Data Sheet

Thin Quad Flat Pack Packages (TQFP)

Amkor offers a broad line of TQFP IC packages. These packages allow 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 TQFPs are an ideal package for most IC semiconductor technologies such as Digital Signal Processors (DSP), PLDs, microprocessors, microcontrollers, high-speed logic/FPGAs, ASICs, SRAMs and PC chip sets.

TQFP packages are particularly well suited for light weight, portable electronics requiring broad performance characteristics. Such applications include: laptop PCs, video/audio, telecom, cordless/RF, data acquisition, office equipment, disc drives and communication boards (Ethernet, ISDN, etc.).

Features

- 5 x 5 mm to 20 x 20 mm body size
- 32-176 lead counts
- Broad selection of die pad sizes
- Copper leadframes
- 1.0 mm body thickness
- Custom leadframe design available
- Low stress BOM for stress sensitive products
- Pb-free and RoHS compliant materials

TQFP

Thermal Performance

Single-layer PCB

Pkg	Body Size (mm)	Pad Size (mm)	ΘJA (°C/W) by Velocity (LFPM)		
			0	200	500
32 ld	7 x 7	5 x 5	69.3	57.8	52.1
64 ld	14 x 14	8 x 8	47.0	38.1	33.9
100 ld	14 x 14	8 x 8	43.4	35.5	31.7

JEDEC Standard Test Boards

Multi-layer PCB

Pkg	Body Size (mm)	Pad Size (mm)	ΘJA (°C/W) by Velocity (LFPM)		
			0	200	500
32 ld	7 x 7	5 x 5	49.5	43.8	41.3
64 ld	14 x 14	8 x 8	35.1	29.8	27.7
100 ld	14 x 14	8 x 8	33.4	28.5	26.4

JEDEC Standard Test Boards
Tested @ 1W

Electrical Performance

Pkg	Body Size (mm)	Pad Size (mm)	Lead	Self Inductance (nH)	Bulk Capacitance (pF)	Self Resistance (mF)
176 ld	20 x 20	10 x 10	Longest	4.890	0.871	58.4
–	–	–	Shortest	3.490	0.744	43.9

Simulated Results @ 100 MHz

Reliability Qualification

Amkor devices 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 — -65°C/+150°C, 1000 cycles
- Temp/Humidity — 85°C/85% RH, 1000 hours
- High Temp Storage — 150°C, 1000 hours

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

Data Sheet

TQFP

Process Highlights

- Die thickness — 11.5 ± .5 mils
- Strip solder plating — Matte Sn and pre-plated package options, i.e. Ni/Pd frames
- Strip marking — Laser
- Lead inspection — Laser/optical
- Pack/ship options — Bar code, dry pack
- Wafer backgrinding — Available

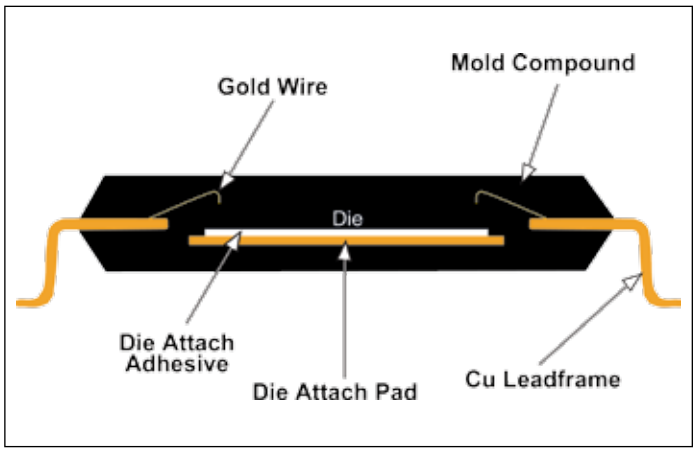
Test Services

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

Shipping

- JEDEC outline CO-124 low profile tray

Cross-section TQFP



Configuration Options

TQFP Nominal Package Dimensions (mm)

Lead Count	Body Size	Body Thickness	Lead Form	Standoff	Foot Length	Tip-to-Tip	JEDEC	Tray Matrix	Units Per Tray
32/40	5 x 5	1.00	1.00	0.10	0.60	7.0	MS-026	12 x 30	360
32/48/64	7 x 7	1.00	1.00	0.10	0.60	9.0	MS-026	10 x 25	250
44/52/64	10 x 10	1.00	1.00	0.10	0.60	12.0	MS-026	8 x 20	160
80	12 x 12	1.00	1.00	0.10	0.60	14.0	MS-026	7 x 17	119
64/80/100/120/128	14 x 14	1.00	1.00	0.10	0.60	16.0	MS-026	6 x 15	90
144	16 x 16	1.00	1.00	0.10	0.60	18.0	N/A	6 x 15	90
144/176	20 x 20	1.00	1.00	0.10	0.60	22.0	MS-026	5 x 12	60

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