UNITEMP
Universal Temperature Processes

Model RTP-150

Rapid Thermal Process Oven with Vacuum up to 150 mm dia. or 156 mm x 156 mm substrate size

Technical and design changes reserved

- **For wafer size up to 150 mm dia.**
- **Ramp up rate up to 75 K/sec**
- Control **SIMATIC**® with 7" touch panel
- **Vacuum up to 10^{-3} 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**
- **Touch Panel Svivel**
- **Programmable temperature profiles**
- **Record of process data**

APPLICATION

The **RTP-150** Rapid Thermal Annealing Vacuum oven is an excellent tool for various semi-conductor up to 150 mm diameter wafer or 156mm x156mm substrate size.

Some examples for applications: Laboratory furnace for all kind of developers implementing and researching new processes, prototype research, environmental research purposes and for small pre-series or series.

PROCESS GASES

The RTP-150 can be used with standard process gases, like Nitrogen, Oxygen, Forming Gas. The chamber is sealed and can easily be cleaned.

GAS FLOW CONTROL

One gas line with Mass Flow Controller (MFC) for Nitrogen (5 nlm = norm liter per minute) is default, three more gas lines **(Option: MFC)** are possible.

VACUUM

The system is vacuum capable of up to 10^{-3} hPa. For higher vacuum we offer the model **RTP-150-HV** (see separate data sheet).

HEATING

The maximal achievable temperature is 1000 °C . Key features are precisely controlled fast ramp-up 75 K/sec) and excellent ramp-down rates (depends on temperature and loading).

TEMPERATURE

The RTP-150 allows an excellent temperature distribution and homogeneity. Optionally a graphite suzceptor can be inserted into the quartz chamber (**Option: GP Graphite Plate or Suszeptor**).

PROGRAMMING

The RTP-150 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

the parts in the quartz chamber is realized by Nitrogen gas which will be led through the chamber.

OTHERS

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

This oven can also be orderd as „**double chamber oven**". By adding a second process chamber **(Option: PC-150)** the oven does have 2 process chambers and one controller unit.
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SPECIFICATION

Max. part size	150 mm dia. or 156 mm x 156 mm
Chamber material	Quartz glass chamber
Part holder	Quartz universal holder for either 156 x 156 mm solar wafer or 150 mm wafer dia.
Chamber height	40 mm
Vacuum capability	Up to 10^{-3} hPa
Process chamber size	325 mm x 214 mm x 40 mm (W x D x H)
Temperature max.	1000 °C (higher on request)
Temp. unifomity	≤ 1,5% of set temperature
Heating	Top and bottom heating with 24 IR Lamps (21 kW)
Ramp up rate	Up to 75 K/sec
Ramp down rate	T= 1000°C > 400°C: 200 K/min, T= 400°C > 100°C: 30 K/min
Flow Controller	Mass Flow Controller (Nitrogen 5 nlm)
Controller	SIMACTIC® 50 programs with 50 steps each
Chamber cooling	Water cooled
Substrate Cooling	by Nitrogen Gas

Dimension oven	505 mm x 525 mm x 570 mm (W x D x H)
Weight	55 kg (estimated)
Electrical connection	400/230V, 21kW

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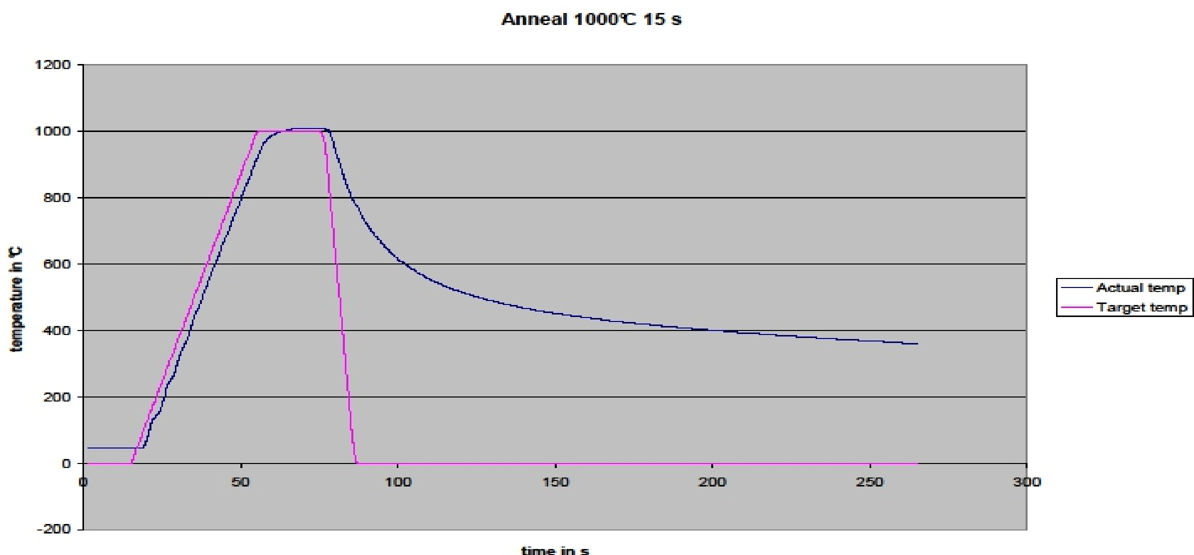
OPTIONS

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 Analyser 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)
VAC I	Basic Vacuum up to 3 hPa, Vacuum sensor, vacuum valve excl. pump
VAC II	Comfort Vacuum up to 10^{-3} hPa, Pirani Sensor, vacuum valve, excl.pump
VCR	Tubing made of VCR (welded)

ACCESSORIES

RTP-GP-150	Graphite Plate or susceptor (optional SiC coated)
RTP-PC-150	add. 100 mm oven chamber (“double chamber(for usage of 2 chambers)
RTP-QR-75	Adapter (quartz ring) for 75 mm wafer
RTP-QR-100	Adapter (quartz ring) for 100 mm wafer
MP	Membrane/diaphragm pump for vacuum up to 3 hPa



Feb 2019

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