PROFORMA™ 300iSA
SEMI-AUTOMATED WAFER INSPECTION AND METROLOGY SYSTEM

Wafer Measurement Systems
for Semiconducting and
Semi-insulating Wafers

Proforma™ 300iSA - Semi Automated Measurement Tool

THICKNESS **SITE** **WARP** **BOW** **TTV** **GLOBAL FLATNESS**
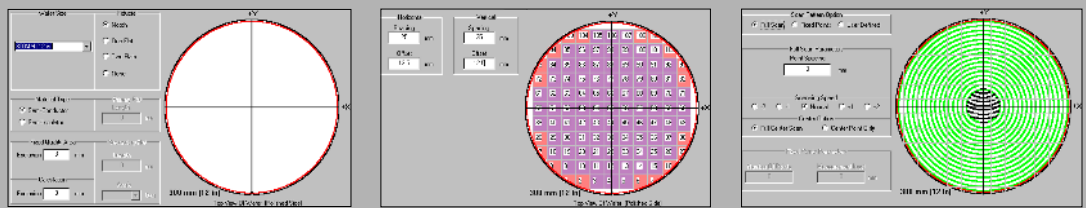
Push/Pull Probes
Vacuum Chuck
Teflon Coating
Wafer Alignment Pins
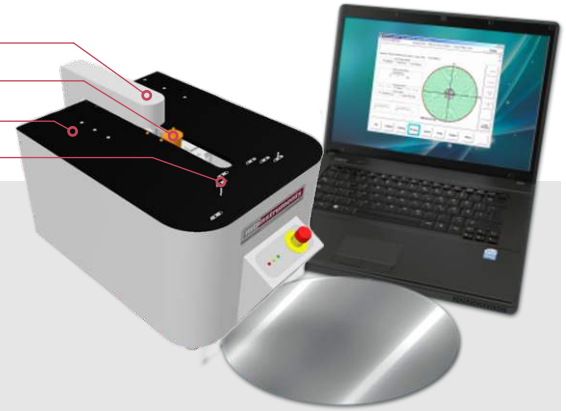
The Proforma 300iSA is a desktop, semi-automated wafer measurement system for semi-conducting and semi-insulating materials. The Proforma 300iSA delivers full wafer surface scanning for thickness, thickness variation, bow, warp, site and global flatness. User-defined and ASTM/SEMI compliant scan patterns are used to generate full 3-dimensional wafer images.

The Proforma 300iSA Controller contains all the electronics and control hardware necessary to control the Measurement Stage. It is also the interface to the external computer.

Unique Push/Pull Technology:
Two Probes built into one body

PUSH SENSOR

PULL SENSOR

Current flows across the semi-conductive surface

TARGET
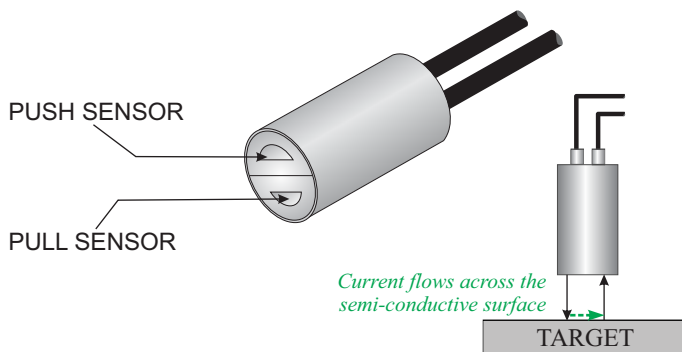
To address the needs of the semiconductor industry, MTII developed its unique "push-pull™" probe technology. In this design each probe consists of two capacitance sensors, built into one probe body. Each sensor is driven at the same voltage, however, there is a 180 degree phase shift between signals. This shift allows the current path to travel across the target surface rather than through the target to ground, eliminating any inaccuracies created by poorly grounded targets.

Additionally, highly non-conductive targets can be measured with this technology, thus allowing capacitance sensors to be used on semi-insulating and semi-conducting targets.

Proforma™ 300iSA Features

- Non-contact full wafer scanning
- 3-D mapping of thickness and shape
- Measures semiconducting and semi-insulating wafers
- Standard Windows® based user interface

- Powerful software and graphics package
- Customized data reporting
- Upgradeable to fully automated system
- Up to 1000 µm measurement range
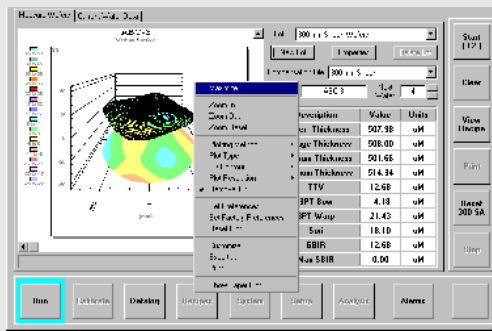- Remote data analysis and recipe creation

Proforma™ 300iSA - Semi Automated Measurement Tool

Customized data reporting, multi-format data export and full network capability allows easy access to your process information from anywhere on your network. The quick and easy to use Windows® - based control system performs complex data analysis and provides output in tabular and 3-D graphical formats which can be exported to spreadsheet and word processing programs.

The systems come preset for SEMI standard wafer diameters, with the ability to add custom wafer parameters if required. Each measurement and system parameter is selected from the user-friendly software interface.
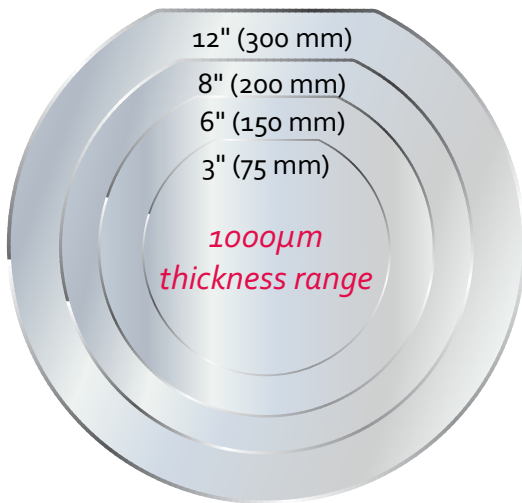
Parameters can be modified and data recalculated without the need to rescan the wafer, allowing "what-if" engineering analysis. In addition to the powerful measurement capabilities of the standard system, an optional software package can be added for determination of wafer stress.

Able to measure as-cut, lapped, etched, polished or patterned wafers, the Proforma™ 300iSA provide fast, accurate information about your process.

Proforma™ 300iSA - Si, GaAs, Ge, SiC, InP wafers

12" (300 mm)
8" (200 mm)
6" (150 mm)
3" (75 mm)

1000µm thickness range

| Measurement Features	Standard Range	Extended Range
Thickness (ASTM F533)		
Accuracy	± 0.25 µm	± 0.50 µm
Repeatability	0.050 µm	0.075 µm
TTV (ASTM F533)		
Accuracy	± 0.25 µm	± 0.50 µm
Repeatability	0.050 µm	0.075 µm
BOW (ASTM F534)		
Range	± 500 µm	± 800 µm
Accuracy	± 2.0 µm	± 5.0 µm
Repeatability	0.750 µm	0.750 µm
Warp (ASTM F1390)		
Range	± 500 µm	± 1500 µm
Accuracy	± 2.0 µm	± 5.0 µm
Repeatability	0.750 µm	0.750 µm
Flatness - Global and Site (ASTM F1530)		
Accuracy	± 0.05 µm	± 0.15 µm
Repeatability	0.03 µm	0.05 µm

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Proforma™ 300iSA - Measurement Principles

Probe A

Tw

WAFER

GAP **A**

GAP **B**

G *total*

Probe B

Measurement Axis

G*total*:
GAP **A** + GAP **B** + T*w*

T*w*:
G*total* - (GAP **A** + GAP **B**)

Total Thickness Variation (TTV):
T*w*Max - T*w*Min
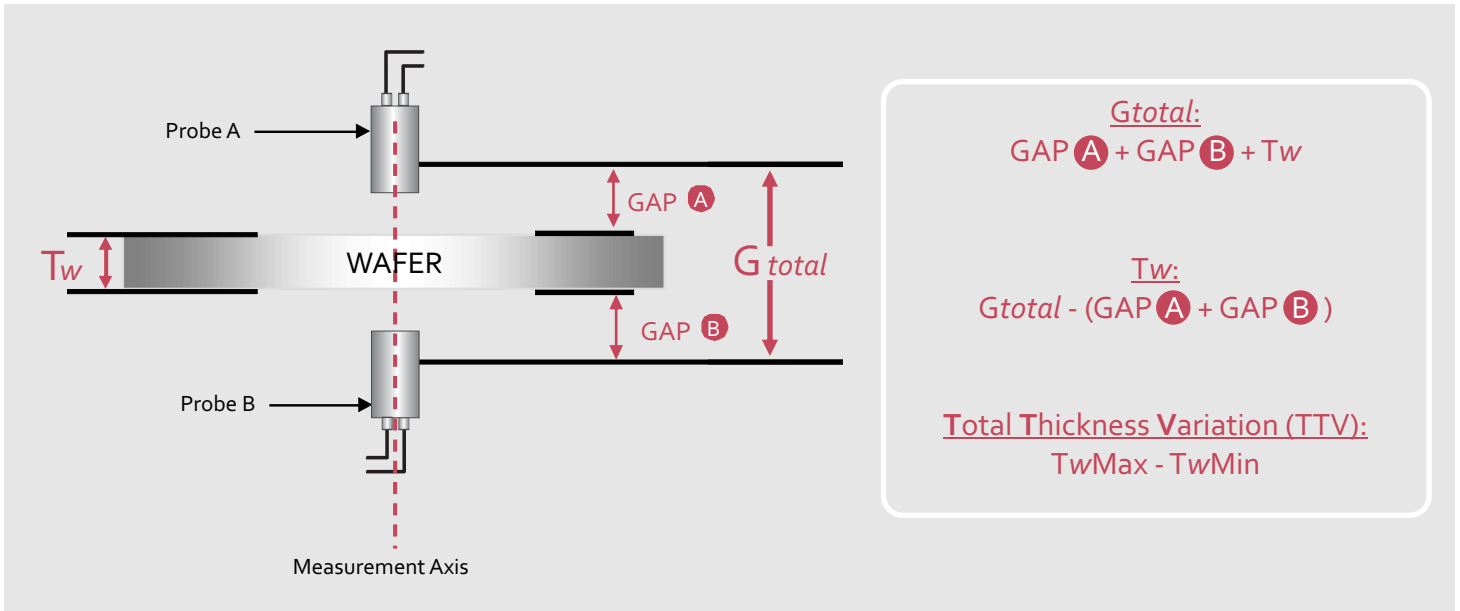
Product #	Model
8000-6485	Proforma 300iSA (includes controller)
	Options
2000-2000	Silicon (Si) calibration standard
2000-2001	Gallium Arsenide (GaAs) calibration standard
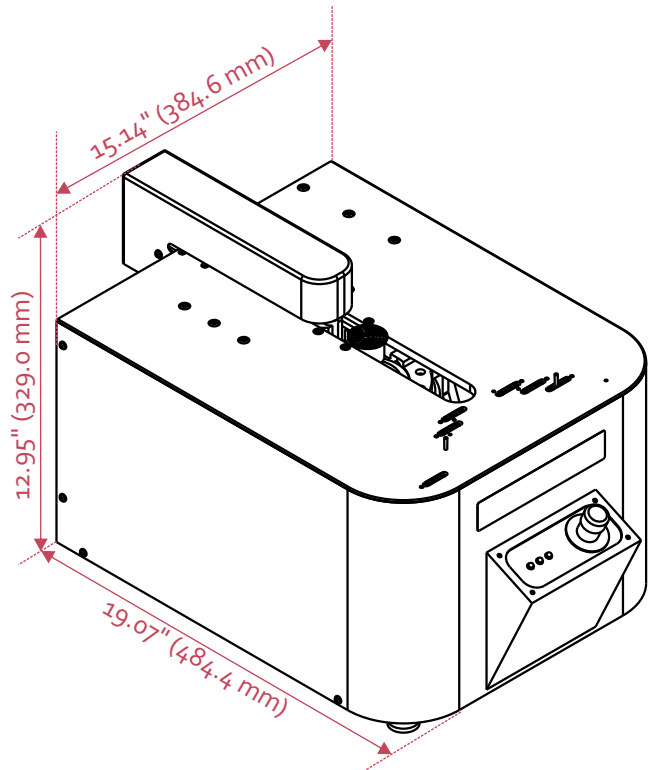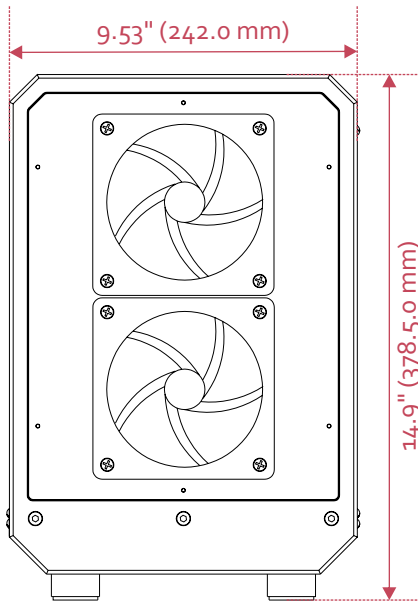
9.53" (242.0 mm)

14.9" (378.5.0 mm)

15.14" (384.6 mm)

12.95" (329.0 mm)

19.07" (484.4 mm)

mti instruments

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