UNITEMP
Universal Temperature Processes

Model RTP-100-HV

Rapid Thermal Vacuum Process Oven with ramp up rate up to 150°C/K for wafer dia. 100 mm

(Picture similar -/ technical and design changes reserved)

- **For single wafer up to 100mm (4")**
- **Ramp up rate up to 150°K/sec**
- Control **SIMATIC**® with 7" touch panel
- **Vacuum up to 10^{-6} hPa**
- **Process gas line with MFC for N_2**

FEATURES

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

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
- Si-Solar Wafer Cells on glass by

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- **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 compound semiconductor wafers (RTA), rapid thermal oxidation (RTO), rapid thermal nitridation (RTN), rapid thermal diffusion from spin-on dopant, crystallization, 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 RTP-H2S). 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^{-6} hPa.

HEATING

The maximal achievable temperature is 1200 °C . Key features are precisely controlled fast ramp-up (up 150°K/sec) and excellent ramp-down rates (depend 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 Suszeptor**).

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 programs can be up- and downloaded from 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.

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S P E C I F I C A T I O N

Max. part size	100 mm dia. (4")
Chamber material	Quartz glass muffle and **quartz universal holder**
Chamber height	18 mm
Vacuum capability	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 (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®, 50 programs with 50 steps each
Chamber cooling	Water cooled
Substrate Cooling	By Nitrogen Gas

T E C H N I C A L D A T A

Dimension oven	504 mm x 521 mm x 576 mm (W x D x H)
Weight	55 kg (estimated)
Electrical connection	400/230V, 20kW

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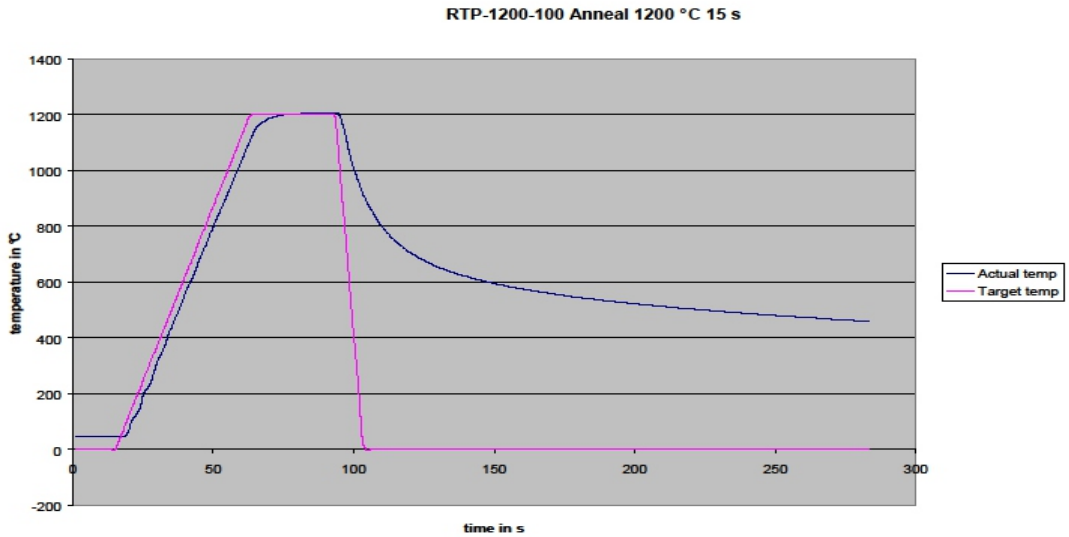
OPTIONS

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) * * = 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-VCR	Tubing made of VCR (welded)
RTP-CAB	Oven integrated as floor model into a cabinet with Universal Heat Exchanger (UHE)
RTP-PYR	Pyrometer on request

ACCESSORIES

RTP-GP-100	Graphite Plate or susceptor (optional SiC coated)
RTP-PC-100	add. 100 mm oven chamber = double chamber(for usage of 2 chambers)
RTP-QR-50	Adapter (quartz ring) for 50 mm wafer
RTP-QR-75	Adapter (quartz ring) for 75 mm wafer
MP	Membrane/diaphragm pump for vacuum up to 3 hPa
RVP	Rotary vane pump or dry pump for vacuum up to 10^{-3} hPa



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