



ELECTRONIC TUBE REFERENCE

17CK3

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
RECTIFIER

Half-wave vacuum rectifier for television damper service, using controlled heater warm-up and heater characteristics suited to series-string receivers.

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

SECTION 1 Rectifier	
WARM-UP TIME	11 s
<i>Reference-only sheet; parent electrical ratings not reproduced in supplied source.</i>	

17CK3 — Half-Wave Vacuum Rectifier

A Novar-type half-wave vacuum rectifier designed for damper service in the horizontal-deflection circuits of television receivers.

Overview

The **17CK3** is a specialized damper heater-cathode diode housed in a T-9 glass envelope with a 9-pin Novar button base. It is primarily employed in the horizontal-deflection circuitry of black-and-white television receivers. The 17CK3 is electrically identical to the **6CK3** except for its heater ratings, which are designed for series-string heater circuits.

Construction, Physical Dimensions, and Basing

The 17CK3 features a T-9 glass bulb construction with an exhaust tip located on the base. It uses a Novar Button 9-Pin base (E9-89) with a **9HP** basing diagram.

The physical dimensions of the tube are:

- **Maximum Diameter:** 1.188 inches
- **Maximum Seated Height:** 2.625 inches
- **Maximum Overall Height:** 3.005 inches

Socket Connections and Installation

The tube is designed to be mounted in a Novar 9-contact socket. To ensure reliable operation under high-voltage conditions, specific installation guidelines must be followed:

- **Unused Terminals:** Pins 1, 3, 6, and 8 must not be used as tie points for any auxiliary wiring.
- **Arc-Over Prevention:** It is recommended to remove the socket tabs associated with these unused pins to reduce the risk of arc-over and minimize electrical leakage.
- **Ventilation and Temperature:** The tube requires adequate ventilation during operation. The maximum allowable bulb temperature at its hottest point is **220 °C**.

Heater and Cathode Characteristics

The 17CK3 is equipped with an indirectly heated, coated cathode. The heater is designed with a controlled warm-up time to ensure reliable operation in series-connected heater strings.

Heater Parameter	Value
Nominal Heater Voltage (AC or DC)	16.8 V
Nominal Heater Current	0.450 A (450 mA)
Heater Current Tolerance	±0.030 A
Average Warm-up Time	11 seconds

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the unshielded tube are approximately:

- **Plate to Cathode and Heater:** 6.5 pF
- **Cathode to Plate and Heater:** 9.0 pF
- **Heater to Cathode:** 3.0 pF

Damper Service Ratings and Operating Conditions

The 17CK3 is rated under the **Design-Maximum System** for operation as a damper tube in a standard 525-line, 30-frame television scanning system. In this service, the tube is subjected to high-voltage pulses during the horizontal retrace period.

Design-Maximum Ratings

These ratings represent the limiting values that should not be exceeded under any normal operating conditions:

- **Peak Inverse Plate Voltage:** 5200 V (provided the pulse duration does not exceed 15% of one horizontal scanning cycle, or 10 microseconds)
- **Peak Plate Current (Steady State):** 1200 mA
- **Average Plate Current (DC):** 250 mA
- **Plate Dissipation:** 6.5 W

Heater-Cathode Voltage Limits

Because the cathode of a damper tube experiences high pulse voltages relative to ground (and thus relative to the heater), the heater-cathode insulation must withstand severe electrical stress. The design-maximum limits are categorized by polarity:

- **Heater Negative with Respect to Cathode:**
 - **DC Limit:** 900 V
 - **Total DC and Peak Limit:** 5200 V
- **Heater Positive with Respect to Cathode:**
 - **DC Limit:** 100 V
 - **Total DC and Peak Limit:** 300 V

Electrical Characteristics

The forward conduction efficiency of the diode is characterized by its instantaneous tube voltage drop. When conducting a plate current of 350 mA, the instantaneous tube voltage drop is **16 V**.

Technical Summary

The **17CK3** is a Novar-base, half-wave vacuum rectifier designed for television damper service. Operating with a **16.8 V, 0.450 A** heater, it is electrically identical to the **6CK3** except for its heater ratings. It is capable of handling peak inverse plate voltages up to **5200 V** and peak currents up to **1200 mA** under pulsed conditions in a 525-line, 30-frame system. Its physical design utilizes a T-9 glass envelope with a 9-pin Novar button base, requiring careful socket wiring and adequate ventilation to maintain the bulb temperature below **220 °C**.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

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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	6CK3	Electrical characteristics same except heater

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and their source documents.

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