

## Plastic Ball Grid Array (PBGA)

Amkor's PBGA packages incorporate the most advanced assembly processes and designs for cost/performance applications. This advanced IC package technology allows application and design engineers to optimize innovations while maximizing the performance characteristics of semiconductors.

These PBGA packages are designed for low inductance, improved thermal operation and enhanced SMT ability. Custom performance enhancements, like ground and power planes, are available for significant improvements in electrical response demanded by advanced electronics.

Additionally, these packages utilize industry proven, semiconductor grade materials for reliable, long-term operations while providing user flexible design parameters.

## Applications

The integrated design features of Amkor's PBGAs offer enhanced performance in many devices, making this the ideal package for: microprocessors, microcontrollers, ASICs, gate arrays, memory, DSPs, PLDs, graphics and PC chip sets.

Applications requiring improved portability, form-factor/size and high-performance such as cellular, wireless telecommunications, PCMCIA cards, Global Positioning Systems (GPS), laptop PCs, netbooks, video cameras, disc drives and similar products benefit from Amkor's PBGA attributes.

## PBGA

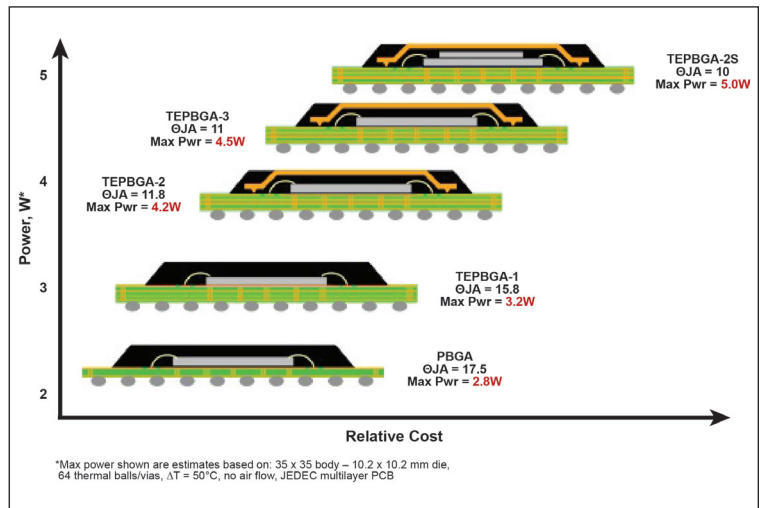
### Features

Innovative designs and expanding package offerings provide a platform from prototype-to-production.

- Custom ball counts up to 1521
- 1.00, 1.27 & 1.50 mm standard ball pitch available (other ball pitches available upon request, (e.g. 0.8 mm))
- 17 mm to 40 mm body sizes
- Thin Au wire (0.5 mil) or Cu wire compatible
- Chip-on-Chip (CoC)
- Large mold cap for quality enhancement
- Low profile and lightweight
- Thermal and electrical enhancement capable
- Highly flexible internal routing of signal, power and ground for device performance and system compatibility
- HDI designs possible
- Suitable substrate for multi-die (MCM) and integrated SMT structures
- Mature strip based manufacturing process with high yields
- Full in-house design capability
- Quickest design-to-prototype delivery
- Perimeter, stagger and full ball arrays
- Special packaging for memory available
- Multi-layer, ground/power
- JEDEC MS-034 standard outlines
- Excellent reliability
- 63 Sn/37 Pb Eutectic or Pb-free solder balls

### Thermal Performance

#### Thermal Performance vs. Cost



Visit Amkor Technology online for locations and to view the most current product information.



DS520Q  
Rev Date: 11-14

## PBGA

### Reliability Qualification

Amkor assures reliable performance by continuously monitoring key indices:

- Moisture Sensitivity Characterization JEDEC Level 3, 30°C/60% RH, 192 hours
- uHAST 130°C/85% RH, 96 hours
- Temp Cycle -55°C/+125°C, 1000 cycles
- High Temp Storage 150°C, 1000 hours

### Process Highlights

- Die thickness 13 mils
- Bond pad pitch (min) 2.4 mils
- Au wire diameter 1.2-0.5 mils
- Cu wire diameter 1.2-0.7 mils
- Marking Laser
- Ball inspection Optical
- Pack/ship options JEDEC trays, dry pack
- Wafer backgrinding Available

### Standard Materials

- Package substrate CCL-HL832HX-A
- Die attach adhesive Ablestik 2300
- Wire Au HTS/Cu PCC
- Mold compound Nitto GE100L/Sumitomo G770FE
- Solder balls Leaded or lead-free options

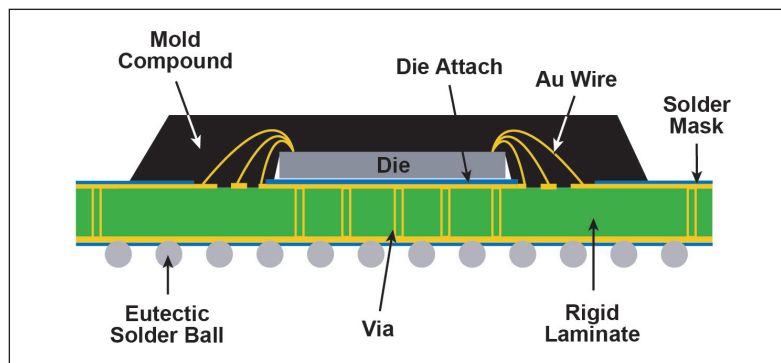
### Test Services

- Program generation/conversion
- Product engineering
- Wafer sort
- 256 pin x 20 MHz test system available
- 55°C to +125°C test available
- Burn-in capabilities
- Tape and reel services

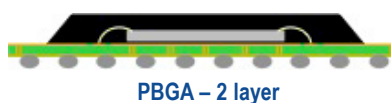
### Shipping

- JEDEC outline CO-029 low profile tray

### Cross-section PBGA



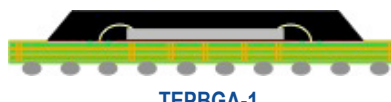
### PBGA Standard Package Offering



PBGA - 2 layer



PBGA - 4 layer



TEPBGA-1



TEPBGA-2  
TEPBGA-3



TEPBGA-2S

**PBGA** (Qualified L2AA/260°C)  
2/4/6 Layer  
4-Layer with 1 oz (35 µm) Internal Cu Planes  
Single or Multi-Die

**TEPBGA-1** (Qualified L2AA/260°C)  
4-Layer with 2 oz (70 µm) Internal Cu Planes  
Single or Multi-Die

**TEPBGA-2** (Qualified L3/260°C)  
4-Layer with 2 oz (70 µm) Internal Cu Planes  
Embedded Cu Heat Spreader  
(Grounded Option)

**TEPBGA-3** (Qualified L3/260°C)  
4-Layer with 2 oz (70 µm) Internal Cu Planes  
Embedded Cu Heat Spreader  
(Grounded Option)  
Thermally Enhanced Mold Compound

**TEPBGA-2S** (Qualified L3/245°C)  
4-Layer with 2 oz (70 µm) Internal Cu Planes  
Embedded Cu Heat Spreader  
(Grounded Option)  
Thermally Enhanced Mold Compound  
Dummy Si spacer

Visit Amkor Technology online for locations and to view the most current product information.



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