

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

17CT3

Rectifier - Damper Diode electronic tube

1 SECTION
CONSTRUCTION
RECTIFIER

Half-wave vacuum rectifier used as a damper tube in television horizontal-deflection circuits, supplied as a heater-voltage variant of its 6-volt parent.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	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

SECTION1 Rectifier	
MAXIMUM PLATE DISSIPATION	4.75 W
PEAK INVERSE VOLTAGE	5000 V
NOMINAL OUTPUT CURRENT	250 mA
PEAK FORWARD CURRENT	1.2 A
FORWARD VOLTAGE DROP	16 V
WARM-UP TIME	11 s
Reference-only sheet; parent electrical ratings not reproduced in supplied source.	

17CT3 — Half-Wave Vacuum Rectifier

The **17CT3** is a miniature half-wave vacuum rectifier designed specifically for damper service in the horizontal-deflection circuits of television receivers. It is utilized in both black-and-white and small-screen color television designs. Except for its heater characteristics and ratings, the 17CT3 is identical to the **6CT3** vacuum tube.

Physical Characteristics and Ventilation

The 17CT3 is constructed using a miniature **T-6½** glass envelope with an **E9-1** nine-pin miniature base. Because of the thermal demands of damper service, the tube requires adequate ventilation during operation. The physical dimensions of the device are as follows:

- **Maximum Diameter:** 0.875 inches
- **Maximum Seated Height:** 2.875 inches
- **Maximum Overall Height:** 3.125 inches
- **Maximum Bulb Temperature (at hottest point):** 220 °C

Pinout and Socket Wiring Constraints

The tube utilizes a **9RX** basing diagram and requires a miniature 9-contact socket. To maintain interchangeability and prevent circuit malfunction, internal connection (IC) pins must not be used as tie points for external circuit components.

Depending on the specific implementation of the 9RX basing diagram, two distinct pinout configurations are documented:

Configuration A

- **Pin 1:** Internal Connection (IC)
- **Pin 2:** Plate (P)
- **Pin 3:** Internal Connection (IC)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Cathode (K)
- **Pin 7:** Internal Connection (IC)
- **Pin 8:** Internal Connection (IC)
- **Pin 9:** Cathode (K)
- *Note:* In this configuration, socket terminals 1, 3, 7, and 8 must not be used as external tie points.

Configuration B

- **Pin 1:** Internal Connection (IC)
- **Pin 2:** Heater (H)
- **Pin 3:** Internal Connection (IC)
- **Pin 4:** Plate (P)
- **Pin 5:** Internal Connection (IC)
- **Pin 6:** Internal Connection (IC)
- **Pin 7:** Heater (H)
- **Pin 8:** Internal Connection (IC)
- **Pin 9:** Cathode (K)

- *Note:* In this configuration, socket terminals 1, 3, 5, 6, and 8 are designated as internal connections and must be kept free of external wiring.

Heater and Electrical Characteristics

The 17CT3 features an indirectly heated cathode designed for series-string or parallel heater operation. The heater is characterized by a controlled warm-up time to ensure reliable operation in series-connected receiver designs.

Heater Ratings

- **Heater Voltage (AC or DC):** 16.8 V
- **Heater Current:** 0.45 A (450 mA), with a tolerance of ± 0.030 A (± 30 mA)
- **Average Heater Warm-up Time:** 11 seconds

Direct Interelectrode Capacitances

The approximate capacitances of the tube, measured without an external shield, are:

- **Plate to Cathode and Heater:** 12 pF (or 12.0 pF)
- **Cathode to Plate and Heater:** 9.5 pF
- **Heater to Cathode:** 2.8 pF

Tube Voltage Drop

Under typical operating conditions, the tube exhibits a low internal voltage drop:

- **Instantaneous Tube Voltage Drop:** 16 V at an instantaneous plate current of 350 mA.

Damper Service Ratings

The maximum ratings of the 17CT3 are defined under the Design-Maximum System for operation in standard television receivers (specifically a 525-line, 30-frame system). These limits must not be exceeded under the worst-case operating conditions.

Plate Ratings

- **Peak Inverse Plate Voltage:** 5000 V. The duty cycle of the voltage pulse must not exceed 15% of a horizontal scanning cycle, corresponding to a maximum pulse duration of 10 microseconds.
- **Steady-State Peak Plate Current:** 1200 mA
- **Average Plate Current (DC Plate Current):** 250 mA
- **Plate Dissipation:** 4.75 W

Heater-Cathode Voltage Ratings

Due to the high-voltage pulses present in horizontal-deflection circuits, the insulation between the heater and cathode is rated to withstand significant potential differences:

- **Heater Negative with Respect to Cathode:**
 - **DC Limit:** 900 V
 - **Total DC and Peak Limit:** 5000 V
- **Heater Positive with Respect to Cathode:**
 - **DC Limit:** 100 V
 - **Total DC and Peak Limit:** 300 V

Technical Summary

The **17CT3** is a specialized **miniature half-wave vacuum rectifier** housed in a **T-6½** glass envelope with a **9-pin miniature base**. Engineered for **damper service** in television horizontal-deflection systems, it features a **16.8 V, 0.45 A** heater with an **11-second warm-up time**. It is capable of handling a **peak inverse plate voltage of 5000 V** (at a maximum 15% pulse duty cycle) and a **peak plate current of 1200 mA**, while maintaining a low **16 V voltage drop** at 350 mA. The tube is electrically identical to the **6CT3** except for its heater ratings.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 RCA HB3 Binder 5 of 7

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	16.8 V	AC or DC at rated heater current
Heater current	450 mA	Nominal current
Warm-up time	11 s	Average
Reference parent type	6CT3	Electrical characteristics same except heater



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 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Warm-up Time {Average}	11 s	Other;PublishedValue1
Heater Warm-up Time {Average}	11 s	Other;PublishedValue2
Heater Warm-up Time {Average}	11 s	Other;PublishedValue3
Peak Inverse Plate Voltage*	5000 V	MaximumRating
Peak Plate Current	1200 mA	MaximumRating
Average Plate Current	250 mA	MaximumRating

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate Dissipation	4.75 W	MaximumRating
Peak value	800 V	MaximumRating;PublishedValue1
Peak value	-5000 V	MaximumRating;PublishedValue2
Average value -(	-100 V	MaximumRating;PublishedValue1
Average value -(	-900 V	MaximumRating;PublishedValue2
Peak Inverse Plate Voltage	5000 V	Section1;Promoted
Peak Plate Current	1.2 A	Section1;Promoted

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate to Cathode and Heater	12 pF	Capacitance
Cathode to Plate and Heater	9.5 pF	Capacitance
Heater to Cathode	2.8 pF	Capacitance

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tube Voltage Drop for plate current of	350 mA	Characteristic;PublishedValue1
Tube Voltage Drop for plate current of	16 mA	Characteristic;PublishedValue2

TUBE TINKER

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