ipTEST is a company of
MICROTEST
GROUP

# MOSTRAK 2

## The fastest and most productive power semiconductor testers on the market

iptest.com

ipTEST

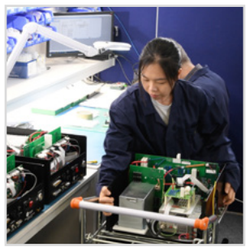
# ipTEST

## YOUR TESTING PARTNER

ipTEST are a UK manufacturer of parametric Power Discrete test systems. Specializing in high-speed production-line testers, we design and manufacture test systems from the ground up so our technology delivers the highest test speed and productivity.

We focus all our efforts on delivering world class power semiconductor testers. With over 35 years experience, we offer the widest device and test coverage in the industry.

Part of the Microtest global group of companies, ipTEST stands at the forefront of innovation and flexibility in power testing solutions.



# A NEW DAWN

## FOR POWER SEMICONDUCTORS

Power conversion is at the core of modern society and is critical to growing our green energy infrastructure. To realise this green revolution new device technologies are being developed which need ever more stringent quality control testing.

### Customise your production line

We invest heavily in R&D and have a dedicated custom engineering team. We openly collaborate with our customers and develop unique testing systems. Our customers get direct access our experienced engineers in order to develop test systems to meet their specific requirements.

### Our product quality

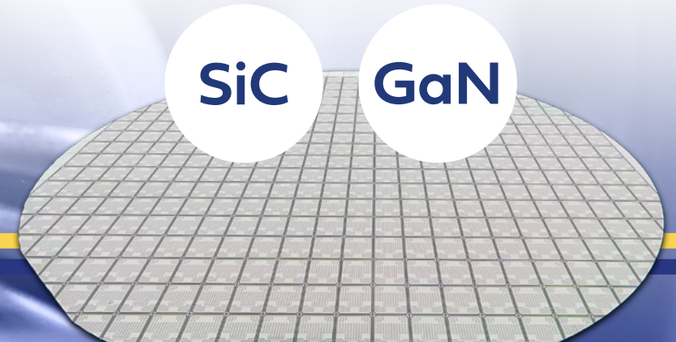
We take our product quality seriously.
We are ISO9001 certified and all of our testers undergo extensive in-house application testing before shipment. Our testers are designed to give superior reliability which protects our customers production line uptime.

### New technologies requires new testing

New wide bandgap technologies such as Silicon Carbide (SiC) and Gallium Nitride (GaN) are enabling lower cost and higher efficiency electric vehicles and renewable energies. These new substrates offer higher power, lower losses, faster switching and better thermal performance than their predecessors. This requires a step change in the equipment used to test them in the production environment.

### Mostrak tests wide bandgap

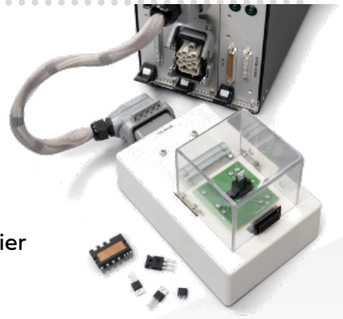
Our product roadmap is driven by the testing demands of these new technologies and by our customers requirements. Our Mostrak product family can test sub-mΩ on-resistance and nano-second switching speeds at production throughput. For SiC or GaN wafer, die and packaged devices we have developed our M2 range of testers which deliver reduced parasitics and higher switching speeds.



# TESTING

## FOR EVERY DEVICE

### ipTEST covers the most demanding tests and devices



Our systems test all discrete power devices such as transistors, MOSFETs, IGBTs, SCR, Bipolar, Diodes and TRIACs, as well as newer high-speed low loss wide band-gap devices like SiC and GaN.

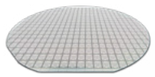
**Datasheet Compliance** - Prove device performance and sort into different bins according to predefined datasheet limits.

**Manufacturing Tolerance** - Detect changes in manufacturing quality earlier in the production process and ensure they are dealt with accordingly.

**Stress/Ruggedness Testing** - Simulate harsh real-world operating conditions and ensure device ruggedness, especially important for zero-defect automotive products.

### Test Types

WAFER



DIE

DEVICE

MODULE

**Avalanche** - Check device body diode ruggedness and performance under stress. Unclamped Inductive Switching (UIS) tests: UIL, EAR, EAS

**Dynamic Switching** - Measure dynamic parameters of devices, analyze performance and simulate "real-life" operation. DS tests: Single, Double, and Multi Pulse inductive load switching, short-circuit (stress test), diode recovery, Eon, Eoff, tr, tf, Qrr, Irr, dynamic Rds(on).

**Thermal** – Test die attach quality, ensuring proper heat dissipation standards are met. Tests performed: dVSD, dVBE, DVCE(sat).

**Gate Quality** – Analyze device gate resistance and capacitance, which affect the overall performance of devices (switching speed and efficiency, gate ruggedness etc.) Rg tests: Rgs, Cgs with bias, Gfs.

**Off-state tests** - Confirms device breakdown voltage and leakage current, ensuring off-state performance. Tests performed: BVDSS, IDSS, IGSS etc.

**On-state tests** - Characterize device performed when switched on. Tests performed: Rds(on), Vds(on), Gfs etc.

## The fastest, most productive power semiconductor testers on the market

### Maximise Throughput

M2 performs testing up to 30% faster than previous generations.

UPH is improved with each additional M2 generator.

Uptime improvements from board swap repair.

### Test with Confidence

Onboard waveform capture for program development.

Measure forcing conditions on each test.

Accurate signal control with digital servo's and FPGA technology.

### Expand Productivity

Upgrade to M2 and increase productivity.

Compatible test programs between Mostrak and M2.

Same UI and controls, no operator re-training needed.

# MAXIMISE
## YOUR THROUGHPUT

Productivity  is everything in production environments. Throughput is the most critical factor for ensuring economic success of a new device. Our M2 tester is the fastest production line tester on the market for index parallel and true parallel testing. Our goal is to help you achieve new standards in UPH.

**Rapid test plan development**
On board waveform capture and menu driven test plan creation.

**Full automation**
Auto stop start for quick lot changes.

**Get testing quickly**
Turn key set-up and simple operator training.

**Best in class productivity**
30% faster than previous generations.

**High speed switching**
Dynamic switching tests for wide band-gap GaN and SiC.

**Small footprint**
Generators housed in test heads for easy access.

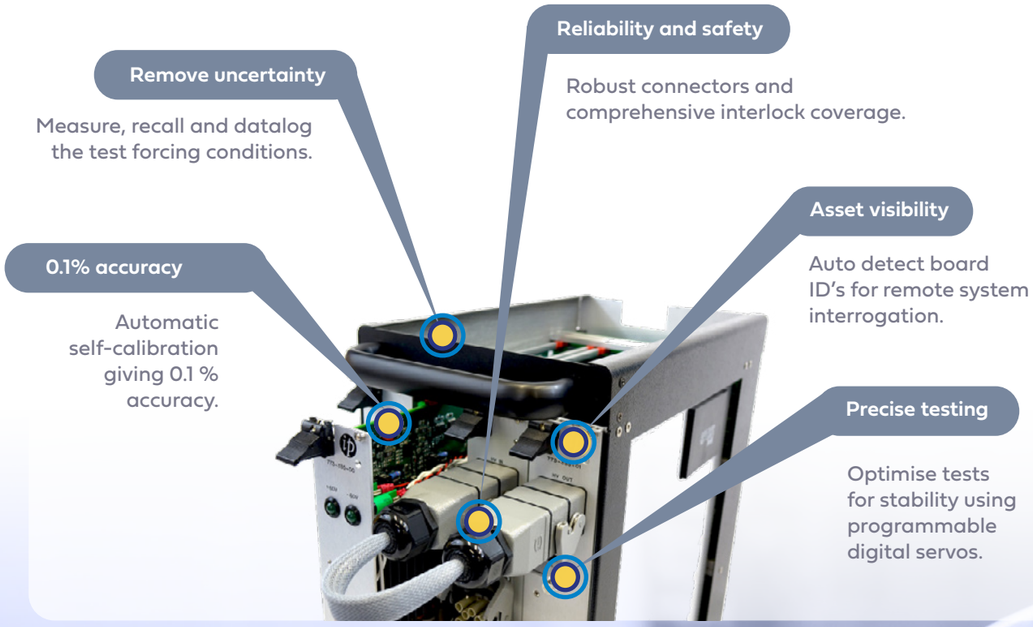
# TEST

## WITH CONFIDENCE

Our global customer base of leading Integrated Device Manufacturers rely on ipTEST systems to perform round-the-clock testing of their power semiconductor products. They trust us to ensure their devices receive robust and consistent quality control by deploying ipTEST at wafer, KGD, discrete & module assembly stages of manufacture.

### Build for reliability

The M2 tester is controlled with a Linux based operating system which offers simple IT integration. FPGA technology allows users to optimise tests for speed and stability. This gives the highest level of test confidence and ensures maximum repeatability even at the highest throughput speeds.






# DYNAMIC SWITCH TESTING

## FOR EVERYTHING HIGH POWER

Fast switching, high power wide bandgap devices place new demands on dynamic switch testing. ipTEST supply the full range of hard dock test generators, from lower power GaN and SiC based devices all the way to the highest power devices and modules for automotive and power transmission. Perform a full dynamic characterization on your product in under 200 ms.

### DS5-400

Entry level, lower power solution for high switching speed **GaN** devices. Low parasitic inductance and Dynamic $R_{DSON}$ test capabilities.

**1 KV**
**400 A**

### DS5-1000

High power, comprehensive testing for **Si and SiC** devices. Perform diode recovery, single and double pulse clamped inductive load, and short circuit testing, all on one board.

**1.2 KV**
**2000 A**
Short Circuit

### DS6 PULSAR

Ultra high power testing for latest **SiC automotive devices**. Test full modules and discrete single & half bridge devices to ensure compliance with AEC-Q101 and AQG 324.

**1.4 KV**
**5000+ A**
Short Circuit

Protect your Investment: SocketSafe™ technology safeguards the contactor and test generator should the device under test develop a fault. Energy is swiftly removed from the device and tester, minimizing the need for contactor repairs, saving on maintenance costs and maximising uptime and UPH.

SOCKET SAFE™

# EXPAND & GROW

## M2

M2 is a future proof system which is flexible to ever changing testing requirements. Easily reconfigure your system as your testing needs change.

### Flexibility

Test boards are interchangeable with other generators.

### Grow your system

Start small and add additional test boards as needed.

### Easy to expand

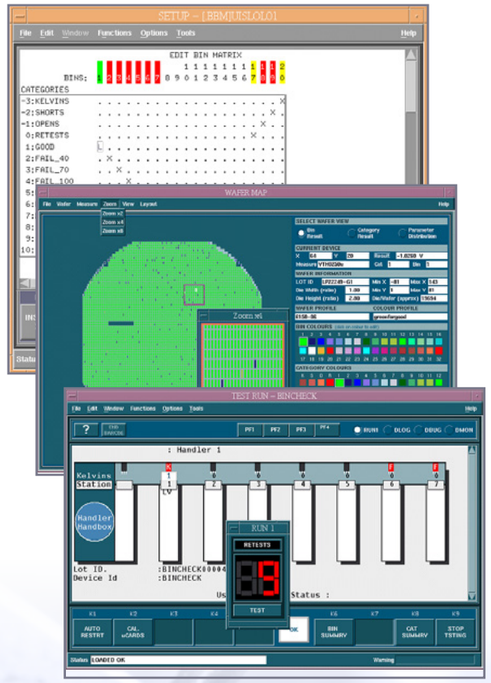
Increase output current with ad-on 200A booster boards.

# SOFTWARE

## DESIGNED FOR ENGINEERS

Our software uses the Linux Operating system which gives full Open Source flexibility with file handling tools for MS Windows including STDF.

The menu driven test procedure set up is designed so operators do not need to have coding experience. The test procedures are quick and easy to complete. Our wafer mapping software also shows the bin numbers by colour code, depending on the result of each test.



Waveform capture screen.

### Waveform capture

On the M2 systems it is also possible to look at a waveform for each test. This allows engineers to qualify a test procedure before running a batch in production. The waveform capture is a powerful tool for assisting engineers in developing the test procedures in the fastest time possible.

**Other Features:**

- Real Multi User
- Part Average Testing (Relative testing)
- Hi Rel testing
- Yield Control
- Repeat and Reliability
- Selective testing
- QA testing
- STDF data analysis tools

# TEST EVERYTHING

## DC-STATIC

## GATE

## AC-DYNAMIC

## THERMAL

| HV | LV | $R_G$ | UIS | Dynamic Switch | FB |
|---|---|---|---|---|---|
| Off state tests | On state tests | Gate & oxide quality | Avalanche ruggedness | Switching-speed tests | Heat dissipation / SOA |
| 3kV Expandable to 10kV | 200A Expandable to 1,000A | Gate Resistance and Capacitance 2V / 1MHz | Unclamped Inductive Load Switching 2.3kV / 200A | Dynamic Switching 1.4kV / 5,000A+ | Die Attach Tests 1kW |
| BVDSS IGSS RDSON And more... | Breakdown voltage Gate leakage Device efficiency | Gate resistance Gate capacitance | Avalanche / RBSOA Double pulse testing (DPT) Diode recovery Short circuit And more... | | Delta VSD Die attach |

**CONTACT APPLICATIONS@IPTEST.COM TO BOOK A SESSION TAILORED TO YOUR NEEDS!**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