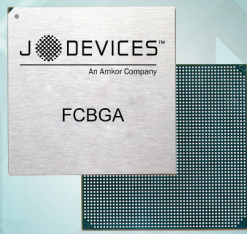


Flip Chip BGA (FCBGA)



Features

- ▶ Up to 26 mm die sizes
- ▶ 12-47.5 mm body size
- ▶ 1.0-0.4 mm ball pitch
- ▶ 150 μm minimum array bump pitch
- ▶ $100 \mu\text{m}$ minimum peripheral bump pitch
- ▶ Wafer node $\geq 28 \text{ nm}$ qualified, 16 nm in development

Additional Package Options

- ▶ SMT components on top or bottom side
- ▶ Multi-die capability
- ▶ Memory components on top side
- ▶ Variety of lid material options
- ▶ Grounded lid
- ▶ Custom BGA footprints

Applications

- ▶ Games, networking, PC and TV applications
- ▶ High speed, high pin count, high density applications with better heat dissipation

J-Devices FCBGA package offers a better solution for high performance applications.

“Flip Chip” describes a method of electrically connecting the die to the package carrier through a conductive bump. Benefits for this technology include: reduced signal inductance due to the shorter die to package connection; reduced power/ground inductance as power can be routed directly into die core; higher signal density by utilizing the total die surface vs. only edge pads on wire bonded design.

For higher I/O products limited by bond pad design, this packaging technology can enable smaller die design. Package X & Y footprint is reduced since there is no need for bond wire routing; and a thinner package is possible since the mold is not needed to protect the wires. High thermal conductive material is used for the thermal interface material between die back side and lid, resulting in excellent thermal performance.

Technology Options

- ▶ Substrates
 - ▷ 4-19 layer laminate build up substrates
 - ▷ High CTE ceramic
 - ▷ Coreless
- ▶ Bump types
 - ▷ Eutectic Sn/Pb
 - ▷ High Pb
 - ▷ Pb free
 - ▷ Cu pillar (array and fine pitch peripheral)
- ▶ Package formats
 - ▷ Bare die
 - ▷ Lidded

Reliability Qualification

- ▶ Moisture Sensitivity: Pre-condition of 30°C/60% RH, 192 hours, IR reflow 260°C 3X
- ▶ THB: 85°C/85% RH, 100 hours
- ▶ uHAST: 130°C/85% RH, 100 hours
- ▶ Temp Cycle: -55°C/+125°C, 1000 cycles
- ▶ High Temp Storage: 150°C, 1000 hours

Thermal Solutions

The various FCBGA package options enable a package selection that fits the final product specific needs. High performance products can utilize a lidded package configuration that can be directly attached to a heat spreader. This feature produces the lowest possible thermal resistance (Theta JC) between the package and any externally applied thermal solution.

Flip Chip BGA (FCBGA)

Test Services

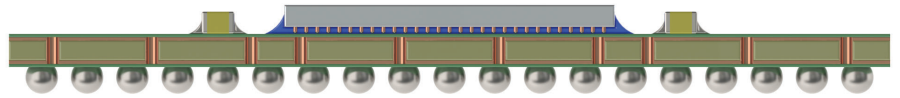
- ▶ Program conversion
- ▶ Product engineering
- ▶ Burn-in capabilities

Shipping

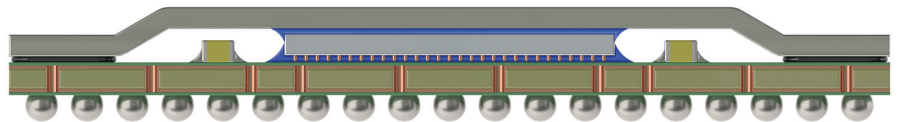
- ▶ JEDEC outline trays

Cross-section

Bare Die



Hat Type Lid



Configuration Options

Body Type	0.4 mm	0.5 mm	0.65 mm	0.8 mm	1 mm	1.27
	Ball Count					
15 x 15		605, 647				
17 x 17			625			
19 x 19				436	320	
21 x 21				472, 592		
23 x 23				484, 524, 672		
25 x 25				560, 593, 653		360
27 x 27				832, 815, 873, 1089	576, 625, 676	360
29 x 29				830, 1225	554, 561, 640, 729, 783	
31 x 31					772, 896, 900	304
33 x 33					961, 1020	
35 x 35					914, 924, 1089, 1152, 1156	
37.5 x 37.5				1936	1256, 1288, 1369	784
40 x 40					1182, 1414, 1444	
42.5 x 42.5					1681	
45 x 45					1848	
47.5 x 47.5					1752, 2116	



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