FC 300

High Force Device Bonder

The FC300 is a newest generation of high accuracy and high force device bonder for wafers up to 300 mm. The system also features Nanoimprinting capabilities.

The FC300 is able to perform various applications on the same platform with a quick process head reconfiguration:

- High Force, especially interesting for Cu-Cu bonding applicable to 3D-ICs packaging or Nanoimprinting using a Hot Embossing Lithography process.
- Low Force reflow bonding of RF & optoelectronics devices assembly.
- UV-Curing for a adhesive bonding or for Nanoimprinting using a UV-NIL process.

Features & Benefits

- ± 0.5 µm @ 3 sigma accuracy (process dependent) and 20 µradian leveling guaranty high yields on even the most advanced products
- Large Device Bonding Capabilities; devices up to 100 mm x 100 mm on wafers up to ø 300 mm.
- Optional Built-in chamber for collective reflow in gas or vacuum environment.
- NIL configuration as add-on to Bonding capability for maximum flexibility

Bonding Processes

- Die Bonding (Face Up)
- Flip Chip Bonding (Face Down)
- Mass Reflow, in-situ reflow and fluxless eutectic bonding
- Thermocompression, ultrasonic bonding
- UV or Thermal Cured Adhesive
- UV-NIL, Hot Embossing Lithography

Applications

- Chip-to-Chip, Chip-to-Wafer bonding
- Optoelectronic and photonic devices Assembly
- MOEMS, MEMS, MCM...
- 3D Interconnexion, System in Package
- Nanoimprinting Applications

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Technical Specifications

Process station	
Component Size	
Chip (Upper Component)	0.2 ~ 100 mm Thickness up to 6.3 mm
Substrate (Lower Component)	Up to 200 x 200 mm Wafer-Diameter 300 mm Thickness up to 5 mm
Bonding Arm: Universal Bonding Arm	
Post-bonding Accuracy	± 0.5 µm @ 3 sigma*
Leveling Travel	± 1 degree Resolution 4.2 µrad
Z Travel	180 mm Resolution 0.03 µm
Force	5 N to 4,000 N*
Alignment Stage	
XY stage Travel	410 x 395 mm Resolution 0.01 µm
Theta Travel	± 5 degrees with 0.4 µrad step
Bonding Heads	
Room Temperature	Up to sq. 100 mm
Heating	sq. 22, 50, 100 mm RT to 450°C, Resolution 1°C
Ultrasonic	55 - 65 kHz, 40 W max
UV	120 mW/cm² @ 365 nm
Substrate Chucks	
Room Temperature	Up to sq. 200 mm Diameter 300 mm
Heating	sq. 22, 50, 150, 200 mm, ø 300 mm RT to 450°C, Resolution 1°C
Optics	
XY Inspection Travel	100 x 80 mm Resolution 0.01 µm
Autocollimator Sensitivity	20 µrad on mirror
Digital Camera Resolution	0.55 µm per pixel Dark Field and Bright Field illumination by LED
Field of View	890 x 680 µm
Pattern Recognition System	Cognex™

Options

- UV Glue Curing System
- Advanced Laser Leveling System
- Ultrasonic bonding head
- Face Up Station
- Fluid Dispenser
- Collective Reflow Chamber with vacuum or formic acid capabilities (150 mm wafer)
- Nanoimprint Lithography capabilities by Hot Embossing or UV-NIL:

- Imprinting Resolution	Sub-50 nm
- Overlay Accuracy	250 nm

General Characteristics	
Machine Footprint	1960 x 2100 mm
Machine Height	2163 mm
Machine Total Weight	3000 kg
Electrical Power Supply	200 V/400 V - 12.5 kVA 50/60 Hz - 3 phases

*Process or Configuration Dependent.

Data, design and specifications depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations, photos and specifications in this datasheet are not legally binding. Specifications are subject to change without prior notice.

Wafer Pick Up

Confinement Chamber

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