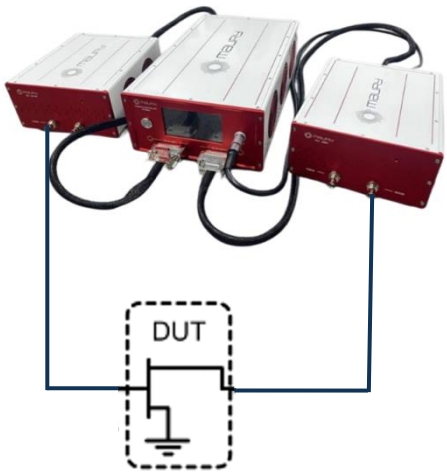
Pulsed IV / SPar. System for Traps & Thermal Characterization

Pulsed IV measurements enable modeling and design characterization engineers to accurately assess the intrinsic behavior of semiconductor devices by minimizing self-heating effects, capturing dynamic behavior under realistic operating conditions, modeling charge trapping effects, and extracting precise parameters for compact and behavioral models.

DC measurements can introduce significant self-heating, which distorts a device's true electrical behavior. III-V devices (e.g., GaN) are susceptible to trapping effects, which can degrade performance and long-term reliability. Pulsed IV measurements provide critical insight into these effects, enabling the development of more predictive and robust device models. One of the main technical challenges in Pulsed IV testing is generating short-duration pulses with fast rise and fall times while maintaining signal integrity—ensuring the voltage and current waveforms settle properly without distortion. Additionally, the measurement system must precisely capture the voltage and current responses of the device under test (DUT) during these brief pulses.

This demonstration shows the new Maury Pulsed IV measurement system that allows IV characterization from DC to Pulsed IV of 200ns. The setup supports gate sweeps from -30V to 30V up to 1.5A and drain sweeps from 0 to 280V up to 40A. A packaged GaN device will be used to test system capabilities up to 30V, while an external oscilloscope will be used to validate and showcase short-pulse performance.

Demo Setup



Target Users

Target users include modeling engineers, design and validation teams, and reliability engineers who need to capture accurate and reliable Pulsed IV measurements.

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Product Overview

Pulsed IV Measurement System

The new Maury Pulsed IV measurement system is a fully integrated Pulsed IV power supply that enables accurate IV characterizations in quasi-isothermal conditions. The integrated solutions include 3 modules:

- PIV Main:
  - High Voltage AC/DC power supply module
- PIV- 30V-BP:
  - Bipolar +/-30V gate pulsed IV module
- PIV-280V:
  - 280V drain pulsed IV module

KEY SPECIFICATIONS AND FEATURES:

- Integrated power supply and measurements modules.
- Wide range of pulsed and DC voltage settings: +/-30V (Gate) and 280V (Drain).
- High-resolution DC and Pulsed IV measurements with unique 10ns time resolution.
- Integrated with InsightPro™ (device characterization software suite) for modelling and validation analysis.
- Measurement and pulsed trigger for S-parameters and fast power measurements.
- Open source SCPI commands.

More Resources

Visit maurymw.com/info/eumw-2025 to learn more about Maury Microwave solutions.

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