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Data Sheet

August 13, 2026

KEITHLEY

Keithley 590 1MHz/100k C-V Analyzer

The Keithley 590 measures semiconductor capacitance versus voltage (C-V) and capacitance versus time (C-t) at 100 kHz, 1 MHz, or both (590/100k, 590/1MHz, 590/100k/1M). Test signal is 15 mV rms. Capacitance 0.1 fF sensitivity to 20 nF (100 kHz with 5904 adapter); conductance 0.1 nS class to 20 mS. 100 kHz accuracy 0.12 percent versus 0.29 percent class at 1 MHz. Internal cable/connection correction, setup storage, analysis, and plotter control. IEEE-488 programmable. p-n and Schottky junction characterization Choice of 100 kHz (better accuracy) or 1 MHz (legacy standards) Internal correction for cables and switches Instrument Type: Semiconductor CV analyzer Alias: 590; 590/100k; 590/1MHz; 590/100k/1M



MODEL

Keithley 590

CALIBRATION

Available on request

CONDITION

Used

STATUS

In stock

RFQ / SKU

590

LISTING

<https://aumictechlabs.com/products/590-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The Keithley 590 C-V Analyzer is a precision instrument for capacitance-voltage and capacitance-time measurements in semiconductor device characterization and quality control. Dual-frequency operation at 100 kHz and 1 MHz enables compliance with established test standards while optimizing resolution and accuracy. The analyzer measures capacitance, conductance, and voltage to extract critical device parameters including doping profiles, threshold voltage, oxide properties, mobile ion density, interface trap density, and minority carrier lifetime. Technical Specifications Measurement Parameters: Capacitance: 10 fF to 20 nF (100 kHz); sensitivity 0.1 fF Conductance: 0.1 nS to 1 μ S; sensitivity 0.1 nS Test signal: 15 mV rms $\pm$ 10%

Frequency tolerance: $\pm 0.1\%$ Bias Sources: Internal: -20.000V to $+20.000\text{V}$, 5 mV steps, $\pm 50\text{ mA}$ max, $<1\text{ ms}$ settling External: Up to $\pm 200\text{V}$ DC input, 50 mA max Measurement Performance: Rate: 1 to 1000 readings/second, selectable Accuracy: $\pm 0.06\%$ at 100 kHz , $\pm 0.08\%$ at 1 MHz Capacitance non-linearity: 20 or $D < 0.05$, $18\text{--}28^\circ\text{C}$) Data Handling: Buffers A & B: 450 measurement triplets each (C, G, V) C-t storage: Up to 1350 points Waveform Modes: DC, Stair, Dual Stair, Pulse Key Features Internal correction for transmission line and connection errors Built-in correction value storage and analysis Normalized capacitance calculation (C/C_0) and derived functions ($1/C^2$) C-V curve plotting capability Operating range: 0°C to 50°C Typical Applications Doping profile analysis, threshold voltage extraction, oxide characterization, mobile ion density assessment, interface trap density evaluation, minority carrier lifetime determination.

Features & description

From manufacturer datasheet

Built-in analysis and plotter control

Technical Specifications Model: 590 Manufacturer: Keithley Instruments Instrument Type: Semiconductor CV analyzer Alias: 590; 590/100k; 590/1MHz; 590/100k/1M Test Frequencies: 100 kHz; 1 MHz; or both (SKU) Test Signal: 15 mV rms Capacitance Sensitivity: 0.1 fF Capacitance Range Max: 20 nF at 100 kHz with 5904 adapter Conductance Sensitivity: 0.1 nS Conductance Range Max: 20 mS with 5904 Accuracy 100 kHz Class: 0.12 percent of reading (Q greater than or equal to 20) Accuracy 1 MHz Class: 0.29 percent class Display 100 kHz: 4.5 digits Range Example 2 pF: 0.1 fF resolution Range Example 20 pF: 1 fF class Range Example 200 pF: 10 fF class Range Example 2 nF: 100 fF Range Example 20 nF: 1 pF with 5904 Remote Interface: IEEE-488 Correction: internal for cables, connections, switching paths Setup Storage: built in Plotter Control: built in Adapter 5904: 20 nF / 20 mS input adapter Functions: C-V and C-t Form: bench/systems half rack class Notes Specs from Keithley 590 CV Analyzer datasheet. Confirm 590/100k versus 590/1MHz versus dual-frequency 590/100k/1M on the faceplate, and whether 5904 is present for 20 nF.

590 Characteristics / Specifications

PARAMETER	VALUE
Model	590
Manufacturer	Keithley Instruments
Instrument Type	Semiconductor CV analyzer
Alias	590; 590/100k; 590/1MHz; 590/100k/1M
Test Frequencies	100 kHz; 1 MHz; or both (SKU)
Test Signal	15 mV rms
Capacitance Sensitivity	0.1 fF
Capacitance Range Max	20 nF at 100 kHz with 5904 adapter
Conductance Sensitivity	0.1 nS
Conductance Range Max	20 mS with 5904
Accuracy 100 kHz Class	0.12 percent of reading (Q greater than or equal to 20)
Accuracy 1 MHz Class	0.29 percent class
Display 100 kHz	4.5 digits
Range Example 2 pF	0.1 fF resolution
Range Example 20 pF	1 fF class
Range Example 200 pF	10 fF class
Range Example 2 nF	100 fF
Range Example 20 nF	1 pF with 5904
Remote Interface	IEEE-488
Correction	internal for cables, connections, switching paths
Setup Storage	built in
Plotter Control	built in
Adapter 59	20 nF / 20 mS input adapter
Functions	C-V and C-t
Form	bench/systems half rack class Notes Specs from Keithley 590 CV Analyzer datasheet. Confirm 590/100k versus 590/1MHz versus dual-

PARAMETER	VALUE
	frequency 590/100k/1M on the faceplate, and whether 5904 is present for 20 nF.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications	
Specifications	
PARAMETER	VALUE
Model	590
Manufacturer	Keithley Instruments
Instrument Type	Semiconductor CV analyzer
Specifications	
PARAMETER	VALUE
Alias	590; 590/100k; 590/1MHz; 590/100k/1M
Test Frequencies	100 kHz; 1 MHz; or both (SKU)
Test Signal	15 mV rms
Specifications	
PARAMETER	VALUE
Capacitance Sensitivity	0.1 fF
Capacitance Range Max	20 nF at 100 kHz with 5904 adapter
Conductance Sensitivity	0.1 nS
Specifications	
PARAMETER	VALUE
Conductance Range Max	20 mS with 5904
Accuracy 100 kHz Class	0.12 percent of reading (Q greater than or equal to 20)
Accuracy 1 MHz Class	0.29 percent class
Specifications	
PARAMETER	VALUE
Display 100 kHz	4.5 digits
Range Example 2 pF	0.1 fF resolution
Range Example 20 pF	1 fF class

Specifications

PARAMETER	VALUE
Range Example 200 pF	10 fF class
Range Example 2 nF	100 fF
Range Example 20 nF	1 pF with 5904

Specifications

PARAMETER	VALUE
Remote Interface	IEEE-488
Correction	internal for cables, connections, switching paths
Setup Storage	built in

Specifications

PARAMETER	VALUE
Plotter Control	built in
Adapter 5904	20 nF / 20 mS input adapter
Functions	C-V and C-t

Form: bench/systems half rack class

Notes

Specs from Keithley 590 CV Analyzer datasheet. Confirm 590/100k versus 590/1MHz versus dual-frequency 590/100k/1M on the faceplate, and whether 5904 is present for 20 nF.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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NIST-traceable calibration · SAM registered ·
30-day returns
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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.