# Rapid Thermal Vacuum Process Oven


Picture similar to RTP-100

## RTP-100, RTP-100-HV

- For single wafer up to 100 mm (4“)
- Ramp up rate up to 150 K/sec (optionally up to 200 K/sec)
- SIMATIC® controller with 7“ touch panel
- Vacuum up to $10^{-3}$ hPa (optionally up to $10^{-6}$ hPa)
- Process gas line with Mass Flow Controller for Nitrogen

### Application

- Implantation/Contact Annealing
- RTP, RTA, RTO, RTN
- Operation with inert gases, Oxygen, Hydrogen, Forming gas
- SiAu, SiAl, SiMo Alloying
- Low-k dielectrica
- Crystallization & densification

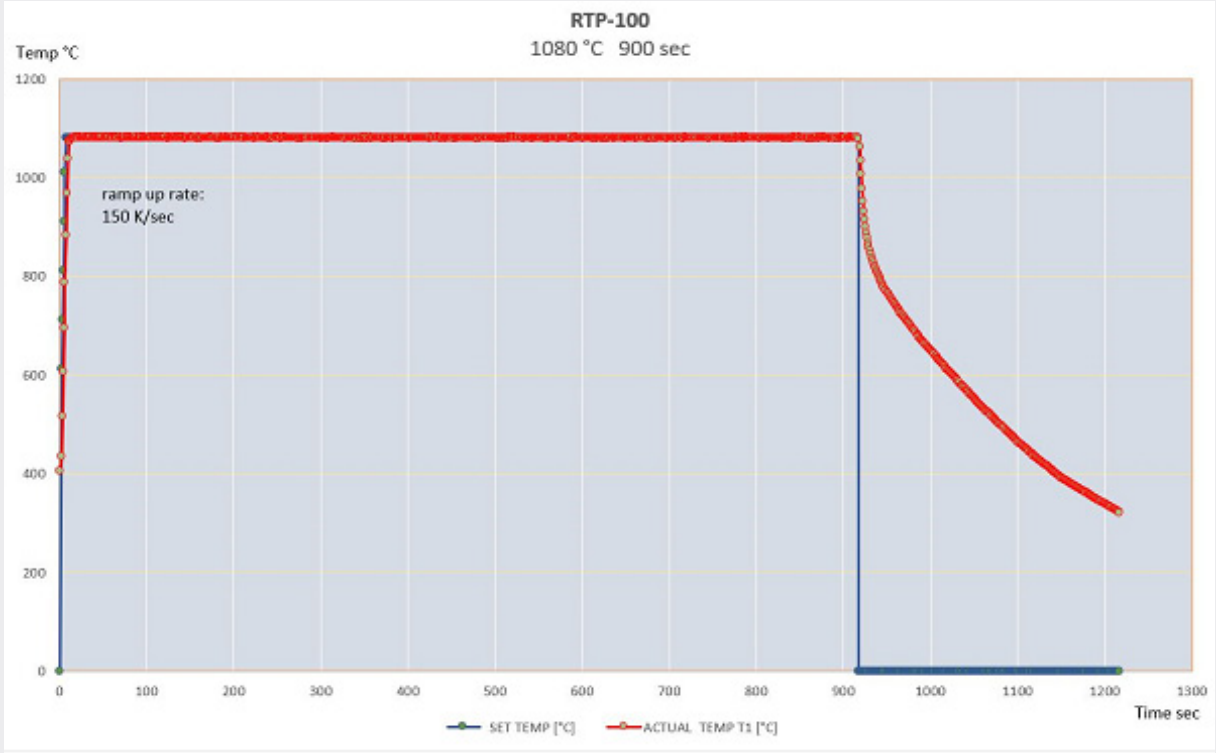
### Features

- Precise fast ramp up and fast ramp down rates
- Excellent temperature uniformity
- Up to 4 gas lines (Mass Flow Controller)
- Integrated data logging
- Heated by Infrared Lamps
- SIMATIC® controller
- 50 programs with 50 steps each
- Small foot print

UNITEMP
Universal Temperature Processes

# RTP-100, RTP-100-HV

- Rapid Thermal Annealing Process Oven with vacuum
- 7" Touch Panel
- Programmable temperature profiles
- Record of process data




## Application

The RTP-100 oven can be used for several different applications like annealing for silicon and com-pound semiconductor wafers (RTA), rapid thermal oxidation (RTO), rapid thermal nitridation (RTN), rapid thermal diffusion from spin-on dopant, crystalliza-tion, contact alloying and more.

## Process Gases

Beside standard process gases, like Nitrogen, Oxygen, Forming Gas the system (depends on model) can also be used with pure Hydrogen (Option: RTP-H2 and Hood S). The chamber is sealed and can be easily cleaned.

## Gas flow Control

One gas line with Mass Flow Controller (MFC) for Nitrogen is default. Three more gas lines are possible (option: RTP-MFC).

## Vacuum

The system is vacuum capable up to $10^{-3}$ hPa. For higher vacuum we offer the model RTP-100-HV.

## Heating

The maximum achievable temperature is 1200 °C. Key features are precisely controlled fast ramp-up (up 200 K/sec) and excel-lent ramp-down rates (depends on temperature and loading)

## Temperature

The RTP-100 allows an excellent temperature distribution and homogeneity. Optionally a graphite susceptor can be inserted into the quartz chamber (Option: GP Graphite Plate or Suscep-tor).

## Programming

The RTP-100 is equipped with a 7" touch panel which allows easy and comfortable programming directly on the unit.
50 programs with 50 steps each can be stored. Unlimited pro-grams can be up- and downloaded from an external storage medium.

## Process Control

The software allows the permanent monitoring, read- out and analysis of

- temperature
- process gas flow
- cooling water level status
- pressure value and status

## Cooling Process

The cooling of the parts in the quartz chamber is realized by Nitrogen.

## Others

An interlock function as well as an Emergency-OFF-Button (EMO) are default.

## Special

This oven can also be orderd as „double chamber oven". By adding a second process chamber (Option: PC-100) the oven does have 2 process chambers and one controller unit. This saves money when 2 different processes are needed and the chambers shall not be cleaned due to contamination or other reasons.

# RTP-100, RTP-100-HV


Standard Quartz holder for 100 mm wafer size

## Specification

| | |
|---|---|
| **Max. part size** | 100 mm dia. (4") |
| **Chamber material** | Aluminium chamber and quartz glass universal holder |
| **Process Chamber** | Quartz glass chamber (optional) |
| **Chamber height** | 18 mm |
| **Vacuum capability** | Up to $10^{-3}$ hPa, RTP-100-HV up to $10^{-6}$ hPa |
| **Process chamber size** | 134 x 169 x 18 mm (W x D x H) |
| **Temperature max.** | 1200 °C |
| **Temp. unifomity** | ≤ ± 1,5 % of set temperature |
| **Heating** | Top and bottom heating with 18 IR Lamps (20 kW) |
| **Ramp up rate** | Up to 150 K/sec, optionally up to 200 K/sec (100 mm diameter Si wafer) |
| **Ramp down rate** | T= 1200 °C > 400 °C: 200 K/min, T= 400 °C > 100 °C: 30 K/min |
| **Flow Controller** | Mass Flow Controller (Nitrogen 5 nlm) |
| **Controller** | SIMATIC® controller, 50 programs with 50 steps each |
| **Chamber cooling** | Water cooled |
| **Substrate Cooling** | By Nitrogen Gas |

## Technical Data

| | |
|---|---|
| **Dimension oven** | 504 mm x 505 (700) mm x 570 mm (W x D x H) |
| **Weight** | 55 kg |
| **Electrical connection** | 400/230 V, 20 kW |

## Options

| | |
|---|---|
| **RTP-H2** | Hydrogen option with Safety device (Sensor and Hydrogen monitoring) |
| **RTP-H2S** | Safety device for Hydrogen option (with cover and sensor) |
| **RTP-MFC** | Additional process gas line with Mass Flow Controller (max. 3 add)*<br>* = all in all max. 4 process gas lines |
| **RTP-Ox** | Oxygen Analyzer to measure Oxygen residues (not in combination with Hydrogen Option) |
| **RTP-MM** | Moisture Analyzer to measure moisture residues in the chamber |
| **RTP-SW** | Switchbox for chiller and vacuum pump |
| **RTP-TC** | add. Thermocouple to measure on device (plugged in chamber, max. 1) |
| **RTP-VAC I** | Basic Vacuum up to 3 hPa, Vacuum sensor, vacuum valve excl. pump |
| **RTP-VAC II** | Comfort Vacuum up to $10^{-3}$ hPa, Pirani Sensor, vacuum valve, excl. pump |
| **RTP-VCR** | Tubing made of VCR (welded) |
| **RTP-CAB** | Oven integrated as floor model into a cabinet with Universal Heat Exchanger |

## Accessories

| | |
|---|---|
| **RTP-GP-100** | Graphite Plate or susceptor (optional Pyc infiltrated or SiC coated) |
| **RTP-PC-100** | add. 100 mm oven chamber = double chamber( for usage of 2 chambers) |
| **RTP100-QTW-50** | Quartz tray for 50 mm wafer |
| **RTP100-QTW-75** | Quartz tray for 75 mm wafer |
| **RTP100-QTW-100** | Quartz Tray for 100 mm wafer |
| **RTP100-QTGS-110** | Quartz tray for graphite susceptor 110 mm |
| **MP** | Membrane/diaphragm pump for vacuum up to 3 hPa |
| **RVP** | Rotary vane pump or dry pump for vacuum up to $10^{-3}$ hPa |

UNITEMP
Universal Temperature Processes

UniTemp GmbH · Luitpoldstraße 6 · 85276 Pfaffenhofen/Ilm · Deutschland
Tel. +49 (0)8441-787663 · Fax +49 (0)8441-787664 · info@unitemp.de · www.unitemp.de

09/2022 Subject to change