

# Equipment for Back-end Process

## Wafer to Wafer Bonding Equipment



**BC7000**

$\phi 100 / \phi 150$  mm

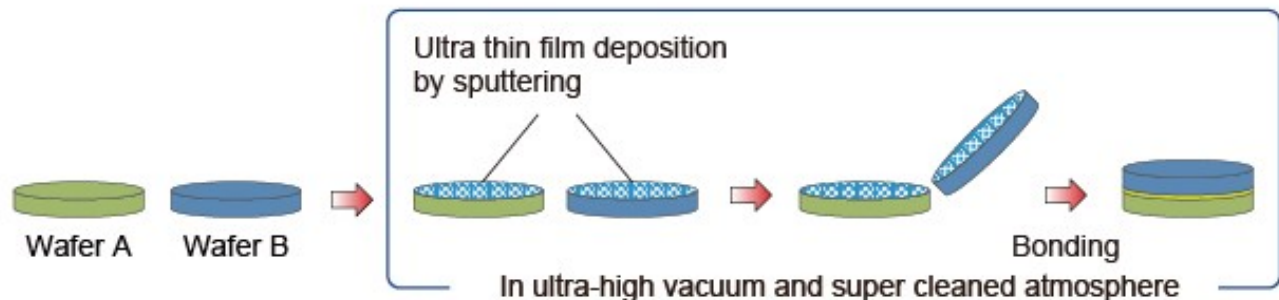


**BC7300**

$\phi 200 / \phi 300$  mm

### Features

- Bonding at room temperature
- No pressure during bonding
- High bonding strength
- Bonding of any similar or dissimilar materials
- High throughput
- Strong bonding by diffusion of sputtered atoms



Atomic Diffusion Bonding Process Flow

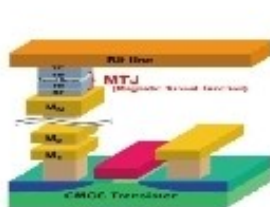
# Equipment for Front-end Process

## Sputtering Equipment for Memory

### MTJ Sputtering Equipment for Mass production NC7900

#### Features

- Ultra-high vacuum and oblique angle rotation PVD
- Fine interface control with ultra-thin multi-layers
- Compatible with Planar & Perpendicular MTJ formation



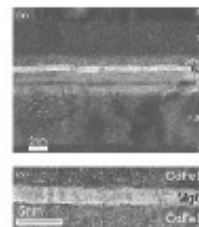
Basic MRAM cell structure



### MTJ Etching Equipment for Mass production NC8000

#### Features

- MTJ Etching Equipment for Mass production
- Overall etching process by clampless holder with 2 axes of revolution and stage angle



CoFeB/MgO/CoFeB MTJ



### Memory Wire Sputtering Equipment for mass production IC7500

#### Features

- Cathode magnet position (3D) is variable in-situ per each recipe
- Provides >90% uptime rate at semiconductor memory production line. (failure rate < 1%)



DRAM Cross Section

### Metal Gate Sputtering Equipment for mass production FC7100

#### Features

- Capable of controlled film composition through ultra-high vacuum co-sputtering
- High-precision control of (0.1 nm unit) film thickness and excellent uniformity ( $1\sigma < 1\%$ )
- Low material cost through use of compact cathode. Easy material changeover.



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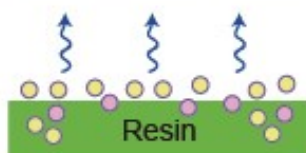
## Sputtering Equipment for Advanced Packaging



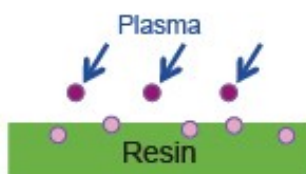
### EL3400

Panel PVD system for advanced packaging applications including barrier and copper seed deposition

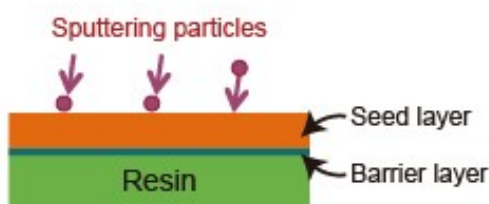
#### Cu seed sputter process



Low temp degas



Surface treatment

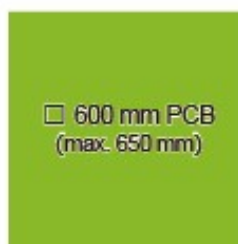


Ti/Cu metal deposition

#### Features

- Strong adhesion on substrate
- Available to deposit films on resin or glass substrate
- Available to handle panel size substrate

#### Substrates for EL3400



#### Interposer

