



ELECTRONIC TUBE REFERENCE

17D4

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
RECTIFIER

Indirectly heated half-wave rectifier designed for television horizontal-deflection damper service, electrically related to the 6DA4 apart from heater characteristics.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	5
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	
MAXIMUM PLATE DISSIPATION	5.5 W
PEAK INVERSE VOLTAGE	4400 V
NOMINAL OUTPUT CURRENT	155 mA
PEAK FORWARD CURRENT	900 mA
FORWARD VOLTAGE DROP	22 V
WARM-UP TIME	11 s
<i>Reference/equivalence-only source does not reproduce the referenced electrical ratings/characteristics; promoted values intentionally not inferred from external datasheets.</i>	

17D4 — Half-Wave Vacuum Rectifier and Damper Diode

The **17D4** is an indirectly heated, half-wave vacuum rectifier designed specifically for service as a damping diode in the horizontal deflection circuits of television receivers. It is engineered for use in

series-connected heater strings, featuring controlled thermal characteristics to minimize heater voltage surges during the receiver's warm-up cycle.

Mechanical Specifications and Pinout

The 17D4 is constructed in a glass bulb with a T-9 outline (JEDEC 9-41 or 13D outline designation). It features an 8-pin octal base, which can be an intermediate shell (B5-85 or JETEC B6-8) or a short intermediate shell (B6-60). The tube can be mounted in any position.

Physical Dimensions

- **Maximum Diameter:** 1-3/16 inches to 1-9/32 inches
- **Maximum Seated Height:** 2-3/4 inches
- **Maximum Overall Length:** 3-5/16 inches

Pin Connections

The tube utilizes the JEDEC 4CG bottom-view basing diagram. The pin assignments are as follows:

Pin Number	Connection	Description
Pin 1	IC	Internal Connection (must not be used as a tie point; may be omitted)
Pin 2	IC	Internal Connection (must not be used as a tie point)
Pin 3	K	Cathode
Pin 4	IC	Internal Connection (must not be used as a tie point)
Pin 5	P	Plate
Pin 6	IC	Internal Connection (must not be used as a tie point)
Pin 7	H	Heater
Pin 8	H	Heater

To ensure proper operation and safety, all unused pins and associated metal parts must be tied directly to the heater. Socket terminals corresponding to pins 1, 2, 4, and 6 must never be utilized as circuit tie points.

Heater Characteristics and Controlled Warm-up

The heater of the 17D4 is designed to operate in series with other heaters of similar current ratings in television receivers.

- **Heater Voltage (AC or DC):** 16.8 V
- **Heater Current:** 0.45 A (with a tolerance of ± 0.030 A)
- **Average Heater Warm-up Time:** 11.0 seconds

The controlled warm-up characteristic is specifically designed to prevent voltage surges across individual heaters in a series string. The warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value (13.44 V) when four times the rated heater voltage (67.2 V) is applied to a circuit consisting of the tube heater in series with an external resistance equal to three times the nominal heater operating resistance. The nominal operating resistance is calculated as the rated heater voltage divided by the rated heater current.

Electrical Characteristics and Typical Operation

The 17D4 exhibits low internal resistance, resulting in a low voltage drop during conduction. Under typical operating conditions, the tube voltage drop is between 21 and 22 volts when measured at a plate current (I_b) of 250 mA.

Direct Interelectrode Capacitances

The capacitances of the tube, measured with unused pins and metal parts tied to the heater, are approximately:

- **Heater to Cathode:** 3.0 pF
- **Plate to Cathode and Heater:** 6.0 pF
- **Cathode to Plate and Heater:** 8.0 pF

Average Plate Characteristics

The relationship between plate current (I_b) and plate voltage (E_b) under rated heater conditions is characterized by the following typical operating points:

- At $E_b = 10$ V, the plate current is approximately 80 mA.
- At $E_b = 20$ V, the plate current is approximately 220 mA.
- At $E_b = 30$ V, the plate current is approximately 420 mA.
- At $E_b = 40$ V, the plate current is approximately 650 mA.
- At $E_b = 50$ V, the plate current is approximately 900 mA.

Maximum Ratings and Operating Conditions

The maximum ratings of the 17D4 are defined under the Design-Maximum System. These ratings apply to damper service in a standard 525-line, 30-frame television system, where the duty cycle of the horizontal

voltage pulse does not exceed 15% of one scanning cycle (or a maximum duration of 10 microseconds).

Parameter	Design-Maximum Rating	Design-Center Rating
Peak Inverse Plate Voltage	4,400 V	—
Peak Plate Current	900 mA	—
DC Plate Current	155 mA	145 mA
Plate Dissipation	5.5 W	—
Heater-Cathode Voltage (Heater Negative, DC)	900 V	—
Heater-Cathode Voltage (Heater Negative, Total DC & Peak)	4,400 V	—
Heater-Cathode Voltage (Heater Positive, DC)	100 V	—
Heater-Cathode Voltage (Heater Positive, Total DC & Peak)	300 V	—

To prevent overheating and ensure reliable operation, the tube must be provided with adequate ventilation.

Related Designations and Equivalents

The 17D4 is electrically identical to the [6DA4](#) and [12D4](#) vacuum tubes, except for its specific heater ratings. The [6DA4](#) and [12D4](#) are designed for different heater supply configurations, whereas the 17D4 is optimized for 450 mA series-connected heater strings. These designations cannot be directly substituted without adjusting the heater supply circuitry to match the required voltage and current specifications.

Technical Summary

The **17D4** is an octal-based, indirectly heated half-wave rectifier and damper diode housed in a T-9 glass envelope. It is designed for series-heater television receiver circuits, operating at a nominal heater rating of **16.8 V and 0.45 A** with a controlled **11-second warm-up time**. The tube features a maximum peak inverse voltage rating of **4,400 V**, a peak plate current capability of **900 mA**, and a maximum plate dissipation of **5.5 W**. Its low internal voltage drop of **21 to 22 V** at 250 mA makes it highly efficient for horizontal deflection damping applications.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Tung Sol

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

1961 TUNG SOL

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	16.8 V	Nominal
Heater current	300 mA	Nominal



SOURCE OPERATING CONDITIONS

1965 Sylvania Electronic Tubes Vol3

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

1965 SYLVANIA ELECTRONIC TUBES VOL3

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak inverse voltage	4400 V	—
Peak plate current	900 mA	—
DC plate current	155 mA	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater-to-cathode capacitance	3 pF	—
Plate-to-cathode/heater capacitance	6 pF	—

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1966 Tung Sol Electronic Tubes 3 of 4

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

1966 TUNG SOL ELECTRONIC TUBES 3 OF 4

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
AS A DAMPING DIODE IN HORIZONTAL DEFLECTION CIRCUITS OF	450 mA	Published datasheet
I NTER Pft ETED ACCORDING TO DESIGN MA%	1 mA	Published datasheet
TOTAL DC AND PEAK	400 V	Published datasheet
DC lO	0 V	Published datasheet
TOTAL DC AND PEAK	300 V	Published datasheet
MAXIMUM PEAK INVERSE VOLTAGE	400 V	Published datasheet
MAXIMUM DC PLATE CURRENT	155 mA	Published datasheet
MAXIMUM DC PLATE CURRENT (DESIGN CENTER SYSTEM)	145 mA	Published datasheet
Z MAXIMUM PEAK PLATE CURRENT	9 mA	Published datasheet
MAXIMUM PLATE DISSIPATION	5.5 W	Published datasheet
HEATER WARM-UP TIME (APPROX.) '	11 s	Published datasheet
T UN G-GOL ELECTRIC INC. ELECTRON TUNE DIVISION BL	931 mA	Published datasheet
MAX	5 mA	Published datasheet
AS A DAMPING DIODE IN HORIZONTAL DEFLECTION CIRCUITS OF	450 mA	Published datasheet
HEATER TO CATHODE	3 pF	Published datasheet
T OTA	400 V	Published datasheet
TOTAL DC AND PEAK	3 V	Published datasheet
MAXIMUM PEAK INVERSE VOLTAGE	400 V	Published datasheet

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM OC ►LATE CURRENT	155 mA	Published datasheet
MAXIMUM DC PLATE CURRENT (DESIGN CENTER SYSTEM)	145 mA	Published datasheet
MAXIMUM PEAK ►LATE CURRENT	900 mA	Published datasheet
MAXIMUM PLATE DISSIPATION	5.5 W	Published datasheet
DROP WITH	2 V	Published datasheet
HEATER WARM-UP TIME (APPROX.)*	11 s	Published datasheet

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HEATER VOLTAGE	16 V	Published datasheet
HEATER CURRENT 0	6 A	Published datasheet
TUBE VOLTAGE DROP WITH Ib=	22 V	Published datasheet
THE HORIZONTAL VOLTAGE PULSE X	15 V	Published datasheet
HEATER CURRENT --~	450 mA	Published datasheet
TUBE VOLTAGE Ib=	250 V	Published datasheet
THE MORIZOXT AL VOLTAGE PUI SE NOT TO EXCEED	15 V	Published datasheet



SOURCE OPERATING CONDITIONS

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 · Rectifier

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



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	6DA4	Electrical characteristics same except heater

TUBE TINKER

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

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