

for immediate release

Surface Tracker “Flattens” Wafers

Elk Grove Village, IL; May 3, 2016 -- Silicon wafers are supposed to be ‘flat’ when they are being scanned by an acoustic micro imaging tool for defect detection or for measurement. Die having defects will be removed after dicing.

But suppose the wafer is warped. Ordinarily, the acoustic tool’s transducer scans in a flat plane, and is focused and gated on a specific depth of interest. Warping of the wafer means that some die are partly or entirely out of focus and defects can be entirely missed.

Sonoscan has solved this problem in its C-SAM[®] systems with its new Quantitative Dynamic Z[™] (Q-DZ) surface tracking feature for scanning warped wafers. The tool acquires data from the scans that not only reveal the features inside the wafer but also measures the warpage. The warpage information is used during the scan to instantly adjust the height of the transducer above the wafer surface and maintain the critical focus inside the wafer over its entire area.

The result is that the transducer scans a wafer whose topography resembles rolling hills, but the transducer sees it as a flat plain. All devices are imaged at the depth of interest, all internal features remain in focus and within the gate, and all rejects are identified without any false rejects due to warpage.

In addition, the Q-DZ outputs a series of contour coefficients/parameters that can be used to monitor processes in manufacturing, for example, encapsulant cure rates, internal stresses, etc.

In the illustration, the warped wafer at left was scanned in a flat plane. White regions were too high, black regions were too low relative to a true flat surface. Only the gray zone between them was meaningfully imaged.

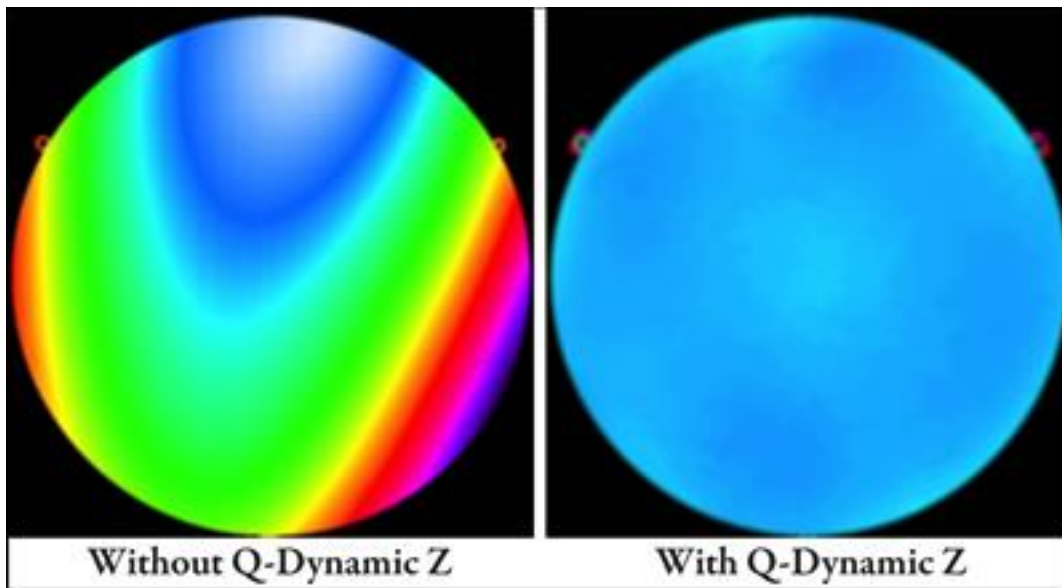
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The same wafer is shown at right. With Q-Dynamic Z surface tracking, all devices were imaged as though the wafer were flat.

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Since 1974, Sonoscan has led the development and production of acoustic micro imaging (AMI) tools, methods and modes for non-destructive imaging, inspection and analysis of parts and products used in commercial, military and aerospace applications. Along the way, the company has been awarded numerous patents in the U.S. and abroad. The company also operates contract testing laboratories in multiple locations.