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NANOMETRICS INCORPORATED 310 DE GUIGNE DRIVE, SUNNYVALE, CALIFORNIA 94086-3906 TELEPHONE (408) 746-1600 FAX #408/720-0196

Model 2100 NanoSpec®/AFT

Film Thickness Measurement System

DESCRIPTION:

The Model 2100 is a small spot visible film thickness measurement system allowing manual handling of wafers.

Standard Film Types Measured	Typical * Range (Å)	Typical** Repeatability	Notes
1. Silicon dioxide on silicon	500-50,000Å	2Å	
2. Silicon nitride on silicon	500-40,000Å	2Å	
3. Negative resist on silicon	500-40,000Å	2Å	
4. Polysilicon on 200-10,000 SiO2	200-15,000Å	2Å	1, 2, 3
5. Negative resist on 200-10,000 SiO2	400-30,000Å	2Å	1, 2, 3
6. Silicon nitride on 200-10,000 SiO2	200-30,000Å	2Å	1, 3, 4
7. Thin oxide on silicon	250-500Å	2Å	
8. Thin nitride on silicon	200-500Å		
9. Polyimide on silicon	500-30,000Å	2Å	
10. Positive resist on silicon	500-40,000Å	2Å	
11. Positive resist on 200-10,000 SiO2	200-30,000Å	2Å	1, 3
12. Reflectance mode	400-800nm	.7%	1, 3
13. Thick films	4-20μm	1%	5
14. Red resist on silicon	4,000-30,000Å	2Å	6

Special Film Types Measured

Program

253 Double layer film measurement with user definable optical constants. This program for dual layer transparent films on silicon allows the following optical constants to be defined:

Top layer	- Cauchy Coefficients a & b; absorption coefficients k_a, k_b, k_c
Bottom layer	- Cauchy coefficients a & b

254 Single layer film measurement with user definable optical constants. This program for single layer transparent films on silicon allows the Cauchy coefficients a and b to be defined.

255 Special film program for substrates (5μm maximum thickness) other than silicon

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* Range will vary with objective lens.
** 1 Sigma based upon measurement of the same spot 15 times in succession.

Note 1 Oxide thickness must be entered with an accuracy of ±100Å. 2Å repeatability applies to top layer measurement.
Note 2 Assumes undoped Poly and minimal haze. Performance may vary under other conditions.
Note 3 For the 5X and 10X objectives, 1,000Å < total optical thickness of the stack < 40,000Å.
Note 4 Assumes Nitride with Nref = 2.00 ± 0.04. Performance may vary under other conditions.
Note 5 Specification is for Oxide only: however, this program has proven very useful for other films and substrates whose refractive index has low dispersion as a function of wavelength.
Note 6 Specification is for EPA914 Resist. Performance with other Resists may vary.

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MEASUREMENT SYSTEM 310 DE GUIGNE DRIVE, SUNNYVALE, CALIFORNIA 94086-3906 TELEPHONE (408) 746-1600 FAX #408/720-0196

Typical Measurement time: 5 seconds

Measurement spot sizes:

5X objective lens	50μm spot size
10X objective lens	25μm spot size
40X objective lens	6.5μm spot size

Wafer sizes: 100mm, 125mm, 150mm

INSTALLATION REQUIREMENTS:

Power requirements:	Primary power	117 volts + /-5%, 50/60Hz
	Power dissipation	250 watts
Dimensions (HxWxD):	Microscope & spectrophotometer	30-5/8" x 24-1/2" x 20"
	Computer	9-1/2" x 7-1/2" x 21-1/2"
	CRT terminal	14" x 13-1/2" x 13-1/2"
	CRT keyboard	2" x 18-1/2" x 8"
	Optional printer	3-1/8" x 7-3/8" x 6-1/2"
Weight:	Microscope & spectrophotometer	49 pounds
	Computer	17 pounds
	CRT terminal	20 pounds
	CRT keyboard	4 pounds
	Optional printer	4 pounds