TEKTRONIX

MSO71254C

The Tektronix MSO71254C is a high-performance 12.5 GHz Mixed Signal Oscilloscope belonging to the MSO70000C Series. Designed for deep system-level debug of high-speed digital designs, it features 4 analog channels and 16 logic channels. It delivers real-time sample rates of up to 100 GS/s on 2 channels (50 GS/s on all 4 channels) and a 12.5 GS/s sample rate with 80 ps timing resolution on digital channels. The instrument is equipped with Pinpoint triggering, a hardware-based 6.25 Gb/s serial pattern trigger, iCapture analog multiplexing of digital lines, and comprehensive serial decoding options.

SPECIFICATIONS

General

Interfaces	USB 2.0 Host, USB Device, LAN (10/100/1000 Base-T Ethernet), GPIB, LXI Class C, DVI-I, TekConnect
Display	12.1-inch liquid-crystal active-matrix color TFT-LCD touchscreen (1024 × 768)
LXI Compliance	LXI Class C Version 1.3

Physical

Power Supply	100 to 240 V AC ±10% (50/60 Hz), 115 V AC ±10% (400 Hz), <980 VA max
Operating Temperature	5 to 45 °C °C
Dimensions (W×H×D)	451 × 298 × 489 mm mm
Weight	24 kg

Analog Vertical System

Analog Input Channels	4
Analog Bandwidth	12.5 GHz (User-selectable DSP enhance)
Hardware Analog Bandwidth (-3 dB)	12.5 GHz (typical)
Calculated Rise Time (10% to 90%)	32 ps (typical)
Vertical Resolution	8 bit (11 bit with averaging)
Max Input Voltage (50 Ohm)	<5.0 V_RMS for >=100 mV/div; 1.5 V_RMS for <100 mV/div

Digital Vertical System

Digital Channels	16
Vertical Resolution (Digital)	1 bit
Logic Threshold Range (P6780)	-2 to +4.5 V
Logic Threshold Range (P6717)	-1.5 to +4.0 V
Maximum Input Voltage (Digital Probe)	±15 V (nondestruct)
Digital Bandwidth (P6780)	2.5 GHz
Digital Bandwidth (P6717)	350 MHz

Horizontal System

Time Base Range	10 ps/div to 1000 s/div
Time Resolution (ET/IT mode)	100 fs
Channel-to-Channel Deskew Range	±75 ns
Jitter Noise Floor	270 fs (typical, with BW bandwidth enhance enabled)
Time Base Delay Range	-5.0 ks to 1.0 ks
Timebase Aging	±1 ppm/year
Timebase Accuracy	±1.5 ppm (initial)

Acquisition System (Analog)

Max Real-time Sample Rate (2 Channels)	100 GS/s
Max Real-time Sample Rate (4 Channels)	50 GS/s
Max Equivalent Time / Interpolated Time Sample Rate	10 TS/s
Maximum Record Length (Standard Configuration)	31.25 M on all 4 channels
Maximum Duration at Highest Real-time Resolution (Standard)	0.625 ms

Acquisition System (Digital)

Max Digital Sample Rate (All Channels)	12.5 GS/s
Digital Timing Resolution	80 ps
Maximum Record Length (Digital, with option)	250 M on all channels
Minimum Detectable Pulse Width	300 ps
Maximum Number of Buses	16
Number of Channels per Bus	Up to 24 (16 logic, 4 analog, 4 math)

Acquisition Modes

Averaging Mode	From 2 to 10,000 waveforms
Envelope Mode	From 1 to 2x10^9 waveforms
FastAcq Waveform Capture Rate	>300,000 wfms/s on all 4 channels simultaneously
FastFrame Segmented Memory	Maximum trigger rate >310,000 waveforms per second
High Resolution (Hi-Res) Mode	Real-time boxcar averaging reduces random noise and increases resolution
Peak Detect Mode	Not supported
Roll Mode	Not supported
Sample Mode	Acquires and displays sampled values
Waveform Database Mode	Accumulates three-dimensional array of amplitude, time, and counts

Trigger System

Digital A then Analog B Triggering	Standard
A Event and Delayed B Event Trigger Types	Edge, Glitch, Runt, Width, Transition Time, Timeout, Pattern, State, Setup/Hold, Window
Main Trigger Modes	Auto, Normal, Single
Trigger Sequences	Main, Delayed by Time, Delayed by Events, Reset by Time, Reset by State, Reset by Transition
Serial Pattern Triggering	Up to 6.25 Gb/s (hardware-based, NRZ or 8b/10b patterns)
Embedded Serial Bus Support	I2C, SPI Decoding and Triggering
Trigger Jitter	<100 fs RMS (typical)
Trigger Level Range (Internal)	±120% of full scale

Waveform Analysis & Features

iCapture Multiplexer Technology	Route any 4 of the 16 logic channels to the analog acquisition system
Probing System Support	P7500 TriMode Probing System (4 GHz to 20 GHz)

Environmental & Compliance

Operating Altitude	Up to 3,000 m (9,843 ft.)

Vertical System - Analog

Input Coupling (Analog)	DC
DC Gain Accuracy	±2%
Vertical Sensitivity Range	10 mV/div to 1 V/div

Vertical System - Digital

Digital Input Impedance (with P6717 Probe)	20 kΩ || 3 pF
Digital Input Impedance (with P6780 Probe)	20 kΩ || 0.8 pF
Digital Threshold Accuracy	±(100 mV + 3% of threshold setting)
Digital Threshold Resolution	5 mV
Minimum Digital Voltage Swing	300 mVp-p

Computer System

Operating System	Windows 7 Ultimate (64-bit)

Environmental

Non-Operating Temperature	-20 °C to +60 °C
Operating Humidity	8% to 80% RH (at or below +32 °C)
Non-Operating Humidity	5% to 95% RH (at or below +40 °C)
Non-Operating Altitude	12,190 m (40,000 ft)

Vertical System (Analog)

Rise Time (20% to 80%)	22 ps
Analog Input Offset Range	±0.5 V (10 mV/div to 99.5 mV/div), ±5.0 V (100 mV/div to 500 mV/div)
Position Range	±5 divisions

Waveform Math & Analysis

Number of Math Waveforms	4
Math Functions	Arithmetic, algebraic, trigonometric, exponential, logarithmic, integration, differentiation, FFT
FFT Window Types	Rectangular, Hamming, Hanning, Kaiser-Bessel, Blackman-Harris, Gaussian, Flattop2, TekExponential
Automatic Measurements	53 automatic measurements

Connectivity & I/O

USB Ports	1x USB 2.0 host (front), 4x USB 2.0 host (rear), 1x USB device (rear)
Video Output Ports	1x DVI-I, 1x VGA

Horizontal System / Timebase

External Reference Input Frequency	10 MHz
External Reference Input Impedance	50 Ohm

Physical & Environmental

Cooling Clearance Requirements	76 mm (3 in.) on left, right, and rear
Operating Shock Resistance	15 g, 11 ms half-sine
Non-Operating Shock Resistance	30 g, 11 ms half-sine
Operating Vibration Resistance	0.31 GRMS (5 Hz to 500 Hz)
Non-Operating Vibration Resistance	2.46 GRMS (5 Hz to 500 Hz)

TECHNOLOGY

Mixed Signal Oscilloscope

APPLICATIONS

High-speed digital design, DDR memory verification, serial standards testing, digital RF, ASIC/FPGA debugging

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