

## Axiom PCBA Design for Manufacturability Guidelines

Section: 10.1.1	Revision: A	Revision Date: 2/15/13
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DFM Subject: PCB Size and Thickness, Pad Crater Prevention
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### DFM Requirement:

1. Minimum PCB thickness based on length to width ratio is defined in Table 1.
2. If BGA size is larger than 30mm, minimum PCB thickness should be  $\geq 1.90\text{mm}$  (.075").

Table 1 – Minimum PCB Thickness Based on Length to Width Ratio

PCB Length to Width Ratio	Minimum PCB Thickness		
	1.52 – 1.90mm (.060" – .075")	1.90 – 2.29mm (.075" – .090")	> 2.29mm (> .090")
~ 1 to 1	X		
~ 1 to 2		X	
> 1 to 2			X

### DFM Impact:

PCB size, as defined by the length to width ratio, can increase the potential for BGA pad cratering by making the PCB more flexible, especially near the middle of the PCB. Increasing the PCB thickness can decrease the potential for pad cratering by making the PCB stiffer.

#### PCB size (length to width ratio) risk relative to pad cratering:

1. Length to width ratio is ~ 1 to 1 – lower risk
2. Length to width ratio is ~ 1 to 2 – moderate risk
3. Length to width ratio > 1 to 2 – higher risk

#### Minimum PCB thickness risk relative to pad cratering:

1. Thickness is 1.52 – 1.90mm (.060" to .075") – higher risk
2. Thickness is 1.90 – 2.29mm (.076" to .090") – moderate risk
3. Thickness is >2.29mm (> .090") – lower risk

#### BGA size reference relative to pad cratering (section 10.1c):

Small BGAs: maximum length is < 30mm – lower risk

Large BGAs: maximum length is > 30mm – higher risk