

KLA-Tencor OmniMap® RS-100

Advanced
300 mm
Resistivity
Mapping
System



For nearly two decades, the OmniMap resistivity mapping products have proven to be the industry standard for accurate and reliable sheet resistance measurements. Building upon these standards, the OmniMap RS-100 provides new capabilities such as advanced automation and improved edge performance to meet today's production requirements for 300 mm wafer manufacturing.

The extensive process application range of the RS-100 — from metal deposition, CMP, ion implantation, and diffusion — to its ability to measure materials such as polysilicon, copper, and bulk silicon substrates, enables the RS-100 to provide a flexible and singular means for process characterization, production monitoring, and tool qualification. The system can

quickly identify process problems with its throughput and measurement speed, improving production cycle time. For development applications, the RS-100's speed also provides dramatic time savings for any activity dependent on frequent, high-resolution testing such as 49, 100 or 625 point maps. Further system advances, such as an increased measurement sensitivity range, enhance performance and add visibility to today's processes of highly conductive interconnects such as copper and thick aluminum.

Patented Temperature Compensation Feature

Small changes in temperature can have a dramatic effect on sheet resistance — the very gauge used to control film thickness and carrier density.

KLA-Tencor OmniMap RS-100

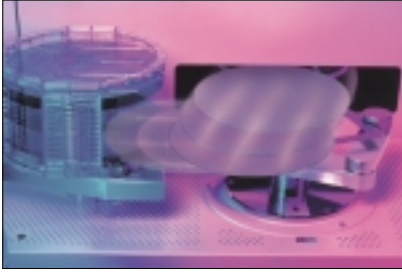


Figure 1. Flexible handler hardware eases system upgrades, from 200 mm to 300 mm and maximizes system extendability.

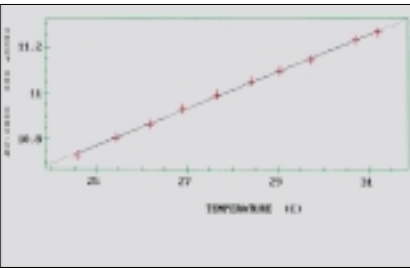


Figure 2. The RS-100 determines the temperature coefficient of resistivity (TCR) of unique semiconductor materials. It corrects the sheet resistance measurements for optimal accuracy, stability and system-to-system matching.

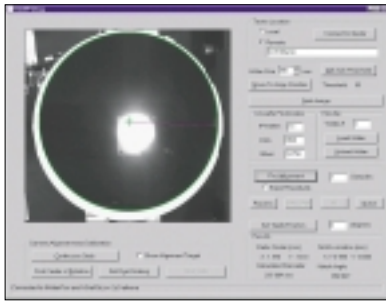


Figure 3. Provides on-stage wafer orientation, eliminating positional errors associated with transporting the wafer between the flat alignment station and the measurement stage, enabling probing to 1 mm.



KLA-Tencor Corporation
Metrology Group
Film Measurement Division
160 Rio Robles
San Jose, CA 95134
Tel 408-875-3000
Fax 408-571-2822
www.kla-tencor.com

Temperature variations in a fab or in a wafer due to processing can impact measurements by as much as one percent per degree Celsius. The RS-100 is the only resistivity metrology tool that generates film-specific TCR (temperature coefficient of resistance) values and uses them to correct for temperature variations during wafer measurement. Correcting for these temperature variations, provide the accuracy, long-term repeatability, and matching — system-to-system and fab-to-fab — for today's production requirements.

Enhanced Edge Performance

Leading the industry, the RS-100 is the first resistivity system with enhanced edge performance, collecting measurement information up to 1 mm from the conductive film edge. Not only does this additional information provide greater insight to process control variance, it extends a wafer's useable area, lowering cost-of-ownership. An innovative approach to wafer alignment also improves the probe placement accuracy and repeatability over existing systems.

Powerful, Easy-to-Use Software

Operating on Windows NT® software, the RS-100 provides true multi-tasking capabilities. The software's colorful graphical user interface allows for easier recipe set-up and data analysis, while its new networking capabilities for data transfer support increasing fab automation.

Modular Handler Flexibility

Choose from a variety of automated handler configurations such as: an open cassette for 200 mm to 300 mm wafers, 300 mm single FIMS for either 13 or 25 wafer FOUPs, or 200 mm single SMIF. Modular handlers provide the ease of fab ramps from 200 mm to 300 mm, for example, while maintaining high system uptime and availability.

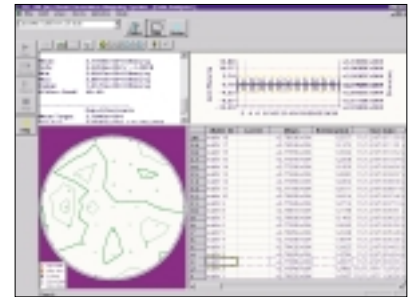


Figure 4. Currently the only production-ready resistivity measurement system in the industry operating on Windows NT.

For reliable sheet resistance measurements, KLA-Tencor's OmniMap RS-100 dominates the industry with innovative concepts like film-specific temperature compensation for accurate measurements, as well as hardware and software advances for greater edge measurement performance. With the system's modular handler and Windows NT-driven GUI, the RS-100 has the power and flexibility to meet the semiconductor industry's requirements for new process development and production of today and tomorrow.