

Equipment and processes of the Packaging Area

The Packaging area is the area in the Clean Room where tasks such as wafer dicing, die bonding or flip-chip are performed.

Techniques

- Silicon wafers and different materials substrates dicing and cleaving
- Microelectronic devices Packaging: dispensing epoxy adhesives, wirebonding, ribbon bonding, Flip Chip, etc.
- Circuit Packaging test: destructive or non destructive test, wire bond shear test, die attach test by shear test, etc.

Equipment and Available capabilities

Substrate dicing

Semiautomatic Dicing machine K&S780

- Semi-automatic equipment
- Substrates up to 6"
- Y-axis accuracy: 2 μm
- Hub and hub less type 2" blades
- Multiple chip dimensions
- Multiple cutting depths
- Multiple rotation angles: Parametric
- Sawable substrate materials: Si, Ge, GaAs, GaN, Borosilicate, Al_2O_3 , SiO_2 , SiC, LiNbO_3

Dicing Machine K&S 980 (1998)

- Semi-automatic equipment
- Substrates up to 8"
- Y-axis accuracy: 2 μm
- Hub and hub less type 2" blades
- Multiple chip dimensions
- Multiple cutting depths
- Multiple rotation angles: By reference
- Sawable substrate materials: Si, Ge, GaAs, GaN, Borosilicate, Al_2O_3 , SiO_2 , SiC, LiNbO_3

Dicing Machine DISCO DAD-3350 (2019)

- Substrates up to 8"
- Circle cut for wafer downsizing
- US option for SiC
- In process checking
- CO2 Bubbler
- Additives for long-term processes
- Highly configurable and programmable with wizards and PRS
- Higher dicing quality with lower environmental impact
- Sawable substrate materials: Si, Ge, GaAs, GaN, Borosilicate, Al_2O_3 , SiO_2 , SiC, LiNbO_3

LatticeGear 420 Cleaver (2015)

- Cleaves almost all crystalline materials
- Clock dial for indent calibration
- Indent position control with 5 μm step size
- High accuracy positioning of sample ($\pm 10 \mu\text{m}$)
- Resulting sample size down to 5 mm
- Polished tip diamond indenter with polished face for accurate positioning
- Colour CCD camera and Monocular, parfocal, zoom lens
- Up to 300 mm substrate size

Microelectronic devices Packaging

Dr. Tresky T4907 (2006)

- Manual Pick&Place
- Epoxy and soft paste dispenser
- Rework Station
- Flip chip option installed
- Placement accuracy: 10 μm

K&S 4123, 4523, 4127 Wedge Bonders (1986 y 2005)

- Fully manual bonders
- Accepts standard packages and substrates up to 4"
- Al, Au and Cu wires from 0.7 to 15 mils
- Heated sample holder
- Target light beam system

Wire Bonder TPT HB16 (2009)

- Semi auto, Deep Access wire and Ribbon Bonder
- Au, Al, Ag, Cu wire (17 to 75 μm) for Wedge & Ball Bonding
- Au and Al Ribbon up to 250 x 25 μm
- Large program storage capacity with more than 100 parameters
- Accepts flat packages and substrates up to 4"
- Heated sample holder
- Spotlight targeting system
- Possibility to make bumps for Flip-chip packaging

Bondtec 56XXi Wirebonder & Bond Tester (2022)

- Changeable bondheads for all wirebond and testing process
- Installed ball bonding (5610i) and Deep access wire bonding heads (5632i)
- Installed Pullheads - 100 cN - 5000 cN and Shearheads - 500 cN - 5000 cN
- Automatic bonding with pattern recognition system

- Adaptable bond settings (loop shapes, force and power profiles...), stored in unlimited bond programs
- Travel distances 100 mm x 100 mm
- Up to 1800 bonds/h

Royce 650 Die Shear & Bond Tester (2010)

- 305 mm x 155 mm stage for 300 mm wafers, leadframes or substrates
- Interchangeable test heads
- Die shear up to 200 kgf
- Wire Pull Test Force up to 10 kgf
- Total System Accuracy: ± 0.1 %

Packaging Team

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