E4727B Advanced Low-Frequency Noise Analyzer
30 mHz to 100 MHz, 200 V, 100 mA

Measure Semiconductor’s Flicker(1/f) Noise and RTN with Wafer Mapping

The Keysight E4727B/W7802B is a turn-key solution to measure flicker (1/f) noise and RTN (Random Telegraph Noise) of semiconductor’s device. The Keysight W7801B is bundle software to control Keysight B1530A (WGFMU). These solutions can control semi-auto probe station and get mass wafer mapping noise data automatically.

Applications

- Process design kit development
- Manufacturing statistical process control and reliability
- IC noise specification

E4727B Key Features

- 1/f noise corner frequency measurement in very high frequency
- Extremely low device noise measurement such as transistor linear region noise by newly designed LNA
- State of the art new LNA also allows noise measurement in very low bias current
- High power device noise measurement even in the high current like 1A
- Improve measurement productivities by fast measurement speed even in the high accurate condition with number of averaging.
E4727B Hardware Specifications

<table>
<thead>
<tr>
<th>Key Features</th>
<th>Specifications</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency BW</td>
<td>30 mHz to 100 MHz</td>
<td></td>
</tr>
<tr>
<td>System Noise Floor</td>
<td>1E-28 A²/Hz</td>
<td>Typical</td>
</tr>
<tr>
<td>Min Measurable Bias Current</td>
<td>30 pA</td>
<td>Typical</td>
</tr>
<tr>
<td>Max Drain Bias Current, Voltage, Power</td>
<td>0.1 A / 200 V / 10 W</td>
<td></td>
</tr>
<tr>
<td>High Power Noise Measurement</td>
<td>&gt;0.1 A current</td>
<td>Needs external power supply</td>
</tr>
<tr>
<td>RTN</td>
<td>2 ns min time step up to 16 M sample size</td>
<td></td>
</tr>
</tbody>
</table>

W7802B: PathWave WaferPro Express A-LFNA Measurement and Programing bundle Software

The A-LFNA software and user interface is built on top of the PathWave WaferPro Express measurement platform. The A-LFNA’s built-in measurement routines make DC and noise measurements turnkey. For example, to measure noise on an N-Type MOSFET, the system automatically chooses the source and load impedances that will best expose the intrinsic device noise. The engineer can accept these recommended settings or make changes, and a noise measurement is initiated. The A-LFNA then measures noise power spectral density (1/f noise) and noise in the time domain (RTN). Resulting data is plotted using a “multiplot” data display window. Various windows tabs help facilitate common tasks such as evaluating device DC operating point and measuring the slope of the power spectral density curve.

Key features

- Seamless integration with PathWave WaferPro Express measurement platform
- Advanced data display and analysis, enabling noise data comparisons and modeling with respect to bias current
- Automated control of all major wafer probing systems
- A-LFNA module features DC measurements, 1/f noise, RTN and data analysis
- Flexible hardware averaging for throughput-accuracy tradeoffs
- Multiple built-in biasing schemes for flicker noise characterization
- Measured data compatible with Keysight device modeling software
- Guided system calibration procedure
- PEL and Python measurement routine language support

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus