

data sheet



MQFP PowerQuad® 2 Packages:

The MQFP PowerQuad® 2 (PQ2) is patented, advanced IC packaging technology with excellent attributes in thermal and electrical performance. Extraordinary gains in power dissipation and speed are achieved through the use of an innovative, integrated, embedded copper heatsink. The IC is attached directly to this large, highly efficient heatsink which readily extracts generated heat under demand situations. To enhance the thermal conduction from the IC to the mounting surface, the internal package leads are mechanically connected, yet electrically isolated, by a proprietary process to the heatsink. Thermal resistance improvements greater than 50% can be realized with this technology without the use of any external cooling aids! The large heatsink also provides a "floating" ground plane to the signal leads, reducing self inductance by 50% (over conventional plastic QFPs). Additionally, the patented PQ2 heatsink has integrated mechanical "locking" features to ensure package integrity while eliminating moisture penetration. The end result is a high-power, high-speed IC package with the properties to enable new electronic products and emerging end applications to move from concept to production.

MQFP PowerQuad® 2

Features:	<p>Exceptional thermal and electrical performance by design include the following:</p> <ul style="list-style-type: none"> • Very high conductive, solid copper heatsink • 50% reduction in package self inductance • 64-304 lead counts (14 x 14 mm to 40 x 40 mm body size) • Industry-accepted JEDEC package outlines • Low stress mold compound • Heatsink-up and heatsink-down configurations available • ~50% improvement in Theta JA over standard MQFP 																																																	
Thermal Resistance:	<p>Multi-Layer PCB</p> <table border="1"> <thead> <tr> <th rowspan="2">Pkg</th> <th colspan="3">Theta JA (°C/W) by Velocity (LFPM)</th> </tr> <tr> <th>0</th> <th>200</th> <th>500</th> </tr> </thead> <tbody> <tr> <td>100 ld</td> <td>17.6</td> <td>14.7</td> <td>13.3</td> </tr> <tr> <td>208 ld</td> <td>12.6</td> <td>10.4</td> <td>9.2</td> </tr> <tr> <td>240 ld</td> <td>11.8</td> <td>9.6</td> <td>8.4</td> </tr> <tr> <td>304 ld</td> <td>10.3</td> <td>8.4</td> <td>7.2</td> </tr> </tbody> </table>	Pkg	Theta JA (°C/W) by Velocity (LFPM)			0	200	500	100 ld	17.6	14.7	13.3	208 ld	12.6	10.4	9.2	240 ld	11.8	9.6	8.4	304 ld	10.3	8.4	7.2																										
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Reliability:	<p>Reliability is of prime importance and long-term performance is assured by advanced designs, manufacturing process and materials.</p> <ul style="list-style-type: none"> • Temp cycle -65/+150 °C, 1000 cycles • Autoclave 121 °C, 2 atm, 504 hours • Temp/humidity 85 °C/85%RH, 1000 hours • High temp storage 150 °C, 1000 hours 																																																	

Applications:

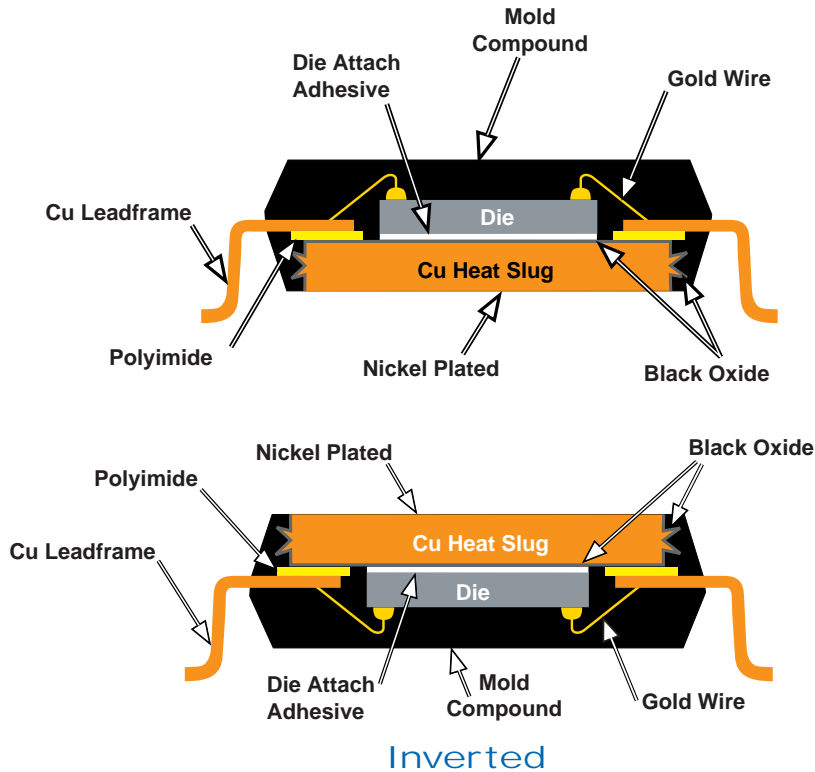
Major semiconductor packaging engineers and manufacturers have chosen PowerQuad® 2 as the IC package of choice for advanced, power micr processors, DSPs, high-speed logic / FPGAs, PLDs, ASICs and other similar technologies. System designers and OEM product developers find PQ2 solves power / thermal / speed concerns while supporting system constraints (standard package outlines, cost, SMT capability, product availability, technical support). PQ2 is ideal for: PCs, notebooks, high-end audio/video, power supplies, VME CPU board systems, workstations, RISC engine modules, GUI boards and many other applications.

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MQFP PowerQuad® 2

Cross-sections MQFP PowerQuad® 2



Process Highlights

Die thickness (max)	25 mils
Strip solder plating	85/15 Sn/Pb
Marking	Pad
Lead inspection	Laser/optical
Pack/ship options	Bar code/dry pack/TNR

Test Services

- Program generation/conversion
- Product engineering
- Wafer sort
- Contact Amkor Test Services for more details

Shipping

Low profile tray (JEDEC Outline CS-004)

Configuration Options:

MQFP POWERQUAD® 2 PACKAGE FAMILY (UNITS IN MM)

Lead Count	Body Size	Body Thickness	Lead Pitch	Form Length	Tip To Tip	Foot Length	Board Standoff	JEDEC	Units Tray Matrix	Per Tray
64	14 x 14	2.0	0.80	1.60/1.95	17.2 x 17.9	0.80	0.15	MS-022	6 x 14	84
120	28 x 28	3.37	0.80	1.30/1.60	30.6/31.2	0.56/0.88	0.13/0.33	MS-029/022	3 x 8	24
128	28 x 28	3.37	0.80	1.30/1.60	30.6/31.2	0.56/0.88	0.13/0.33	MS-029/022	3 x 8	24
144	28 x 28	3.37	0.65	1.30/1.60	30.6/31.2	0.56/0.88	0.13/0.33	MS-029/022	3 x 8	24
160	28 x 28	3.37	0.65	1.30/1.60	30.6/31.2	0.56/0.88	0.13/0.33	MS-029/022	3 x 8	24
208	28 x 28	3.37	0.50	1.30/1.60	30.6/31.2	0.56/0.88	0.13/0.33	MS-029/022	3 x 8	24
256	28 x 28	3.37	0.40	1.30/1.60	30.6/31.2	0.56/0.88	0.13/0.33	MS-029/022	3 x 8	24
240	32 x 32	3.40	0.50	1.30	34.6	0.56	0.38	MS-029	3 x 8	24
304	40 x 40	3.80	0.50	1.30	42.6	0.56	0.43	MS-029	2 x 6	12