

Large P4 monochrome television picture tube designed for high-voltage direct-view service, using manufacturer-specified focusing, magnetic deflection, and beam-control arrangements for type 23NP4.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	7
NOMINAL HEATER	6.3 V / 30 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	50 V
CRT-specific ratings, operating conditions, capacitances, focus/deflection, cutoff, optical, and screen data are retained in section parameters.	

Attention is called to the from JEDEC release #2874, July 4, 1960 use of Design-Maximum Ratings for this type. 23NP4 PICTURE TUBE Low-Yol tage Electro- Aluminized Screen 19-1/4" x 15-1/8" Screen static Focus Low-Grid-No.2-Voltage Type 23-31/64" Max. Bulb Diagonal | 14° Magnetic Deflection for Cathode-Drive Operation [4-11/16" Max. Overall Length RCA-23NP4 is a directly viewed, rectangular GENERAL DATA glass picture tube having an aluminized screen Electrical: 19-1/74" x I15-1/8" with nearly straight sides Heater Current at 6.3 volts . 600 & 30 ma Heater Warm—Up Time (Average) e e e e 11 seconds and slightly rounded corners, and a minimum Heater warm-up time is defined as the time requireg projected screen area of 282 square inches. in the test circuit shown in Fig.1 for the voltage (E) across the heater terminals to increase from zero Maximum overall tength is [4—11716", to 5 volis. Dire



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Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
static Focus Low-Grid-No	64	static Focus Low-Grid-No.2-Voltage Type 23-31/64" Max. Bulb Diagonal
14° Magnetic Deflection for Cathode-Drive Operation [4-11/	16	14° Magnetic Deflection for Cathode-Drive Operation [4-11/16" Max. Overall Length
19-1/74" x I15-1/8" with nearly straight sides Heater Curren	30 V	19-1/74" x I15-1/8" with nearly straight sides Heater Current at 6.3 volts . 600 & 30 ma
projected screen area of	1	projected screen area of 282 square inches. in the test circuit shown in Fig.1 for the voltage
Diagonal	114	Diagonal. .. 114°
Horizontal. e e e e e	102	Horizontal. e e e e e 102°
yoke region to obtain	110	yoke region to obtain 114° deflection with 110° Internal surface— .
Other design features of the	114	Other design features of the 23NP4 include Bulp. Ce J187 {114°}
ULTOR®-TO-GRID-No	22000 V	ULTOR®-TO-GRID-No.1 VOLTAGE {22000 max. volts acceptable serviceability of the device, taking responsi-
11000 min. volts	11000 V	11000 min. volts
GRID-NO	1	GRID-NO.4-TO-GRID=NO.1 VOLTAGE:
Positive value	1100 V	Positive value. 1100 max. volts The equipment manufacturer
Negative value. ,	550 V	Negative value. , 550 max. volts intended service is exceeded with a bogey device under
GRID-NO,	70 V	GRID-NO,2-TO~GRID-NO.1 VOLTAGE. 70 max. volts the worsi probable operating conditions with respect to

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
40 min., volts supply-voltage variation, equipment component	40 V	40 min., volts supply-voltage variation, equipment component variation,
CATHODE~TO-GRID-No	1	CATHODE~TO-GRID-No.1 VOLTAGE: variation, and environmental conditions,
Positive peak value	220 V	Positive peak value 220 max. volts
Positive bias value	154 V	Positive bias value 154 max. volts which is applied the highest dc voltage for accelerating
Negative peak value ,	5 V	Negative peak value , 2 max. volts the 23NPH, the ultor function is performed by grid MO.5.
WEATER VOLTAGE. . . « « +	23 V	WEATER VOLTAGE. . . « « + 4 {°~9 max. volts together within the 23NP4, they are collectively
5.7 min. volts referred to simply as "ultor®" for convenience	5.7 V	5.7 min. volts referred to simply as "ultor®"™ for convenience In
not exceeding	450 V	not exceeding 15 seconds., . . 450 max. volts § Individual tubes will have satisfactory focus at some
After equipment warm-up period	1 V	After equipment warm—up period. 200 max, volts value of grid-No.4~10~grid-No.1 voltage between Qc and
Heater positive with	400 V	Heater positive with 400 volts with the combined bias voltage and video-
respect to cathode., ... ,	200 V	respect to cathode., ... , 200 max. volts signal voltage adjusted to give an ultiar current aof
200 microamperes.	200	200 microamperes.
With any ultor-tz;grid—flo.1 voltage (Ec	-1	With any ultor-tz;grid—flo.1 voltage (Ec5§1) between 11000 magnet should not exceed 2-1/u", Excluding extraneous
and	21 V	and 22000 volts and grid-§o.2-to-grid-No 21 voltage (Bepg;) fields, the center of the undeflected focused spot will
between	16 V	between 44 and 70 volts fall within a circle having a 7/16-inch radius concentric
Grid-No. U=to-Grid-No	1	Grid—No. U=to-Grid-No.1 Voltage that the earth's magnetic field can cause as much
for focusg. C e e e e e e e o to uoo volts as	2 V	for focusg. C e e e e e e e o to uoo volts as 1/2-inch deflection of the spot from the center of

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
tathode-to-Grld-No	1	tathode-to-Grld-No.1 voltage (Eyg,] the tube face,
1 negative voltage X-Ray Warning. When operated at ultor vol	1	1 negative voltage X-Ray Warning. When operated at ultor voltages
Grid-No.s Current	23	Grid-No.s Current, . . . -25 to +2% ua up to 16 kilovolts, the 23NP4 does not produce
Centering Magnet\$	22	Centering Magnet\$ 0 to 8 gaussess voltages as high as 22 kilovolts (design-maximum
Examples of Use of Design Ranges: value), shielding of the	23	Examples of Use of Design Ranges: value), shielding of the 23NP4 for X-ray radia-
and grid-Ko	50 V	and grid-Ko.2-to-grid-¥o.l volitage of 50 volts
Grid-No	1	Grid-No.8-1g-Grid-No.1 Voltage
for focusg. N e	400 V	for focusg. N e . 0 to 400 volts whenever the operating conditions involve voltages
Cathode-i{o-Grld-Ng	6	Cathode-i{o-Grld-Ng.1 voliage in excess of 6 kilovolts.
focused raster	34 V	focused raster. 34 to u9 volts Shatter-Proof Cover Over the Tube Face.
White-level value	3 V	White-level value —3Y4 to -hu9 volts . . . —
Grid~No,	1.5	Grid~No,1-Circult Resistance. . . 1.5 max. megohms and toprotect it against possible damage resulting
Ef=	6.3 V	Ef=6.3 VOLTS
ULTOR=- TO - GRID - N	16000	ULTOR=-TO-GRID-N2i VOLT5=16000
GRID=N	1 V	GRID=N2 4-TD-GRID-N&1 VOLTS ADJUSTED FOR FOCUS,
DIRECTLY BY APPROX	0 V	DIRECTLY BY APPROX. 2%, FOR EVERY 000-VOLT
CHANGE IN ULTOR-TQ-GRID-N	1	CHANGE IN ULTOR-TQ-GRID-N21 VOLTAGE.
roRTocR VOLTS=	16000 V	roRTocR VOLTS=16000 frT=o?13TVchT;o N2 VOLTS=16000
GRID-N	50 V	GRID-N22-TO-GRID-N2I VOLTS=50 GRID-N2 2=TO-GRID-Nf1 VOLT3=50
VIDEO VOLTS FROM	30 V	VIDEO VOLTS FROM 30RASTER CUTOFF

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
SIGMAL	20 V	SIGNAL 20 VIDEO SIGNAL VOLTS FROM RASTER CUTOFF
438"~ TJ.— °	438	438"~ TJ.— °



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Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to all other electrodes	6 pF	Published CRT datasheet value; multiple numbers on one source row represent 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 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 separate limits or operating conditions.
Heater Current at 6.3 volts – published value 3	30 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Heater Warm-Up Time (Average)	11	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Light transmission at center (Approx.)	78	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Projected Area of Screen	282	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Anode Voltage	18000 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.4 Voltage	200 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Grid-No.2 Voltage	50 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
of focused raster	52 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode Voltage	22000 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Combined AC and DC voltage	200 V	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.
Grid-PJo.1 Circuit Resistance	1.5 mA	Published CRT datasheet value; multiple numbers on one source row represent separate limits or operating conditions.

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