TEKTRONIX

TDS1002

The Tektronix TDS1002 is a 60 MHz, 2-channel digital storage oscilloscope from the TDS1000 Series, offering a real-time sample rate of 1.0 GS/s on each channel, a monochrome LCD display, and an exceptionally lightweight, compact benchtop design.

SPECIFICATIONS

General

Interfaces	RS-232, GPIB, Centronics (via optional TDS2CMA or TDS2MEM module)
Display	1/4 VGA (320 x 240) passive-matrix monochrome LCD with backlit illumination

Physical

Power Supply	90 to 250 VAC, 45 to 440 Hz (90 to 127 VAC), 45 to 62 Hz (120 to 250 VAC), 20 W maximum power consumption
Operating Temperature	0 to +50 °C
Dimensions (W×H×D)	323.8 x 151.4 x 124.5 mm
Weight	2.0 kg

Vertical System

Analog Bandwidth	60 MHz
Number of Channels	2
Calculated Rise Time	5.8 ns
Input Coupling	AC, DC, GND
Input Impedance	1 MΩ ± 2% in parallel with 20 pF ± 3 pF
Input Sensitivity Range	2 mV/div to 5 V/div
Vertical Resolution	8 bits
Maximum Input Voltage	300 V RMS CAT II; derate at 20 dB/decade above 100 kHz to 13 V peak AC at 3 MHz and above
DC Gain Accuracy	±3% for Sample or Average acquisition mode
Offset Range	±2 V (2 mV to 200 mV/div); ±50 V (>200 mV to 5 V/div)
Hardware Bandwidth Limits	20 MHz
Channel-to-Channel Isolation	>= 100:1 at 30 MHz
Common Mode Rejection Ratio (CMRR)	>= 100:1 at 60 Hz, >= 10:1 at 10 MHz (with equal Volts/div settings)
Supported Probe Attenuation Factors	1x, 10x, 100x, 1000x

Horizontal System

Timebase Range	5 ns/div to 50 s/div
Timebase Accuracy	±50 ppm
Display Format	YT, XY

Acquisition System

Maximum Real-Time Sample Rate	1.0 GS/s
Maximum Record Length	2.5k points
Acquisition Modes	Sample, Peak Detect (12 ns high-frequency glitches), Average (4, 16, 64, 128 waveforms)
Peak Detect Glitch Capture	12 ns (typical) at all timebase settings from 5 µs/div to 50 s/div

Trigger System

Trigger Sources	CH1, CH2, Ext, Ext/5, AC Line
Trigger Modes	Auto, Normal, Single Sequence
Trigger Coupling	AC, DC, Noise Reject, HF Reject, LF Reject
Trigger Holdoff Range	500 ns to 10 s
Standard Trigger Types	Edge, Video (Line or Field, NTSC/PAL/SECAM), Pulse Width (33 ns to 10 s)
External Trigger Input Impedance	1 MΩ ±2% in parallel with 20 pF ±3 pF
External Trigger Maximum Input Voltage	300 V RMS CAT II (derating at 20 dB/decade above 100 kHz to 13 V peak AC at 3 MHz and above)
Edge Trigger Sensitivity (Internal)	0.35 div from DC to 10 MHz, 1 div from 10 MHz to 60 MHz
Edge Trigger Sensitivity (External)	50 mV from DC to 10 MHz, 150 mV from 10 MHz to 60 MHz
Video Trigger Signal Formats	NTSC, PAL, SECAM

Waveform Measurements and Analysis

Automatic Measurements	11 parameters: Period, Frequency, +Width, -Width, Rise Time, Fall Time, Max, Min, Peak-to-Peak, Mean, Cycle RMS
Waveform Math Operators	Add, Subtract, FFT
FFT Window Types	Hanning, Flat Top, Rectangular
Non-Volatile Storage	Two reference waveforms, 10 front-panel setup states

Environmental and Compliance

Storage Temperature Range	-40 °C to +71 °C
Operating Humidity	Up to 90% RH at or below +30 °C; up to 60% RH up to +50 °C
Operating Altitude	Up to 3,000 m
Electromagnetic Compatibility	Meets Directive 89/336/EEC, EN 55011 Class A, EN 50082-1

Physical & Environmental

Cooling System	Convection cooled (fanless)
Vibration (Operating)	0.31 g RMS from 5 Hz to 500 Hz, 10 minutes per axis
Shock (Operating)	50 g, 11 ms, half-sine

Interfaces & Connectivity

Optional Connectivity Modules	TDS2CMA (GPIB, RS-232, Centronics) or TDS2MEM (CompactFlash, USB)

Display

Display Resolution	320 × 240 pixels

Measurements

Cursor Measurements	Voltage difference (ΔV), time difference (Δt), and 1/Δt (frequency)

Storage

Non-Volatile Setup Storage Capacity	10 internal setups
Non-Volatile Waveform Storage Capacity	2 reference waveforms

Power

Power Consumption	30 W maximum

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic Design, Troubleshooting, Education, and Manufacturing Test