

On-Wafer Test of Power Devices

Keysight Technologies and
Cascade Microtech

Reduce your development time for power devices with on-wafer test

On-wafer test of your power devices can increase your rate of product introduction to meet the needs of your customers. The growth in the use of power semiconductors has exploded due to emerging energy standards and the need for efficient power utilization. The double-digit growth in the market for power devices now exceeds the rest of the semiconductor market. To achieve the cycle times demanded by customers, manufacturers have to migrate to on-wafer test of their power devices.

Conventionally, manufacturers characterize their power semiconductors after the devices have been diced and packaged. The delays incurred in this approach add cost and time to the development process. With the increased demand for power devices this approach is no longer viable. With on-wafer test you can speed your turnaround in the design, development and characterization of your new power devices.

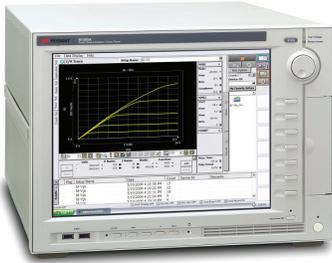
Cascade Microtech's Tesla on-wafer power device characterization system is a complete on-wafer test solution. The Tesla system is designed to provide probing levels of up to 3,000 V, 100 A and 100 W/cm². It features an advanced chuck mechanism to ensure low contact resistance, facilitate thin wafer handling and power dissipation while providing a low-noise, fully guarded and shielded test environment. To ensure operator safety while handling high power devices the system incorporates a light curtain and safety interlock system. The system supports a measurement temperature range of -60 °C to 300 °C.

Tesla uses the Keysight B1505A power device analyzer/curve tracer to make the necessary measurements. This single box solution allows accurate measurement and curve tracing for the key parameters of interest when characterizing a power semiconductor device including breakdown voltage measurement and Rds(on) measurement.

- On-wafer test of power devices
- Reduce the development time for power devices
- Supports probing at up to 3,000 V, 100 A and 100 W/cm²
- Light curtain and system interlocks for operator safety
- Advanced chuck mechanism for low contact resistance and low noise
- Uses Keysight B1505A power device analyzer/curve tracer



On-Wafer Test of Power Devices



The Keysight B1505A power device analyzer/curve tracer is a single box solution for characterizing high power devices from sub-picoamps up to 3000 volts and 40 amps. These capabilities are ideal for new power devices using wide-band gap materials such as silicon carbide or gallium nitride. Its ten-slot modular construction allows you to configure the B1505A to meet your exact needs with SMUs available to support high-current and high-voltage modes.

Whenever making power measurements the test fixture is extremely important, both to ensure safety and to support the wide variety of power device package types. The Tesla system from Cascade Microtech meets this need making it and the B1505A the perfect match for on-wafer test of your high power devices.

The combination of the Keysight B1505A and Cascade Microtech's Tesla system provides the capabilities you need in a system designed specifically for power devices. With the Tesla system you can migrate your characterization from in-package to on-wafer test, optimize your development process and, as a result, reduce the product development time for your power devices.

System Components

Keysight Technologies

B1505A	B1505A Power device analyzer/curve tracer mainframe
B1510A-FG	B1510A-FG High power source/monitor unit module (2 required)
B1512A-FG	B1512A-FG High current source monitor unit module
B1513A-FG	B1513A -FG High voltage source monitor unit module
N1258A	N1258A Module selector for B1505A
N1261A-003	N1261A-003 Protection adapter (2 required)
N1262A-011	N1262A-011 Resistor box for gate (SHV output)

Cascade Microtech

Tesla measurement system	On-wafer high-power device characterization system with high-voltage chuck
151-465 200 mm	Tesla probes and interconnect accessories kit
151-475 300 mm	Tesla probes and interconnect accessories kit
High-voltage probe and positioners	Three high-voltage triax probes and two high-voltage coax probes for high-voltage measurement up to 3,000 V
High-current probe and positioners	Two high-current probes for current measurement up to 100 A

To learn how this solution can address your specific needs please contact Keysight's solutions partner, Cascade Microtech
www.keysight.com/find/cascade



Keysight & Solutions Partners
 Extending our solutions to meet your needs

Keysight and its Solutions Partners work together to help customers meet their unique challenges, in design, manufacturing, installation or support. To learn more about the program, our partners and solutions go to

www.keysight.com/find/solutionspartner

Cascade Microtech is a worldwide leader in precision contact, electrical measurement and test of integrated circuits (ICs), optical devices and other small structures
www.cascademicrotech.com

For information on Keysight Technologies' products, applications and services, go to
www.keysight.com

© Keysight Technologies, 2012-2014
 Published in USA, August 2, 2014
 5990-5242EN