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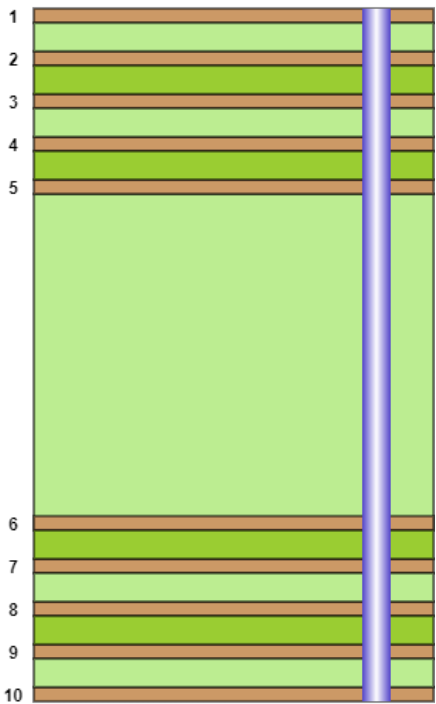
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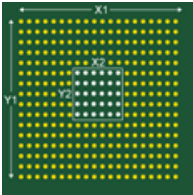
Customer Input

Project Name / Rev	Monster Project/A
PCB Size	14 inches X 7 inches
Board Type	Rigid
Material	FR370HR
Finished Thickness	0.062 inches
Layer Count	10
STD / HDI	STD
Layer Combination	5Signal 5Plan
Layer Sequence	SPSPS-PPSPS
Technology Level	Level 1

10L_0-10-0_5S



BGA Pattern



X1 = 20 Pins	Y1 = 20 Pins
X2 = 6 Pins	Y2 = 6 Pins

Total Number of Pins	400
Number of Signal Pins	324
Pitch	0.8
Cost Index	2.643

Stackup

Layer#	Material	Layer Type	Copper %						Finished Thickness (Mils)	Dielectric or Copper Base Thickness (Mils)	Copper Plating Thickness (Mils)	Dielectric Description (Mils)	Er (Dk @10 GHz)	Material Construction Details
	Solder Mask								0.5	0.5 mils		Soldermask 0.5 mils	4.2	
1	Foil	Signal Signal	24%						1.45	0.35 (0.25 oz)	1.1			
	Prepreg								3.348	3.6		FR370HR Prepreg 3.6 mils	3.63	1x1080-71%
2	Copper	Plane Plane	64%						0.7	0.7 (0.50 oz)				
	Core								4	4		FR370HR Core 4 mils 0.50 oz / 0.50 oz	3.84	1x106+1x1080-60%
3	Copper	Signal Signal	24%						0.7	0.7 (0.50 oz)				
	Prepreg								6.416	7.2		FR370HR Prepreg 7.2 mils	3.63	2x1080-71%
4	Copper	Plane Plane	64%						0.7	0.7 (0.50 oz)				
	Core								4	4		FR370HR Core 4 mils 0.50 oz / 0.50 oz	3.84	1x106+1x1080-60%
5	Copper	Signal Signal	24%						0.7	0.7 (0.50 oz)				
	Prepreg								17.616	18.4		FR370HR Prepreg 18.4 mils	3.68	2x1080-71% + 1x4 Mil Core 0/0-60% +2x1080-71%
6	Copper	Plane Plane	64%						0.7	0.7 (0.50 oz)				
	Core								4	4		FR370HR Core 4 mils 0.50 oz / 0.50 oz	3.84	1x106+1x1080-60%
7	Copper	Plane Plane	64%						0.7	0.7 (0.50 oz)				
	Prepreg								6.416	7.2		FR370HR Prepreg 7.2 mils	3.63	2x1080-71%
8	Copper	Signal Signal	24%						0.7	0.7 (0.50 oz)				
	Core								4	4		FR370HR Core 4 mils 0.50 oz / 0.50 oz	3.84	1x106+1x1080-60%
9	Copper	Plane Plane	64%						0.7	0.7 (0.50 oz)				
	Prepreg								3.348	3.6		FR370HR Prepreg 3.6 mils	3.63	1x1080-71%
10	Foil	Signal Signal	24%						1.45	0.35 (0.25 oz)	1.1			

Layer#	Material	Layer Type	Copper %		Finished Thickness (Mils)	Dielectric or Copper Base Thickness (Mils)	Copper Plating Thickness (Mils)	Dielectric Description (Mils)	Er (Dk @10 GHz)	Material Construction Details
	Solder Mask				0.5	0.5 mils		Soldermask 0.5 mils	4.2	
Total					62.644					

Impedance Calculator

Sr. No.	Signal Layer	Target Impedance (ohm) (tol-10%)	Tx Line model	Ref 1	Ref 2	Trace Width (mils)	Trace Spacing (mils)	TPS = W + S (mils)	Coplanar Spacing (mils)	Calculated Impedance (Ω)	Calculated Impedance before Mask (Ω)	Propagation Delay (ps/inch)
1	1	50	Coated Microstrip Single Ended	2		5.5				50.136	54.665	149.211
2	1	100	Coated Microstrip Differential Pair	2		4	6	10		99.633	113.502	145.374
3	1	90	Coated Microstrip Differential Pair	2		5.2	6	11.2		89.751	100.786	145.42
4	3	50	Stripline Single Ended	2	4	4.5				50.004	0	163.883
5	3	100	Stripline Differential Pair	2	4	3.8	6	9.8		99.902	0	163.578
6	3	90	Stripline Differential Pair	2	4	4.8	6	10.8		90.069	0	163.625
7	8	50	Stripline Single Ended	7	9	4.5				50.004	0	163.883
8	8	100	Stripline Differential Pair	7	9	3.8	6	9.8		99.902	0	163.578
9	8	90	Stripline Differential Pair	7	9	4.8	6	10.8		90.069	0	163.625
10	10	50	Coated Microstrip Single Ended	9		5.5				50.136	54.665	149.211
11	10	100	Coated Microstrip Differential Pair	9		4	6	10		99.633	113.502	145.374
12	10	90	Coated Microstrip Differential Pair	9		5.2	6	11.2		89.751	100.786	145.42

BGA Fan Out Recommendation

BGA Trace Geometry

	Trace / Space Within BGA Area	Maximum Number of Traces Between Adjacent BGA pads/vias
Top Layer	5 mil	1 
Inner Layers	5 mil	1 
Bottom Layer	5 mil	1 

BGA Area Details

Mechanical Via Drill Diameter (mils)	8
Mechanical Via Pad Diameter (mils)	14

Outside of BGA Area

Mechanical Via Drill Diameter (mils)	8
Mechanical Via Pad Diameter (mils)	16

Via Set Information

This Stackup supports the following Via Set

L1-L10

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