Vacuum Soldering System for processing also for contaminating processes

VSS-450-300 Vacuum Solder System

VSS-300, VSS-300-HV

- For substrate size up to 300 mm x 300 mm x 70 mm
- Ramp up rate up to 150 K/min
- SIMATIC® Controller with 7" touch panel
- Vacuum up to 10^{-3} hPa (opt. 10^{-6} hPa)
- Process gas line with Mass Flow Controller for Nitrogen
- Temperature up to 450 °C (opt. up to 600 °C)

Application

Reflow Solder Processes with or without vacuum up to 10^{-6} hPa. Easy profiling by using a SPS SIMATIC® Controller with WIN based software. Perfect lab tool and also for production on a low cost base. High production output. A remote control can be adjusted and the system can easily integrated into a production line.

- Reflow Solder Processes with flux
- Operation with inert gas, Oxygen, Forming gas, Formic Acid
- Lead and Lead-free SMT reflow
- Resistor paste firing

Features

- Precise ramp up and fast ramp down rates
- Up to 4 gas lines (Mass Flow Controller)
- Heated by Infrared lamps
- 50 programs with 50 steps each
- Top and bottom heating (selection by Software)
- Small foot print
- 3 heating zones programmable

UNITEMP
Universal Temperature Processes

VSS-300, VSS-300-HV

- Vacuum Solder System
- Programmable temperature profiles
- Record of process data
- Process in different gas atmospheres

The VSS-300 Vacuum Process Oven

The VSS-300 Reflow Solder System is an excellent tool for various solder processes up to 300 mm diameter wafer or 300 mm x 300 mm substrate size and 75 mm height (Option: EH with 120 mm height).

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 VSS-300 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 (optionally up to 10^{-6} hPa).

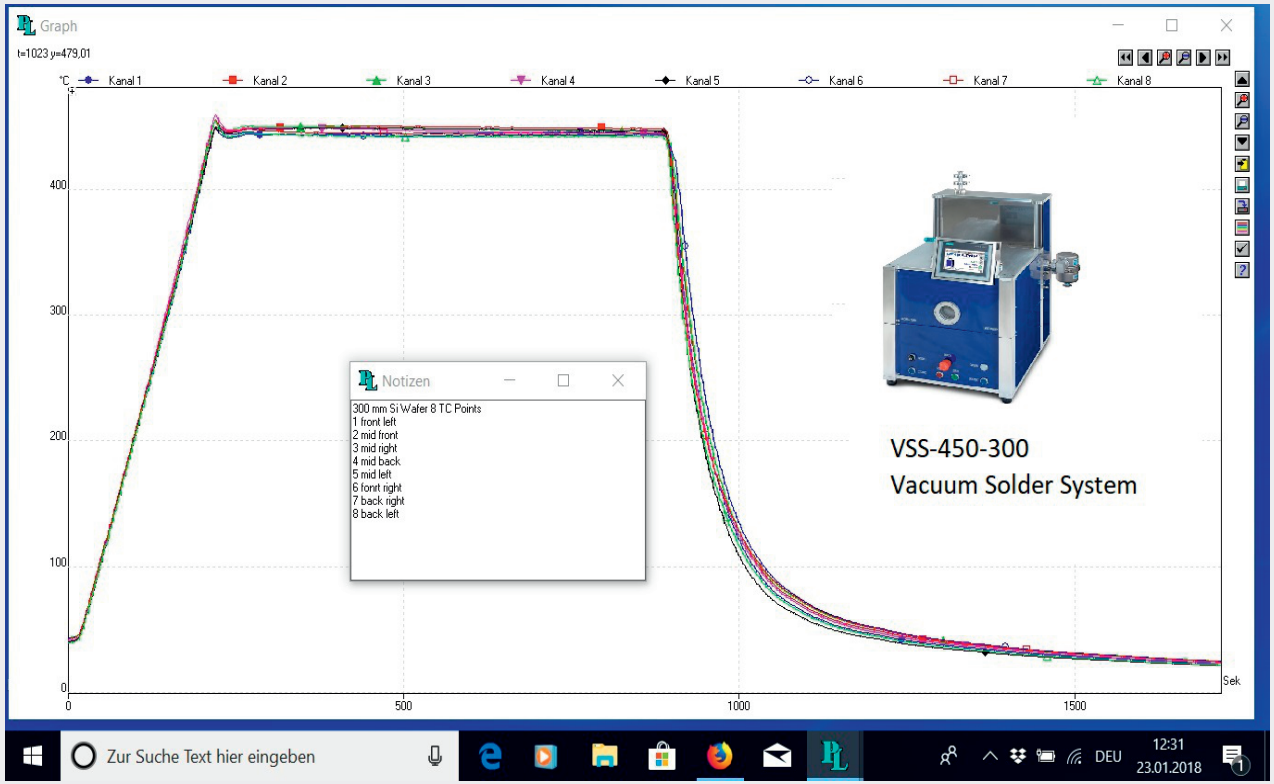
Heating

The maximal achievable temperature is 450 °C (opt. 650 °C). Key features are precisely controlled fast ramp-up (150 K/min) and excellent ramp-down rates (depend on temperature and loading).

Temperature distribution

The VSS-300 allows an excellent temperature distribution and homogeneity. Optionally a graphite susceptor can be inserted on the quartz bottom plate.

VSS-300 Example for a standard temperature profile with VSS-450-300



Programming

The VSS-300 is controlled by SPS SIMATIC® controller.
A 7" touch panel allows a very comfortable programming and control of the process. There can be saved up to 50 programs with 50 steps each (unlimited programs can be down- and uploaded from an external data storage).

Process control

The software allows the permanent monitoring, readout and analysis of

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

Cooling process

The hot plate is active cooled with homogenous cooling from both sides.

Others

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

Special

This oven can also be integrated into a production line. The chamber open/close is realized by push button operation.

VSS-300, VSS-300-HV

Specification

Max. part size	300 mm dia. or 300 mm x 300 mm
Chamber material	Aluminium chamber (chamber area: 350 mm x 350 mm) inclusive quartz fram
Chamber height	75 mm (optional: 120 mm)
Vacuum capability	Up to 10^{-3} hPa (optional up to 10^{-6} hPa)
Temperature max.	450 °C (higher temp. on request)
Temp. uniformity	≤ 1 % of set temperature (on a 200 mm wafer) (e.g. ± 3K @ 300 °C)
Heating	Bottom Heating: Infrared lamps cross aligned (18 kW)
Ramp up rate	**150K/min**
Ramp down rate	T = 450 °C > 200 °C: 90 K/min, T = 200 °C > 100 °C: 60 K/min
Flow Controller	One Mass Flow Controller for 5 nlm (=norm liter per minute) as default, up to 3 more Mass Flow Controllers are available as option
Controller	SIMATIC® controller 50 programs with 50 steps each
Chamber cooling	By external water cooling system
Substrate Cooling	By Nitrogen Gas

Technical Data

Dimension oven	540 mm x 690 mm x 890 mm (W x D x H)
Weight	120 kg
Electrical connection	400/230 V, 18 kW

No. Options:

	Additional process gas lines:	
1	VSS-MFC-Ar	Additional process gas line for Argon (Ar) gas controlled by Mass Flow Controller
2	VSS-MFC-O2	Additional process gas line for Oxygen (O_2) gas controlled by Mass Flow Controller
3	VSS-MFC-FG	Additional process gas line for Forming Gas (max. 10 % H2/N2) gas controlled by Mass Flow Controller
	Formic acid module and trap:	
4	FA II	Upgrade with integrated formic acid module with individually controlled process gas line
5	FA III	Upgrade with integrated formic acid module (process gas line shared with base VSS system)
6	FA IV	Formic acid mudule with separate gas line and automatic refilling
7	FA-T	Trap for formic acid vapors
8	FA-T-2	Double Trap for formic acid
	Flux options:	
9	VSS-FluxHeat	Heated cover for sue with flux for avoiding condensating flux
10	VSS-FT	Flux trap
11	VSS-FT-2	Flux trap
	Height and lift pins options:	
12	VSS-EH	Extended chamber height up to 120 mm, including 65 mm diameter viewing window
13	VSS-LiftPins	Upgrade with Lift pins for lifting up of single wafer (150 mm, 200 mm or 300 mm diameter)
	Hydrogen gas options	
14	H2	Hydrogen option for use of pure hydrogen gas (100% H2)
15	H2S	Safety hood
	Additional thermocouples:	
16	TC I	Upgrade with additional (flexible) thermocouple (not connected to process control, for external data logging)
17	TC II	additional thermocouple to measure on device (plugged in chamber); for external measurement tool (max. 4 pcs)
	Vacuum options (not including vacuum pumps):	
18	VAC I	Vacuum basic up to 3 hPa incl. vacuum sensor and valve
19	VAC II	Vacuum comfort up to 10^{-3} hPa incl. vacuum sensor and valve
	Interfaces:	
20	VSS-RC	Remote control of top cover opening and closing, including connection to safety of external cabinet
21	VSS-SI	Serial interface between VSS system and external PC using USB 2.0 port and through USB 2.0 cable
	Measurement options:	
22	MM	Moisture measurement
23	Ox	Atmospheric oxygen analyser
	Other options:	
24	CAB	Cabinet with integrated Universal Heat Exchanger (UHE)
25	PT	Upgrade with 3 colors pat light
26	VSS-QP	Additional quartz glass plate at top
27	VSS-HT	Extension of max temperature to 600 °C
	VSS-TH	Top heat (power x2), add. lamp field in the top
	VSS-ExOH	Extended opening from 200 mm to 300 mm
	Accessories (vacuum pumps, chiller):	
28	MP	Membrane/diaphragm pump (not chemically resistant)
29	MPC	Chemically resistant membrane/diaphragm pump
30	RVP	Rotary vane pump for vacuum up to 10exp.$^{-3}$ with oil filter
31	WC III	Closed loop water cooling system
32	UHE	Universal Heat exchanger (as alternative to WC-III, requires cooling water for its primary side)

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

05/2022 Subject to change