TECHNICAL *Specifications*

Film thickness†

(wafers 3" to 200mm)	Typical	Guaranteed
	± 1.0%	± 3.0%
1-1,000 micron		

Resistivity†

(wafers 3" to 200mm)	Typical	Guaranteed
0.1-1.0 ohm-cm	± 2.0%	± 3.0%
1.0-3.0 ohm-cm	± 3.0%	± 4.0%
3.0-6.0 ohm-cm	± 3.0%	± 5.0%
10.0-50.0 ohm-cm	± 6.0%	± 8.0%

†Within wafer, wafer to wafer, and run to run uniformities are identical.

1. Certain combinations of source gas, substrate, dopant, and concentration will be subject to RED approval.
2. Measurement locations to SEMI standards (6mm from edge, except for Hg probe 0-V, which requires 12mm from edge).
3. Guaranteed values are those uniformities that include at least 90% of all data points from 4 consecutive runs (2 runs per reactor station) and that are corrected for measurement error.

Film Type
Epitaxial silicon

Guaranteed surface qualities
Film thickness (1-15) microns
Spikes ≤ 0.05cm^2***
Microscopic defects: ≤ 01cm^2***
Slip and surface quality: per SEMI spec**
*SEMI Standards measurement techniques
**1991 International standard by illumination with edge exclusion
***Certain combinations of source gas, deposit temperature, and substrate are subject to RED approval.

Source gasses
Silane, dichlorosilane, trichlorosilane, silicon tetrachloride

Operating temperature
Touch screen, mouse or keyboard

Capacity
300-mm wafers - 4; 200-mm wafers - 8; 150-mm wafers - 18

Guaranteed intrinsic resistivity
Silane and dichlorosilane; 100 ohm-cm; silicon tetrachloride and trichlorosilane: 200 ohm-cm

Conditions for guaranteed uniformities

Source gas	Deposition pressure	Deposition rate(µm/min)	Deposition Temp.(°C)
SiH_4	atm	0.05-0.25	970-1080
SiH_2Cl_2	atm to 80 torr	0.1-1.5	970-1070
$SiHCl_3$	atm	0.5-1.5*	1060-1120
	200 to 80 torr		1060-1100
$SiCl_4$	atm	0.5-1.0	1100-1150
	200 to 80 torr		1100

*Growth rates to 3.0 micron/minute available by special request.

Carrier Gas: Hydrogen at 150-250 SLM, typical. Consult RED factory for maximum flows required when specifying hydrogen purifier.
Dopant: arsine, phosphine or diborane HCl: 0.05-0.4 micron-per-minute wafer etch.

Silicon substrates
Orientation: (111) off 3° ± 0.5° toward the nearest (110), (100) ± 0.5°
Diameter: 3 inch; 100, 125, or 150 mm (SEMI standard)
Resistivity measurement:
N/P:P -(B), 10-20 ohm-cm, 4-point probe
P/N:N+(Sb),>0.008 ohm-cm, 4-point probe
P/P+,N/N+: capacitance-voltage or SRP per SEMI standards
Thickness measurement: N+ (Antimony) 0.005-0.020 ohm-cm
(Automated IR fourier transform per SEMI standards)

REXON®8 SERIES Control System

System components:
- System Control
  Industrial PC
  Pentium processor
  Window NT 4.0
  20-in. SVGA with touch screen
  Microsoft Network
- Reactor Control
  Modicon PLC
- Reactor Backup Control
  Modicon PLC
- Power Loss Protection
  TOPAZ UPS

Operational Features:
- Graphics oriented screens by WonderWare InTouch provide extensive system control capabilities and ease of use.
- Multiple levels of password protection to insure critical process parameters remain intact
- The "Recipe Control System" is Microsoft FoxPro based and provides for creation, maintenance and execution of process Recipes. ThosRecipes are created and maintained on an "attached to the network" computer and downloaded to the Reactors computer as required. The operator may make time and value adjustments to the Recipe locally.
- The "Real Time Trending and Historical Logging System", under operator control, selectively collects process data on each run. That data is then passed down the network for report generation.
- Remote inspection or actual operation (password protected) of the Reactor's computer may be performed. The remote PC must be properly configured and attached to the local network or via modem to a PC on the local network.

System UPS Protection
- Facility power failure:

System console computer, system PLC, COMB, system electronics and pneumatics remain online for 20 minutes.

If reactor is in "RF" mode, H2 post purge begins and continues for 6 minutes. Upon completion, N2 purge begins and continues for 4 minutes. At end of N2 purge a complete system shutdown occurs. The system must be manually restarted after power restores.

If reactor is not in "RF" mode, N2 purge begins and continues for 4 minutes at the end of this 4 minutes, a complete system shutdown occurs.

- Facility power restored during shutdown purge:

Cooling and laminar flow blowers come back on line. Rotation and lift controls remain inhibited. Purge mode presently in progress continues, complete system shutdown does not occur. Operator may depress "Control On" to begin new process.

Compliance
All REXON® systems comply with SEMI S2-93 and C-E seal requirements

Specifications subject to change without notice.
Consult factory for latest data.

DIXON

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