

KEYSIGHT TECHNOLOGIES (AGILENT HP)

4294A

The Keysight (formerly Agilent/HP) 4294A is a precision impedance analyzer designed for efficient impedance measurement and analysis of components and circuits. It provides high basic impedance accuracy over a broad test-frequency range of 40 Hz to 110 MHz, making it highly effective for design, qualification, and quality control of electronic components. The instrument features a wide test signal range and internal DC bias capabilities, alongside advanced calibration and error compensation functions to eliminate fixture-related measurement errors.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (10Base-T)
Display	8.4-inch color LCD (TFT)
Warm-up Time	30 minutes

Physical

Power Supply	90 to 132 V or 198 to 264 V AC, 47 to 63 Hz, 500 VA max
Operating Temperature	0 to 40 °C °C
Dimensions (W×H×D)	426 × 234 × 537 mm mm

Frequency Characteristics

Frequency Range	40 Hz to 110 MHz
Frequency Resolution	1 mHz
Sweep Parameters	Frequency, AC voltage, AC current, DC bias voltage, DC bias current
Number of Sweep Points	2 to 801 points

Measurement Parameters

Measurement Parameters	$ Z $, $ Y $, θ , R, X, G, B, L, C, D, Q
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Measurement Accuracy and Range

Impedance Measurement Range	3 m Ω to 500 M Ω
Basic Impedance Accuracy	$\pm 0.08\%$

AC Test Signal

Voltage Output Range	5 mV to 1 Vrms
Current Output Range	200 μ A to 20 mArms

DC Bias Signal

Internal DC Bias Voltage Range	0 V to ± 40 V
Internal DC Bias Current Range	0 mA to ± 100 mA

Signal Source

Oscillator Level Resolution (Voltage)	1 mV
Oscillator Level Resolution (Current)	20 µA

DC Bias

DC Bias Voltage Resolution	1 mV
DC Bias Current Resolution	40 µA

Control & Triggering

Trigger Sources	Internal, External, Manual, Bus
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Calibration & Error Correction

Calibration Functions	OPEN/SHORT/LOAD calibration, Port extension, Fixture compensation
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Analysis Functions

Equivalent Circuit Analysis	3- and 4-element models
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Performance

Measurement Speed	Approx. 3 ms / point (Fast mode, ≥ 30 kHz)
Averaging Factor	1 to 256 (integer)
Phase (θ) Measurement Range	-180° to +180°

Power

Maximum Power Consumption	500 VA
Line Frequency	47 Hz to 63 Hz

Environmental

Operating Humidity	15% to 80% RH (non-condensing, wet bulb ≤ 29 °C)
Storage Temperature	-20 °C to +60 °C
Storage Humidity	15% to 90% RH (non-condensing)
Operating Altitude	Up to 2,000 m

TECHNOLOGY

Impedance Analysis

APPLICATIONS

Electronic Component Testing, Material Evaluation, Circuit Design, Production Testing

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