

UHR Wafer™



The UHR Wafer™ System is an ultra-high resolution Scanning Acoustic Microscope (SAM) designed to non-destructively inspect silicon or GaAs wafers for internal discontinuities. Designed for either the laboratory or production environments, the system can provide unmatched resolution to satisfy all your failure analysis, process control or production needs.

The UHR Wafer Meets the Challenge

Wafer bonding methods and techniques have become an increasingly important issue in the manufacturing of ICs, optoelectronic devices and micromechanical devices. There are several critical areas where investigation is required to establish adequate wafer reliability. Specifically, voids, delaminations and other contaminants like excess flux, can be detrimental to electrical and long term die and device functionality. SAM technology allows for reliability concerns to be screened prior to wafer dicing, thereby reducing scrap, reducing costs and ultimately improving reliability.

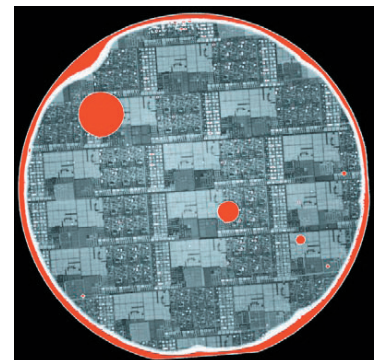
SAM Advancements

The UHR Wafer™ system differs significantly from other SAM systems on the market today. While maintaining Sonix' digital data acquisition advantage, the UHR Wafer™ offers a state-of-the-art linear servo motor delivering unparalleled scan resolution. In addition, the 0.5 micron encoder provides image resolutions of 2 microns or better. But scanning precision is not enough. Equally important is the advanced wafer analysis software that accompanies each system. The automatic defect detection and defect sizing software allows the operator to automatically determine which individual die meet a specific accept/reject criteria and aids in the "root cause" defect determination.

The UHR Wafer is SEMI S2 and CE Certified and offers the user new features that improve the flexibility and ease of use of the system. These features include:

- **DPR500** - The DPR-500 offers improved bandwidth and is completely software controlled. Total control under software includes applied voltage, gain, damping, energy, low pass filters, high pass filters, acquisition mode (E/T), and triggering. Modular in design it allows for multiple configurations within a single unit. The design also improves cable management and was designed for easy operation.
- **Integrated Wafer Chuck** - Wafers are positioned in a vacuum chuck to maintain orientation and levelness.
- **Fully Integrated ESD Protection** - Offering two ground plug locations, the dual static ground plug allows for either right or left handed static plug positioning.
- **Ultra high frequency and resolution** - Clearly detects defects as small as 5 microns, 1 micron step capability.

Bonded Wafer: The image to the right was generated using the UHR Wafer. Note the superior image quality and image resolution.



Specifications

Scan Axis

Positioning device:	Linear servo motor
Servo Max Velocity:	830 mm/s
Servo Repeatability:	+/-0.5 micron
Linear Encoder Resolution:	0.5 micron
Max Scan Area:	315mm

Step Axis

Positioning device:	Low-EMI microstep motor with zero-backlash lead screw
Step Axis Resolution:	0.25 micron
Max Scan Area:	327mm

Focus Axis

Positioning device:	Low-EMI microstep motor with zero-backlash lead screw
Focus Axis Resolution:	0.5 micron
Max Travel:	7mm

Fixtures

- Vacuum chuck fixture
- Fixtures are available for 6" (150 mm), 8" (200 mm), and 12" (300 mm) wafers
- Vacuum/blowoff feature
- Fixture rises out of water for loading/unloading

Immersion Tank

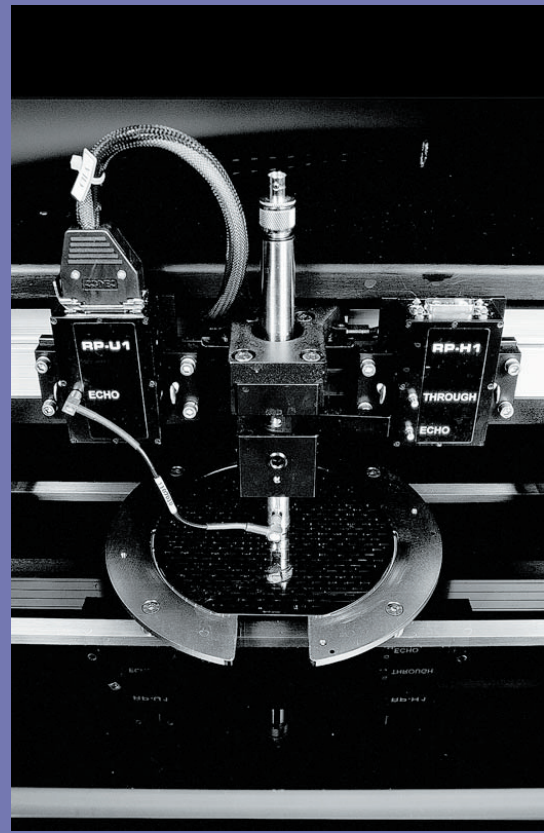
- Removable acrylic tank with pump and 30 micron filter, plus tank bottom fitting for complete draining

Ultrasonic Instruments

- DPR500 Receiver with L2/H2 pulser
- Optional U2 pulser with expanded bandwidth receiver and
- Optional HF Kit

Enclosure

- Includes base cabinet for computer and instrumentation, with casters and leveling feet
- Approved emergency off and safety interlock
- Ergonomic design of load/unload area and user controls



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