DOUBLE SENSOR TLP WITH HIGH TIME DOMAIN RESOLUTION

Ref-Nr: TA-Y20007

HINTERGRUND

Modern power semiconductors are based on GaN or SiC technology, which allow high switching frequencies. High switching frequencies enable higher efficiencies on the one hand and a further miniaturization of power supplies on the other. However, in order to exploit the full performance and potential of these technologies, the transient behavior of the corresponding devices and modules must be analyzed in detail and the device and circuit parasitics must be determined and eliminated (or at least mitigated) as far as possible.

LÖSUNG

The present invention enables a comprehensive analysis of the transient behavior of power electronics devices and modules and their parasitics at a high resolution. It can be regarded as an extension of the established method for electrostatic discharge (ESD) testing using TLP or vf-TLP. It is based on these analysis methods, combining the advantages of the two. These are the long pulse duration of the TLP method and the high resolution of the vf-TLP method.

Key to the invention is not only the utilization of solely fast voltage sensors, but also an advanced and innovative data analysis algorithm.

Main features:

- TLP / vf-TLP add-on procedure
- No current sensor required (too slow)
- Resolution << 1 ns
- Pulse duration not restricted to 10 ns (as for vf-TLP)
- Advanced and innovative data analysis algorithm

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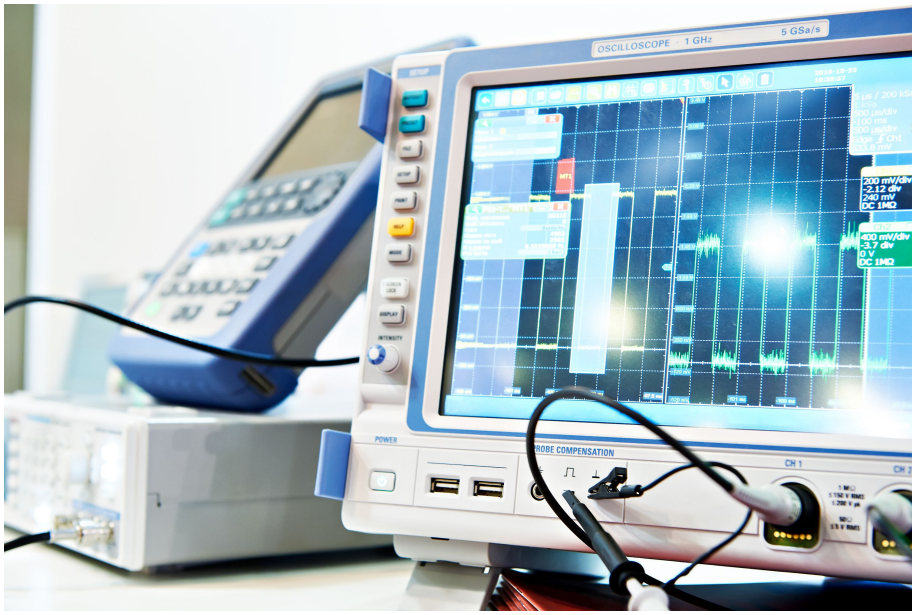
ENTWICKLUNGSSTAND

Demonstrationsexemplar

CATEGORIES

//Elektronik und Elektrotechnik //Elektrische Schaltungen //Mess- und Regeltechnik



ANWENDUNGSBEREICHE

Add-on to the broadly applied ESD analysis methods TLP and vf-TLP, enabling a detailed analysis of high performance power semiconductor devices and modules, to exploit their full potential.

PUBLIKATIONEN & VERWEISE

D. Helmut, G. Wachutka and G. Groos, "Measuring Transient I/V Turn-On Behavior of a Power MOSFET without a Current Sensor" (2021). DOI: https://doi.org/10.14311/ISPS.2021.020