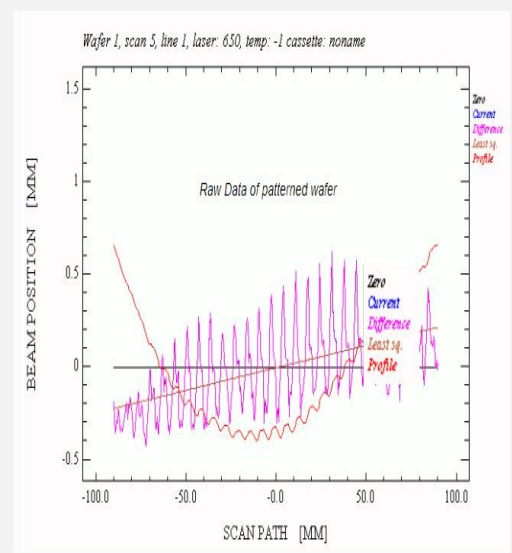
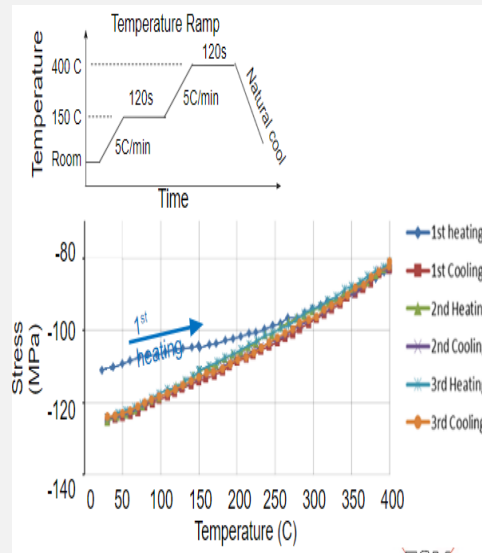


FSM 500TC High-Temperature Bow & Stress Measurement System

Characterizing Thermal Properties & Stability of Thin Film Materials



FSM500TC



The FSM 500TC system allows for multiple heat cycles to be superimposed, enabling detailed analysis of thermal stability over successive runs. Results, graphs, or maps—such as Stress vs. Temperature or Wafer Bow vs. Temperature—are conveniently exported to Excel™ or Word documents for seamless report generation and data sharing.



Frontier Semiconductor

165 Topaz St., Milpitas, CA 95035, USA.

Phone: 1-408-582-4997, E-mail: malam@frontiersemi.com

Website: www.frontiersemi.com

FSM 500TC High-Temperature Bow & Stress Measurement System

Introduction

The FSM 500TC High-Temperature Measurement System is designed for researchers and process engineers to evaluate the thermal properties and stability of thin films in semiconductor, III-V, optoelectronics, and MEMS materials subjected to thermal cycles. This critical tool aids in identifying issues such as film cracking, voiding, and hillock formation—common challenges that can lead to reliability concerns in manufacturing. By using FSM 500TC, you can assess the maturity of new processes and materials before production deployment. The FSM 500TC's intuitive user interface ensures ease of operation for both dedicated operators and occasional users, whether in R&D or production environments.

Key Features

- **Versatility**
Accommodates 50mm to 200mm/300mm wafers without changing sample holders or jigs. Performs stress and wafer bow measurements at both room and high temperatures.
- **Simple Sample Handling**
Convenient wafer placement on the heat chuck stage with location pins ensures consistent, reproducible operation.
- **Auto Switching Dual Laser**
Patented dual-laser technology automatically switches wavelengths (650nm and 780nm) based on sample reflectivity, enabling measurements on diverse films, including nitrides, polyimides, low-k, high-k materials, and metals.
- **Programmable Temperature Cycling**
Create recipes for single or multiple heat cycles with programmable ramp rates and annealing temperatures to evaluate thermal stability.
- **Data Management & Reporting**
Exportable graphs and results—such as Stress vs. Temperature, Stress vs. Time, or Wafer Bow vs. Temperature—facilitate report generation in Excel™ or Word. Standard features include Coefficient of Thermal Expansion calculations.

Specifications

- **Operating Temperature:** Ambient to 500°C
- **Heating Method:** Resistive heat chuck with air cooling
- **Measurement Technique:** Non-contact laser scanning
- **Wafer Size:** 50mm to 200mm/300mm (round or square)
- **Scanning Method:** High-precision single-line scan
- **Temperature Ramp Rate:** 1–20°C/min, programmable (ramp and hold cycles available)
- **Film Stress Range:** 1 MPa to 1.4 GPa for Si wafers with at least 1µm curvature or bow height change
- **Repeatability:** 1% (1 sigma) on a 20m curvature mirror (ambient)
- **Accuracy:** Better than 2.5% based on a 20m curvature mirror
- **Auto Laser Switching:** 650nm and 780nm
- **Laser Class:** Class 1
- **Data Export:** Compatible with Excel™ and JPEG formats
- **Purging Gas:** Nitrogen, Argon, or Forming Gas
- **Computer Requirements:** Pentium-based PC with SVGA monitor
- **Footprint & Weight:** Main Unit: 26" (H) X 36" (W) X 55" (D) (7" for rear exhaust fan is included)
Cart: 28" (H) X 22" (W) X 30" (D), 500 pounds
- **Power:** 208V, 20A

Facilities Requirements

- Source of purging gas: Nitrogen, Argon, or Forming Gas



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