



ELECTRONIC TUBE REFERENCE

17BE3A

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

RECTIFIER

Compactron single heater-cathode diode designed for television horizontal-deflection damping, electrically related to 6BE3A/12BE3A except for heater characteristics.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	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

SECTION RATINGS

SECTION 1 Rectifier	
MAXIMUM PLATE DISSIPATION	6.5 W
PEAK INVERSE VOLTAGE	5000 V
NOMINAL OUTPUT CURRENT	200 mA
PEAK FORWARD CURRENT	1.2 A
FORWARD VOLTAGE DROP	16 V
WARM-UP TIME	11 s
<i>Electrically identical to 12BE3A except heater characteristics/ratings per supplied datasheet. Published maximum ratings and characteristics promoted from supplied datasheet.</i>	

17BE3A — Compactron Single Damper Diode

The **17BE3A** is a specialized Compactron, single heater-cathode type diode designed primarily for use as a damping diode in the horizontal deflection circuits of color television receivers. It features a coated unipotential cathode and is housed in a T-9 glass envelope.

The 17BE3A is electrically identical to the [6BE3A](#) and [12BE3A](#), differing only in its heater characteristics and ratings. Additionally, the 17BE3A offers a lower tube voltage drop compared to the older [17BE3](#).

Mechanical Construction and Pinout

The 17BE3A utilizes a T-9 glass envelope with a JEDEC 9-60 outline and a 12-pin button base (JEDEC E12-70). The tube is designed to be mounted in any position.

Physical Dimensions

- **Maximum Overall Length:** 2.875 inches
- **Seated Height:** 2.250 to 2.500 inches
- **Body Diameter:** 1.062 to 1.188 inches

Pin Connections (JEDEC 12GA Basing Diagram)

The 12-pin layout provides the following connections:

- **Pin 1:** Heater (H)
- **Pin 2:** No Connection (NC)
- **Pin 3:** No Connection (NC)
- **Pin 4:** Plate (P) or Internal Connection (IC)
- **Pin 5:** Internal Connection (IC)
- **Pin 6:** No Connection (NC)
- **Pin 7:** Cathode (K)
- **Pin 8:** No Connection (NC)
- **Pin 9:** Internal Connection (IC)
- **Pin 10:** Plate (P)
- **Pin 11:** No Connection (NC)
- **Pin 12:** Heater (H)

Note on Socket Wiring: Socket terminals 5, 6, 8, and 9 must not be used as tie points for external circuitry. It is recommended that the socket clips for these specific pins be physically removed to prevent accidental contact or voltage breakdown.

Heater and Heater-Cathode Ratings

The 17BE3A is designed for series-string heater circuits, featuring controlled warm-up characteristics.

Heater Parameter	Value
Average Heater Voltage	16.8 V
Average Heater Current	450 mA
Heater Supply Limits (Current Operation)	450 ± 30 mA

Heater Parameter	Value
Heater Warm-up Time	11 seconds

The heater warm-up time is defined as the time required for the heater voltage to reach 80% of its rated value when four times the rated heater voltage 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.

Heater-Cathode Voltage Limits (Design-Maximum Values)

To prevent insulation breakdown, the voltage difference between the heater and cathode must be kept within strict limits:

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

Electrical Characteristics and Maximum Ratings

The 17BE3A is rated under the Design-Maximum System (EIA Standard RS-239) for television damper service.

Direct Interelectrode Capacitances

These approximate values are measured without an external shield:

- **Cathode to Plate and Heater [K to (P + H)]:** 10 pF
- **Plate to Cathode and Heater [P to (K + H)]:** 8.0 pF
- **Heater to Cathode [H to K]:** 3.4 pF

Typical Operating Characteristics

- **Tube Voltage Drop:** 22.5 V (measured at a DC plate current of 350 mA)

Television Damper Service Maximum Ratings

These ratings apply to operation in a standard 525-line, 30-frame television system (FCC standards):

- **Peak Inverse Plate Voltage:** 5000 V maximum
- **Plate Dissipation:** 6.5 W maximum
- **Steady State Peak Plate Current:** 1200 mA maximum
- **DC Output Current:** 200 mA maximum

- **Pulse Duty Cycle Limit:** The duty cycle of the voltage pulse must not exceed 15% of one horizontal scanning cycle.

Technical Summary

The **17BE3A** is a high-voltage Compactron damper diode designed for television horizontal deflection circuits. Operating with a 16.8 V, 450 mA heater, it provides robust insulation capable of withstanding peak heater-cathode potentials up to 5000 V. With a low typical voltage drop of 22.5 V at 350 mA and a peak inverse plate voltage rating of 5000 V, it offers efficient and reliable performance in demanding television receiver 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

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OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Service	Television damper diode	—



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

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CAPACITANCE

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CATHODE TO PLATE AND HEATER: K TO (P+H)	10 pF	Published datasheet
PLATE TO CATHODE AND HEATER: P TO (K + H)	8 pF	Published datasheet

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HEATER TO CATHODE: (H TO K)	3.4 pF	Published datasheet
AVERAGE CHARACTERISTICS	12.6 mA	Published datasheet; operating column 1
AVERAGE CHARACTERISTICS	600 mA	Published datasheet; operating column 2
HEATER WARM-UP TIME SEE BELOW	11 s	Published datasheet
DC COMPONENT	900 V	Published datasheet

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
TOTAL DC AND PEAK	5000 V	Published datasheet
DC COMPONENT	100 V	Published datasheet
TOTAL DC AND PEAK	300 V	Published datasheet
PEAK INVERSE PLATE VOLTAGE	5000 V	Published datasheet
PLATE DISSIPATION	6.5 W	Published datasheet
Maximum plate dissipation	6.5 W	Published datasheet; promoted section value
Maximum peak inverse voltage	5000 V	Published datasheet; promoted section value
DC output current	200 mA	Published datasheet; promoted section value
Peak forward current	1.2 A	Published datasheet; promoted section value

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CURRENT	0 mA	Published datasheet; operating column 1
CURRENT	600 mA	Published datasheet; operating column 2
CURRENT	40 mA	Published datasheet; operating column 3
STEADY STATE PEAK PLATE CURRENT	1200 mA	Published datasheet
TUBE VOLTAGE DROP	16 V	Published datasheet; operating column 1
TUBE VOLTAGE DROP	350 V	Published datasheet; operating column 2
TUBE VOLTAGE DROP	225 V	Published datasheet; operating column 3

TUBE TINKER

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