



Test systems

Power Semiconductor Reliability Test System

INTEPRO SYSTEMS



Reliability Testing for Power Components

SEMTest is the ideal configuration for reliability and extended lifetime testing of Power Semiconductors including IGBT, MOSFET, SCR, Diode and Bipolar parts and modules. This fully integrated solution is intended for product development characterisation and comprises a test system, thermal oven, chiller, cold plates, and test software.

The test system performs a combination of thermal and electrical cycles to verify new products, processes and materials including (SiC) Silicon Carbide based semiconductors or devices designed to meet RoHS requirements.

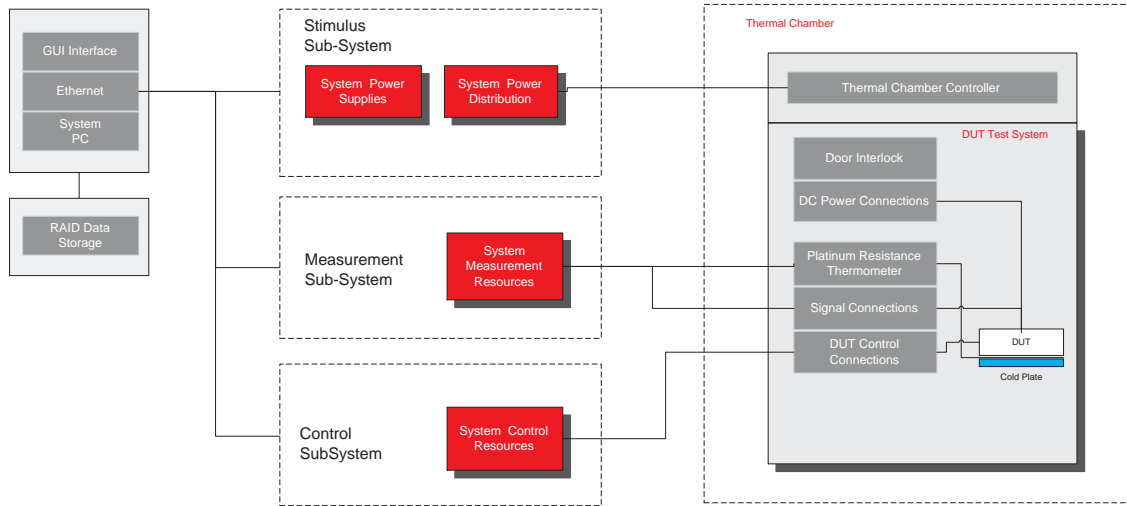
SEMTest is designed to accelerate any failure mechanisms in the device in order to determine its life and functional operating limits.

Applications

- Design Engineering Verification
- Design Characterisation
- Manufacturing Validation

Features

- Power Cycles provide thermal and electrical stressing of DUT
- Highly accelerated life testing of DUTs
- Trend Monitoring with user defined warning and control limits
- Junction temperature measurement
- Rapid DUT temperature cycling & ambient temperature profiling
- Detection of nascent failures with automated alert mechanism
- DUT isolated control



Tests and Measurements

- Voltage up to 1200V
- Current up to 1000A
- Power up to 20kW (total dissipated power)
- DUT Voltages
- Temperature range -40°C to +180°C
- Switching frequency to 20kHz
- Duty cycle from 10% to 90%
- Multiple DUTs, up to 100 or more

Intepro's broad knowledge and long experience in power device testing ensures high quality comprehensive test coverage which can be tailored to meet your specific test requirements. Intepro's team of experts consult with the customer every step of the way from project specification to design, build and integration. Intepro's expertise in high end power electronics has been the cornerstone of our worldwide success since starting out 26 years ago.

Climatic and thermostatic chambers

Thermal Chamber

The environmental chamber uses a silicone oil based coolant to control the temperature of both its own internal ambient and that of heat removing cold plates to which the DUTs are fixed. The chamber has a typical cooling capacity of 15kW and controls the ambient temperature and cold plate temperatures.

DUTs are mounted onto the coldplates in the thermal chamber via sliding trays and the thermal chamber is set and regulated between -40°C to +180°C via Intepro's front end test executive software.



Cold Plate on sliding tray



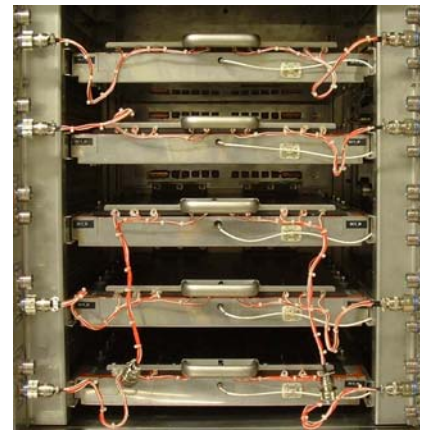
Thermal Chamber

DUT Cold plates

With 15kW of cooling capacity the cold plate temperature can range from -35°C to +170°C

Electrical stimulus

Platinum Resistance Thermometers (PRTs) are electrically connected to the DUTs through the rear of the chamber.



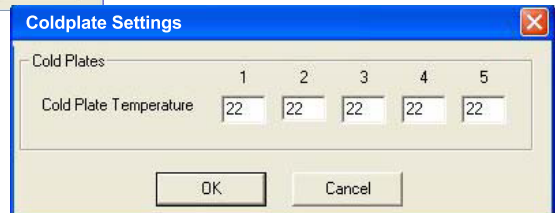
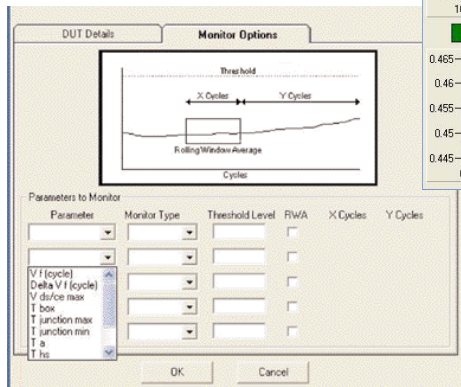
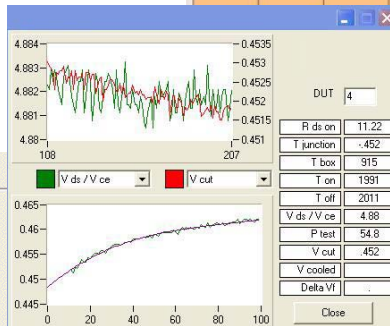
Multiple coldplates in chamber

Software

System test configuration is programmed at the PC using a user friendly GUI (Graphical User Interface).

Local control of the test is performed by distributed local controllers. A DUT interface card is used to provide high power isolated control for particular DUT types.

Test results are written to an SQL Database.



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Intepro has had 25 years of experience completing high end power electronic projects to stringent budget and time requirements. Flexible system architecture and a dedicated engineering team provide technical support from initial system specification design, right through to build, test, installation, application and lifetime maintenance.

Key to this is the assigning of a dedicated project manager to work closely with our customers throughout the entire process. Intepro Systems has built its reputation in the high complexity test market by establishing long-term relationships with key clients.

Intepro Systems

The Power Test Experts

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