



TECHNICAL DATA

TEKTRONIX
T5511P

Revision A

8/1/62

The Tektronix Type T5511P___ is an aluminized 5-inch flat-faced cathode ray tube with electrostatic focus and deflection and a helical post-accelerator. Two identical electron guns with separate DJ₃-DJ₄ deflection systems share a common DJ₁-DJ₂ deflection system. The T5511P___ was designed for use in the Tektronix Type 551 Oscilloscope.

MECHANICAL SPECIFICATIONS:

Overall length	18½ ± ³ / ₁₆ inches
Greatest diameter of bulb	5 ⁵ / ₁₆ inches
Bulb contact	J1-21
Neck pin diameter	0.040 ±.002 inch
Base	JEDEC NO. B14-38
Bulb and base alignment	See outline drawing

ELECTRICAL DATA: ¹

Heater voltage	6.3 volts RMS
Heater current, total	1.2 ±10% amperes RMS
Helix resistance	200 megohms Min.
Capacitance, interelectrode (typical values)	
Grid No. 1 to all other electrodes	7.0 μμf
Cathode to all other electrodes	4.7 μμf
DJ ₁ to DJ ₂	3.0 μμf
DJ ₁ to all other electrodes except DJ ₂	4.8 μμf
DJ ₂ to all other electrodes except DJ ₁	4.8 μμf
DJ ₃ to DJ ₄	2.2 μμf
DJ ₃ A to all other electrodes except DJ ₄ A	3.0 μμf
DJ ₃ B to all other electrodes except DJ ₄ B	3.0 μμf
DJ ₄ A to all other electrodes except DJ ₃ A	3.3 μμf
DJ ₄ B to all other electrodes except DJ ₃ B	3.3 μμf

Deflection polarity

- Positive voltage on DJ₁ deflects beam approximately toward pin No. 4
- Positive voltage on DJ₃ deflects beam approximately toward pin No. 1

Geometry (measured under typical operating conditions and PDA ratio of 6)

Minimum useful scan DJ ₁ -DJ ₂	10 cm
Minimum useful scan DJ ₃ -DJ ₄	4 cm ²
Trace orthogonality	90° ±1°

Centering of undeflected spot with respect to center (deflection electrodes connected to grid No. 6)	5 mm ³
Raster distortion	1.7% Max.

MAXIMUM RATINGS (all measurements taken with respect to cathode):¹

Post-accelerator voltage	12,000 volts Max.
Accelerator and deflection system (screen, 1st anode, 2nd anode, deflection plates, deflection plate shields, isolation shield, lower helix)	2100 volts Max.
Focus electrode	
Voltage range	0 to 800 volts
Maximum current to focus electrode	±10 μa
Peak voltage between electrodes	
Plate to plate	500 volts Max.
Plate to all other electrodes in the accelerator and deflection system	500 volts Max.
Between any two electrodes in the accelerator and deflection system	500 volts Max.
Grid No. 1 voltage	
Negative bias value	200 volts Max.
Positive bias value	0 volts Max.
Peak positive bias value	2 volts Max.
Peak heater-cathode voltage	
Heater negative with respect to cathode	125 volts Max.
Heater positive with respect to cathode	125 volts Max.
Maximum electrode power dissipation	
1st anode	6 watts Max.

TYPICAL OPERATING CONDITIONS (all measurements taken with respect to cathode):¹

Electrode designation	Symbol	
Post-accelerator voltage	Epa	10,000 volts DC
Lower helix voltage	Elh	1575 to 1700 volts DC ⁴
Isolation shield voltage	Eg6	
Average of deflection plates	Edp	1650 volts DC
DJ ₃ -DJ ₄ deflection shield voltage	Es1	1575 to 1700 volts DC ⁵
Accelerator voltage		
Grid No. 5 (astigmatism)	Eg5	1575 to 1850 volts DC
Grid No. 2 (1st anode)	Eg2	1650 volts DC
Grid No. 3 (common beam registration)	Eg3	1525 to 1775 volts DC
Grid No. 4 voltage (focus)	Eg4	200 to 550 volts DC
Grid No. 1 voltage (control)	Eg1	-45 to -85 volts DC (cutoff)

Deflection factors (nominal)⁶

DJ ₁ -DJ ₂	30.3 volts/cm
DJ ₃ -DJ ₄	6.6 volts/cm

Useful scan

DJ ₁ -DJ ₂	10 cm
DJ ₃ -DJ ₄	4 cm ²

DESIGN RANGES: ¹

Minimum scan (PDA ratio of 6)

DJ ₁ -DJ ₂	10 cm
DJ ₃ -DJ ₄	4 cm ²

Deflection factors (PDA ratio of 6)⁶

DJ ₁ -DJ ₂	17.0 to 19.7 v/cm/kv of Edp
DJ ₃ -DJ ₄	3.6 to 4.4 v/cm/kv of Edp

Grid No. 1 voltage for extinction of undeflected focused spot 5.2% of Edp

Focus electrode voltage (recommended range) 12% to 33% of Edp

NOTES:

1. Data applies to both A and B guns separately unless otherwise noted.
2. DJ₃-DJ₄ scans overlap 2 cm.
3. DJ₁-DJ₂ center at geometric center of tube. DJ₃-DJ₄ offset 1 cm from geometric center giving 2 cm total separation between A and B guns.
4. Lower helix and isolation shield are connected internally. Pattern distortion minimal with proper potential.
5. Adjustment of DJ₃-DJ₄ deflection shield voltage improves linearity of DJ₃-DJ₄ deflection by controlling edge effect of DJ₃-DJ₄ plate field.
6. The deflection plates intercept part of the electron beam near the edge of scan; therefore, a low impedance deflection drive is desirable.

