Rapid Thermal Process

ALLLWIN21 CORP.

AccuThermo AW 826

Introduction

The AccuThermo AW826 is production-proven stand alone atmospheric RTP (Rapid Thermal Processing) system, which uses high intensity visible radiation to heat single wafer for short process periods of time at precisely controlled temperatures. The process periods are typically 1-900 seconds in duration, although periods of up to 9999 seconds can be selected. These capabilities, combined with the heating chamber's cold-wall design and superior heating uniformity, provide significant advantages over conventional furnace processing.

AccuThermo AW 826 Key Features

- Long steady time capability RTP/RTA/RTO/RTN system with big stand alone frame and fans in the frame.
- 35 years' production-proven Real RTP/RTA/RTO/RTN system
- Scattered IR light by special gold plated Al chamber surface.
- Allwin21 advanced Software package with real time control technologies and many useful functions.
- Consistent wafer-to-wafer process cycle repeatability.
- Top and bottom High-intensity visible radiation Tungsten halogen lamp heating for fast heating rates with good repeatability performance and long lamp lifetime.
- Cooling N2 (Or CDA) flows around the lamps and quartz isolation tube for fast cooling rates
- Elimination of external contamination by Isolated Quartz Tube
- Up to five gas lines with MFCs and shut-off valves
- Energy efficient.
- Made in U.S.A.
- Small footprint
  38(D) X 39(W) X 70(H)

Typical Application Areas:

- Chip manufacture
- Compound industry: GaAs,GaN,GaP,GaINP,InP,SiC, III-V,II-VI
- Optronics, Planar optical waveguides, Lasers
- Nanotechnology
- Biomedical
- Battery
- MEMS
- Solar
- LED

Typical Applications (But not limited to)

- Silicon-dielectric growth
- Implant annealing
- Glass reflow
- Silicides formation and annealing
- Contact alloying
- Nitridation of metals
- Oxygen-donor annihilation
- Other heat treatment process

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AccuThermo AW 826 Software Key Features

- Integrated process control system
- Real time graphics display
- Real time process data acquisition, display, and analysis
- Programmed comprehensive calibration and diagnostic functions
- Closed-loop temperature control with temperature sensing.
- Precise time-temperature profiles tailored to suit specific process requirements.
- Faster, easier Programmable comprehensive calibration of all subsystems, leading to enhanced process results.
- A recipe editor to create and edit recipes to fully automate the processing of wafers inside the AccuThermo RTP
- Validation of the recipe so improper control sequences will be revealed.
- Storage of multiple recipes, process data and calibration files so that process and calibration results can be maintained and compared over time.
- Passwords provide security for the system, recipe editing, diagnostics, calibration and setup functions.
- Simple and easy to use menu screen which allow a process cycle to be easily defined and executed.
- Troubleshooting feature which allows engineers and service personnel to activate individual subassemblies and functions. More I/O, AD/DA "expose".
- Use PowerSum technology to detect the process and increase Yield.
- Watchdog function: If this board looses communication with the control software, it will shut down all processes and halt the system until communication is restored.
- GEM/SECS II function (Optional).

AccuThermo AW 826 Specifications

- Wafer sizes: Small pieces, 2", 3", 4", 5", 6" , 8" wafer capability
- Recommended ramp up rate: Programmable, 10°C to 120°C per second. Maximum Rate: 200°C (NOT RECOMMENDED)
- Recommended steady state duration: 0-600 seconds per step.
- Ramp down rate: Non-programmable, 10°C to 200°C per second.
- Recommended steady state temperature range: 150°C - 1150°C. Maximum 1250°C, 1500ºC is optional.
- ERP Pyrometer 450-1250°C with ±1°C accuracy when calibrated against an instrumented thermocouple wafer. 1500ºC is optional.
- Thermocouple 100-800°C with ±0.5°C accuracy & rapid response.
- Temperature repeatability: ±0.5°C or better at 1150°C wafer-to-wafer. (Repetition specifications are based on a 100-wafer set.)
- Temperature uniformity: ±8°C across an 8" (200 mm) wafer at 1150°C. (This is a one sigma deviation 100 angstrom oxide.) For a titanium silicide process, no more than 6% increase in non-uniformity during the first anneal at 650°C to 700°C.
- Process/Purge gas inputs: Any inert and/or non-toxic gas regulated to 30 PSIG and pre-filtered to 1 micron. Typically, N2, O2), Ar, He, forming gas, NH3, N2O2 are used.

AccuThermo AW 826 Configuration

- AccuThermo AW 820 Main Frame with wires.
- Power Type: Three Phase, worldwide power (50/60 Hz).
- CE Mark if Necessary.
- Pentium® class computer with a 15-inch touch screen monitor and Allwin21 Corp proprietary software package.
- Mouse and standard keyboard.
- Aluminum oven chamber with water cooling passages and gold plating plates.
- Door plate with one TC connection port.
- Isolated Quartz Tube W/O Pyrometer window or with Pyrometer Window.
- Oven control board and one main control board.
- Bottom and top heating with 27 (1.2KW ea) Radiation heating lamp module with 4 bank zones (Top Front&Rear, Bottom Front&Rear).
- Quartz Tray for 5 to 8 inch round wafer or customized.
- Gas line with one Gas MFC with shut-off valve.
- T-Shape Quartz with qualified K-Type TC and one set holder for 100-800°C temperature measurement.
- Package of 5 pieces of thermocouple wires as spare TC.
- USB with original Software backup.

Options:

- Multiple Process Gases (Up to 6) and MFCs with Gas Control Board if necessary.
- Carrier or Susceptor for small sample, transparent substrate and substrate with metal thin film on top.
- Patented ERP Pyrometer (400-1250°C) as non-contact high temperature sensor.1500ºC is optional.
- Integrated Solid robotic wafer transfer
- 2-inch, 4-inch, 6-inch, 8-inch Not recommended) TC Wafer, Single Point for Pyrometer calibration
- Omega Meter for Pyrometer and Thermocouple calibration
- Shutt-off valve for Quartz Tube&Lamps cooling control
- Chiller for Pyrometer

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