

Zeta™-6xx Series

PANEL METROLOGY SYSTEM FOR PCB AND IC SUBSTRATE MANUFACTURING



Advantages

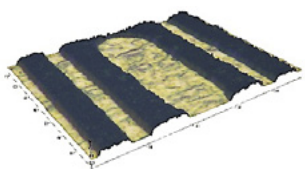
- Fast, non-contact 3D optical profiler with ZDot™ technology for true color imaging
- Multi-mode optics enable a wide range of measurement applications
- Production-ready design meets cleanliness standards and supports both semi- and fully-automated configurations
- Full panel mapping for a wide range of panel sizes
- Built-in vibration isolation for high precision applications
- Intuitive user interface for recipe setup, automated measurement jobs, data acquisition and analysis

3D and 2D Applications

- Via and trace dimensions
- Bump dimensions
- Overlay metrology
- Layer and build-up film thickness
- Roughness of metal and dielectric layers
- Feature-to-feature long distance measurement
- Panel warpage
- Full panel macro inspection

The Zeta™-6xx Series panel metrology system addresses 3D and 2D metrology requirements for PCB and IC substrate manufacturing. Based on a multi-mode approach to measurements, the Zeta-6xx optical profiler system combines the capability of several tools into one compact platform with performance that has been proven at leading outsourced assembly and test (OSAT) facilities and PCB houses.

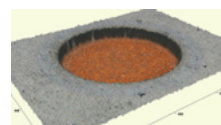
The Zeta-6xx Series system leverages KLA's experience with process control technology to provide high-performance metrology solutions. The Zeta-6xx Series profiler measure both test and inline product panels, providing the data required to enable process feedback during development and to support process control for high volume manufacturing. It is possible to integrate a panel inspection module for macro defect inspection and full panel image acquisition.



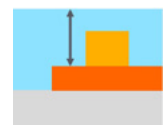
Copper to Pre-Preg Height



Pad and Trace 2D Dimensions

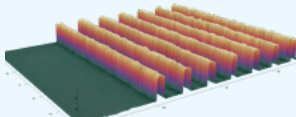
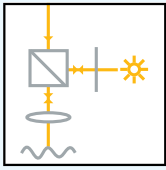

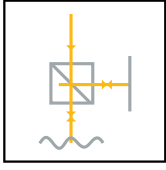
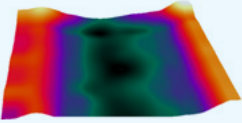
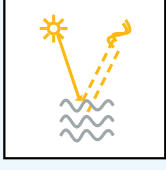
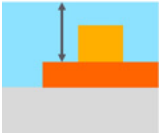
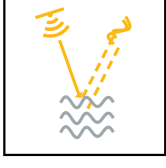


Solder Resist Dimensions



Build-up Film Thickness

Multi-Mode Optics

 <p>Traces and Vias</p>		<p>ZDot™</p> <p>Proprietary 3D measurement technology combines innovative optics with powerful algorithms to produce high resolution 3D data on a variety of surfaces.</p>
 <p>Surface Roughness</p>		<p>ZX</p> <p>Phase and vertical scanning interferometry enable wide area measurements with high z resolution.</p>
 <p>Film Thickness Map</p>		<p>ZFT</p> <p>An integrated broadband reflectometer measures film thickness and reflectance.</p>
 <p>Build-up Film Thickness</p>		<p>ZIR</p> <p>An integrated narrowband reflectometer measures film thickness and reflectance of opaque layers.</p>

Fast and Easy to Use

Data acquisition is easy with simple, intuitive software and automated measurement analysis features.

- Automatic illumination control
- Autofocus
- Auto-sequence for multiple sites
- Wide area stitching
- Pattern recognition deskew for automatic sample alignment
- Pass/Fail criteria for any measurement item

Results

Advanced functionality plus simple reporting features enable operators and engineers to clearly communicate results.

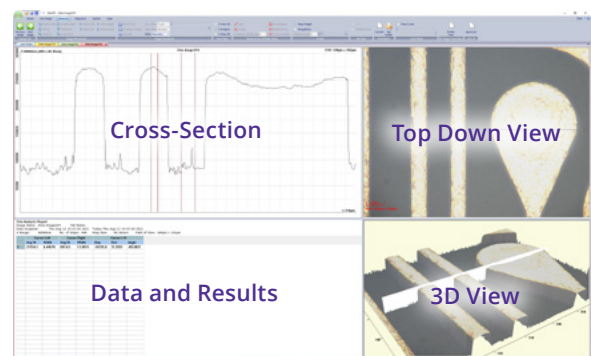
- True Color and height color maps
- 2D and 3D data viewing
- Offline analysis license
- Data upload for SPC process control

Specifications

Light source	LED-based for broad- and narrowband
Max FOV at pixel resolution	~7.0mm x 6.0mm at 2.76µm/pix
Min FOV at pixel resolution	~0.17mm x 0.14m at 0.069µm/pix
Min vertical resolution (1)	<0.1nm
Precision (2)	3σ < max [0.01*value; 0.05nm]
Step height range	0.1nm to 20mm

(1) Using PSI on VLSI calibrator

(2) Using PSI and dynamic repeatability out of 20 repeats; 0.05nm verified on polished surface



KLA SUPPORT

Maintaining system productivity is an integral part of KLA's yield optimization solution. Efforts in this area include system maintenance, global supply chain management, cost reduction and obsolescence mitigation, system relocation, performance and productivity enhancements, and certified tool resale.

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