

## \*\*\* PCB SPECIFICATION FOR BARE BOARD MANUFACTURING \*\*\*

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PRODUCT OWNER : Silicon Labs  
DOCUMENT/BOARD : PCB4191T\_A00  
DATE : 2021. 08. 18.  
REVISION : A00

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PREPARED BY : Adam Sule  
BOARDS pr PANEL : 3  
PANEL SIZE : 210.2 x 205.4 mm  
BOARD SIZE : 160 x 160 mm; 33 x 160 mm; 33 x 14.5 mm  
BOARD THICKNESS : 1.55 mm +/-10%  
NO OF LAYERS : 6  
MATERIAL(S) : See layer stack up below.

MARKINGS : Logo, Week/Year, UL (ON SECONDARY SIDE (BOT))  
(Avoid areas reserved for DataMatrix, Barcodes or Lables)  
All PCB manufacturer's markings (Logo, Week/Year, UL)  
shall be put in the PCB frame, No marking on the boards  
is allowed

QUALITY REQ. : IPC-A-600 (current revisions) Class 2, and IPC specifications  
referred to by IPC-A-600

GENERAL REQ. : - Copper must not be added or removed from inside the board  
outline(s), without written consent/approval.  
If applicable, the following requirements are valid:  
- Copper balancing may be applied on break-away-tabs,  
or otherwise outside board outline(s), but must have  
a minimum 1.5 mm clearance to possible fiducials.  
- If Build-Up (Stack-Up) is specified, follow Build-Up,  
otherwise use (board manufacturer) standard Build-Up.  
- Break-away areas may be used for patterns, holes etc.  
by manufacturer for QA purposes.  
- If V-CUT, use angle 30 +/- 5 degrees.  
V-CUT minimum remaining thickness 0.5 +/- 0.1 mm.  
Use of V-CUT test pads is allowed.  
- Inner radius (contour/outline) 1.2 mm, unless stated otherwise.

COPPER THK. : SEE BUILD-UP

COPPER PASSIV. : ENIG to meet IPC-4552 Class 2 requirements (current revision)  
(Electroless Nickel/Immersion Gold)

RESIST MASK : Solder Mask Color: BLACK (NBI NON-STANDARD)  
Photo Polymer Wet film  
to IPC-SM-840 Class T requirements (current revision)  
Thickness minimum 8 um, maximum 20 um  
Removal of thin solder resist dams (between QFN and BGA pads)  
is allowed.

VIA HOLES : PLUGGED/FILLED, IPC-4761 (current revision) Type IV-b  
Plugged and Covered Both Sides, Low CTE Plugging Paste  
If Type IV-b is not available as a process, then Type IV-a  
for the Top Side, and Overprinted (Tented) Bot Side is OK

LEGEND/SILKSCR. : WHITE, BOTH SIDES (TOP + BOT)

NOMINAL VALUES for Width, Spacing and VIA Diameter:

Cu TRACK(TRACE) : Minimum conductor width : 0.10 mm (4 mil)

Cu SPACING : Minimum conductor spacing : 0.10 mm (4 mil)

MINIMUM VIA : Minimum via pad diameter : 0.6 mm (23.6 mil) blind vias  
Min via hole (SEE HOLE INFORMATION FURTHER DOWN)  
Min via hole may have more than one pad diameter.  
Blind Vias for L6-L5 connection

MINIMUM VIA : Minimum via pad diameter : 0.60 mm (23.6 mil)  
Min via hole (SEE HOLE INFORMATION FURTHER DOWN)  
Min via hole may have more than one pad diameter.

&lt;SPECIFICATION CONTINUED ON NEXT PAGE&gt;

BUILD UP :

Blind vias L5-L6

L1	=====    =====	35 um Cu (ca) After plating
	- - -    - Core - FR4-Improved - -	200 um
L2	=====    =====	18 um Cu
	- - -    - PREPREG - 2x2116-47 - -	240 um
	- - -    - PREPREG - 7628-45 - - -	180 um
L3	=====    =====	18 um Cu
	- - -    - Core - FR4-Improved - -	200um - - CENTER - -
L4	=====    =====	18 um Cu
	- - -    - PREPREG - 7628-45 - - -	180 um
	- - -    - PREPREG - 2x2116-47 - -	240 um
L5	==   =    =====	18 um Cu
	-    -    - Core - FR4-Improved - -	200 um
L6	==   =    =====	35 um Cu (ca) After plating

Core dielectric constant shall be as close to 4.3  
at 2.4 GHz as possible.

TEST

- : 100% Electrical Test
- Optical test, AOI (with automatic scanner)
- Visual inspection
- (Generate netlist from Gerber and Drill files)

If NBI is used in this specification, it is latin,  
meaning mark well or observe particularly