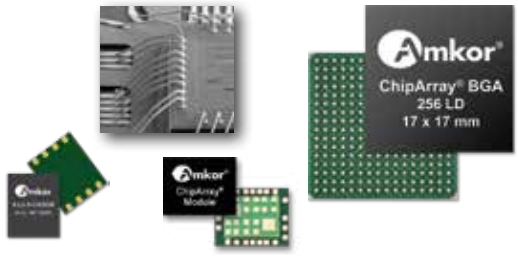
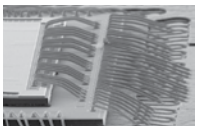
Data Sheet



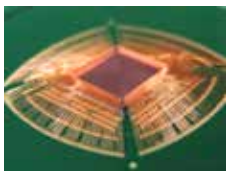
ChipArray® Packages (CABGA/fBGA)

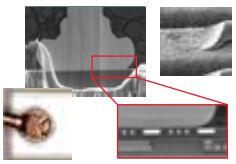
Amkor's ChipArray® Ball Grid Array (CABGA) packages are laminate based packages that are compatible with SMT mounting processes worldwide.

The near chip size CABGA fine-pitch BGA (fBGA) offers a broad selection of ball array pitches (≥ 0.4 mm pitch), ball counts and body sizes (1.5 mm to 27 mm body), single and multi-die layouts, stacked die (1-16) and passive component (up to 300) integration.



Copper (Cu) wire is today's fastest growing interconnect method and Amkor offers high volume infrastructure on latest generation Cu wire bond equipment at all Amkor CABGA production locations.





Thin core laminate (2 to 6 metal layer) from the strongest supply chain in the industry, ultra-thin mold cap thickness and Si thinning below 75 µm enable next generation tablets, mobile handsets, game controllers, digital still & video cameras and remote devices.

Advances in substrate surface finishes and routing techniques reduce gold costs while improving electrical and board level reliability performance. Innovative thermal package structures offer cost competitive solutions to the most challenging thermal management needs.

Applications

The ChipArray package family is applicable for a wide range of semiconductors from high end FPGAs, ASICS to memory, analog, RF devices, MCUs, and simple PLDs requiring a smaller package size than conventional PBGAs or leadframe packages. ChipArray packages fill the need for the low cost, minimum space, high performance and reliability requirements of mobile and gaming devices, notebooks, personal computers, networking, automotive and industrial applications.

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

CABGA/fBGA

Features

- Cutting edge technology and expanding package offerings provide a platform from prototype-to-production
- Lowest price using Amkor standard CABGA bill of materials selection
- 1.5-27 mm body size available
- Square or rectangle packages available
- 4-700 ball/lead counts
- 0.4, 0.5, 0.65, 0.75, 0.80 & 1.0 mm ball pitch available
- JEDEC MO-216 compliant for 0.8 mm & 1.0 mm ball pitch
- JEDEC MO-195 compliant for 0.5 mm & 0.65 mm ball pitch
- JEDEC MO-298 compliant for 0.4 mm ball pitch
- RoHS-6 (green) BOM options for 100% of CABGA family

Thermal Performance

Body Size (mm)	ΘJA at 1.0W and 0 Airflow (°C/W)		
	LFBGA	TFBGA	VFBGA
8 x 8	37.28	36.45	37.52
10 x 10	19.86	29.04	26.7
15 x 15	20.1	N/A	N/A
19 x 19	17.04	N/A	N/A

*Additional thermal data available

Reliability Qualification

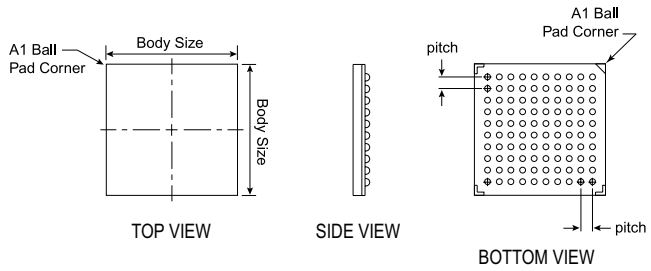
- Moisture Sensitivity Characterization — JEDEC Level 3 @ 260°C; L2 & L1 achievable in some structures/BOMs* 85°C/85% RH, 168 hours
- HAST — 130°C/85% RH, 96 hours
- Temp/Humidity — 85°C/85% RH, 1000 hours
- Temp Cycle — -55°C/+125°C, 1000 cycles
- High Temp Storage — 150°C, 1000 hours

Board level reliability available*

*Contact Amkor for additional information.

Data Sheet

CABGA/fBGA



Process Highlights

• Die thickness	0.075-0.27 mm
• Marking	Laser
• Ball inspection	Optical
• Pack options	Dry pack
• Wafer backgrinding	Available
• Encapsulated SMT components	Available
• Micro Pb-free covered LGA Pads/LGAs	Available

Standard Materials

• Package substrate	
– Conductor	Copper
– Dielectric	Epoxy resin glass reinforced
• Die attach adhesive	Low stress elastomer
• Encapsulant	Epoxy mold compound
• Low alpha material	Available
• Solder ball	Pb-free
• Wire type	Copper and gold (2N, 4N)

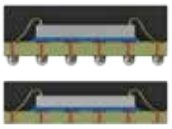
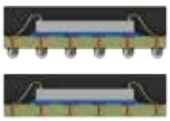
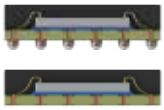
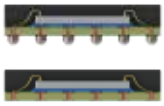
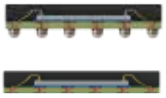
Test Services

- Program generation/conversion
- Product engineering
- Wafer sort
- 256 pin x 20 MHz test system available
- -55°C to +165°C test available
- Burn-in capability
- Tape and reel services

Shipping

- JEDEC trays

CABGA Package Thickness Capability

	LFBGA > 1.2 mm	TFBGA 1.2 mm (max)	VFBGA 1.0 mm (max)	WFBGA 0.8 mm (max)	UFBGA 0.65 mm (max)	XFBGA 0.50 mm (max)
	CA-lfBGA 	**CABGA-tfBGA CTBGA/CASON** 	**CABGA-vfBGA CVBGA/CASON** 	**CA-wfLGA CASON** 	**CA-ufLGA** 	**CA-xfLGA** 
Mold Cap Thickness	**0.70 mm** **0.95 mm**	**0.60 mm** 0.53 mm	**0.45 mm (BGA)** 0.53 mm (LGA)	**0.40 mm (BGA)** **0.45 mm (LGA)**	0.32 mm (BGA)* **0.40 mm (LGA)**	**0.25 mm (BGA)** 0.32 mm (LGA)
Substrate Layer	**2lyr** 0.32 mm, 0.56 mm **4lyr or 6lyr** 0.34 mm, 0.56 mm	**2lyr or 4lyr** 0.21 mm, 0.26 mm	**2lyr or 4ly** 0.21 mm	**2lyr** 0.21 mm, 0.13 mm	**2lyr** 0.13 mm	**2lyr** 0.13 mm
Die Thickness**	**0.27 mm**	**0.23 mm**	**0.18 mm**	**0.13 mm**	**0.10 mm**	**0.075 mm**
Availability	**0.7 mm** **All Sites** **0.95 mm P3, K4**	**All Sites**	**All Sites**	**0.45 mm** **All Sites** **0.40 mm C3, K4**	**0.32 mm** **(K4 only)**	**0.25 mm** **All Sites**

*Options are available with microballs.
**Die thickness is also dependent on the wirebond loop height requirement.

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

Amkor Technology®