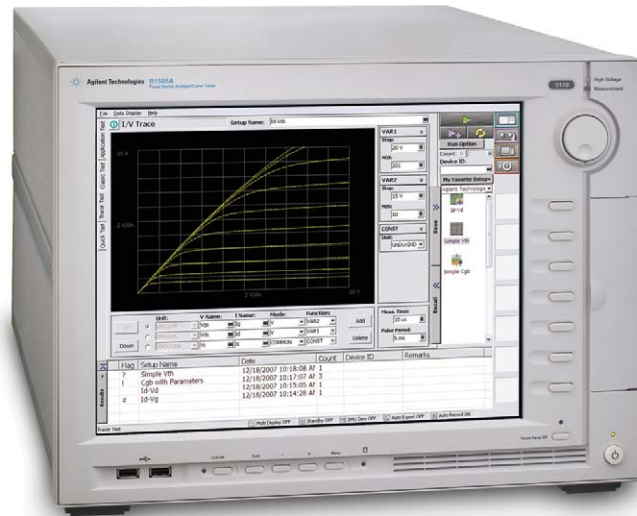




Curve Tracer Mode Supports Simple and Easy Failure Analysis

Agilent B1505A Power Device Analyzer/ Curve Tracer Application Note B1505-2



Introduction

Conventional analog curve tracers have traditionally been used for checking device operation and failure analysis because of their ease-of-use, including their intuitive ability to control voltage output by rotating a knob. However, conventional curve tracers have many deficiencies, such as poor measurement accuracies and antiquated floppy disk drives for data import and export. For both these and other reasons, conventional curve tracers are not good fit for modern-day testing needs and work environment.

The Agilent B1505A Power Device Analyzer/Curve Tracer is a new solution for conventional curve tracer users. The B1505A with its built-in EasyEXPERT software provides the following features that allow it to replace conventional curve tracers:

- Quick and effortless current versus voltage (IV) measurement using the knob sweep curve tracer mode
- Easy and flexible data management on a Microsoft® Windows® based instrument platform
- Support for measurements over wide voltage and current ranges (3000 V/20 A), which is comparable with conventional curve tracers

This application note describes how the B1505A can be used for the failure analysis and why it is the best tool for this application.

For more information on the B1505A's high voltage and high current measurement capabilities please refer to application note B1505-1, *Accurate and Efficient Characterization of Power Devices at 3000 A/20 A*.



Agilent Technologies

Quick and Effortless Measurement with Curve Tracer Mode

EasyEXPERT 4.0's curve tracer mode provides quick and easy IV measurement capability. Using EasyEXPERT you can execute measurements in a few simple steps as follows:

1. Select a measurement item (such as Id-Vd or Id-Vg) from the furnished measurement setups.
2. Set proper compliance value to prevent unexpected device damage.
3. Start the measurement by clicking the repeat-measurement button, and rotate the knob to increase or decrease the output voltage.

The sweep measurements are repeated and the measured results are updated in real-time. The output values can be controlled manually by rotating the knob, and this permits users to gradually increment the applied voltage up to the point where device damage or breakdown occurs. For failure analysis applications you can manually increase the output voltage from zero volts to check if the device is functioning or to determine how device damage is occurring. Figure 1 shows how quickly and easily Id-Vd measurements can be made using the curve tracer mode. It takes just a few simple steps to set up the measurement, and it is easy to change the output drain voltage by rotating the knob.

Even if the device is permanently destroyed the trace data just before device destruction is retained in memory as temporary trace data, and this data can be retrieved after stopping the repeat measurement. For obvious reasons, this is an extremely useful feature when measuring breakdown characteristics that can permanently damage a device.

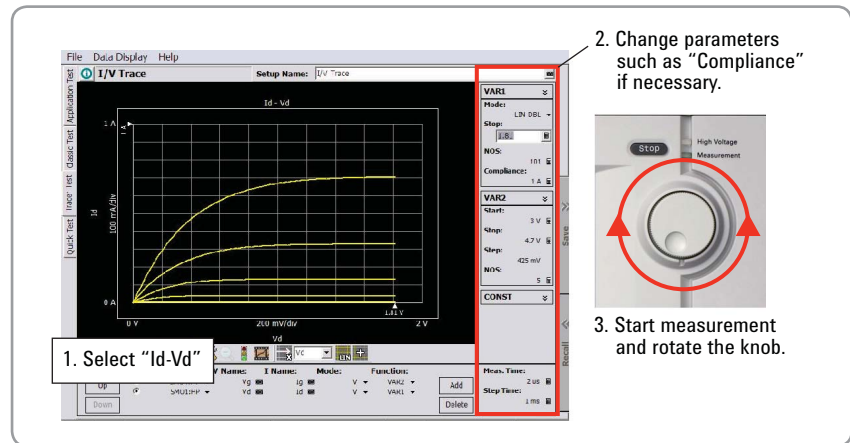


Figure 1. Id-Vd measurement in curve tracer mode.

Easy and Flexible Data Management on Microsoft Windows OS

The B1505A's measurement results can be stored (either selectively or automatically) onto a large internal hard disk drive. Since the B1505A's EasyEXPERT software runs on the Windows XP operating system, you can easily export this stored data into PC-compatible spreadsheet formats such as CSV (comma separated values) and XML (extensible markup language). Graphical data can also be saved into PC-compatible picture formats such as Windows bit-map and PNG image files. These are important features to support efficient failure analysis report creation.

In addition to the internal hard disk drive, you can save measurement data onto other storage devices such as network drives and USB storage drives via the B1505A's LAN and USB interfaces (respectively). You can then perform data management and data analysis using Desktop EasyEXPERT running on any Windows-based PC. Desktop EasyEXPERT, which has the same user interface as EasyEXPERT running on the B1505A, can be downloaded for free from Agilent website. You can also carry out additional data analysis using tools such as Microsoft Excel and you can develop attractive and professional looking failure analysis reports using tools such as Microsoft Word.

You can easily print out measurement results such as graphs, data lists, and extracted parameters on any Windows-compatible printer via the LAN or USB interfaces.

Conclusion

The B1505A's curve tracer mode provides users a simple and easy tool for quick evaluation. The ability to vary output voltage by rotating a knob is very useful for checking device functionality, especially for failure or defect analysis purposes. You can also easily export data and graphs into your Windows-based PC work environment for further data analysis or to develop documents such as failure analysis reports. The B1505A is an all-in-one solution that meets the needs of failure analysis environments while also improving your work efficiency.

For more information please refer to application note B1505-1, *Accurate and Efficient Characterization of Power Devices at 3000 A/20 A*, which describes the B1505A's measurement capabilities for both high current and voltage (IV) measurements and capacitance versus voltage (CV) measurements.

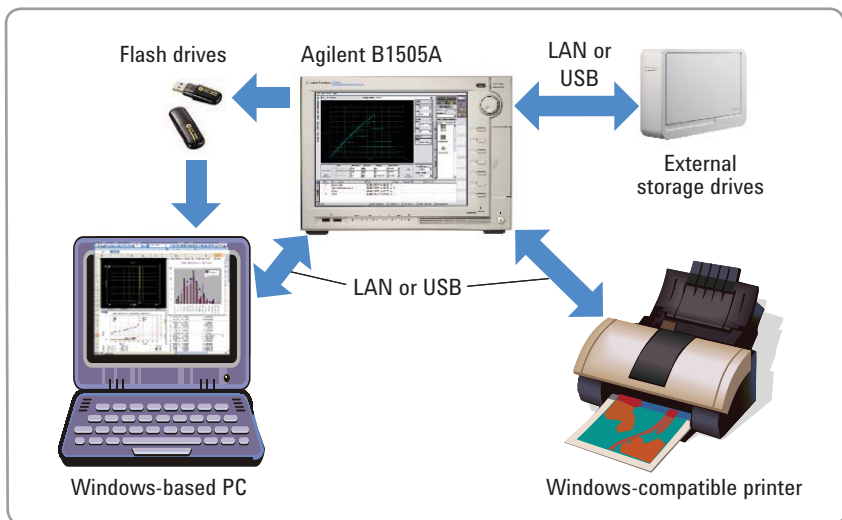


Figure 2. Easy and flexible data management.

 **Agilent Email Updates**

www.agilent.com/find/emailupdates
Get the latest information on the products and applications you select.

 **Agilent Direct**

www.agilent.com/find/agilentdirect
Quickly choose and use your test equipment solutions with confidence.

Agilent
Open 

www.agilent.com/find/open
Agilent Open simplifies the process of connecting and programming test systems to help engineers design, validate and manufacture electronic products. Agilent offers open connectivity for a broad range of system-ready instruments, open industry software, PC-standard I/O and global support, which are combined to more easily integrate test system development.

Microsoft and Windows are U.S. registered trademarks of Microsoft Corp.

Remove all doubt

Our repair and calibration services will get your equipment back to you, performing like new, when promised. You will get full value out of your Agilent equipment throughout its lifetime. Your equipment will be serviced by Agilent-trained technicians using the latest factory calibration procedures, automated repair diagnostics and genuine parts. You will always have the utmost confidence in your measurements. For information regarding self maintenance of this product, please contact your Agilent office.

Agilent offers a wide range of additional expert test and measurement services for your equipment, including initial start-up assistance, onsite education and training, as well as design, system integration, and project management.

For more information on repair and calibration services, go to:

www.agilent.com/find/removealldoubt

Product specifications and descriptions in this document subject to change without notice.

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at:

www.agilent.com/find/contactus

Americas

Canada	(877) 894-4414
Latin America	305 269 7500
United States	(800) 829-4444

Asia Pacific

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Thailand	1 800 226 008

Europe & Middle East

Austria	01 36027 71571
Belgium	32 (0) 2 404 93 40
Denmark	45 70 13 15 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 €/minute
Germany	07031 464 6333
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
Switzerland	0800 80 53 53
United Kingdom	44 (0) 118 9276201

Other European Countries:

www.agilent.com/find/contactus

Revised: October 1, 2008

© Agilent Technologies, Inc. 2009
Printed in USA, April 30, 2009
5990-3813EN



Agilent Technologies