



# MOSTRAK 2

The fastest and most productive power discrete semiconductor testers on the market.

[iptest.com](http://iptest.com)

**ip** TEST  
power semiconductor testers



# ipTEST

## YOUR TESTING PARTNER

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



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

### 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.



# 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.

### New technologies requires new testing

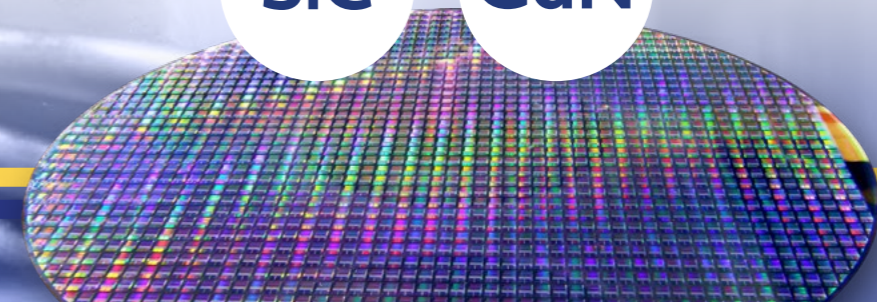
New wide bandgap technologies such as Silicon Carbide (SiC) and Gallium Nitride (GaN) are enabling lower cost and higher efficiency electric vehicles and renewable energies. These new substrates offer higher power, lower losses, faster switching and better thermal performance than their predecessors.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

### Mostrak is ready for 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.

SiC

GaN





# 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 using SiC and GaN.

We can test basic 3 pin products or multi-pin devices and modules. Our test coverage allows comprehensive testing on wafer, die and complete devices.

### Test Types

**HV** - Off state tests: BVDSS, IDSS, IGSS etc.

**LV** - On-state tests: Rds(on), Vds(on), Gfs etc.

**FB** - Thermal die-attach: dVSD, dVBE, dVCE(sat).

**UIS** - Unclamped Inductive load Switching: Avalanche tests UIL, EAR, EAS.

**Rg** - Gate resistance: RGS, CGS with bias.

**DS5** - Dynamic switching tests: Single pulse and double pulse inductive load switching, short-circuit, diode recovery, Eon, Eoff, tr, tf, Qrr, Irr.



### 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.

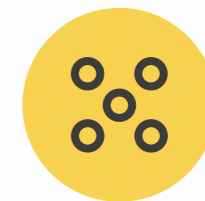


#### Test with Confidence

Onboard waveform capture for program development.

Measure forcing conditions on each test.

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



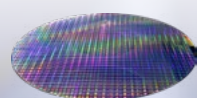
#### Expand Productivity

Upgrade to M2 and increase productivity.

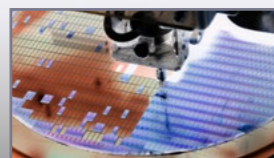
Compatible test programs between Mostrak and M2.

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

#### WAFER



#### DIE



#### DEVICE



#### MODULE





# MAXIMISE

## YOUR THROUGHPUT

Speed 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 by using index 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 discrete power semiconductor products. They trust us to ensure their devices receive robust and consistent quality control.

### Build for reliability

The M2 tester is controlled with a Linux based operating system which offers simple IT integration. The 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.

# 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.

- Remove uncertainty**  
Measure, recall and datalog the test forcing conditions.
- 0.1% accuracy**  
Automatic self-calibration giving 0.1 % accuracy.
- Reliability and safety**  
Robust connectors and comprehensive interlock coverage.
- Asset visibility**  
Auto detect board ID's for remote system interrogation.
- Precise testing**  
Optimise tests for stability using programmable digital servos.

- 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.

# ADVANCED AUTOMATION

## Reduce set up time and avoid operator error

On the M2 test system it is possible to automate test set-up and programming using several automation features. This reduces the chance of operator error as the correct test programme is automatically loaded. At the same time it also reduces set-up time in high mix production lines during changeover to a new batch of devices.



### File start

Send a file from a remote server/controller to auto-start a production lot.



### Barcode read

Automatically load test plans from scanned barcodes.



### Learn keys

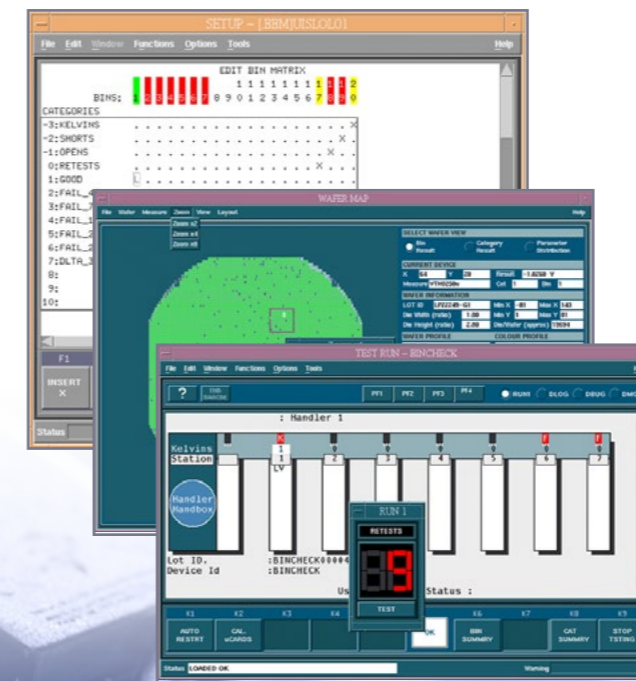
Condense complex key sequences into one key command with saved learn keys.



# SOFTWARE FEATURES

## 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



# TESTING

## COVERAGE

High Voltage Generator	Low Voltage Generator
3kV with optional 10kV extension	200A expandable up to 1000A in 200A steps
0.1% accuracy and built-in waveform capture	0.1% accuracy and built-in waveform capture
100nA low-current measure range	1mohm-RDSon capable
Measured kelvin resistance test	50V/20A@25ms thermal test (die attach test)
Unclamped Inductive Switching Generator	Dynamic Switching Testing
Maximum 2.2kV and 200A	Programmable power source up to 1.2kV
Programmable load inductors 12.5uH to 25mH	Selectable inductive loads (100uH to 1mH)
Built-in waveform capture	Double-pulse inductive load test up to 1000A
	Waveform capture via oscilloscope
	Up to 1000A short-circuit test
Rg Generator (Gate Resistance)	Thermal Generator
Integrated 1MHz DSP processor	30A and 100V to 100A and 300V: 10kJ total energy
1pF to 20nF measure range	Up to 10 second test time
Programmable drain bias (+/-30v), gate bias (+/-10v)	Supports basic LV static tests
Kelvin test	



On state low voltage tests



Off state high voltage tests



Combined HV/LV



Dynamic switching



Gate capacitance and resistance