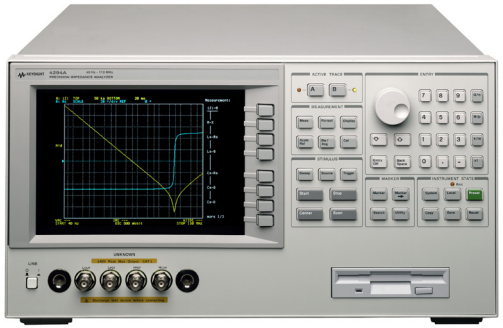
Product Fact Sheet

Keysight 4294A Precision Impedance Analyzer

Frequency ranges: 40 Hz to 110 MHz

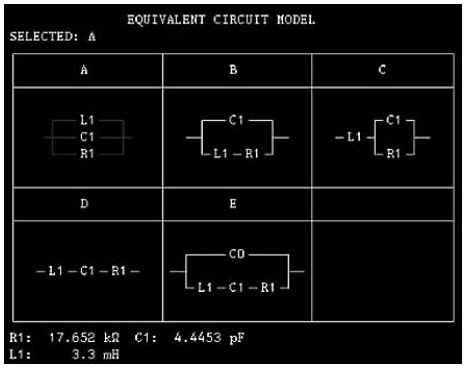
An Industrial Standard in Mid-Frequency Impedance Measurements

Keysight Technologies, Inc. 4294A precision impedance analyzer is an industrial standard in mid-frequency impedance measurements up to 110 MHz with its unsurpassed performance and powerful analysis capabilities for a wide range of component and material measurement applications in general R&D, QA, and incoming inspection.

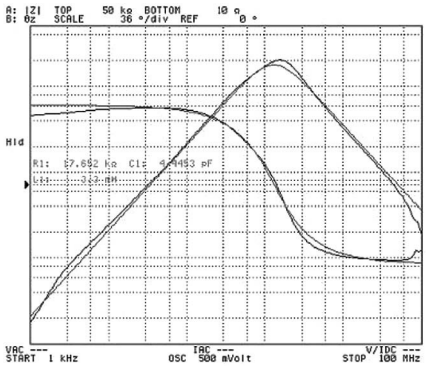


Key features

1. Accurate, real-world characterization of electronic components
   - The equivalent circuit function enables modeling of the impedance vs. frequency characteristics with three or four elements to help you design quality circuits and effective components.

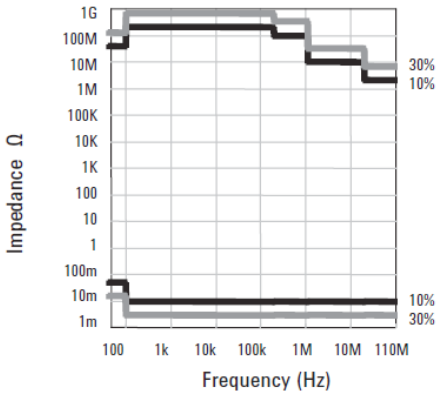


Equivalent circuit model



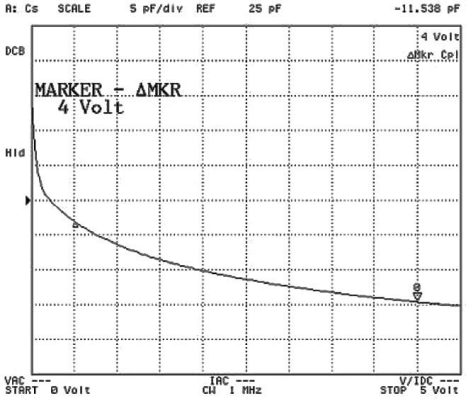
Simulation vs. actual meas. data

2. State-of-the-art technology for improved measurement performance
   - Impedance measurement range covers from 10 mΩ to 200 MΩ (typical). When compared to that of a general network analyzer (typically 3 Ω to 1 kΩ), it is clear the 4294A has an extremely broad impedance measurement range.



Impedance measurement range (typical)

3. Impedance analysis under various operating conditions
   - 5 mVrms to 1 Vrms, 200 uArms to 20 mArms variable test signal
   - 0 to ± 40 V DC voltage bias, ± 100 mA DC current bias
   - Test level monitor function
   - Segment sweep



Signal level dependency of a ceramic capacitor

4. Accessories for various measurement needs
   - 42941A impedance probe for in-circuit measurements
   - 42942A terminal adapter for 7-mm test fixtures
   - 16451B dielectric/16452A liquid/16454A magnetic test fixtures

KEYSIGHT TECHNOLOGIES

Models

Model	Description
4294A	Precision Impedance Analyzer, 40 Hz to 110 MHz

Options

Model	Description
4294A-800	Standard frequency reference
4294A-1D5	High stability frequency reference
4294A-801	Bottom feet
4294A-1CM	Rack mount kit
4294A-1CN	Front handle kit
4294A-1CP	Handle/rack mount kit
4294A-810	Keyboard
4294A-ABA	English localization
4294A-ABJ	Japanese localization
4294A-1A7	ISO 17025 compliant calibration
4294A-A6J	ANSI Z540 compliant calibration

For more details on the option configuration, refer to the configuration guide 5989-8318EN.

Upgrade options

Refer to the configuration guide 5989-8318EN for the upgrades.

Application support literatures

Literature	Publication number
Impedance Measurement Handbook - 4th Edition - Application Note	5950-3000

For additional literature and product information, refer to the following literatures

Literature	Publication number
4294A Precision Impedance Analyzer, 40 Hz to 110 MHz - Technical Overview	5968-3808E
4294A Precision Impedance Analyzer - Data Sheet	5968-3809E
4294A Precision Impedance Analyzer, 40 Hz to 110 MHz - Configuration Guide	5989-8318EN

Recommended accessories

DUT	Fixture type	Model	Description
Lead	Axial/radial	16047A/D/E	Spring contact type (A/D)/Screw-lock type (E)
	Clip-type	16089A/B/C/D/E (5 Hz to 100 kHz)	Large clips(A)/medium clips (B)/IC clips (C)/alligator clips (D)/high repeatability (E)
SMD/chip	SMD/chip	16034E/G/H	Large contact (E)/small contact (G)/for array components (H)
		16044A	Kelvin contacts
	Tweezers-type	16334A	Tweezers (cable length 1 m)
	Extension cable	16048G/H	BNC test leads (1/2 m)
	Probe	42941A	Impedance probe
	Adapter	42942A	Terminal adapter for 7-mm
Material	Dielectric	16451B	Permittivity, ≤ 30 MHz
	Dielectric (liquid)	16452A	Permittivity, ≤ 30 MHz
	Magnetic	16454A	Permeability, ≤ 1 GHz

Accessories may limit the measurement frequency range. For more details including other accessories (e.g. material measurement probe), refer to the configuration guide 5989-8318EN.

www.keysight.com/find/impedance_analyzers

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