

Axiom Electronics PCBA Design for Manufacturability Guidelines

Section: 10.21	Revision: B	Revision Date: 12/15/18
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DFM Subject: Component Assembly Spacing (SMT and Through-Hole)
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<p>DFM Requirement:</p> <p>SMT Component Spacing recommendations are listed in Tables 10.21a, 10.21b and 10.21c</p> <ul style="list-style-type: none"> • Components are categorized in Table 10.21a by size and complexity • Spacing shall be land to land if the component does not extend beyond the land • Spacing shall be land to component body if the component extends beyond the land

<p>DFM Impact:</p> <p>Proper component spacing ensures ease of solder paste printing, component placement, solder joint inspection, and rework.</p>

Table 10.21a – SMT Component Categories

A	B	C	D	E
0201	SOT	SOIC	PLCC	BGA
0402	RPACK	TSOP	SOJ	LGA
0603	LED	BTC	QFP	CONN
0805	TANT		LCC	
1206				
1210				

See page 2 for instructions and examples regarding use of these tables

Table 10.21b – SMT Component Spacing, Metric (mm)

	Secondary				
Primary	A	B	C	D	E
A	0.5mm	0.65mm	1.0mm	1.27mm	2.5mm
B		0.65mm	1.0mm	1.27mm	2.5mm
C			1.0mm	1.27mm	2.5mm
D				1.27mm	2.5mm
E					2.5mm

Table 10.21c – SMT Component Spacing, Imperial (inches)

	Secondary				
Primary	A	B	C	D	E
A	0.020"	0.025"	0.040"	0.050"	0.100"
B		0.025"	0.040"	0.050"	0.100"
C			0.040"	0.050"	0.100"
D				0.050"	0.100"
E					0.100"

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DFM Requirement:

Through-Hole Component Spacing requirements are listed in Table 10.21d

- Spacing for through-hole components is on the insertion side
- Spacing can be body to body or body to land, whichever is applicable

DFM Impact:

Proper component spacing ensures ease of component insertion, solder joint inspection, and rework. Through-hole components are usually taller than SMT components, so additional spacing is required to improve access to SMT components and solder joints.

Table 10.21d – Through-Hole Component Spacing, Metric (mm) and Imperial (inches)

	Preferred Spacing	Minimum Spacing
Through-Hole to Through-Hole, Body to Body	2.5mm (0.100")	1.27mm (0.050")
Through-Hole to SMT, Body to Body	2.5mm (0.100")	1.27mm (0.050")
Through-Hole to SMT, Body to Land	2.5mm (0.100")	1.27mm (0.050")

Instructions and Examples for SMT Component Spacing Tables

To obtain the spacing for two components:

1. Use table 10.21 to determine the letter designation for each component by identifying the letter (A, B, C, D, or E) at the top of the column containing the part description.
2. Use either the Metric (mm) 10.21b or Imperial (inches) 10.21c tables.
3. Select the primary row using the first letter, and then select the column with the secondary letter to determine the recommended spacing value (intersection of row then column).

Example: What is the spacing for a 0402 and a QFP?

1. The 0402 is categorized in Column "A" and the QFP is categorized in Column "D".
2. Start in the Primary column with the "A" component.
3. Go across the row to the Secondary column and find the "D" value.
4. The recommended spacing for this combination is 0.050" or 1.27mm.

Note: contact the Manufacturing Engineer for SMT and through-hole component spacing requirements not listed in Tables 10.21b, 10.21c or 10.21d.