AG Associates Rapid Thermal Anneal

Written on 01/31/2005 by Dechao Guo

RTA Automatic Operating Instructions (up to 900^{o}C)

Starting:

1. Sign in the logbook. Be sure to fill in all the pertinent information
2. Turn on the Chassis power at the left bottom of the chassis front panel.
3. Turn on the N_2 in the service chase if it is not already on.

Load wafers:

1. Unscrew the bolts on the chamber door and pull it outward to slide out the sample tray. Be careful not to break the quartz tray.
2. Place the samples on the large silicon wafer.
3. Close the door and screw the fastening bolts tight.
4. Purge with N_2 for 1 minute by opening the valve on the chassis one full turn. **NEVER INCREASE THE GAS PRESSURE ABOVE 6 PSIG.**
5. If gas other than N_2 will be used in the annealing process, switch from N_2 to the needed gas and purge for at least another minute.

Set Parameters:

1. If the Main Menu (M, A, S, L, T, C, D,..) is not shown, hit any key until the main menu appears.
2. Enter the anneal time :
    a. Hit "S" for set; hit "A" for time;
    b. Enter the annealing time in seconds;(use the delete key to correct mistakes)
    c. Hit Return to enter;
3. Enter the anneal temperature:
    a. Hit "S" for set; hit "T" for temperature (lower than 900^{o}C).
    b. Enter the temperature in degree C; (use the delete key to correct mistakes)
    c. Hit Return to enter;

Anneal:

1. Hit "A" for automatic, and the annealing cycle will begin. The RTA will ramp up to the set temperature and will hold for the set time. You will need to allow the gas to continue to flow during the anneal time, including the cooling down.
2. If you want to abort the cycle, hit any key.

Cooling:

Wait until the temperature drops down to below 200^{o}C, with gas purging.

Remove Samples:

1. If N_2 is the environment gas in the process, reduce the flow rate to 1 PSIG. If gas other than N_2 is the environment gas in the process, turn off the environment gas and change to N_2 with a flow rate of 1PSIG.

2. Unscrew the bolts on the chamber door; carefully slide out the quartz tray, and unload wafers.
3. Turn the Chassis Main Power off. Do not turn off the controller power.
4. Write a checkmark in the "Free?" column on the logbook, so later users can continue to use the RTA.

Main Menu Command Reference

M	Manual Mode	Manually alter intensity. Do not use it unless you know what to do
A	Automatic	Anneals with previously set time and temperature
S	Set	Set time (A) or temperature (T); Do NOT use the M switch toggles between temperature and intensity control mode.
T	Title	Enter or changes a one line comment (60 characters at most)
C	Comment	Enter 3 comment lines (60 characters at most)

Potential Hazardous Issue to Users

1. High Current
2. High temperature
3. Water Leak

Requirements before RTA Qualification

1. At least 5 times usage of the RTA, under supervision of general users.
2. Familiar with operating procedure and Hazardous issue to pay attention to.