



UltraMap C200L

Wafer Flatness Measurement System

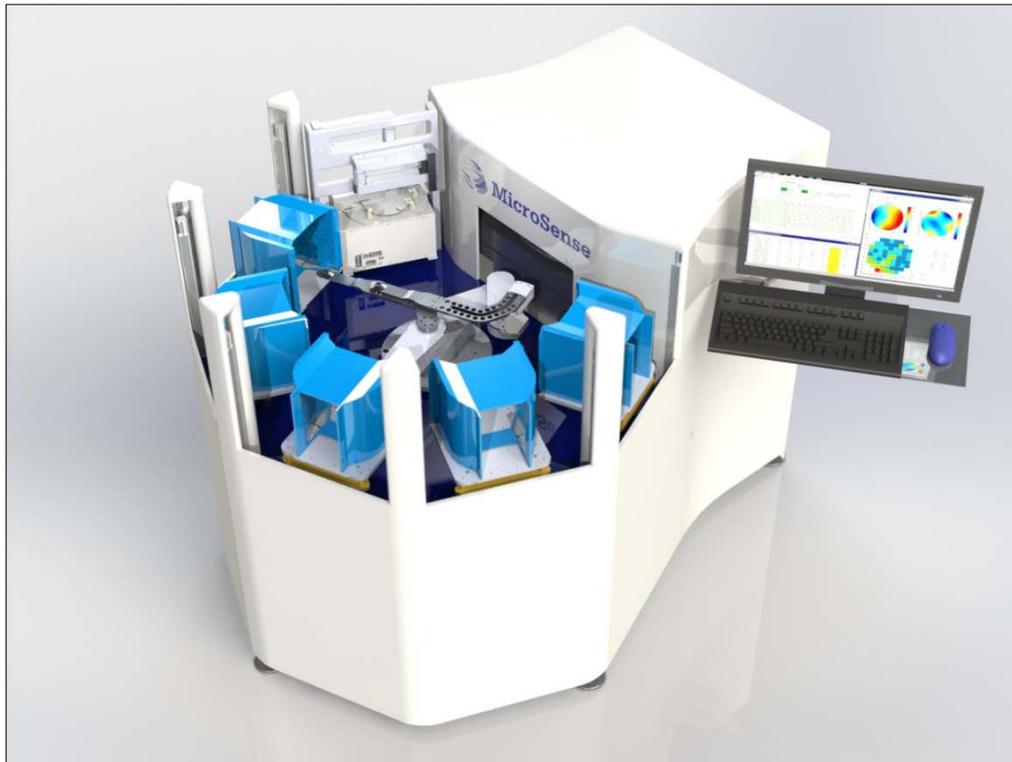
Precise Automated Measurement for High Volume Silicon Wafer Manufacturing

High Repeatability, Industry Standard Measurement of:

- Wafer Global Flatness and Site Flatness
- Wafer Thickness
- Wafer Shape – Bow, Warp, SORI
- Wafer Resistivity and Wafer P/N Type

High Throughput System

- Measure 32% more wafers per shift compared to ADE 9600



UltraMap C200L

Silicon Wafer Flatness Measurement System

Flexible Wafer Characterization System for In Process Control and Outgoing Quality Assurance



MicroSense UltraMap - A Better Approach to Silicon Wafer Measurement

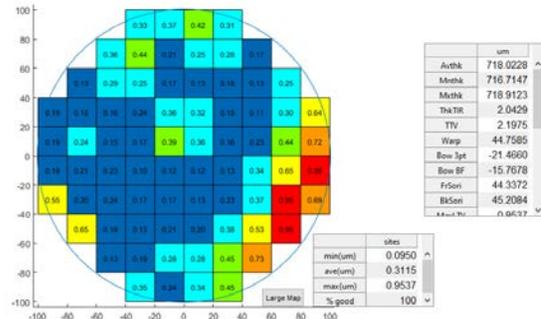
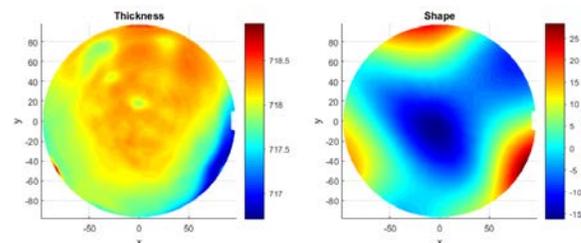
- Reduce 200mm wafer measurement time – industry leading 1.25x higher throughput – 56 wafers per hour, with full wafer mapping and 2mm edge exclusion
- Nanometer resolution, dual probe MicroSense capacitive measurement system for high sensitivity and high repeatability measurements in compliance with SEMI standards
- Measures over 200,000 data points per 200mm wafer
- Fully automated in machine Auto-Calibration – more wafers measured each shift
- Designed for reliability and long term support - UltraMap has a modern, high reliability system design with direct drive precision air bearing r-theta wafer stage and software running on Windows computer.
- Ease of Integration - UltraMap wafer data is output in a variety of industry standard formats and is compatible with existing data management in your factory

Sorting after Inspection

The UltraMap system sorts wafers after wafer measurement based on pre-defined quality criteria. The system includes a high speed dual paddle robot, pre-aligner and 5 cassette stations (2in, 3 out) for sorting flexibility.

MicroSense UltraMap – System Configuration

- Non-contact 200 mm precision air bearing r-theta stage
- Dual arm Robot and pre-aligner
- Kinematic 3 point wafer holder
- Cassette sorting; 5 cassettes (2 in, 3 out)
- Integrated light curtain safety system
- Optional SECS/GEM interface
- Optional Resistivity, Low or High or both
- Optional P/N type sensor
- Dual sided SEMI standard capacitance measurement
- 2mm edge exclusion
- Completely programmable measurement path, including legacy system emulation. 1.9mm standard measurement ring spacing.



UltraMap software has 2D and 3D mapping - save and export wafer maps

Silicon Wafer Flatness Measurement System

Specifications

	Accuracy	Repeatability (1 sigma)	Absolute Range
Thickness	±0.25 µm	0.06 µm	Nominal ±75 µm
Global Flatness	±0.06 µm	0.02 µm	
Site Flatness	±0.06 µm	90% of sites: 0.011 µm 10% of sites: 0.025 µm	
Shape (Bow/Warp)	±(1.5 + 3% of reading) µm	±(0.5 + 1% of reading) µm	±75 µm

All accuracy and repeatability specifications reported for a 200mm diameter wafer of nominal 725 micron thickness with 0.1µm STIR and 0.9 ohm-cm resistivity.

Wafer Properties

Material	Silicon wafer - etched, lapped or polished
Wafer diameters	150mm and 200mm diameter
Wafer thickness	300µm to 1200µm
Notches, Flats (Primary/Secondary)	Up to 2 notch or flat per SEMI standard
Edge Exclusion	Adjustable; up to 2mm from wafer edge

Data Density and Throughput

Number of data points, full wafer map	>200,000 for 200mm wafer
System throughput	56 200mm wafers per hour with full wafer mapping

Option – Resistivity Measurement

Low range module – measurement range	0.001 – 0.999 ohm-cm
High range module – measurement range	0.2 – 199.9 ohm-cm

Resistivity Gage configuration – low, high or both

Type sensor - optional

Non-contact detection of wafer P type or N type

Wafer Sorting and Cassettes

Sorting criteria	Configurable sorting, numerous binning options
Number of Cassettes	5 cassettes standard - 2 in, 3 out typical

Wafer Measurements

Wafer Thickness	Full wafer scan, 5 point or center point
Shape	Bow/Warp/SORI using 3-Point or Best Fit references
Global Flatness	SEMI GBIR, TIR, FPD, FPD%, 5 Point TTV
Site Flatness	SFQR/SFQD, SBIR/SBID and all SEMI M1 standards with 8-30mm sites size and variable offsets

Options

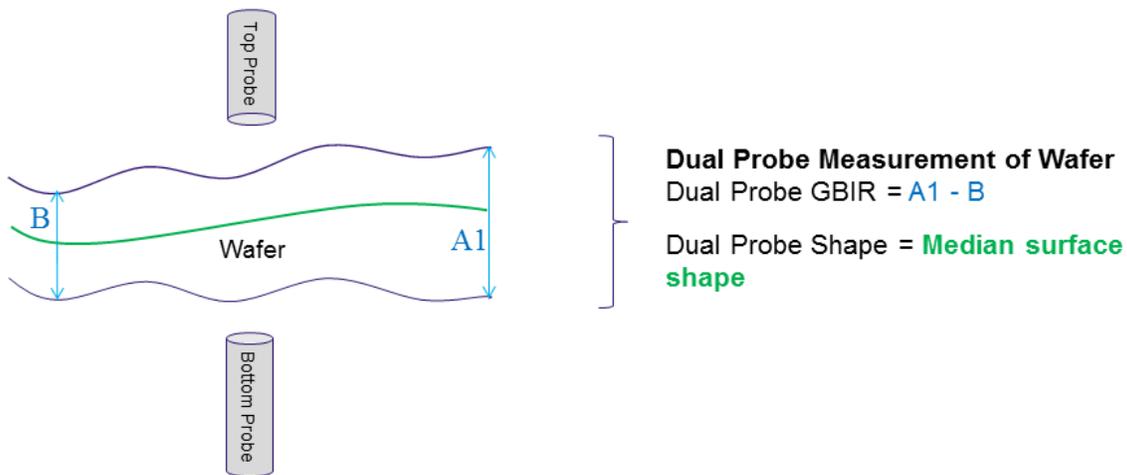
Resistivity gage (low high or both), P/N type sensor, edge grip end effectors and edge grip pre-aligner, SECS/GEM Interface

Machine Certifications

SEMI S2, CE

Accurate Dual Sided Wafer Measurement

The MicroSense dual probe capacitance measurement system directly and accurately measures the true Thickness and Shape of the wafer in compliance with SEMI standards. Data for all wafer measurements is taken at the same time - no second measurement is ever required.



- The SEMI standard GBIR metric by definition is the difference between the thickest point on the wafer minus the thinnest point on the wafer.
- Bow and warp measured with the median surface per SEMI standard