finetech

micro assembly

FINEPLACER® sigma

Semi- automated Sub- Micron Bonder

FINEPLACER® sigma

The FINEPLACER® sigma combines sub- micron placement accuracy with a 450 x 150 mm² working area and bonding forces up to 1000 N. The system is ideal for all types of precision die bonding and flip chip applications ready to be pushed toward wafer level. This includes complex 2.5D and 3D IC packages, Focal Plane Arrays (i.e. image sensors), MEMS/ MOEMS, and more.

Placing small devices on large substrates is made possible by the FPX*vision*™ optical system design. With this alignment system, the smallest structures at the highest magnification can be viewed across the entire field of view. Moreover, FPX*vision*™ introduces pattern recognition to a die bonder with manual alignment.

The FINEPLACER® sigma embraces all features of an assembly and development platform capable of handling an unlimited spectrum of applications and prepared for future technologies.

Highlights*

- Sub micron placement accuracy
- Capable for substrates up to 300 mm
- Bonding forces up to 1000 N
- **FPX*vision***™ - high resolution for all magnifications
- Software guided alignment verification
- Touch screen GUI
- Modular design for flexible configurations

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* depending on configuration/ application, (1) standard value, other values on request, (2) optional modules
Technical information are subject to change without prior notice.

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Features

- Alignment position verification via digital pattern recognition
- Sub micron placement accuracy for substrate sizes up to 450 x 300 mm^2
- Easy process module integration allows individual machine configurations
- Software based process management with touch screen operation
- Integrated Bonding Force Module up to 1000 N*

Benefits

- Operator independent alignment process and automatic process run
- High precision chip assembly to wafer
- Virtually unlimited spectrum of bonding technologies
- Comprehensive, easy to use parameter optimization
- Latest bonding technologies, such as sintering, Cu/Cu and many more

Technologies

- Thermocompression bonding
- Thermo- / ultrasonic bonding
- Soldering (AuSn / eutectic, Indium, C4)
- Adhesive technologies
- ACF/ ACP bonding
- UV / thermal curing
- Bump bonding
- Cu / Cu bonding, copper pillar bonding
- Laser- assisted bonding
- Precision vacuum die bonding
- Sintering
- Micro mechanical assembly

Applications

- Wafer level packaging (FOWLP, W2W, C2W)
- 2.5D and 3D IC packaging (TSV)
- Multi chip packaging (MCM, MCP)
- Flip chip bonding (face down)
- Precision die bonding (face up)
- Optical package assembly
- MEMS/ MOEMS packaging
- Sensor assembly
- Glass- on- glass, chip- on- glass, chip- on- flex

Technical Specifications*

Placement accuracy:	±0.5 µm
Field of view:	3.8 mm x 2.7 mm
Field of view resolution:	1µm / pix
Extended field of view:	83 mm x 2.7 mm
Component size (min):	0.07 mm x 0.07 mm
Component size (max):	100 mm x 100 mm
Substrate support (max):	300 mm x 300 mm
X- travel / resolution[1]:	2.5 mm / 1 µm
Y- travel / resolution[1]:	2.5 mm / 1 µm
Z- travel / resolution:	10 mm / 10 µm
Theta travel:	±15° (±2° fine travel)
Working area:	450 mm x 150 mm
Bonding force range[2]:	0.2 - 40 N / 1 - 1000 N
Heating temperature:	450 °C

Modules & Options

- Substrate Heating Module
- Chip Heating Module
- Dispenser Module
- Process Video Module
- Die Pick up Module
- Die Flip Module
- Bonding Force Module
- Process Gas Module
- Ultrasonic Module
- UV Curing Module
- Formic Acid Module
- Vacuum Chamber Module
- Laser- assisted Bonding Module
- Motorized Z- Travel

Notes:

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