

ELECTRONIC TUBE REFERENCE

17DRP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view television picture tube with low-voltage electrostatic focus and magnetic deflection. Manufacturer documentation provides screen, optical, focus, deflection, and operating characteristics for high-voltage monochrome receiver display service.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	0
NOMINAL HEATER	6.3 V / 2.68 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
Published values promoted where clearly attributable to this section.	

17DRP4 — Television Picture Tube

The **17DRP4** is a 17-inch rectangular, direct-view television picture tube. It features an extremely short design with low-voltage electrostatic focusing and 110-degree magnetic deflection. The tube is designed with internal magnetic shielding in the gun structure, which permits the use of deflecting yokes without requiring special external magnetic shields. This internal shield is visually identified by a distinctive yellow base.

Other key features of the 17DRP4 include an unusually low heater power requirement, an aluminized metal-backed screen with a P4-Sulfide Type phosphor, and a straight electron gun design that requires no ion-trap magnet. The tube uses a short integral glass-button base with straight-through leads and an indexing lug.

Mechanical and Physical Characteristics

The 17DRP4 is a compact and lightweight cathode-ray tube, weighing approximately 10 lbs. Its physical dimensions and mechanical specifications are highly optimized for space-saving television receiver designs.

Envelope and Screen Dimensions

The tube utilizes a J132 1/2 A1 bulb with a spherical filterglass faceplate that provides approximately 77% light transmission at the center. The screen uses a P4 phosphor, which produces a white fluorescent color with medium persistence.

- **Projected Area of Screen:** 155 sq. in.
- **Minimum Useful Screen Dimensions:**
 - Diagonal: 15 3/4 inches
 - Width: 14 3/4 inches
 - Height: 11 11/16 inches
- **Greatest Bulb Dimensions:**
 - Diagonal: 16 9/16 $\pm$ 1/8 inches
 - Width: 15 5/8 $\pm$ 1/8 inches
 - Height: 12 3/4 $\pm$ 1/8 inches
- **Overall Length:** 10 13/16 inches (with tolerances of $\pm$ 3/16 inch or $\pm$ 3/8 inch depending on standard)
- **Neck Length:** 3 11/16 inches (with tolerances of $\pm$ 1/16 inch or $\pm$ 1/8 inch)

Deflection and Mounting

The tube has an approximate diagonal deflection angle of 110°, with a horizontal deflection of 105° and a vertical deflection of 87°. The reference line is determined by a JETEC No. 126 gauge.

An external conductive coating of the Modified-Band type is applied to the bulb, providing a grounding contact near the reference line. The area around the anode button has an insulating coating. The bottom circumference of the base wafer falls within a 1 3/4-inch diameter circle concentric with the bulb axis.

To prevent mechanical stress, the socket must not be rigidly mounted; it must have flexible leads that allow free movement and avoid impressing lateral strains on the pins.

Heater and Electrical Connections

The 17DRP4 is designed with a highly efficient heater optimized for series-string television receiver applications.

Heater Ratings

The heater has a controlled warm-up time of 11 seconds. This warm-up time is defined as the time required to reach 80% of the rated heater voltage when four times the rated voltage is applied in series with a resistance equal to three times the rated heater resistance.

Parameter	Value
Nominal Heater Voltage	2.68 V
Design-Maximum Heater Voltage Range	2.4 V to 2.9 V
Heater Current (at 2.68 V)	450 ± 45 mA (0.45 A)

Base and Pinout Configurations

The tube features a JEDEC No. B7-208 Small-Button Neoeightar 7-Pin base (Arrangement 1) with an 8JK bottom-view basing designation. The high-voltage anode connection is made via a recessed small cavity cap (JEDEC No. J1-21), which aligns with the center line between pin 6 and pin 7 within $\pm 30^\circ$.

Because different technical records list variations in the pin assignments for the 8JK basing, both documented configurations are presented below:

Pinout Configuration A

- **Pin 1:** Heater
- **Pin 2:** Grid No. 2
- **Pin 3:** Grid No. 1
- **Pin 4:** Grid No. 4 (Focus)
- **Pin 6:** Grid No. 2
- **Pin 7:** Cathode
- **Pin 8:** Heater
- **Cap:** Anode (Grid No. 3, Grid No. 5, Screen, Collector connected internally)
- **External Coating:** Grounding contact

Pinout Configuration B

- **Pin 1:** Heater
- **Pin 2:** Grid No. 1
- **Pin 3:** Grid No. 2
- **Pin 4:** Grid No. 4 (Focus)
- **Pin 6:** Cathode
- **Pin 7:** Heater
- **Cap:** Anode (Grid No. 3, Grid No. 5, and Anode connected internally)
- **External Coating:** Grounding contact

Interelectrode Capacitances

- **Cathode to all other electrodes:** 3.65 pF
- **Grid No. 1 to all other electrodes:** 4.15 pF
- **External conductive coating to anode:** 900 pF minimum / 1400 pF maximum

Operating Modes and Electrical Ratings

The 17DRP4 can be operated in either Grid-Drive Service or Cathode-Drive Service. The maximum ratings are defined under both the Design-Maximum and Absolute Maximum systems.

Maximum Ratings

The following table outlines the maximum limits for both operating services. Voltages are positive with respect to the cathode in Grid-Drive Service, and positive with respect to Grid No. 1 in Cathode-Drive Service, unless otherwise specified.

Parameter	Grid-Drive Service	Cathode-Drive Service
Anode Voltage	17,600 max V DC	17,600 max V DC
Grid No. 4 (Focus) Voltage	-700 to +950 max V DC	-550 to +1100 max V DC
Grid No. 2 Voltage	550 max V DC	700 max V DC
Grid No. 1 Voltage		
— Negative-Bias Value	155 max V DC	—
— Negative-Peak Value	400 max V	—
— Positive-Bias Value	0 max V DC	—
— Positive-Peak Value	2 max V	—
Cathode Voltage		
— Positive-Bias Value	—	155 max V DC
— Positive-Peak Value	—	220 max V
— Negative-Bias Value	—	0 max V DC
— Negative-Peak Value	—	2 max V
Grid No. 1 Circuit Resistance	1.5 max MΩ	1.5 max MΩ

Peak Heater-Cathode Voltage Limits

These limits apply to both Grid-Drive and Cathode-Drive services:

- **Heater negative with respect to cathode:**
 - During equipment warm-up period (≤ 15 seconds): 450 max V
 - After equipment warm-up period: 200 max V
- **Heater positive with respect to cathode:**
 - Combined AC and DC voltage: 200 max V
 - DC component: 100 max V

Typical Operating Conditions

Under typical operating conditions, the tube is operated at an anode potential of 14,000 V DC.

Grid-Drive Service

Voltages are positive with respect to the cathode.

- **Anode Voltage:** 14,000 V DC
- **Grid No. 4 Voltage (Focus):** 100 to 500 V DC
- **Grid No. 2 Voltage:** 300 V DC
- **Grid No. 1 Voltage for visual extinction of focused raster:** -35 to -72 V DC (*Note: For cutoff of an undeflected focus spot, the absolute bias value increases by approximately 5 V.*)

Cathode-Drive Service

Voltages are positive with respect to Grid No. 1.

- **Anode Voltage:** 14,000 V DC
- **Grid No. 4 Voltage (Focus):** 150 to 550 V DC
- **Grid No. 2 Voltage:** 300 V DC
- **Grid No. 1 Voltage:** 0 V DC
- **Cathode Voltage for visual extinction of focused raster:** +34 to +60 V DC (*Note: For cutoff of an undeflected focus spot, the absolute bias value increases by approximately 5 V.*)

Safety Considerations

When operating the 17DRP4, safety precautions regarding X-ray radiation must be observed. If the tube is operated at anode voltages higher than 16,000 Volts, appropriate X-ray radiation shielding may be necessary to protect users and service technicians.

Technical Summary

The **17DRP4** is a highly specialized, short-neck 17-inch rectangular television picture tube designed for space-efficient and low-power receiver designs. By combining a 110-degree magnetic deflection angle with low-voltage electrostatic focusing, it achieves a remarkably short overall length of under 11 inches. Its design eliminates the need for an ion-trap magnet and external magnetic shielding, utilizing an internal shield instead. Operating at a typical anode voltage of 14,000 V, the tube supports both grid-drive and cathode-drive configurations, with a controlled 11-second heater warm-up cycle that makes it ideal for series-string entertainment equipment.

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
LOW-VOLTAGE ELECTROSTATIC FOCUS	10 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid No.1 to all other electrodes	4.15 pF	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
External conductive coating to anode	900 pF	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 2.68 volts	2.68 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Warm-Up Time (Average)	11	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Light transmission (Approx.)	77	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Projected Area of Screen	155	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage	14000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.4 Voltage – published value 1	100 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.4 Voltage – published value 2	500 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.2 Voltage	300 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
extinction of focused raster – published value 1	35 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	17600 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	200 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.1-Circuit Resistance	1.5 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.