KEYSIGHT TECHNOLOGIES (AGILENT HP)

54542C

The Keysight (formerly Agilent / HP) 54542C is a high-performance 4-channel, 500 MHz digital oscilloscope designed for R&D, analog and digital design, and manufacturing test. Featuring a real-time sampling rate of 2 GSa/s on all four channels simultaneously, 32 K points of acquisition memory per channel, 1 ns peak detect, and a built-in floppy disk drive, this color flat-panel oscilloscope ensures precise measurement and detailed analysis of high-frequency signals.

SPECIFICATIONS

General

Interfaces	HP-IB (IEEE-488.2), Centronics parallel
Display	Color active-matrix TFT LCD flat-panel display

Physical

Power Supply	90 to 132 V AC or 198 to 264 V AC, 48 to 66 Hz, 350 VA maximum
Operating Temperature	0 to +55 °C °C
Dimensions (W×H×D)	425.5 mm × 194 mm × 356 mm mm
Weight	11.8 kg kg

Vertical System

Analog Bandwidth (-3 dB)	500 MHz
Number of Input Channels	4
Calculated Rise Time (10% to 90%)	700 ps
Vertical Resolution (ADC)	8 bits
Input Impedance	1 MΩ (selectable 50 Ω)
Input Coupling	AC, DC
Maximum Input Voltage (1 MΩ)	±250 V (DC + peak AC)
Maximum Input Voltage (50 Ω)	5 Vrms
Input Sensitivity Range (1 MΩ)	1 mV/div to 5 V/div
Input Sensitivity Range (50 Ω)	1 mV/div to 1 V/div
DC Gain Accuracy	±1.25%
Channel-to-Channel Isolation	≥ 40 dB from DC to 100 MHz, ≥ 30 dB from 100 MHz to 500 MHz
A/D Converters	Four independent 2 GSa/s 8-bit ADCs
Vertical Offset Range	±2 V (1 to 50 mV/div), ±10 V (50.5 to 250 mV/div), ±50 V (255 mV to 1.25 V/div), ±250 V (1.27 to 5 V/div)
Input Capacitance	7 pF
Bandwidth Limit Filter	30 MHz

Horizontal System

Maximum Real-Time Sampling Rate	2 GSa/s (simultaneously on all 4 channels)
Maximum Record Length	32,768 points per channel
Time Base Range	500 ps/div to 5 s/div
Time Base Accuracy	±0.005%
Timebase Resolution	10 ps

Trigger System

Trigger Sources	Channel 1, Channel 2, Channel 3, Channel 4, Line
Trigger Modes	Auto, Auto Level, Normal, Single
Trigger Types	Edge, Pattern, State, Delay, Glitch (pulse width)
Glitch Triggering	Triggers on glitches down to 1 ns
Trigger Holdoff Range	70 ns to 6.7 s
Trigger Level Range	±1.5 × full scale from center of screen

Acquisition System

Peak Detect	1 ns
Acquisition Modes	Real-time, Sequential Single Shot, Peak Detect, Envelope, Average
Sequential Single Shot	Captures and stores successive single-shot events

Waveform Measurements and Analysis

Automatic Measurements	Vp-p, Vmax, Vmin, Vtop, Vbase, Vamp, Vavg, Vrms, Rise time, Fall time, Positive width, Negative width, Frequency, Period, Duty cycle
Fast Fourier Transform (FFT)	Standard, with Hanning, Hamming, Rectangular, Flattop windows

Processor and Storage

Internal Storage Drive	3.5-inch floppy disk drive, MS-DOS compatible

Waveform Analysis

Waveform Math Functions	Addition, subtraction, multiplication, division, integration, differentiation, FFT

Interfaces

External Video Output	15-pin VGA
Auxiliary Output	BNC (trigger output, calibrator output, or DC level)
Printer Port	Centronics parallel

Triggering

Trigger Sensitivity (DC to 100 MHz)	0.5 division or 5 mV
Trigger Sensitivity (100 MHz to 500 MHz)	1.0 division or 10 mV

Save/Recall

Non-volatile Setup Memories	10 setups
Non-volatile Waveform Memories	4 waveforms

Environmental

Operating Humidity	Up to 90% RH at 40 °C (non-condensing)
Maximum Operating Altitude	4,600 m

TECHNOLOGY

Digital Storage Oscilloscope (DSO)

APPLICATIONS

Electronic test, high-frequency signal analysis, analog & digital system design