

## TEKTRONIX

# TDS5052

The Tektronix TDS5052 is a 2-channel, 500 MHz Digital Phosphor Oscilloscope (DPO) designed for advanced electronic design, debugging, and analysis. Featuring a maximum sample rate of 5 GS/s, a high waveform capture rate of up to 100,000 wfms/s via DPX technology, and a 10.4-inch active matrix color display, it offers deep insight into complex signals. Operating on an open Windows 2000 platform, it provides exceptional integration with third-party software, making it highly versatile for bench-top test environments.

## SPECIFICATIONS

### General

|            |                                                              |
|------------|--------------------------------------------------------------|
| Interfaces | USB, LAN, GPIB, VGA, RS-232, Parallel                        |
| Display    | 10.4-inch (264 mm) active-matrix color LCD, 640 x 480 pixels |

### Physical

|                       |                                                                                                |
|-----------------------|------------------------------------------------------------------------------------------------|
| Power Supply          | 100 to 240 V $\square\%$ CAT II (47 to 63 Hz) or 115 V $\square\%$ (360 to 440 Hz),<br>< 220 W |
| Operating Temperature | +5 to +45 °C °C                                                                                |
| Dimensions (W×H×D)    | 447 mm x 361 mm x 288 mm mm                                                                    |
| Weight                | 11.4 kg kg                                                                                     |

### Vertical System

|                                         |                                                                                           |
|-----------------------------------------|-------------------------------------------------------------------------------------------|
| Input Channels                          | 2                                                                                         |
| Analog Bandwidth (-3 dB)                | 500 MHz                                                                                   |
| Calculated Rise Time                    | 800 ps                                                                                    |
| Vertical Resolution                     | 8-bit                                                                                     |
| Input Coupling                          | AC, DC, GND                                                                               |
| Input Impedance                         | 1 M $\Omega$ $\square\%$ in parallel with 13 pF, or 50 $\Omega$ $\square\%$               |
| Input Sensitivity Range (1 M $\Omega$ ) | 1 mV/div to 10 V/div                                                                      |
| Input Sensitivity Range (50 $\Omega$ )  | 1 mV/div to 1 V/div                                                                       |
| DC Gain Accuracy                        | $\pm 1.5\%$ with offset set to 0 V                                                        |
| Channel-to-Channel Isolation            | $\geq 100:1$ at 100 MHz, $\geq 30:1$ at 500 MHz                                           |
| Maximum Input Voltage (1 M $\Omega$ )   | 150 V CAT I                                                                               |
| Maximum Input Voltage (50 $\Omega$ )    | 5 V RMS                                                                                   |
| Analog Bandwidth Limits                 | 20 MHz and 150 MHz (selectable)                                                           |
| Channel-to-Channel Deskew Range         | $\pm 75$ ns                                                                               |
| Vertical Position Range                 | $\pm 5$ divisions                                                                         |
| Vertical Offset Range                   | $\pm 0.5$ V (1 to 99.5 mV/div), $\pm 5$ V (100 to 995 mV/div), $\pm 50$ V (1 to 10 V/div) |

## Horizontal & Acquisition System

|                                         |                                                                            |
|-----------------------------------------|----------------------------------------------------------------------------|
| Maximum Real-time Sample Rate           | 5 GS/s (1 channel), 2.5 GS/s (2 channels)                                  |
| Maximum Record Length (Standard)        | 200 kpoints                                                                |
| Maximum Record Length (Optional Config) | Up to 8 Mpoints (with Option 3M)                                           |
| Timebase Range                          | 200 ps/div to 40 s/div                                                     |
| Timebase Accuracy                       | ±15 ppm                                                                    |
| Acquisition Modes                       | Sample, Peak Detect, Envelope, Average, High Resolution, Waveform Database |

## Trigger System

|                                      |                                                                                                   |
|--------------------------------------|---------------------------------------------------------------------------------------------------|
| Trigger Sources                      | CH1, CH2, Line, External                                                                          |
| 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 or front-panel auxiliary input                          |
| Pulse Width Triggering               | Trigger on width of positive or negative pulses from 1 ns to 1 s                                  |
| Glitch Triggering                    | Trigger on or reject glitches down to 1 ns                                                        |
| Runt Triggering                      | Trigger on pulse that crosses one threshold but fails to cross a second before crossing the first |
| Timeout Triggering                   | Trigger on event which remains high, low, or either, for 1 ns to 1 s                              |
| Transition (Slew Rate) Triggering    | Trigger on pulse edge rates that are faster or slower than specified                              |
| Setup and Hold Violations Triggering | Trigger on setup time and hold time violations between clock and data on any two input channels   |
| Pattern / State Triggering           | Trigger when pattern goes false or true, or is qualified by a clock edge                          |
| Window Triggering                    | Trigger on event entering or exiting a window defined by two thresholds                           |
| Video Triggering                     | Trigger on NTSC, PAL, SECAM, or HDTV formats                                                      |
| Trigger Jitter (Typical)             | ≤8 ps RMS                                                                                         |

## Display & Visualization

|                               |                                                           |
|-------------------------------|-----------------------------------------------------------|
| Display Type                  | Active-matrix color TFT LCD                               |
| Display Size                  | 10.4 in (264 mm)                                          |
| Display Resolution            | 640 x 480 pixels                                          |
| Waveform Capture Rate         | 100,000 wfms/s maximum                                    |
| Intensity-Graded Display Tech | DPX Digital Phosphor                                      |
| Waveform Styles               | Vectors, Dots, Infinite Persistence, Variable Persistence |
| Format                        | YT, XY                                                    |

## Waveform Measurements & Analysis

|                          |                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Amplitude Measurements   | Amplitude, High, Low, Maximum, Minimum, Peak-to-Peak, Mean, Cycle Mean, RMS, Cycle RMS, Positive Overshoot, Negative Overshoot |
| Time Measurements        | Rise Time, Fall Time, Positive Width, Negative Width, Positive Duty Cycle, Negative Duty Cycle, Period, Frequency, Delay       |
| Combination Measurements | Area, Cycle Area, Phase, Burst Width                                                                                           |
| Waveform Math            | Add, subtract, multiply, and divide waveforms                                                                                  |
| Advanced Math            | Algebraic Expressions, Calculus, Frequency Domain Functions (option dependent)                                                 |
| FFT Window Types         | Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2, Tek Exponential                             |

## Connectivity & Interface Ports

|                          |                                                  |
|--------------------------|--------------------------------------------------|
| Probe Interface Support  | TekProbe Level II                                |
| GPIO Interface           | IEEE-488.2                                       |
| LAN/Ethernet Port        | 10/100 Base-T RJ-45                              |
| USB Ports                | USB 1.1 (host ports on front/rear)               |
| VGA Monitor Output       | DB-15 female connector                           |
| RS-232 Serial Port       | DB-9 male connector                              |
| External Trigger Input   | Front-panel BNC input                            |
| Auxiliary Output         | BNC connector, trigger out or recovery clock out |
| Reference Clock Input    | BNC connector, 10 MHz                            |
| Keyboard and Mouse Ports | PS/2 ports on rear panel, USB on front/rear      |
| Built-in Printer Option  | Available as option                              |
| CD-RW Drive Option       | Available as option                              |

## Software & Operating System

|                                    |                 |
|------------------------------------|-----------------|
| Internal Operating System          | Windows 98      |
| Programming Support                | SCPI, VISA      |
| Third-Party Software Compatibility | MATLAB, LabVIEW |

## Power Requirements

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| Input Voltage Range   | 100 to 240 V $\pm 10\%$ CAT II                    |
| Input Frequency Range | 47 to 63 Hz (100 to 240 V), 360 to 440 Hz (115 V) |
| Power Consumption     | < 220 W                                           |

## Physical & Environmental Specifications

|                           |                               |
|---------------------------|-------------------------------|
| Non-Operating Temperature | -20 °C to +60 °C              |
| Operating Humidity Range  | 20% to 80% RH, non-condensing |
| Operating Altitude        | Up to 3,000 m (10,000 ft.)    |
| Non-Operating Altitude    | Up to 12,190 m (40,000 ft.)   |

### Horizontal System

|                      |                |
|----------------------|----------------|
| Timebase Delay Range | -10 ns to 50 s |
|----------------------|----------------|

### Interfaces & Connectivity

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Parallel Port          | 1 Centronics DB-25 connector (IEEE 1284)         |
| Audio Ports            | Line In, Line Out, and Microphone (3.5 mm jacks) |
| Reference Clock Output | 10 MHz BNC connector (buffered)                  |

### Environmental

|                   |                       |
|-------------------|-----------------------|
| Shock (Operating) | 15 g, 11 ms half-sine |
|-------------------|-----------------------|

### Physical Characteristics

|                   |                                       |
|-------------------|---------------------------------------|
| Cooling Clearance | 3 in (76 mm) on left, right, and rear |
|-------------------|---------------------------------------|

### PC System

|                          |                                          |
|--------------------------|------------------------------------------|
| Processor                | Intel Celeron (850 MHz)                  |
| System Memory            | 256 MB (standard), upgradeable to 512 MB |
| Hard Disk Drive Capacity | ≥20 GB                                   |

### Display

|              |                      |
|--------------|----------------------|
| Touch Screen | Optional (Option 18) |
|--------------|----------------------|

### Trigger

|                                           |                                                            |
|-------------------------------------------|------------------------------------------------------------|
| Internal Trigger Sensitivity (DC Coupled) | 0.35 div from DC to 50 MHz, increasing to 1 div at 500 MHz |
| External Trigger Sensitivity (DC Coupled) | 150 mV from DC to 50 MHz, increasing to 500 mV at 500 MHz  |
| Trigger Level Range (Internal)            | ±12 divisions from center of screen                        |

### Compliance

|                                         |                                                         |
|-----------------------------------------|---------------------------------------------------------|
| Safety Compliance Standards             | UL 3111-1, CSA 22.2 No. 1010.1, EN 61010-1, IEC 61010-1 |
| Electromagnetic Compatibility Standards | 89/336/EEC, EN 61326 Class A                            |

### Options

|                            |                                                                                                                                   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Optional Analysis Packages | Option JT3 (Jitter and Timing Analysis), Option PW3 (Power Measurement), Option LPT (Limit Testing), Option ITU (Comm Triggering) |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|

### TECHNOLOGY

Digital Phosphor Oscilloscope (DPO)

### APPLICATIONS

Electronic Design, Debugging, and Analysis

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.