



Ball Grid Array (BGA) Routing Guidelines

BGA Pad Dimensions				Line Width/Space					
Pad Pitch		Pad Size		1 Track	2 Track	3 Track	1 Track	2 Track	3 Track
(mm)	(mils)	(mm)	(mils)	(mils)	(mils)	(mils)	(mm)	(mm)	(mm)
1.0	39.4	0.51	20	6.5	3.9	2.8	0.16	0.10	0.07
1.0	39.4	0.41	16	7.8	4.7	3.3	0.20	0.12	0.08
1.0	39.4	0.36	14	8.5	5.1	3.6	0.21	0.13	0.09
1.0	39.4	0.30	12	9.1	5.5	3.9	0.23	0.14	0.10
0.8	31.5	0.41	16	5.2	3.1	2.2	0.13	0.08	0.06
0.8	31.5	0.36	14	5.8	3.5	2.5	0.15	0.09	0.06
0.8	31.5	0.30	12	6.5	3.9	2.8	0.17	0.10	0.07
0.8	31.5	0.25	10	7.2	4.3	3.1	0.18	0.11	0.08
0.75	29.5	0.36	14	5.2	3.1	2.2	0.13	0.08	0.06
0.75	29.5	0.30	12	5.8	3.5	2.5	0.15	0.09	0.06
0.75	29.5	0.25	10	6.5	3.9	2.8	0.17	0.10	0.07
0.65	25.6	0.30	12	4.5	2.7	1.9	0.12	0.07	0.05
0.65	25.6	0.25	10	5.2	3.1	2.2	0.13	0.08	0.06
0.5	19.7	0.25	10	3.2			0.08		
0.4	15.7	0.20	8	2.6			0.07		

Key		
	Low	≥ 5 mils (0.13mm)
	Standard	4 - 4.9 mils (0.10 - 0.12mm)
	High	3 - 3.9 mils (0.07 - 0.09mm)
	Advanced	2 - 3 mils (0.05 - 0.06mm)

Low & Standard Technology: These trace width & space dimensions conform to standard high volume inner and out layer manufacturing guidelines. There is sufficient trace-to-pad spacing so soldermask will also be able to coat these traces.

High Technology: These guidelines should only be used for inner layers or for outer layer BGA internal row fanout to the array perimeter. The trace-to-pad spacing is sufficient so the traces will be coated with soldermask. These fine features could increase the PCB price.

Advanced Technology: These rules should only be utilized for single and multi-chip module PCB's. There is sufficient trace-to-pad spacing to traces will be coated with LPI soldermask. These feature sizes could significantly increase the PCB price.

Contact: dfmcenter@samina-sci for more information