PPI3300

Post Probing Inspection System

Highlights

The PPI3300 is an ideal solution for detecting defects on 8-inch and 12-inch patterned wafer surfaces such as scratches, ink dot smear, probe marks, water marks, and die edge cracks. High Speed CMOS camera with resolution of 26.1MP and CoaXPress interface is used in the system. The combination of 5120 x 5120 high resolution, high speed at 90 FPS and global shutter create a new standard for the inspection application. The CF objective was used to extend the working distance while maintaining a high NA, resulting in images that are crisp and clear, with high contrast and resolution. The micro wafer station has been integrated with a rotary table and an anti-vibration platform to provide accurate and high throughput inspection. Auto loading, wafer ID reader for OCR and 2D matrix code reading, and auto defect inspection are all part of the standard system configuration.

Key Features

- 26.1MP Area-Scan Color Camera
- Bright-field Inspection
- Laser Auto focus System
- Nikon High Power Metallurgical Microscope
- Rotary Table with Vacuum Chuck
- Anti-Vibration Platform
- 1x Hirata FOUP Port
- Hirata ATM Robot with End Effector
- Hirata Wafer Alignment Module
- IOSS WID120 OCR Reader
- HEPA/ULPA FFU (Optional)

# Post Probing Inspection System

Statistical Training Method is used by the PPI3300 Post Probing Inspection System to find the feature of interest within the camera's field of view with trained image. The system will then determine the defects of the wafer surface.

Auto focus System

Auto focus system provide a real time focus system for infinity corrected optical system. A motorized offset lens allows for real-time adjustment of the imaging depth into the sample.
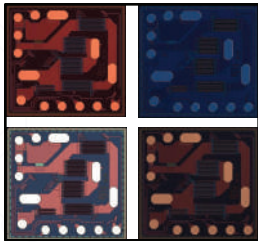
Optical Observation

The CF objective with infinity optics contributes to a bright and high-contrast images. Optional dark-field and Normaski-DIC techniques are available.
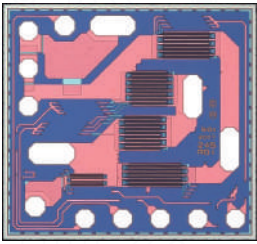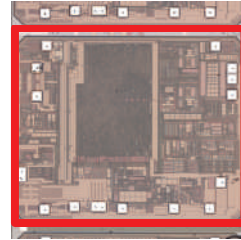
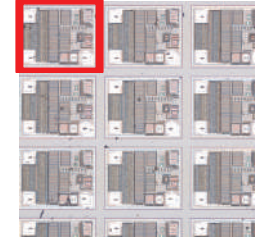
Bright Field Image
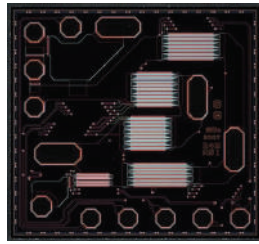
Dark Field Image

Normaski-DIC Image

Image Processing

Create 1 die unit/image by using the Single Die Per View (SDPV), Multiple Die Per View (MDPV), or Multiple View Per Die (MVPD) technique.
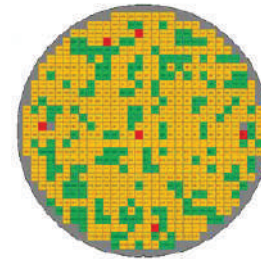

Single Die Per View
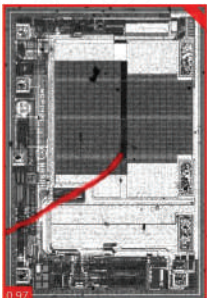

Multiple Die Per View

Wafer Mapping Capability

Automatic classify defects on the wafer map such as defects size, defects area, defects color, and defect counts for advance defect detection.
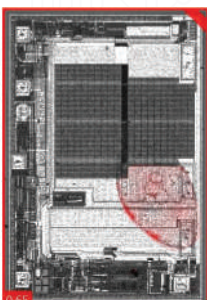
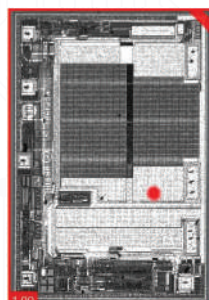
Wafer Map

Vision Capabilities

Wafer Crack

Scratches on Die

Surface Contamination

Foreign Material

- Scratches on Die
- Scratches on Bond Pad
- Die Surface Contamination
- Ink Dot Smear
- Missing Passivation
- Wafer Chip
- Corrosion
- Bond Pad Discoloration
- Die Edge Crack
- Silicone Dust
- Wafer Marks/Liquid Droplets
- Expose Oxide

- No Probe Mark
- Probe Mark Overdrive
- Diffusion Faults
- Top Side Chip
- Metal Peeling
- Metal Damage
- Abnormal Bond Pad
- Bump Shorting
- Burn Mark
- Wrong Saw
- Passivation Peeling
- Whisker

Features and Advantages

Hirata FOUP Port
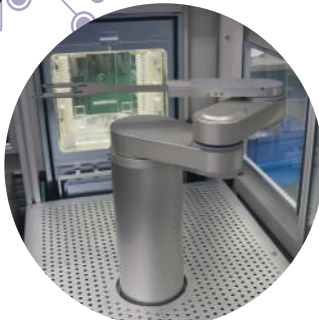
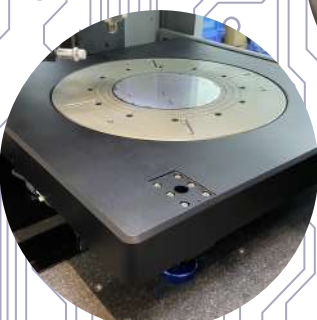*Hirata ATM Robot*

Hirata Wafer PreAligner

IOSS WID120

Camera System

Objective Lens

Rotary Table with Vacuum Chuck

Quick & Effective Handling

PPI3300 is equipped with 3-axis single arm Hirata ATM Robot which provide higher performance and effective wafer handling during process. The wafer mapping sensor integrated with Hirata FOUP port for quick and reliable detection of semiconductors wafers, either , bright, dark or coated wafers and slotting errors in cassettes.

High Speed Alignment

Wafer PreAligner supports orientation flat type and notch type wafers. Achieves advances alignment by high speed processing with an alignment time 2 seconds or lower and a correction accuracy of ±0.2°. Through the use of this pre-aligner, the ATM robot is able to conduct handling of wafers in a fixed orientation.

Advanced Wafer ID Reader

With up to 18 different light modes, the IOSS WID120 can decodes OCR, Barcode, DataMatrix and QR-Code markings on any kinds of wafer, regardless of the wafer material. Fully automatic light control and intelligent configurations handling, IOSS WID120 is able to improve the read rates drastically.

High Resolution Surface Inspection

The surface inspection is equipped with a 26.1 MP color scan area camera, which is combined with a CF objective lens to produce images that are crisp and clear, with high contrast and resolution. The system incorporates a laser auto-focus module that combines advanced optics and intelligent in-built microprocessing to provide a real-time focus system for infinity corrected optical systems.

1800mm

2050mm
Front View

1450mm
Side View
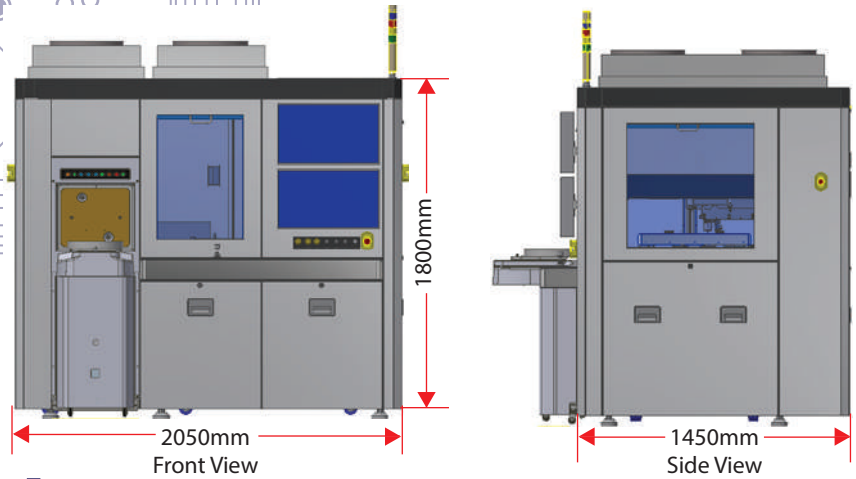
Technical Specification

Wafer	
Size/ Thickness	8" Wafer Size / 250µm-800µm
	12" Wafer Size / 300µm-1000µm
Loading Port	
Input/ Output Port	1x Configurable to FOUP, FOSB and Open Cassette
Wafer Carrier	SEMI Standard 8" Open Cassette
	SEMI Standard 12" FOUP
	SEMI Standard 12" FOSB
Load Port Sensors	Integrated with Wafer Mapping Features
	Presence or Absence & Orientation Detection
	Wafer Protrusion Detection
Wafer Handling	
Wafer Warpage	Up to 1mm *(Sample Required for Engineering Test)*
Robotic Handling	3-Axis Hirata ATM Robot with End Effector
Pre-Aligner	Wafer Centering & Configurable Notch or Flat Orientation
Inspection Platform	
Micro Inspection	Nikon High Power Metallurgical Microscope
	Objective Lenses at 5x,10x and 20x
	26.1MP Area Scan Color Camera
	Laser Autofocus System
	Rotatory Table with Vacuum Chuck
	Anti-Vibration Platform
Operation System	
Software	Microsoft Window 10 Operating System
	Post Probing Inspection System, PPI3300
Wafer ID Reader	
Code Types	Barcode: BC412, IBM412 (IBM & SEMI, T1-95 & Base35)
	2D Matrix: Data Matrix™ECC200, SEMI T7, M1.15
	Alphanumeric: SEMI OCR: M12, M13, M1.15
Standard Accessories	
Display	2x LCD Monitor
Status Indicator	4-Tier Tower Light with Adjustable Buzzer Volume
Auto Conversion	Programmable Different Wafer Size (For 8" & 12")
Operating	
Power Supply	200-240VAC, 50/60 Hz Single Phase
Compressed Air	4-6 Bar
Vacuum	-80kPA
Dimension	
Foot Print	2050mm (L) x 1450mm (W) x 1800mm (H)