

ELECTRONIC TUBE REFERENCE

17BP4D

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

P4 cathode-ray display tube documented for high-voltage direct-view operation, using magnetic deflection and manufacturer-specified beam focusing and control arrangements appropriate to type 17BP4D.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	5
NOMINAL HEATER	6.3 V / 60 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	550 V
CRT-specific ratings, operating conditions, capacitances, focus/deflection, cutoff, optical, and screen data are retained in section parameters.	

17BP4D — Rectangular Television Picture Tube

The **17BP4D** is a rectangular glass picture tube designed for television receiver applications. It features an aluminized screen with a P4-Sulfide Type phosphor, magnetic focus, and a 70° magnetic deflection angle. The tube incorporates an advanced electron gun design that requires no external ion-trap magnet, simplifying receiver setup and adjustment.

Optical and Mechanical Construction

The 17BP4D is constructed with a spherical Filterglass faceplate that provides approximately 74% light transmission, enhancing picture contrast under ambient light conditions. The screen has a projected area of 149 square inches.

Mechanically, the tube weighs approximately 18 lbs. Its physical dimensions include an overall length of 19-3/16" $\pm$ 3/8" and a neck length of 7-1/2" $\pm$ 3/16". The external surface of the glass envelope features a Regular-Band type external conductive coating, with a designated contact area for grounding located near the reference line.

Electrical connection to the high-voltage anode is made via a Recessed Small Cavity cap (JEDEC No. J1-21). The base is a Small-Shell Duodecal 5-Pin configuration (JEDEC Group 4, No. B5-57), which corresponds to the 12N basing designation.

Pinout and Electrical Connections

The 12N basing arrangement, viewed from the bottom of the tube, provides the following pin and cap connections:

Pin / Cap	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 10	Grid No. 2
Pin 11	Cathode
Pin 12	Heater
Cap	Anode (Grid No. 3, Screen, Collector)
C	External Conductive Coating (Grounding)

Heater and Electrical Characteristics

The 17BP4D is designed for operation with a nominal 6.3 V heater supply. The heater current is rated at 600 $\pm$ 60 mA at 6.3 volts. Under design-maximum ratings, the allowable heater voltage range is 5.7 volts minimum to 6.9 volts maximum.

Direct Interelectrode Capacitances

The direct interelectrode capacitances of the tube are as follows:

- **Cathode to all other electrodes:** 5 pF
- **Grid No. 1 to all other electrodes:** 6 pF
- **External conductive coating to anode:** 1500 pF maximum, 750 pF minimum

Design-Maximum Ratings

The design-maximum ratings represent the absolute limits within which the tube must be operated to ensure reliability and performance. All voltages are specified as positive with respect to the cathode

unless otherwise noted.

- **Anode Voltage:** 17,500 max. volts
- **Grid-No. 2 Voltage:** 550 max. volts
- **Grid-No. 1 Voltage:**
 - Negative peak value: 220 max. volts
 - Negative bias value: 155 max. volts
 - Positive bias value: 0 max. volts
 - Positive peak value: 2 max. volts
- **Peak Heater-Cathode Voltage:**
 - **Heater negative with respect to cathode:**
 - During equipment warm-up period (15 seconds or less): 450 max. volts
 - After equipment warm-up period: 165 max. volts
 - **Heater positive with respect to cathode:**
 - Combined AC and DC voltage: 165 max. volts
 - DC component: 100 max. volts

Typical Operating Conditions (Grid-Drive Service)

Under typical grid-drive operating conditions, the tube is operated with the following parameters (voltages are positive with respect to the cathode):

- **Anode Voltage:** 12,000 volts
- **Grid-No. 2 Voltage:** 300 volts
- **Grid-No. 1 Voltage for visual extinction of focused raster:** -28 to -72 volts

The maximum circuit resistance for the Grid-No. 1 circuit is restricted to **1.5 megohms** to maintain stable bias conditions.

Technical Summary

The **17BP4D** is a 17-inch class rectangular glass cathode-ray tube featuring a 70° magnetic deflection angle, magnetic focus, and an aluminized P4-Sulfide phosphor screen. Its design eliminates the need for an ion-trap magnet, reducing component count and alignment complexity in television receivers. Operating at a typical anode voltage of 12,000 V (with a design-maximum limit of 17,500 V), the tube delivers a bright, high-contrast image through its 74% transmission Filterglass faceplate. The electrical interface is standardized around a Small-Shell Duodecal 5-pin base (12N pinout) and a JEDEC J1-21 anode cap, supported by a 6.3 V, 600 mA heater.

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 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAGNETIC FOCUS	70 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid No.1 to al l other electrodes	6 pF	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
External conductive coating to anode	750 pF	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 volts – published value 1	6.3 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 volts – published value 2	600 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 volts – published value 3	60 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Light transmission (Approx)	74	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Projected Area of Screen	149	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage	12000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.2 Voltage	300 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
extinction of focused raster – published value 1	-28 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
extinction of focused raster – published value 2	-72 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Voltage	17500 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.2 Voltage	550 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Combined AC and DC voltage	165 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.1~ircuit Resistance	1.5 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

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