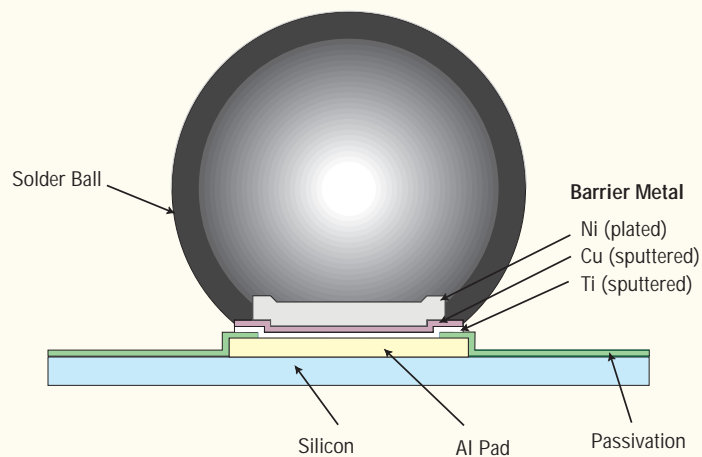


Wafer Bumping

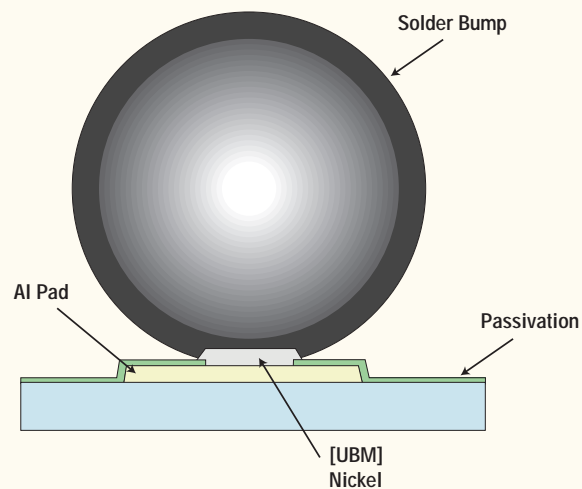
Wafer bumping services are offered as a preparatory step for flip-chip bonding or as bumping service alone. The types of solder bumping available include high lead solder, eutectic solder and lead free solder. Lead free bump, which is composed of tin-silver alloy, can meet the WEEE directives. Additionally, it can eliminate alpha particle sources. Fujitsu's solder bumping service is currently offered for 6" and 8" wafers, and soon 12" wafers.

Using advanced technology fabrication, Fujitsu manufactures 11,000 bumps on a die with 120 μ m bump pitch with lead free solder, and a 100 μ m bump pitch.

Cross section of solder bump



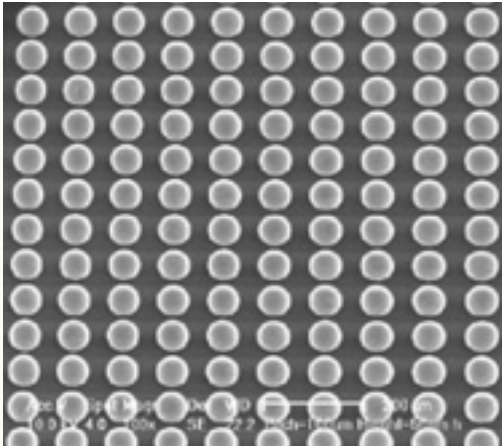
Cross section of electroless Ni UBM and AP- bump



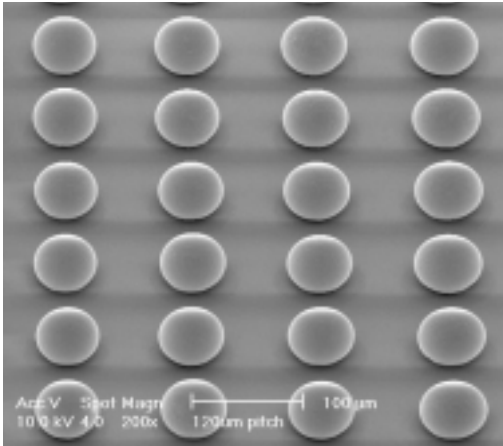
- Industry's most extensive experience
- Lead-free and other innovative bumping solutions
- Copper wiring redistribution services
- Tightest bump pitch
- Single die bumping capability

Wafer Bumping

Fine-pitch bump

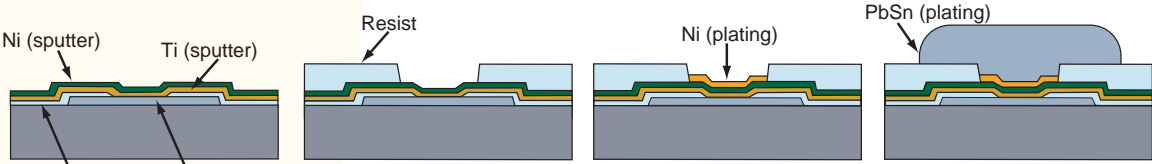


Bump pitch: 100um
Bump height: 50um



Solder Bumping Process Flow

1. UBM sputtering
2. Resist patterning for plating
3. Ni plating
4. PbSn Plating



5. Resist removing
6. Cu/Ti etching
7. Bump shaping

