

RAPID THERMAL ANNEAL (RTA) SOP

Revised May 2020

RTA Startup

1. Log into the tool in your FOM account.
2. In the chase near the RTA turn **ON** the following services.
3. RTA electrical disconnect panel
4. Compressed air
5. Nitrogen
6. Two (2) RTA water lines.
7. On the front of the RTA turn **ON** the power.
8. Press in briefly the plastic tube on the left side of the RTA to reset the overheat flashing LED.
9. Turn **ON** the computer by pressing the button with a star drawn on it.
10. At the prompt:
 - a. press any key to continue
 - b. Q
 - c. type: **pcat1106**
 - d. **<enter>**
 - e. **<enter>**

SELECTING & MODIFYING RECIPES

1. Click on **R** to select a recipe.
2. Use the up and down arrows to select a recipe of interest and **<enter>**.
3. Click on **C** to edit the selected recipe.
4. Specify the type of step in the recipe. **DLY** will enter a waiting period, delay or pause, **RAMP** will ramp up or down to a specified temperature and **SS** will hold at a specified temperature or steady state for a period of time.
5. The next 3 columns of the recipe specify the time in seconds, ramp rate (°C/sec) and if nitrogen is turned on or off. The system is plumbed for nitrogen only at this time.
6. After modifying the recipe press **<F10>** and **S** to save the recipe. Press **Y** to overwrite the existing file.

RUNNING A RECIPE

1. Lift the process tray handle upwards and gently pull open the tray to reveal the quartz chamber.

2. Place your sample onto the quartz pins.
3. Gently push the sample tray back into the RTA and push down on the handle to lock the door.
4. From the main menu press **E** and **<F1>** to run the recipe.
5. While running a recipe the display on the front of the RTA will have a decimal point showing the temperature. Disregard the decimal point to read the actual temperature.
6. When finished press **<F10>** to return to the main menu.
7. Lift the lock handle and gently pull open the sample tray to retrieve your sample. Return the quartz tray back to the chamber and push down the lock handle.

OVERSHOOT AND UNDERSHOOT

If your recipe is undergoing undershoot or overshoot conditions, then go to the main menu **<F10>** and click on **C** to edit the selected recipe. Use the right arrow **→** to move to the screen to the right and modify the following parameters one step at a time. Test the recipe before changing the next parameter.

Overshoot

- i. Increase **T-switch**
- ii. Make the **Gain** less negative
- iii. Make the **DGain** less negative
- iv. Decrease **I-cold** if it is the first wafer to be processed or as a last resort.

Undershoot

- i. Decrease **T-switch**
- ii. Make the **Gain** more negative.
- iii. If the temperature oscillates during steady state make the **DGain** more negative.
- iv. Increase **I-cold** if it is the first wafer to be processed or as a last resort.

After modifying the parameters press **<F10>** and **S** to save the recipe. Press **Y** to replace the file.

Shutdown process to turn off the RTA:

1. Press **<F10>** to go to the main menu.
2. Scroll to **Q** to quit the software.
3. At the C:\ prompt turn **OFF** the computer by pressing the button with a star drawn on it.
4. Turn **OFF** the power on the front of RTA.
5. In the chase near the RTA turn **OFF** the following services.
 - a. RTA electrical disconnect panel
 - b. Compressed air
 - c. Nitrogen
 - d. Two (2) RTA water lines.
6. Log out of the tool in your FOM account.