Non contact laser tomography technology

非接觸雷射斷層掃描偵測技術

* Extremely high speed and high precision 極高速極精確 *

SSI laser tomography technology is an advanced non contact nondestructive measurement and inspection technology able to detect the visual defects and structures as well as conduct measurement below the surface of materials. For semiconductor industry, it can be used to measure wafer thickness/ parallelism/void, adhesive thickness and checking cracks or voids during wafer thinning or bonding process in real time. It can be also used for glass thickness checking during thinning process or adhesive thickness measurement and distribution for touch panel lamination. Other applications are like multilayer film thickness inspection, structure uniformity and or homogeneity analysis or film coating thickness measurement. It can also be used to check OCA or OCR thickness inspection for touch panel lamination.

SSI雷射斷層掃描技術是一種極為先進的非接觸式非破壞性的量測及檢驗技術，這種技術能偵測物體裏層的狀況、瑕疵或量測其各層的厚度分布，在半導體業，它可以用來即時偵測wafer薄化過程的厚度或wafer bonding時的龜裂、平整度、空隙、氣泡及貼合膠水的厚度，其他應用包括玻璃薄化過程的玻璃厚度即時檢測或觸控面板貼合膠水的厚度及分佈，對多層材料也能進行各層材料的厚度或對材料分佈均勻度及同質性進行分析。

SSI laser tomography technology encompasses the following key advantages:

. Most advanced 3rd generation tomography

. Advanced fiber laser technology

. Flexible fiber guided probe

. Customized laser scanning system

. Total process solution provider

SSI雷射斷層掃描技術涵蓋下面幾項主要的有優點與特色:

. 最先進的第三代雷射斷層掃描技術

. 先進的光纖雷射技術

. 具撓性光纖導管的探測頭

. 客製化的掃瞄系統

. 提供完整製程自動化的能力。

3D Penetrating Inspection Resolution

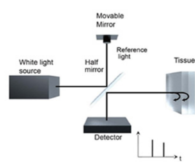
Items	Optical 3D Penetrating Structure Inspection
Vertical axis resolution	Accuracy: error <0.1 μm Repeatability: 0.03 μm (3 standard deviations)
Horizontal resolution (in air)	20 μm/100 μm
Laser Beam Size (In the air)	20 μm/50 μm
雷射井深(空氣中)	400 μm/2500 μm
Inspection Swap Speed	19.2 mm^2s^{-1}/480 mm^2s^{-1}

INDUSTRIAL OPTICAL COHERENT TOMOGRAPHY 工業級光干涉斷層掃描技術

OCT: Optical Coherence Tomography.

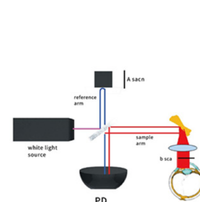
A non-invasive cross-sectional interferometric imaging technique using the coherence of laser light.

Typical resolution: ~ 10um, depth: ~ 5mm



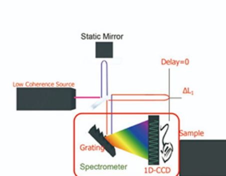
Time Domain (TD)-OCT

Problem: Mechanical scan - Slow Speed



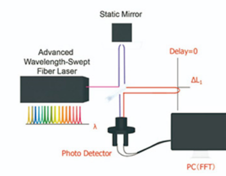
Spectrometer OCT

-No need for A-scan
-High Speed



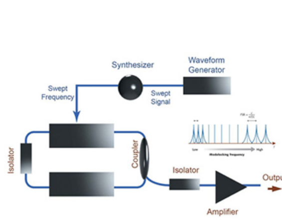
Swept Source OCT

-No need for A-scan
-Very High Speed, High Sensitivity

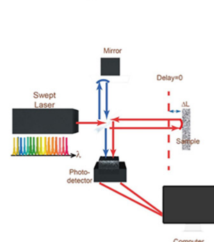


KEY TECHNOLOGY 關鍵技術

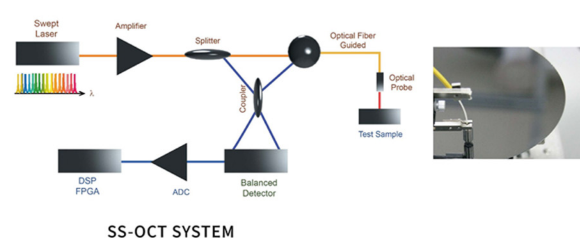
Advanced Swept-Wavelength Fiber Laser



3rd Generation Swept-Source OCT

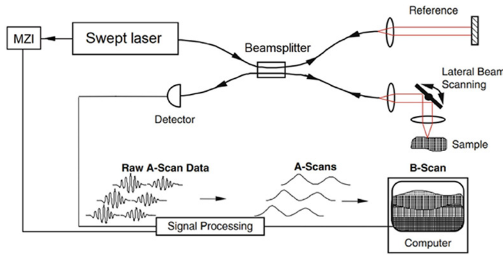


HIGHLY FLEXIBLE OPTICAL GUIDE SYSTEM 高撓性光學探測系統

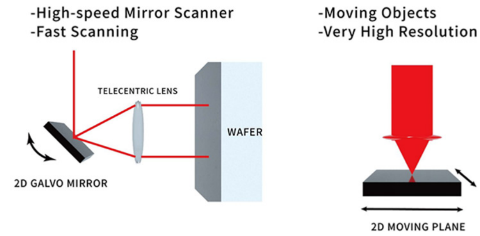


SS-OCT SYSTEM

SYSTEM DIAGRAM 系統概念圖



CUSTOM SCANNING SOLUTION 客製化光學掃描方案

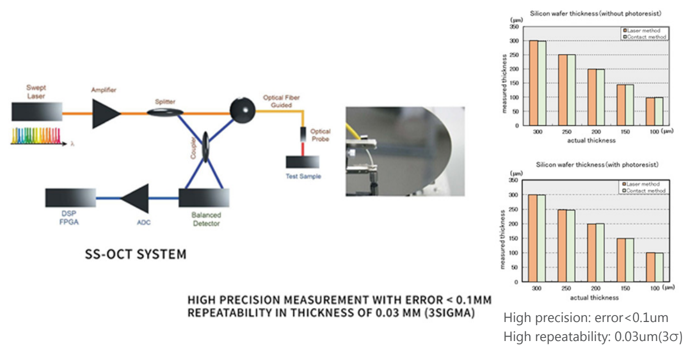


APPLICATIONS - WAFER THICKNESS / VOIDS / PARALLELISM

The trend of wafer thinning is obvious and fast particularly for 3D wafer . Look at the records between 2015 to 2021, MEMS wafer thickness from 370~250um to 100um, ASIC MEMS from 100~150 um to 100 um, memories from 50um to 18um, Logics from 50um to 28um and power device from 60~110um to 60um. It is crucial for silicon manufacturing that precision polished wafer keeps uniform thickness and parallelism to ensure good quality bonding to the 2nd wafer. To achieve the above goal, the proper technology which is able check voids/cracks and measure the thickness, parallelism, adhesive thickness in real time becomes essential for wafer manufacturing. SSI offers the updated advanced tomography technology to help silicon wafer manufacturers to be able to solve the problem of real time measure wafer thickness and related problems.

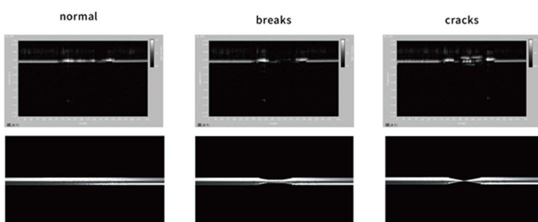
應用 - 晶圓厚度/空隙/平整度量測

晶圓薄化的趨勢極為快速及明顯，特別是3D的晶圓。檢視過去2015到2021晶圓薄化的紀錄即可了解，MEMS厚度從370~250um降到100um，ASIC MEMS從100~150um到100um，memories從50um到um, Logics從50um到2um，power device從60~110um到60um以上的晶圓薄化趨勢讓晶圓製造商對保持晶圓厚度的一致性及平整度變成是一個不可忽視的課題，特別是在保持下個貼合後晶圓的良好品質。要達到晶圓製造商的期許，能即時檢測晶圓厚度/平整度，並能同時量測測貼合膠水的厚度及檢測空隙、氣泡、龜裂等瑕疵的技術變成是關鍵，SSI提供的工業用雷射斷層掃描技術即能解決晶圓厚度即時檢測等問題。

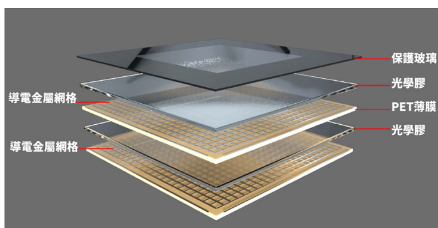


High precision: error<0.1um
High repeatability: 0.03um(3σ)

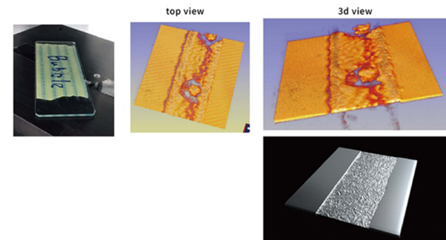
2D CROSS SECTIONAL VIEWS 2D 剖面的檢測



TOUCH PANEL LAMINATION OCA OR OCR THICKNESS INSPECTION

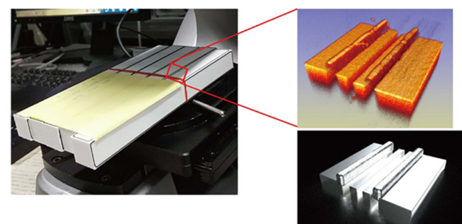


INSPECTION OF INTERNAL DEFECTS 物體內部瑕疵檢測



INSPECTION OF SURFACE UNIFORMITY, INTERNAL DEFECTS OF PLASTIC AND ADHESIVE LAYER

塑膠表面平整度及內部接合黏膠的瑕疵檢測



Just call our specialist and we will be happy to work with you to solve your noncontact measurement or inspection issues.
請聯繫我們，我們樂意為您解決有關非接觸非破壞的材料量測及檢測問題。
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