

Axiom Electronics PCBA Design for Manufacturability Guidelines

Section: 11.5

Revision: B

Revision Date: 10/15/2023

DFM Subject: Land Pattern Design, BGA

DFM Requirement:

- IPC-7351 and IPC-7352 Requirements for Surface Mount Design and Land Pattern Standard should be used as a guide for land pattern design. This section also contains some basic guidance for land pattern design, which is based on industry and Axiom best practice.
- Also reference IPC-7095 Design and Assembly Process Implementation for BGAs.
- There are two types of BGA solder joints: collapsible and non-collapsible. Each type requires a different land pattern design. Collapsible BGAs are the most common.

DFM Impact:

Land pattern design is critical to solder joint reliability. In particular, solder joint stand off height is critical for BGA solder joint reliability.

DFM Details: BGA land pattern design guidance

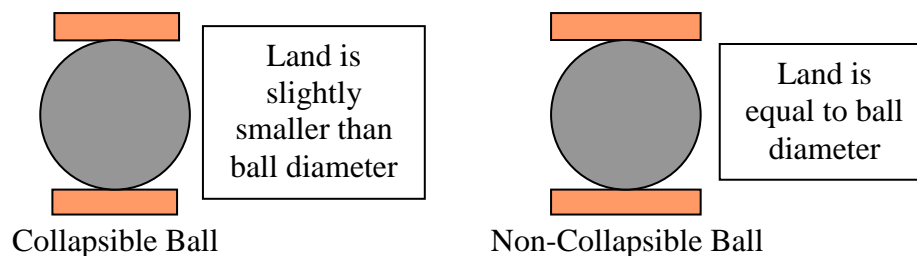
Collapsible BGA land pattern design recommendations:

- Soldermask defined lands shall not be used (see Section 10.10)
- Ideal land design: land diameter on PCB = land diameter on BGA
- When BGA land diameter is unknown: PCB land diameter = 70 to 80% of ball diameter
- PCB land diameter shall not be less than 70% of ball diameter
- PCB land diameter shall not exceed ball diameter

Non-collapsible BGA land pattern design recommendations:

- Soldermask defined lands shall not be used (see Section 10.10)
- Ideal land design: land diameter on PCB = ball diameter
- PCB land diameter shall not be less than 80% of ball diameter
- PCB land diameter shall not exceed ball diameter

Note: see IPC-7095 for a list of common BGA ball diameters



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