

JASCO's Semiconductor/FPD Solutions

Layer Thickness Management for Manufacturing

UTS-2000 Film Thickness Measurement System

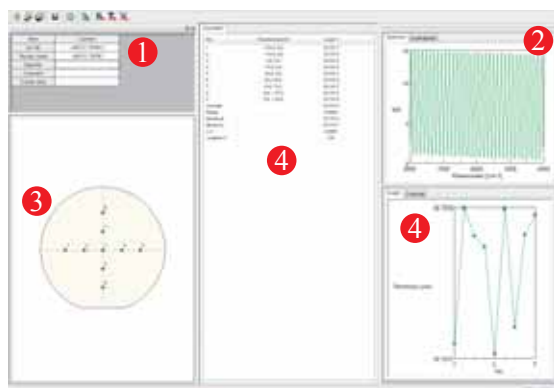


UTS-2000
with automatic cassette sampling system

The thickness of the epitaxial layer, substrate, etching (residual layer), liquid crystal cell gap and other semiconductor layers dramatically impacts semiconductor device performance. Management of layer thickness during the manufacturing process is extremely crucial for production of large yields of stable devices.

JASCO's film thickness measurement system is a non-destructive, non-contact analysis method using the latest interferometric technology to provide rapid film thickness measurements. Utilizing a proprietary frequency analysis method, the sample interference spectrum is converted to a spatialgram and the film thickness calculated with a high degree of accuracy. This integrated system offers the film thickness measurements required for the exacting standards of the semiconductor industry including high-speed sample mapping; a wide thickness measurement range; and a refined operating environment, supporting a wide range of analysis requirements from process use to R&D. JASCO offers near-infrared and mid-infrared models according to the thickness measurements desired.

Intuitive Software for Film Thickness Measurements



- ① Measurement Information
(Input information for an analysis)
- ② Fringe or Spatialgram Spectrum
- ③ Measurement Point Map
- ④ Film Thickness Distribution Graph

High Measurement Reproducibility

The following table shows consecutive measurement results for a silicon epitaxial layer. The error of 10 consecutive measurements is less than $\pm 0.001 \mu\text{m}$. These figures demonstrate the extremely reproducible film thickness measurement capability.

Reproducibility of consecutive measurements

Measurement No.	Measurement Value (μm)	Deviation (μm)
1	4.9001	-0.0013
2	4.9014	0.0000
3	4.9010	-0.0004
4	4.9109	0.0005
5	4.9015	0.0001
6	4.9018	0.0004
7	4.9011	-0.0003
8	4.9014	0.0000
9	4.9017	0.0003
10	4.9021	0.0007



Specifications

	UTS-2000
Measurement method	FT-IR interference method for film thickness measurements
Measurement configuration	Reflection, Transmission (option)
Objective	Near infrared: Lens objectives (4x) and Cassegrain objectives (15x, 30x) Mid-infrared: Cassegrain objectives (15x, 30x)
Focus mechanism	11 mm stroke
Sampling area	20 x 20 to 1200 x 1200 μm
Sampling positioning	Verification of measurement area using an integrated CCD camera
Measurement range/accuracy	
Film thickness	0.25 to 750 μm (for Si)
Reproducibility	$\pm 0.005 \mu\text{m}$ or less (for Si with identical measurements)
XY stage	
Stage movement	200 x 200 mm (other option available)
Minimum step size	2 μm
Data processing unit	
Operating system	Windows 7 Professional
System control	JASCO Spectra Manager software: Optics and X-Y stage control; Wafer cassette system control (option)
Table	
Type	Integrated vibration isolation table
Dimensions and Weight	
Dimension and weight	1095 (W) x 862 (D) x 1763 (H) mm, Approx. 300 kg (excluding protrusions or optional cassette loading system)
Power consumption	300 VA



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For more information, please contact :



Products described herein are
designed and manufactured by
ISO-certified JASCO Corporation.

MADE IN TOKYO, JAPAN