



# **TOPOGRAPHY & DEFORMATION** MEASUREMENT

WARPAGE AND STRAIN MEASUREMENT on µm scale from -65°C to 400°C

RELIABILITY TESTING | REFLOW SIMULATION

### THE TDM IS A VERSATILE INSTRUMENT FOR A WIDE ARRAY OF APPLICATIONS IN THE AREAS OF PRODUCT DEVELOPMENT, FAILURE ANALYSIS, RELIABILITY, AND QUALITY CONTROL.

### ABSOLUTE 3D CARTOGRAPHY

TDM is a patented tool for warpage analysis under a with dimensions up to 400mm x 500mm. temperature profile.

TDM uses the fringe projection technology (also called projection moiré) for non-contact, full-field acquisition of 3D topographies with a resolution below 1µm. TDM acquires a full, absolute 3D cartography of devices

Simultaneously, its powerful heating and cooling capabilities allow for virtually any temperature profile on the sample under test. The integrated software package provides tools for quality control assessment and R&D purposes.

### **MULTIPLE CAPABILITIES**

#### **REFLOW** simulation

with double sided IR oven: cycles from room temperature to 400°C with adjustable thermal ramps Complies with: • JEDEC 22B112A

• IPC/JEDEC J-STD-020D

• -65 to 400°C

Top and bottom heating

Heating ramp up to +6°C/s

**RELIABILITY testing** using convection : multiple cycles from -65°C to 150°C Complies with MIL-STD-883G







### Z resolution <1um</li>

- Ultra high camera resolution
- Measurement of discontinuities





### **RELIABILITY TESTING**

Our convective module allows for unlimited cycles from -65°C to 150°C. Hot/cold air blown into the chamber ensures high thermal homogeneity even for parts with complex geometry.

### 3D-CTE

Strain measurements between -65°C to 400°C on samples from 0.5mm x 0.5mm to 300mm x 300mm. The measurement is performed simultaneously with the warpage characterization.



### MULTISCALE ANALYSIS

Acquisition with various FOVs (i.e.: various magnification) of the same object during reflow. Changing the FOV enhances greatly the pixel density which allows characterization of fine spatial features. This option enables the correlation between high frequency and low frequency deformation. It is especially useful for parts like wafer, stripe or PCB on which the global deformation is as critical as the local deformation of a sub area such as die, unit or package area.







### SOLDER BALL ANALYSIS

Dedicated software for solder ball co-planarity (or Pins) at room temperature and during reflow.



TDM is used for product development, quality control and optimization by global companies, market leaders in a wide range of applications:

> Telecommunications and smartphone Consumer electronics Automotive Power electronics Aerospace Defense

### WARPAGE CAPABILITY AT A GLANCE

- Full field acquisition in 2 s

- Samples up to 400mm x 500mm
- Automatic post processing



### XSFOV

Measurement of samples as small as 0.5mm x 0.5mm. The XSFOV ensures both a high pixel density (up to 40,000 pixel/mm2) and a high Z resolution (<1µm), making it suitable for fine texture characterization.



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### TDM **TT**

Maximum sample size: 120mm x 120mm

Field of view (x,y): 75mm x 87mm

**Temperature range:** Room temperature to 300° C continuous

Options: CTE

### TDM COMPACT

Maximum sample size: 200mm x 200mm

Field of view (x,y): Zoom from 10mm x 12mm to 150mm x 187mm

**Temperature range:** -60°C to 300° C continuous

**Options:** CTE, XSFOV, Sub Room module



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### TDM LS

**Maximum sample size:** 500mm x 400mm

Field of view (x,y): Zoom from 30mm x 37mm to 400mm x 500 mm

**Temperature range:** Room temperature to 300° C continuous

Options: CTE

## TDM **COMPACT 3**

**Maximum sample size:** 600mm x 450mm

Field of view (x,y): Zoom from 10mm x 12mm to 300mm x 375mm

**Temperature range:** -65°C to 400° C continuous

**Options:** CTE, XSFOV, Cooling booster, Convection Module, Scanning XY module.





### TEST SERVICES

Insidix offers test services using our latest warpage platform:

- Complete out-sourcing of laboratory testing and analysis for customers whose needs do not justify the investment in equipment and personnel
- Complementary expertise for highly complex issues
- Supplemental resources when large or time-sensitive projects cannot be handled by internal resources alone

#### Insidix can provide customized design for room temperature measurement and online inspection system using its unique know-how on fringe projection technology.

CUSTOMIZED DESIGN

### ABOUT INSIDIX

Founded in 1996, Insidix is today a leading supplier of non destructive test equipment in the electronics industry.

### A strong Network of sales and support partners



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