

RAPID THERMAL ANNEALING (RTA)

What We Offer

Design &
Simulation



Prototyping &
Fabrication



Testing &
Characterization



Annealing in semiconductor manufacturing is a critical thermal process used to repair crystal damage and activate dopants, ensuring reliable device performance. A widely used technique is Rapid Thermal Annealing (RTA), where wafers are briefly heated above 1000 °C and cooled rapidly. This minimizes unwanted dopant diffusion, allowing the formation of shallow junctions essential for modern miniaturized devices. Compared to conventional furnace annealing, RTA offers faster processing, precise temperature control, and improved uniformity, making it indispensable for high-performance integrated circuits.

Key applications

**Dopant activation
after ion
implantation**

**Formation of
shallow junctions in
semiconductor devices**

**Reduction of crystal
defects and lattice
damage**

**Thermal processing
of thin films
and contacts**

UniTemp RTP-100 1200

- Temperature range: 20 °C to 1200 °C
- Heating rate: up to 150 °C·s⁻¹
- Cooling rate:
 - 200 °C ·min⁻¹ (1200°C → 400 °C)
 - 30 °C ·min⁻¹ (400 °C → 100 °C)
- Heating system: IR lamps, total power 20 kW
- Vacuum: down to 10⁻³ mbar
- Process gases: N₂, O₂, forming gas (N₂/H₂)
- Chamber size: 134 × 169 × 18 mm
- Wafer size: up to 4" wafer

Cleanroom class: ISO8

Contact person:

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UniTemp RTP-I300

- Temperature range: 20 °C to 1100 °C
- From 20 °C to 700 °C (continuous operation)
- Up to 1100 °C (short-time operation ≤1 min)
- Heating rate: up to 200 °C·s⁻¹
- Cooling rate:
 - Up to 200 °C ·s⁻¹ (600 °C → 400 °C)
 - Up to 30 °C ·s⁻¹ (400 °C → 100 °C)
- Heating system: IR lamps, total power 18 kW
- Process gases: N₂, Ar
- Gas flow: Up to 500 l/min
- Wafer size: up to 4" wafer.

Cleanroom class: ISO7

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UniTemp RTP-100-HV

- Temperature range: 20 °C to 1200 °C
- Heating rate: up to 150 °C ·s⁻¹
- Cooling rate:
 - 200 °C ·min⁻¹ (1000 °C → 400 °C)
 - 30 °C ·min⁻¹ (400 °C → 100 °C)
- Heating system: IR lamps, total power 18 kW
- Vacuum: down to 10⁻³ mbar
- Process gases: N₂, Ar
- Chamber size: 100 × 100 × 10 mm (W × H × D)
- Wafer size: up to 4" wafer

Cleanroom class: ISO7

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Features:

- Infrared lamp heating from both top and bottom
- Wide temperature range suitable for both low- and high-temperature treatments
- Programmable temperature ramp up
- Integrated vacuum capability for controlled environments
- Efficient chamber cooling with nitrogen purge
- Flexible recipe programming with multiple steps
- User friendly interface

Capabilities:

- Performs rapid high-temperature processing up to 1200 °C
- Enables thermal treatments in vacuum or controlled gas atmospheres (N₂, Ar, O₂, forming gas)
- Supports fast heating and cooling for short, well-controlled thermal cycles that limit unwanted material changes



If you have any questions, please contact us by email:
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