



ELECTRONIC TUBE REFERENCE

17GE5

Power - TV Horizontal Output (sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

BEAMPOWER

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

GENERAL CHARACTERISTICS

BASE DESIGNATION	12BJ	BASE PINS	12
NOMINAL HEATER	16.8 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

12BJ - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	–	H – Heater	CONNECTED
PIN2	–	G2 – Screen Grid	CONNECTED
PIN3	–	G1 – Control Grid	CONNECTED
PIN4	–	G3 – Suppressor Grid	CONNECTED
PIN4	–	K – Cathode	CONNECTED
PIN5	–	–	IC
PIN6	–	–	IC
PIN7	–	P – Plate (Anode)	CONNECTED
PIN8	–	–	IC
PIN9	–	–	IC
PIN10	–	G3 – Suppressor Grid	CONNECTED
PIN10	–	K – Cathode	CONNECTED
PIN11	–	G1 – Control Grid	CONNECTED

TERMINAL	SECTION	ELEMENT	STATUS
PIN12	—	H — Heater	CONNECTED

SECTION RATINGS

SECTION1 Beam Power	
PLATE RESISTANCE	18000 Ω
TRANSCONDUCTANCE	0.0073 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>Reference/equivalence-only source does not reproduce the referenced electrical ratings/characteristics; promoted values intentionally not inferred from external datasheets.</i>	

17GE5 — Beam Power Pentode

The **17GE5** is a Compactron beam power pentode designed primarily for use as a horizontal-deflection amplifier in television receivers, particularly color television sets. It features a coated unipotential cathode and is electrically identical to the [6GE5](#) and [12GE5](#) vacuum tubes, differing only in its heater ratings.

Construction, Physical Dimensions, and Pinout Configurations

The 17GE5 is constructed in a Compactron T-12 glass envelope with a 12-pin button base (E12-74) or duodecar 12-contact socket. The physical dimensions of the tube are as follows:

- **Maximum Diameter:** 1.563 inches
- **Maximum Seated Height:** 2.500 inches
- **Maximum Overall Height:** 2.875 inches
- **Outline Designation:** 12-56 (Outlines section 15A)

Pinout Variations (Basing Diagram 12BJ)

The technical literature documents three distinct pinout configurations under the 12BJ basing diagram. Designers and technicians must verify the specific pin connections of the physical device being used:

Pin	Configuration A	Configuration B	Configuration C
1	Heater (H)	Heater (H)	Heater (H)
2	Grid No. 2 (G2)	Grid No. 2 (G2)	Grid No. 2 (G2)
3	Cathode, Grid No. 3 (K, G3)	Grid No. 3 (G3)	Grid No. 1 (G1)
4	Grid No. 1 (G1)	Internal Connection (IC)	Cathode (K)
5	Internal Connection (IC)	Plate (P)	Internal Connection (IC)
6	Plate (P)	Internal Connection (IC)	Internal Connection (IC)
7	Internal Connection (IC)	Internal Connection (IC)	Plate (P)
8	Internal Connection (IC)	Grid No. 3 (G3)	Internal Connection (IC)
9	Internal Connection (IC)	Internal Connection (IC)	Internal Connection (IC)
10	Cathode, Grid No. 3 (K, G3)	Cathode (K)	Grid No. 3 (G3)
11	Grid No. 1 (G1)	Grid No. 1 (G1)	Grid No. 1 (G1)
12	Heater (H)	Heater (H)	Heater (H)

Note: Internal connections (IC) must not be used for circuit tie points.

Heater and Cathode Characteristics

The 17GE5 incorporates an indirectly heated, coated unipotential cathode. The heater is designed for series-string or parallel operation with the following specifications:

- **Heater Voltage (AC or DC):** 15.8 V or 16.8 V (with 16.8 V specified as the bogey value at 0.45 A)
- **Heater Current:** 0.45 A (with a tolerance of ± 0.03 A)
- **Average Heater Warm-up Time:** 11 seconds
 - *Warm-up measurement condition:* The time required for the heater voltage to reach 80% of its bogey value when a voltage equal to four times the bogey voltage (67.2 V) is applied to the heater in series with a resistance equal to three times the bogey voltage divided by the bogey current (112 Ω).
- **Heater-Cathode Voltage Limits:**

- **Heater Negative with Respect to Cathode:** 200 V maximum (total DC and peak)
- **Heater Positive with Respect to Cathode:** 100 V DC maximum (or 200 V maximum total DC and peak)

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the 17GE5, measured without an external shield, are:

- **Grid No. 1 to Plate:** 0.34 pF
- **Input (G1 to all other electrodes except Plate):** 16 pF
- **Output (Plate to all other electrodes except G1):** 7 pF

Electrical Characteristics and Class A1 Operation

The 17GE5 can be operated under Class A1 amplifier conditions in either pentode or triode configurations. The typical operating points and characteristics are detailed below:

Pentode Connection Characteristics

- **Low-Voltage Knee Point:**
 - Plate Voltage: 60 V
 - Grid-No. 2 Voltage: 150 V
 - Grid-No. 1 Voltage: 0 V
 - Plate Current: 345 mA (measured using a recurrent waveform method to prevent exceeding maximum ratings)
 - Grid-No. 2 Current: 27 mA (measured using a recurrent waveform method)
- **High-Voltage Point (Condition A):**
 - Plate Voltage: 250 V
 - Grid-No. 2 Voltage: 150 V
 - Grid-No. 1 Voltage: -22.5 V to -22.6 V
 - Plate Current: 55 mA to 65 mA
 - Grid-No. 2 Current: 1.8 mA
 - Plate Resistance (Approximate): 18,000 Ω
 - Transconductance: 7,300 μmhos
 - Grid-No. 1 Voltage for Plate Current of 1.0 mA (Approximate): -42 V
- **High-Voltage Cutoff Point (Condition B):**
 - Plate Voltage: 5,000 V
 - Grid-No. 2 Voltage: 150 V
 - Grid-No. 1 Voltage for Plate Current of 1.0 mA (Approximate): -100 V

Triode Connection Characteristics

When Grid No. 2 is connected directly to the plate, the tube exhibits the following characteristics:

- **Plate Voltage:** 150 V
- **Grid-No. 2 Voltage:** 150 V
- **Grid-No. 1 Voltage:** 0 V or -22.5 V
- **Amplification Factor (μ):** 4.4

Horizontal-Deflection Service and Ratings

The 17GE5 is rated under the Design-Maximum Rating System for operation in television receivers utilizing a standard 525-line, 30-frame scanning system.

Design-Maximum Ratings

- **DC Plate Supply Voltage (Boost + DC Power Supply):** 770 V
- **Peak Positive-Pulse Plate Voltage:** 5,500 V to 6,500 V
 - *Duty Cycle Restriction:* The pulse duration must not exceed 15% of one horizontal scanning cycle (equivalent to a maximum of 10 μ s).
- **Peak Negative-Pulse Plate Voltage:** 1,500 V
- **DC Grid-No. 2 Voltage:** 220 V
- **Peak Negative-Pulse Grid-No. 1 Voltage:** 330 V
- **DC Grid-No. 1 Voltage:** -55 V
- **Peak Cathode Current:** 550 mA
- **Average Cathode Current:** 175 mA
- **Plate Dissipation:** 17.5 W
- **Grid-No. 2 Input / Dissipation:** 3.5 W
- **Bulb Temperature (at hottest point):** 200 °C to 220 °C

Circuit Design Constraints

- **Grid-No. 1 Circuit Resistance:** 1.0 M Ω maximum.
- **Tube Protection:** In stages operating with grid-leak bias, an adequate cathode bias resistor or other protective means is required to safeguard the tube against excessive plate dissipation in the absence of drive/excitation.

Technical Summary

The **17GE5** is a high-performance Compactron beam power pentode designed for horizontal-deflection amplifier service in television receivers. It features a 15.8 V / 16.8 V heater drawing 0.45 A, with a controlled 11-second warm-up time. The tube is capable of handling high peak positive-pulse plate voltages up to 6,500 V and peak cathode currents of 550 mA. With a plate dissipation rating of 17.5 W and a transconductance of 7,300 μ mhos under typical Class A1 conditions, the 17GE5 provides robust performance in demanding television deflection circuits. It is identical to the [6GE5](#) and [12GE5](#) except for its heater characteristics.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1968 General Electric Co

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

1968 GENERAL ELECTRIC CO

Section 1 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warmup Time	11 s	—



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
Load Resistance 2000	4000 Ω	Published in approved 17GE5 target datasheet entry; Section1
Total Harmonic Distortion 10	10 %	Published in approved 17GE5 target datasheet entry; Section1
Maximum-Signal Power Output 2.1	3.8 W	Published in approved 17GE5 target datasheet entry; Section1
For fixed -bias operation	0.1 M Ω	Published in approved 17GE5 target datasheet entry; Section1
For cathode-bias operation	0.5 M Ω	Published in approved 17GE5 target datasheet entry; Section1
Heater Voltage (ac/dc) 6.3 12.6	16.8 V	Published in approved 17GE5 target datasheet entry; Section1
Heater Current 1.2 0.6	450 mA	Published in approved 17GE5 target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warm-up Time (Average) – 11	11 seconds	Published in approved 17GE5 target datasheet entry; Section1
DC Plate Supply Voltage	770 V	Published in approved 17GE5 target datasheet entry; Section1
Peak Positive-Pulse Plate Voltage*	6500 V	Published in approved 17GE5 target datasheet entry; Section1
Peak Negative-Pulse Plate Voltage	1500 V	Published in approved 17GE5 target datasheet entry; Section1
DC Grid-No.2 Voltage	220 V	Published in approved 17GE5 target datasheet entry; Section1
Peak Negative-Pulse Grid-No.1 Voltage	330 V	Published in approved 17GE5 target datasheet entry; Section1
3	-6 W	Published in approved 17GE5 target datasheet entry; Section1
Grid-No.1 Circuit Resistance	1 MΩ	Published in approved 17GE5 target datasheet entry; Section1
# Pulse duration must not exceed 15% of a horizontal scanning cycle (	10 microseconds	Published in approved 17GE5 target datasheet entry; Section1
Heater Voltage (ac/dc) 6.3 9.7	13 V	Published in approved 17GE5 target datasheet entry; Section1
Heater Current 0.985 0.6	450 mA	Published in approved 17GE5 target datasheet entry; Section1

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Voltage 60 250	150 V	Published in approved 17GE5 target datasheet entry; Section1
Grid-No.2 (Screen-Grid) Voltage 150 150	150 V	Published in approved 17GE5 target datasheet entry; Section1
Grid-No.1 (Control-Grid) Voltage 0	-22.5 V	Published in approved 17GE5 target datasheet entry; Section1
Plate Resistance (Approx.)	18000 Ω	Published in approved 17GE5 target datasheet entry; Section1
Transconductance	7300 μS	Published in approved 17GE5 target datasheet entry; Section1
Plate Current 345*	65 mA	Published in approved 17GE5 target datasheet entry; Section1
Grid-No.2 Current 27 •	1.8 mA	Published in approved 17GE5 target datasheet entry; Section1

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
of	1 mA	Published in approved 17GE5 target datasheet entry; Section1
of 1 mA	-42 V	Published in approved 17GE5 target datasheet entry; Section1
Grid to Plate 4.6	9 pF	Published in approved 17GE5 target datasheet entry; Section1
Plate Voltage 250	150 V	Published in approved 17GE5 target datasheet entry; Section1
Grid Voltage -3	-20 V	Published in approved 17GE5 target datasheet entry; Section1
Plate Resistance (Approx.) 40000	760 Ω	Published in approved 17GE5 target datasheet entry; Section1
Transconductance 1600	7200 μS	Published in approved 17GE5 target datasheet entry; Section1
For plate current of 100 /1A –	-45 V	Published in approved 17GE5 target datasheet entry; Section1
For plate voltage of	60 V	Published in approved 17GE5 target datasheet entry; Section1
For plate voltage of 60 volts and zero grid voltage	95 mA	Published in approved 17GE5 target datasheet entry; Section1
For grid voltage of	28 V	Published in approved 17GE5 target datasheet entry; Section1

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid to Cathode and Heater 2.4	6.5 pF	Published in approved 17GE5 target datasheet entry; Section1
Plate to Cathode and Heater 0.26	1.4 pF	Published in approved 17GE5 target datasheet entry; Section1

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker