Make faster, easier prober connections and prevent time-consuming measurement errors

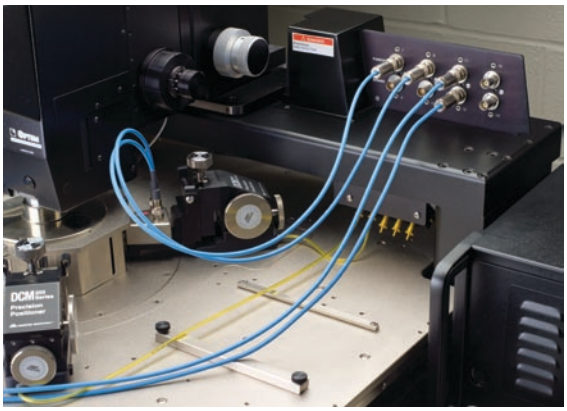
Keithley delivers the only prober cables that can handle I-V, C-V, and pulsed I-V signals

Our new high performance triaxial cable kits make it easy to connect the Model 4200-SCS Semiconductor Characterization System or any other modern semiconductor parameter analyzer to a prober, simplifying switching between DC I-V, C-V, and pulsed I-V testing configurations. Their patent-pending design eliminates the need for recabling when you change from one type of measurement to another. By preventing common cabling errors, they also prevent the measurement errors that cabling errors often produce.

THE PROBLEM: Differing cabling needs

One of the biggest challenges associated with characterizing semiconductor devices and understanding the processes used to make them is measuring DC I-V, C-V, and pulsed I-V test signals with the same system—each type of measurement has fundamentally different cabling requirements. Although the cabling from the instrument to the probe station bulkhead and feed-through is fairly straightforward, the cabling from the bulkhead to the probe tips can be confusing and difficult. For example, making low current I-V measurements requires guarding, which demands the use of triaxial cables. C-V measurements are typically made using four coaxial cables with their outer shells connected together to control the characteristic impedance the signals encounter. Pulsed measurements require the highest bandwidth of the three measurement types, so the characteristic impedance of the cabling must match the source impedance in order to prevent reflections from the DUT from reflecting off the source.

DIFFERENT CABLE REQUIREMENTS FOR I-V, C-V, AND PULSED I-V SIGNALS	
DC I-V	· Triaxial cables
	· Kelvin connection
	· Isolated, driven guards
LCR/C-V	· Coaxial cables
	· Kelvin connection
	· Shields connected at the probe tips
Pulsed I-V	· Coaxial cables
	· Non-Kelvin connection (single cable)
	· Shields connected at the probe tips
	· Shield optionally connected to a probe tip



THE SOLUTION: High performance triaxial cable kits

Keithley designed its new cabling kits with these differing requirements in mind. No matter what type of measurement is being made, you don't have to change the probe manipulator cabling—just move the cables from one set of instrument connections to another. That makes it much easier to switch between I-V measurements, C-V measurements, and pulsed I-V testing, simplifying the device characterization process. In addition, you can change the setup while the probe needles stay in contact with a wafer, reducing pad damage and maintaining the same contact impedance for all three types of measurements.

The Model 4210-MMPC-C version of the kit is optimized for use with Cascade Microtech probers; the Model 4210-MMPC-S is optimized for use with SUSS MicroTec probers. Both offer fast, economical solutions to difficult cabling challenges. Check with your Keithley sales representative for information on solutions designed for probe stations from other manufacturers.

Only Keithley lets you make all three kinds of measurements with just one set of cables

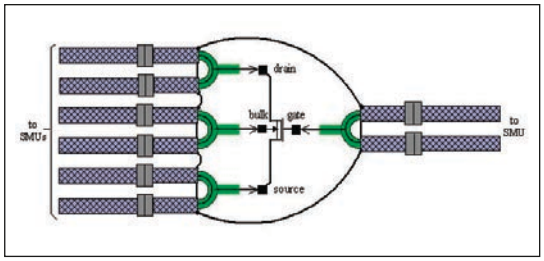
Routing I-V, C-V, and pulsed I-V test signals from the prober to your test instrumentation demands a cabling solution that offers exceptional set-up flexibility, like Keithley's new high performance triaxial cable kits.

To learn more about how Keithley's new high performance triaxial cables can improve the accuracy of your device characterization measurements, contact your local Keithley sales representative or visit www.keithley.com to download a copy of our newest white paper, "Labs' Demands for Greater Measurement Flexibility Require Cabling Systems Capable of Accommodating Multiple Measurement Types."

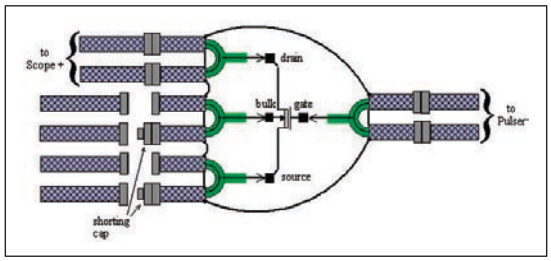
Ongoing system enhancements ensure ongoing ROI

Since 2000, the Model 4200-SCS Semiconductor Characterization System has offered the semiconductor industry the broadest and deepest applications coverage of any parameter analyzer on the market. The easy-to-use Model 4200-SCS performs lab-grade DC and pulse device characterization, real-time plotting, and analysis with high precision and sub-femtoamp resolution. The 4200-SCS offers the most advanced capabilities available in a fully integrated characterization system, including a complete, embedded PC with Windows operating system and mass storage. Its self-documenting, point-and-click interface speeds and simplifies the process of taking data, so users can begin analyzing their results sooner.

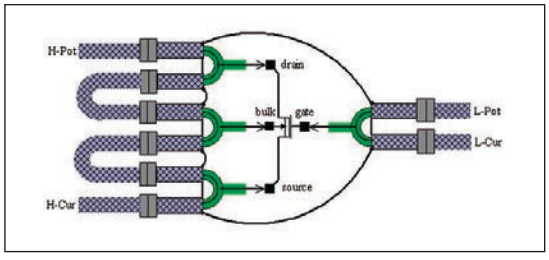
Keithley has continually enhanced the Model 4200-SCS's hardware and software ever since its introduction. Our commitment to ongoing system innovation assures a cost-effective upgrade path, so you'll never have to buy a new parametric analyzer because your old one is obsolete. The Model 4200-SCS is engineered to keep up with the industry's changing test needs, stretching your capital investment further and improving your ROI.



Many I-V and pulse measurements are made on devices with more than two terminals. The most common device type is a four-terminal MOSFET. This figure illustrates how to use Keithley's new triaxial cable kits to configure an I-V measurement setup for a four-terminal DUT.



To make a pulse I-V measurement, the connectors can be disconnected and shorting caps inserted into the source and bulk cables.



In the four-terminal C-V measurement illustrated here, three of the four terminals are connected together to allow making a two-terminal C-V measurement. The frequency at which the C-V measurement can be made can be increased by connecting the three terminals together at the prober rather than at the LCR/C-V meter.

A GREATER MEASURE OF CONFIDENCE

KEITHLEY

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