

ELECTRONIC TUBE REFERENCE

19EFP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Nineteen-inch rectangular direct-view television picture tube with electrostatic focus, 114-degree magnetic deflection, aluminized P4 white screen, and no ion trap. Its wide-angle construction is intended for shallow-cabinet monochrome receiver displays.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray
No fixed ratings recorded.
Television CRT electron-gun/display section.

19EFP4 — Banded Cathode Ray Tube

The **19EFP4** is a 19-inch, 114-degree banded cathode ray tube designed for television display applications. It features a straight electron gun that requires no ion trap and is optimized for cathode drive service with a 50 V Grid No. 2 potential. The tube is constructed without a coated funnel and incorporates integral implosion protection consisting of a rim band and tension strap.

Mechanical and Physical Design

The 19EFP4 utilizes a glass bulb designated as JEDEC J-149-F1, paired with a JEDEC B7-208 base. The electrical connections are routed through a JEDEC 8HR basing configuration, with the high-voltage anode

connection made via a JEDEC J1-21 bulb contact that aligns with Pin Position No. 4 within a tolerance of ± 30 degrees.

Physical Dimensions

The physical envelope of the tube is compact relative to its screen size, featuring a short neck to accommodate wide-angle deflection.

Dimension	Value
Overall Length	11 5/8 +1/4 inches
Neck Length	4 3/8 +1/8 inches
Greatest Diagonal	18 7/8 max. inches
Greatest Width	16 11/16 max. inches
Greatest Height	13 39/64 max. inches

Screen and Optical Characteristics

The screen features a projected minimum useful area of 172 square inches. The optical and screen dimensions are specified as follows:

- **Minimum Useful Diagonal:** 17 9/16 inches
- **Minimum Useful Horizontal Axis:** 15 1/8 inches
- **Minimum Useful Vertical Axis:** 12 inches
- **Phosphor:** P4 Aluminized
- **Light Transmittance:** Approximately 49% at the center of the screen

Heater and Electrical Connections

The 19EFP4 is equipped with a heater designed for reliable warm-up performance. The heater has a nominal warm-up time of 11 seconds.

Heater Ratings

- **Nominal Voltage:** 6.3 V
- **Design-Maximum Voltage Range:** 5.8 V to 6.9 V
- **Current:** 600 $\pm$ 30 mA at 6.3 V

Pinout Configuration (8HR Basing)

The JEDEC 8HR base provides the following pin assignments, viewed from the bottom of the tube:

Pin Number	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 3	Grid No. 2
Pin 4	Grid No. 4 (Focusing Electrode)
Pin 6	Grid No. 1
Pin 7	Cathode
Pin 8	Heater
Cap	Ultor (Grid No. 3, Grid No. 5 Collector)
External Coating	External Conductive Coating (C)

The external conductive coating must be grounded. The electrical resistance between the external coating and the implosion protection hardware is specified at a minimum of 50 megohms.

Electrical Characteristics and Capacitances

The 19EFP4 uses electrostatic focusing and magnetic deflection. The deflection angles of the bulb are:

- **Diagonal:** 114°
- **Horizontal:** 102°
- **Vertical:** 86°

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** Approximately 5 μF
- **Grid No. 1 to all other electrodes:** Approximately 6 μF
- **External conductive coating to anode:** 1,000 pF minimum to 1,500 pF maximum, measured with the implosion protection hardware connected to the external coating.

Operating Ratings and Conditions

The ratings of the 19EFP4 are defined under the Design-Maximum Rating System, with all voltages referenced to Grid No. 1.

Design-Maximum Ratings

- **Anode Voltage:** 10,000 minimum to 20,000 maximum volts
- **Grid No. 4 (Focusing Electrode) Voltage:** -500 minimum to +1,100 maximum volts
- **Grid No. 2 Voltage:** 25 minimum to 60 maximum volts

- **Cathode Voltage:**
 - Maximum negative DC value: 0 volts
 - Maximum negative peak value: 2 volts
 - Maximum positive DC value: 100 volts
 - Maximum positive peak value: 150 volts
- **Heater-Cathode Voltage:**
 - Heater negative with respect to cathode: 450 maximum volts during warm-up (first 15 seconds or less); 200 maximum volts after warm-up
 - Heater positive with respect to cathode: 200 maximum volts

Typical Operating Conditions (Cathode Drive Service)

In typical cathode drive service, where voltages are specified with respect to Grid No. 1:

- **Anode Voltage:** 16,000 volts DC
- **Grid No. 2 Voltage:** 50 volts DC
- **Cathode Voltage:** 35 to 55 volts DC for visual extinction of the focused raster
- **Grid No. 4 Voltage:** 250 volts DC. Satisfactory focus is obtainable between 0 and +400 volts DC under conditions where the combined Grid No. 1 bias and video-signal voltage are adjusted for an anode current of 100 μ A on a 15 1/8-inch by 12-inch raster pattern.

Maximum Circuit Values

- **Grid No. 1 Circuit Resistance:** 1.5 maximum megohms

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1964 RMA EIA

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

1964 RMA EIA

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	600 mA	—
Heater Warm-up Time	11 s	—
Focusing Method	Electrostatic text	—
Deflection Method	Magnetic text	—
Horizontal Deflection Angle	102 deg	—
Vertical Deflection Angle	86 deg	—
Diagonal Deflection Angle	114 deg	—
Cathode-to-All Capacitance	5 pF	Approximate
Grid1-to-All Capacitance	6 pF	Approximate
External Coating-to-Anode Capacitance Minimum	1000 pF	—
External Coating-to-Anode Capacitance Maximum	1500 pF	—
Phosphor	P4 Aluminized text	—
Fluorescence	White text	—
Light Transmittance	49 percent	ScreenCenter

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid2 Voltage	50 V	CathodeDriveDesign

TUBE TINKER

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

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker