ACS-300
Advanced Control System

ACS-300

First in-line, non-contact metal films advanced metrology system to provide independent measurements of single or stack of conductive film thickness, sheet resistance, bulk resistivity and uniformity on product wafers

The Challenge: With the transition to the 90-nm node, yield issues are constantly emerging. Chipmakers are facing with an entirely new set of complex process integration challenges that cannot be addressed with existing metrology techniques. Even medium complexity IC requires matching of over 80 process chambers. Constant monitoring of film thickness and uniformity in production is necessary to alert chipmakers to variations that can result in significant yield and reliability hazards.

The Solution: Most metrology techniques utilized by manufacturers today are either partially or fully destructive, or extremely elaborate in their design and/or operation. ACS-300 is non-contact, non-destructive, and simple in operation. It can distinguish individual conductive layers when measurements are performed sequentially. Depending on end user needs, ACS-300 could be configured to take measurements in up to 127 spots simultaneously within second, leaving production bottleneck a thing of the past. ACS-300 modular architecture allows end user to configure this tool for specific applications that span front-end-of-line (FEOL) and back-end-of-line (BEOL) metrology applications in a typical IC fab.

The Solution: Primary applications for ACS-300 at the 90-nm node include film thickness and uniformity on multi-layer film stacks, such as copper barrier/seed, electro-chemical plating (ECP) copper, and copper chemical mechanical planarization (CMP) films, as well as ultra-thin ALD barriers and other metal films. Emerging applications at the 65-nm node include cobalt tungsten phosphate (CoWP) cap layers, and ultra-thin multi-layer magnetic random access memory (MRAM) stacks. The module is suitable for measuring “sheet-ρ” and uniformity of SiGe, strained Si and SOI wafers.

Key features

Enables contact-less, fast and accurate measurement of conductive films of a wide range of film thickness from 30Å – 6µm.

Distinguish individual conductive layers when measured sequentially.

Inspects for coating uniformity.

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

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