

Power electronics switch testing & modelling

An innovative approach, reducing design risks in your power electronics systems

Our state of the art power electronics switch test platforms are used to test and model high voltage and high current components in accordance with your requirements. We support you in identifying potential technical risks, thereby eliminating the shortfalls of your designs.

OVERVIEW

Power Electronics (PE) converters make it possible to control power systems easily thanks to their advanced algorithms. Extreme environments, such as renewable energies, rail, avionic, marine, etc., require these power systems to perform under extreme operating conditions throughout their entire lifecycle.

As PE switches are extremely critical elements within power electronics systems we are the ideal partner to assist you in the following areas:

- Characterisation and datasheet generation
- Reliability & robustness assessment
- Simulation model production based on the
- aforementioned measurements

We perform these services on high voltage and high current Power electronics switches, including SiC components.



ADDED VALUE

Relieving you from the burden of managing your projects, we take charge from start to finish, beginning with your specifications and resulting in the final analysis of component behaviour within the required application.



DESCRIPTION

We provide recommendations for selecting the appropriate tests and testing conditions for your specific applications.

We perform investigation tests according to your individual requirements and are also capable of carrying out tests in accordance with international standards (IEC, JEDEC).

We offer the following tests:

- Static & dynamic
- Thermal impedance
- Reliability & robustness

We offer these services for commercially available switches or for your new power electronics switch designs.

AVAILABLE SERVICES

- Datasheet generation
- Reliability & robustness tests
- Test reports in accordance with customer specifications
- Double-source / obsolescence investigation
- Component comparison
- Simulation models



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CHARACTERISATION & DATA SHEETS

The characterisation platform can perform tests under the following conditions:

Static conditions

- Max typical ratings: up to 5 kV 1,5 kA
- Leakage current up to 30 kV
- Capacitance measurement up to 3 kV
- Temperature from ambient to +175 °C

Dynamic conditions

- Double pulse tests up to 20 kV 100 A
- Inverter-based test up to 10 kV-3 kA
- Conducted Electromagnetic Interference investigation
- Temperature between -20°C & 200 °C

Thermal impedance measurement

Tests are performed in accordance with IEC/JEDEC standards or according to customer specifications.



Example of dynamic characterisation results for a 3,3 kV IGBT power module.

SIMULATION MODELS

Using the results of our characterisation tests (robustness and reliability), we provide a behaviour model of the tested component which can then be integrated into your simulation tools.

Added value of simulation models

- Models generated with the characterisation results
- Real life testing conditions taken into account when validating the models

• Save time when optimising PE design thanks to model flexibility

SuperGrid Institute's offer

- ANSYS/SPICE based models
- Our versatile models can be adjusted for use within our virtual prototyping and converter design services

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RELIABILITY & ROBUSTNESS TESTS

The reliability and robustness platform can perform the following tests:

- High Temperature Gate Bias (HTGB)
- High Temperature Gate Switching (HTGS)
- High Temperature Chopper Mode Bias (HTCMB)
- High Temperature Reverse Bias (HTRB)
- Repetitive avalanche tests
- Repetitive short circuit tests

Tests are performed in accordance with JEDEC recommendations or according to customer specifications.



Example of dynamic characterisation results for a 3,3 kV IGBT power module.

CONTACT

For additionnal information or to ask for a quote, please contact: sales@supergrid-institute.com

