## ASM Semiconductor Equipment Products

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Flip Chip Bonder
AD900A / AD9012A

Applications: Flip chip bonding on leadframe, BGA, ceramic substrates, singulated units, etc.

- Precise placement*:
  - XY placement: ±7 μm @ 3σ
- High productivity*:
  - 0.7 sec/cycle (bonding time exclusive)
- Die size range: 10 x 10 – 1,000 x 1,000 mil
- Excellent process flexibility
  - Flux dispensing via writing system
  - Flux dipping
  - High viscosity material dispensing capability
- Convertible flip chip and die bonding process
- AD9012A - up to 12” wafer handling capability

Thermosonic Flip Chip Bonder
AD900TS / AD9012TS

Applications: Thermosonic flip chip bonding on leadframe, BGA, ceramic substrates, singulated units, etc.

- Precise placement*:
  - XY placement: ±15 μm @ 3σ
- High productivity*:
  - 1 sec/cycle (bonding time exclusive)
- Die size range: 10 x 10 – 500 x 500 mil
- Intelligent self-compensated bond force control
- Regularly calibration free bond head design
- 4 consistent and independent heating controls
- Up to 250°C bonding temperature
- AD9012TS - up to 12” wafer handling capability

Automatic BOC Flip Chip Bonder
AD9012-BOC

Applications: Flip chip bonding on WBGA substrates

- Precise placement*:
  - Normal mode: ±25.4 μm @ 3σ
  - High precision mode: ±8 μm @ 3σ
- High productivity: 3,000 +* UPH
- Process flexibility
  - Patent pending thin dice handling capability
  - Large range of bond force control: up to 7,000 g
  - Precision bond tool temperature control: up to 250°C ± 5°C
  - LOC bonding capability
- Excellent process control with
  - Intelligent pre-baking process
  - Automatic collet cleaning system
  - Substrate warpage control with strategic system design
- Convertible die attach film (DAF) and flip chip bonding process

Dual Head Flip Chip Bonder
AD9212

Applications: Flip chip bonding on leadframe, BGA, ceramic substrates, singulated units, etc.

- Precise placement*:
  - XY placement: ±10 μm @ 3σ
- High productivity with individual dual flip chip bonding systems: 8,000* + UPH
- Up to 12” wafer handling capability
- Supporting flux dipping flip chip process
- Die size range: 20 x 20 – 1,000 x 1,000 mil
- Convertible flip chip and die bonding process
- In-line capability with SMEMA compliance (option)

*Remark: All performance is package dependent
12” FLIP CHIP BONDING EQUIPMENT

12” Thermocompression Flip Chip Bonder
AD9012TC

Applications: Thermocompression flip chip bonding on e.g. CLCC, PLCC, BGA, PCB, singulated units, etc.

☑ Excellent bonding performance
  • Bond force control: up to 6,000g
  • Bond collet temperature: up to 300 °C ± 5 °C
☑ Flexible indexing system for substrate or carrier boat
☑ Real time dispensing pattern inspection and position alignment
☑ Up to 12” wafer handling capability
☑ Supporting both flip chip and direct die attach process

12” Flip Chip Bonder
(for Image Sensor Application)
IS9012LA

Applications: Image sensor flip chip bonding on e.g. CLCC, PLCC, BGA, PCB, singulated units, etc.

☑ Complete foreign materials (FM) prevention
  • HEPA filter implementation concept
  • Clean bath during on-loading
  • Clean cell via workholder
  • And more.....
☑ Flexible indexing system for substrate or carrier boat
☑ Real time epoxy pattern inspection and position alignment
☑ Up to 12” wafer handling capability
☑ Supporting both flip chip and direct die attach process

Total RFID Assembly Solution
Unwinder + AD900HS + APS900 + Rewinder

Applications: ACP flip chip bonding for non-contact type smartcard package, etc.

☑ Complete solution for RFID packages
  • From adhesive dispensing, flip chip boning, curing to tester handle process
☑ Large range of web-tape handling: up to 100 mm bond width @ 180 mm physical width
☑ Up to 32 dice curing with single pass ONLY
☑ Flexible to integrate with various testers
☑ Supporting rejected unit marking capability

*Remark: All performance is package dependent
12” DIE ATTACH EQUIPMENT

12” Automatic Die Bonder
AD8912
Applications: Mini-BGA, flex BGA, CSPBGA, MLP/QFN, QFP, TQFP, PLCC, TSSOP, TSOP, SOIC, SOT, PDIP, etc.

- Up to 12” robotic wafer handling capability
- High accuracy and productivity*:
  - System cycle time: 320 ms
  - XY placement: ±25.4 μm @ 3σ
  - Die rotation: ±0.5° @ 3σ
- Die size range: 10 x 10 – 1,000 x 1,000 mil
- Universal workholder design for various packages
  - Flexible indexing clamp for leadframe / substrate thickness: 0.1 - 2 mm
- Real time epoxy pattern inspection and position alignment

12” Stack Die Bonder
AD8912SD-A
Applications: Stack die application on Mini-BGA, flex BGA, CSPBGA, QFN, QFP, TQFP, PLCC, TSSOP, TSOP, etc.

- Up to 12” robotic wafer handling capability
- High accuracy and productivity*:
  - XY placement: ±25.4 μm @ 3σ
  - Die rotation: ±0.5° @ 3σ
- Stack and thin die handling capability
- Excellent substrate warpage control

12” Die Bonder
(Reel Form Materials Handling)
AD8912RL
Applications: Reel form materials handling e.g. smart card substrates, metal leadframe or flex substrates, etc.

- High speed die bonding process with
  - Implementing patented bond head design
  - Supporting dual dispensing system
- Up to 12” robotic wafer handling capability
- Die size range: 10 x 10 – 1,000 x 1,000 mil
- Flexible to equip with visual inspection station at outputting side
- In-line capability with curing oven – PC139R and buffer station

12” Die Bonder
(for Image Sensor Application)
IS8912DA
Applications: Image sensor die bonding on e.g. CLCC, PLCC, BGA, PCB, singulated units, etc.

- Complete foreign materials (FM) prevention
  - HEPA filter implementation concept
  - Clean bath during on-loading
  - Clean cell via workholder
  - And more……..
- Flexible indexing system for substrate or carrier boat
- Real time epoxy pattern inspection and position alignment
- Up to 12” robotic wafer handling capability
- Supporting up to 8” wafer size with IS898DA

*Remark: All performance is package dependent
8” DIE ATTACH EQUIPMENT

Automatic Die Bonder
AD898

Applications: Mini-BGA, flex BGA, CSPBGA, MLP/QFN, QFP, TQFP, PLCC, TSSOP, TSOP, SOIC, SOT, PDIP, singulated units, etc.

☑ High accuracy with excellent productivity*:
  • System cycle time: 320 ms
  • XY placement: ±25.4 μm @ 3σ
  • Die rotation: ±0.5° @ 3σ
☑ Flexible configurations to fit different applications
  • Special design for different applications
  • Large range of substrate thickness: 0.1 – 2 mm
  • Die size range: 10 x 10 – 1,000 x 1,000 mil
☑ Real time epoxy pattern inspection and alignment

Automatic High Speed Epoxy Die Bonder
AD838

Applications: High density leadframe, e.g. QFN, TQFP, PLCC, TSSOP, TSOP, SOIC, SOT, etc.

☑ Up to 17,200** UPH by
  • Implementing patented bond head design
  • Supporting dual dispensing system
☑ Excellent accuracy with full-range of inspection algorithms
☑ Graphical user interface with multi-languages support
  • MS Windows® XP operating system
☑ Providing graphical SPC data with latest IQC system
☑ Extra large bonding area: up to 4” width substrate handling capability

Automatic High Speed Epoxy Die Bonder
(Reel Form Materials Handling)
AD838R

Applications: Reel form materials handling, e.g. metal leadframe or flex substrates, topLED, etc.

☑ High UPH with
  • Implementing patented bond head design
  • Supporting dual dispensing system
☑ Extra large bonding area: up to 4” width substrate handling capability
☑ Excellent accuracy with full-range of inspection algorithms
☑ Automatic input reel system
☑ Graphical user interface with multi-languages support
  • MS Windows® XP operating system
☑ Providing graphical SPC data with latest IQC system

Automatic High Speed Epoxy Die Bonder
(Boat Carrier Indexing System)
AD838L

Applications: Direct substrate indexing, e.g., SAW filter, high power LED, etc.

☑ Strategic indexing algorithm suitable for special substrate handling, e.g. direct ceramic substrate indexing
☑ Excellent substrate warpage control
☑ Implementing excellent precision with
  • Various inspection systems during bonding process
  • Patented bond head design
☑ Extra large bonding area: up to 4” width substrate handling capability
☑ Implementing latest global substrate alignment

*Remark: All performance is package dependent
Automatic High Speed Die Bonder
AD830

Applications: High density substrate, e.g., Chip LED, Top LED, Side View LED, SOIC, SOD, High power LED, etc.

- High throughput: up to 18,000 UPH* by
  - Implementing patented bond head design
  - Supporting dual dispensing system
  - Widely implementing linear motor system
- Implementing excellent flexibility by
  - Supporting various types of inputting system
  - Multi-directional bonding capability with rotary collet bond arm system
- Graphical user interface with multi-languages support
  - MS Windows® XP operating system
- Up to 8” wafer handling capability (option)

Applications: High density substrate, e.g., Chip LED, Top LED, Side View LED, SOIC, SOD, High power LED, etc.

High throughput: up to 18,000 UPH* by
- Implementing patented bond head design
- Supporting dual dispensing system
- Widely implementing linear motor system

Excellent accuracy with full-range of inspection algorithms
- Large range of reel form substrate handling capability
- In-line capability with curing oven, e.g. PC139R, COE139R, etc.

Graphical user interface with multi-languages support
- MS Windows® XP operating system

Supporting eutectic die attach process – AD830UR

*Remark: All performance is package dependent
**8” DIE ATTACH EQUIPMENT**

**Soft Solder Die Bonder**  
**SD890A**

**Applications:** High power device, discrete unit, e.g. TO-220, SOT, DPAK, DPAK matrix, PowerSO, etc.

- High productivity*: 550 ms cycle time
- Implementing flexibility with
  - Matrix leadframe handling with XY shuttling bondhead system
  - AB dice handling with rotary collet bond arm design
  - Up to 8 independently controlled heating zones suitable for various temperature profile requirement
- Precision solder volume and pattern control with
  - Precise solder wire feeding and spanning system
- Providing excellent oxygen level control with forming gas supply

**Soft Solder Die Bonder**  
**SD832D**

**Applications:** High power device, discrete unit, e.g. TO-220, SOT, DPAK, DPAK matrix, PowerSO, etc.

- High productivity with
  - Patented double decoupling bond head system
- Excellent pattern consistency by equipping dual patent pending solder writing system
- Providing excellent oxygen level control with forming gas supply
- Automatic die theta alignment with well-developed rotary collet bond arm system

**6” DIE ATTACH EQUIPMENT**

**High Speed Epoxy Die Bonder**  
**(for Vertical LED Application)**  
**AD8930V/UV**

**Applications:** Vertical LED, photo transistor, infrared diodes, etc.

- Pro-longing MTBA with new inputting / outputting system
  - Inputting system: wheel type inputting mechanism / multi-magazines inputting elevator system
  - Outputting system: multi-magazine outputting elevator system
- Precise epoxy stamping capability with pre-bond inspection
- Advanced PR look ahead capability further enhances bonding speed
- Advanced die surface defect inspection at wafer stage
- Supporting eutectic die attach process with AD8930UV

**High Speed Epoxy Die Bonder**  
**(for Bent Leadframe Application)**  
**AD8930-02**

**Applications:** Epoxy bonding for bent leadframe for piranha and other application

- Providing carrier free indexing design
- Pro-longing MTBA with various inputting / outputting system
  - Inputting system: multi-magazine inputting elevator system
  - Outputting system: multi-magazine outputting elevator system
- Precise epoxy stamping capability with pre-bond inspection
- Advanced PR look ahead capability further enhances bonding speed
- Advanced die surface defect inspection at wafer stage

*Remark: All performance is package dependent*
Automatic Die Bonder
AD896 Series
Applications: COB devices, IrDA, 7-segment display, dot matrix display, chip LED, metal can, bent Leadframe, etc.

- Wide range of substrates handling capability
- Flexible configurations
  - AD896-IL08: automatic material handling system
  - AD896M-06: multi-wafer system for multi dice application
  - AD896M-IL08: multi-wafer system with automatic material handling system
- Powerful inspection system providing excellent bonding quality
  - Wafer PRS with PR look ahead capability
  - Advanced die surface defect inspection at wafer stage

High Precision Die Bonder
AD819-PD
Applications: Metal can packages e.g. photo diode on stem, etc.

- High precision epoxy die bonding with
  - 2-in-1 stamping and bonding system
  - Widely implementing linear motor system
  - Full range of PR inspection at various stages for precision bonding
- Supporting various configurations to fit different applications
  - Programmable tilting workchuck for PD application
  - Rotary workchuck for VCSEL application (option)
- Carrier free metal cans handling design

Remark: All performance is package dependent
High Precision Flip Chip Bonder
AD819-11A / -11TS

**Applications:** Precision flip chip die attach e.g. LED on submount for high brightness LED, etc.

- **High productivity**
  - AD819-11A: 0.7 sec (cycle time)
- **Precision placement accuracy**
  - Widely implementing linear motor system
  - XY placement: ± 10 μm @ 3σ
  - Die rotation: ± 0.5° @ 3σ
- Configurable for flux / epoxy flip chip bonding process
- Thermosonic flip chip bonding capability – AD819-11TS
- Automatic substrate input & output handling capability (option)

High Precision Eutectic Die Bonder
AD819-11B

**Applications:** Precision eutectic die attach e.g. LED on submount for high brightness LED, etc.

- **Precision placement**
  - Widely implementing linear motor system
  - XY placement: ± 25.4 μm @ 3σ (with up-looking inspection)
  - Die rotation: ± 0.5° @ 3σ
- Providing excellent oxygen level control with forming gas supply
- Anti-thermal shock design with pre-heat and post-heat stations
- Automatic substrate input & output handling capability (option)

Multi-chip Module Bonder
MCM12

**Applications:** Various of multi-chip packages on, e.g. BGA, singulated unit, metal can, wafer submount, etc.

- High speed die attach process with
  - US patented gantry design
  - Supporting auxiliary dispensing system
- Precision placement with latest inspection system
- Implementing excellent flexibility by supporting
  - Up to 12" wafer handling capability
  - Up to 14 types of picking tools handling capability
  - Up to 5 types of ejecting kits installation
  - Extra large substrate handling
  - SMD bonding capability
  - Direct die attach / flip chip bonding capability
  - And more……
- Supporting automatic wafer exchanging system

Automatic COG Bonder
COG900

**Applications:** Various types of glass and LSI, e.g. STN, CSTN, TFT, etc.

- High speed performance driven by
  - Widely implementing linear motor system
  - Supporting dual main pressing system
- High precision
  - Full range of inspection system at each process
  - 4D (XYZθ) workholder system driven by precise linear and DDR actuating system
- Supporting various inputting and outputting configurations
  - Belt inputting / outputting system
  - Tray handling capability (option)
- Advance inspection system lighting by programmable dual colour LED system
- Inline capability with FOG900
**OTHER DIE ATTACH EQUIPMENT**

**Automatic FOG Bonder**

**FOG900**

**Applications:** Various types of glass and flex, e.g. STN, CSTN, TFT, etc.

- High speed performance driven by
  - Widely implementing linear motor system
  - Supporting three main pressing system
- High precision
  - Full range of inspection system at each process
  - 4D (XYZ-theta) workholder system driven by precise linear and DDR actuating system
- Supporting various inputting and outputting configurations
  - Belt inputting / outputting system
  - Tray handling capability (option)
- Advance inspection system lighting by programmable dual colour LED system
- Inline capability with COG900

**Remark:** All performance is package dependent

**Applications:** Various types of glass and flex, e.g. STN, CSTN, TFT, etc.

**Automatic Glass Bonder**

**(for Image Sensor Application)**

**IS898GA**

- Complete foreign materials (FM) prevention
  - HEPA filter implementation concept
  - Clean bath during on-loading
  - Clean cell via workholder
  - And more......
- Flexible indexing system for substrate base or carrier boat
- Supporting glass on mylar / waffle pack handling at wafer system
- Dual glue writing capability further enhances productivity
- Capable of integrating various UV snap cure systems (option)

**Applications:** IR glass bonding on substrate, e.g. BT, CLCC, PLCC, or singulated lens holders, etc.

**Automatic Infra-red Glass Bonder**

**(for Image Sensor Application)**

**IRGA868**

- Complete foreign materials (FM) prevention
  - HEPA filter implementation concept
  - Clean bath during on-loading
  - Clean cell via workholder
  - And more......
- Flexible material handling capabilities
  - Tape & reel input/output lens holder handling
  - Vacuum/mechanical picking system to fit different lens holder
- Up to 8" thin film IR glass handling capability
- Excellent cover tape sealing performance for protecting bonded units

**Applications:** IR glass bonding on lens holder

**Automatic Lens Holder Bonder**

**(for Image Sensor Application)**

**IS868LA2**

- Complete foreign materials (FM) prevention
  - HEPA filter implementation concept
  - Clean bath during on-loading
  - Clean cell via workholder
  - And more......
- Versatile lens holder input handling system adapts for:
  - JEDEC standard tray / waffle tray
- Twin glue writing capability further enhances productivity
- Individual pick and bond arm system further enhance bonding speed
- Capable of integrating various UV snap cure systems (option)

**Applications:** Lens holder bonding on e.g. CLCC, PLCC, BGA, PCB, singulated units, etc.
TOTAL CLIP BONDING SOLUTION

**eClip**

**Applications**: High power discrete unit, e.g. DPAK matrix, PowerSO, etc.

- All-in-one bonding solution from die bonding, clip bonding to reflow process
- High throughput by
  - Implementing patented bond head design
  - Supporting dual dispensing system
  - Array clip bonding capability
- Supporting independent temperature controlling regions
  - 8 heating zones + 1 cooling zone
- Consistent reflow environment
  - Excellent oxygen level control with low level of forming gas consumption
  - Programmable temperature profile on various stations

WAFER LEVEL SCANNING AND SORTING EQUIPMENT

**Wafer Level Packages Sorter**

**WP808**

**Applications**: Sorting wafer level packages into reel pocket tape

- High speed and precision sorting performance with linear motor and DDR motor driven
- Full range of inspections on various stages
- Implementing excellent flexibility
  - Tape and reel loader: 8 - 24 mm pocket tape
  - Supporting hot and cold cover tape sealing
- Wafer map handling capability
- Post-sealing inspection capability (option)

**Wafer Scanner**

**WS896**

**Applications**: Generating precise and reliable wafer map from physical location of every die

- Fast wafer scanning speed
- Precision scanning
- Updating wafer map information corresponding to the physical location
- Advanced die surface defective inspection

*Remark: All performance is package dependent*
Wafer Mapping Die Sorter
MS899 Series

**Applications:** Sorting die, e.g. blue LED, white LED, laser diode, etc. based on wafer map information

- High speed sorting driven by
  - Direct drive rotary (DDR) motor and linear motor system
- User-friendly interface with Windows® XP based operation system
- Flexible configurations for various need
  - MS899: flexible "Plug & Sort" bin block arrangement
  - MS899-DL: input and output film frames handling system
  - MS899-DLA: supporting high speed bin frame exchanging system
- Whole series supporting ring on frame wafer presentation
- Achieving factory automation with MS899-DL
  - Extra large sorting area: 58 x 58 mm
  - Up to 150 grades can be sorted automatically once

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- Whole series supporting ring on frame wafer presentation
- Achieving factory automation with MS899-DL
  - Extra large sorting area: 58 x 58 mm
  - Up to 150 grades can be sorted automatically once

Die Sorter
AS899

**Applications:** LD and LED dice individually testing and sorting solution

- High speed die testing and sorting system with rotary testing stage design
  - Dual individual linear bond heads for pick and place process
  - Parallel pick, test and sort process
  - Sorting good die only with advanced die surface defect detection at wafer stage
- Excellent flexibilities
  - Supporting various types of testers integration
  - Flexible bin block arrangement
  - Up to 56 bin blocks can be installed once (option)
- Precision probing performance with 3D testing stage motions
- User-friendly interface with Windows® XP based operation system

*Remark: All performance is package dependent*
**Remark:** All performance is package dependent

**GOLD BALL WIRE BONDING SYSTEM**

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**Ultra Fine Pitch Wire Bonder**

**EagleXtreme**

- Applications: Ultra low-k wire bonding, stacked die & thin over hang die wire bonding, ultra low loop wire bonding
  - Wider bonding area
  - 30 μm BPP bond capability
  - Precision placement with nano scale resolution

**High Speed Wire Bonder**

**iHawkXtreme**

(for Discrete / Opto / IC Applications)

- Applications: Cu wire bonding, QFN, SMD LED, HPLED, high density discrete packages, etc.
  - Innovation in optics & PR system for smaller discrete dice
  - Advanced PR algorithm with PR look ahead capability
  - Faster package conversion with fully motorized material handling system

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**Extreme High Speed Wire Bonder**

**TwinEagleXtreme**

- Applications: Ultra low-k wire bonding, stacked die & thin over hang die wire bonding, ultra low loop wire bonding
  - High performance gold wire bonder*
    - 40 wires/sec per machine for 2mm wire
  - Highest output per square foot area
  - Ultra fine pitch machine
    - Capable to handle up to 30 μm BPP
    - Excellent vibration suppression technology to eliminate vibration coupling
  - Capable to handle high pin count package
    - Support ultra low loop bonding
    - Dual wire size & wire types application

**HarrierXtreme**

- Applications: QFN, SMD LED, HPLED, high density discrete packages, etc.
  - Dual high speed wire bond heads system
  - Highest output per square foot area
  - Small ball bonding capability: 35 μm ball size
  - User-friendly, intelligent windows-based interface
  - Innovative algorithm for faster PR
  - Supporting copper wire bonding & copper BSOB (option)

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*Remark:* All performance is package dependent
**GOLD BALL WIRE BONDING SYSTEM**

**Ultra High Speed Wire Bonder**
(for Hybrid Application)

*EagleXtreme X2L*

*Applications:* One pass solution for large bond area packages, e.g. multi-chip modules, SiP, etc.

- High speed*: 20 wires per sec @ 2 mm wire length (wire cycle time)
- Implementing patented design concept
- Extreme large bonding area

**Automatic Gold Ball Wire Bonder**
(for Vertical LED Application)

*iHawk-V*

*Applications:* Vertical leadframe handling capability, including, Vertical LED, photo transistor, infra-red diodes, etc.

- High speed wire bonding capability
- Pro-longing MTBA with latest input / output magazine handling
- Extended workholder - support up to 2 strips in waiting

**Auto Gold Wire Bonder**
(for Bent Leadframe Application)

*iHawk-02*

*Applications:* Bent leadframe handling capability for piranha LED application

- High speed wire bonding capability
- Pro-longing MTBA with latest input / output magazine handling
- Saving cost of ownership by direct bent leadframe indexing

**Automatic Gold Ball Wire Bonder**
(for Laser Diode Application)

*Eagle60AP-LD*

*Applications:* Metal can packages with three dimensional bonding e.g. LD assembly, etc.

- Rotary workholder system for multi-plane bonding
  - 0° to 90° programmable rotation
- One pass LD and submount bonding
- Specially designed for photonics and optoelectronic application
- Custom-made top plate and carrier for large range of laser diode products

*Remark: All performance is package dependent*
**STUD BUMPING SYSTEM**

**Wafer Level Stud Bumping System**

**Hummingbird**

**Applications:**
- Gold / copper stud bumping on wafer
- High speed bumping performance
- Excellent bumping control
- Fine pitch bumping capability
- Stock bumping capability
- Implementing flexibility
  - Large bumping area: up to 12" wafer handling capability
  - Supporting gold / copper stud bumping
  - Automatic wafer loading system
  - Optional to equip with pre-heat / post-heat system

**Applications:**
- Gold / copper stud bumping on wafer
- High speed bumping performance
- Excellent bumping control
- Fine pitch bumping capability
- Stock bumping capability
- Implementing flexibility
  - Large bumping area: up to 12" wafer handling capability
  - Supporting gold / copper stud bumping
  - Automatic wafer loading system
  - Optional to equip with pre-heat / post-heat system

**ALUMINUM WIRE WEDGE BONDING SYSTEM**

**Rotary Bondhead Wedge Bonder**

**AB559A**

**Applications:**
- Chip-on-board, multi dice, LED display, chip-on-flex, chip-on-glass, ceramic, etc.
- Fine pitch capability:
  - Pad pitch: 68 μm
  - Pad size: 63 x 80 μm @1.0 mil Al wire
- Large effective bonding area: 8" x 4"
- Vision Lead Locator (VLL) to adapt lead width variation
- Dual colour (red-blue) lighting for different substrates surface reflection
- Gold wire wedge bonding application (option)
- 60° wire feed angle capability (option)

**Applications:**
- Chip-on-board, multi dice, LED display, chip-on-flex, chip-on-glass, ceramic, etc.
- Fine pitch capability:
  - Pad pitch: 68 μm
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- Large effective bonding area: 8" x 4"
- Vision Lead Locator (VLL) to adapt lead width variation
- Dual colour (red-blue) lighting for different substrates surface reflection
- Gold wire wedge bonding application (option)
- 60° wire feed angle capability (option)

**Automatic Ultrasonic Wedge Bonder**

**AB530**

**Applications:**
- Chip-on-board, multi dice/multi PCB, high lead count, etc.
- High speed bonding: 8 wires/sec
- Fine pitch capability
  - Pad pitch: 68 μm
  - Pad size: 63 x 80 μm @1.0 mil Al wire
- Large effective bonding area: 8" x 4"
- Vision Lead Locator (VLL) to adapt lead width variation
- Dual colour (red-blue) lighting for different substrates surface reflection
- Gold wire wedge bonding application (option)
- 60° wire feed angle capability (option)

**Applications:**
- Chip-on-board, multi dice/multi PCB, high lead count, etc.
- High speed bonding: 8 wires/sec
- Fine pitch capability
  - Pad pitch: 68 μm
  - Pad size: 63 x 80 μm @1.0 mil Al wire
- Large effective bonding area: 8" x 4"
- Vision Lead Locator (VLL) to adapt lead width variation
- Dual colour (red-blue) lighting for different substrates surface reflection
- Gold wire wedge bonding application (option)
- 60° wire feed angle capability (option)

*Remark: All performance is package dependent*
**Reflow Oven**

SR902

**Applications:**
- Reflowing process for high lead (>85% Pb) solder, lead free solder, flux reflow, etc.
- Reflowing temperature: up to 400°C
- Up to 8 independent temperature controlling regions
- Combination of convection and radiation heating modes
- Built-in reflow temperature profiler
- Sophisticated oxidation level control
  - Oxygen level control: < 50 ppm
  - Nitrogen gas consumption as low as 160LPM
- In-line capability with AD9012A and other die attach system (option)

**Automatic Lens Holder Reflow Oven**

SR902LA

**Applications:**
- Curing process for lens holder attached substrates, e.g. CLCC, PCB, singulated carrier, etc.
- Stable and repeatable curing temperature: up to 300°C
- Up to 8 independent temperature controlling regions
- Combination of the convection and radiation heating modes
- Sophisticated oxidation level control
  - Nitrogen gas consumption as low as 160LPM
- In-line capability (option)

**Snap Curing Oven**

COE139 / COE139R

**Applications:**
- Curing process for die attached substrates in either strip or reel form, e.g. SOT, Top LED, etc.
- Excellent oxygen level control with
  - N2 curtains at oven's input and output sides
- Consistent curing temperature control with 6 temperatures control zones
- Selectable for various substrates handling
  - COE139: strip form substrate handling
  - COE139R: reel form substrate handling
- In-line capability, e.g. AD830, and other die attach system (option)

**Snap Curing Oven**

PC139 / PC139R

**Applications:**
- Curing process for die attached substrates in either strip or reel form, e.g. smart card, SOT, etc.
- Stable and repeatable temperature control
  - Temperature range: up to 300°C
- Sophisticated oxidation level control
- 5 independent temperature controlling zones
- Selectable for various substrates handling
  - PC139: strip form substrate handling
  - PC139R: reel form substrate handling
- In-line capability, e.g. AD8912RL, AD838R, and other die attach system (option)
**APPLICATIONS**
Column pressing station for stack die package

- Precision tape cutting and tape bonding
  - XY placement and cutting accuracy: ±25.4 μm
  - Tape rotation: ±0.5°

- Excellent flexibility
  - Large range of tape handling capability: 2 – 16mm (tape width)
  - Fast package conversion
  - In-line capability (option)

**APPLICATIONS**
Tape bonding system for stacking dice package, e.g. stacked CSP

- Automatic Tape Cut and Paste Machine
  - CPS12

**APPLICATIONS**
Column pressing station for stack die package

- After Press System
  - APS70

**APPLICATIONS**
Leadframe Cutting System

- LFC130

**APPLICATIONS**
Precision cutting reel form leadframe into strip form

- High throughput with 4.5 cutting cycles per minute
- Precision indexing with location pin
- Standalone cutting control
- In-line capability (option)

**APPLICATIONS**
Base Off-loading System

- BOL139 / SOL139

**APPLICATIONS**
Picking singulated unit from boat carrier to the JEDEC trays

- Automatic orientation correction for pick & place process
- Programmable rotary table for orientation correction
  - 90°, 180° and 270° (programmable)
- Simple and easy conversion
IDEALcompress™

**Applications:** Large substrate W150mm x L300mm, LED

- Ideal for high-mix, low volume manufacturing
  - Small lot assembly
  - Compact
- Ideal for ECO friendly manufacturing
  - No material wastage
  - No mold cleaning required
- Ideal for complex designs
  - Thin chip, fine pitch, long wires
  - Multi stacked die package
  - Low K die
  - And more......
- Various dispensing configuration, including, liquid epoxy, clear silicone, granular powder dispensing

IDEALmold™ 80/120/170 ton

**Applications:** Mini-BGA, flex BGA, CSP/BGA, QFN, QFP, TQFP, PLCC, TSSOP, TSOP, SOIC, SOT, PDIP, singulated unit, power devices, POP, etc.

- Capable of running in standalone or inline configuration
- Simple and flexible operation
  - Flexible press configuration of 1 to 4 presses
- Excellent productivity and cycle time
- Suitable for clean room application
  - Clean cell, line scan, precision degate and lot management optional features
- Input and output pattern recognition features
- Vacuum and wedge molding capability
- High pre-heat temperature capability
- Windows® XP operating system
- Pinnacle Gating System (PGS™) molding capability (option)

IDEALmold™ R2R

**Applications:** Reel form leadframes or substrates, e.g. smart card, SIM, flex devices, discrete devices, etc.

- World’s only dual reel automatic molding system
- Pinnacle Gating System molding (PGS™)
- Capable of running in standalone or inline modes
- Simple operation
- Excellent productivity and cycle time
- Fast conversion time
- Windows® XP operating system
- Clean cell and line scan (option)
- Inspection and Reject Punch Station (option)
- Pinnacle Gating System (PGS™) molding capability (option)

Osprey

**Applications:** BGA, MLP/QFN, QFP, SOIC, SOT, PDIP, COB, carrier molding, POP, etc.

- World smallest footprint automatic molding machine
- Built-in PGS™ molding capability
  - Ultra high density molding
  - POP capability
- Lowest tooling cost and shortest lead time
- PRP free design: < 15 mins conversion time
- Ideal for
  - Small lot, high product mix production
  - Flexible manufacturing work cell

*Remark: All performance is package dependent*
Molding Equipment

**WLP300**

*Applications:* WLP, wafer level LED, exposed solder ball WLP, Cu bump pillar WLP, embedded wafer ball grid array, redistributed chip package

- World’s first 12” automated WLP compression encapsulation system
- Flexible to handle wafer size ranging from 4” to 12”
- Dispensing accuracy of ± 2%
- Equipped with encapsulant weight compensation
- Dispensing options
  - Liquid epoxy
  - Clear silicone
  - Granular powder

**DISPENSING / JETTING SYSTEM**

**Precision Dispensing System**

**DS500 series**

*Applications:* Die coat, adhesive dispensing, sealing, gel coating, underfill dispensing, etc.

- Excellent encapsulant placement repeatability and dispensing quality
- Extra large dispensing area with gantry table design
- Glob top, dam and fill dispensing mechanism
- Custom programmable dispensing patterns & parameters
- Automatic substrate handling capability with input / output elevator systems (option)
- Dual dispensing heads with adjustable pitch (option)
- Reel-to-reel handling capability (option)

**Precision Jetting System**

**DS520**

*Applications:* Jetting encapsulant onto various substrates, including, phosphors mixed silicone on vertical LED, etc.

- Extreme high speed jetting: up to 45,000+ PPH
- Excellent jetting performance
  - High accuracy & repeatability
  - Easy to operate & maintenance
  - Long modules life
- Maintaining fluid homogeneity by strategic agitating system
- Supporting individual dual workholders control
- Supporting graphical user interface with Windows® XP operating system

*Remark: All performance is package dependent*
Trim/Form/Singulation System

Mechanical Press Trim / From System
MP209

Applications: DPAK, D²PAK, QFN, SO, SOT, TO, TO220, TQFP, TSOP, TSSOP, etc.

- High speed eccentric cam-follower driving mechanism with synchronized transportation
- Two-ton capability
- Automatic tool height inching
- Fast running trim / form operation, typically,
  - Dam bar cut: 160 spm
  - Lead form: > 100 spm
- Modular construction configurable to accommodate different applications
  - QFP system (JEDEC Tray Off-loading)
  - SOIC system (Tube pallet Off-loading)
  - SOT system (bulk Off-loading)
  - In-line system (link with laser and finishing modules)

Applications: DPAK, D²PAK, QFN, SO, SOT, TO, TO220, TQFP, TSOP, TSSOP, etc.

- High pressing speed up to 200 spm (bulk offloading)
- Press size 600mm width
- Tool and product part quick exchange
- Tool width 110mm
- Flexible integration

Applications: Thin IC frames such as MSOP, SOT, etc.

Lab Press
MP-LAB

Applications: For tool characterization

- Toggle driver mechanism
- Two-ton driver capability
- Manual operation
- Accept ASM tooling

Applications: Molded type SD card frames with tie bar construction

- Self contained system to accept stack magazine loading and un-loading
- Servo press driver
- Linear servo carrier transportation provides a flexible solution to variety of frames
- Standard ASM mark vision package (G-NG inspection)
- Flexible to integrate any third party vision

*Remark: All performance is package dependent
Trim/Form/Singulation System

**PBGA Singulation System**

**BG289-M**

**Applications**: PBGA frame in single row or matrix, etc.

- Toggle driver mechanism
- Two-ton driver capability
- Shear-cut / Slot-cut mechanism
- Palm-size toolset facilitates quick product conversion
- Flexible to integrate any end-of-line products

**Carrier Based Laser Mark Handler**

**LS2000**

**Applications**: All kinds of IC and power device leadframes

- Self contained system to accept stack magazine loading and unloading
- Open platform to accept various laser marker in market
- Carrier transportation provides a flexible solution to variety of package
- Standard ASM mark vision package (G-NG inspection)
- Flexible to integrate any third party vision

Image Sensor Equipment

**Camera Module Auto Focusing and Testing System**

**IS300-AF**

**Applications**: Socket type CMOS camera module

- Support (Standard Mobile Imaging Architecture) SMIA-65, SMIA-85, and SMIA-95 camera modules; which use CCP2 +CCI interface
- Socket type module from 4.5x4.5mm up to 14x14mm in size
- Electrical test stations
  - Supply current test on streaming and standby modes
  - Open/short test on individual pins
- Auto-focus stations
  - Optimize lens barrel position for image sharpness according to user-defined criteria (such as MTR, SFR)
  - 70° FOV maximum
  - Dual test charts with built-in backlight illumination
    - Small chart: Chart size up to 632mm x 1232mm
    - Test distance 300 ~ 710mm
    - Large chart:
      - Chart size up to 1120mm x 1400mm
      - Test distance 690 ~ 1100mm
- Test contactor: Spring loaded Pogo™ pins
- Dual path design for parallel processing of two units at the same time
- Throughput up to 900 units per hour (at 7 seconds AF-time, which is device dependent)
- Material onload/offload: JEDEC trays
- Two reject trays with user-defined binning partitions

**Automatic Camera Module Test Handler**

**IS320-UT**

**Applications**: Socket type CMOS camera module

- Electrical test stations
  - Supply current test on streaming and standby modes
  - Open/short test on individual pins
- Auto-focus stations
  - Optimize lens barrel position for image sharpness according to user-defined criteria (such as MTR, SFR)
  - 70° FOV maximum
  - Conversion lens system; simulated object distance = 0.3m to infinity
- Dispensing & UV spot-curing station
- Image test stations
  - White LED light source panel for Blemish test
  - Conversion lens system for color and focus checking
- Dual turret/turn-table (with totally five test stations per turret) design for enhancement of UPH
- Support Camera link cable for image signal data bus; and there is no need to re-initialize the camera module in each test station again; due to usage of moving cable technique.
- Material onload/offload: JEDEC trays
- One reject trays with user-defined binning partitions

*Remark: All performance is package dependent*
New Generation
Ball Placement System
BP2000

Applications: Strips – CSBGA / PBGA, Flex BGA, etc.

- Ultra fine pitch CSBGA
  - Ball size: 0.15mm*
  - Ball pitch: 0.4mm#
- Fast cycle time
  - Strip form substrate – typical 9.0 - 13.0 sec* per placement (with PR alignment)
  - Singulated BGA – typical 14.0 - 17.0 sec
- Flexible material handling capability
  - Strip form substrate / flat carrier / plastic tray / U-boat / pallet / slot magazine
- Built-in diverter for easy link-up with conventional oven

* 0.15mm ball process is under engineering evaluation
# 0.3mm pitch is under preparation
* * With high speed version
** Typical 11.0 – 14.0 sec per placement for ball size < 0.25mm

High Speed Tape Sorting System
CS900

Applications: BCC, CSBGA, MLP, QFN, SIP, Window BGA, etc.

- High throughput: 9,000 – 10,000 UPH (for smaller packages, say 2 x 2 and 3 x 3)
- High speed linear motor technology
- Advanced in-house vision technology: mark inspection, lead/ball inspection and 4 sides inspection (QFN)
- Flexible offloading configuration, including tube-tray / tray-tray / canister-tray, etc.

*Remark: All performance is package dependent
Turret Based Test Handler

FT2030S

Applications: SC59, SC70, SOT23, SOT89, SOT113, SOT223, SOIC, TSSOP, QFN/MLP, MBGA, DPAK, TO220, TO3P, TO264, SIP9, etc.

- Up to 40,000PPH Handling Rate
- 30 high speed turret pick heads for efficient processing of multiple process steps with extremely short index time
- High flexibility
  - Configure any mix of process steps to provide a full range of flexible solutions
- Flexible system configuration
  - Onload: Stack tube / vibratory bowl feeder / metal tray
  - Offload: Stack tube / plastic tube / tape-and-reel / multiple tubes / multiple bins
- Expertise in Contactor Technology
  - Clamp type contact blade / strip
  - Flat type contact strip
- Advanced vision technologies
  - 3D lead inspection with lead co-planarity and stand-off check, 5S inspection, In-pocket inspection, Mark and Surface inspection

Turret Based Vision Inspection Handler

FV2030

Applications: SC59, SC70, SOT23, SOT89, SOT113, SOT223, SOIC, TSSOP, QFN/MLP, MBGA, DPAK, TO220, TO3P, TO264, SIP9, etc.

- Up to 40,000PPH Handling Rate
- 30 high speed turret pick heads for efficient processing of multiple process steps with extremely short index time
- Enhanced vision inspection capability
  - 6S inspection: Chip casting, Piping hole, Short molding, etc.
  - 3D inspection: Lead standoff, Lead co-planarity, Stand-off, etc.
  - 2D inspection: Lead width, Lead length, Lead pitch, etc.
- Flexible system configuration
  - Onload: Stack tube / vibratory bowl feeder / metal tray
  - Offload: Stack tube / plastic tube / tape-and-reel / multiple tubes / multiple bins

Wafer Frame Sort/Test Handler

FT2030WF

Applications: Sawn DFN, QFN CSBG A, CIS, Bare Die, Bumped Die, etc.

- Fully modular design – scalable system configure
- Sorting speed 10-15K
  - Subject to substrate matrix form and device size form factor
- Fully modular design – scalable system configure
- 8” & 12” wafer frame loader with tape expansion and multi-pins ejector
- Programmable device flipping module
- Allow co-exist different off-loading devices
  - i.e. standard JEDEC tray, tape-and-reel, tube, and canister…etc.
- Advanced vision technologies
  - 3D lead inspection with lead co-planarity and stand-off check, 5S inspection, In-pocket inspection, Mark and Surface inspection
- PC™ control and vivid Windows® based GUI

*Remark: All performance is package dependent
Carrier Based Test Handler

**FT1000**

- **Applications**: M-BGA, QFN, SOIC, QFP, TSOP, etc.
- ✔ Parallel device testing in singulated/strip form
- ✔ Carrier loading area of 75 mm x 260 mm
- ✔ Programmable 3-axis carrier indexer
- ✔ Short indexing time:
  - Carrier exchange time: 2.0 - 3.7 sec
  - Within carrier: 0.4 s up to 20 mm travel
- ✔ Temperature range: ambient to 135°C (Option: 155°C)
- ✔ In-house design test contactor
  - Spring loaded Pogo™ pins
  - Unlimited multi-site testing depends on tester’s resources
- ✔ Combine with Finishing module to provide a one stop test, sort, inspect and packing solution

Memory Test Handler

**FT1000-HD**

- **Applications**: SO, TSOP, QFN, MLF, BCC, BGA, CSP etc.
- ✔ Hi-density carrier based test handler system capable of testing 256 devices in parallel
- ✔ Index time less than 1.0 sec
- ✔ Temperature range: ambient to 135°C (Option: 155°C)
- ✔ Adjustable contact force of 120 kgf (Option: 240 kgf)
- ✔ Throughput up to 10,000 PPH
- ✔ Heat compensation during test
- ✔ Flexible input / output configuration

Singulation and Finishing Cluster

**PS209**

- **Applications**: SO, TSOP, TSSOP, etc.
- ✔ Flexible and hi-speed system that provides singulation, visual inspection and packing capabilities
- ✔ Throughput up to 20,000 PPH
- ✔ 30-head turret pick-and-place system
- ✔ Impact force controlled
- ✔ Multiple output bins
- ✔ Armed with in-house mark, lead, and pre-tape inspections with surface inspection options
**LED (SMD) Sorting & Taping System**

**Automatic LED (SMD) Sorting System**  
**SLS230/T/S**

- **Applications:** Chip LED, Top LED Sideview LED etc.
- **Implementing patent pending design**
  - High speed bins sorting design
  - Unit orientation correction design
- **All bins have present sensors to prevent bin mixing**
- **Test contact technology: adapt IC test contactor design knowledge**
- **Option with vision inspection for multi-chip LED to screen out package with chip missing, defected chip, etc before sorting**
- **Simple and easy operation with multiple hot keys features**
- **Wide range of application**
  - Chip LED devices: 0402, 0603, 0605, 0805, 1206, etc.
  - Top LED devices: 3014, 3020, 3528, 5050, etc.
  - Sideview LED devices: 008, 010, 020, 215, 335, etc.

**Automatic LED Taping System**  
**SLT400**

- **Applications:** Chip LED, Top LED Sideview LED etc.
- **In-house developed direct drive rotary motor and linear up down motor to maximize system throughput**
- **Advanced inspection algorithm to perform high accuracy inspection**
  - Package/pocket orientation check
  - In-pocket inspection
- **Option with in-house checker to perform electrical and optical tests before taping**
- **Ensuring taping for good units with supporting test contact technology**
- **Simple and easy operation with MS Windows® operating system**
- **Wide range of application**
  - Chip LED devices: 0402, 0603, 0805, etc.
  - Top LED devices: 3014, 3020, 3528, 5050, etc.
  - Sideview LED devices: 008, 010, 020, etc.

**Ingenious (LED) Packing System**  
**IP360**

- **Applications:** Chip LED, Top LED, Sideview LED etc.
- **One-stop solution for test, sort and packing with good traceability**
- **In-house developed direct drive rotary motor and linear up down motor to maximize system throughput**
- **Choose of wafer frame input for sawn type LED; Bowl feeder input for chipLED or PLCC**
- **Up to 8 tape-and-reel output and less frequent bins will store in buffer**
- **Powerful inspection capability**
  - Wafer inspection
  - Tape-and-reel in-pocket inspection, etc.
- **Simple and easy operation with MS Windows® XP operating system**

*Remark: All performance is package dependent*
In-line Assembly Solution

LS1000 + MP209

Applications: DPAK, D²PAK, QFN, SO, SOT, TO, TO220, TQFP, TSOP, TSSOP, etc.

CS8000AP + FT1000HD + PS209

Applications: QFN

LS1000 + MP209 + FT2030S

Applications: DirectFET™
Manufacturing Solution

Discrete Solution

- AD838 (P. 6)
- Heavy AI Wire Bonder (P. 14)
- IDEAlmold™ (P. 15)
- MP209 (P. 21)
- FT2030S (P. 24)
- SD832D (P. 8)
- SD890A (P. 8)
- iHawkXtreme (P. 14)

Die Attach Equipment
Wire Bonding Equipment
Molding System
Trim/Form System
Test & Finish Handling Equipment

DDR Memory / Memory Card Solution

- AD9012-BOC (P. 3)
- AD8912SD-A (P. 5)
- EagleXtreme (P. 14)
- TwinEagleXtreme (P. 14)
- IDEAlmold™ (P. 19)
- MP-SDS (P. 21)
- BP2000 (P. 23)

Die Attach Equipment
Wire Bonding Equipment
Molding System
BEP System

Smartcard / RFID Solution

- RFID Line (P. 6)
- AD8912RL (P. 5)
- PC139R (P. 17)
- iHawkXtreme (P. 14)
- IDEAlmold™ R2R (P. 19)
- AD838R (P. 6)

Die Attach Equipment
Curing Oven
Wire Bonding Equipment
Molding Equipment

MEMS Solution

- AD898 (P. 6)
- AD838 (P. 6)
- iHawkXtreme (P. 14)
- DS500 (P. 20)

Die Attach Equipment
Wire Bonding Equipment
Dispensing Equipment

*Remark: All performance is package dependent
Manufacturing Solution

COB Solution

- AD880 (P. 9)
- AD896 (P. 9)
- AB559A (P. 16)
- AB530 (P. 16)
- DS500 (P. 20)

Die Attach Equipment
Wire Bonding Equipment
Dispensing Equipment

HP LED Solution

- AD819-11TS (P. 10)
- AD830U (P. 14)
- EagleXtreme (P. 14)
- IDEALcompress™ (P. 19)
- IP360 (P. 26)

Die Attach Equipment
Wire Bonding Equipment
Molding Equipment
Ingenious (LED) Packing System

SMD LED Solution

- AD830 (P. 7)
- iHawkXtreme (P. 14)
- DS520 (P. 20)
- SLS230 (P. 26)
- SLT400 (P. 26)

Die Attach Equipment
Wire Bonding Equipment
Jetting Equipment
LED (SMD) Sorting System
LED (SMD) Taping System

Vertical LED Solution

- AD930V (P. 8)
- iHawk-V (P. 15)
- DS520 (P. 20)

Die Attach Equipment
Wire Bonding Equipment
Dispensing Equipment

*Remark: All performance is package dependent