data sheet



Plastic Ball Grid Array (PBGA):

Amkor's PBGAs incorporate the most advanced assembly processes and designs for today's and tomorrow's cost/performance applications. This advanced IC package technology allows application and design engineers to optimize innovations while maximizing the performance characteristics of semiconductors. Amkor's PBGAs 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 advancing electronics. Additionally, these PBGAs utilize industry proven, semiconductor grade materials for reliable, long-term operations while providing the user flexible design parameters.

Applications:

Semiconductor technologies find enhanced performance by using the integrated design features of Amkor's PBGAs. Microprocessors / controllers, ASICs, Gate Arrays, memory, DSPs, PLDs, graphics and PC chip sets find Amkor's PBGA family to be an ideal package. Applications requiring improved portability, form-factor/size and high-performance such as cellular, wireless telecommunications, PCMCIA cards, global positioning systems (GPS), laptop PC's, video cameras, disc drives, PLDs, graphics and other 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 ball pitch available
- 13 mm to 40 mm body sizes
- 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 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 solder balls

Thermal Resistance:

Multi layer PCB, 0 air flow

Pkg	Body Size	PCB Layer	Cu Thickness	Theta JA (°C/W)
272	27.0 x 27.0	2	N/A	22
388	35.0 x 35.0	2	N/A	19
272	27.0 x 27.0	4	36 µm	19
388	35.0 x 35.0	4	36 µm	16
356* TE	27.0 x 27.0	4	72 µm	16
452* TE	35.0 x 35.0	4	72 µm	14
356**TE-2	27.0 x 27.0	4	72 µm	13.5
452**TE-2	35.0 x 35.0	4	72 µm	12

*TEPBGA **TEPBGA-2

Results dependent on body size, die size, and PCB design.

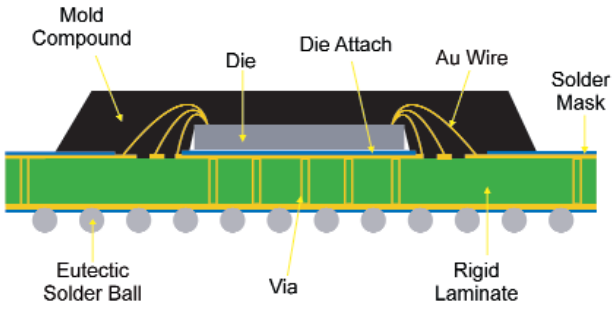
Reliability:

Amkor assures you reliable performance by continuously monitoring key indices:

• Moisture sensitivity characterization	JEDEC Level 3 30 °C/60% RH/192 hours
• High temp op life	125 °C, 6V, 1000 hours
• Autoclave or unbiased hast	130 °C/85% RH/96 hours
• High temp storage	150 °C, 1000 hours
• Temp cycle	-55/+125 °C, 1000 cycles

PBGA

PBGA Cross Section



PBGA Standard Package Offering (mm)

BODY SIZE	BALL COUNT	BALL PITCH	BALL MATRIX	BALL DIAM.	PCB THICKNESS 2 LYR	PCB THICKNESS 4 LYR	MOLD CAP THK	TOTAL PACKAGE THICKNESS 2 LYR	TOTAL PACKAGE THICKNESS 4LYR
13.0 x 13.0	144	1.0	12 x 12 F	0.51	0.32	0.56	0.80	1.52	1.76
14.0 x 22.0	119	1.27	7 x 17 F	0.76	0.32	0.56	0.90	1.82	2.06
	153	1.27	9 x 17 F	0.76	0.32	0.56	0.90	1.82	2.06
15.0 x 15.0	121	1.27	11 x 11 F	0.76	0.32	0.56	1.17	2.09	2.33
	156/160	1.00	14 x 14 P	0.51	0.32	0.56	0.80	1.52	1.76
	196	1.00	14 x 14 F	0.51	0.32	0.56	0.80	1.52	1.76
17.0 x 17.0	192/208	1.00	16 x 16 P	0.51	0.32	0.56	0.80	1.52	1.76
	256	1.00	16 x 16 F	0.51	0.32	0.56	0.80	1.52	1.76
19.0 x 19.0	240	1.00	18 x 18 P	0.51	0.32	0.56	0.80	1.52	1.76
	289	1.00	17 x 17 P	0.51	0.32	0.56	0.80	1.52	1.76
	324	1.00	18 x 18 P	0.51	0.32	0.56	0.80	1.52	1.76
23.0 x 23.0	169	1.50	13 x 13 F	0.76	0.32	0.56	1.17	2.09	2.33
	208/217	1.27	17 x 17 P	0.76	0.32	0.56	1.17	2.09	2.33
	240/249	1.27	17 x 17 P	0.76	0.32	0.56	1.17	2.09	2.33
	289	1.27	17 x 17 F	0.76	0.32	0.56	1.17	2.09	2.33
	288/324	1.00	22 x 22 P	0.63	0.32	0.56	1.17	1.99	2.23
	484	1.00	22 x 22 F	0.63	0.32	0.56	1.17	1.99	2.23
27.0 x 27.0	225	1.50	15 x 15 F	0.76	0.32	0.56	1.17	2.09	2.33
	256/272	1.27	20 x 20 P	0.76	0.32	0.56	1.17	2.09	2.33
	300/316	1.27	20 x 20 P	0.76	0.32	0.56	1.17	2.09	2.33
	356	1.27	20 x 20 P	0.76	0.32	0.56	1.17	2.09	2.33
	400	1.27	20 x 20 F	0.76	0.32	0.56	1.17	2.09	2.33
	416	1.00	26 x 26 P	0.63	0.32	0.56	1.17	1.99	2.23
	676	1.00	26 x 26 F	0.63	0.32	0.56	1.17	1.99	2.23
31.0 x 31.0	304/329	1.27	23 x 23 P	0.76	0.52	0.56	1.17	2.29	2.33
	360/385	1.27	23 x 23 P	0.76	0.52	0.56	1.17	2.29	2.33
	529	1.27	23 x 23 F	0.76	0.52	0.56	1.17	2.29	2.33
	516	1.00	30 x 30 P	0.63	0.52	0.56	1.17	2.19	2.23
	900	1.00	30 x 30 F	0.63	0.52	0.56	1.17	2.19	2.23
35.0 x 35.0	313	1.27	25 x 25 S	0.76	0.52	0.56	1.17	2.29	2.33
	352/388	1.27	26 x 26 P	0.76	0.52	0.56	1.17	2.29	2.33
	420/456	1.27	26 x 26 P	0.76	0.52	0.56	1.17	2.29	2.33
	452	1.27	26 x 26 P	0.76	0.52	0.56	1.17	2.29	2.33
	809	1.27	26 x 26 F	0.76	0.52	0.56	1.17	2.29	2.33
	580	1.00	34 x 34 P	0.63	0.52	0.56	1.17	2.19	2.23
	680	1.00	34 x 34 P	0.63	0.52	0.56	1.17	2.19	2.23
	1,156	1.00	34 x 34 F	0.63	0.52	0.56	1.17	2.19	2.23
37.5 x 37.5	524	1.27	28 x 28 P	0.76	0.52	0.56	1.17	2.29	2.33
	784	1.27	28 x 28 F	0.76	0.52	0.56	1.17	2.29	2.33
40.0 x 40.0	564	1.27	30 x 30 P	0.76	0.52	0.56	1.17	2.29	2.33
	900	1.27	30 x 30 F	0.76	0.52	0.56	1.17	2.29	2.33

Process Highlights

Die thickness (max)	13 mils
Bond pad pitch (min)	2.4 mils
Marking	Laser
Ball inspection	Optical
Pack / Ship options	JEDEC trays, Dry pack
Wafer backgrinding	Available

Standard Materials

Package Substrate:	CCL-HL832
Die attach:	Ablestik 2300
Au wire:	25 μm or 30 μm
Mold compound:	Nitto GE 100L
Solder balls:	63 Sn / 37 Pb

Test Services

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

Shipping

Low profile tray (JEDEC Outline CO-029)

NOTE: All measurements in mm.
P = Perimeter F = Full Array S = Stagger

= Maximum possible ball count (may not be tooled). Additional depopulated options are available. Contact account manager for additional tooling.

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