

TYPE T-519

CATHODE RAY TUBE DATA SHEET

A high writing rate, wide band CRT featuring single-ended distributed vertical deflector. It was designed for use in the Tektronix 519 indicator.

MECHANICAL SPECIFICATIONS:

Overall Length-----	21 3/4"
Greatest Diameter of Bulb-----	5 5/16" Max.
Bulb Contacts (2)-----	J1 - 21
Neck Pins (10)-----	.040 ± .002" dia. Wire
Base-----	14 Pin .040 dia. special (See outline drawing)
Bulb and Base Alignment-----	See Outline Drawing

ELECTRICAL DATA:

Heater Voltage-----	6.3 Volts
Heater Current-----	.6 Amperes
Helix Resistance Range 200 Megohms to 600 Megohms	
Capacitance, Interelectrode (Typical Values)	
Grid No. 1 to all others -----	10.8μmf
Cathode to all others-----	4.4μmf
DJ ₁ to DJ ₂ -----	2.65μmf
DJ ₁ to all others except DJ ₂ -----	4.3μmf
DJ ₂ to all others except DJ ₁ -----	4.3μmf
Vertical Deflector (Note 1)	
Characteristic Impedance-----	125 ± 3 Ohms

Deflection Polarity:

- Positive Voltage of DJ₁ deflects beam toward Pin No. 10
- Positive Voltage on DJ₃ deflects beam toward Pin No. 6

Geometry:

Measured under typical operating conditions (PDA Ratio 6-1)	
Minimum useful scan DJ ₁ -DJ ₂ -----	6 cm
Minimum useful scan DJ ₃ -DJ ₄ -----	2 cm

TYPE T-519

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Electrical Data:

Geometry: (cont'd)

Trace Orthogonality-----	90 ± 1°
Centering of undeflected spot with respect to geometric center-----	±5 mm
Raster Distortion-----	1%

MAXIMUM RATINGS (All measurements taken with respect to the cathode)

I. Post Accelerator Voltage-----	24,000 Max.Volts
II. Accelerator and Deflection System (1st anode, 2nd anode, deflection plates, deflection plate shields, isolation shield, lower helix)-----	4500 Max.Volts
III. Focus Electrode Voltage-----	0 to 4000 Volts
Maximum Current to Focus Electrode-----	±10µa
IV. Peak Voltage between Electrodes	
Plate to Plate DJ ₁ -DJ ₂ -----	500 Max.Volts
Plate to Plate DJ ₃ -DJ ₄ -----	200 Max.Volts
Plate to all other electrodes in the accelerator and deflection system-----	500 Max.Volts
Between any two electrodes in the accelerator and deflection system-----	500 Max.Volts
V. Grid No. 1 Voltage	
Negative bias value-----	200 Max.Volts
Positive bias value-----	0 Max. Volts
Peak Positive value-----	2 Max. Volts
VI. Peak Heater-Cathode Voltage	
Heater Negative with respect to Cathode-----	125 Max.Volts
Heater Positive with respect to Cathode-----	125 Max.Volts
VII. Maximum Electrode Power Dissipation 1st Anode	6 Max.Watts

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TYPICAL OPERATING CONDITIONS (All measurements taken with respect to cathode)

Electrode Designation	<u>Symbol</u>	
Post Accelerator Voltage or	Epa	24,000 Volts DC
Lower Helix Voltage	Elh	3900 to 4100 Volts DC
Isolation Shield Voltage	Eg5)	4000 Volts DC (See Note 1)
Average of Deflection Plates)	
Accelerator Voltage		
Grid No. 4 (Astigmatism)	Eg4	3900 to 4100 Volts DC
Grid No. 2	Eg2	4000 Volts DC
Grid No. 3 Voltage (Focus)	Eg3	800 to 2000 Volts DC
Grid No. 1 Voltage (Control)	Eg1	-80 to -120 Volts
Deflection Factors (Nominal)		
DJ ₁ - DJ ₂ -----		38 Volts/cm
DJ ₃ - DJ ₄ -----		8 Volts/cm
Useful Scan		
DJ ₁ - DJ ₂ -----		6 cm
DJ ₃ - DJ ₄ -----		2 cm

DESIGN RANGES

Minimum Scan (PDA Ratio 6-1)

DJ ₁ - DJ ₂ -----	6 cm
DJ ₃ - DJ ₄ -----	2 cm

Deflection Factors (PDA Ratio 6-1)

DJ ₁ - DJ ₂ -----	8.8 to 10.2/cm/1KV Vgun
DJ ₃ - DJ ₄ -----	1.85 to 2.15/cm/1KV Vgun

Grid #1 Voltage for extinction of undeflected focused spot minimum----- 3% of Vgun

Focus Electrode Voltage (recommended range)-- 20% to 50% of Vgun

NOTE:

1. Optimum high speed response is obtained with 4000 Volts on the vertical deflector. Under this condition the electron beam is deflected synchronously.

