

PHILCO®

CATHODE RAY TUBE

DATA SHEET

TENTATIVE

23BNP4

TELEVISION

PICTURE

TUBE

DESCRIPTION

The 23BNP4 is a 23" directly viewed rectangular glass type cathode ray tube with an aluminized screen. Other features include a spherical faceplate, bonded shield, grey filter glass, internal shielding, electrostatic focus, 110° magnetic deflection, and no ion trap.

ELECTRICAL DATA

Focusing Method	Electrostatic
Deflecting Method	Magnetic
Deflection Angle, approximate	
Horizontal	99 Degrees
Vertical	82 Degrees
Diagonal	110 Degrees
Direct Interelectrode Capacitance, approximate	
Cathode to All	5.0 μf
Grid #1 to All	6.0 μf
External Coating Capacitance	2000 Min. μf 2500 Max. μf
Heater Voltage	6.3 Volts
Heater Current	0.60 $\pm$ 5% Amperes
Heater Warm-up Time (Note 1)	11 Seconds

OPTICAL DATA

Phosphor Number	Aluminized P4
Fluorescent Color	White
Persistence	Medium Short
Faceplate (Bonded Shield)	FP198A1
Light Transmission at Center, approximate	40 Percent

MECHANICAL DATA

Overall Length	15 $\frac{3}{16}$ $\pm$ $\frac{3}{8}$ Inches
Neck Length	5 $\frac{1}{8}$ $\pm$ $\frac{1}{8}$ Inches
Minimum Useful Screen Dimensions (maximum assured dimensions)	
Diagonal	22 $\frac{5}{16}$ Inches
Width	19 $\frac{5}{16}$ Inches
Height	15 $\frac{1}{4}$ Inches
Area (Projected)	282 Sq. Inches
Bulb	J187A1 or Equiv.
Base	B7-208
Basing	8HR
Anode Contact	J1-21
Anode Contact Aligns with Center	
Line through Pin #4 $\pm$ 30°	

GRID DRIVE SERVICE

Voltag es are positive with respect to cathode unless indicated otherwise.

MAXIMUM RATINGS (Design Maximum Values)

Anode Voltage (Note 2)	22,000 Max. Volts DC
Grid #4 Voltage	- 550 Min. to + 1100 Max. Volts DC
Grid #2 Voltage	550 Max. Volts DC
Grid #1 Voltage	
Negative-Bias Value	155 Max. Volts DC
Negative-Peak Value	220 Max. Volts
Positive-Bias Value	0 Max. Volts DC
Positive-Peak Value	2 Max. Volts
Peak-Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period not to Exceed	
15 Seconds	450 Max. Volts
After Equipment Warm-up Period	200 Max. Volts
Heater Positive with Respect to Cathode	200 Max. Volts

TYPICAL OPERATING CONDITIONS

Anode Voltage	18,000 Volts DC
Grid #4 Voltage for Focus	- 100 to + 300 Volts DC
Grid #2 Voltage	400 Volts DC
Grid #1 Voltage (Note 3)	- 60 to - 110 Volts DC

MAXIMUM CIRCUIT VALUES

Grid #1 Circuit Resistance	1.5 Max. Megs.
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CATHODE DRIVE SERVICE

Voltag es are positive with respect to Grid #1 unless indicated otherwise

MAXIMUM RATINGS (Design Maximum Values)

Anode Voltage (Note 2)	22,000 Max. Volts DC
Grid #4 Voltage	- 400 Min. to + 1250 Max. Volts DC
Grid #2 Voltage	700 Max. Volts DC
Cathode Voltage	
Positive-Bias Value	155 Max. Volts DC
Positive-Peak Value	220 Max. Volts
Negative-Bias Value	0 Max. Volts DC
Negative-Peak Value	2 Max. Volts
Peak-Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
During Warm-up Period not to Exceed	
15 Seconds	450 Max. Volts
After Equipment Warm-up Period	200 Max. Volts
Heater Positive with Respect to Cathode	200 Max. Volts

23BNP4

TYPICAL OPERATING CONDITIONS

Anode Voltage	18,000 Volts DC
Grid #4 Voltage for Focus	150 to 500 Volts DC
Grid #2 Voltage	400 Volts DC
Grid #1 Voltage	0 Volts DC
Cathode Voltage (Note 3)	+54 to +90 Volts DC

MAXIMUM CIRCUIT VALUES

Grid #1 Circuit Resistance 1.5 Max. Megs.

NOTES

1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.
2. Anode, Grid #3 and Grid #5 are connected together within the tube and are referred to herein as anode.
3. For visual extinction of the focused raster. For cutoff of the undeflected focus spot, the absolute value of the bias between cathode and grid will increase by about 5 volts.

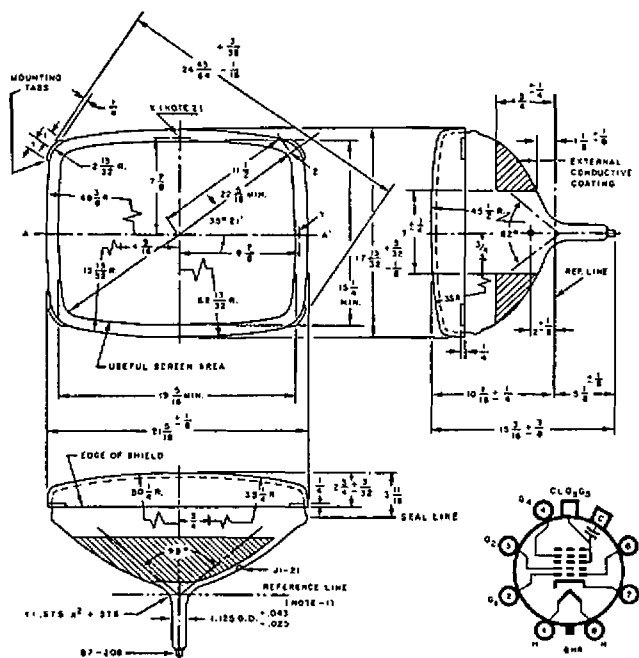


DIAGRAM NOTES:

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1. Reference line is determined by plane C-C' of JEDEC No. Reference Line Gauge, when the gauge is seated against the bulb.
2. Planes perpendicular to tube axis and passing through points X, Y and Z are located as follows:
 Plane tangent to crown of face to plane of X: .758" Nom.
 Plane of X to plane of Y = .463" ± .030"
 Plane of X to plane of Z = .970" ± .030"
3. Dimensions are shown in inches.

WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at anode voltages higher than 18,000 volts.

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