

DESIGN SUMMARY:

This board provides an EVM for the A2B modules:
- AB0001 (2nd gen, A2B connector included)
- AB0331 (3rd gen, A2B connector included)

It does not support:
- OEM versions that do not include an A2B connector on the board (i.e. 4 or 4/8 pin headers instead)

Compatible with ADI WG eval board

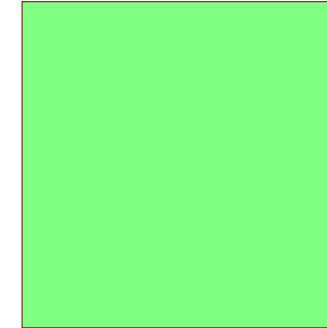
DESIGN NOTES

This board can be used as a A2B root node or as a A2B client node.

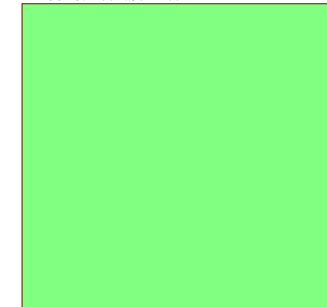
Board design Rev 1

PCB artwork production version Rev A

Main
AB0020.main.SchDoc



Mechanical
AB0020.mech.SchDoc

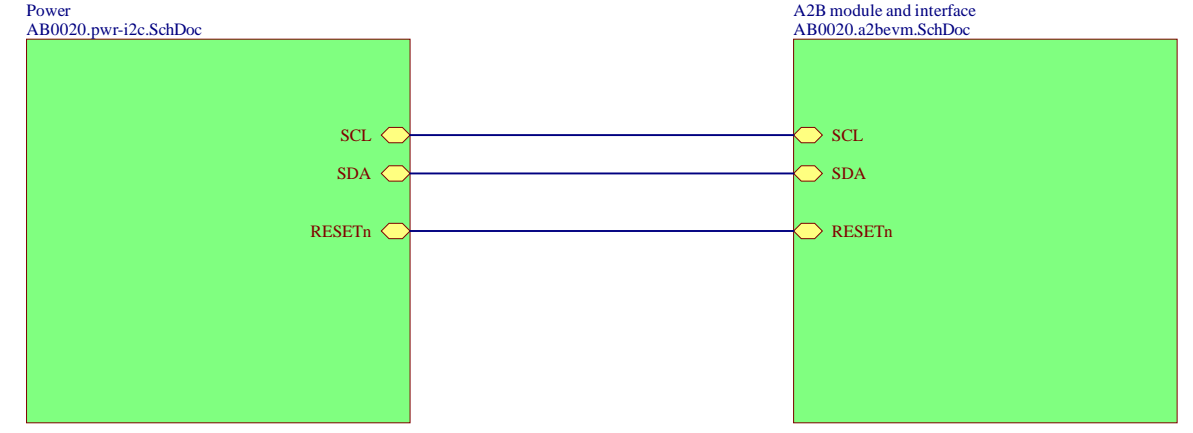


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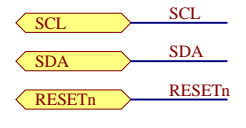
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Title AB0020 EVM for A2B modules			Cannot open file C:\Users\lamab\OneDrive\CSP\Engineer ring\A2BHardware\boards\A2Bmodule\ AB0020.mech.dwg http://clk.works
Size: Tabloid	Number: AB0020	Revision: 1.0	
Date: 11/15/2023	Time: 12:19:27 AM	Sheet 1 of 5	
File: C:\Users\lamab\AppData\Local\Temp\Releases\Snapshot\1\AB0020.cover.SchDoc			

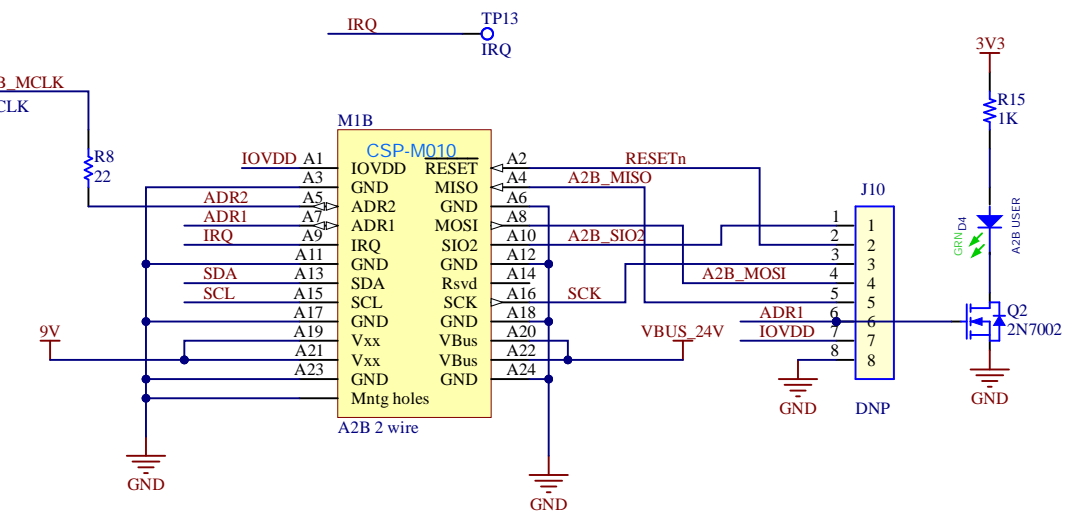
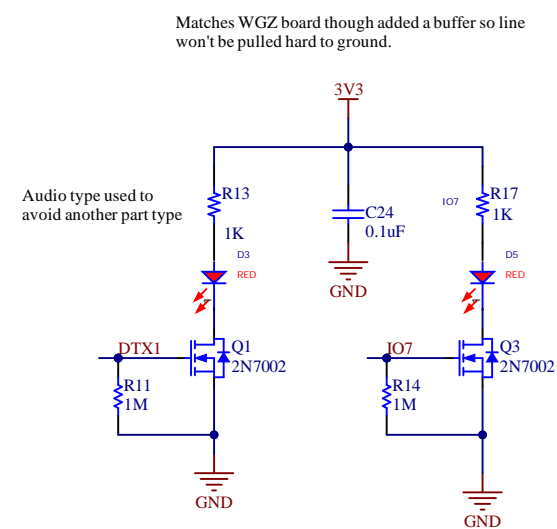
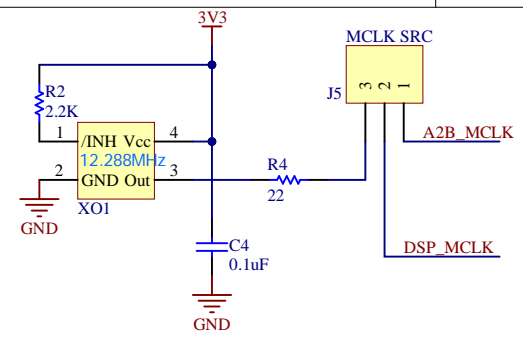
SCL is bidirectional here because when USBi is in use that port is the master. On an A2B client node the A2B device is normally I2C master, though USBi can be used by ensuring the A2B part is not using the I2C bus. This is not the same as multi-master operation, it has to be USBi (x) or A2B exclusively.



Title Main			Cannot open file C:\Users\lamab\OneDrive\CSP\Engineering\A2BHardware\boards\A2Bmodule\AB0020 module\11temp\11temp\main.SchDoc http://clk.works
Size: Tabloid	Number: AB0020	Revision: 1.0	
Date: 11/15/2023	Time: 12:19:27 AM Sheet 2 of 5		
File: C:\Users\lamab\AppData\Local\Temp\Releases\Snapshot\1\AB0020.main.SchDoc			

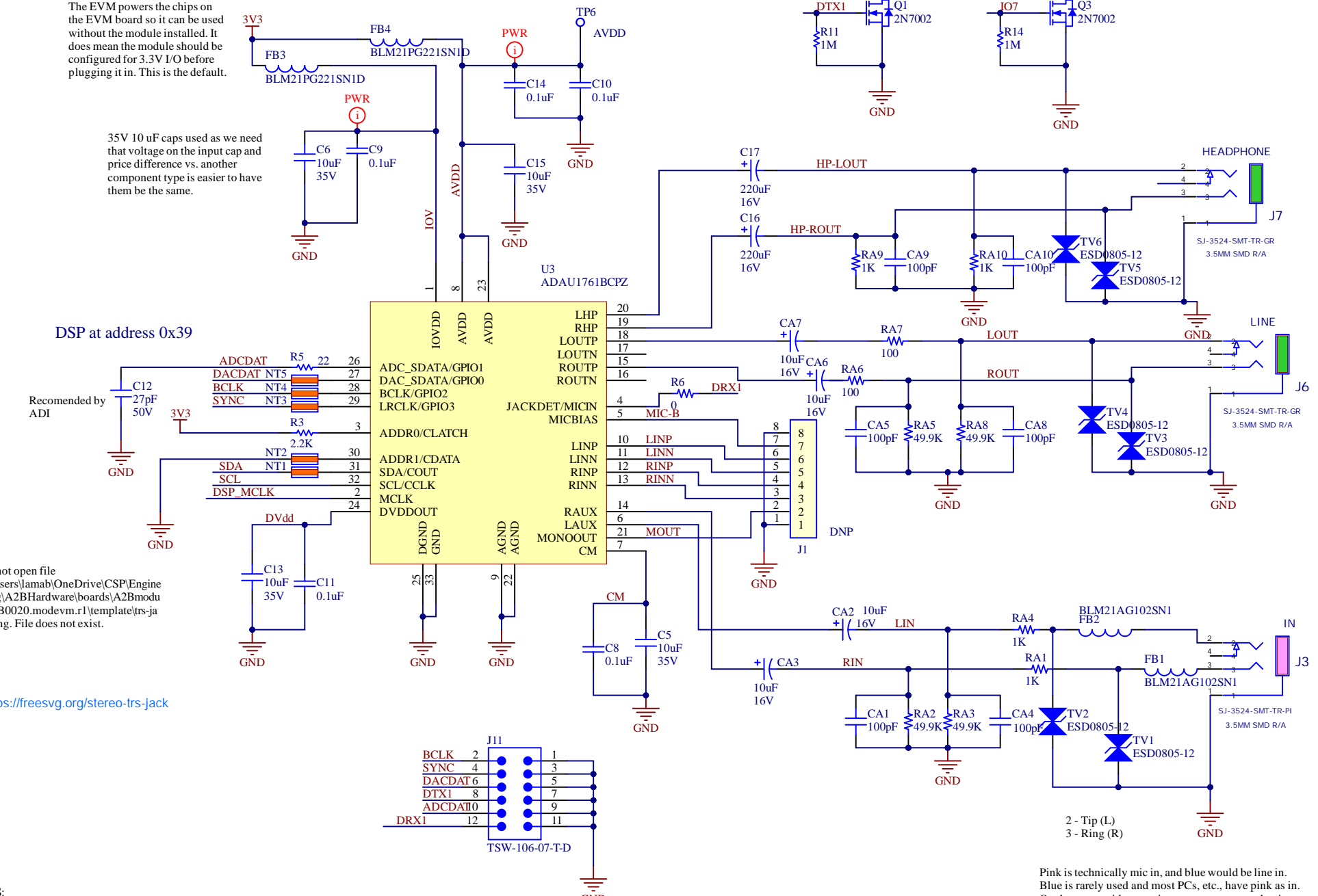


Oscillator needed if using the board standalone or as A2B Master (root) node.
Do not drive the A2B_CLK pin A3 if oscillator is being used.
When used as the root node the ADAU1761 must be programmed first so it can supply LRCLK to the A2B module/chip.



The EVM powers the chips on the EVM board so it can be used without the module installed. It does mean the module should be configured for 3.3V I/O before plugging it in. This is the default.

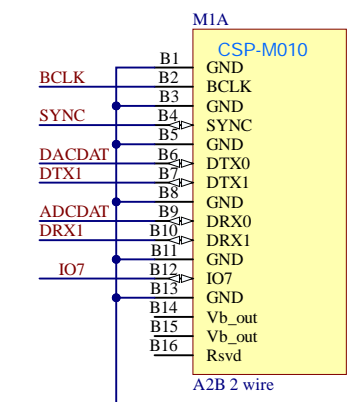
35V 10uF caps used as we need that voltage on the input cap and price difference vs. another component type is easier to have them be the same.



DSP at address 0x39

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from: <https://freesvg.org/stereo-trs-jack>



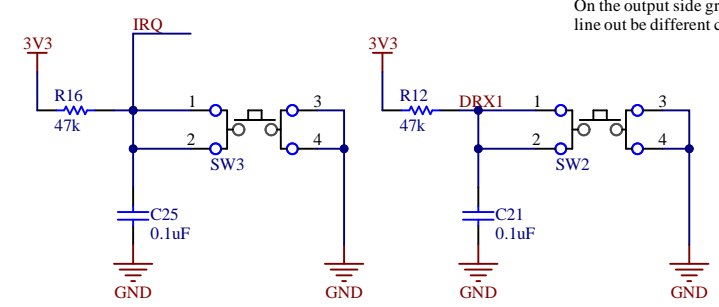
NOTES:
Based on the ADI WG eval board.

ADAU1761: Line input has added 1K resistors, these seem to be suggested in some of the examples. Assumed to be there to protect the input if the board isn't powered and a low impedance source is driving the Line In. But that's only a guess.

The headphone output is the worst performance wise but it's what the design that this is copied from used.

The NT devices are pads with a trace that can be cut to isolate a bus segment, and then later a 0 ohm jumper can be put there. They are 0603 sized.

The default ADAU1761 QFN footprint has the pads at the corners very close. Those were changed to rounded rectangles to leave more space.



Pink is technically mic in, and blue would be line in. Blue is rarely used and most PCs, etc., have pink as in. On the output side green is use to mean out vs. having line out be different color than headphone.

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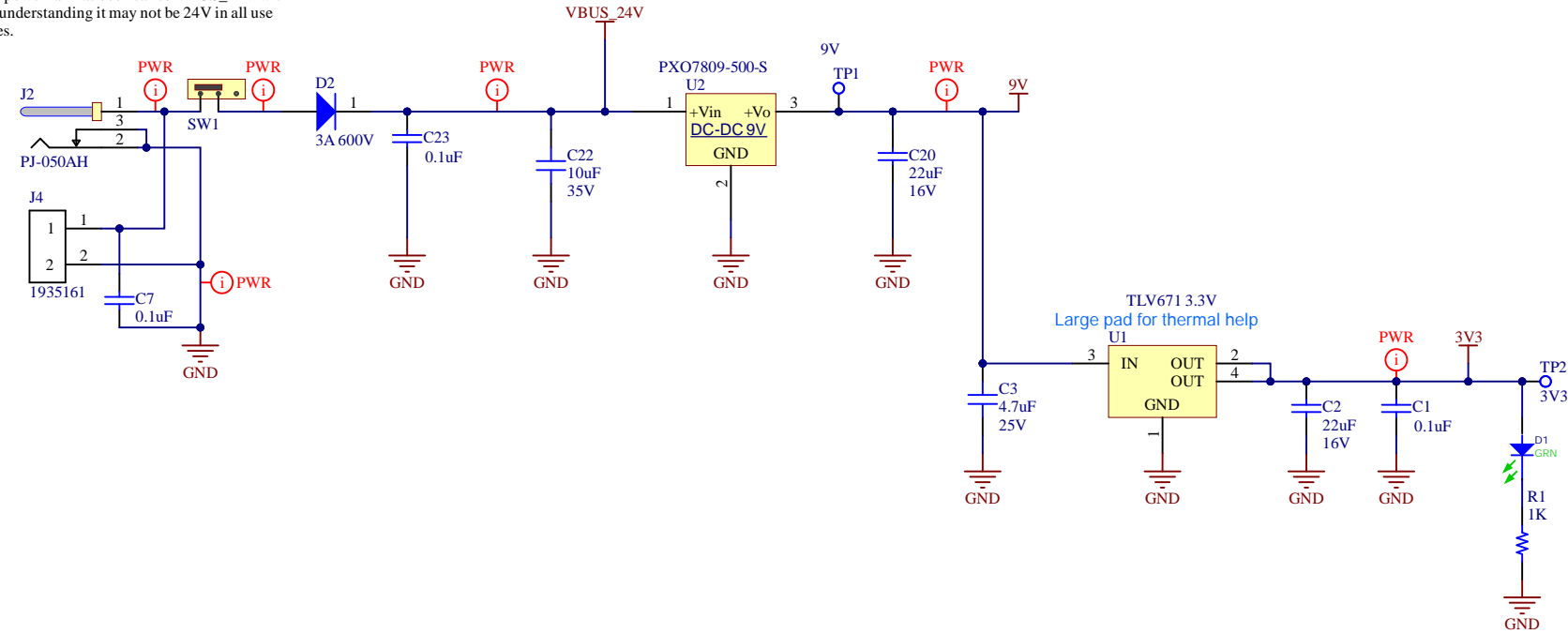
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Title DSP and A2B			Cannot open file C:\Users\lamab\OneDrive\CSP\Engineering\A2BHardware\boards\A2Bmodule\le\AB0020.moddevm.r1\template\trs-jack.png. File does not exist. http://clk.works
Size: Tabloid	Number: AB0020	Revision: 1.0	
Date: 11/15/2023	Time: 12:19:27 AM	Sheet 3 of 5	
File: C:\Users\lamab\AppData\Local\Temp\Releases\Snapshot\1\AB0020.a2bevmschDoc			

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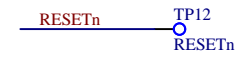
For AD2428 modules 12V supply (5W) can be used. For AD2437 modules supplies up to 24V (up to 50W) can be used, depending on CFG4 power requirements.

The power rail has been called VBUS_24V with the understanding it may not be 24V in all use cases.



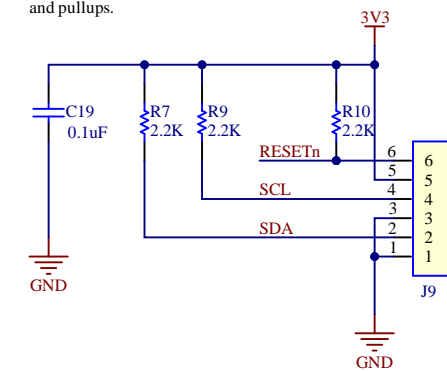
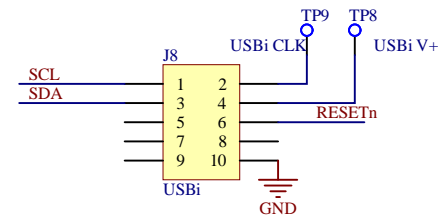
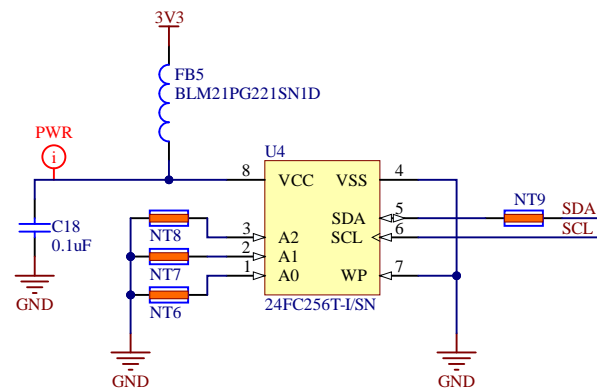
POWER

I2C



There's no reset pins on either the ADAU1761 nor the A2B AD2428 parts, they have a built in brownout detector. On this EVM that means a reset is achieved only by the power switch. AD243x modules do have a reset input.

See note in user manual for module about I2C and IOVdd and pullups.

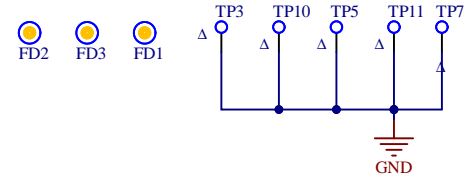


EEPROM at Address 0x50

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Title Power & I2C things			Cannot open file C:\Users\lamab\OneDrive\CSP\Engineering\A2BHardware\boards\A2Bmodule\AB0020.modevm.r1\template\reg-pinout.png. File does not exist. http://clk.works
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Date: 11/15/2023	Time: 12:19:27 AM Sheet 4 of 5		
File: C:\Users\lamab\AppData\Local\Temp\Releases\Snapshot\1\AB0020.pwr-i2c.SchDoc			



Jumpers to be installed

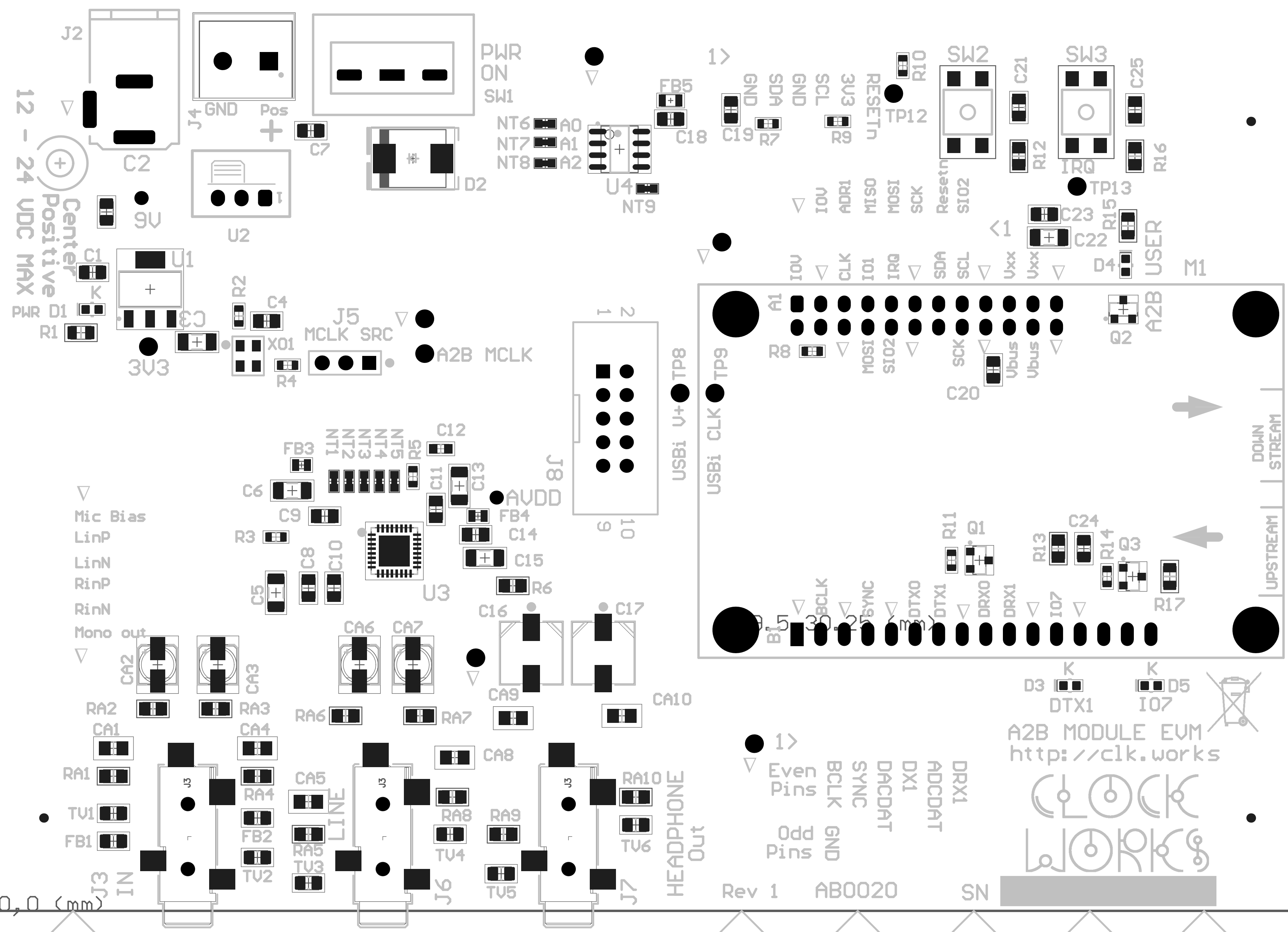


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Date: 11/15/2023	Time: 12:19:27 AM Sheet 5 of 5		
File: C:\Users\lamab\AppData\Local\Temp\Releases\Snapshot\1\AB0020.mech.SchDoc			

140,97 (mm)



140,0 (mm)

0,-10 (mm)

Cut V groove with approx 30 degree angle to a depth of no more 33% of board thickness both sides

Rev 1 AB0020 SN

Even Pins BCLK SYNC DACDAT DX1 ADCDAT DRX1

Odd Pins GND

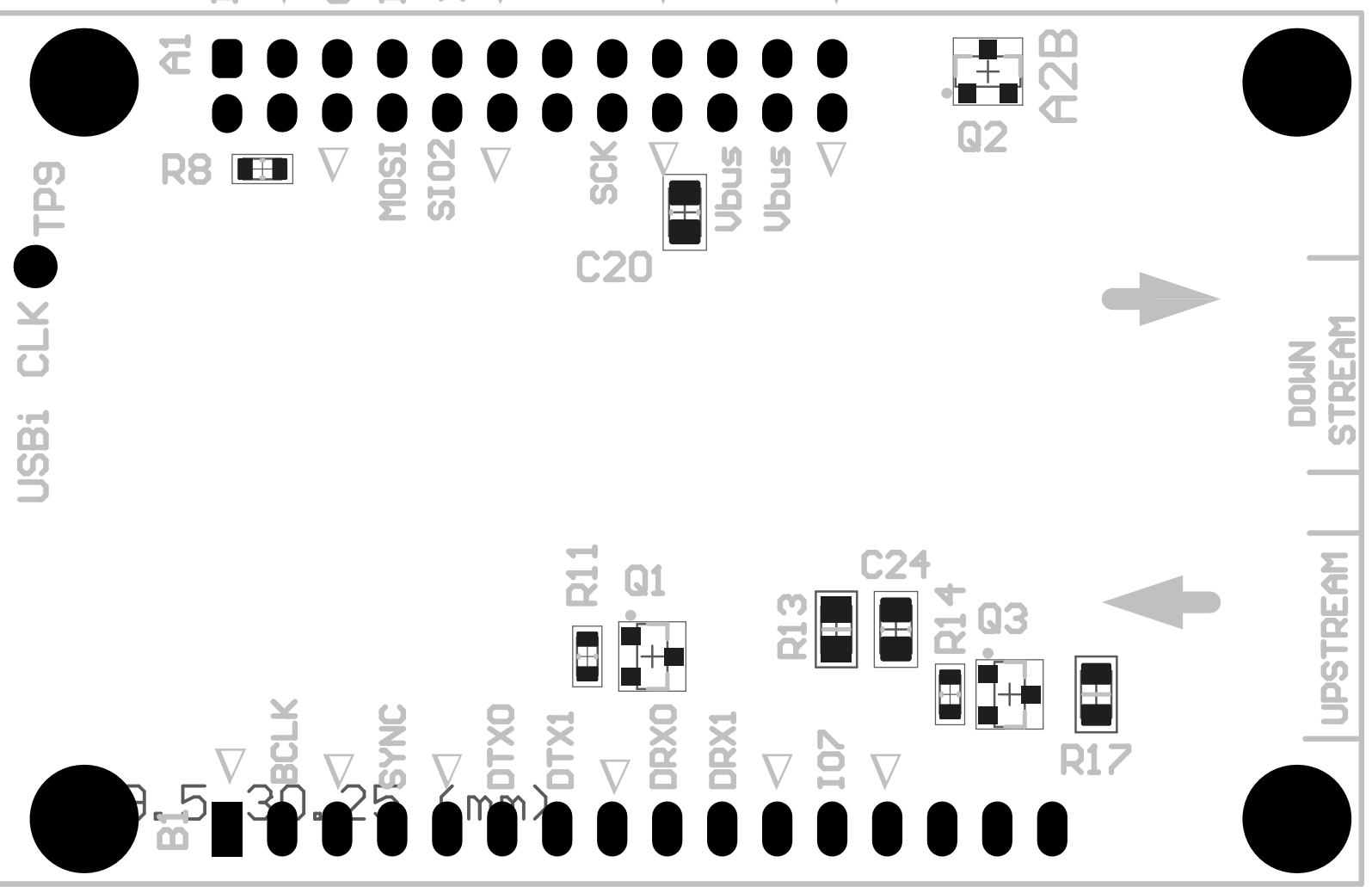
CLOCK WORKS

A2B MODULE EVM

<http://clk.works>



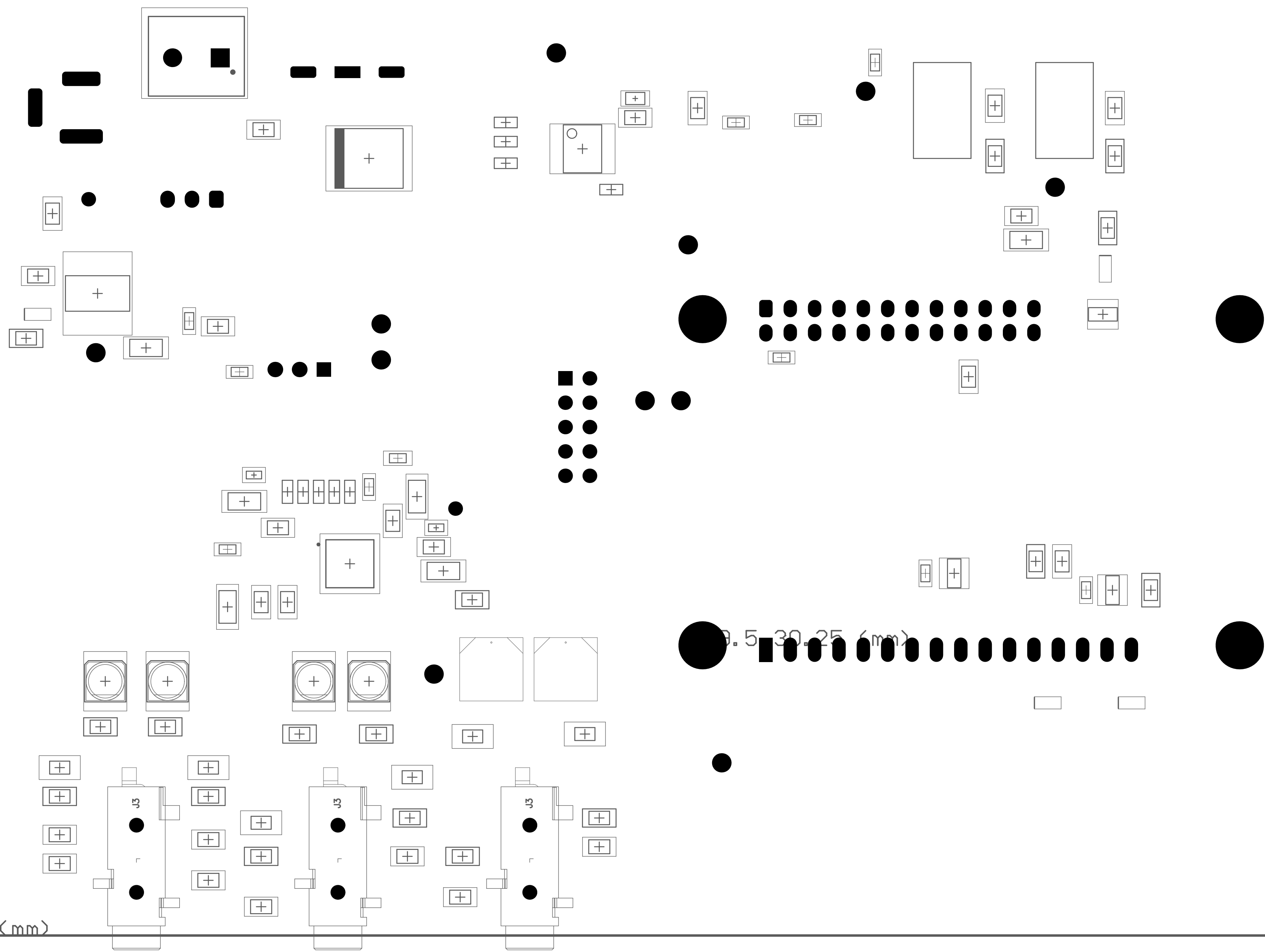
USBi U+ TP8



HEADPHONE Out

UPSTREAM DOWNSTREAM

140,97 (mm)



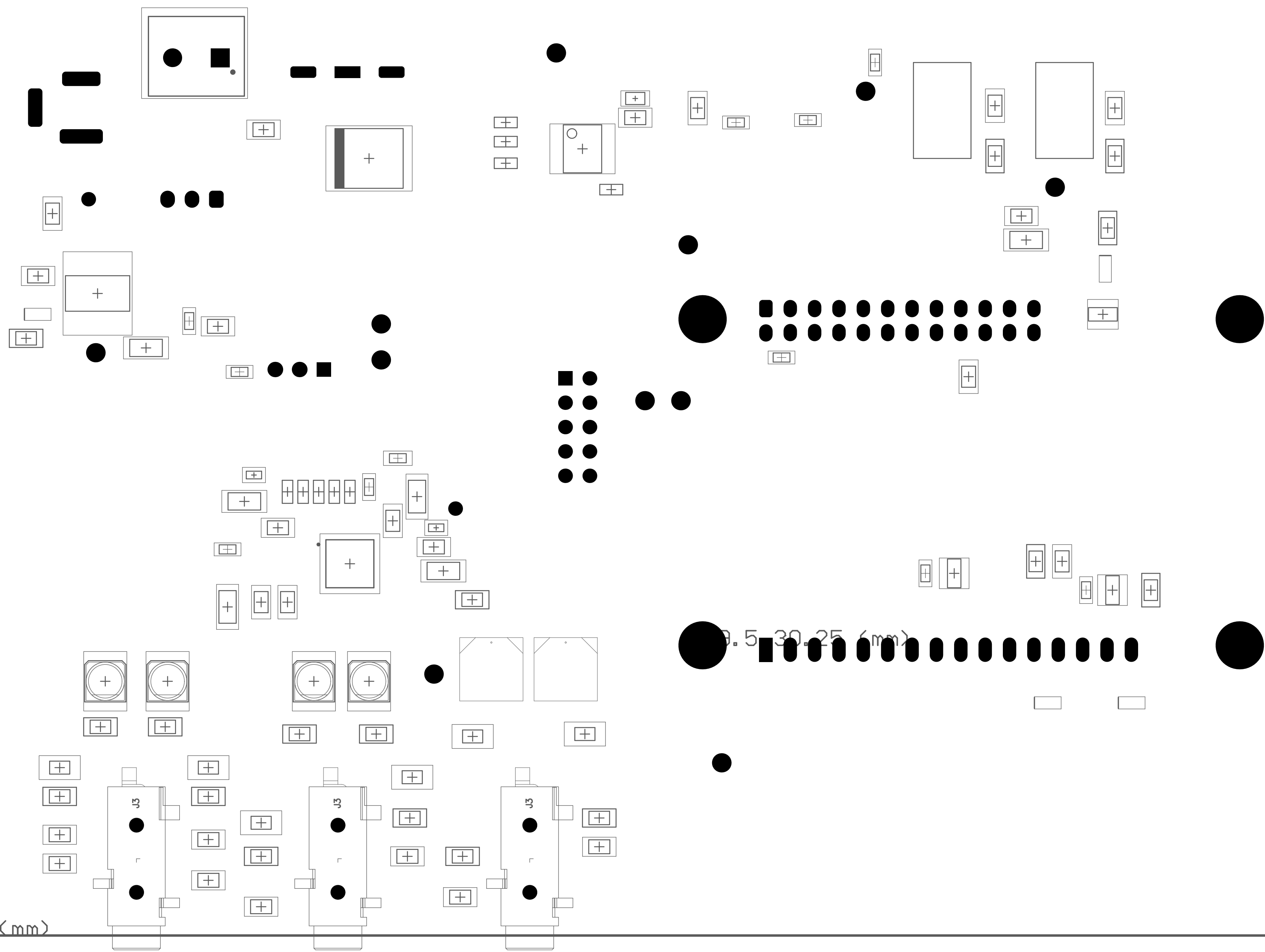
0,0 (mm)

140,0 (mm)

0,-10 (mm)

Cut V groove with approx 30 degree angle to a depth of no more 33% of board thickness both sides

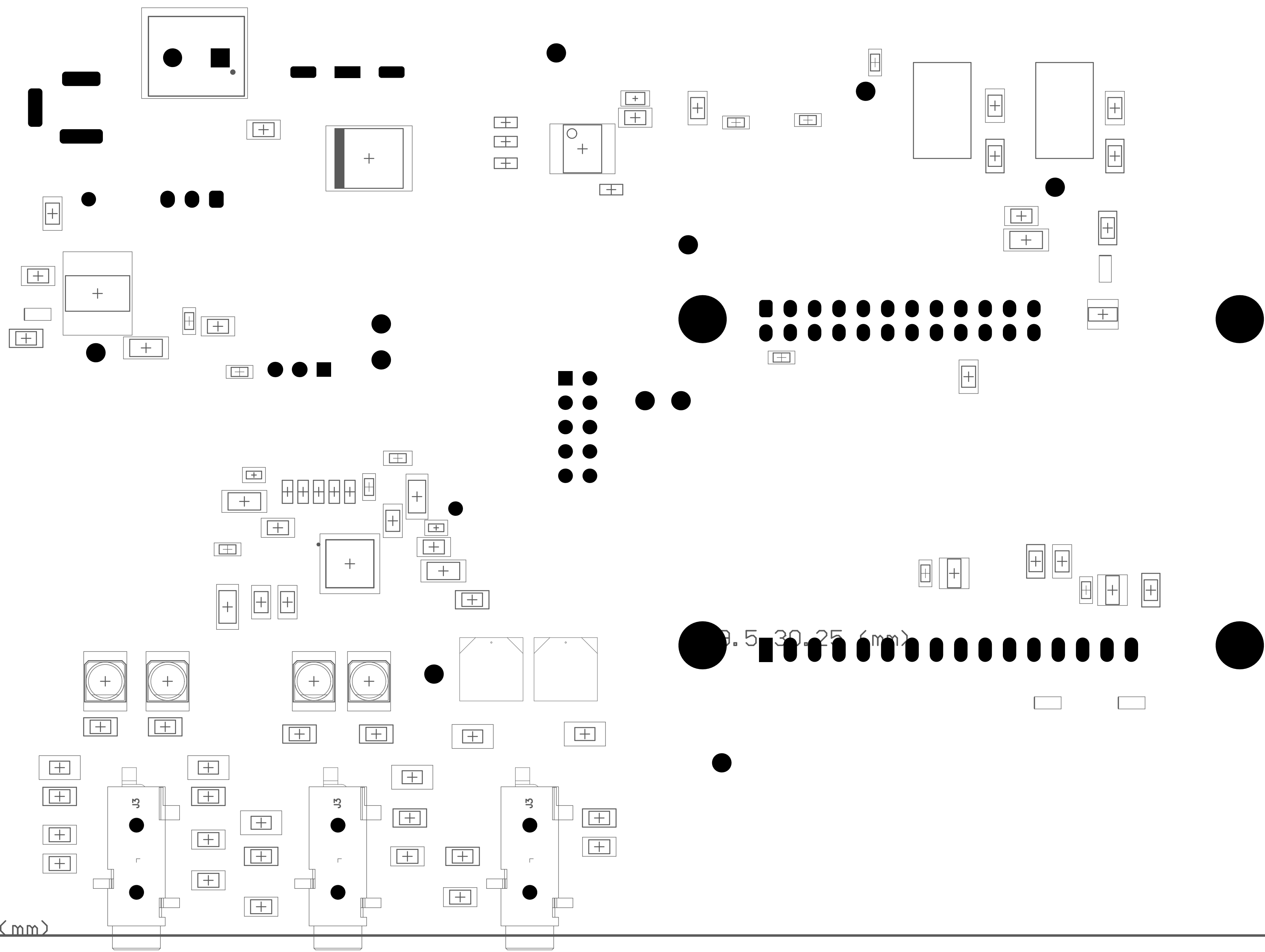
140,97 (mm)



0,-10 (mm)

Cut V groove with approx 30 degree angle to a depth of no more 33% of board thickness both sides

140,97 (mm)



0,-10 (mm)

Cut V groove with approx 30 degree angle to a depth of no more 33% of board thickness both sides