



ELECTRONIC TUBE REFERENCE

17BR3

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

RECTIFIER

Half-wave vacuum rectifier designed specifically for television horizontal-deflection damper service, with controlled heater warm-up for series-string receiver operation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	E9-11	BASE PINS	9
NOMINAL HEATER	14.8 V / 450 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
MAXIMUM PLATE DISSIPATION	6.5 W
PEAK INVERSE VOLTAGE	5500 V
NOMINAL OUTPUT CURRENT	200 mA
PEAK FORWARD CURRENT	1.2 A
FORWARD VOLTAGE DROP	19 V
WARM-UP TIME	11 s
<i>Same electrical ratings as 6BR3 except heater rating.</i>	

17BR3 — Half-Wave Vacuum Rectifier

The **17BR3** (also co-designated as the **17BR3/17RK19**) is a miniature half-wave vacuum rectifier designed specifically for use as a damper tube in the horizontal-deflection circuits of television receivers. It is engineered for operation in standard 525-line, 30-frame television systems. The 17BR3 is electrically identical to the 6BR3/6RK19 except for its heater ratings.

Heater and Physical Characteristics

The 17BR3 is a miniature-type tube that requires a standard miniature 9-contact socket. Its physical outline corresponds to section 7D. The tube features an indirectly heated cathode with the following heater specifications:

Parameter	Value
Heater Voltage (AC/DC)	16.8 V
Heater Current	0.45 A
Average Warm-up Time	11 seconds

Using the rated heater voltage of 16.8 V and heater current of 0.45 A, the nominal heater power consumption is calculated as $16.8 \text{ V} * 0.45 \text{ A} = 7.56 \text{ W}$.

Pinout Configurations

The 17BR3 utilizes the **9CB** pinout diagram. There are two documented variations regarding the connections for the heater and cathode terminals on pins 5 and 6. Designers must account for these differing descriptions when wiring the socket:

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

In one configuration, Pin 5 serves as a combined heater and cathode connection, leaving Pin 6 as an internal connection. In the alternative configuration, Pin 5 is dedicated solely to the heater, and Pin 6 serves as the cathode connection. Pins 1, 2, 3, 7, and 8 are reserved as internal connections in both configurations and should not be used for circuit connections.

Damper Service Maximum Ratings

The ratings for the 17BR3 are established under the Design-Maximum System for operation in a 525-line, 30-frame television receiver. These limits must not be exceeded under the worst-case operating conditions:

Rating Parameter	Design-Maximum Value
Peak Inverse Plate Voltage	5500 V
Peak Plate Current	1200 mA
Average Plate Current	200 mA
Plate Dissipation	6.5 W
Peak Heater-Cathode Voltage (Heater Positive)	+300 V
Peak Heater-Cathode Voltage (Heater Negative)	-5500 V
Average Heater-Cathode Voltage (Heater Positive)	+100 V
Average Heater-Cathode Voltage (Heater Negative)	-900 V
Maximum Bulb Temperature (at hottest point)	180 °C

For the peak inverse plate voltage rating of 5500 V, the pulse duration must be strictly controlled and must not exceed 15% of a horizontal scanning cycle, or 10 microseconds.

Electrical Characteristics

The electrical performance of the 17BR3 is characterized by its internal tube voltage drop during conduction. Under typical instantaneous operating conditions, the tube exhibits the following characteristic:

- **Tube Voltage Drop:** 19 V at an instantaneous plate current of 250 mA.

This low voltage drop at high peak currents is essential for maintaining efficiency in television horizontal-deflection damper service.

Technical Summary

The **17BR3** (17BR3/[17RK19](#)) is a specialized miniature half-wave vacuum rectifier optimized for damper service in television horizontal-deflection systems. Operating with a 16.8 V, 0.45 A heater, it provides robust high-voltage performance, including a peak inverse plate voltage rating of 5500 V and a peak plate current capability of 1200 mA. Its physical design utilizes a 9-pin miniature base (9CB pinout) and is capable of operating at bulb temperatures up to 180 °C.



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
Peak inverse plate voltage	5500 V	DamperService
Peak plate current	1200 mA	DamperService
Average plate current	200 mA	DamperService
Plate dissipation	6.5 W	DamperService

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tube voltage drop	19 V	PlateCurrent=250mA
Heater warm-up time	11 s	Average



SOURCE OPERATING CONDITIONS

1982 Toshiba

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

1982 TOSHIBA

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak Inverse Plate Voltage	5500 V	TVDamperService
Peak Plate Current	1.2 A	TVDamperService
DC Plate Current	200 mA	TVDamperService
Plate Dissipation	6.5 W	TVDamperService

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Tube Voltage Drop	19 V	I _b =250mA DC

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater-Cathode Capacitance	3 pF	—
Cathode-to-Plate-and-Heater Capacitance	10.5 pF	—
Plate-to-Cathode-and-Heater Capacitance	8.5 pF	—

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