data sheet

MCM-PBGA

MCM-PBGA Packages:

The MCM-PBGA (Multi-Chip Module Plastic Ball Grid Array) by Amkor incorporates the latest technology in high-density plastic IC packaging. The high-speed performance and thermal advantages of the PBGA package provide the platform to mix semiconductor technologies such as analog, digital, bipolar, CMOS, ASIC, memory, etc., in a single IC package.

The affordability of our MCM-PBGAs enable systems designers to realize their vision of new, advanced or improved applications. Our designs are optimized to use standard PBGA package outline tooling to save you costs and utilize a proven BGA infrastructure. Additionally, we work with you to produce the most efficient substrate circuit design that will enhance the operation and performance of your IC chips. Our advanced in-house design center and electrical test support services complete the turn-key solution.

Applications:

Amkor's MCM-PBGA is an excellent platform for reducing form factor and size while combining semiconductor technologies. MCM-PBGAs are perfect for any application where size, weight, electrical performance, board density and SMT yields are important considerations, such as ASICs, cable and DSL modems, wireless telecommunications and electronic automotive components.

Features:

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

- Ball counts up to 1156
- 13.0 mm to 40.0 mm body sizes
- 1.00, 1.27 & 1.50 mm ball pitch available
- Perimeter, stagger and full ball arrays
- Special packaging for memory available
- 2, 4, or 6 layer construction, ground / power
- Full in-house design capability
- JEDEC MS-034 standard outlines
- MCM under high volume manufacturing in all sites
- Enhanced electrical performance, shorter signal paths and reduced package parasitics
- 2-8 active devices
- 200-600 wire bonds
- Passives can be added by utilizing the SMT equipment located in the SiP line

Thermal Performance:

Multi layer PCB, 0 air flow

Pkg	Body Size	PCB Layer	Cu Thickness	Theta JA (°C/W)
272	27.0 x 27.0	4	36 µm	19
388	35.0 x 35.0	4	36 µm	16

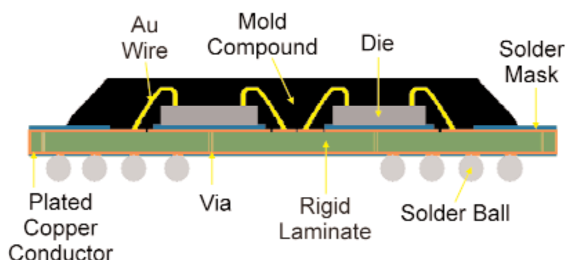
Reliability:

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
• High temp storage	150 °C, 1000 hours
• Autoclave or unbiased hast	130 °C/85% RH/96 hours
• Temp cycle	-55/+125 °C, 1000 cycles

MCM-PBGA

MCM-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	0.36	0.56	0.80	1.56	1.76
14.0 x 22.0	119	1.27	7 x 17 F	0.76	0.56	0.56	0.90	2.06	2.06
	153	1.27	9 x 17 F	0.76	0.56	0.56	0.90	2.06	2.06
15.0 x 15.0	121	1.27	11 x 11 F	0.76	0.36	0.56	1.17	2.13	2.33
	156/160	1.00	14 x 14 P	0.51	0.36	0.56	0.80	1.56	1.76
	196	1.00	14 x 14 F	0.51	0.36	0.56	0.80	1.56	1.76
17.0 x 17.0	192/208	1.00	16 x 16 P	0.51	0.36	0.56	0.80	1.56	1.76
	256	1.00	16 x 16 F	0.51	0.36	0.56	0.80	1.56	1.76
19.0 x 19.0	240	1.00	18 x 18 P	0.51	0.36	0.56	0.80	1.56	1.76
	289	1.00	17 x 17 P	0.51	0.36	0.56	0.80	1.56	1.76
	324	1.00	18 x 18 P	0.51	0.36	0.56	0.80	1.56	1.76
23.0 x 23.0	169	1.50	13 x 13 F	0.76	0.36	0.56	1.17	2.13	2.33
	208/217	1.27	17 x 17 P	0.76	0.36	0.56	1.17	2.13	2.33
	240/249	1.27	17 x 17 P	0.76	0.36	0.56	1.17	2.13	2.33
	289	1.27	17 x 17 F	0.76	0.36	0.56	1.17	2.13	2.33
	288/324	1.00	22 x 22 P	0.63	0.36	0.56	1.17	2.03	2.23
	484	1.00	22 x 22 F	0.63	0.36	0.56	1.17	2.03	2.23
27.0 x 27.0	225	1.50	15 x 15 F	0.76	0.36	0.56	1.17	2.13	2.33
	256/272	1.27	20 x 20 P	0.76	0.36	0.56	1.17	2.13	2.33
	300/316	1.27	20 x 20 P	0.76	0.36	0.56	1.17	2.13	2.33
	356	1.27	20 x 20 P	0.76	N/A	0.61	1.17	N/A	2.38
	400	1.27	20 x 20 F	0.76	0.36	0.56	1.17	2.13	2.33
	416	1.00	26 x 26 P	0.63	0.36	0.56	1.17	2.03	2.23
	676	1.00	26 x 26 F	0.63	0.36	0.56	1.17	2.03	2.23
31.0 x 31.0	304/329	1.27	23 x 23 P	0.76	0.56	0.56	1.17	2.33	2.33
	360/385	1.27	23 x 23 P	0.76	0.56	0.56	1.17	2.33	2.33
	529	1.27	23 x 23 F	0.76	0.56	0.56	1.17	2.33	2.33
	516	1.00	30 x 30 P	0.63	0.56	0.56	1.17	2.23	2.23
	900	1.00	30 x 30 F	0.63	0.56	0.56	1.17	2.23	2.23
35.0 x 35.0	313	1.27	25 x 25 S	0.76	0.56	0.56	1.17	2.33	2.33
	352/388	1.27	26 x 26 P	0.76	0.56	0.56	1.17	2.33	2.33
	420/456	1.27	26 x 26 P	0.76	0.56	0.56	1.17	2.33	2.33
	452	1.27	26 x 26 P	0.76	N/A	0.61	1.17	N/A	2.38
	676	1.27	26 x 26 F	0.76	0.56	0.56	1.17	2.33	2.33
	580	1.00	34 x 34 P	0.63	0.56	0.56	1.17	2.23	2.23
	680	1.00	34 x 34 P	0.63	0.56	0.56	1.17	2.23	2.23
	1,156	1.00	34 x 34 F	0.63	0.56	0.56	1.17	2.23	2.23
37.5 x 37.5	524	1.27	28 x 28 P	0.76	0.56	0.56	1.17	2.33	2.33
	784	1.27	28 x 28 F	0.76	0.56	0.56	1.17	2.33	2.33
40.0 x 40.0	564	1.27	30 x 30 P	0.76	0.56	0.56	1.17	2.33	2.33
	900	1.27	30 x 30 F	0.76	0.56	0.56	1.17	2.33	2.33

Process Highlights

Die Thickness (max)	13 mils
Bond Pad Pitch (min)	2.4 mils
Marking	Laser
Ball Inspection	Optical
Pack/Ship Options	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

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

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