data sheet

LQFP

Low Profile Quad Flat Pack (LQFP) Packages:

Amkor offers a broad line of LQFP IC packages designed to provide the same great benefits as MQFP packaging with a 1.4 mm body thickness. This allows IC packaging engineers, component specifiers and systems designers to solve issues such as increasing board density, die shrink programs, thin end-product profile and portability.

Applications:

Amkor's LQFPs are an ideal IC package for most IC semiconductor technologies such as ASIC, DSP, controllers, processors, gate arrays (FPGA/PLD), SRAMs and PC chip sets.

LQFPs are particularly suited for light weight, portable electronics requiring broad performance characteristics. Such applications are laptop PCs, video/audio, telecom, cordless/RF, data acquisition, office equipment, disc-drives and communication boards.

Features:

Amkor's LQFP packaging portfolio provides:

- 7 x 7 mm to 28 x 28 mm body size
- Copper leadframes
- Custom leadframe design available
- Low stress die attach adhesive
- Power enhancement version - PowerQuad®
- 32 to 256 lead counts
- Broad selection of die pad sizes
- 1.4 mm body thickness
- Rapid cure mold compound

Thermal Resistance:

Single-Layer PCB

Pkg	Body Size (mm)	Pad Size (mm)	Theta JA (°C/W) by Velocity (LFPM) 0	200	500
32 ld	7 x 7	5 x 5	67.8	55.9	50.1
100 ld	14 x 14	8 x 8	41.5	33.4	29.5
100 ld	14 x 20	9.5 x 9.5	39.7	31.8	28.3
144 ld	20 x 20	8.5 x 8.5	38.0	31.2	28.1
176 ld	24 x 24	8 x 8	38.3	31.9	29.0

JEDEC Standard Test Boards

Multi-Layer PCB

Pkg	Body Size (mm)	Pad Size (mm)	Theta JA (°C/W) by Velocity (LFPM) 0	200	500
32 ld	7 x 7	5 x 5	47.9	42.1	39.4
100 ld	14 x 14	8 x 8	31.7	26.8	24.7
100 ld	14 x 20	9.5 x 9.5	30.0	25.1	23.0
144 ld	20 x 20	8.5 x 8.5	31.7	26.9	24.9
176 ld	24 x 24	8 x 8	31.9	27.3	25.4
208 ld*	28 x 28	16 x 16	18.1	15.3	14.4

*Pre-JEDEC Standard Test Boards   Tested @ 1 W

All others - JEDEC Standard Test Boards

Electrical:

Pkg	Body Size (mm)	PadSize (mm)	Lead	Inductance (nH)	Capacitance (pF)	Resistance (mΩ)
32 ld	7 x 7	5 x 5	Longest	0.904	0.211	9.2
			Shortest	0.799	0.202	7.8
48 ld	7 x 7	5 x 5	Longest	1.110	0.225	13.8
			Shortest	0.962	0.200	12.0
100 ld	14 x 14	8 x 8	Longest	2.300	0.419	26.3
			Shortest	1.520	0.322	17.8
144 ld	20 x 20	8.5 x 8.5	Longest	6.430	1.100	62.9
			Shortest	4.230	1.070	52.6
176 ld	24 x 24	8 x 8	Longest	9.510	1.270	89.0
			Shortest	5.200	1.340	64.0
208 ld	28 x 28	11 x 11	Longest	9.670	1.380	86.2
			Shortest	6.190	1.210	64.8

Simulated Results @ 100 MHz

Reliability:

IC chips are assembled in optimized package designs with proven reliable semiconductor materials.

- Moisture sensitivity characterization — JEDEC Level 3, 30 °C/60%RH, 192 hrs
- PCT — 121 °C, 100%RH, 2 atm, 504 hours
- Temp cycle — -55/+125 ° C, 1000 cycles
- Temp/humidity — 85 °C/85% RH, 1000 hours
- High temp storage — 150 °C, 1000 hours

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DS232B
Rev Date: 08'00

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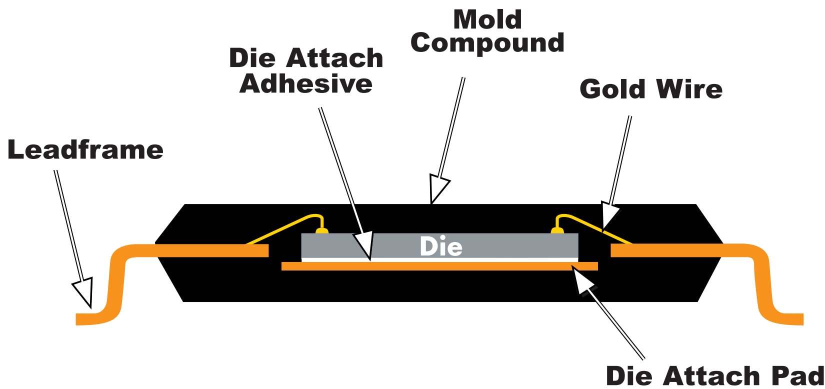
Cross-section LQFP



Process Highlights

Die thickness	14.5 ± .5 mil
Strip solder plating	85/15 Sn/Pb
Marking	Laser
Lead inspection	Laser/optical
Pack/ship options	Bar code, dry pack
Wafer backgrinding	Available

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

Shipping

JEDEC outline CO-124 low profile tray

Configuration Options:

LQFP Nominal Package Dimensions (units in mm)

Body Size	Body Tkns	Lead Form	Standoff	Foot Length	Tip To Tip	Lead Count	JEDEC	Tray Matrix	Units Per Tray
7 x 7	1.40	1.00	0.10	0.60	9.0	32/48/64	MS-026	10 x 25	250
10 x 10	1.40	1.00	0.10	0.60	12.0	44/52/64/80	MS-026	8 x 20	160
14 x 14	1.40	1.00	0.10	0.60	16.0	44/64/80/100/120/128	MS-026	6 x 15	90
14 x 20	1.40	1.00	0.10	0.60	16.0 x 22.0	100/128	MS-026	6 x 12	72
20 x 20	1.40	1.00	0.10	0.60	22.0	128/144/176	MS-026	5 x 12	60
24 x 24	1.40	1.00	0.10	0.60	26.0	160/176/216	MS-026	4 x 10	40
28 x 28	1.40	1.00	0.10	0.60	30.0	160/208/256	MS-026	4 x 9	36

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