

PCB LAYER CONFIGURATION STACK-UPS

Rev A

Layer Configurations.doc 3/20/2003 9:44 AM

	<u>02A</u>	<u>02B</u>	<u>02C</u>								
Layer 1	(Top)	(Top)	(GND)								
Layer 2	(Bottom)	(GND)	(Bottom)								
	<u>04A</u>	<u>04B</u>	<u>04C</u>	<u>04D</u>	<u>04E</u>	<u>04F</u>					
Layer 1	(Top)	(Top)	(PWR)	(GND)	(GND)	(Top)					
Layer 2	(GND)	(PWR)	(Signal)	(Signal)	(Sig/Pwr)	(Signal)					
Layer 3	(PWR)	(GND)	(Signal)	(Signal)	(Sig/Pwr)	(Signal)					
Layer 4	(Bottom)	(Bottom)	(GND)	(PWR)	(GND)	(Bottom)					
	<u>06A</u>	<u>06B</u>	<u>06C</u>	<u>06D</u>	<u>06E</u>	<u>06F</u>	<u>06G</u>	<u>06H</u>	<u>06J</u>	<u>06K</u>	<u>06L</u>
Layer 1	(Top)	(Top)	(Top)	(Top)	(GND)	(GND)	(Top)	(Top)	(Top)	(Top)	(Top)
Layer 2	(GND)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(GND)	(PWR)	(PWR)	(Signal)
Layer 3	(Signal)	(Signal)	(GND)	(PWR)	(GND)	(PWR)	(Signal)	(PWR)	(GND)	(Signal)	(Signal)
Layer 4	(Signal)	(Signal)	(PWR)	(GND)	(PWR)	(GND)	(PWR)	(Signal)	(Signal)	(GND)	(Signal)
Layer 5	(PWR)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(GND)	(PWR)	(PWR)	(Signal)
Layer 6	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(GND)	(GND)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)
	<u>08A</u>	<u>08B</u>	<u>08C</u>	<u>08D</u>	<u>08E</u>	<u>08F</u>	<u>08G</u>	<u>08H</u>	<u>08J</u>	<u>08K</u>	<u>08L</u>
Layer 1	(Top)	(Top)	(Top)	(Top)	(GND)	(GND)	(PWR)	(GND)	(Top)	(Top)	(Top)
Layer 2	(Signal)	(Signal)	(GND)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(GND)	(GND)
Layer 3	(GND)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(PWR)	(Sig/Pwr)	(PWR)	(PWR)
Layer 4	(Signal)	(Signal)	(GND)	(PWR)	(GND)	(PWR)	(Signal)	(Signal)	(GND)	(Signal)	(Signal)
Layer 5	(Signal)	(Signal)	(PWR)	(GND)	(PWR)	(GND)	(Signal)	(Signal)	(Sig/Pwr)	(Signal)	(Signal)
Layer 6	(PWR)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(PWR)	(GND)	(GND)	(PWR)	(GND)
Layer 7	(Signal)	(Signal)	(GND)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(Sig/Pwr)	(GND)	(PWR)
Layer 8	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(GND)	(GND)	(GND)	(PWR)	(Bottom)	(Bottom)	(Bottom)
	<u>10A</u>	<u>10B</u>	<u>10C</u>	<u>10D</u>	<u>10E</u>	<u>10F</u>	<u>10G</u>	<u>10H</u>	<u>10J</u>	<u>10K</u>	
Layer 1	(Top)	(Top)	(Top)	(Top)	(Top)	(Top)	(GND)	(GND)	(GND)	(GND)	
Layer 2	(GND)	(GND)	(GND)	(PWR)	(GND)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	
Layer 3	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(PWR)	
Layer 4	(Signal)	(Signal)	(Signal)	(Signal)	(PWR)	(PWR)	(GND)	(PWR)	(PWR)	(GND)	
Layer 5	(PWR)	(GND)	(PWR)	(GND)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	
Layer 6	(GND)	(PWR)	(GND)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	
Layer 7	(Signal)	(Signal)	(Signal)	(Signal)	(PWR)	(PWR)	(PWR)	(GND)	(GND)	(GND)	
Layer 8	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(PWR)	(PWR)	
Layer 9	(GND)	(GND)	(PWR)	(GND)	(GND)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	
Layer 10	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(GND)	(GND)	(GND)	(GND)	
	<u>12A</u>	<u>12B</u>	<u>12C</u>	<u>12D</u>	<u>12E</u>	<u>12F</u>	<u>12G</u>	<u>12H</u>	<u>12J</u>	<u>12K</u>	<u>12L</u>
Layer 1	(Top)	(Top)	(Top)	(Top)	(Top)	(Top)	(Top)	(Top)	(GND)	(Top)	(GND)
Layer 2	(GND)	(PWR)	(GND)	(GND)	(GND)	(GND)	(GND)	(PWR)	(Signal)	(GND)	(PWR)
Layer 3	(PWR)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)
Layer 4	(Signal)	(Signal)	(PWR)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(PWR)	(Signal)	(Signal)
Layer 5	(Signal)	(Signal)	(Signal)	(Signal)	(PWR)	(GND)	(PWR)	(GND)	(GND)	(PWR)	(GND)
Layer 6	(GND)	(PWR)	(GND)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(Signal)
Layer 7	(PWR)	(GND)	(PWR)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)
Layer 8	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(PWR)	(GND)	(PWR)	(PWR)	(Signal)	(GND)
Layer 9	(Signal)	(Signal)	(PWR)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)	(GND)	(Signal)
Layer 10	(GND)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)	(Signal)
Layer 11	(PWR)	(GND)	(GND)	(GND)	(GND)	(GND)	(PWR)	(GND)	(Signal)	(Signal)	(GND)
Layer 12	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(Bottom)	(GND)	(GND)	(PWR)

Note:

This document is used for the naming convention of the PowerPCB Start Files, PowerPCB CAM Files, PowerPCB 2D-Line "Below Board Text" items and AutoCAD Lay-up Details.

PCB LAYER CONFIGURATION STACK-UPS

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	<u>14A</u>	<u>14B</u>	<u>14C</u>	<u>14D</u>	<u>14E</u>	<u>14F</u>	<u>14G</u>				
Layer 1	(Top)	(Top)	(GND)	(PWR)	(Top)	(Top)	(Top)				
Layer 2	(GND)	(PWR)	(Signal)	(Signal)	(GND)	(PWR)	(GND)				
Layer 3	(Signal)	(Signal)	(PWR)	(GND)	(Signal)	(Signal)	(PWR)				
Layer 4	(Signal)	(Signal)	(GND)	(PWR)	(Signal)	(GND)	(Signal)				
Layer 5	(PWR)	(GND)	(Signal)	(Signal)	(GND)	(Signal)	(Signal)				
Layer 6	(GND)	(PWR)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)				
Layer 7	(Signal)	(Signal)	(PWR)	(GND)	(PWR)	(PWR)	(Signal)				
Layer 8	(Signal)	(Signal)	(GND)	(PWR)	(GND)	(GND)	(Signal)				
Layer 9	(PWR)	(GND)	(Signal)	(Signal)	(Signal)	(Signal)	(GND)				
Layer 10	(GND)	(PWR)	(Signal)	(Signal)	(PWR)	(Signal)	(Signal)				
Layer 11	(Signal)	(Signal)	(PWR)	(GND)	(Signal)	(PWR)	(Signal)				
Layer 12	(Signal)	(Signal)	(GND)	(PWR)	(Signal)	(Signal)	(PWR)				
Layer 13	(PWR)	(GND)	(Signal)	(Signal)	(GND)	(GND)	(GND)				
Layer 14	(Bottom)	(Bottom)	(PWR)	(GND)	(Bottom)	(Bottom)	(Bottom)				
	<u>16A</u>	<u>16B</u>	<u>16C</u>	<u>16D</u>							
Layer 1	(Top)	(Top)	(GND)	(PWR)							
Layer 2	(GND)	(PWR)	(Signal)	(Signal)							
Layer 3	(PWR)	(GND)	(PWR)	(GND)							
Layer 4	(Signal)	(Signal)	(Signal)	(Signal)							
Layer 5	(Signal)	(Signal)	(Signal)	(Signal)							
Layer 6	(GND)	(PWR)	(GND)	(PWR)							
Layer 7	(PWR)	(GND)	(PWR)	(GND)							
Layer 8	(Signal)	(Signal)	(Signal)	(Signal)							
Layer 9	(Signal)	(Signal)	(Signal)	(Signal)							
Layer 10	(GND)	(PWR)	(GND)	(PWR)							
Layer 11	(PWR)	(GND)	(PWR)	(GND)							
Layer 12	(Signal)	(Signal)	(Signal)	(Signal)							
Layer 13	(Signal)	(Signal)	(Signal)	(Signal)							
Layer 14	(GND)	(PWR)	(GND)	(PWR)							
Layer 15	(PWR)	(GND)	(Signal)	(Signal)							
Layer 16	(Bottom)	(Bottom)	(PWR)	(GND)							

Notes:

- Stack-ups with GND & PWR on outer layers are primarily meant for fanout and short trace runs only. For HDI purposes, the second layer is a signal layer to run traces from fine pitch BGA's. In this HDI application, the manufacturer would use laser drills to perform a control depth drilling process to access layer 2.
- Balance of laminate thickness between layers from the centerline of the PCB structure is required for all stack-ups in order to minimize or eliminate warpage. You must determine laminate type and thickness prior to the start of CAD layout.
- It is imperative that analysis of the stack-up be done with the manufacturer to determine copper weights, prepreg and core thickness before CAD layout to insure controlled impedance.
- 1.6mm FR4 material can be used for Stack-ups 2 – 16 Layers. 1.8mm FR4 is used for the 10 - 20 Layer, 2.3mm FR4 is used for the 10 - 32 Layer stack-ups.
- Common PC Board thickness' are:
 - 0.8mm (.031")
 - 1.0mm (.040")
 - 1.6mm (.062")
 - 1.8mm (.070")
 - 2.3mm (.090")
 - 3.2mm (.125")

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