

Highly Accurate Measurement System For GaN And SiC Semiconductors

When combined with the company's High Definition Oscilloscopes (HDOs), [Teledyne LeCroy's DL-ISO](#) high-voltage optically isolated 1-GHz probe and Power-Device test software are said to offer the most accurate electrical characterization of gallium nitride (GaN) and silicon carbide (SiC) power semiconductor devices.

Wide-bandgap (WBG) materials, such as GaN and SiC, switch more than ten times faster than silicon (Si) semiconductor devices, and reduce size and weight while increasing efficiency. However, many engineers are implementing WBG semiconductors for the first time, and need more measurement bandwidth and more accurate and detailed analysis of the semiconductor devices.

According to Teledyne LeCroy, the DL-ISO probe provides design engineers with the highest-confidence GaN and SiC power semiconductor device measurements. The new probe has the best signal fidelity, lowest overshoot and best accuracy—1.5% when combined with Teledyne LeCroy's industry-leading 12-bit resolution HDOs, nearly twice as good as the only competitor, says the vendor (see Figs. 1 and 2).

The 1-GHz bandwidth meets requirements to measure GaN device 1-ns rise times. HDOs also provide up to a 20-GS/s sample rate at 12-bit resolution for the faithful capture and display of high-speed GaN and SiC device signals. The combination of best signal fidelity, low overshoot, high accuracy, high bandwidth and high sample rate is critically important for successfully implementing GaN and SiC technologies in new designs.

Teledyne LeCroy's new Power-Device software package additionally simplifies the analysis of GaN and SiC devices with automated JEDEC switching loss and other measurements, and color-coded overlays to highlight the relevant, measured areas.

The DL-ISO probes are offered in bandwidths of 350 MHz, 700 MHz and 1 GHz. Availability of the probe and Power-Device software is 14 weeks ARO. For more information, see the power electronics probes [page](#), see the [datasheet](#) or contact Teledyne LeCroy at 1-800-553-2769.

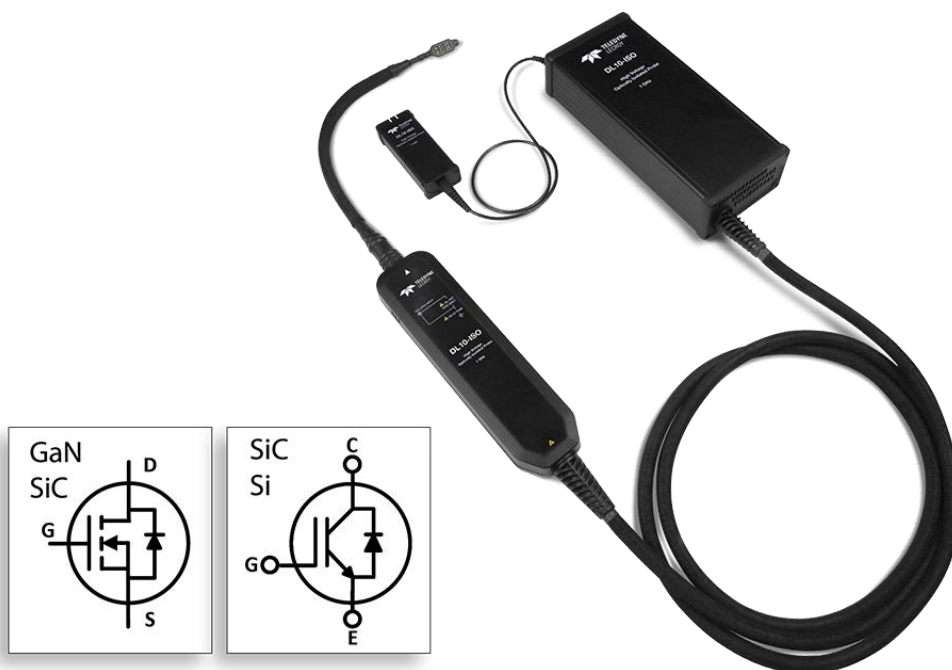


Fig. 1. When used with the company's 12-bit high definition oscilloscopes, the DL-ISO high-voltage optically isolated 1-GHz probe and Power-Device test software provide 1.5% system accuracy and 160-dB CMRR for excellent noise rejection. The probe's fast rise time (435 ps) is well suited for capturing high dV/dt GaN and SiC waveforms.



Fig. 2. The DL-ISO probe features flexible interfaces to devices under test including an MMCX connector (middle photo) for measuring gate-drive signals and a square pin header for safe high voltage (1000 V and 2500 V) measurement. Additionally high-quality coaxial leads improve EMI/RFI immunity and reduce stray noise pickup.