

# Data Sheet

## Flip Chip Bumping & Assembly

*Advanced Microelectronic Packaging*

### Complete Turn-Key Flip Chip Production

Substrates:  
 Organic, ceramic, HiTCE, flex, silicon, et al  
 All die sizes & configurations  
 Substrate design & fabrication, or  
 Assembly of customer-supplied substrates  
 High performance substrates available  
 Materials selection & evaluation  
 Low & medium volume production  
 Reliability testing  
 Inventory management  
 ITAR Registered (Reg. Code: M24169)

### Wafer / Die Bumping

UBM: Electroless Ni, immersion Au (ENIG), Pt, et al  
 Solder: Pb-Free (RoHS), eutectic, high Pb  
 Screen printed, jetted  
 Gold Stud Bumping (wafer or die)

### Assembly

Solder-bump reflow  
 Isotropic & anisotropic pastes & films (w/ Au Studs)  
 Thermocompression bonding (w/ Au Studs)  
 Standard & "no flow" underfills available  
 Encapsulation, lid seal, or corner staking

### Substrate Ball Attach

Pb-Free (RoHS), eutectic  
 All ball sizes

### Thermal Management & Marking

Thermal interface materials  
 Custom marking & serialization available

### Wafer Dicing & Backgrind

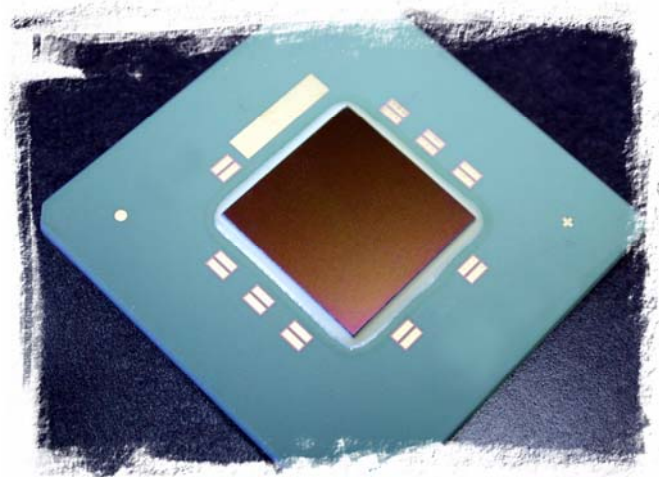
Up to 300mm wafers  
 Die and wafer tracing  
 Wafer backgrind available

When you're ready for Flip Chip, **Aspen Technologies** can provide you with successful implementation & rapid time to market. Aspen can assist in choosing the perfect bump technology and materials to meet your requirements, execute the substrate design, produce prototypes, manage the qualification, and manufacture your devices in its facilities. Flip Chip has entered the advanced packaging mainstream, and devices like microprocessors, DSPs, RF chips, smart cards, and even MEMS are taking advantage of its strengths:

- Smaller footprint
- Greater interconnect density
- Faster speeds (lower resistance, capacitance, & inductance)
- Excellent thermal management

Whether your needs are for traditional solder-based Flip Chip or your RF devices require Au stud bumps and thermocompression or adhesive-attach technologies, Aspen offers viable & proven alternatives to standard assembly technologies for products requiring enhanced performance. Aspen Technologies has extensive experience with a wide range of Flip Chip assembly methodologies, mating them with diverse substrates such as organic, ceramic, HiTCE, flex, Si on Si, and others.

Whether your device requires three bumps or 3,000, has single or multiple die, requires lead-free, eutectic, or Stud Bump attach, Aspen can provide a full assembly solution for you as it has for many recognizable industry names for many years!



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