

## Rapid Thermal Annealing

The RTP-600S, manufactured by Modular Process Technology Corp, is a rapid thermal processing system which uses high-intensity visible radiation to heat a single wafer for a short time at precisely controlled temperatures. Those capabilities, combined with the heating chamber's cold-wall design and superior heating uniformity, provide significant advantages over conventional furnace processing. The integrated process control system features real-time graphics, recipe management, data acquisition and display and has a comprehensive diagnostic function.

The RTP-600S System features a closed loop temperature control algorithm with a temperature control stability of from  $\pm 2^{\circ}\text{C}$  from set point. This feature greatly simplifies programming complex multi-step cycles. The Lamp Calibration feature allows user-optimization of heating uniformity. Software diagnostics are provided to monitor each lamp and compensate for lamp aging effects.

The temperature measurement techniques available for the RTP-600S system are thermocouple and pyrometer. The type K thermocouple is useful for low-temperature processing and calibrating the pyrometer. The Extended Range Pyrometer Plus (ERP+) pyrometer can be used to measure wafer temperatures in the range of 350-1250 $^{\circ}\text{C}$ .

### System specifications:

- Stead-State Temperature Stability:  $\pm 2^{\circ}\text{C}$
- Heating Rate: 0~200 $^{\circ}\text{C}$  per second, user-controllable

- Cooling Rate: Temperature dependent, max. 150°C per second
- Maximum Non-Uniformity:  
Radiant Flux:  $\pm 0.25\%$   
Sheet Resistivity: Uniformity  $\leq 2\%$   
Implant: As,  $10^{16}$ , 50KeV, with implant uniformity  $\leq 0.3\%$
- Steady State Time: 1-9999 sec. (1-600 sec recommended)
- Wafer Sizes for the RTP-600S: 2", 3", 4", 5", 6" and smaller pieces

