B1505A Power Device Analyzer/Curve Tracer

The all-in-one solution for power device evaluation across a wide range of operating conditions (up to 1500 A/10 kV and +250 °C)

Can Your Present Equipment Solve These Key Power Device Evaluation Challenges?

Insufficient measurement capability

Power devices require characterization across their entire operating region, ranging from nano amps or microvolts up to more than one thousand amps and thousands of volts. In addition, the ability to perform narrow (microsecond range) pulsed IV measurements is also essential to prevent device self-heating, which can distort measurement results. Lastly, characterizing the switching speeds of power devices necessitates some means to characterize gate resistance (Rg), gate charge (Qg), and junction capacitances at biases of several thousand volts. These parameters have become extremely important as end-application switching frequencies have continued to increase. However, traditional measurement equipment cannot meet all of these requirements.

Verification of power device reliability

Since many power devices are used in harsh environments and mission-critical applications, they have to be highly reliable. Characterizing performance under a wide range of operating temperatures as well as near the safe operation area (SOA) is crucial to meeting reliability targets. Unfortunately, temperature testing is time-consuming, complex, and prone to oscillation issues caused by long cables when an external thermal chamber is used. SOA testing typically requires dynamic testers, which are difficult to use and lack sufficient accuracy.

Issues with novel new device (SiC, GaN, Ga_2O_3, IGBT) characterization

New wide-bandgap materials such as SiC, GaN, and Ga_2O_3 show great promise for emerging high-power applications because of their ability to withstand large voltages and their fast switching speeds. IGBTs are becoming increasingly important as electronic switches for a variety of applications. Characterization of large breakdown voltages (up to 10 kV), high currents (hundreds of amps), gate charge, junction capacitances under high voltage DC biases (up to 3000 V), device temperature dependency, and the GaN device current collapse effect are measurement capabilities that are crucial to bringing these new devices to market as quickly as possible.

No curve tracer hardware support or feature enhancements

Until recently, curve tracers have been the de facto standard tool for power device evaluation. However, conventional curve tracers do not possess the abilities necessary to evaluate modern power devices. They lack crucial capabilities such as transfer curves or junction capacitance characterization, cannot generate sufficiently short pulse widths, and possess insufficient accuracy. Extracting PC-compatible data from curve tracers is also inconvenient and time-consuming.

Safe and efficient packaged device testing

A test fixture that is both safe and easy to use is crucial for packaged power device evaluation. However, the lack of a standard test fixture for high-power devices has forced many people to create their own solutions, which become challenging to manage when multiple package types need to be tested. Moreover, temperature-dependent testing (which is mandatory for power device evaluation) cannot be done safely and reliably.

Power device development costs

The ability to probe devices on-wafer significantly saves both time and money by eliminating the need to package the devices beforehand. However, on-wafer power device measurements have previously not been easy to make. Not only the time and cost of supporting the on-wafer measurement environment but also the safety of the on-wafer measurement environment are big concerns.

The Keysight B1505A Meets the Most Challenging Power Device Evaluation Requirements

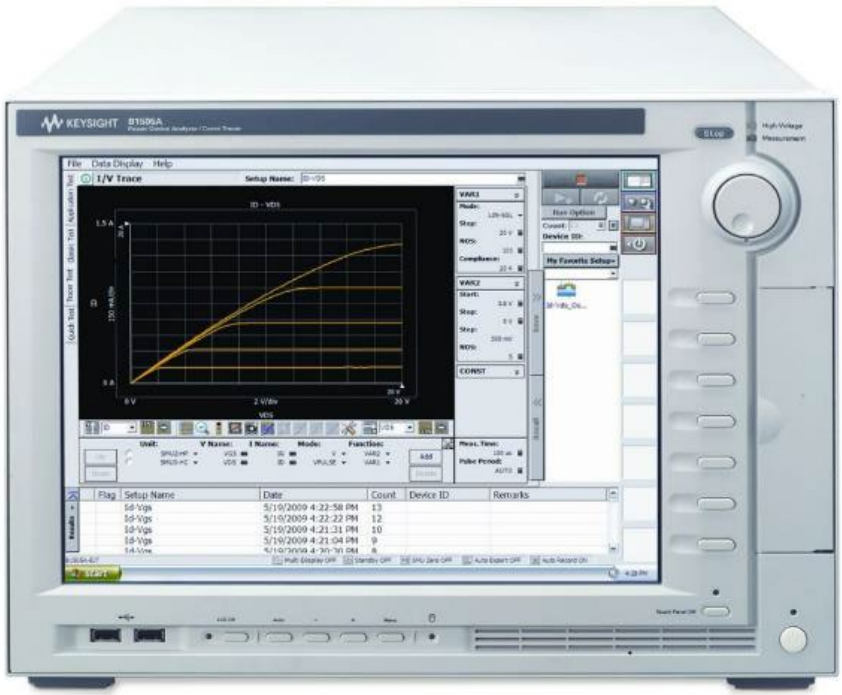
A one-box solution for accurate and easy power device evaluation and analysis

The B1505A meets the measurement challenges posed by state-of-the-art power devices. It is the only single-box solution to accurately evaluate and characterize power devices from sub-picoamps up to 10 kV and 1500 amps. It can also measure dynamic parameters such as gate charge and capacitance at 3000 V of DC bias. It supports thermal testing from -50 °C to +250 °C.

In addition to these impressive measurement capabilities, the intuitive EasyEXPERT group+ software environment makes data analysis a snap. You can also easily export data into your PC-based work environment and use this data to generate presentations and reports.

The B1505A supports two standardized test fixture solutions, the N1259A, and the N1265A, that are differentiated by their voltage and current ranges. Both solutions are compatible with a variety of different socket types. The B1505A also supports on-wafer testing of power devices, thereby eliminating the need to package the devices first. This capability dramatically improves the turn-around time (TAT) when testing devices in the lab.

Taken together, these capabilities and features result in revolutionary efficiency improvements in power device evaluation and a significant reduction in the cost of tests.



Keysight B1505A Key Feature Summary

Precision measurement across a wide range of operating conditions

- All-in-one solution for power device characterization up to 1500 A/10 kV
- Medium current measurement with high voltage bias (e.g., 500 mA at 1200 V).
- μΩ resistance measurement capability
- Accurate sub-picoamp level current measurement at high voltage bias
- Fully automated, safe, accurate, and fastest available thermal testing from -50 °C to +250 °C

Extensive device evaluation capabilities

- Fully automated Capacitance (Ciss, Coss, Crss, etc.) measurement at up to 3000 V of DC bias
- High-power pulsed measurements down to 10 μs
- Both packaged device and on-wafer IGBT/FET gate charge measurement
- High voltage/high current fast switch option to characterize GaN current collapse effect
- Up to five high voltage (3 kV) source/measure channels for maximum flexibility
- Safe temperature-dependent testing via an interlock-equipped test fixture
- Supporting SiC MOSFET Vth, BTI-Vth measurements based on the JEDEC standards

Improved measurement efficiency

- Switch between high-voltage and high-current measurements without the need to re-cable
- Automatic test circuit formation for transistor junction capacitances (Ciss, Coss, Crss, Cgs, Cgd, Cds, etc.) for both packaged and on-wafer devices
- Standard test fixtures with interlock for safe packaged power device testing
- Supported and secure on-wafer high-power testing over 200 A and up to 10 kV
- The Oscilloscope view allows verification of applied voltage and current waveforms
- MS Windows-based EasyEXPERT group+ software facilitates data management and analysis

Upgradable and scalable hardware architecture

- A wide selection of measurement modules
- Support for high-power devices with up to 6 pins

Unmatched Power Device Characterization Across a Wide Range of Operating Conditions

1500 A/10 kV current and voltage capabilities revolutionize power device evaluation

Due to the wide current and voltage ranges required by many modern high-power applications, accurate characterization of the devices used in these circuits has not been possible because no equipment existed with sufficient current and voltage measurement capability to characterize these devices across their entire operating range. In addition, power devices require relatively fast pulsed measurements to prevent device self-heating effects that can distort the measurement results. The B1505A meets these challenges by supporting a variety of modules that can address all of these needs. These include a high-voltage SMU (HVSMU), a high-current SMU (HCSMU), an ultra-high current (UHC) module, an ultra-high voltage (UHV) module, and a high voltage medium current (HVMC) module. With these modules, creating a solution that meets your specific testing needs is easy. The HCSMU, medium current SMU (MCSMU), UHC, UHV, and HVMC all support fast pulsed measurements down to 10 microseconds. This prevents the device from self-heating that prevents accurate power device characterization.

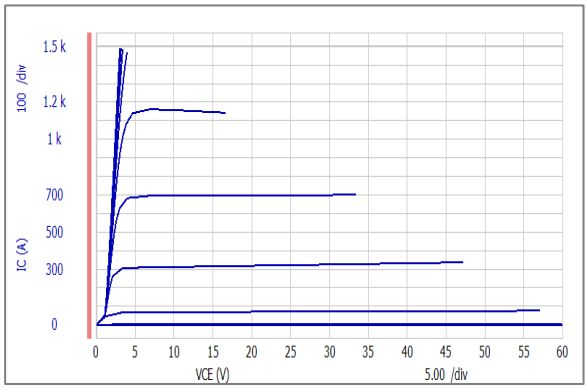


Figure 1. Measure important transient characteristics such as Id-Vd or Ic-Vc at up to 1500 A

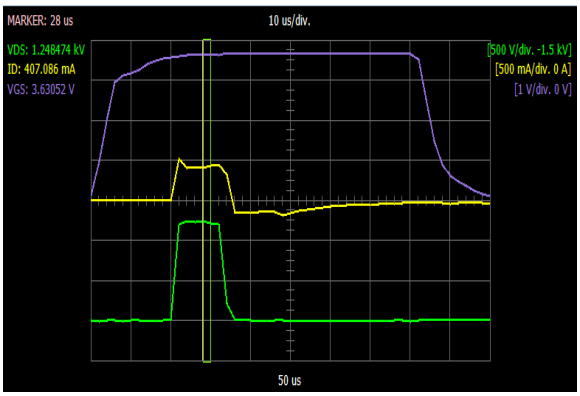


Figure 2. 10 µs pulse widths ensure accurate HVMOS Id-Vd measurement (Note: The 10 µs current and voltage pulses can be verified using the built-in Oscilloscope view function).

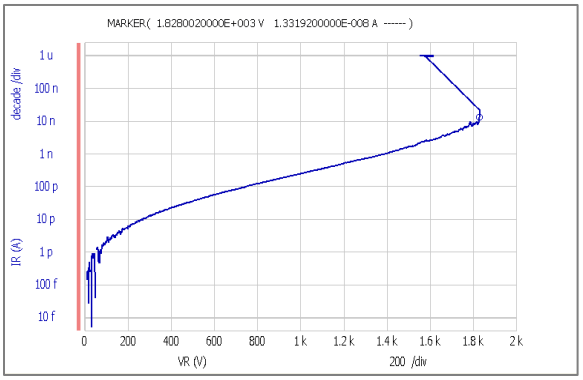


Figure 3. The HVSMU can accurately measure breakdown voltages with less than 1 pA of leakage current.

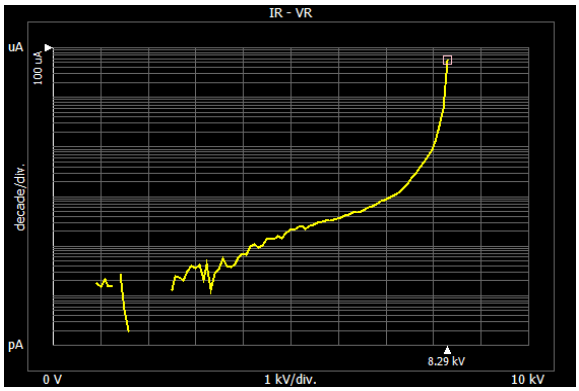


Figure 4. Precisely characterize breakdown voltages up to 10 kV

Precise sub-pA characterization

Although power devices generally operate at high currents and voltages, low current measurement capability is also very important. The B1505A supports sub-pA level current measurements with 10 fA resolution. The B1505A allows you to seamlessly combine either the MPSMU or HPSMU with either the UHC or HCSMU to accurately characterize devices across their entire operating ranges (from sub-pA up to 1500 A).

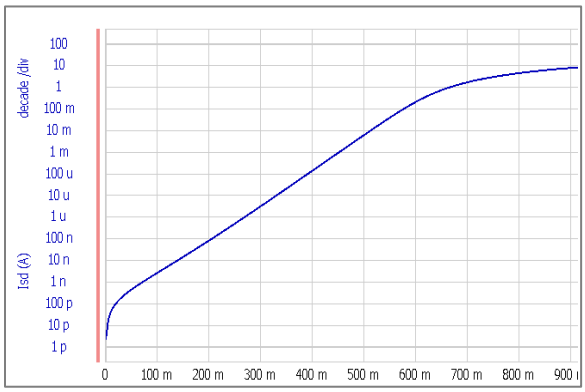


Figure 5. The B1505A's wide IV measurement range allows characterization of low-level current and voltage signals up through the maximum operating range of the DUT

Automatic thermal testing from -50 °C to +250 °C

When used with the N1271-002 or -005, the B1505A can support inTEST Thermostream temperature control systems, allowing safe and accurate device characterization from -50 °C to +220 °C. This solution provides rapid thermal cycling along with fully automated control from the B1505A, enabling thermal characterization to complete in less than an hour. If only high-temperature characterization is required, then an inTEST thermal plate is available that supports temperature measurements from room up to 250 °C. In addition, both of these solutions allow temperature measurements on your DUT to be made in the B1505A's test fixture, eliminating lengthy cables and minimizing the risk of oscillation and accuracy degradation. Both solutions also take into account condensation and user safety issues.

Figure 6. Thermostream

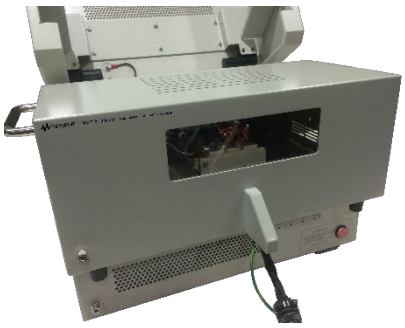


Figure 7. Thermal plate

Extensive power device evaluation capabilities

Elimination of self-heating effects permits accurate on-resistance measurements

Making accurate on-resistance measurements is becoming increasingly important as the efficiency requirements for power applications continue to accelerate. The B1505A meets this challenge with the ability to make accurate on-resistance measurements down to the mΩ and even μΩ levels.

The B1505A's unique architecture allows it to make high-current pulsed sweep measurements while simultaneously making precision voltage measurements. The B1505A's ability to combine short current pulses with long duty cycles ensures highly accurate on-resistance measurement results.

Both the UHC and HCSMU modules allow you to adjust the pulse width from 10 μs to 1 ms, with pulse periods as long as 5 s. These capabilities not only allow you to eliminate device self-heating effects, but they also allow you to observe the impact of varying the pulse period on the device characteristics.

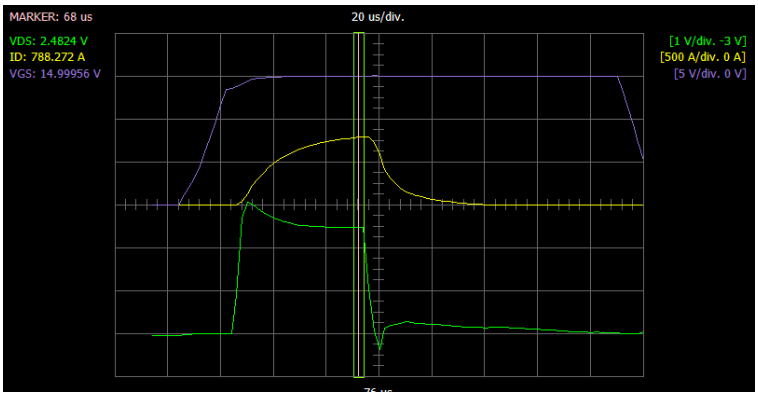


Figure 8. Ultra-high current fast pulsed measurements can be made in 50 μs

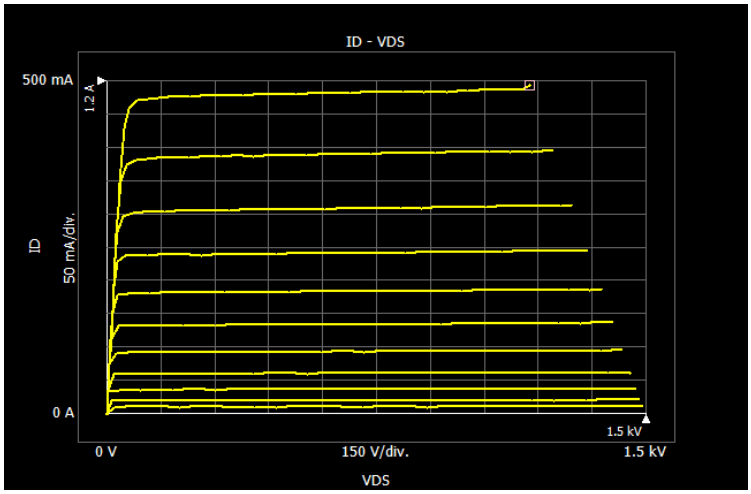


Figure 9. Display high voltage HVMOS Id-Vd characteristics

Unique high-voltage (3000 V) capacitance measurement capability

The B1505A supports a multi-frequency capacitance measurement unit (MFCMU) with a 1 kHz to 5 MHz frequency range. The MFCMU can be used in conjunction with an optional high-voltage bias-T and the HVSMU module to perform capacitance versus voltage (CV) measurements at up to 3000 V of DC bias. This industry-first feature permits the accurate characterization of capacitances such as Ciss, Coss, and Crss, which are important to correctly predict characterization power device switching characteristics. It also allows material researchers to perform much deeper doping profile characterizations than is possible using conventional equipment. The MFCMU also supports open, short, load, and phase compensation via a user-friendly GUI, making it easy to perform accurate capacitance measurements across the entire voltage bias range.

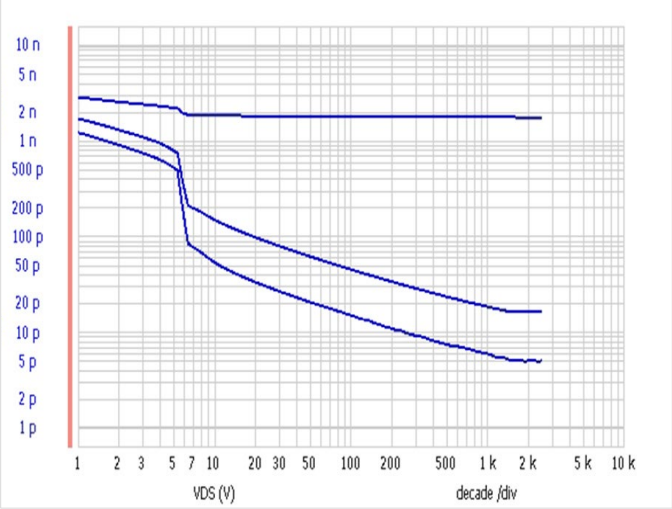


Figure 10. Ciss, Coss and Crss vs. drain voltage

Figure 11. N1272A capacitance selector and N1273A capacitance test fixture

Accelerate Your Emerging Material Device Development

Accurately characterize SiC, GaN, Ga_2O_3, and diamond substrate devices

Devices fabricated using emerging new materials such as SiC and GaN, Ga_2O_3 have higher breakdown voltages and smaller leakage currents than conventional power devices. Therefore, the equipment used to characterize these devices needs to have both high breakdown voltage measurement capability as well as the ability to measure leakage currents at high voltage biases. The B1505A has two choices for high-voltage characterization. For breakdown voltages up to 3000 V, the HVSMU module offers current measurement capability down to the sub-pA level. For breakdown voltages up to 10 kV, the UHV module can meet this challenge while still providing sub-nA current measurement accuracy. In addition to high

voltage, devices composed of these emerging materials also often require high current measurement for complete characterization. While the current requirements are often relatively low in the development phase (less than 20 A), device testing can often require 100 A or more of current when used in a practical application. The scalability of the B1505A's high-current modules is ideal for this situation since the HCSMU can be used to supply up to 40 A, and the UHC module can be added later to supply up to 1500 A if necessary. These high voltage and high current measurement capabilities enable researchers to quickly characterize and develop SiC, GaN, Ga_2O_3, and other novel new device types.

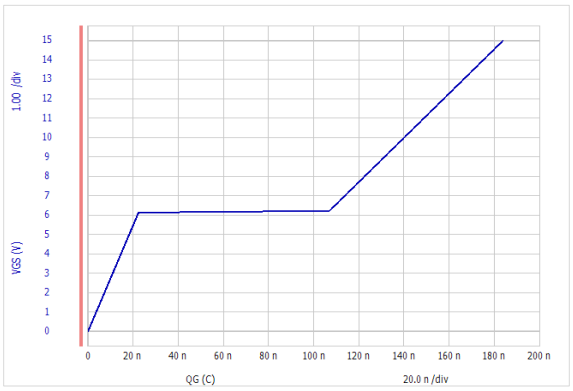


Figure 12. Gate charge (Qg) characterization

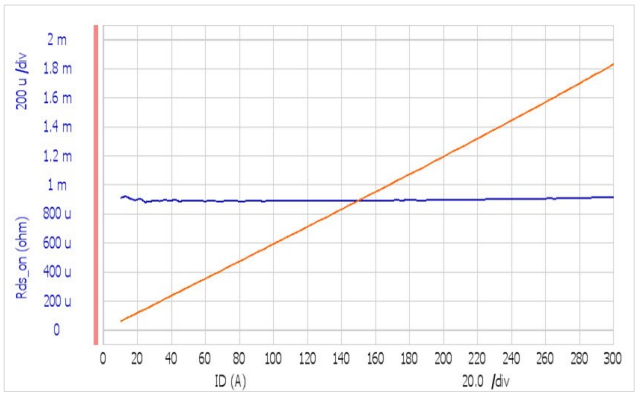


Figure 13. Accurate (µΩ resolution) on-resistance measurements are easy to make

Integrated voltage and current waveform monitoring capability

It is clear that accurate device characterization requires the application of precise voltages and currents. Unfortunately, power device measurements suffer more from the effects of residual and stray capacitance and inductance than traditional low-power semiconductor device measurements due to the high currents and voltages that power devices require. The only way to ensure measurement integrity is to visually verify the applied waveforms, which has now required an oscilloscope. However, the B1505A has a built-in waveform monitoring capability with a 2 µs sampling rate that eliminates additional instrumentation. This feature lets you quickly and easily verify if an applied voltage or current pulse is correctly reaching its programmed value and adjust parameters such as wait time accordingly.

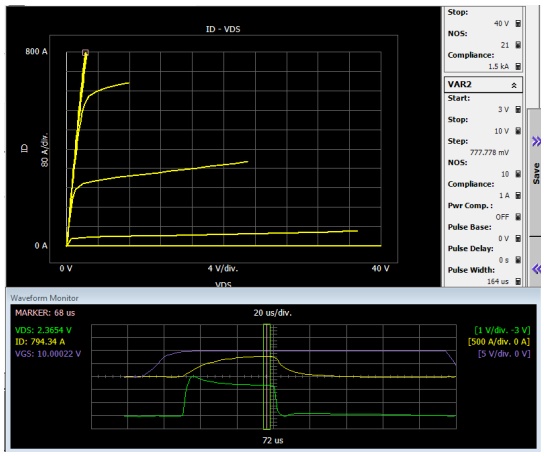


Figure 14. Oscilloscope View eliminates the need to use an external oscilloscope to verify the waveform being applied to the DUT.

Off-the-shelf GaN current collapse measurement

Studying and characterizing the gallium nitride (GaN) current collapse effect is crucial for researchers working on these types of devices. However, the characterization of this phenomenon is difficult since it requires measuring currents of several Amps immediately after halting high-voltage stress. The B1505A's high voltage / high current fast switch unit meets this challenge by enabling fast switching between the HCSMU and HVSMU modules. Using the fast switch along with the B1505A's overlay feature in Tracer Test mode, it is easy to graphically display the current collapse effect. Moreover, the B1505A's 2 µs sampling rate provides the speed necessary to determine transient device behavior.

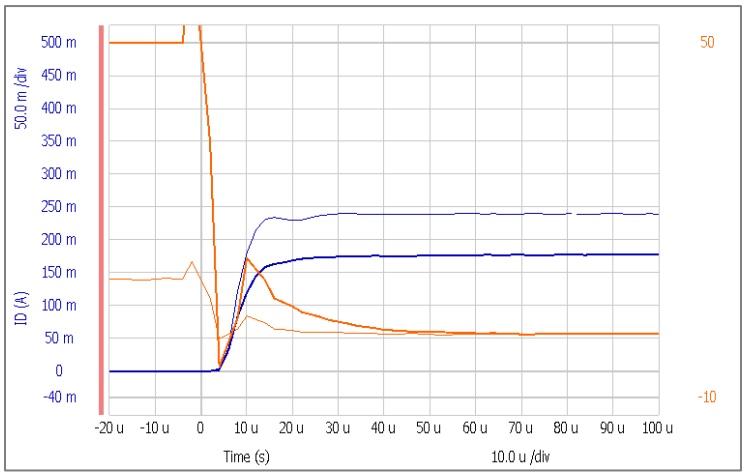


Figure 15. The B1505A can quantitatively evaluate current collapse phenomena.

The logical choice for curve tracer replacement

Next-generation curve tracer functions boost productivity

The B1505A's Tracer Test mode offers traditional curve tracer knob sweep control enhanced with the convenience and flexibility of a modern GUI. Just like an analog curve tracer, you can sweep in only one direction (useful for R&D device analysis) or in both directions (useful for failure analysis applications). Besides these traditional curve tracer capabilities, the B1505A has additional features that make device evaluation more efficient than ever before.

You can easily export measurement data into PC-compatible formats (both graphical and numerical), making it simple to create presentations and reports. You can also automatically or selectively save setup information and measurement results to the built-in SSD as well as to any other available storage location (USB memory stick, network drive, etc.).

A snapshot feature allows you to save and display multiple data traces to compare them easily with data from the current measurement. A stoplight feature allows you to graphically define forbidden regions (either voltage or current based) such that the measurement immediately ceases if the trace enters the forbidden area. Best of all, an auto-record feature keeps a running record of the most recent trace changes so you can replay and save measurement trace data even if your device is inadvertently damaged or destroyed. These improvements represent a revolutionary advance in curve tracer design that can significantly reduce device characterization cycle times.

Figure 16. In curve tracer mode the dual polarity sweep feature allows you to simultaneously sweep in both directions just like on an analog curve tracer.

Advanced features outperform traditional alternatives

The Keysight Technologies, Inc. EasyEXPERT group+ software, which is resident on the B1505A, represents a paradigm shift from previous generations of test solutions. EasyEXPERT's Application Test mode supports over 40 user-modifiable high-power application tests, which provide a convenient and visually intuitive alternative to conventional curve tracer operation. Parameters such as threshold voltage or breakdown voltage can easily be extracted automatically using EasyEXPERT's built-in auto-analysis capabilities. In addition, a test setup and results done in Tracer test mode can seamlessly and instantaneously be transferred to Classic Test mode for further detailed measurement and analysis. Powerful auto-analysis functions available in both Application Test and Tracer Test modes allow graphical data analysis to be performed as a measurement is made. This includes the ability to display parameters calculated from user-defined functions in real-time. Measurement data can also be displayed in various formats, including semi-log and log-log graphs.

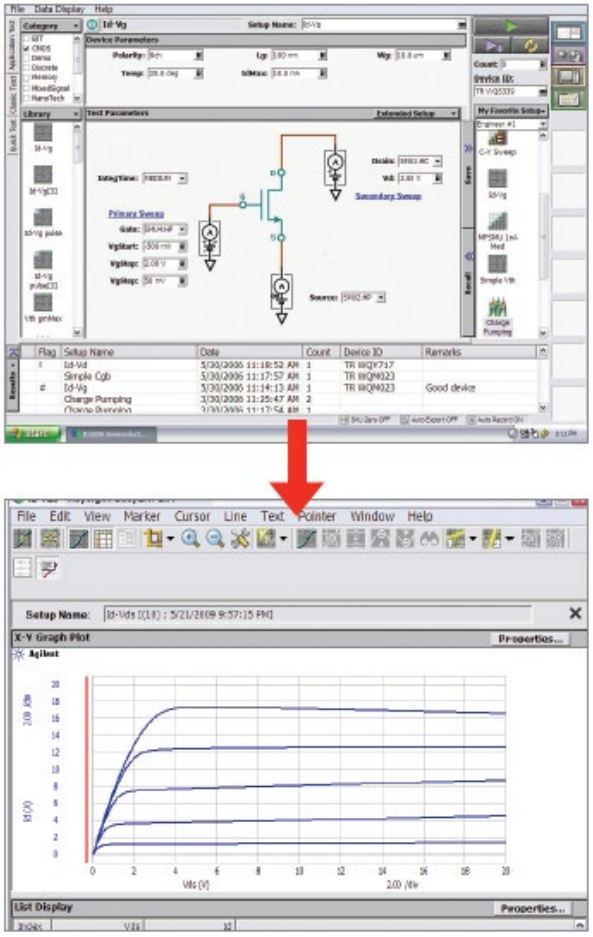


Figure 17. The furnished EasyEXPERT application tests allow even inexperienced users to become productive quickly without the need for extensive instrument training

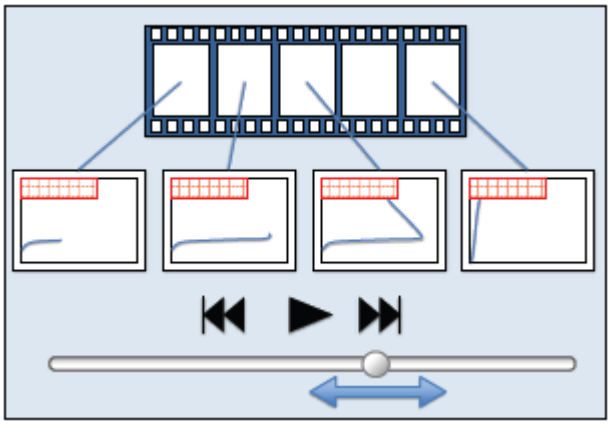


Figure 18. The auto record function allows you to view and export graphs even if a device is accidentally destroyed.

The simplicity of a curve tracer combined with the power of an analyzer provides unrivaled ease of use and efficiency

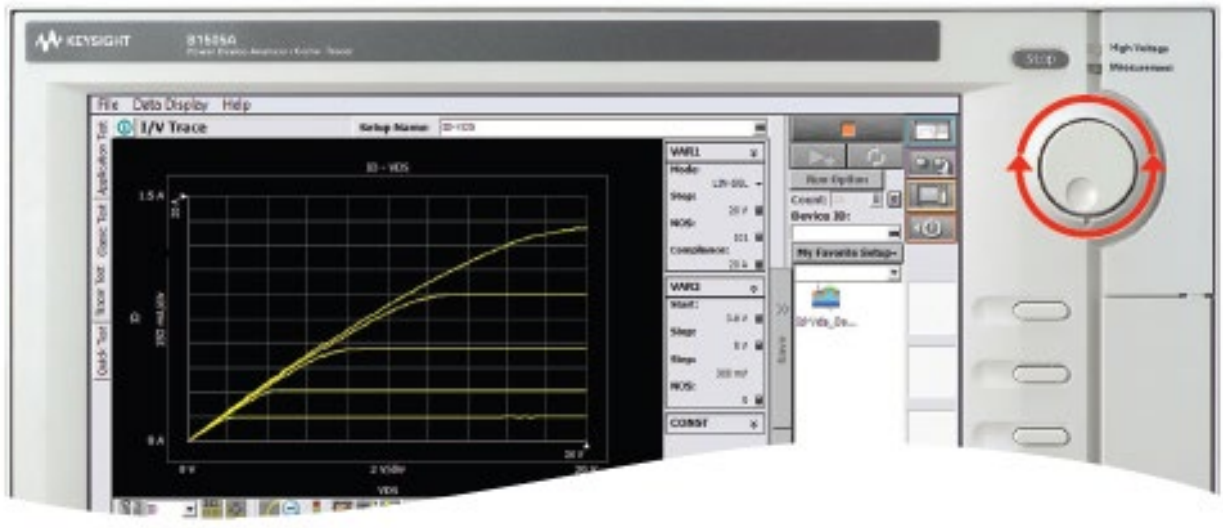


Figure 19. True knob-sweep curve tracer functionality — intuitive and real-time

Figure 20. High-power wafer prober control

Figure 21. Fully automated, safe, accurate, and fastest available thermal testing

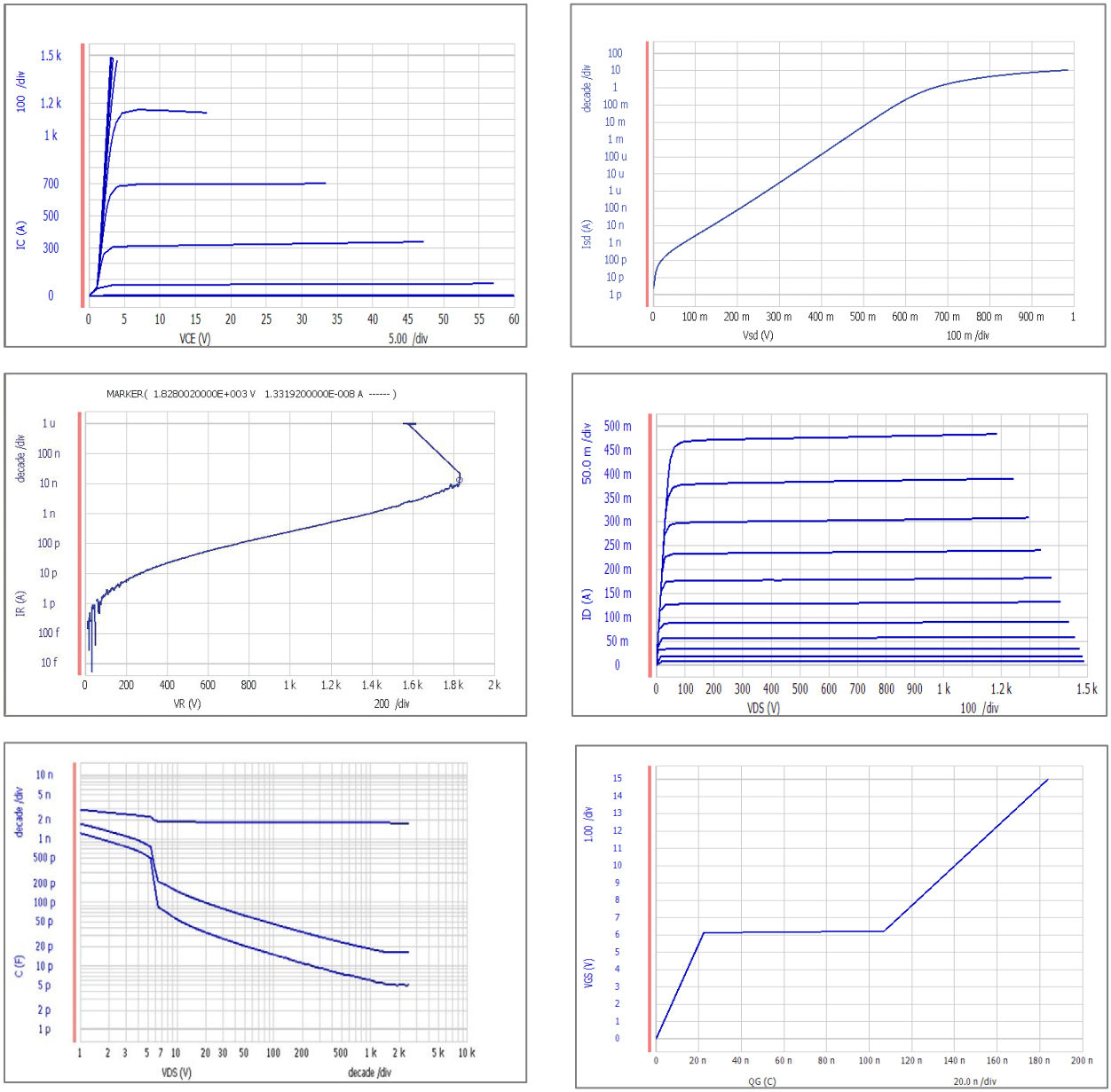


Figure 23. The auto data recording feature prevents data loss even if the DUT is inadvertently damaged or destroyed.

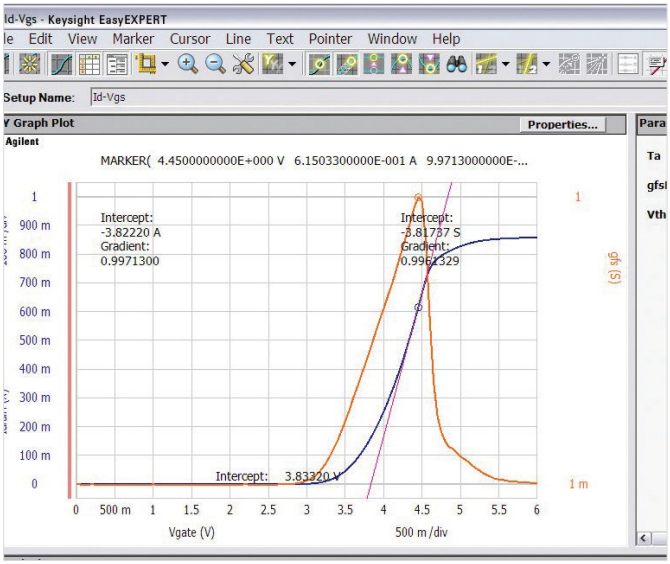


Figure 24. Easy data analysis and parameter extraction

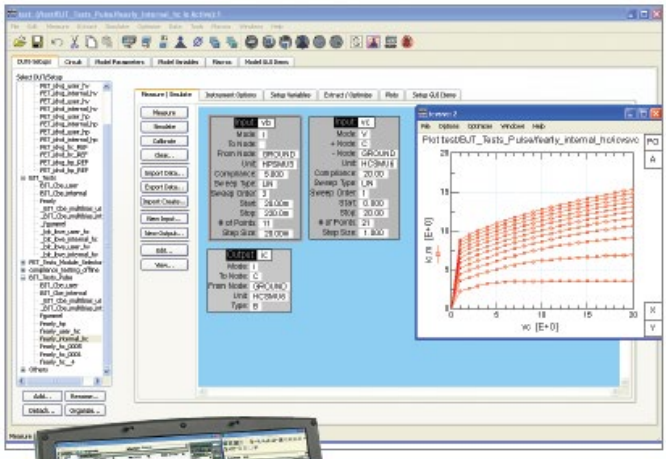


Figure 25. Supported by popular modeling software

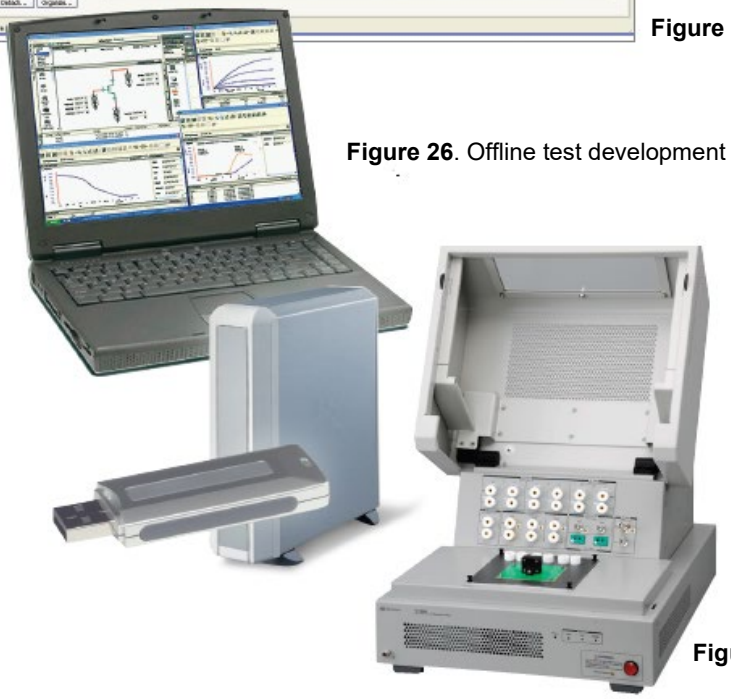


Figure 26. Offline test development and data analysis

Figure 27. Safe package device testing

Standard solutions improve efficiency and reduce costs

Safe and supported packaged device testing

Connecting to various power device package types has always been challenging when measuring high voltages and currents. Many users have had to waste valuable resources creating their own customized test fixtures just to be able to test their devices. Even when completed, concerns often arose about the safety of these home-grown solutions. The B1505A supports two standardized test fixtures (the N1259A and N1265A) that solve these issues. Both test fixtures have a modular configuration that supports various package types, including a universal socket adapter that can be used to create solutions for custom package types.

Moreover, a test adapter socket module enables you to use legacy interfaces designed for the Tektronix 370B and 371B curve tracers. Both test fixtures also have a safety interlock that prevents measurements at dangerous voltage levels unless the lid is closed. In addition, optional protection adapters and resister boxes are available to work with the test fixtures to ensure that lower-power modules (such as the MPSMU) are not inadvertently damaged. These new features and capabilities make packaged power device testing easier than ever before.

Figure 28. Both test fixtures (N1259A and N1265A) support a variety of different package types

Supported modeling software reduces development times

Many popular device modeling software solutions support the B1505A (including Keysight IC-CAP).

The B1505A's superb accuracy and resolution, combined with IC-CAP's powerful 85194Q HiSIM_HV** extraction package, provide a turnkey solution that enables you to extract highly accurate modeling parameters for high-power devices. This reduces device development times and improves time to market.

Ultra-high current and voltage measurements traceable to international standards

To be absolutely certain of your measurement results, you need to know that the instrumentation being used is traceable to international standards. However, until now, it has not been possible to purchase high-power test equipment with this type of traceability. The B1505A sets a new standard for high-power measurement instrumentation, with traceability to international standards for current and voltage levels up to 1500 A and 10 kV.

Figure 29. Calibration standards traceable to international standards ensure accurate measurement results for both ultra-high current and ultra-high voltage.

On-wafer measurement and automation capabilities reduce cycle times

More than 200 A and up to 10 kV on-wafer measurement capability

Performing high-power device testing on-wafer is more efficient than on packaged devices. However, power device on-wafer measurement has always been problematic due to the voltages and currents involved.

The B1505A supports cables with low residual resistance along with connectors and adapters that interface with all of the major high-power analytical wafer probers. You can now use the B1505A to make previously unobtainable high current and high voltage on-wafer measurements up to 200 A and 10 kV, as well as on-wafer IGBT/FET capacitance and gate charge measurements up to 3 kV. Moreover, the B1505A also supports various wafer prober interlock schemes to ensure safe on-wafer device testing.

These abilities permit the acquisition of valuable process information without the need to first package the devices, thereby significantly saving time and money.

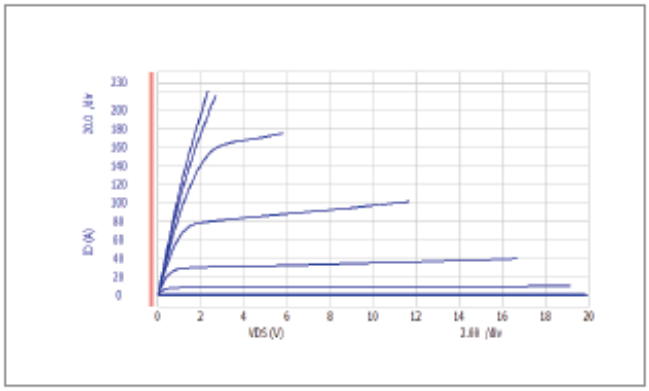


Figure 30. On-wafer measurements at more than 200 A are now possible using the B1505A

Figure 31. Module selector units are available for both on-wafer and packaged device measurements

Multiple parameters measurement in a single sequence

Automating testing across an entire wafer is extremely easy using EasyEXPERT's built-in Quick Test mode. Simply arrange the tests you want to run using Quick Test's GUI and select the Keysight-furnished wafer prober drivers corresponding to your wafer prober. A single mouse click will then enable you to test across the entire wafer and automatically save your test data to any available storage location. In addition, the module selector unit's ability to switch as needed between a high voltage measurement resource (HVSMU or HVMC), a high current measurement resource (HCSMU or UHC), and a standard SMU resource (MPSMU or HPSMU) permits such varied parameters as leakage current, on-resistance and breakdown voltage to be measured in a single measurement sequence.

Moreover, IGBT/FET junction capacitances can also be automatically evaluated on-wafer using the optional capacitance selector, which contains the blocking capacitors, resistors, and switches necessary to make accurate capacitance measurements.

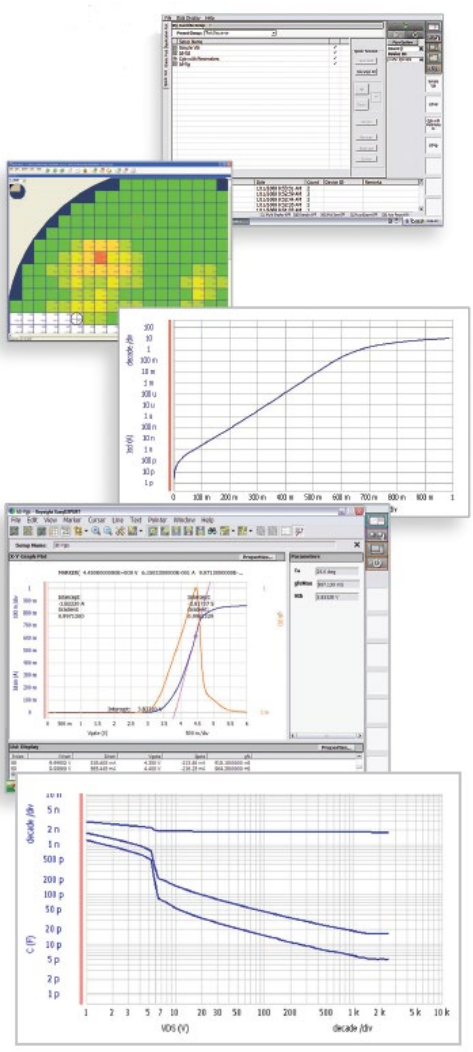


Figure 32. N1272A Capacitance Selector

Figure 33. The Quick Test feature and module selector unit allow you to automate on-wafer testing without having to do any programming or re-cabling, thereby reducing your overall measurement cycle time

Flexible and Expandable Architecture Protects Your Investment

Scalable and upgradeable platform

The B1505A's modular construction and wide selection of available power measurement modules make it a scalable platform that can cover various devices. For example, the HCSMU, HVSMU, and HVMC modules are sufficient for HVMOS characterization, while the UHC and UHV modules can be added for IGBT characterization. This scalability allows you to select the configuration that best meets your needs.

Most power devices pursue the twin goals of withstanding higher voltages while minimizing device on-resistance. This means that the currents and voltages applied during testing need to increase as the devices become more advanced. The B1505A's architecture makes it an ideal choice for this type of development environment. For example, a B1505A with an HCMSU and 20 A current measurement capability can easily be upgraded to support either 500 A or 1500 A by simply adding a UHC module.

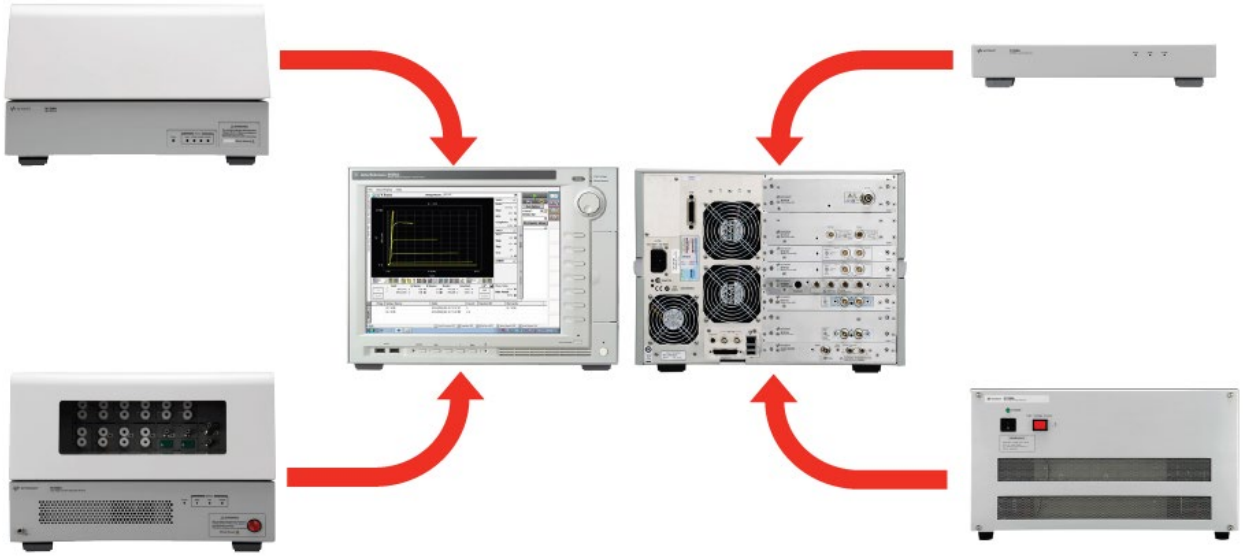


Figure 34. The scalable and upgradable architecture allows you to configure solutions for today's needs and also permits expansion in the future

Flexible configurations for sophisticated power devices

The B1505A's 10-slot mainframe supports a wide variety of both single-slot (MCSMU, MPSMU, and MFCMU) and double-slot (HCSMU, HVSMU, and HPSMU) modules. This enables great flexibility and expandability in configuring power device test solutions. For example, the single-slot MCSMU modules can be used by themselves, but they can also function as the control interface for the external UHC, UHV, and HVMC modules. Since up to five HVSMUs are supported, reliability applications requiring multiple high-voltage channels are possible. Moreover, the availability of the single-slot MPSMU module for use with low-power device nodes ensures that you do not run out of slots and enables the testing of five and six-pin count power devices. One such example is intelligent IGBTs, which typically have a sense emitter and temperature-sensing diode in addition to the standard gate, collector, and emitter terminals. Using the available B1505A modules, you can easily create a configuration to measure these devices.

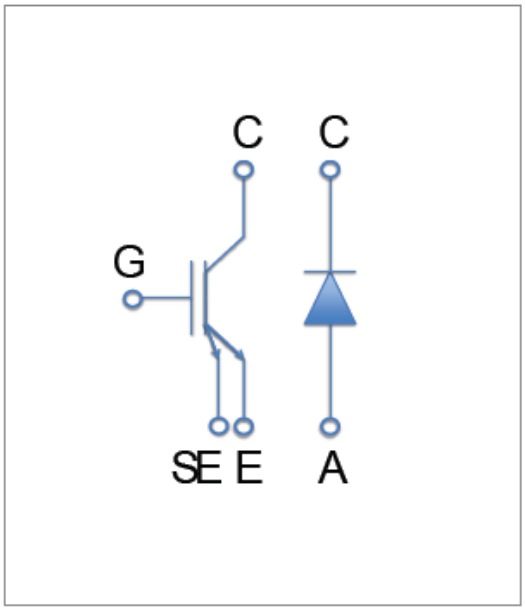


Figure 35. Five and six pin count devices (as shown above) can be measured with the B1505A

Mainframe Characteristics and Module Information

Mainframe characteristics

Available slots	10
Ground unit sink capability	4.2 A
USB 2.0 ports	2 front and 2 rear
Instrument control	GPIB
Networking	100 BASE-TX / 10 BASE-T LAN Port
External trigger inputs/outputs	1 BNC Trigger In; 1 BNC Trigger Out; 8 Programmable Trigger In / Out

Module	HPSMU	MPSMU	HCSMU [1]	HVSMU	MCSMU
Maximum force voltage	±200 V	±100 V	±40 V (DC) ±20 V (Pulse)	±3000 V	±30 V
Maximum force current	±1 A at ±20 V	±100 mA at ±20 V	±1 A (DC) ±20 A (Pulse) [1]	±8 mA at ±1500 V ±4 mA at ±3000 V	±100 mA (DC) ±1 A (Pulse)
V measurement resolution	2 µV	2 µV	200 nV	200 µV	200 nV
I measurement resolution	10 fA	10 fA	10 pA	10 fA	10 pA

Note:
1. If two HCSMUs are combined using either the Dual HCSMU combination adapter or the Dual HCSMU Kelvin combination adapter, then the maximum current ranges are ±2 A (DC) and ±40A (Pulsed).

Module	UHC (N1265A)	HVMC (N1266A)	UHV (N1268A)
Max voltage	±60 V	±2200 V	±10 kV
Max current	±500 A ±1500 A (optional)	±2.5 A	±10 mA (DC) ±20 mA (pulse)
V measure resolution	100 µV	3 mV	10 mV
I measure resolution	500 µA (500 A), 2 mA (1500 A)	200 nA	10 pA

MFCMU (B1520A) key specifications

Frequency range	1 kHz to 5 MHz
Maximum DC bias	±25 V, ±3000 V [2]
Supported measurements	Cp-G, Cp-D, Cp-Q, Cp-Rp
	Cs-Rs, Cs-D, Cs-Q, Lp-G, Lp-D
	Lp-Q, Lp-Rp, Ls-Rs, Ls-D, Ls-Q
	R-X, G-B, Z-θ, Y-θ

Note:
2. Using high voltage bias-tee (N1259A-020 or N1260A) and HVSMU

EasyEXPERT group+ Software Features and Options

Data acquisition and control	
User interface	Windows GUI
User interface options	Clickable knob, 15-inch touch screen, softkeys, USB keyboard, and mouse
Operation mode	Tracer Test mode (Curve Tracer mode), Application Test mode, Classic Test mode, Quick Test mode
Data viewing	View multiple graphs in tile, tab, or overlay display formats
Data storage	Data and test settings are automatically or selectively saved after each measurement
Test sequencing	Test sequencing without programming via Quick Test mode
Wafer prober control	Integrated semiautomatic wafer prober control supports die/sub-die moves
Supported wafer probers	Cascade Microtech, SUSS MicroTec, Vector Semiconductor
CV measurement	Integrated capacitance compensation
Furnished application libraries	High-power device, Utility
Application test management	Workspace feature allows the creation of public/private application test libraries

Plotting and reporting	
Data analysis	Automated real-time graphical data analysis
Data comparison	Append feature displays multiple measurements on the same graph. The Tracer Test mode snapshot feature saves and displays multiple data traces.
Data export	Automatic data export to any available drive
Printing	Print to any Windows-supported printer (via LAN or USB)

Environment and connectivity	
Operating system	Windows 10
Hardcopy media	DVD-ROM / CD-ROM / CD-RW Drive[1]
Networking	Windows 10
Supported peripherals	Any PC peripheral using a USB

1. Mainframe with serial number MY64320101 or later is not equipped with DVD drive.

Order Information

B1505A Power Device Analyzer Curve Tracer

Supported modules	Slots occupied	Max number
High power SMU (HPSMU)	2	4
Medium power SMU (MPSMU)	1	10
High current SMU (HCSMU)	2	2
High voltage SMU (HVSMU)	2	5
Medium current SMU (MCSMU)	1	6
Multi frequency CMU (MFCMU)	1	1

External modules		Required number of MCSMU
N1265A	Ultra-high current expander / fixture	2
N1265A Opt 015	1500 A option	
N1266A	HVSMU current expander	2
N1267A	High voltage/high current fast switch	1
N1268A	High voltage expander	2
N1259A/N1265A Opt 014	Gate charge socket adapter	1
N1274A/N1275A	On-wafer gate charge measurement adapter	1

Accessories	
N1258A	Module selector
N1259A	Test fixture
N1260A	High voltage bias-T
N1261A	Protection adapter
N1269A	Ultra-high voltage connection adapter
N1271A	Thermal test enclosure
N1271A Opt 001	Thermal plate compatible enclosure for N1259A/N1265A
N1271A Opt 002	Thermostream compatible enclosure for N1265A (3kV IV)
N1271A Opt 005	Thermostream compatible enclosure for N1265A (3kV IV, CV & 10kV)
N1272A	Device capacitance selector
N1273A	Capacitance test fixture
N1274A	On-wafer gate charge measurement adapter for 20 A/3 kV
N1275A	On-wafer gate charge measurement adapter for N1265A

B1505AP Pre-configured products

Option	H20	H21	H50	H51	H70	H71	U50	U70
Max V	3 kV	3 kV	3 kV	3 kV	3 kV	3 kV	10 kV	10 kV
Max I	20 A	20 A	500 A	500 A	1500 A	1500 A	1500 A	1500 A
CV	N	Y	N	Y	N	Y	N	Y

Upgrade product

B1505AU	For adding SMU/CMU modules and upgrading the B1505A mainframe.
N1259AU	For adding test fixture modules/Bias-T/Module selector
N1265AU	For adding test fixture modules/the 1500 A option

B1505A Now Supported in Windows 10

The B1505A PC platform has been renewed. It includes Windows 10 OS, a faster CPU, 8 GB of memory, and a solid-state drive (SSD). The latest PC platform enables you to perform your software tasks efficiently while improving your total computing performance. Windows 10 upgrade option is also available.

For more information:

https://www.keysight.com/us/en/assets/7018-04136/technical-overviews/5991-3327.pdf