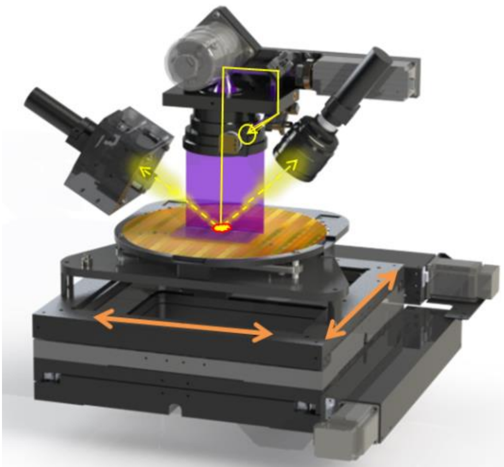
Multi-Mode Defect Inspection Solution

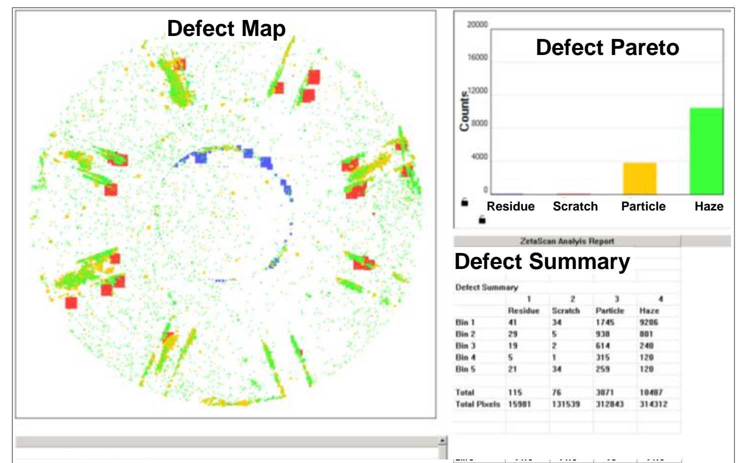
ZetaScan

The **ZetaScan** series are **fully automated 300mm capable** defect inspection tools that can address a variety of substrates such as opaque and **transparent wafers as well as touch panels,** rough ground, polished or unpolished substrates. Based on Zeta's revolutionary **multi-mode** approach to inspection, the ZetaScan series defect inspectors provide high defect sensitivity at high throughput.



Scanning Beam Optics

- Scanning Beam Optics combines the strong signal from a small spot beam (higher intensity than a line focus beam) with the speed of the scanning laser
- ZetaScan **allows for any sample shape up to 370mm X 470mm**, very thin samples, and other delicate samples, such as **thin glass** or **bonded wafers**
- 405nm laser diode with the latest technology in beam shaping optics



Defect Summary

	1	2	3	4
	Residue	Scratch	Particle	Haze
Bin 1	41	34	1745	9206
Bin 2	29	5	938	801
Bin 3	19	2	614	240
Bin 4	5	1	315	120
Bin 5	21	34	259	120
Total	115	76	3871	10487
Total Pixels	15981	131539	312843	314312

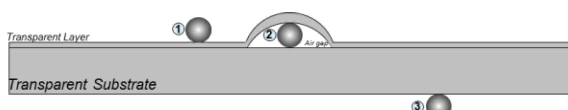
Comprehensive Full Wafer Inspection
Defect Map on a **300mm Glass** wafer

Multi-Mode Optics

- **ZSP – Zeta Specular** measures reflectivity
- **ZTP – Zeta Topography** measures surface topography
- **ZTS – Zeta Top Scatter** measures scattering signal above the sample
- **ZSS – Zeta Side Scatter** measures scattering signal to the side of the sample
- **Other …** give us your inspection challenge. The Zeta team is continuously developing new modes of defect detection.

Automated Defect Classification

The multiple-mode optics can be used for easy defect classification. In the **glass wafer inspection** example shown on the right, **surface particles and interface particles** can be separately classified based on the differences in the ZTP, ZSP and the ZSS images. ZetaScan's innovative optical design also allows the user to **simultaneously detect** and accurately classify the **bottom surface particles** based on their optical signature. This unique capability is unmatched in the defect inspection industry.



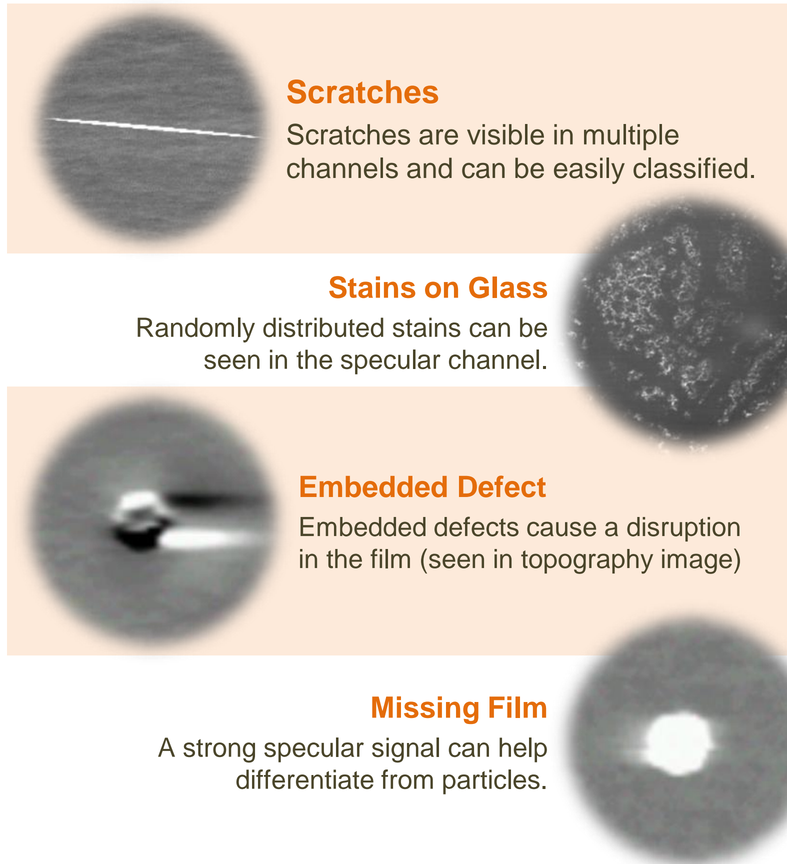
	ZTS	ZSS	ZTP	ZSP
1 Surface Particle				
2 Interface Particle				
3 Backside Particle				

Multi-Mode Inspection
Optical Signature of different defects

© Copyright 2015 Zeta Instruments Inc., All rights reserved

System Information

ZetaScan
Manual Load Defect Inspection



Fast Full Wafer Defect Mapping

The linear scanning motion of the incident beam is combined with the lateral motion of the wafer to quickly generate the full wafer defect map. This type of scan is **faster, more stable and less sensitive to vibration** as compared to other 'helical' or 'spiral' scan based tools.

ZetaScan Features & Benefits

- Thin and transparent substrates – new detection optics design does not degrade signal as the substrate becomes thinner
- Multiple channel detection provides the **necessary signals to separate pits from particles down to submicron** in size
- New light collector design capable of **detecting defects on rough surfaces or films**.

Performance Specifications (ZetaScan)

Particle:	*0.13µm PSL on polished Si*
Dynamic range:	*0.13µm – 20µm*
Pit, Scratch:	*0.1µm deep, >3µm in diameter/length*
Other defects:	*Stains, Micro-waviness, Epi defects*
Classification:	*Separate Pit/Particle*
Full wafer[1] scan:	*<120sec for a 300mm substrate*
Rough Substrate:	*Can handle rough polish ~ 5µm RMS*
Cleanliness:	*Class 100*
Repeatability[2]:	*±5% (1σ/Average)*

System Features

Illumination:	*405nm (violet) Laser Diode*
Detectors:	*High resolution PMT detectors*
Detection Channels:	*Side Scatter, Top Scatter, Topography, Specular*
Scan Type:	*Linear scan*
Substrate Size:	*50mm – 300mm diameter*
Motorized Stage:	*300mm x 300mm XY travel*
Sample Thickness:	*Up to 25mm*
Sample Type:	*Polished/Unpolished, Opaque/Transparent*
Vibration Isolation:	*Built-in*
Factory Automation:	*Recipe & Data Upload/Download*

ZetaScan Series

ZetaScan	**ZetaScan-AUTO**	**ZetaScan-EFEM**
Manual System	Open Cassette	Auto System
Up to 300 mm	150/200 mm	300mm EFEM/FOUP

[1] Full wafer inspection at best sensitivity. Throughput is higher at lower sensitivity
[2] Static repeatability and accuracy based on measuring a polished Si wafer deposited with NIST traceable PSL particles

Actual features included will depend on final configuration
Specifications subject to change without notice

ZETA Instruments
2528 Qume Drive Suite 12 • San Jose CA 95131
Tel +1.408.573.7285 • Fax +1.408.573.7627
ZETA
www.zeta-inst.com