

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** <u>Repeatability</u> | Notes |
|--|------------------------|-----------------------------------|---------|
| Silicon dioxide on silicon | 500-50,000Å | 2 Å | |
| 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 | |
| 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 Bottom layer - Cauchy Coefficients a & b; absorption coefficients k_a, k_b, k_c - 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 (5 µm maximum thickness) other than silicon

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.

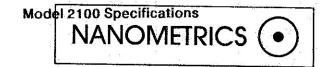
Note 2 Assumes undoped Poly and minimal haze. Performance may vary under other conditions.

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.



MEASUREMENTSYSTEM 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

 50μ m spot size 25μ m spot size

10X objective lens 40X objective lens

6.5 µm 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" 9-1/2" x 7-1/2" x 21-1/2" 14" x 13-1/2" x 13-1/2"

CRT terminal

Computer

2" x 18-1/2" x 8"

CRT keyboard Optional printer

3-1/8" x 7-3/8" x 6-1/2"

Weight:

Microscope & spectrophotometer

49 pounds

Computer CRT terminal CRT keyboard 17 pounds 20 pounds

CRT keyboard Optional printer 4 pounds 4 pounds