

Axiom Electronics PCBA Design for Manufacturability Guidelines

Section: 7.0	Revision: A	Revision Date: 2/14/13
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DFM Subject: Component Packages and Naming Conventions

7.1 Table 7.1 contains a list of approved surface mount components.

- Devices with a lead or ball pitch between 0.4mm (0.016”) and 0.5mm (0.020”) can be used, however please check with Manufacturing Engineering first.
- Devices with a lead or ball pitch less than 0.4mm (0.016”) should not be used.

7.2 Table 7.2 contains a list of approved through-hole mount components.

7.3 Table 7.3 contains a list of standard component naming conventions.

Note: Consult with Manufacturing Engineering for components not listed in these tables.

Table 7.1 – Surface Mount Components

Package Name	Minimum size	Maximum Size	Approved ⁽¹⁾
Resistor (0402 and larger)	0402	2512	Yes
Resistor (0201 and smaller)	01005	0201	Confirm
Resistor, MELF	Various Sizes ⁽³⁾	Various Sizes ⁽³⁾	Confirm
Resistor Networks (R-packs)	Various Sizes ⁽³⁾	Various Sizes ⁽³⁾	Yes
Capacitor (0402 and larger)	0402	1210	Yes
Capacitor (0201 and smaller)	01005	0201	Confirm
Capacitor, Tantalum	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes
Capacitor, Electrolytic	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes
Inductor	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes
Diode, MELF	Various Sizes ⁽³⁾	Various Sizes ⁽³⁾	Confirm
Light Emitting Diode, LED	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes
Small Outline Transistor (SOT)	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes
Small Outline IC (SOIC)	SO8	SO44	Yes
Small Outline J-Lead (SOJ)	SOJ28	SOJ42	Yes
Plastic Leaded Chip Carrier (PLCC)	PLCC20	PLCC52	Yes
Quad Flat Pack (QFP)	5mm/side	55mm/side	Yes
Thin Quad Flat Pack (TQFP)	5mm/side	55mm/side	Yes
Low Profile Quad Flat Pack (LQFP)	5mm/side	55mm/side	Yes
Leadless Ceramic Carrier (LCC)	Various Sizes ⁽³⁾	Various Sizes ⁽³⁾	Confirm
Plastic Ball Grid Array (PBGA)	5mm/side	55mm/side	Yes
Chip Scale Packages (CSP)	Various Sizes ⁽³⁾	Various Sizes ⁽³⁾	Confirm
Ceramic Ball Grid Array (CBGA)	5mm/side	55mm/side	Confirm
Land Grid Array (LGA)	5mm/side	55mm/side	Confirm
Bottom Termination Components (BTC), for example a QFN	2mm/side	10mm/side	Yes
Connector	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes
Socket	Sizes vary ⁽²⁾	50mm/side	Confirm
Fuse	Various Sizes ⁽²⁾	Various Sizes ⁽²⁾	Yes

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Note 1, Approved Definitions:

- Yes – this component is approved for use in all applications.
- No – this component should not be used. Consult with Manufacturing Engineering.
- Confirm – there may be some assembly or reliability concerns associated with this component depending on the application; please consult with Manufacturing Engineering before using this component.

Note 2: Various sizes are available; consult with Manufacturing Engineering for details.

Note 3: Convex soldering terminations are preferred.

Note: the following formula should be used for secondary side component mounting:

- Weight of component (grams) divided by total pad mating area (square inches).
- Guideline: less than or equal to 30 grams per square inch is acceptable.

Table 7.2 – Through-Hole Mount Components

Package Name	Approved ⁽⁴⁾
Resistor, Axial	No
Resistor, Radial	No
Capacitor, Axial	No
Capacitor, Radial	No
Capacitor, Tantalum	No
Capacitor, Electrolytic	Yes
Transistor	No
Inductor	No
Diode	No
Light Emitting Diode, LED	Yes
Dual-Inline-Package (DIP)	No
Pin Grid Array (PGA)	No
Connector	Yes
Socket	Yes
Fuse	No

Note 4, Approved Definitions:

- Yes – this component is approved for use in all applications.
- No – this component should not be used unless there is not a surface mount equivalent.

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7.4 Component Naming Conventions

The component naming convention (abbreviation) outlined in Table 7.3 should be followed for all designs.

7.5 Reference Designator Marking Requirements

Reference designator markings shall:

- Be viewable after component installation.
- Not cover any surfaces intended for soldering.
- Not cover any surfaces intended for grounding.
- Be a reasonable distance from the component.

Table 7.3 – Component Naming Conventions (Abbreviations)

Component Name	Abbreviation	Comments
Batteries	BT	
Capacitors	C	
Diodes (including LEDs)	D	
Test Points	E	
Fuses	F	
Headers	H	
Jacks and Shields	J	
Jumpers	JP	
Inductors, Ferrites, EMI-Filters	L	
Lamps	LP	
Plugs (male connectors)	P	
Transistors	Q	
Resistors	R	
Resistor Packs	RP	
Sockets	S	
Switches	SW	
Transformers	T	
Integrated Circuits	U	
Transguards	V	
Swage Mounting Holes	W	“W” must be visible on the layer opposite the installed side
Crystals/Oscillators	X	
Fiducials, tooling holes, mounting holes and label boxes	Y	Devices with a “Y” should not have a visible silkscreen on the PCB