**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 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
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.

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
- Automotive AEC-Q100 reliability available

Process Highlights

- Die thickness
- Bond pad pitch (min)
- Au wire diameter
- Cu wire diameter
- Marking
- Ball inspection
- Pack/ship options
- Wafer backgrinding

13 mils
2.4 mils
1.2-0.5 mils
1.2-0.7 mils
Laser
Optical
JEDEC trays, dry pack
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: Lead 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

Thermal Performance vs. Cost

Thermal Performance

*Max powers shown are estimates based on 70 x 15 mm body, 10.5 x 8.2 mm die;
64 thermal pins, 81°C air flow, 0.100” air gap, JEDEC C20C at 50°C.

Cross Section PBGA
PBGA/TEPBGA

PBGA Standard Package Offering

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

PBGA – 2 layer

PBGA – 4 layer

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

TEPBGA-1

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

TEPBGA-2

- TEBPBA-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-3

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

TEPBGA-2S

Visit amkor.com or email sales@amkor.com for more information.

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