ELECTRONIC TUBE REFERENCE

3SP11

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
CATHODERAY

Three-inch cathode-ray tube for oscilloscope and instrument display service, using electrostatic focusing and electrostatic deflection. Its P11 screen designation identifies the phosphor variant within this compact oscillographic family.

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.

CRT section; maximum anode voltage 2750 V and capacitances retained in parameter table.

Three-inch rectangular direct-view oscilloscope CRT with electrostatic focus and electrostatic deflection.

SOURCE OPERATING CONDITIONS

1950 Sylvania

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

1950 SYLVANIA

Section 1 · Cathode Ray

CHARACTERISTIC		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Phosphor	**P11**	—
Focusing Method	**Electrostatic**	—
Deflecting Method	**Electrostatic**	—

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Typical Anode No. 2 Voltage	**2000 V**	—

SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

1960 Waterman Products

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

1960 WATERMAN PRODUCTS

Section 1 · Cathode Ray

OTHER		
PARAMETER	**PUBLISHED VALUE**	**CONDITION / NOTE**
Heater Voltage	**6.3 V**	. Heater Voltage ... . 6.3 Volts
Heater CUTTENt est tssess smsessassssssseenes [1]	**600 mA**	Heater CUTTENt est tssess smsessassssssseenes 0.6 == 10% Amperes
Heater CUTTENt est tssess smsessassssssseenes [2]	**10 A**	Heater CUTTENt est tssess smsessassssssseenes 0.6 == 10% Amperes
Cathode to all other electrodes	**5.6 pF**	Cathode to all other electrodes 5.6 ppf

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid [1]	**1 pF**	Grid 1 to all other electrodes 8.3 ppf
Grid [2]	**8.3 pF**	Grid 1 to all other electrodes 8.3 ppf
Positive voltage on D3 deflects beam approximately toward pin £	**4**	Positive voltage on D3 deflects beam approximately toward pin £ 4
D1-D2 are nearest to the screen (	**3**	D1-D2 are nearest to the screen (3” Dimension)
Anode Voltage (A2)	**2750**	Anode Voltage (A2). 2750 Vuolts DC
Anode (A2) loput	**6**	Anode (A2) loput ... 6 Watts
Anode # [1]	**1 V**	Anode #1 (Focusing Elcclrode) VO]ULC 1100 Volts
Anode # [2]	**1100 V**	Anode #1 (Focusing Elcclrode) VO]ULC 1100 Volts
Grid #	**1**	Grid #1 (G1) Voltage
Heater positive with respect to cathode	**125 V**	Heater positive with respect to cathode .. 125 Volts ©
Peak Voltage between Anode £ [1]	**2 V**	Peak Voltage between Anode £2 and any deflecting plate ... 550 Volts
Peak Voltage between Anode £ [2]	**550 V**	Peak Voltage between Anode £2 and any deflecting plate ... 550 Volts
Focusing Electrode (A1} Current for any operating condition [1]	**-15 A**	Focusing Electrode (A1} Current for any operating condition ... —15to +~10 xAmps
Focusing Electrode (A1} Current for any operating condition [2]	**10 A**	Focusing Electrode (A1} Current for any operating condition ... —15to +~10 xAmps
Spot Position (undeflected) (NOTE [1]	**1 mm**	Spot Position (undeflected) (NOTE 1) 12 Max. mm
Spot Position (undeflected) (NOTE [2]	**12 mm**	Spot Position (undeflected) (NOTE 1) 12 Max. mm
A1 Voltage [1]	**16.5**	A1 Voltage 16.5% to 31% of A2 Voltage
A1 Voltage [2]	**31**	A1 Voltage 16.5% to 31% of A2 Voltage
G1 Voltage [1]	**2.8**	G1 Voltage 2.8% 1o 6.7% of A2 Voltage (NOTE 2)
G1 Voltage [2]	**1**	G1 Voltage 2.8% 1o 6.7% of A2 Voltage (NOTE 2)
G1 Voltage [3]	**6.7**	G1 Voltage 2.8% 1o 6.7% of A2 Voltage (NOTE 2)

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
G1 Voltage [4]	**2**	G1 Voltage 2.8% 1o 6.7% of A2 Voltage (NOTE 2)
Anode Voltage (A2) [1]	**500 V**	Anode Voltage (A2) 500 1000 2000 Volts
Anode Voltage (A2) [2]	**1000 V**	Anode Voltage (A2) 500 1000 2000 Volts
Anode Voltage (A2) [3]	**2000 V**	Anode Voltage (A2) 500 1000 2000 Volts
Focusing Electrode Voltage (Al) [[1]	**82.5 V**	Focusing Electrode Voltage (Al) [82.5to 155 165 to 310 330t0 620 | Volts
Focusing Electrode Voltage (Al) [[2]	**155 V**	Focusing Electrode Voltage (Al) [82.5to 155 165 to 310 330t0 620 | Volts
Focusing Electrode Voltage (Al) [[3]	**165 V**	Focusing Electrode Voltage (Al) [82.5to 155 165 to 310 330t0 620 | Volts
Focusing Electrode Voltage (Al) [[4]	**310 V**	Focusing Electrode Voltage (Al) [82.5to 155 165 to 310 330t0 620 | Volts
Focusing Electrode Voltage (Al) [[5]	**330 V**	Focusing Electrode Voltage (Al) [82.5to 155 165 to 310 330t0 620 | Volts
Focusing Electrode Voltage (Al) [[6]	**620 V**	Focusing Electrode Voltage (Al) [82.5to 155 165 to 310 330t0 620 | Volts
Grid # [1]	**1 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [2]	**2 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [3]	**-14.5 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [4]	**-33.75 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [5]	**-291 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [6]	**-67.5 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [7]	**-58 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Grid # [8]	**-135 V**	Grid # 1 Voltage (Note 2) —14.5t0 —33.75 | —291to0 —67.5| —58 to —135| Volts
Deflection Factor D1-D2 [1]	**36.5 V**	Deflection Factor D1-D2 36.5t049.5 73 t0 99 146 to 198 | Volts DC/Inch
Deflection Factor D1-D2 [2]	**49.5 V**	Deflection Factor D1-D2 36.5t049.5 73 t0 99 146 to 198 | Volts DC/Inch
Deflection Factor D1-D2 [3]	**73 V**	Deflection Factor D1-D2 36.5t049.5 73 t0 99 146 to 198 | Volts DC/Inch

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection Factor D1-D2 [4]	**99 V**	Deflection Factor D1-D2 36.5t049.5 73 t0 99 146 to 198 | Volts DC/Inch
Deflection Factor D1-D2 [5]	**146 V**	Deflection Factor D1-D2 36.5t049.5 73 t0 99 146 to 198 | Volts DC/Inch
Deflection Factor D1-D2 [6]	**198 V**	Deflection Factor D1-D2 36.5t049.5 73 t0 99 146 to 198 | Volts DC/Inch
Deflection Factor D3-D4 [1]	**26 V**	Deflection Factor D3-D4 26 to 35 52t0 70 104 to 140 | Volts DC/Inch
Deflection Factor D3-D4 [2]	**35 V**	Deflection Factor D3-D4 26 to 35 52t0 70 104 to 140 | Volts DC/Inch
Deflection Factor D3-D4 [3]	**52 V**	Deflection Factor D3-D4 26 to 35 52t0 70 104 to 140 | Volts DC/Inch
Deflection Factor D3-D4 [4]	**70 V**	Deflection Factor D3-D4 26 to 35 52t0 70 104 to 140 | Volts DC/Inch
Deflection Factor D3-D4 [5]	**104 V**	Deflection Factor D3-D4 26 to 35 52t0 70 104 to 140 | Volts DC/Inch
Deflection Factor D3-D4 [6]	**140 V**	Deflection Factor D3-D4 26 to 35 52t0 70 104 to 140 | Volts DC/Inch
Grid # [1]	**1**	Grid # 1 Circuit Resistance 1.5 Megohms
Grid # [2]	**1.5**	Grid # 1 Circuit Resistance 1.5 Megohms
Resistance in any Deflecting Electrode Circuit (Note [1]	**3**	Resistance in any Deflecting Electrode Circuit (Note 3) 1.0 Megohms
Resistance in any Deflecting Electrode Circuit (Note [2]	**1**	Resistance in any Deflecting Electrode Circuit (Note 3) 1.0 Megohms
Published value	**1**	1. With deflecting electrodes connected to Anode (A2).
Published value	**2**	2. For visual extinction of undeflected focused spot.
Published value	**3**	3. The resistance in each deflecting electrode circuit should be approximately equal.
' [1]	**3 in**	'3’(5"1 ALL DIMENSIONS IN INCHES
' [2]	**5 in**	'3’(5"1 ALL DIMENSIONS IN INCHES
' [3]	**1 in**	'3’(5"1 ALL DIMENSIONS IN INCHES
rescent, yellow phosphorescent, long persistence phosphor. Use of [1]	**35**	rescent, yellow phosphorescent, long persistence phosphor. Use of 35P7 at anode voltage below 1000

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
rescent, yellow phosphorescent, long persistence phosphor. Use of [2]	**1000**	rescent, yellow phosphorescent, long persistence phosphor. Use of 35P7 at anode voltage below 1000

SOURCE OPERATING CONDITIONS

SOURCE PDF

1965 Sylvania Electronic Tubes Vol3

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

1965 SYLVANIA ELECTRONIC TUBES VOL3

Section 1 · Cathode Ray

CHARACTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	**1 code**	Electrostatic
Deflection method	**1 code**	Electrostatic
Deflection factor D1-D2 minimum	**146 V/in**	—
Deflection factor D1-D2 maximum	**198 V/in**	—
Deflection factor D3-D4 minimum	**104 V/in**	—
Deflection factor D3-D4 maximum	**140 V/in**	—
Useful screen / scan	**1 code**	1.5 x 3-inch rectangular direct-view screen
Phosphor designation	**1 code**	P11

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode No. 2 / accelerator voltage maximum	**3000 V**	—
Anode No. 2 / accelerator voltage	**2000 V**	—
Focusing electrode voltage maximum	**1200 V**	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing electrode voltage minimum	**330 V**	—
Focusing electrode voltage maximum	**620 V**	—
Grid No. 1 cutoff voltage minimum	**-135 V**	—
Grid No. 1 cutoff voltage maximum	**-58 V**	—
Peak heater-to-cathode voltage	**140 V**	—
Peak voltage between accelerator and any deflection plate	**550 V**	—
Grid No. 1 negative bias maximum	**200 V**	—