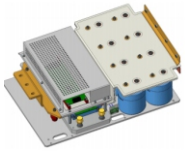
Test Solution for Semiconductor

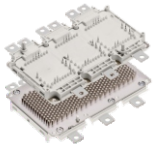
FIRSTACK

About Us

Products



Stack



Module

Roadmap

Lab DP Tester

ATE Tester

FIRSTACK

About Us

Leveraging years of experience in power device application and R&D, and combining the needs of domestic and international customers, Firstack has conducted in-depth research on power semiconductor testing technologies and methods, while developing a series of testing equipment. The company provides comprehensive power device testing solutions, covering from Wafer-level Burn-in (WLBI), Known Good Die (KGD), Device-level Automatic Test Equipment (ATE) to application-level Double Pulse Test (DPT), as well as dynamic bias reliability (DHTXB) testing and screening solutions, ensuring reliable performance testing and reliability screening for customers' products.

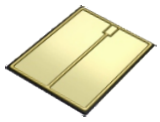
2011
Company Established

2018
Equipment Division Established

450+
Staff

150+
IPs

Discrete



Die

Wafer

DGS+DRB Tester

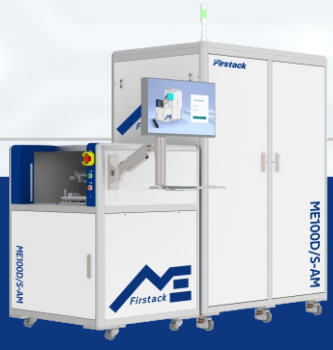
KGD Tester

WLBI Tester

Product Series

One Stop Test Solution For Semiconductor

DPT Equipment

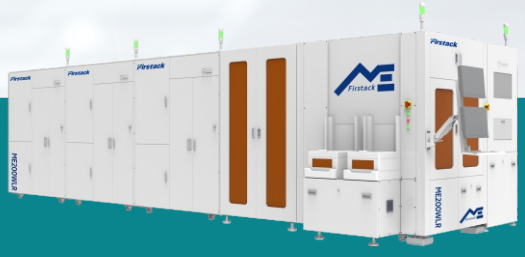


ATE

01 Electrical Performance

DGS&DRB Test Equipment

02 Reliability



WLBI Test Equipment

CONTENTS

Laboratory DPT

ME400D-SE

IGBT/SiC Device, Module, Stack DPT Equipment

01 Product Description

The ME400D-SE is a laboratory-grade double pulse test system with a test range of 2 kV. It enables the evaluation of dynamic characteristics for IGBT, SiC MOSFET and GaN power devices during the R&D and application phases, and can quickly generate test reports. When combined with Firstack's self-developed software, the system supports multi-dimensional data processing and analysis of test results.

Product Features

02

Quick One-Click Test

Supports one-click testing under multiple temperature, voltage, and current conditions — fast and convenient, significantly reducing test time.

Automatic Adjustment of Multiple Parameters

Supports automatic adjustment of load inductance L, high/low temperature T_{Vj}, gate voltage V_G, as well as gate resistance and capacitance R_G, C_{GE} (via RC Box) — intelligent hardware for streamlined operation.

Multiple Fixture Compatibility

Compatible with various power module packages (e.g., TO247, EasyPACK, HPD) using a universal driver core — only the adapter board needs to be replaced, greatly reducing costs. Custom fixtures are also supported for added flexibility.

DPower Test/Analysis Intelligent Software

The test software supports single/double pulse, RBSOA, short-circuit, current sharing, narrow pulse tests. The analysis software enables waveform overlay, waveform panning, curve generation, data calculation functions, completing the closed loop between testing and data analysis.

03 Product Specification

Model	ME400D-SE
DUT	IGBT，SiC MOSFET，POWER STACK
Test Range	V_{DC}=20-2000V，I_C=4000A，I_{SC}=8000A
Test Items	S/DPT, Q_g，UIS，$R_{DS(on)}$，RBSOA，SCSOA, current-sharing, narrow pulse, phase calibration and parasitic inductance calculation, device comparison. (t_{don}, t_r, t_{on}, t_{doff}, t_f, t_{off}, E_{on}, E_{off}, di/dt, dv/dt , Q_g, I_{rr}, t_{rr}, E_{rec}, Q_{rr}, $P_{frd(max)}$, etc.)
Software	Report generation, wave form overlay, curve plotting, gate parameterself-matching, V_{CEMAX}/I_{CMAX} safety limits, cycle/single-step control, etc.
Pulse Width	$t_{1(ON)}$ = 0.2~600μs； $t_{2(OFF)}$ = 1~50μs； $t_{3(ON)}$ = 1~50μs, accuracy 0.1 μs, resolution 0.1 μs.
Fixture	Negative volatge -20~-1 V, resolution 0.1 V; positive voltage 10~30 V, resolution 0.1 V; total voltage: 15~35 V, resolution 0.1 V; parasitic inductance L < 10 nH (for HPD); protection with online configuration; wireless programming
Inductance	10/20/50/100/200/500μH
Temperature Range	-55℃ ~ +250℃, accuracy ±5℃, resolution 0.1℃.
Power Supply	AC 220 V, 6 kW
Size&Weight	1602mm（W）× 800mm（D）× 1950mm（H）; 310kg

Laboratory DPT

ME400D

IGBT/SiC Device, Module, Stack DPT Equipment

01 Product Description

The ME400D-6K is a laboratory-grade double pulse test system with a test range of 6 kV. It enables the evaluation of dynamic characteristics for IGBT, SiC MOSFET and GaN power devices during the R&D and application phases, and can quickly generate test reports. When combined with Firstack's self-developed software, the system supports multi-dimensional data processing and analysis of test results.

Product Features

02

Quick One-Click Test

Supports one-click testing under multiple temperature, voltage, and current conditions — fast and convenient, significantly reducing test time.

Automatic Adjustment of Multiple Parameters

Supports automatic adjustment of load inductance L, high/low temperature T_{Vj}, gate voltage V_G, as well as gate resistance and capacitance R_G, C_{GE} (via RC Box) — intelligent hardware for streamlined operation.

Multiple Fixture Compatibility

Compatible with various power module packages (e.g., TO247, EasyPACK, HPD) using a universal driver core — only the adapter board needs to be replaced, greatly reducing costs. Custom fixtures are also supported for added flexibility.

DPower Test/Analysis Intelligent Software

The test software supports single/double pulse, RBSOA, short-circuit, current sharing, narrow pulse tests. The analysis software enables waveform overlay, waveform panning, curve generation, data calculation functions, completing the closed loop between testing and data analysis.

03 Product Specification

Model	ME400D-2k	ME400D-6k
DUT	IGBT， SiC MOSFET， Power Stack	
Test Range	V_{DC}=20-2000V， I_C=8000A， I_{SC}=12000A； V_{DC}=20-6000V， I_C=8000A， I_{SC}=12000A	
Test items	S/DPT, RBSOA, SCSOA, current-sharing, narrow pulse, phase calibration and parasitic inductance calculation, device comparison.(t_{don}, t_r, t_{on}, t_{doff}, t_f, t_{off}, E_{on}, E_{off}, di/dt, dv/dt, Q_g, I_{rr}, t_{rr}, E_{rec}, Q_{rr}, $P_{frd(max)}$, etc.)	
Software	Report generation, wave form overlay, curve plotting, gate parameter self-matching, V_{CEMAX}/I_{CMAX} safety limits, cycle/single-step control, etc.	
Pulse Width	$t_{1(on)}$ = 0.1~600 μs, $t_{2(off)}$ = 1~50 μs, $t_{3(on)}$ = 1~50 μs, accuracy 0.1 μs, resolution 0.1 μs.	
Fixture	Negative voltage -20~-1 V, resolution 0.1 V; positive voltage 10~30 V, resolution 0.1 V; total voltage: 15~35 V, resolution 0.1 V; parasitic inductance L < 10 nH (for HPD); protection with online configuration; wireless programming	
Inductance	10/20/50/100/200/500 μH	
Temperature Range	-55°C ~ +250°C, accuracy ±5°C, resolution 0.1°C.	
Power Supply	AC 220 V, 6 kW	AC 220 V, 10 kW
Size&Weight	1450 mm (W) × 800 mm (D) × 1980 mm (H), 600 kg	

ME100D-AM

IGBT/SiC Device, Module
Production Line Dynamic ATE

01 Product Description

The ME100D-AM is a device for dynamic parameter testing of SiC devices in production. It helps power device manufacturers perform production dynamic parameter testing and screening, supports automated one-stop high-volume factory testing; optionally available with a rotary table for manual loading/unloading, supporting multi-variety small-batch factory testing or incoming inspection.

Product Features

02

6-Channel SiC Driver

Self-developed ASIC drivers with dead-time output, cross talk suppression, and Miller clamping functions.
The resistor switching and $Q_g/Q_{gs}/Q_{gd}$ testing are supported.

High-Current Fast Short-Circuit Protection

Programmable short-circuit protection with a maximum protection current of 15,000 A and protection time of <1.5 μs.

Low Parasitic Inductance

Parasitic inductance < 15 nH (device and fixture not included).

Flexible Configuration

Supports 2-level and 3-level topology module testing.
Supports contact resistance, V_{th}, single/double pulse, multi-pulse, and complementary pulse testing.

03 Product Specification

Project	ME100D-AM
DUT	IGBT, SiC MOSFET
Test Items	Double pulse (including turn-on characteristics, turn-off characteristics, and reverse recovery testing), five-pulse, ten-pulse and other customized multi-pulse tests, as well as SC test.
Output Range	Voltage: 1500 V/2000 V, current: 4000 A
Temperature Range	RT~200℃, uniformity ≤ 3℃.
UPH	150 (based on real data from production line used six-pack module)
Size&Weight	Main cabinet: 1300 mm (W) × 900 mm (D) × 1868mm (H) Rotary table: 850 mm (W) × 900 mm (D) × 1200 mm (H) Total weight: 600 kg

Production line ATE

ME100D-AM-3L

3-Level IGBT/SiC Device, Module Production Line Dynamic ATE

01 Product Description

The ME100D-AM-3L is designed for dynamic parameter testing of 3-level power devices in mass production. It provides power device manufacturers with mass dynamic parameter testing and screening, enabling automated one-stop high-volume final testing. With an optional rotary table for manual handling, it also supports multi-type small-batch final testing and incoming inspection.

Product Features

02

ATE Architecture

Built-in AccoTEST resource boards and Firstack test units, ensuring stability, efficiency, and high accuracy

Separation of dynamic and static components, flexible configuration, support both automated and manual loading and unloading

High-Current Fast Short-Circuit Protection

Programmable short-circuit protection, maximum protection current of 3000A, protection time < 1.5μs

Innovative Architecture, Low Parasitic Inductance

Parasitic inductance: < 15nH (excluding device and fixture)

Flexible Hardware and Software Configuration

Supports testing of various 3-level module topologies, compatible with dynamic testing of 2-level devices.

03 Product Specification

Items	ME100D-AM-3L
DUT	IGBT, SiC MOSFET
Test Items	Double pulse (including turn-on characteristic test, turn-off characteristic test, and reverse recovery test), five-pulse, ten-pulse and other custom multi-pulse tests, as well as SC test
Output Range	Voltage：±1500V current：3000A
Temperature Range	RT~200℃, uniformity: ≤3℃
UPH	150 (Based on actual operating data of the delivered A-NPC modules)
Size & Weight	Main cabinet: 1300mm (W) × 900mm (D) × 1868mm (H) Rotary table: 850mm (W) × 900mm (D) × 1200mm (H) 600kg（main cabinet + rotary table）

ME100S-AM

IGBT/SiC Device, Module
Production Line Static ATE

01 Product Description

The ME100S-AM is a device for static parameter testing of SiC devices in production. It helps power device manufacturers perform production static parameter testing and screening, supports automated one-stop high-volume factory testing; optionally available with a rotary table for manual loading/unloading, supporting multi-variety small-batch factory testing or incoming inspection.

Product Features

02

ATE Architecture

Built-in AccoTEST resource boards and Firstack test units, ensuring stability, efficiency, and high accuracy.

High-precision Pulsed High Current Source

± 3000A /30V / 1ms pulse current output capability, with current value measurement function.
Supports GFS testing, V_{GE} range: 0 ~ 20 V.

High-Voltage Leakage Current Testing

Capability single channel: 1800 V, 20 mA for single channel.
Two channels in series/parallel: up to 3600 V, 20 mA/1800 V, 40 mA.

Flexible Configuration

Supports contact resistance testing, short-circuit, open-circuit, and missing-pin detection.
Optional ZMU module supports R_g, C_{iss}, C_{oss}, C_{rss} testing.

03 Product Specification

Project	ME100S-AM
DUT	IGBT, SiC MOSFET
Test Items	I_{GSS}/I_{DSS}, $R_{DS(on)}/V_{GS(th)}$, G_{FS}, R_{NTC}/Kelvin, etc.
Output Range	Voltage: 1800 V/3600 V, current: 1000 A/2000 A/3000 A
Temperature Range	RT~200℃, uniformity ≤ 3℃
UPH	150 (based on real data from production line using six-pack module)
Size&Weight	Main cabinet: 1300 mm (W) × 900 mm (D)× 1868mm (H) Rotary table: 850 mm (W) × 900 mm (D) × 1200 mm (H) Total weight: 600 kg

ME100DHTXB

SiC Device, Module
DGS&DRB Test Equipment

01 Product Description

The ME100DHTXB is designed for dynamic bias reliability tests of SiC devices and modules. It helps SiC device manufacturers conduct DGS&DRB reliability characterization tests and verification; also helps third-party test centers perform reliability certification tests according to standards such as AQG324, AEC-Q101, JEDEC JEP184 and other standards.

Product Features

02

Multi-Level Turn-On&Turn-Off Technology

Perfect match between high dV/dt and low overshoot:

DGS: dV_{GS}/dt > 1 V/ns, no overshoot;

DRB: dV_{DS}/dt > 50 V/ns, overshoot <15%.

dV/dt Thread-Controlled Adjustment Technology

"One-click" software operation for programmable adjustment of driving capability.

Enables online adjustment of dV/dt for devices with different packaging types.

Accurate Parameter Measurement Technology

Each workstation is equipped with customized test circuits.

Real-time, accurate monitoring of parameters such as $V_{GS(th)}$, I_{GSS}, I_{DSS}, and others.

Customized Test Combinations

The system features a cabinet, slot, and fixture free combination mode.

Each cabinet can be configured with DGS or DRB test functions.

03 Product Specification

Items	ME100DHTXB
DUT	SiC discrete devices and modules in TO247-3/4, HPD, DCM and other packaging types.
Test Items	DHTGB, DHTRB, HTGB, HTRB. ($V_{GS(th)}$, I_{GSS}, I_{DSS}, etc.)
Software	Supports multi-stage pre-stress and multi-stage leakage current test condition settings; real-time display of result; overcurrent, overvoltage and overtemperature protection; independent safety inter locking for slots.
Capacity	Each cabinet: 5 DGB slots or 4 DRB slots. Each slot: TO247 20 positions, HPD 6 positions, DCM 12 positions.
DGS Test Range	V_{GS}: -40~40 V, FS: 0~100 kHz, dV_{GS}/dt > 1 V/ns, no overshoot. I_{GSS}: 0.1 nA~100 mA, $V_{GS(th)}$: 0~10 V, duty cycle: 0~100%
DRB Test Range	V_{DS}: 0~2000 V, FS: 0~100 kHz, dV_{DS}/dt > 50 V/ns, overshoot < 15%. I_{DSS}: 1 nA~100 mA, $V_{GS(th)}$: 0~10 V, duty cycle: 0~100%.
Temperature Range	RT~200℃, uniformity ⩽ 3℃.
Power Supply	Three phase, AC 380 V/61 A, 40 kW
Size&Weight	Main cabinet: 600 mm (W) × 1000 mm (D) × 2430 mm (H), 500 kg Auxiliary cabinet: 600 mm (W) × 1000 mm (D) × 2100 mm (H), 500 kg

ME200DHTXB

SiC Device, Module
DGS&DRB Test Equipment

01 Product Description

The ME200DHTXB is a newly upgraded model based on the ME100DHTXB, designed for dynamic bias reliability testing of SiC devices in mass production. This system helps SiC device manufacturers perform production-level DGS and DRB testing and screening, and can be integrated with automation for one-stop high-volume factory testing. It also supports semi-automated loading/unloading for various small-batch factory tests and incoming inspections.

Product Features

02

Mass Production Architecture

Supports automated loading/unloading

Modular Fixture

Supports fast changeover

Multi-Level Turn-on/Turn off Technology

Ensures controllable overshoot under high dV/dt conditions

Online Programmable dV/dt Adjustment

Quickly adapts to dV/dt requirements of different devices

03 Product Specification

Items	ME200DHTXB
DUT	Packaged SiC devices such as TO247-3/4 , HPD , DCM
Test Items	DGS, DRB
Test Parameters	$V_{GS(th)}$, I_{GSS}, I_{DSS}, etc.
Software	Real-time display of test data; overcurrent, overvoltage, and overtemperature protection; two test modes: time control and cycle count control
Test Capacity	Single unit: 6 slots (24 HPD package modules)
DGS Test Range	V_{GS}: -50~50V, F_S: ≥25kHz, dV_{GS}/dt≥1V/ns, no overshoot I_{GSS}: 1nA~30mA, V_{GSth}: 0~10V
DRB Test Range	V_{DS}: 0~2000V, F_S:≥25kHz, dV_{DS}/dt ≥50V/ns, overshoot<15% I_{DSS}: 1nA~100mA, $V_{GS(th)}$: 0~10V
Temperature Range	RT~200℃, Uniformity: ≤3℃
Power Supply	ME200DGS: AC 380 V, single-unit maximum power 28 kW ME200DRB: AC 380 V, single-unit maximum power 35 kW
Size&Weight	Single unit: 1600mm (W) × 1200mm (D) × 2000mm (H), 950kg

WLBI Test Equipment

ME200WLR

8 Inch SiC Wafer-Level Burn-In Test System

01 Product Description

The ME200WLR provides a fully automated wafer-level burn-in test solution. The system is compatible with 6-inch and 8-inch SiC MOSFET wafers, supports HTGB (High-Temperature Gate Bias) and HTRB (High-Temperature Reverse Bias) tests, and is capable of precisely measuring key parameters such as $V_{GS(th)}$, I_{GSS}, I_{DSS}, and I_{DSX}, enabling early failure screening. The ME200WLR-GB supports HTGB and TDDB (Time-Dependent Dielectric Breakdown) and can perform parallel burn-in testing on up to 18 wafers, meeting diverse process requirements and production capacity demands.

Product Features

02

Full Automation Solution

The equipment supports both overhead hoist transport (OHT) and manual loading/unloading modes, with fully automatic wafer alignment and fixture handling.
Loading/unloading speed ≤ 6 min/piece.

Innovative Probe Card Design

Screw-free design effectively reduces the risk of contaminating wafers and the environment.
Probe mark depth consistency ≤ 30%.

Flexible Operation & Easy Maintenance

Modular cabinet design, compatible with both RB (GB compatible) and pure GB cabinets, with universal probe cards. Supports non-stop wafer product changeover and probe card maintenance, with key components replaceable within minutes.

03 Product Specification

Items	ME200WLR
DUT	6/8 inch SiC MOSFET Wafer
Test Items	ME200WLR: $V_{GS(th)}$, HTGB, HTRB (V_{GS}: 0 ~ -35V) ME200WLR-GB: $V_{GS(th)}$, HTGB, TDDB
Test Capacity	ME200WLR: 3/6/9 layer slots available ME200WLR-GB: 6/12/18 slots available 1,536 channels per layer (customizable)
Temperature Range	RT~200℃
Voltage Range & Accuracy	HTGB: 0~±75V, 0.02%+10mV HTRB: 0~2000V, 0.5%+10V
Test Range & Accuracy	$V_{GS(th)}$: 0~10V(0.02%+1mV) I_{GSS} , I_{DSS}: 100nA(1%+0.5nA)~1mA(0.1%+0.3μA) Maximum Resolution: 0.1mV, 0.01nA
Automation	Loading/unloading rate: loading ≤ 3.5 min/wafer, unloading ≤ 2.5 min/wafer Probe mark repositioning accuracy: ≤ ±10 μm Supports rapid product changeover and mixed-batch operation

Note: Some of the above parameters can be adjusted according to customer requirements.

Firstack Intelligent Manufacturing Plant	Production start	Construction area	Location
	December 2026	~45,000m²	Hangzhou, China

Test easy　Life happy

Make Test Easy

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