New Model 4200-CVU integrated C-V option for the Model 4200-SCS

speeds and simplifies device and materials characterization

Keithley keeps on building on its technology leadership in device and materials characterization with a new C-V instrument designed for integration with the Model 4200 Semiconductor Characterization System. The Model 4200-CVU Integrated C-V Option speeds and simplifies the process of making C-V (Capacitance-Voltage) measurements, offering users the advantages of intuitive point-and-click setup, complete cabling, and built-in element models, taking the guesswork out of obtaining valid C-V measurements. The availability of the Model 4200-CVU means that the Model 4200-SCS can now bring together DC I-V, C-V, and pulse testing capabilities in one easy-to-use tool that can support all of a lab's characterization, modeling, and reliability testing needs.

Now, C-V is as simple as I-V

When combined with the Model 4200-SCS's intuitive point-and-click interface and powerful Keithley Interactive Test Environment (KITE), the Model 4200-CVU and its supporting software make C-V tests as easy to set up and run as I-V tests. The system's flexible, powerful test execution engine makes it simple to combine I-V, C-V, and pulsed tests into the same test sequence, so the Model 4200-SCS can replace a variety of electrical test tools with a single, tightly integrated characterization solution.

Powerful C-V test libraries and parameter extraction examples

There's much more to the Model 4200-CVU than hardware and interface software. By building on decades of experience in C-V test technology, Keithley is backing up the Model 4200-CVU with an extensive set of sample programs, test libraries, and built-in parameter extraction examples. The sample tests included range from simple capacitance measurements to capacitance vs. frequency sweeps. Parameter extraction algorithms such as doping profiles and oxide thickness are provided ready to run right out of the box. The open source code for these algorithms is included, allowing easy user customization.

Designed for higher throughput

Much of the credit for the Model 4200-CVU's exceptional measurement accuracy, speed, and efficiency is due to the Model 4200-SCS's high speed digital measurement hardware and tight hardware and software integration, as well as Keithley's adherence to low-noise system design principles. This combination of strengths means the Model 4200-CVU can improve users' productivity significantly, whether the task is a simple as setting up a single measurement or running a preset test sequence with a single mouse-click or as sophisticated as triggering and plotting multiple C-V sweeps. The system's high speed digital architecture means the Model 4200-CVU can run and plot C-V sweeps in real time as fast as any competitive C-V meter. Keithley's modular system architecture means the Model 4200-CVU can be easily incorporated into any existing Model 4200 system ever manufactured, or configured into a new 4200-SCS system as an option.

I-V + C-V + Pulse = One flexible, fully integrated testing environment

A variety of additional options are available that make it simple to configure a Model 4200-SCS system to match any lab's specific characterization needs. These options include a choice of up to eight medium- or high-power DC Source-Measure Units (SMUs), dual-channel pulse and waveform generators, and an integrated digital oscilloscope. Like the new Model 4200-CVU, all of these instruments are controlled by the Model 4200's powerful KITE software environment, which streamlines test setup, test sequence control, and data analysis. KITE also can control a variety of external instruments, including a variety of probers, hot chucks, and test fixtures, as well as Keithley's high integrity switch matrices, which provide the widest connection flexibility available in the industry.

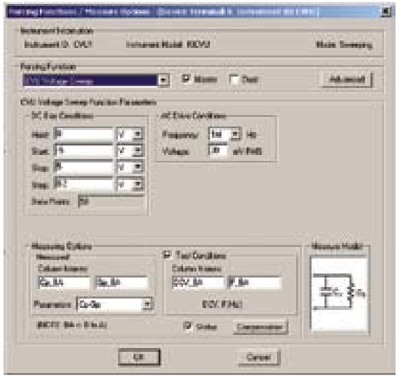
Applications

Characterization of devices and materials:

- MOSCAPs
- MOSFETs
- Mobile ions

Common parameter extractions, including:

- Oxide thickness
- Doping density
- Depletion depth
- Flatband voltage.



The Model 4200-CVU is an integrated instrument designed to plug directly into the 4200-SCS chassis, so it can be controlled through KITE's point-and-click interface, just like an SMU, and allow users of any level of experience to perform C-V testing as if they were experts. A variety of sample tests, including tests for MOSCAPs, MOSFETs, and Mobile Ion characterization are bundled in, as well as common parameter extractions like oxide thickness, doping density, depletion depth, and flatband voltage. Operating specs like frequency range of 10kHz to 10MHz and measured capacitance accuracy as low as 0.1% allow the Model 4200-CVU to outperform anything else in the market.

Model 4200-CVU Specifications

MEASUREMENT FUNCTIONS

MEASUREMENT PARAMETERS: Cp-G, Cp-D, Cs-Rs, Cs-D, R-jX, Z-theta.

TEST SIGNAL

FREQUENCY RANGE: 10kHz to 10MHz.
MINIMUM RESOLUTION: 10kHz, 100kHz, 1MHz depending on frequency range.
SOURCE FREQUENCY ACCURACY: ±0.1%.
SIGNAL OUTPUT LEVEL RANGE: 10mV rms to 100mV rms.
RESOLUTION: 1mV rms.
ACCURACY: ±(10.0% + 1mV rms) unloaded (at rear panel).

DC BIAS FUNCTION

DC VOLTAGE BIAS:
RANGE: ±30V.
RESOLUTION: 1.0mV.
MAXIMUM DC CURRENT: 10mA.

SWEEP CHARACTERISTICS

AVAILABLE SWEEP PARAMETERS: DC bias voltage, frequency.

Ordering Information

4200-CVU
4200 Capacitance Voltage Unit

4200-CVU-PROBER-KIT
Prober Accessory Kit for 4200-CVU

4200-CVU-UPGRADE
4200-CVU Card and Upgrade for existing 4200-SCS systems

4200-CVU-1Y-EW
1 year of return to factory repairs of the 4200-CVU. Before and after data reports compliant with ANSI/NCSL Z540-1. Must be purchased with 4200-1Y-EW and 4200-CAL.

4200-CVU-3Y-EW
1-year factory warranty on the 4200-CVU extended to 3 years from date of shipment. Includes calibration and return shipping. Requires purchase of 4200-3Y-EW.

4200-CVU-5Y-EW
1-year factory warranty on the 4200-CVU extended to 5 years from date of shipment. Includes calibration and return shipping. Requires purchase of 4200-5Y-EW.

4200-CVU-3Y-CAL
3 calibrations / 3 years of calibrated operation of the 4200-CVU. Requires purchase of 4200-3Y-CAL

4200-CVU-5Y-CAL
5 calibrations / 5 years of calibrated operation of the 4200-CVU. Requires purchase of 4200-5Y-CAL

A greater measure of confidence

The Model 4200-CVU comes with a variety of advanced diagnostic tools to help ensure the validity of C-V test results. Uncertain if a test result is accurate? Just click the on-screen "Confidence Check" button or use the real-time front panel to isolate portions of the test setup for validation.

KEITHLEY

A GREATER MEASURE OF CONFIDENCE

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