Quick Fact Sheet

Agilent B1505A Power Device Analyzer/Curve Tracer
1500 A/10 kV, µΩ, sub-pA, 10 µs pulse

The New Standard for Power Device Evaluation that Accelerates Your Innovation!

Agilent B1505A key features

- Wide current/voltage range: 1500 A/10 kV
- Accurate leakage measurement (sub-pA capability)
- Precise on-resistance characterization (µΩ resolution)
- Pulsed measurements as fast as 10 µs
- Medium current measurement at high voltage bias: 500 mA @1200 V
- High power wafer probing support enables testing at > 200 A & 10 kV on-wafer
- True knob-sweep curve tracer functionality
- Integrated thermocouple inputs for temperature measurement
- Oscilloscope view (I/V) function supports output waveform monitoring
- Fully automated measurement & data analysis
- High current/voltage measurements traceable to international standards
- Scalable platform and architecture make it easy to add capabilities as needs change

Ic-Vc characteristics of IGBT modules can be measured accurately at collector current levels up to 1500 A using the Ultra High Current Unit.

The Ultra High Voltage Unit can accurately measure both breakdown voltage at up to 10 kV and small leakage current at up to 10 kV with pA resolution.

The High Voltage Medium Current Unit can make Id-Vd curves (such as 500 mA at 1200 V) with unparalleled accuracy. The Oscilloscope view feature allows you to verify your measurement pulses and timings without an oscilloscope.

Powerful auto-analysis capability permits the easy and accurate extraction of device parameters such as power MOSFET transconductance (Gm) and threshold voltage.

Anticipate ▶ Accelerate ▶ Achieve

Agilent Technologies
Quick Fact Sheet

Agilent B1505A Power Device Analyzer/Curve Tracer

Key specifications

<table>
<thead>
<tr>
<th>Resources</th>
<th>Required module/Expander</th>
<th>Main specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>High power SMU</td>
<td>B1510A HPSMU</td>
<td>Up to 200 V, 1 A force, 10 fA current resolution</td>
</tr>
<tr>
<td>Medium power SMU</td>
<td>B1511A MPSMU</td>
<td>Up to 100 V, 100 mA force, 10 fA current resolution</td>
</tr>
<tr>
<td>High current SMU</td>
<td>B1512A HCSMU</td>
<td>20 A/20 V (pulsed); 1 A/40 V (DC)</td>
</tr>
<tr>
<td>High voltage SMU</td>
<td>B1513B HVCMU</td>
<td>1500 V/8 mA; 3000 V/4 mA (pulsed &amp; DC)</td>
</tr>
<tr>
<td>Medium current SMU</td>
<td>B1514A MCMU</td>
<td>1 A/30 V (pulsed); 100 mA/30 V (DC)</td>
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<tr>
<td>High voltage medium current unit</td>
<td>N1266A HVSMU Current Expander, B1513B HVSMU and two B1514A MCMU/B1512A HCSMU modules</td>
<td>±1500 V/2.5 A (pulsed); ±2200 V/1.1 A (pulsed)</td>
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<tr>
<td>Ultra high current unit</td>
<td>N1265A Ultra High Current Expander/Fixture and two B1514A MCMU/B1512A HCSMU modules</td>
<td>±1500 A/80 V, 22.5 kW peak power, ±500 A/60 V, 7.5 kW peak power</td>
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<tr>
<td>Ultra high voltage unit</td>
<td>N1268A Ultra High Voltage Expander and two B1514A MCMU modules or a combination of a B1512A HCSMU and a B1514A MCMU</td>
<td>10 kV/10 mA (DC); 10 kV/20 mA (pulsed)</td>
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<tr>
<td>Multi frequency capacitance measurement unit</td>
<td>B1520A MFCMU</td>
<td>1 kHz to 5 MHz, 0 to ±25 V, using MFCMU internal DC bias 0 to ±3000 V, using HVSMU and high voltage bias-tee</td>
</tr>
</tbody>
</table>

1. The current ranges can be increased to 40 A/20 V (pulsed) and 2 A/40 V (DC) using two HCSMUs with the Dual HCSMU Adapter.

Agilent B1505AP pre-configured package (B1505A with modules/fixture)

Agilent B1505AP pre-configured package are off-the-shelf solutions for various power device characterization requirements. Each option has all required B1505A hardware and software including mainframe, cables, test fixture etc. required to test discrete power devices.

<table>
<thead>
<tr>
<th>Option</th>
<th>Max voltage</th>
<th>Max current</th>
<th>Capacitance</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>H20</td>
<td>3 kV</td>
<td>20 A</td>
<td></td>
<td>3 kV/20 A/Fixture pack</td>
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<tr>
<td>H21</td>
<td>3 kV</td>
<td>20 A</td>
<td>Yes</td>
<td>3 kV/20 A/C-V/Fixture pack</td>
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<tr>
<td>H50</td>
<td>3 kV</td>
<td>500 A</td>
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<tr>
<td>H51</td>
<td>3 kV</td>
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<td>3 kV/500 A/C-V/Fixture pack</td>
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<td>H70</td>
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<td>1500 A</td>
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<td>3 kV/1500 A/Fixture pack</td>
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<tr>
<td>H71</td>
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<td>1500 A</td>
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<td>3 kV/1500 A/C-V/Fixture pack</td>
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<tr>
<td>U50</td>
<td>10 kV</td>
<td>500 A</td>
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<td>10 kV/500 A/Fixture pack</td>
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<tr>
<td>U70</td>
<td>10 kV</td>
<td>1500 A</td>
<td></td>
<td>10 kV/1500 A/Fixture pack</td>
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</tbody>
</table>

Typical applications/devices

Application
- Power device evaluation
- Incoming inspection
- Failure analysis
- GaN current collapse evaluation

Device
- SiC/GaN devices
- IGBT
- Power MOSFET
- Bipolar transistor
- Thyristor
- Power management IC
- High voltage diode

Refer to Agilent.com website for product details, application notes and other information, visit
- www.agilent.com/find/b1505a
- www.agilent.com/find/b1505ap

Recommended service options

Additional two years of Return-to-Agilent warranty
Additional two years of Return-to-Agilent calibrations
For more information go to www.agilent.com/find/removealldoubt