TEKTRONIX

TDS5054

The Tektronix TDS5054 is a four-channel, 500 MHz digital phosphor oscilloscope (DPO) designed to provide fast waveform capture rates and deep signal insights. Featuring Tektronix's proprietary DPX acquisition technology, a bright 10.4-inch display, and an open Windows-based platform, it delivers powerful triggering, extensive measurement capability, and convenient connectivity for demanding debugging and analysis tasks.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE 488.2), LAN (10Base-T/100Base-TX), USB 1.1 (4 ports), VGA out, RS-232 Serial, Centronics Parallel, PS/2 Keyboard/Mouse
Display	10.4 in (264 mm) color active-matrix TFT LCD, 640 × 480 pixels

Physical

Power Supply	100 to 240 VAC RMS ±10% (47 to 63 Hz), 100 to 132 VAC RMS (360 to 440 Hz); < 220 W power consumption
Operating Temperature	5 °C to 45 °C °C
Dimensions (W×H×D)	447 mm × 361 mm × 288 mm mm
Weight	11.1 kg
Cooling System	Forced-air cooling (right and bottom intake, left exhaust)

Vertical System

Analog Bandwidth	500 MHz
Number of Channels	4
Calculated Rise Time	800 ps
Input Coupling	AC, DC, GND
Input Impedance	1 MΩ ±1% (13 pF ±2 pF), 50 Ω ±1%
Input Sensitivity, 1 MΩ	1 mV/div to 10 V/div
Input Sensitivity, 50 Ω	1 mV/div to 1 V/div
Max Input Voltage, 1 MΩ	150 V CAT I (derated above 100 kHz)
Max Input Voltage, 50 Ω	5 V RMS
DC Gain Accuracy	±1.5%
Offset Range	±1 V (1 mV/div to 99.5 mV/div), ±10 V (100 mV/div to 995 mV/div), ±100 V (1 V/div to 10 V/div)
Channel-to-Channel Isolation	≥ 100:1 at 100 MHz, ≥ 30:1 at 500 MHz
Vertical Resolution (Hi-Res Mode)	Up to 12 bits
Position Range	±5 divisions
Hardware Bandwidth Limits	20 MHz and 150 MHz

Horizontal System

Max Sample Rate (Single-shot)	5 GS/s (1 channel), 2.5 GS/s (2 channels), 1.25 GS/s (4 channels)
Max Record Length	200 kpoints/channel (standard), up to 8 Mpoints (option-dependent)
Time Base Range	200 ps/div to 40 s/div
Time Base Accuracy	±15 ppm
Channel-to-Channel Deskew Range	±75 ns

Trigger System

Trigger Modes	Auto, Normal, Single
Trigger Coupling	DC, AC, HF Reject, LF Reject, Noise Reject
Trigger Holdoff Range	250 ns to 12 s
Edge Triggering	Positive or negative slope on any channel, external trigger, or AC line
Glitch Triggering	Trigger on glitches < 1 ns to 1 s
Width Triggering	Trigger on width of positive or negative pulses from 1 ns to 1 s
Runt Triggering	Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again
Timeout Triggering	Trigger on an event which remains high, low, or either, for a specified time period (1 ns to 1 s)
Pattern / State Triggering	Trigger on AND, OR, NAND, NOR logic pattern or state on analog input channels
Video Triggering	Trigger on NTSC, PAL, SECAM, or HDTV formats
Transition / Slew Rate Triggering	Trigger on pulse edge rates that are faster or slower than a specified rate
Setup and Hold Triggering	Trigger on violations of setup time and/or hold time between data and clock
Trigger Sensitivity (Internal)	0.35 div from DC to 50 MHz, increasing to 1 div at 500 MHz
Trigger Sensitivity (Aux Input)	100 mV from DC to 50 MHz, increasing to 500 mV at 500 MHz
Trigger Level Range (Internal)	±12 divisions from center of screen
Trigger Level Range (Aux Input)	±8 V
Window Triggering	Triggers when a signal enters or exits a specified voltage window

Acquisition Modes

FastAcq Waveform Capture Rate	100,000 wfms/s maximum
Acquisition Modes	Sample, Peak Detect, Envelope, Average, Hi-Res, Waveform Database, FastAcq
Peak Detect Mode	Captures high frequency glitches down to 1 ns
Envelope Mode	Min/max values acquired over one or more acquisitions
Average Mode	Selectable from 2 to 10,000 waveforms

Waveform Measurements and Analysis

Automatic Measurements (Amplitude)	Amplitude, High, Low, Maximum, Minimum, Peak-to-Peak, Mean, Cycle Mean, RMS, Cycle RMS, Positive Overshoot, Negative Overshoot
Automatic Measurements (Time)	Rise Time, Fall Time, Positive Width, Negative Width, Positive Duty Cycle, Negative Duty Cycle, Period, Frequency, Delay
Automatic Measurements (Combination)	Area, Cycle Area, Phase, Burst Width
Waveform Math	Arithmetic (add, subtract, multiply, divide), algebraic expressions (optional), calculus (optional)
FFT Window Functions	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2, Tek Exponential

Display Characteristics

Display Type	Color active-matrix TFT LCD
Display Size	10.4 in (264 mm)
Display Resolution	640 × 480 pixels

Embedded Computer System

Operating System	Microsoft Windows 2000
Internal Storage	≥ 20 GB hard disk drive
Removable Storage	3.5 in 1.44 MB floppy drive, CD-RW drive (Option 1C)

Interfaces and Connectivity

GPIB Port	IEEE 488.2 interface
LAN Port	RJ-45 (10Base-T/100Base-TX)
VGA Video Port	D-Sub 15-pin connector for external monitor
Auxiliary Input/Output	Auxiliary trigger input, Aux output, CH 3 output
External Trigger Input	Front panel BNC connector, 1 MΩ input impedance

Power Specifications

Power Source Voltage Range	100 to 240 VAC RMS ±10%
Power Source Frequency Range	47 to 63 Hz, 360 to 440 Hz
Power Consumption	< 220 W

Environmental and Safety

Non-operating Temperature	-20 °C to +60 °C
Operating Humidity	8% to 80% RH, non-condensing
Operating Altitude	3,000 m (10,000 ft.)
Non-operating Altitude	12,192 m (40,000 ft.)

Acquisition System

Standard Record Length	400,000 points (1 channel), 200,000 points (2 channels), 100,000 points (4 channels)
Record Length Options	Option 1M: 4M (1 ch), 2M (2 ch), 1M (4 ch); Option 2M: 8M (1 ch), 4M (2 ch), 2M (4 ch); Option 3M: 16M (1 ch), 8M (2 ch), 4M (4 ch)
Equivalent-Time Sample Rate (Max)	250 GS/s

Interfaces

USB Ports	3 ports (1 front, 2 rear), USB 1.1 compliant
Parallel Port	1 Centronics parallel port (DB-25)
Serial Port	1 RS-232 serial port (DB-9)
PS/2 Ports	2 ports (keyboard and mouse)
Audio Ports	3 jacks (Line In, Line Out, Microphone)

Computer System

Processor	Intel Celeron, 566 MHz
System Memory	256 MB standard (upgradeable to 512 MB)

Options

Option SM (Serial Mask Testing)	Adds ITU-T, ANSI T1.102, USB, and Ethernet mask templates
Option LT (Limit Testing)	Adds limit testing comparison of active waveforms against a reference template

Storage

CD-ROM Drive	Rear-panel CD-ROM drive

Inputs & Outputs

Probe Interface	TekProbe Level 2 (each channel)
External 10 MHz Reference Input	BNC (rear panel), 500 mV_p-p to 8 V_p-p, 1 kΩ input impedance
10 MHz Reference Output	BNC (rear panel), ≥1.5 V_p-p into 50 Ω
Auxiliary Trigger Output	BNC (rear panel), TTL-compatible (provides a TTL-compatible signal when the oscilloscope triggers)

Environmental

Operating Vibration	0.22 g_RMS, 5 Hz to 500 Hz, 10 minutes per axis (random)
Non-Operating Vibration	2.28 g_RMS, 5 Hz to 500 Hz, 10 minutes per axis (random)
Operating Shock	15 g, 11 ms, half-sine

Compliance

Safety Certifications	UL 3111-1, CAN/CSA-C22.2 No. 1010.1, EN 61010-1
EMC Compliance	EN 61326, FCC Part 15 Subpart B Class A, AS/NZS 2064

TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

APPLICATIONS

Electronic design, debugging, and analysis