How to Choose the Right Rapid Thermal Processing Equipment

Manufacturer, Model, Configuration, and Price

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Semiconductor Rapid Thermal Processor Technical Exchange

2025.04.09

Disclaimer

This material is compiled by Allwin21 based on over 40 years of experience in the field of Rapid Thermal Annealing (RTP) furnaces and is intended solely for technical exchange and industry reference. The views and information presented are based on the company's professional judgment and fundamental understanding and are not aimed at any specific company or product. Please do not take them personally. We have made every effort to ensure the accuracy and reasonableness of the content; however, due to limitations in understanding and expression, there may still be inaccuracies or errors. Any consequences arising from the use of this material (including but not limited to business decisions, technical choices, procurement actions, etc.) are at the user's own risk and responsibility. Allwin21 assumes no direct or indirect liability.

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How to Choose the Right Rapid Thermal Processor - 5 Focused Information -

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1 of 5 : Clarify Your Application Requirements

1. **What is the wafer size?** (e.g., 2-inch, 4-inch, 6-inch, 8-inch, is it for single-wafer or batch processing?)
2. **What material will you be processing?** (e.g., silicon, silicon carbide, gallium arsenide, gallium nitride, indium phosphide, indium gallium phosphide, glass, etc.)
3. **What is the intended purpose?** (e.g., ion implantation annealing, titanium annealing, oxidation, silicide, contact activation, etc.)
4. **What is the required temperature range?** (e.g., 150°C–750°C, 400°C–1100°C)
5. **What purge, cooling, and process gases are required?**

2 of 5 : Key Parameters to Consider

1. **Process Repeatability:** What physical parameters are measured after the process, and what are the reasonable standard ranges?
2. **Process Uniformity:** What physical parameters are measured after the process, and what are the reasonable standard ranges?
3. **Process Flexibility:** Does it support multi-stage program settings, multiple gas inputs, and other functions?
4. **Safety:** Are there control parameters for abnormal equipment conditions (such as issues with lamps, chambers, power, wafer input, the equipment itself, etc.)?
5. **Traceability:** Does it record the parameters for each process, and does it have equipment logs and alarm records?
6. **Network Functions:** Does it support GEM/SECSII EAP functionality?

3 of 5 : Choose the Right Equipment Type

1. **Infrared Lamp Atmosphere RTP System:** A mainstream system widely recognized by the industry for many years, with excellent heating and cooling rates, high and low temperature process consistency, uniformity, and equipment stability.
2. **Tube-type RTP System:** Slower heating and cooling. Issues such as defects in the furnace tube make it not a true RTP system.
3. **Laser RTP System:** Complex technology not adopted by the industry, not recommended for general use.
4. **Vacuum RTP System:** Suitable for small labs with low budgets and non-critical process requirements. Not suitable for fabs or well-known labs.

4 of 5 : Manufacturer's Technical Support Capability

1. **Technology:** The manufacturer possesses industry-certified multi-generation products and core technologies (such as temperature control algorithms, process control technologies, advanced radiation heating systems, non-contact temperature measurement devices, reliable wafer transfer mechanisms, etc.).
2. **Customers:** The manufacturer has extensive experience with a wide range of customers over many years.
3. **Localization:** The manufacturer provides professional support and technical services based on years of local experience.



5 of 5 : Budget and Return on Investment

1. Laboratory-grade RTP systems are priced around $55K to $120K.
2. Mass production systems can cost over $500K.
3. It is important to consider the overall ownership risks and total costs, including equipment price, power costs, maintenance, consumables, energy consumption, and more.
4. RTP priced below $50K have very low cost-effectiveness and should not be purchased, as they lack process capability. It's better to buy an Oven or Furnace instead.

Why You Should Not Buy Conceptual Rapid Thermal Annealing Furnaces

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Why You Should Not Buy Conceptual Rapid Thermal Annealing Furnaces

In the field of Rapid Thermal Processors (RTP), despite the large number of equipment suppliers in the market, very few are widely adopted by mainstream semiconductor manufacturers. This highly concentrated market structure is due to multiple factors such as high technical barriers, strict certification processes, and strong customer loyalty.

From a technical perspective, the principle of a rapid thermal annealing furnace appears relatively simple on the surface, encompassing functions such as chamber heating, temperature measurement and control, gas flow control, and overall system coordination. Therefore, many manufacturers can produce "conceptual RTP" systems that "look alike," but to truly meet the high demands of semiconductor production in terms of process repeatability, uniformity, and equipment stability is no easy task. Only suppliers with deep collaboration with wafer fabs and industry-recognized core technologies (such as high-precision rapid temperature control algorithms, advanced process control systems, advanced radiation heating technologies, non-contact temperature measurement devices, and highly reliable wafer transfer mechanisms) can offer "mature" equipment that truly meets the needs.

Why You Should Not Buy Conceptual Rapid Thermal Annealing Furnaces

As a critical piece of semiconductor process equipment, an RTP system must undergo strict daily verification from semiconductor manufacturers after installation to ensure that it does not negatively impact yield or production efficiency. This means that equipment suppliers without extensive customer verification experience or multiple generations of product iteration often struggle to pass the stringent certification of mature wafer fabs.

Additionally, the high investment cost of RTP equipment results in a strong locking effect once it is put into use. To reduce risk, mature wafer fabs are more inclined to choose well-known brands that are widely recognized in the industry and have been verified by the market over time, rather than easily assisting "conceptual RTP" suppliers with product validation.

As a result, many so-called "conceptual RTP" products on the market are often humorously referred to as "Rapid Trash Processors - RTP" in the industry. These devices are typically only suitable for small laboratories with limited budgets and no strict process requirements. Some may even make it into wafer fabs through special channels, but after prolonged, inefficient debugging, they are returned, ultimately causing harm to both the supplier and the user.

Why You Should Not Buy Vacuum Rapid Thermal Annealing Furnaces

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Why You Should Not Buy Vacuum Rapid Thermal Annealing Furnaces

In the semiconductor industry, equipment selection always follows the basic principle of "process first, cost controllable." Although vacuum rapid thermal processors (Vacuum RTP) are used in certain scenarios, due to their lack of process repeatability, high complexity, and poor economics, they are currently difficult to become a mainstream choice and are classified as "conceptual RTP."

Unless the process explicitly requires annealing in a vacuum environment (such demands are extremely rare and almost nonexistent and need to be confirmed multiple times with a clear understanding), the technical disadvantages and high cost of vacuum RTP often outweigh their potential benefits. In fact, for such requirements, traditional vacuum furnaces (non-rapid type) are sufficient, and there is no need to invest in expensive hybrid vacuum rapid thermal annealing equipment.

In contrast, well-known brand atmosphere RTP systems are the most mainstream and mature equipment in the market. These systems use multi-zone halogen lamp arrays, which enable precise process control and distribution optimization. They effectively avoid technical defects like uneven radiation in a vacuum environment, meeting over 99% of semiconductor thermal processing requirements while balancing efficiency and cost.

Why You Should Not Buy Vacuum Rapid Thermal Annealing Furnaces

The main technical disadvantages of vacuum rapid thermal processors include:

- **Large chamber volume and complex structure:** The vacuum system design results in a chamber volume much larger than that of atmosphere systems, making it difficult to achieve precise control, **process consistency, uniformity, and stability**.
- **Limited heating method:** Most vacuum RTP systems only use single-side top lamps for heating, which cannot meet the strict requirements for process uniformity and repeatability that are achieved with top-and-bottom dual-side heating.
- **High risk of material volatilization:** The vacuum environment may cause metal materials (such as copper or aluminum) to volatilize or sublimate at high temperatures, contaminating the chamber and affecting product reliability.
- **Difficult chamber cleaning:** Vacuum RTP systems use metal chambers, which are difficult to clean after contamination. In contrast, atmosphere RTP systems use quartz chambers that can be efficiently cleaned using wafer fab's standard quartz cleaning processes.
- **Low heat transfer efficiency:** In a vacuum, heat transfer is only possible via radiation, which is less efficient and can lead to significant temperature gradients. Especially in high-temperature processes, the temperature difference between the wafer center and edges is noticeable, which not only affects process uniformity but also requires higher heating power, increasing energy consumption and costs.
- **High system cost and maintenance burden:** Vacuum systems require components like vacuum pumps, sealed chambers, and leak detection devices, significantly increasing equipment costs (by 30%–50%). Additionally, they require regular replacement of seals and pump oils, leading to increased downtime and affecting fab capacity and equipment availability.

Most vacuum RTP suppliers lack verification experience with mainstream semiconductor fabs and multi-generation product iterations. They also lack core technologies (such as high-precision rapid temperature control algorithms, advanced process control systems, radiation heating technologies, non-contact temperature measurement devices, and highly reliable wafer transfer mechanisms).

Why You Should Not Buy Used Rapid Thermal Annealing Furnaces

Why You Should Not Buy Used Rapid Thermal Annealing Furnaces

In the equipment selection process, "saving costs" often tempts people to consider second-hand equipment. However, for Rapid Thermal Processors (RTP), purchasing used equipment is often "seemingly cost-saving, but in reality, a risk." Old RTP equipment typically suffers from issues such as process inconsistency, hardware aging, outdated control systems, and a lack of professional supplier support. It is difficult to meet the strict requirements of modern semiconductor processes for consistency, uniformity, stability, controllability, and automation integration.

In the pursuit of high yield, high stability, and integration with smart manufacturing, old RTP equipment is no longer up to the task. Only by selecting a new RTP supplier with core technologies verified by mainstream semiconductor manufacturers, multiple product iterations, and long-term support capabilities can the process be truly controllable, operations sustainable, and investment returns maximized.

Six core risks cannot be ignored:

1.The original manufacturer no longer exists or provides support: Most old RTP equipment models have been discontinued by their original manufacturers, leaving spare parts supply and technical support unavailable.

2.Hardware aging, performance degradation: Problems such as chamber corrosion and component fatigue are common, making it difficult for the equipment to meet the original manufacturer's specifications.

3.Outdated control systems, inadequate accuracy and stability: Old control systems not only have bugs but also struggle to meet the precision requirements for temperature control and process management in current semiconductor processes. Many second-hand RTP equipment suppliers cannot upgrade outdated control systems.

4.Unable to integrate with modern processes and automation: Old equipment often cannot support new materials (such as compounds) or new processes, nor can it optimize equipment capacity. It cannot meet the integration requirements of mainstream fabs' GEM SEC II/MES/EAP systems and automation networks, severely restricting production line flexibility.

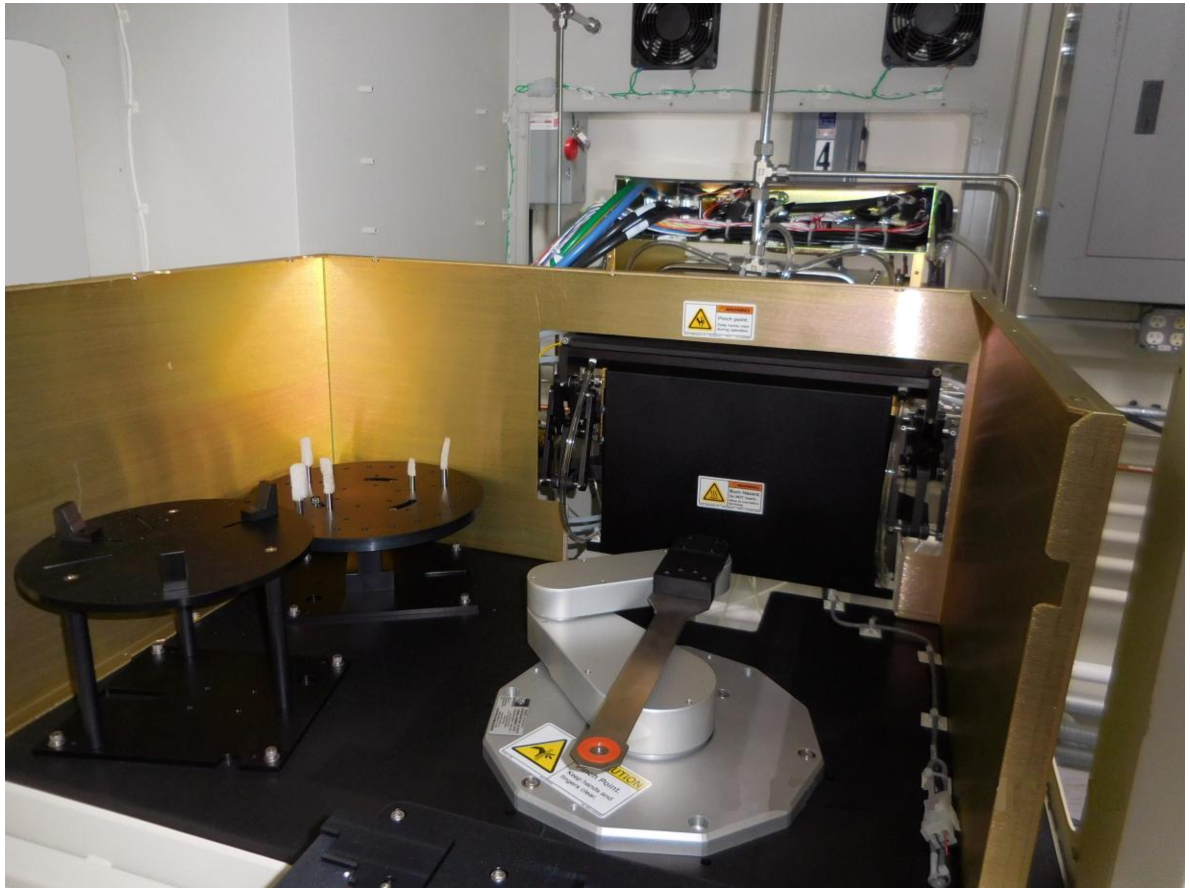
5.Core components discontinued, substitutes reduce performance: Non-original (self-made or third-party) or recycled components not only have poor compatibility but also raise maintenance costs and increase failure rates.

6.Non-professional suppliers, lack of continuous service capabilities: Most second-hand equipment suppliers are merely intermediaries and lack the professional RTP technical knowledge and process support capabilities. Many rely on third-party providers for technical support, making after-sales service unreliable, leading to unbearable difficulties for fabs.

Why You Should Not Buy Rapid Thermal Annealing Furnaces Priced Over One Million Dollars

In today's semiconductor industry, where the trend is to balance "performance + cost + flexibility," investing over a million dollars in Rapid Thermal Processing (RTP) equipment often leads to over-specification, low cost-effectiveness, and a high operational burden. "Not every process needs a million-dollar machine."

In modern semiconductor processing, choosing the right-fit RTP solution is more important than blindly pursuing the most expensive system. Rational investment, focus on process requirements, and selection of high-value professional solutions are the wise choices of a mature fab.



Five reasons why "expensive ≠ practical": Over-investment becomes a burden!

1. Core value ≠ Price tag: The true value of an RTP system lies in its process repeatability, uniformity, system stability, and yield performance — not in brand premiums or redundant, stacked features. Many million-dollar RTP systems are packed with "high-end looking but practically unnecessary" configurations that don't match the actual process needs of most users.
2. High investment brings high maintenance and operating costs: Expensive systems often come with proprietary consumables, exclusive maintenance tools, and costly annual service contracts. These systems tend to be complex to operate and highly automated, increasing the need for training and technical upkeep, ultimately reducing overall equipment availability.
3. No guarantee of better process yields: There are mature RTP solutions on the market that cost significantly less than a million dollars and still meet the demanding requirements of semiconductor manufacturing in terms of repeatability, uniformity, and system stability. High price doesn't always equate to better performance.
4. Rapid tech iteration, faster depreciation: With semiconductor equipment technology evolving every 3–5 years, million-dollar RTP systems depreciate rapidly and are difficult to resell. This leads to long ROI cycles and increased investment risk.
5. More cost-effective alternatives are already mature: The market already offers reputable brands and professional teams that provide RTP systems with strong process performance, greater flexibility, and better cost control — all at a fraction of the million-dollar price. Solutions featuring modular design, upgradeable architecture, and standardized parts offer significant long-term TCO (Total Cost of Ownership) advantages.

Temperature Measurement and Uniformity of Rapid Thermal Annealing Furnaces

Why RTP users can never accurately know the actual wafer temperature or its uniformity?

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Since the 1980s, temperature measurement and uniformity in Rapid Thermal Processing (RTP) systems have remained a focal point of interest in the semiconductor industry. An engineer from a well-known manufacturer once spent a significant amount of time and thousands of dollars optimizing the temperature uniformity of the RTP system in their FAB. After using a multi-point TC wafer to measure poor temperature uniformity at high temperatures, he made adjustments to improve it. However, during actual processing, the results worsened (as indicated by deteriorated sheet resistance, Rs). Surprisingly, the original, unoptimized setup yielded better process results, leaving him perplexed.

To address this complex phenomenon, we offer the following suggestions and insights to help the industry better understand and respond:

1. RTP process temperatures are in a dynamically unbalanced state: During RTP, sample temperatures exist in a constant "wave-like" dynamic condition, forming a non-equilibrium system. Therefore, the measurements inherently contain uncertainties.

2. Different measurement methods and conditions introduce significant errors: Based on our 40 years of experience in RTP temperature measurement: (1) At lower temperatures (around or below 500°C), errors are relatively minor. (2) At higher temperatures (above 500°C), measurement errors become significant, and the higher the temperature, the greater the error — sometimes exceeding 20°C. Thus, we recommend: (1) For **low temperatures**, multi-point TC wafers (e.g., 5-point) can be used to test temperature uniformity. (2) For **high temperatures**, multi-point TC wafer testing is **not recommended** as it is time-consuming, labor-intensive, and unlikely to yield accurate or useful results.

3. Physical differences between customer samples and measurement carriers make temperature uniformity measurements unreliable: Different materials (e.g., TC wafers versus actual product wafers) exhibit different thermal conduction behaviors under the same process menu, RTP furnace, and power conditions. As a result, even if temperature distribution appears uniform on a TC wafer, it doesn't necessarily reflect the true temperature behavior of the actual product wafer, and vice versa.

4. RTP process consistency relies on system design and control—not manual field tuning: RTP process uniformity and repeatability are determined by: (1) Chamber structure design; (2) Precision of heating/cooling systems; (3) Advanced temperature sensing technology; (3) Intelligent control systems. They are **not** achieved through manual multi-point measurement and adjustment on-site.

5. True wafer temperature and uniformity at high temperatures cannot be precisely known: Especially above 500°C, users can never accurately know the actual wafer temperature or its uniformity.

6. Importance of choosing a reputable RTP system brand: RTP equipment from well-established, market-proven brands with strong reputations is capable of delivering uniform photothermal energy to each wafer through high-speed temperature feedback and control systems, thereby ensuring consistent processing. We recommend customers prioritize mature brand equipment over experimental "concept RTP" systems that have not been thoroughly validated.

Process Optimization and Uniformity Measurement and Control of Rapid Thermal Annealing Furnaces

To achieve optimal results in Rapid Thermal Processing (RTP), customers can follow the process below to ensure process stability, consistency, and mass production feasibility:

1. Define Process Objectives and Measurement Metrics

Customers should define the key physical parameters that need to be measured and controlled after RTP treatment, based on their product's technical requirements. Examples include:

•**Sheet Resistance (Rs):** Commonly used to evaluate conductivity after semiconductor metallization or annealing.

•**Power Output (mW) or Voltage Response (mV):** Applicable for optoelectronic and sensor devices.

•**Visual Characteristics:** Such as wafer surface uniformity, color changes, oxide layer thickness, etc.

•**Other Specific Metrics:** Such as carrier mobility, contact resistance, film stress, etc.

2. Establish Parameter Ranges

For each selected physical parameter, customers should define a reasonable target range.

This range can be determined based on past process experience, product yield analysis, simulation results, or technical specifications.

The defined range will serve as the **evaluation criteria** during process development to assess the effectiveness of different RTP process menus.

3. Develop and Optimize Process Recipes Using the "U-Shaped Method"

The "U-Shaped Method" is an optimization strategy based on systematic trial-and-error and gradual convergence.

Initial process settings may be too high or too low; by observing trends in physical parameter variations, one can progressively converge to the optimal window—represented by the bottom of a "U-shaped curve."

It is recommended to gradually adjust key parameters such as:

- Temperature setpoints
- Heating ramp rate
- Soak time
- Atmosphere type/flow rate, etc.

4. Define Control Temperature and Alarm Tolerance

Based on the finalized process window, customers should define:

- **Control Temperature** (i.e., the set temperature in the recipe)
- **Alarm Tolerance**, which is used for RTP system alarm detection, lot interception, or process termination.

Conclusion:

To achieve a truly stable and efficient RTP mass production process, customers should center their development around product performance metrics—supported by physical parameter measurement, the U-shaped optimization method, and appropriate monitoring strategies.

We recommend that customers maintain close communication with their equipment supplier throughout process development to ensure that equipment capabilities align with target process parameters.

Selection of Substrate Carrier Plates

for

Rapid Thermal Annealing Furnaces

Expensive does not equal better!

Selection of Carrier Plates for Rapid Thermal Annealing Furnaces

Type	Material	Configuration	Sizes	RAMP SPEED	Cost	Load/Unload	Remark
Susceptor	Graphite with SiC CVD Coating	Base + Cover	2”,3”,4X2”,4X3”,5X3”, 4X4”	**1–50°C/s is widely accepted in the industry.** The larger the wafer size and the thicker the total carrier plus sample stack, the **slower** the heating rate should be. As long as the **RAMP rate** meets process requirements, **slower is better**—to reduce the risk of carrier cracking. Avoid the temptation to pursue the fastest possible RAMP speed—**the risks and costs are extremely high**.	Not cheap	Manual	Mainstream applications use qualified suppliers, with strict requirements for material and coating quality. The process performance is good, with low contamination and 40 years of extensive validation. Regular replacement is required, as prolonged high-temperature use can cause warping, and the silicon carbide coating may peel off—customers need to optimize high-temperature processes.
		Base + Cover	4”,5”,6”,8”		Not cheap	Manual / Automatic	
		Base Only	2”,3”,4X2”,4X3”,5X3”, 4X4”		Not cheap	Manual	
		Base Only	4”,5”,6”,8”		Not cheap	Manual / Automatic	
	Sintered SiC	Base + Cover	2”,3”,4X2”,4X3”,5X3”, 4X4”		Not cheap	Manual	Generally not recommended. Recently developed applications use qualified suppliers, where material purity and design are crucial. The process performance is good, but contamination may be significant. Regular replacement is required, as prolonged high-temperature use can cause warping—customers need to optimize high-temperature processes.
		Base + Cover	4”,5”,6”,8”		Not cheap	Manual / Automatic	
		Base Only	2”,3”,4X2”,4X3”,5X3”, 4X4”		Not cheap	Manual	
		Base Only	4”,5”,6”,8”		Not cheap	Manual / Automatic	
	Pure CVD SiC	Base + Cover	2”,3”,4X2”,4X3”,5X3”, 4X4”		Expensive	Manual	Generally not recommended due to high cost and limited suppliers, so it is rarely used. The process performance is good, with low contamination, and regular replacement is required. Prolonged high-temperature use may cause slight warping—customers need to optimize high-temperature processes.
		Base + Cover	4”,5”,6”,8”		Expensive	Manual / Automatic	
		Base Only	2”,3”,4X2”,4X3”,5X3”, 4X4”		Expensive	Manual	
		Base Only	4”,5”,6”,8”		Expensive	Manual / Automatic	
	Silica with SiC Sputter Coating	Base + Cover	4X2”,4X3”,5X3”, 4X4”	30-60C/S	Not cheap	Manual	Generally not recommended, but recently developed applications. Using qualified suppliers, material purity and sputtering process are very important. The process performance is acceptable, with acceptable contamination levels. Regular replacement is required, as prolonged high-temperature use may cause warping, and the silicon carbide coating may peel off—customers need to optimize high-temperature processes.
		Base + Cover	6”,8”		Not cheap	Manual / Automatic	
		Base Only	4X2”,4X3”,5X3”, 4X4”		Not cheap	Manual	
		Base Only	6”,8”		Not cheap	Manual / Automatic	
Wafer Carrier	Standard Si Wafers	One or two pieces as Base and Cover	4”,5”,6”,8”	Similar to the heating rates for 4", 5", 6", and 8" Si wafers	The cheapest	Manual	Expensive does not equal better; suitability is the best. Process performance depends on the customer's application and is suitable for customers looking for low-cost solutions.
	Standard Si Wafer with pockets	Base + Cover if necessary	4”,5”,6”,8”, or customized	Similar to the heating rates for 4", 5", 6", and 8" Si wafers	The second cheapest.	Manual	
TC Wafer	Standard TC wafer	Single Point, Upside Down.	6”, 8”	Similar to the heating rates for 6", and 8" Si wafers	The third cheapest	Manual	

Allwin21 Rapid Thermal Annealing Furnace Core Technology - Hardware

Allwin21: 40 Years of Technological Expertise, Globally Proven Core RTP Strength

With over 40 years of technical accumulation, Allwin21 has built a globally validated core technology system in the field of Rapid Thermal Processing (RTP).

Core Hardware Technologies Widely Validated Include:

- **Compact Aluminum Chamber Design:** Provides optimized efficiency and durability.
- **Cold-Wall Heating Chamber & Gold-Plated Inner Walls:** Special scattering gold plating layer enhances heat transfer performance.
- **Efficient Cooling System:** Custom-designed water cooling channels ensure excellent heat dissipation.
- **Top and Bottom Halogen Infrared Heating:** Multi-zone control with infrared lamp lifespan exceeding 2400 hours.
- **Thin and Compact Quartz Chamber:** Special airflow distribution design isolates contamination sources, ensures a clean environment, and is easy to clean.
- **Flexible Wafer Handling:** Supports small samples up to 8" wafers, suitable for both circular and square wafers.
- **Advanced Temperature Sensors:** K-type thermocouple (0.010” diameter, exposed, 0.25-second feedback time, 150-840°C) + patented ERP non-contact high-temperature thermometer (400-1250°C, 0-second ultra-fast feedback time), ensuring high accuracy and repeatability.
- **Flexible Gas Handling System:** Supports 1-6 gas lines, with typical gases and MFCs such as N_2, O_2, forming gas, Ar, N_2O_2, NH_3, etc.
- **Compact Design:** Suitable for cleanroom environments.

Optional Features:

- **Oxygen Content Analyzer:** Equipped with the highest industry quality oxygen content tester, continuously monitoring wall oxygen levels to reduce wafer defects. Features dual sampling pumps for increased sensitivity and accuracy.
- **Double Seal O-Ring on Front Flange:** Ensures good chamber sealing and reduces wafer defects.
- **Dual or Single Carrier:** Offers better adaptability.
- **New Controller and Integrated Robot Wafer Transfer System:** Stable, reliable, and reduces wafer defects.
- **Pre-Aligner:** Available to meet special requirements.

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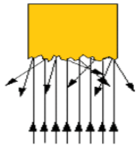
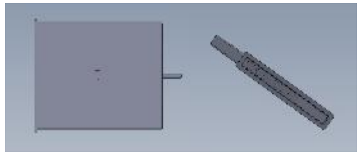
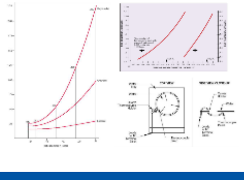
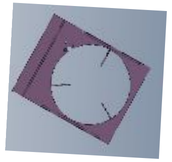
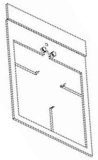




Allwin21 Rapid Thermal Annealing Furnace Core Technology - Software

Allwin21: 40 Years of Technological Expertise, Globally Proven Core RTP Strength

Based on over 40 years of technological accumulation, Allwin21 has built a globally validated core technology system in the field of Rapid Thermal Processing (RTP).

Core Software Technologies Widely Validated Include:

•**Proprietary Real-Time Control Technology:** Utilizes Allwin21's self-developed 0.1 millisecond-level advanced PID precise control algorithm combined with Fuzzy Logic self-learning control technology, achieving ultra-high responsiveness and adaptive optimization of the process.

•**Multi-Zone Independent Power Control:** 6 or 10 independent halogen infrared lamp zones, supporting precise power adjustment for each zone, optimizing temperature distribution and improving process uniformity.

•**PowerSums Process Protection Technology:** Real-time monitoring of equipment status and process conditions, effectively protecting high-value compound wafers and facilitating maintenance.

•**High-Speed Thermal Processing Capability:** Equipped with fast heating and cooling control technology, breaking through the response limits of traditional RTP systems, shortening cycle time, and enhancing productivity.

•**Comprehensive Safety Mechanism:** Built-in multi-level safety monitoring system ensures the safety of wafers, personnel, and equipment throughout the process.

•**Wafer-Level Data Logging & Traceability:** Automatically records all process parameters for each wafer, allowing precise traceability to every second, effectively supporting process optimization, development, and issue analysis.

Intelligent User Interface and System Integration:

•Multi-level password authorization settings for secure and controllable operations.

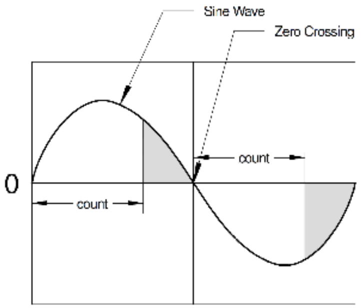
•Fully graphical GUI display with clear and concise menu management.

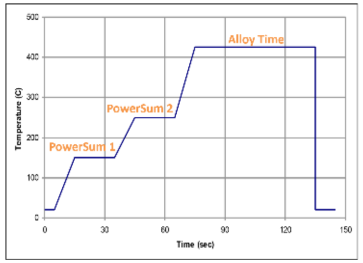
•Multi-channel I/O, AD/DA parameter real-time display.

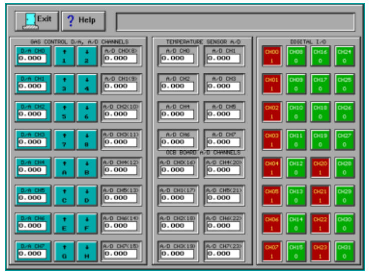
•Supports device logs and alarm record management for easier maintenance.

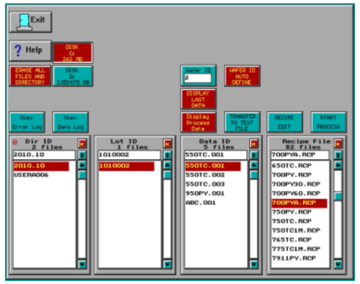
Automatic Calibration System for Software and Hardware:

Software calibrates ERP non-contact thermometer, MFCs, thermocouples, and chambers, improving measurement control accuracy and stability.





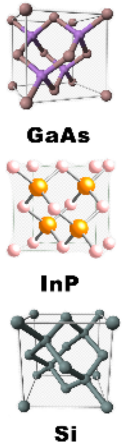




Model	AccuThermo AW610M	AccuThermo AW820	AccuThermo AW820R
Please help fill out the RFQ at Allwin21 Website for an official quotation.			
Type	Table Top, Manual	Stand Alone, Manual	Stand Alone, Automatic
Substrate Size (Round or Square)	4” to 6” (Optional: Small samples to 4”)	5” to 8” (Optional: Small samples to 5”)	6”,8” (Optional: 3”, 4”,5”)
IR Lamps and Zones	21PC,1200W each, 6 Zones, parallel	27PC,1500W each, 10 Zones, parallel	28PC,1500W each, 10 Zones, Crossing
Purge, Cooling, Process Gases	1 with 10SLM or 20SLM N2 MFC (Optional: 2 to 6 MFCs, Typical Gases: N_2, O_2, forming gas, Ar, N_2O_2, NH_3 etc.)		
Temperature measurement	K Type TC (Diameter 0.010”, Response time: 0.25 second. 150-840°C)	K Type TC (Diameter 0.010”, Response time: 0.25 second. 150-840°C)	Optional : K Type TC (Diameter 0.010”, Response time: 0.25 second. 150-840°C)
	Optional: ERP Non-Contact Pyrometer, Response time: 0 second ,400-1250°C)	Optional: ERP Non-Contact Pyrometer, Response time: 0 second ,400-1250°C)	ERP Non-Contact Pyrometer, Response time: 0 second ,400-1250°C)
Wafer carrier (can be customized after confirming the customer's actual needs, but not recommended)	Optional: Susceptor, Graphite with SiC coating or others. 3”,4”,6”,4x2”,3x3”	Optional: Susceptor, Graphite with SiC coating or others. 3”,4”,6”,8”,4x2”,3x3”	Optional: Susceptor, Graphite with SiC coating or others. 3”,4”,6”,8”
	Optional: Standard Si wafers with 3”,4”,5” pockets or customized.	Optional: Standard Si wafers with 4”,5”,6”,8” pockets or customized.	
Dimensions (Width x Depth x Height)	18 x 26 x 14 (Not include 3 color light)	70 x 39 x 54(Not include 3 color light)	70 x 39 x 54(Not include 3 color light)

Let's *All win* in the *21*st Century

III-V



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