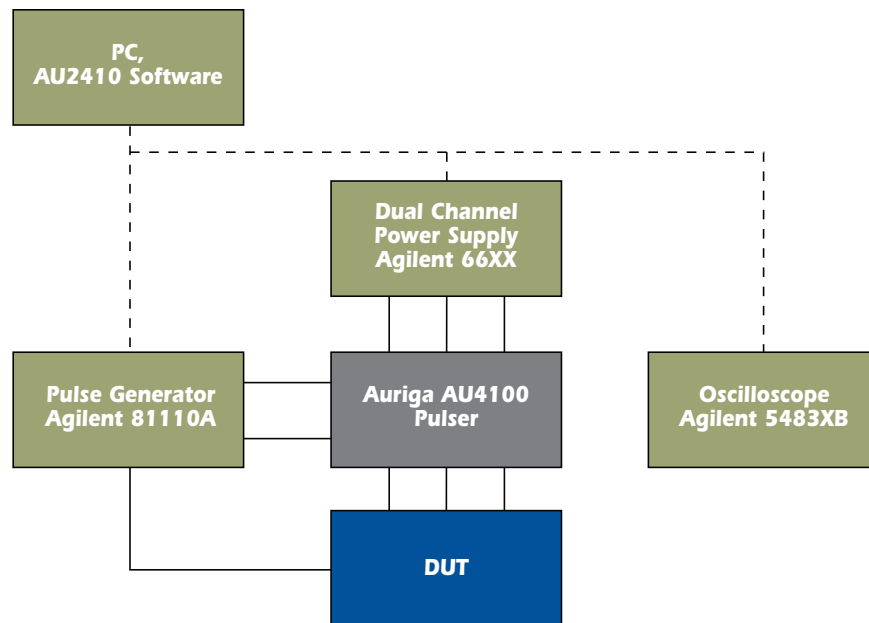
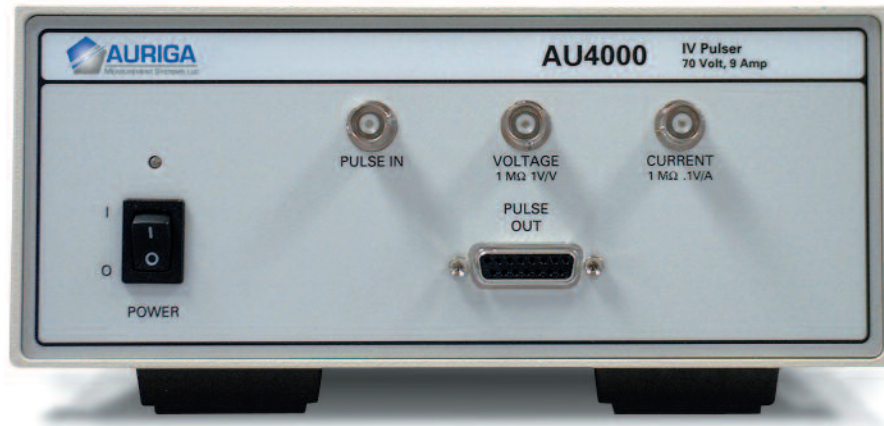


AU4000 Series

200nSec Pulsed IV Measurement System

Isothermal IV curve generation from arbitrary bias conditions of semiconductor devices in a flexible, rapidly-deployable, cost-effective measurement system.



Block Diagram of the Pulsed IV Measurement System

AU4000 Series

200nSec Pulsed IV Measurement System



I. Features:

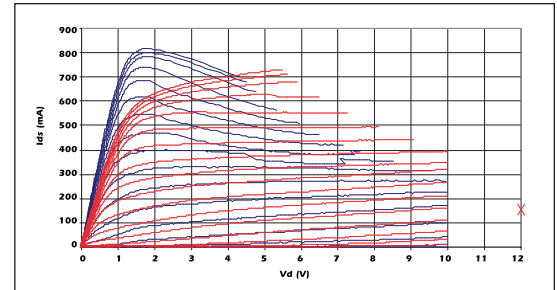
- Wide range of operation, complete control of parameters
- +/- 200V, 10A capability, constant voltage or current operations
- 200nSec minimum pulse width, >10sec maximum pulse width

II. Description:

The AU4000 is a high performance, flexible Pulsed IV system designed to generate isothermal IV curves from arbitrary bias conditions of semiconductor devices. These curves provide important data for device improvement, easy prediction of RF performance in the process lab, as well as for the large signal modeling of power devices. The AU4000 is particularly designed for high current, high voltage measurement, synchronized with RF measurement.

III. System Features

The Auriga AU4000 is a semi-customized system utilizing software and pulse modulation hardware developed by Auriga with standard DC power supplies, pulse generators and digital oscilloscopes to provide the maximum flexibility at minimum cost. Most characterization labs will find the standard instruments readily available; and with the included easy-to-use Windows® compatible software, rapid deployment of this system is possible.



Pulsed IV DC Characteristics (red) vs. Swept DC Characteristics (blue) showing the effect of channel traps

The ability of this system to pulse-modulate the drain collector and gate base voltages from an arbitrary bias point to any operating point allows the system to emulate actual device operation under a large signal drive. The operator has complete control of bias voltages, currents, pulse widths and timing. A simple, intuitive control panel is supplied to allow straightforward system setup and calibration. The system has been designed to integrate with Agilent network analyzers in a straightforward fashion to facilitate pulsed RF and DC measurements.

The system is a critical tool for the improvement of device processes as well as for device modeling because it:

- Easily monitors effects of traps and thermal impacts are easily monitored in the lab
- Removes the effects of channel temperature traps from the DC Characteristics
- Provides the widest dynamic range and highest power operation of any available system

The IV curves of FETs and HBTs are strongly affected by the channel temperature, as well as the traps located near the surface of active channel. Trap levels are charged by the electrical fields in the channel and modulated by the DC bias condition. Pulsed drive from a stable bias point keeps the channel temperature and dc electrical fields unchanged during the IV measurement, emulating the actual operation under RF. Device models based on the pulsed IV measurement are far more successful in simulating the RF results than the models based on DC IV curves.

IV. Electrical characteristics

Absolute maximum ratings:

| Parameters | Symbol | Min | Max |
|----------------|--------|---------|-------|
| Supply voltage | VDD | -200V | 200V |
| Supply current | ID | 0A | 10A |
| Supply voltage | VG | -200V | 200V |
| Supply current | IG | -100mA | 100mA |
| Pulse width | PW | 200nSec | 10Sec |

AUD4000_2 • ©2006 Auriga Measurement Systems, LLC.
Auriga reserves the right to change products and specifications without prior notice. This information does not convey any license by any implication or otherwise under any patents or other right. Application circuits shown, if any, are typical examples illustrating the operation of the devices. Auriga cannot assume responsibility for any problems arising out of these circuits.



650 Suffolk Street, Suite 410 ▪ Lowell, Massachusetts 01854 USA
phone 978-441-1117 ▪ fax 978-441-2666 ▪ www.auriga-ms.com