



ELECTRONIC TUBE REFERENCE

19ABP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

CATHODERAY

Wide-angle P4 monochrome television picture tube designed for high-voltage direct-view service, with magnetic deflection and manufacturer warnings concerning X-ray shielding at elevated anode voltages.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	2.68 V / 450 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	20000 V
MAXIMUM SCREEN VOLTAGE	550 V
<i>Controlled-warm-up short rectangular P4 picture tube.</i>	

19ABP4 — Short Rectangular Picture Tube

The 19ABP4 is a short, rectangular glass television picture tube featuring a 114° magnetic deflection angle, low-voltage electrostatic focusing, and an aluminized screen with a P4-sulfide type phosphor.

Overview

The **19ABP4** is a cathode-ray tube designed for television display applications. It features a short rectangular glass construction that minimizes cabinet depth requirements. The tube incorporates a 114-degree magnetic deflection system and a low-voltage electrostatic focusing lens (Grid No. 4). Its screen is aluminized and utilizes a P4-sulfide type phosphor to provide high brightness and contrast. The electron gun is designed to operate without an external ion-trap magnet, simplifying installation and adjustment.

Additionally, the tube includes an internal magnetic shield to reduce the effects of stray magnetic fields on beam registration.

Mechanical and Physical Characteristics

The 19ABP4 is built with a filterglass faceplate that has approximately 77% light transmission, enhancing picture contrast under ambient lighting conditions. The tube has a projected screen area of 172 square inches and weighs approximately 14 pounds.

Its physical dimensions are highly compact for its screen size:

- **Overall Length:** 10-15/16 inches $\pm$ 3/16 inch
- **Neck Length:** 3-11/16 inches $\pm$ 1/16 inch

The tube's envelope features an external conductive coating of the Regular-Band type, with a grounding contact area located near the reference line. The high-voltage anode connection is made via a recessed small cavity cap (JEDEC No. J1-21). The tube utilizes a Small-Button Neoeightar 7-pin base (Arrangement 1, JEDEC No. B7-208) with an 8JK bottom-view basing designation.

Pinout and Electrode Connections

The 8JK basing arrangement provides the following pin connections, viewed from the bottom of the tube:

Pin / Cap	Connection
Pin 1	Heater
Pin 2	Grid No. 2
Pin 3	Grid No. 1
Pin 4	Grid No. 4 (Focusing Electrode)
Pin 6	Grid No. 2
Pin 7	Cathode
Pin 8	Heater
Cap	Anode (Grid No. 3, Grid No. 5, Screen, Collector)
C	External Conductive Coating (Grounding Contact)

Pins 2 and 6 are internally connected to Grid No. 2. The high-voltage anode cap connects to Grid No. 3, Grid No. 5, the screen, and the collector.

Electrical Ratings and Operating Conditions

The 19ABP4 is designed with a low-voltage heater intended for controlled warm-up circuits. The heater ratings and direct interelectrode capacitances are as follows:

Heater Specifications

- **Nominal Voltage (for current):** 2.68 V
- **Minimum Voltage:** 2.4 V
- **Maximum Voltage (Design-Maximum):** 2.9 V
- **Current:** 450 ± 45 mA at 2.68 V
- **Average Warm-Up Time:** 11 seconds (controlled warm-up)

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** 3.4 pF
- **Grid No. 1 to all other electrodes:** 3.4 pF
- **External conductive coating to anode:** 850 pF minimum, 1400 pF maximum

Design-Maximum Ratings

All voltage ratings are specified relative to the cathode:

- **Anode Voltage:** 20,000 V maximum
- **Grid-No. 4 (Focusing) Voltage:** -700 V to +950 V maximum
- **Grid-No. 2 Voltage:** 550 V maximum
- **Grid-No. 1 Voltage:**
 - Negative peak value: 400 V maximum
 - Negative bias value: 155 V maximum
 - Positive bias value: 0 V maximum
 - Positive peak value: 2 V maximum
- **Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode: 450 V maximum during warm-up (first 15 seconds or less); 200 V maximum after warm-up
 - Heater positive with respect to cathode: 200 V maximum (combined AC and DC); 100 V maximum (DC component only)
- **Grid-No. 1-Circuit Resistance:** 1.5 megohms maximum

Typical Operating Conditions (Grid-Drive Service)

Under typical grid-drive operating conditions, with voltages measured relative to the cathode, the operating parameters are:

- **Anode Voltage:** 16,000 V
- **Grid-No. 4 Voltage:** 100 to 500 V

- **Grid-No. 2 Voltage:** 300 V
- **Grid-No. 1 Voltage (for visual extinction of focused raster):** -35 to -72 V

Technical Summary

The **19ABP4** is a compact, 114° magnetic deflection television picture tube featuring low-voltage electrostatic focusing and an aluminized P4-sulfide screen. Weighing approximately 14 pounds and measuring under 11 inches in overall length, it provides a 172 square inch projected screen area. The tube operates with a nominal 2.68 V, 450 mA heater designed for an 11-second controlled warm-up. With an anode rating of up to 20,000 V and a typical operating anode voltage of 16,000 V, the 19ABP4 delivers a bright, focused raster without requiring an external ion-trap magnet, utilizing an 8JK basing configuration on a 7-pin Neoeightar base.

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

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	2.68 V	—
Heater current	450 mA	—
Heater warm-up time	11 s	—
Maximum anode/ultor voltage	20000 V	—
Typical anode/ultor voltage	16000 V	PictureTubeService
Maximum grid No.2 voltage	550 V	—
Typical grid No.2 voltage	300 V	PictureTubeService
Focus-voltage range minimum	100 V	OptimumFocus
Focus-voltage range maximum	500 V	OptimumFocus
Visual-extinction voltage range minimum	-72 V	FocusedRasterExtinction
Visual-extinction voltage range maximum	-35 V	FocusedRasterExtinction
Maximum grid No.1 circuit resistance	1.5 megohm	—
X-ray shielding warning	Present	HighAnodeVoltage
Maximum negative grid No.1 peak voltage	400 V	—
Maximum negative grid No.1 bias magnitude	155 V	—
Maximum positive grid No.1 peak voltage	2 V	—
Peak heater-cathode voltage during warm-up	450 V	HeaterNegative;Warmup<=15s
Peak heater-cathode voltage after warm-up	200 V	HeaterNegative

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak heater-cathode voltage heater positive	200 V	HeaterPositive

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	LowVoltageElectrostatic	—
Deflection method	Magnetic	—
Phosphor	P4	—
Screen type	White	P4

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection angle	114 deg	Approximate

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	3.4 pF	Approximate
External conductive coating to anode capacitance maximum	1400 pF	Approximate