

FC 250

Automated Device Bonder



The FC250 High Accuracy Production Device Bonder is the most precise chip to wafer assembly solution. A production system able to level, align and bond even the smallest components with $\pm 1 \mu\text{m}$ accuracy.

The FC250 supports an extensive range of bonding applications : optical packaging using high speed passive alignment (e.g. laser diodes), FPAs, LCD drivers, MCMs, MEMS, MOEMS, 3D Integration and more.



Features & Benefits

- $\pm 1 \mu\text{m}$ @ 3 sigma accuracy and 25 μradian leveling guarantee high yields on the most advanced products (process dependent).
- Air bearing technology and granite structure ensure long-term stability and reliability.
- Component temperature and compression force profiling, together with process monitoring, maximize process control.
- Parallel assembly process and component feeding provides high speed operation up to 200 bonds per hour (dry cycle).
- Teaching program enables fast new product turnaround.
- Remote machine servicing through modem optimizes uptime.

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

Applications

- Chip-to-Chip, Chip-to-Substrate bonding
- Chip stacking
- Optoelectronic & photonic devices assembly
- MOEMS, MEMS, MCM...
- Fragile material compatibility: InP, GaAs, MCT...

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Technical Specifications

Process station

Component Size

Chip (Upper Component) 0.2 ~ 40 mm
Thickness up to 2 mm

Substrate (Lower Component) 0.5 ~ 200 mm
Thickness up to 5 mm

Bonding Arm : Universal Bonding Arm

Post-bonding Accuracy $\pm 1 \mu\text{m}$ @ 3 sigma*

Leveling Travel ± 0.86 degrees
Resolution 2.5 μrad

Z Travel 155 mm, Resolution 0.07 μm

Theta Travel ± 6 degrees,
Resolution 1 μrad

Force 0.2 ~ 1000 N
(5 to 2000 N optional)

Alignment Stage

XY stage Travel 270 x 272 mm
Resolution 0.15 μm

Bonding Heads

Room Temperature Up to sq. 50 mm

Heating sq. 22, 50 mm

Ultrasonic 55 - 65 kHz, 40 W max

UV 50 mW/cm² @ 365 nm

Substrate Chucks

Room Temperature Up to sq. 200 mm

Heating sq. 22, 50, 150, 200 mm
RT to 450°C, Resolution 1°C

Optics

XY Inspection Travel 65 x 65 mm
Resolution 0.15 μm

Autocollimator Sensitivity 25 μrad on mirror
(component roughness and reflectivity dependant)

Digital Camera Resolution 0.44 μm per pixel

Field of View 710 x 540 μm

Pattern Recognition System Cognex™

Options

Chip solder flux or Epoxy coating unit

UV glue curing system

Advanced laser leveling system

Accurate fluid dispenser

Feed station

Transfer/Robot

XY Travel 830 x 745 mm
Resolution 0.3 μm

Transfer Accuracy to Process Module $\pm 30 \mu\text{m}$

Carousel/Robot Head

5 Positions Chip, substrate, hybrid & 2 tools

Theta 360 degrees

Z Travel 5 mm, Resolution 5 μm

Force Control $\pm 0.2 - 10 \text{ N}$

Pre-Alignment Optics

Pre-Alignment Accuracy 10 μm

Field of View (6X zoom) 1.0 x 0.8 - 6.1 x 4.6 mm

Pattern Recognition System Cognex™

Options

Tray support - Wafer Frame Unit - Tape on Reel
Additional Transfer Module for Preforms or Dice, Control Camera for opto configuration
Formic Acid Vapor Bonding Environment

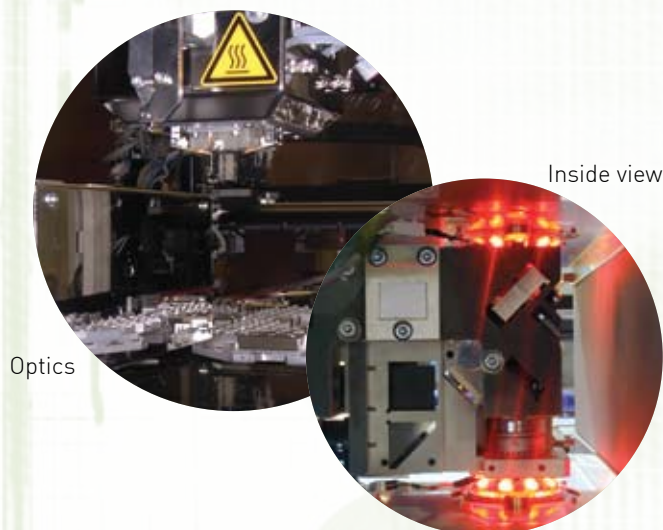
General Characteristics

Machine Footprint 2250 x 1250 mm

Machine Height 2080 mm

Machine Total Weight 2200 kg

Electrical Power Supply 200/230 V - 12.5 kVA
50/60 Hz



*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.

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