target datasheet entry; Section1
Plate Dissipation	3 W	Published in approved 17GT5A target datasheet entry; Section1
Plate Voltage	250 V	Published in approved 17GT5A target datasheet entry; Section1
Grid Voltage	-10.5 V	Published in approved 17GT5A target datasheet entry; Section1
Plate Resistance (Approx.)	5500 Ω	Published in approved 17GT5A target datasheet entry; Section1
Transconductance	3100 μS	Published in approved 17GT5A target datasheet entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to Plate	0.26 pF	Published in approved 17GT5A target datasheet entry; Section1
Grid No.1 to Cathode, Heater, Grid No.2, and Grid No.3	15 pF	Published in approved 17GT5A target datasheet entry; Section1
Plate to Cathode, Heater, Grid No.2, and Grid No.3	6.5 pF	Published in approved 17GT5A target datasheet entry; Section1
Grid to Plate 3	3 pF	Published in approved 17GT5A target datasheet entry; Section1
Grid to Cathode and Heater 3.4	3.6 pF	Published in approved 17GT5A target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate to Cathode and Heater 0.44	0.34 pF	Published in approved 17GT5A target datasheet entry; Section1
Plate of Unit No.1 to Plate of Unit No.2	1 pF	Published in approved 17GT5A target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 150 60	250 V	Published in approved 17GT5A target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Voltage 150 150	150 V	Published in approved 17GT5A target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage -22.5 0	-22.5 V	Published in approved 17GT5A target datasheet entry; Section1
390 •	70 mA	Published in approved 17GT5A target datasheet entry; Section1
Grid-No.2 Current 32*	2.1 mA	Published in approved 17GT5A target datasheet entry; Section1