CVBGA

Very Thin ChipArray® BGA

.4mm Package

ChipArray® (CVBGA) is a new package offering by Amkor that has a 0.4mm pitch. In addition to the standard core ChipArray® package (CABGA and CTBGA), Amkor offers thinner mold cap thickness of 1.0mm max. By utilizing a thin core laminate, much denser routing can be achieved, thereby enabling more I/O's in a given footprint. Due to their small size and I/O density, Amkor's ChipArray® product family is an excellent choice for new devices requiring a small footprint and low mounted height.

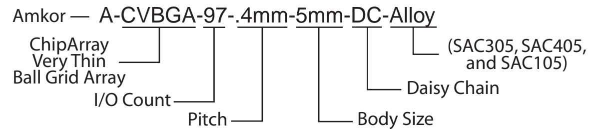
CVBGA Very Thin ChipArray® BGA

Part Description	I/O Count	Pitch	Body Size	Ball Matrix	Ball Alignment	Quantity Per Tray	Available Lead-Free Alloys
A-CVBGA97-.4mm-5mm	97	.4mm	5mm	10 x 10	Full Array	624	SAC405, SAC305 or SAC105
A-CVBGA360-.4mm-10mm	360	.4mm	10mm	23 x 23	Perimeter	250	SAC405, SAC305 or SAC105
A-CVBGA432-.4mm-13mm	432	.4mm	13mm	31 x 31	Perimeter	160	SAC405, SAC305 or SAC105

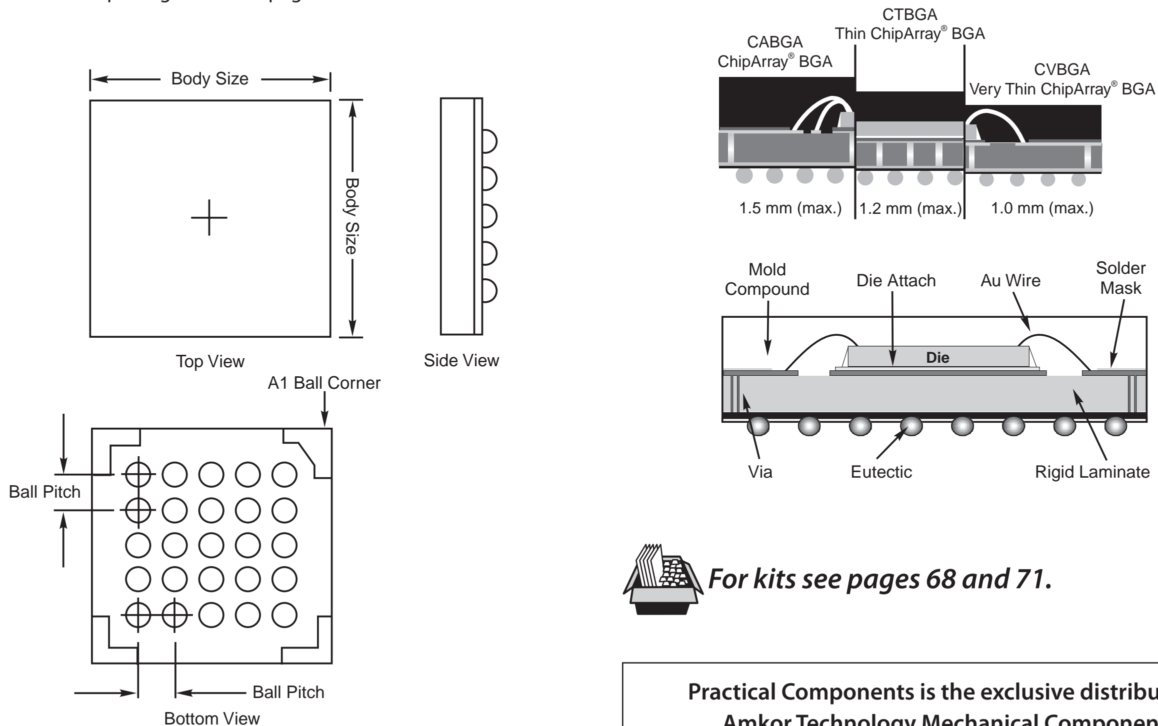
Notes

- Parts are packaged in JEDEC trays.
- All components are daisy-chained.
- Moisture sensitivity is JEDEC level 3.
- Solder ball material is available with Eutectic 63/37 SnPb.
- Lead-free parts are available with 95.5% Sn/ 4.0% Ag/ 0.5% Cu (SAC405) alloy or 96.5% Sn/ 3.0% Ag/ 0.5% Cu (SAC305) or (SAC105) 98.25%Sn/1.2%Ag/0.5%Cu/.05%Ni.
- **New:** CVBGA ,CTBGA and CABGA parts are available without solder ball, which makes the package LGA. See page 27.

Part Description System



- *Add "TR" to end of Part Description for Tape and Reel.*
- *Add "SAC405" or "SAC305" or "SAC105" to end of part number for Lead-Free.*



For kits see pages 68 and 71.

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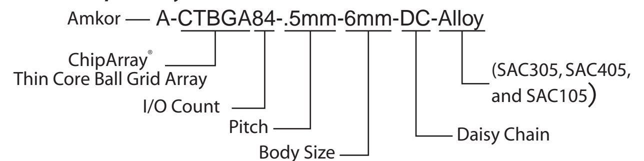
CTBGA ChipArray® Thin Core Ball Grid Array

Part Description	I/O Count	Pitch	Body Size	Ball Matrix	Ball Alignment	Quantity Per Tray	Available Lead-Free Alloys
.5mm Pitch							
A-CTBGA84-.5mm-6mm	84	.5mm	6mm	10 x 10	Perimeter	608	SAC405, SAC105, or SAC305
A-CTBGA84-.5mm-7mm	84	.5mm	7mm	12 x 12	Perimeter	476	SAC405, SAC105, or SAC305
A-CTBGA108-.5mm-7mm	108	.5mm	7mm	12 x 12	Perimeter	476	SAC405, SAC105, or SAC305
A-CTBGA132-.5mm-8mm	132	.5mm	8mm	14 x 14	Perimeter	360	SAC405, SAC105, or SAC305
A-CTBGA228-.5mm-12mm	228	.5mm	12mm	22 x 22	Perimeter	189	SAC405, SAC105, or SAC305
.8mm Pitch							
A-CTBGA49-.8mm-6mm	49	.8mm	6mm	7 x 7	Full Array	608	SAC405, SAC105, or SAC305
A-CTBGA49-.8mm-7mm	49	.8mm	7mm	7 x 7	Full Array	476	SAC405, SAC105, or SAC305
A-CTBGA64-.8mm-7mm	64	.8mm	7mm	8 x 8	Full Array	476	SAC405, SAC105, or SAC305
A-CTBGA64-.8mm-8mm	64	.8mm	8mm	8 x 8	Full Array	360	SAC405, SAC105, or SAC305
A-CTBGA100-.8mm-10mm	100	.8mm	10mm	10 x 10	Full Array	250	SAC405, SAC105, or SAC305
A-CTBGA160-.8mm-12mm	160	.8mm	12mm	14 x 14	Perimeter	198	SAC405, SAC105, or SAC305
A-CTBGA176-.8mm-13mm	176	.8mm	13mm	15 x 15	Perimeter	160	SAC405, SAC105, or SAC305
A-CTBGA208-.8mm-15mm	208	.8mm	15mm	17 x 17	Perimeter	126	SAC405, SAC105, or SAC305
1.0mm Pitch							
A-CTBGA144-1.0mm-13mm	144	1.0mm	13mm	12 x 12	Full Array	160	SAC405, SAC105, or SAC305

Notes

- Parts are packaged in JEDEC trays when available.
- All components are available daisy-chained.
- <0.12mm (5 mil) coplanarity.
- Solder ball material is Eutectic 63/37 SnPb.
- BT (Bismaleimide-Triazine) substrates or equivalent.
- Package thickness is 1.2mm max for 0.8mm and 1.0mm pitch packages.
- Package thickness is 1.1mm max for 0.5mm pitch packages.
- Moisture sensitivity is JEDEC level 3.
- Lead-free parts are available with (SAC405) 95.5% Sn/ 4.0% Ag/0.5% Cu alloy or 96.5%Sn/3.0%Ag/0.5%Cu alloy (SAC305) or (SAC105) 98.25%Sn/ 1.2%Ag/0.5%Cu/.05%Ni is also available.
- New: CABGA, CVBGA and CTBGA parts are available without solder balls, which makes the package LGA. See page 27.

Part Description System



- *Add "TR" to end of part description for Tape and Reel*
- *Add "SAC405" or "SAC105" or SAC305" to end of part description for Lead-Free.*
- *Add DC & Alloy to Part Number System after body size:*

For recommended kit see page 71.

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CABGA

ChipArray® Ball Grid Array

Amkor Technology®

ChipArray® (CABGA) packages are offered in laminate format and are available as Ball Grid Array. The near chip size standard outlines offer fixed body sizes and ball counts. Established SMT mounting processes and techniques are compatibly with ChipArray®. The package size and design provides ideal RF operation (low inductance) for high speed applications requiring small footprints.

ChipArray® Ball Grid Array

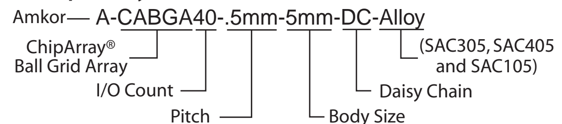
Part Description	I/O Count	Pitch	Body Size	Ball Matrix	Ball Alignment	Quantity Per Tray	Available Lead-Free Alloys
.5mm Pitch							
A-CABGA40-.5mm-5mm	40	.5mm	5mm	8 x 8	Perimeter	624	SAC405, SAC105 or SAC305
A-CABGA56-.5mm-6mm	56	.5mm	6mm	10 x 10	Perimeter	408	SAC405, SAC105 or SAC305
.8mm Pitch							
A-CABGA36-.8mm-6mm	36	.8mm	6mm	6 x 6	Full Array	608	SAC405, SAC105 or SAC305
A-CABGA49-.8mm-7mm	49	.8mm	7mm	7 x 7	Full Array	476	SAC405, SAC105 or SAC305
A-CABGA64-.8mm-8mm	64	.8mm	8mm	8 x 8	Full Array	360	SAC405, SAC105 or SAC305
A-CABGA100-.8mm-10mm	100	.8mm	10mm	10 x 10	Full Array	250	SAC405, SAC105 or SAC305
A-CABGA160-.8mm-12mm	160	.8mm	12mm	14 x 14	Perimeter	198	SAC405, SAC105 or SAC305
A-CABGA176-.8mm-13mm	176	.8mm	13mm	15 x 15	Perimeter	160	SAC405, SAC105 or SAC305
A-CABGA192-.8mm-14mm	192	.8mm	14mm	16 x 16	Perimeter	119	SAC405, SAC105 or SAC305
A-CABGA208-.8mm-15mm	208	.8mm	15mm	17 x 17	Perimeter	126	SAC405, SAC105 or SAC305
A-CABGA288-.8mm-19mm	288	.8mm	19mm	22 x 22	Perimeter	84	SAC405, SAC105 or SAC305
1.0mm Pitch							
A-CABGA100-1.0mm-11mm	100	1.0mm	11mm	10 x 10	Full Array	207	SAC405, SAC105 or SAC305
A-CABGA144-1.0mm-13mm	144	1.0mm	13mm	12 x 12	Full Array	160	SAC405, SAC105 or SAC305
A-CABGA196-1.0mm-15mm	196	1.0mm	15mm	14 x 14	Full Array	126	SAC405, SAC105 or SAC305
A-CABGA256-1.0mm-17mm	256	1.0mm	17mm	16 x 16	Full Array	90	SAC405, SAC105 or SAC305

Notes

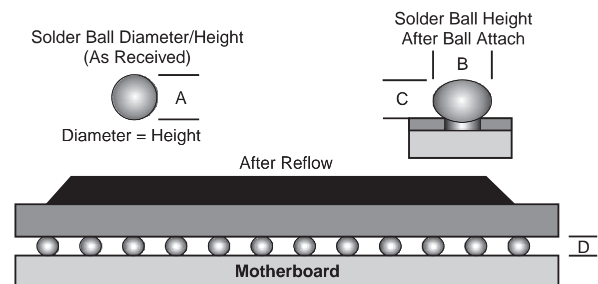
- Parts are packaged in JEDEC trays when available.
- All components are available daisy-chained.
- <0.12mm (5 mil) coplanarity.
- Solder ball material is Eutectic 63/37 SnPb.
- BT (Bismaleimide-Triazine) substrates or equivalent.
- Package thickness is 1.5mm max for 0.8mm and 1.0mm pitch packages.
- Package thickness is 1.34mm max for 0.5mm pitch packages.
- Moisture sensitivity is JEDEC level 3.
- Lead-free parts are available with (SAC405) 95.5% Sn/ 4.0% Ag/ 0.5% Cu alloy or 96.5%Sn/3.0%Ag/0.5%Cu alloy (SAC305) or (SAC105) 98.25%Sn/ 1.2%Ag/0.5%Cu/.05%Ni is also available.
- New: CABGA, CVBGA and CTBGA parts are available without solder balls, which makes the package LGA. See page 30.

For recommended kits see pages 70, 76, 81 and 83.

Part Description System



- *Add "TR" to end of part description for Tape and Reel*
- *Add "SAC405","SAC105" or SAC305" to end of part description for Lead-Free.*



Package Pitch	A	B	C	D
1.00/0.80mm	0.46mm	0.48m (± 0.05mm)	0.36mm (± 0.05mm)	0.30mm (± 0.05mm)
0.50mm	0.30mm	0.32mm (± 0.05mm)	0.19mm (± 0.05mm)	0.17mm (± 0.03mm)

Note: Typical motherboard non-solder mask defined pad:

- 0.50 pitch = 0.28
- 0.80 pitch = 0.30
- 1.00 pitch = 0.38

*Super*BGA® (SBGA) package is a very low profile, high-power BGA. The IC is directly attached to an integrated copper heatsink. Since the IC and the I/O are on the same side, signal vias are eliminated.

SBGA *Super*BGA® 1.27mm Pitch

Part Description	I/O Count	Pitch	Body Size	Ball Matrix	Ball Alignment	Quantity Per Tray
A-SBGA256-1.27mm-27mm	256	1.27mm	27mm	20 x 20	Perimeter	40
A-SBGA304-1.27mm-31mm	304	1.27mm	31mm	23 x 23	Perimeter	27
A-SBGA352-1.27mm-35mm	352	1.27mm	35mm	26 x 26	Perimeter	24
A-SBGA432-1.27mm-40mm	432	1.27mm	40mm	31 x 31	Perimeter	21
A-SBGA520-1.27mm-40mm	520	1.27mm	40mm	31 x 31	Perimeter	21
A-SBGA560-1.27mm-42.5mm	560	1.27mm	42.5mm	33 x 33	Perimeter	12
A-SBGA600-1.27mm-45mm	600	1.27mm	45mm	35 x 35	Perimeter	12

Notes

- Superior thermal performance.
- Light weight
- Low profile (1.4mm mounted)
- Moisture resistant (JEDEC level 3)
- JEDEC MO-192 standard outlines
- Enhanced electrical performance > 1 GHz
- Parts are packaged in JEDEC trays.
- Call for tape and reel quantity and availability.
- Solder ball material is eutectic 63/37 SnPb.
- BGA packages should be baked at 125°C for 24 hours prior to assembly to prevent delamination during assembly process.
- Parts can be baked and dry-packed.
- All components are daisy-chained except for 520 I/O.
- Lead-free parts are available with (SAC405)95.5% Sn/ 4.0% Ag/ 0.5% Cu alloy or 96.5%Sn/3.0%Ag/0.5%Cu alloy (SAC305). Sn3.5Ag is also available (call for availablity).
- SBGA's are not available without solder balls.

Looking for Lead-Free?

This symbol indicates that lead-free parts are available!

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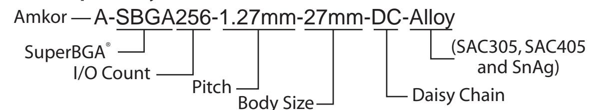
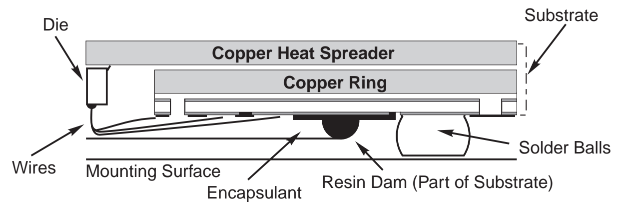
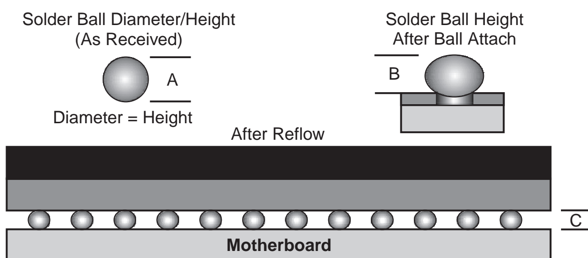
Part Description System



- *Add "TR" to end of part number for Tape and Reel.*
- *Add "SAC405" or "SAC305" or "Sn3.5Ag" to end of part number for Lead-Free.*



Note: Drawing not to scale.



Package	Pitch	A	B	C
SBGA	1.27	.76	.62	.52

All units in mm.

Assumptions: 5 mils solder paste. Solder mask defined pad. Typical motherboard no solder mask defined pad:

- 0.50 Pitch – 0.28
- 0.80 Pitch – 0.30
- 1.00 Pitch – 0.38