Rapid Thermal Vacuum Process Oven

RTP-150 with open drawer and a 6" wafer on quartz glass tray

RTP-150, RTP-150-HV

- For wafer size up to 150 mm dia.
  or 156 mm x 156 mm substrate size
- Ramp up rate up to 75 K/sec
- SIMATIC® controller with 7" touch panel
- Vacuum up to 10^{-3} hPa, RTP-150-HV 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
- Si-Solar Wafer Cells on glass by

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

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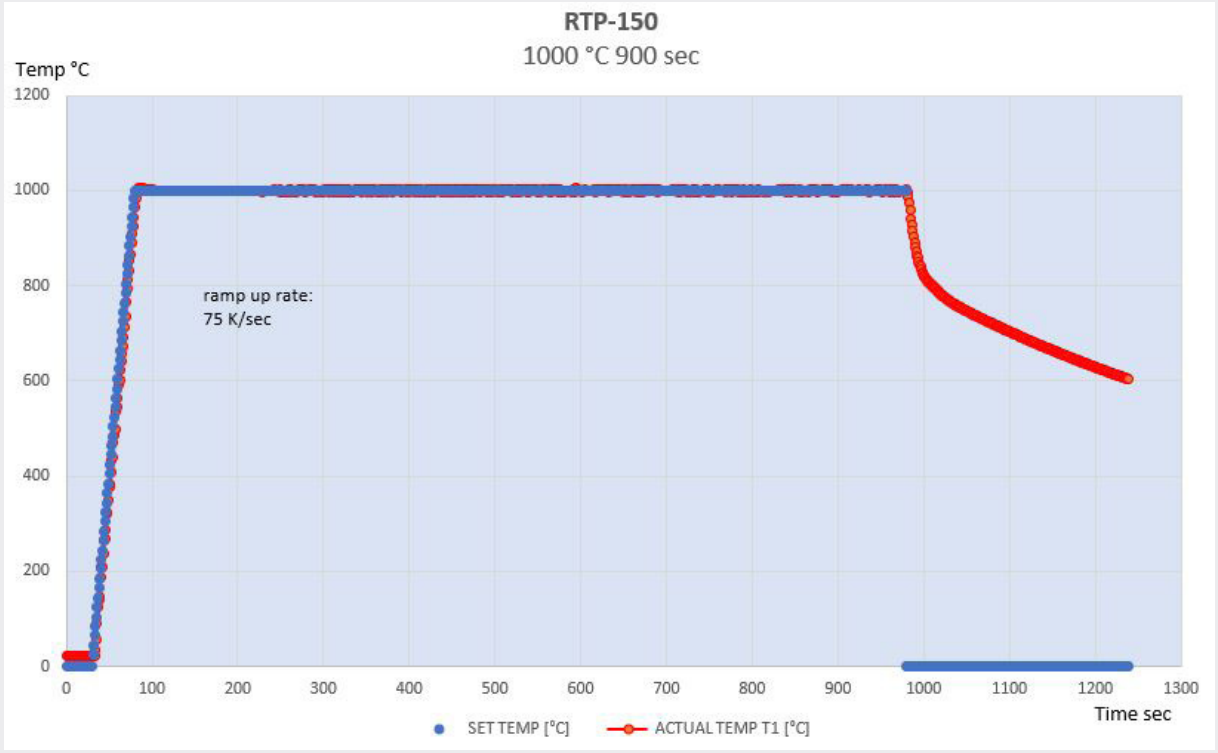
Universal Temperature Processes

RTP-150, RTP-150-HV

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



Application

The RTP-150 Rapid Thermal Annealing Vacuum oven is an excellent tool for various semiconductor up to 150 mm diameter wafer, solar wafer M6 or solar wafer M10 or 156 x 156 mm 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: Mass Flow Controller) are possible.

Vacuum

The system is vacuum capable of up to 10^{-3} hPa. For higher vacuum we offer the model RTP-150-HV (up 10 10^{-6} hPa).

Heating

The maximal achievable temperature is 1200 °C. Key features are precisely controlled fast ramp-up 75 K/sec), optionally up to 150 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 susceptor can be inserted into the quartz chamber (Option: GP Graphite Plate or Susceptor).

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 upand 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

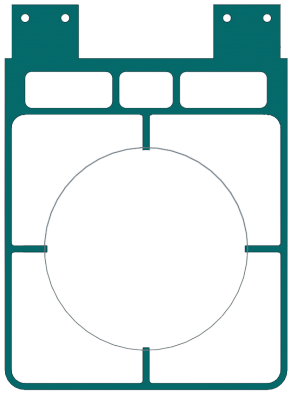
An interlock function as well as an Emergency-OFF-Button (EMO) are default.

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.

RTP-150, RTP-150-HV

RTP-150 closed front view



Standard quartz tray for 150 mm wafer

Specification	**Max. part size**	150 mm dia. or 156 mm x 156 mm
	Chamber material	Aluminium
	Process chamber	Quartz glass chamber (optional)
	Process chamber size	325 mm x 214 mm x 40 mm (W x D x H)
	Part holder	Quartz tray for 150 mm wafer or quartz tray for graphite susceptor
	Chamber height	40 mm
	Vacuum capability	Up to 10^{-3} hPa, RTP-100-HV up to 10^{-6} hPa
	Temperature max.	1000 °C
	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 (optionally up to 150 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	SIMATIC® controller, 50 programs with 50 steps each
	Chamber cooling	Water cooled
	Substrate Cooling	By Nitrogen Gas
Techn. Data	**Dimension oven**	505 mm x 525 mm x 570 mm (W x D x H)
	Weight	55 kg (estimated)
	Electrical connection	400/230 V, 21 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) = 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-EP	Ramp up rate up to 150 K/sec.
	RTP-150-HT	Higher temperature up to 1200 °C
	RTP-XHT	Extended holding time temperature
	FG-O2	Safety unit (when forming as and Oxygen is used)
	PT	Signal tower for status
	TC I	Additional thermocouple with external connection (max. 1 add.)
	TC II	Additional thermocouple with internal connection (max. 1 add.)
	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	**RTP150-GS-160 mm**	Graphite Plate or susceptor (optional SiC coated)
	RTP-PC-150	Add. 100 mm oven chamber = double chamber (for usage of 2 chambers)
	RTP150-QTW-75 mm	Adapter (quartz ring) for 75 mm wafer
	RTP-150-QTW-100 mm	Adapter (quartz ring) for 100 mm wafer
	RTP150-QTW-150 mm	Quartz tray for 150 mm wafer
	RTP150-QTSW-156x156	Quartz tray for solar wafer
	RTP150-QTSW-182x182	Quartz trax for solar wafer
	MP	Membrane/ diaphragm pump for vacuum up to 3 hPa

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