Scope Probe Pulser – Probe Calibrator

Solution Brochure

Measuring GaN Edges and Higher Frequency Signals Depends on Having Flat Probe Frequency Response. This Requires an Ultra-Low Impedance Ultra-Fast Pulse Source

GaN has exceeded the limits of oscilloscope voltage measurements. Not because of the oscilloscope, but because of the probe transfer function limitations and because of the lack of de-embedding.

An additional constraint is that most probes are designed and calibrated using a 50 Ω signal generator. Unfortunately, there aren't any power supplies with 50 Ω impedance. Clearly a better method of measuring and calibrating oscilloscope probes, at GaN speeds, is needed.

So Picotest developed the J2152A Scope Probe Pulser, which offers a nearly 1kV/ns, 0.6Ω moderately priced generator. The J2152A is pocket size, USB powered and voltage selectable while offering up to 2GHz of signal bandwidth.

It doesn't make sense to adjust the probe compensation using a low bandwidth, 50Ω pulse source, unless you plan to measure 50Ω low bandwidth signals.

If you want to measure GaN, you'll need to properly compensate your scope probes. The J2152A is just the tool you need to do it.
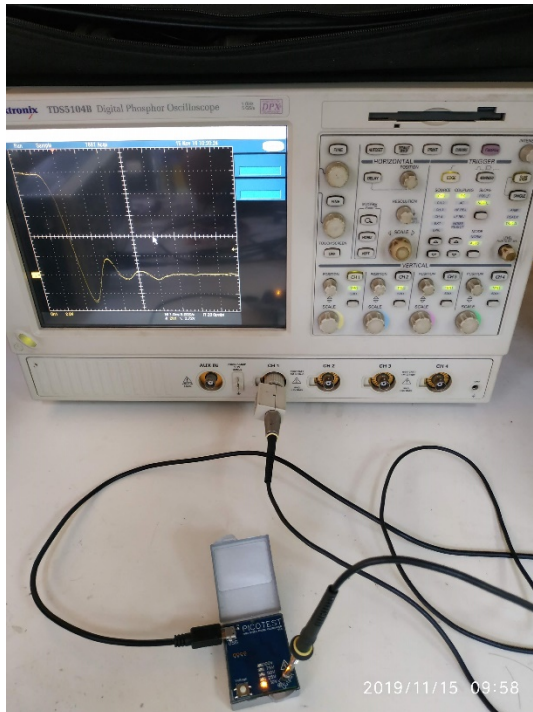
- Evaluate probe response above the probe bandwidth and without the damping introduced by a 50Ω signal source

- Calibrates Probes up to 1.4GHz

- Properly compensate the probe with a low impedance source

- Compensate the probe with the oscilloscope being used for the measurement

- Pocket size, Micro-USB powered

- Very simple to use

- ~250ps Fall Time

- < 1Ω Discharge Impedance

- Voltage Selection: 10V, 25V, 50V, 75V and 100V selectable to match probe or application

- Probe Modeling

- Works with all probes with at least (or greater than) 10V dynamic range

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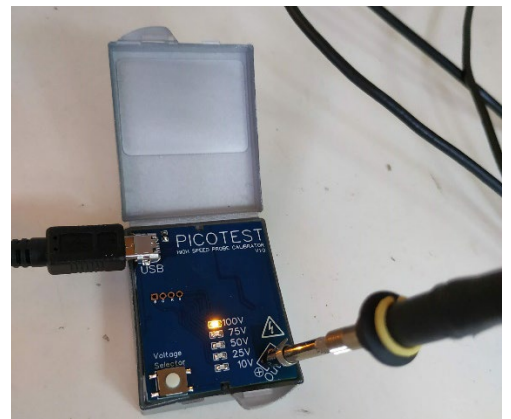
Probe Calibration
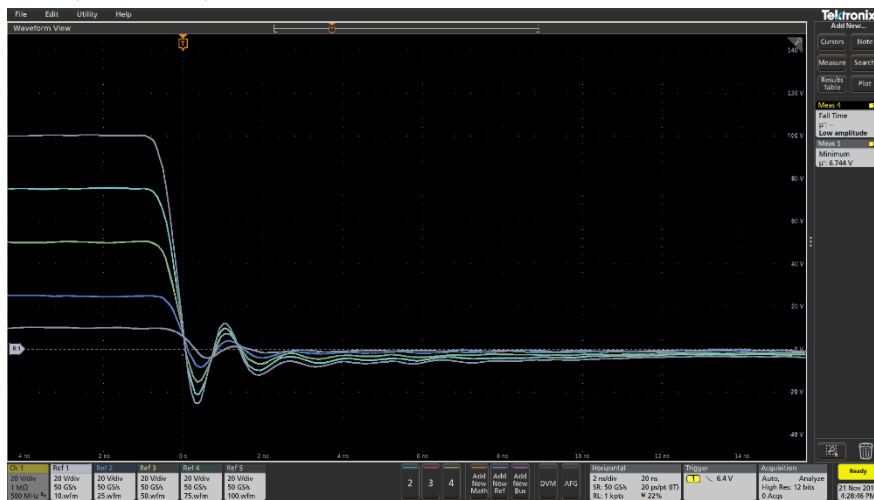
A hyper-fast GaN pulse generator charges the probe tip to a programmable voltage, up to 100V. The probe is then discharged using a 0.5 Ω GaN FET. The result is a time domain response as seen in the ringing here. The probe tip capacitance is measured using the rise time to charge the probe tip.

The bandwidth of most high Z probes is less than 1 GHz, so allowing an additional octave above this frequency, the rise time of the step applied to the probe needs to be faster than 175 ps. Also, the impedance of the pulse generator needs to be much lower than the probe tip impedance.

The J2152A Probe Calibrator shows the time domain response of the probe on the falling edge and the probe capacitance on the rising edge.

Products

J2152A Probe Calibrator	Scope Probe Pulser - Calibrator
PDN Cable (0.5m or 1m)	Very thin - ultra-flexible cable optimized for PDN and SI testing. Reduced shield resistance for more accurate PDN impedance measurements
PCK01	High Performance Cable and Connector Kit

To learn how this solution can address your specific needs please contact Picotest:
877-914-7426
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Picotest J2152A Probe Calibrator

PDN Cable

PCK01 Cable Kit