MULTI METRIXS

MPS 200
Wafer Inspection System

MPS 200

Fast, accurate and reliable metrology tool for semiconductor bulk materials and conductive films measurement, as well as inspection of patterned and blanket wafers.

The Challenge: Decreasing IC fabrication cost while managing increasingly complex chip designs via adaptation of new non-contact and non-distractive technologies, avoiding wafer contamination and ensuring a small spot size.

The Solution: MultiMetrixs MPS 200, a revolutionary new Resonance Sensor Technology (RST™) Wafer Inspection system, incorporates state of the art sensor technology and innovative stage design to deliver high-speed analysis of conductive and semiconductive films and substrates.

MPS 200 inspection system utilizes MultiMetrixs patented RST™ sensors enabling measurement of film thicknesses ranging from 20Å to 6µm. To simplify calibration the MPS 200 wafer inspection system we equipped it with proprietary 4-point-probe sensor. The programmable rotary (Θ) and linear (X) stage provides fast scanning and mapping of film thickness, and sheet resistance over a predetermined area of substrate. By interpreting up to hundred thousands points per scan, the MPS 200 proprietary data acquisition software enables high resolution 2-D and 3-D mapping with scan time ranging from seconds to few minutes.

Wide Range of Applications

- Handles 100, 150, 200 and 300mm wafers
- Measures all relevant materials:
  - Metals – Cu, Ta, Al, Au, W, Mo, Co, Ni, Ru, Pt, Cr, Ti, alloys
  - Semiconductors – Si, GaAs, doped Si, doped GaAs, implanted semiconductors
- Contact and non-contact measurement of film parameters
- Multilayer coating characterization
- Measurement of sheet resistance and film thickness
- Mapping properties of bulk materials and coated wafers
- Patterned wafer mapping
- Coating uniformity
- Defect inspection
- Wafer edge exclusive zone inspection
- Extendable for dielectric measurements

Key features

Enables non-contact, fast and accurate measurement of conductive films with thicknesses as low as 20Å.

Simplifies wafer exclusion zone inspection.

Performs resistivity measurement on test pads.

Enables high resolution mapping of blanket and patterned wafers.

Provides individual characterization of resistivity and uniformity for a multi-metal layer stack.

Offers convenient GUI and 2-D / 3-D data presentation.

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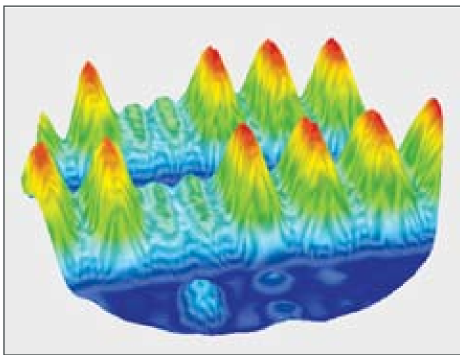
MPS 200 Sensor Specifications

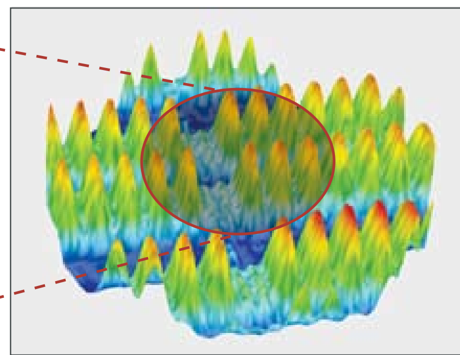
	RST™ 250	IR2
Measurement spot size	$0.25mm^2$	$4mm^2$
Sheet resistance range (Ω/sq)	0.001 - 50	0.001 - 50
Resistivity range (Ωxcm)	0.001 - 1,000	0.001 - 1,000
Accuracy (resistance)	<1%	<1%
Repeatability (resistance)	<0.3%	<0.1%
Range of film thickness	2nm - 1,800nm	5nm - 3,000nm
Types of measurable film	Cu, Ta, Al, Ti, TiN, W, Mo, Co, Ni, Ru, Cr	
Measurement distance	50 - 150μm	0.1 - 3mm

Sample Applications

Metal film thickness high-resolution mapping

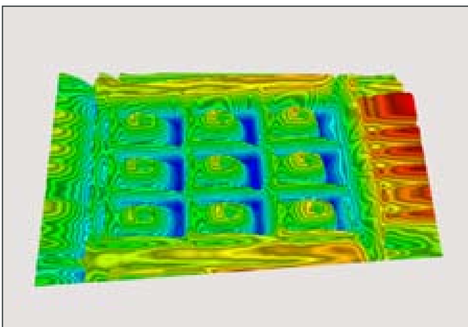


Measurement area (diameter) - 5mm

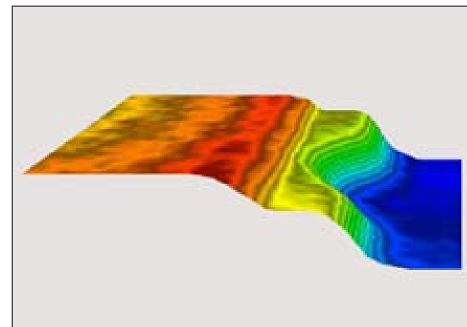


Measurement area (diameter) - 10mm

Patterned wafer die-scale resistivity scan



Wafer edge exclusion zone inspection



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