FOUR LAYER STACK UP

Standard 4-layer stack-up:

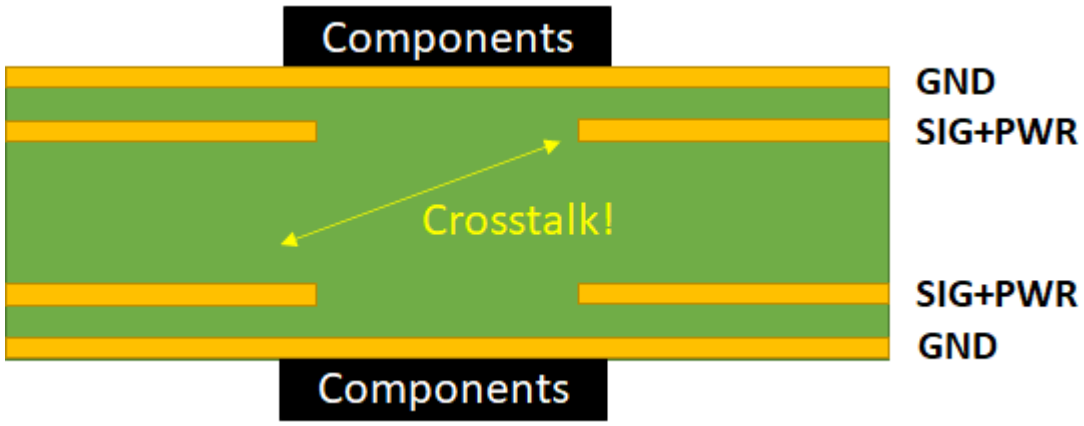
This configuration consists of a top and bottom signal layers along with internal ground and power layers to provide both a solid reference plane and distribute power evenly across the board. Usually, the top layer is used for the more high-speed signals as its closer to the ground plane improving signal integrity while less critical signals are routed on the bottom layer. This configuration is often used in consumer electronics, communication devices, and most low to mid speed applications as it typically isn't the best at minimizing EMI making it less than ideal for high-speed applications. Though it can be used for high-speed applications routing on one side

Objects		Types		Thickness	Physical	
#	Name	Layer	Layer Function	Value mil	Layer ID	Material
*	*	*	*	*	*	*
		Surface				
1	TOP	Conductor	Conductor	1.2	1	Copper
		Dielectric	Dielectric Prepreg	8		Fr-4
2	GROUND	Plane	Plane	1.2	2	Copper
		Dielectric	Dielectric Core	8		Fr-4
3	POWER	Conductor	Conductor	1.2	3	Copper
		Dielectric	Dielectric Prepreg	8		Fr-4
4	BOTTOM	Conductor	Conductor	1.2	4	Copper
		Surface				

High shielding stack-ups:

This configuration uses 2 outer ground layers to provide excellent protection from external EMI. It is considered the safest configuration from

an EMI or ESD standpoint but poses one significant problem and that is its tolerance to crosstalk between the inner layers which are usually combined signal-power layers. Even if the core of the board is very thick, this won't necessarily be enough to eliminate this issue, especially at high speeds.



High speed stack-ups:

Simply an inversion of the previous configuration, this stack-up is used for higher speed configurations that don't require that much shielding from external EMI, but instead aims to prevent any interference resulting from the signal layers. It is also generally preferred to use this configuration if you plan to route signals between both the top and bottom layers. Additionally, this stack-up offers the best path for the return current to flow through as it directly flows into the ground plane taking the lowest impedance path back.