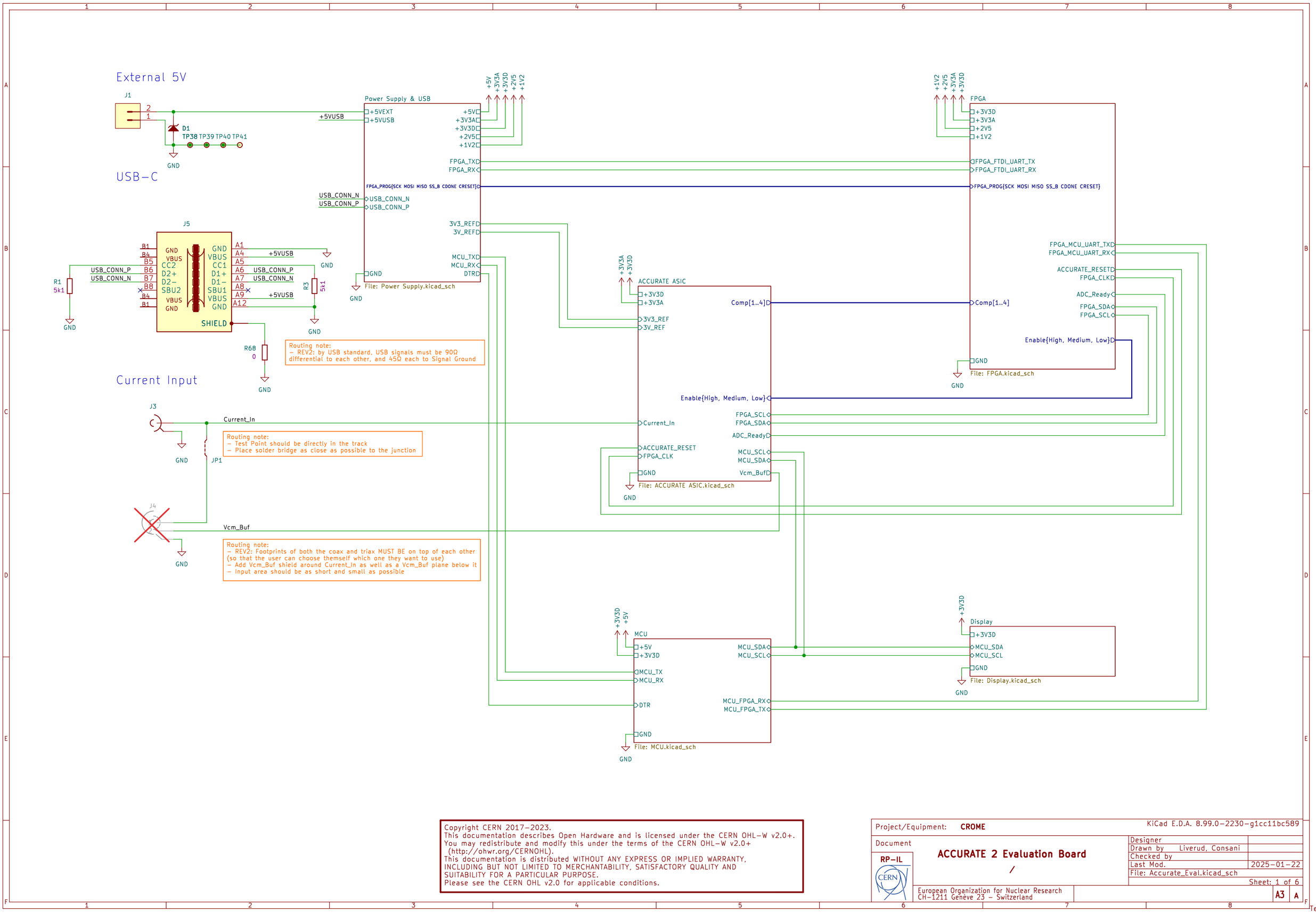

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Project/Equipment: **CROME**

KiCad E.D.A. 8.99.0–2230–g1cc11bc589

Document

RP–IL

ACCURATE 2 Evaluation Board

/

Designer	
Drawn by	Liverud, Consani
Checked by	
Last Mod.	2025–01–22
File: Accurate_Eval.kicad_sch	
Sheet: 1 of 6	

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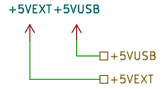
CH–1211 Genève 23 – Switzerland

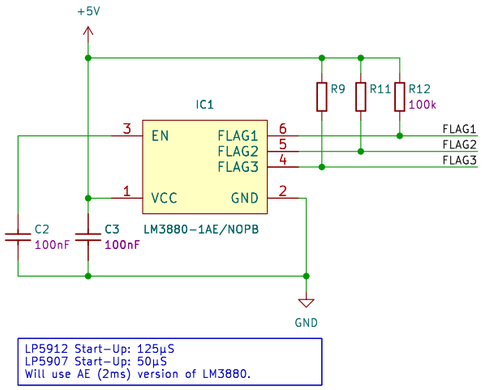
A3 | A

Power Ports

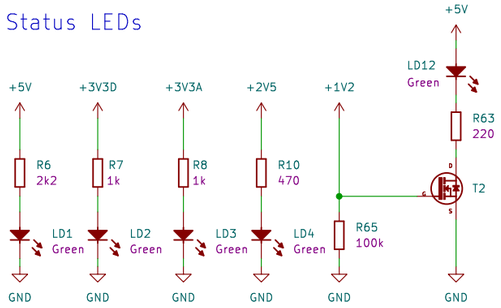


Inputs

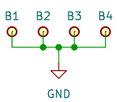
PSU Sequencer



Status LEDs

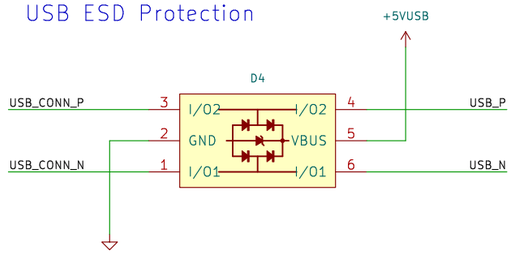


Mounting Holes

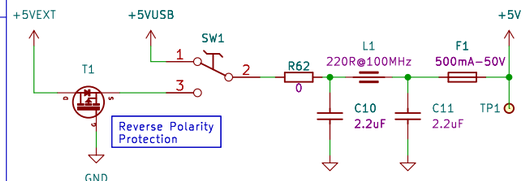


Fiducial Targets

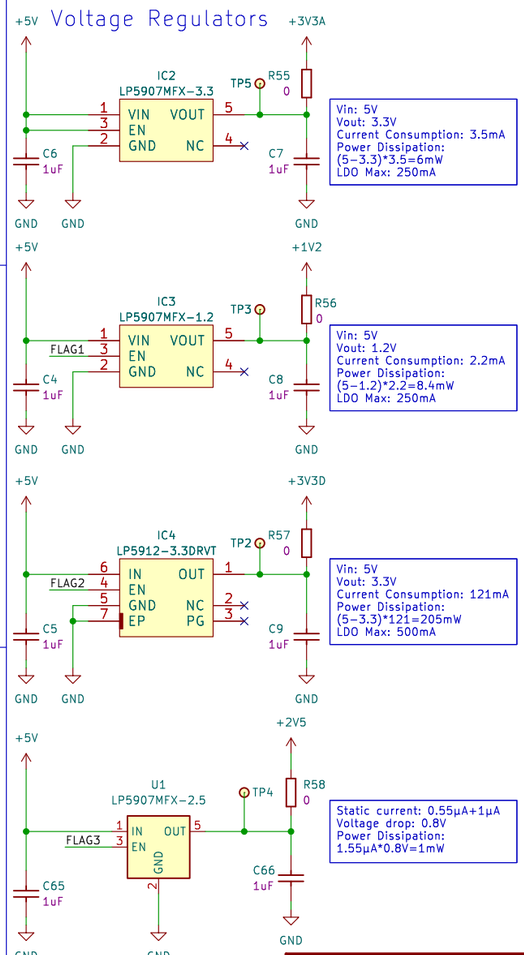
USB ESD Protection



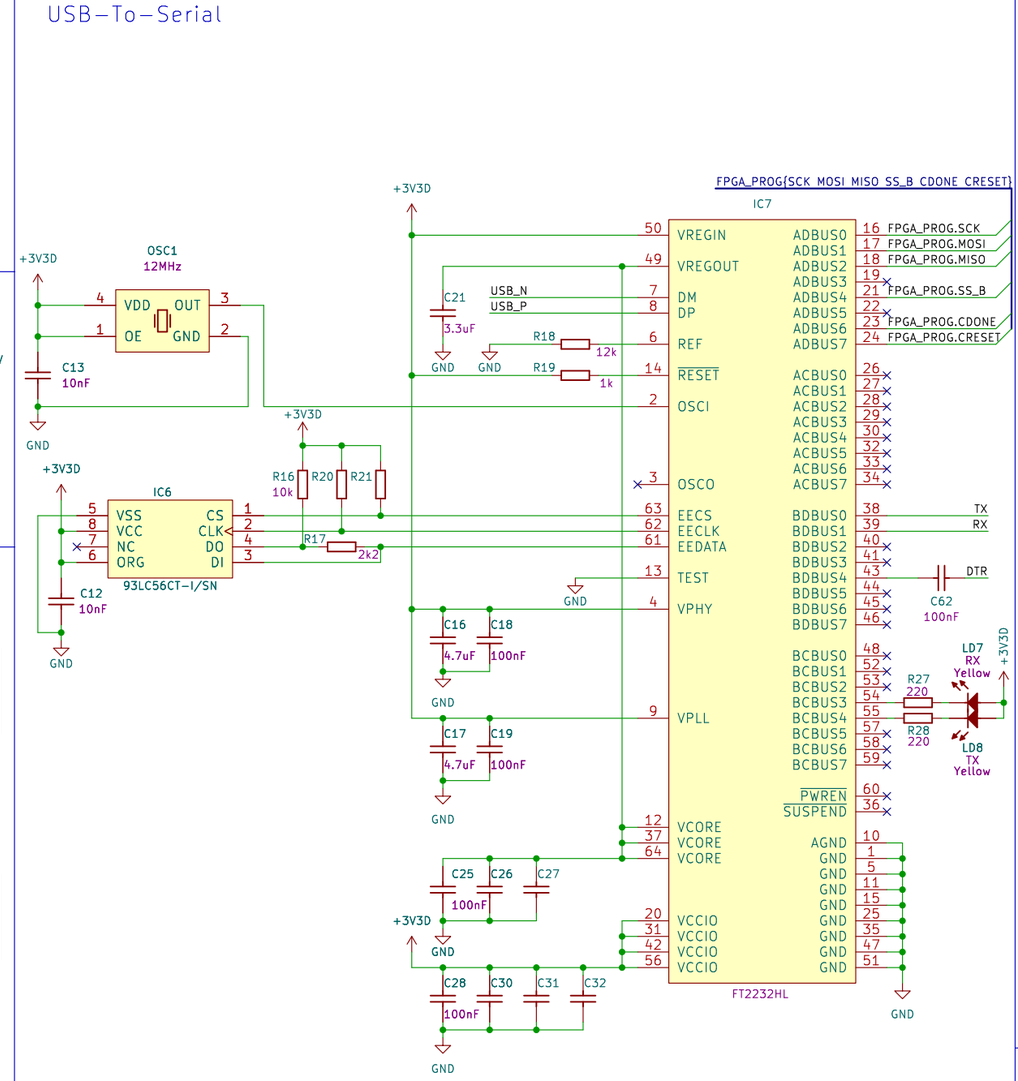
Input Filtering



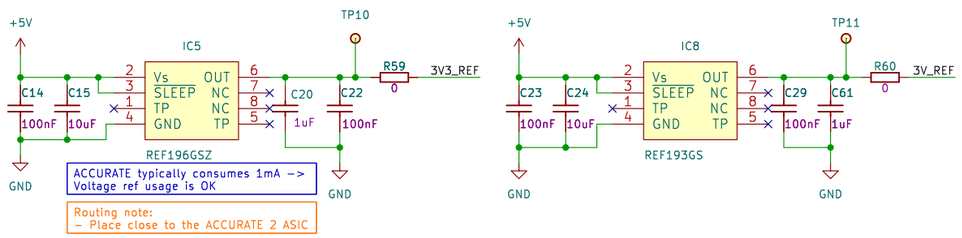
Voltage Regulators



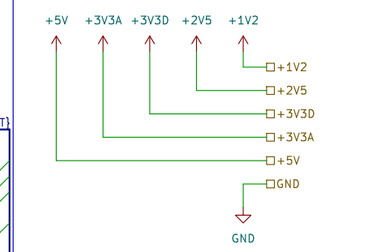
USB-To-Serial

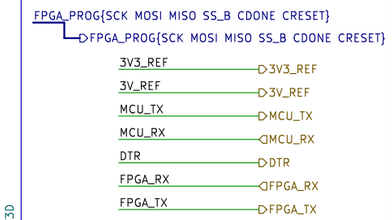


Voltage References

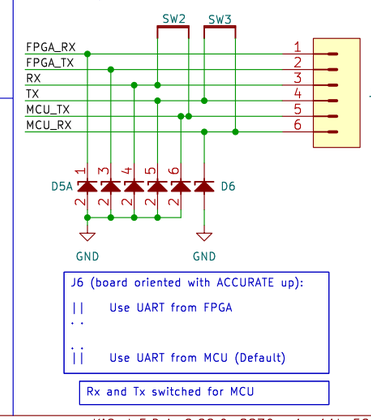


Outputs





FPGA/MCU UART Header



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Project/Equipment: **CROME**

KiCad E.D.A. 8.99.0-2230-g1cc11bc589

Document

RP-IL

ACCURATE 2 Evaluation Board

/Power Supply & USB/

Designer	
Drawn by	Liverud, Consani
Checked by	
Last Mod.	2025-01-22
File: Power Supply.kicad_sch	
Sheet: 2 of 6	

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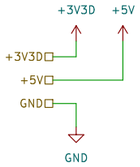
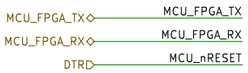
CH-1211 Genève 23 - Switzerland

A3 A

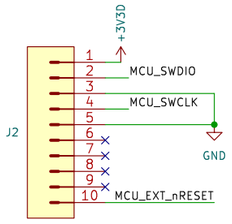
Power Ports

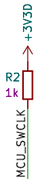


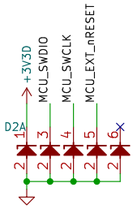
Inputs



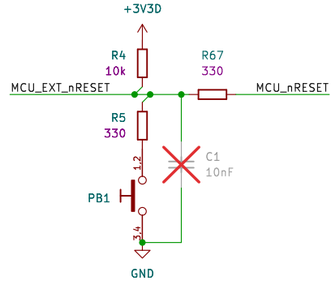
Programming Header





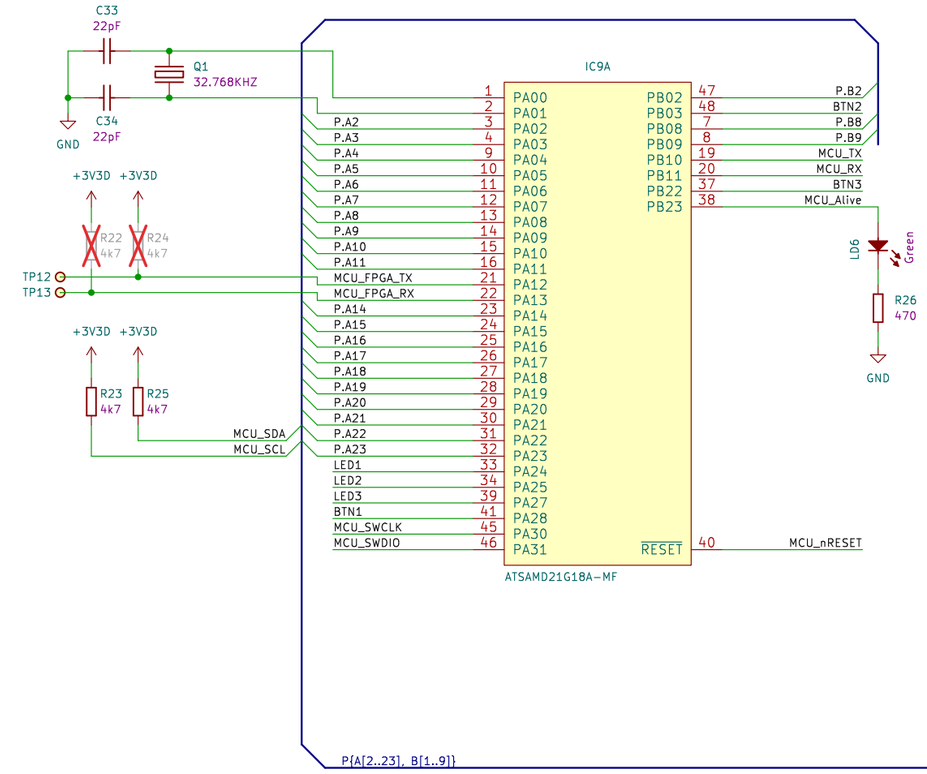


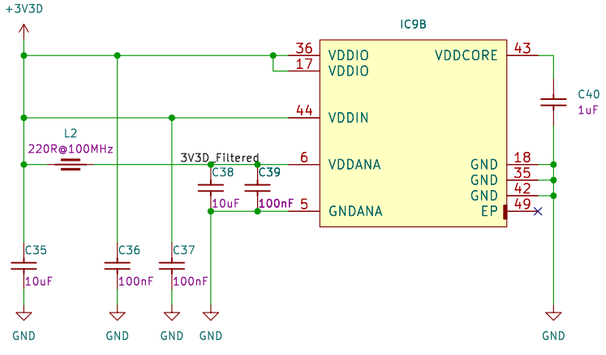
MCU Reset:



ATSAMD21 MCU

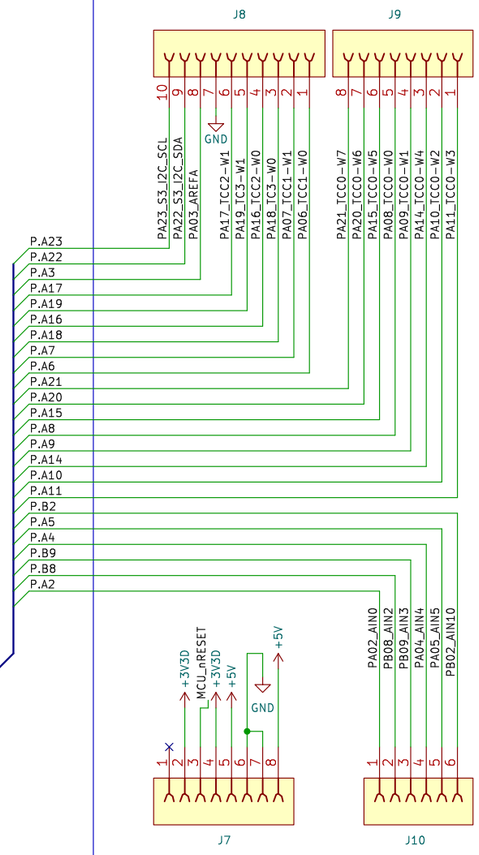
Calculation of crystal load capacitors:
CLOAD = ([CXIN + CLEXT] * [CXOUT + CLEXT]) / ([CXIN + CLEXT + CLEXT + CXOUT]) + CSTRAY
CLOAD = 12.0pF (from crystal datasheet)
CXIN32 = 3.1pF (from MCU datasheet)
CXOUT = 3.3pF (from MCU datasheet)
CSTRAY = 0.5pF (estimate)
CLEXT = 19.8pF



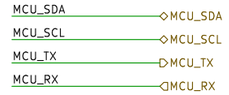


Arduino Header

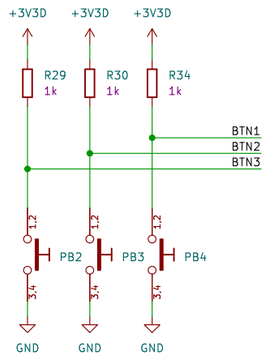
Routing note:
– Placement of female headers must match Arduino Zero Shield



Outputs

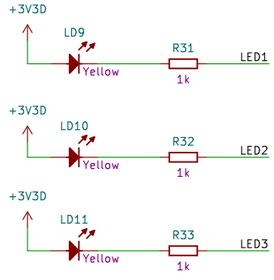


Buttons



Routing note:
– REV2: Place BTN1 (PB4) rightmost, then BTN2 and BTN3 leftmost

LEDs



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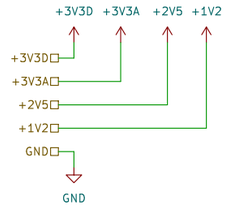
Project/Equipment:	**CROME**
	KiCad E.D.A. 8.99.0–2230–g1cc11bc589
Document	**ACCURATE 2 Evaluation Board** /MCU/
Designer	
Drawn by	Liverud, Consani
Checked by	
Last Mod.	2025–01–22
File:	MCU.kicad_sch
Sheet:	3 of 6
	A3 A

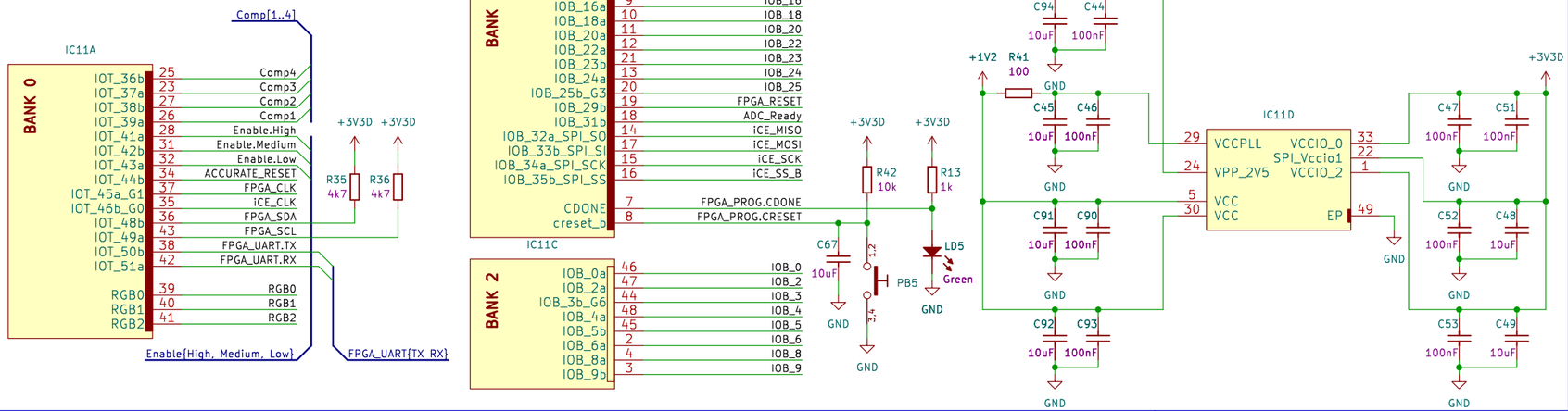
RP–IL

European Organization for Nuclear Research
CH–1211 Genève 23 – Switzerland

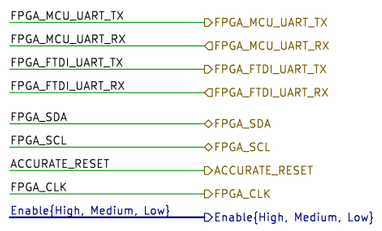
Power Ports



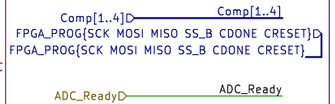
iCE40 Ultra FPGA



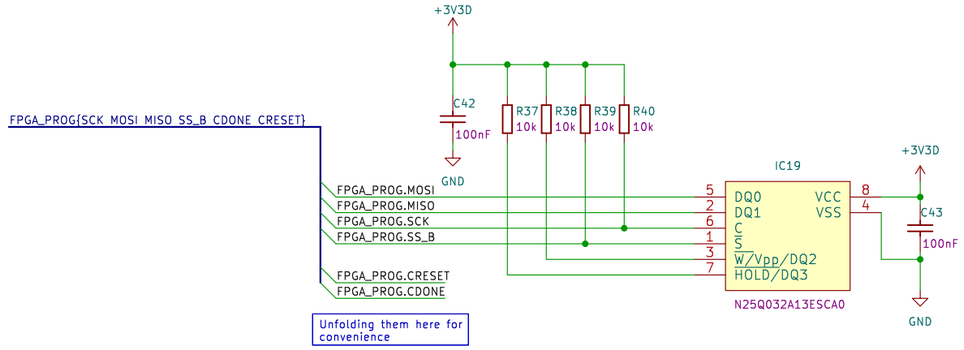
Outputs



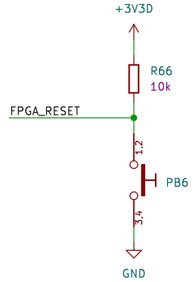
Inputs



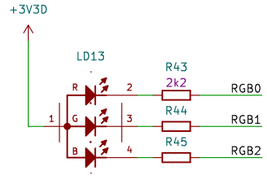
Flash



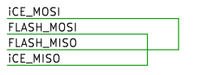
FPGA Reset



RGB LED

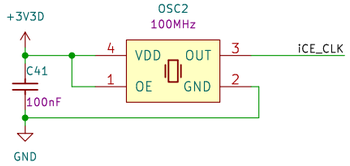


Flash/iCE Header

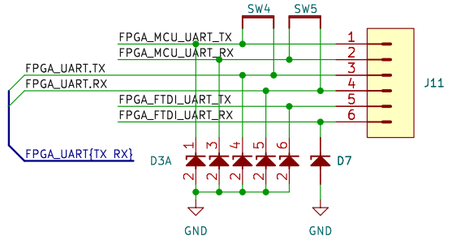


Keeping this block for more clarity, only flash programming is possible.

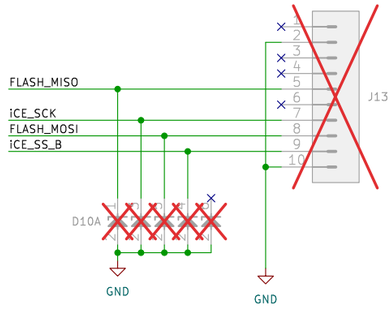
Oscillator



FTDI/MCU UART Header

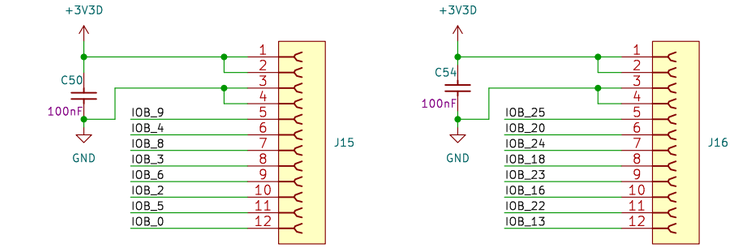


Programming Connector



PMOD Connectors

Routing note:
– Place by board edge



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Project/Equipment: **CROME**

KiCad E.D.A. 8.99.0–2230–g1cc11bc589

Document

RP–IL

ACCURATE 2 Evaluation Board

/FPGA/

Designer	
Drawn by	Liverud, Consani
Checked by	
Last Mod.	2025–01–22
File: FPGA.kicad_sch	
Sheet: 4 of 6	

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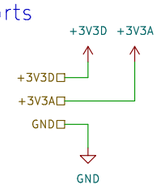
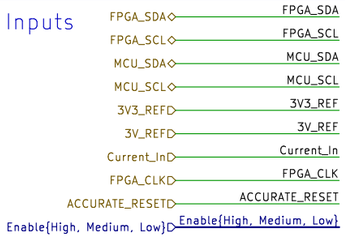
A3 A

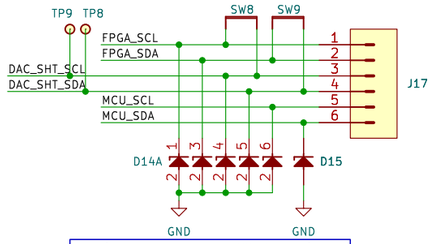
Power Ports



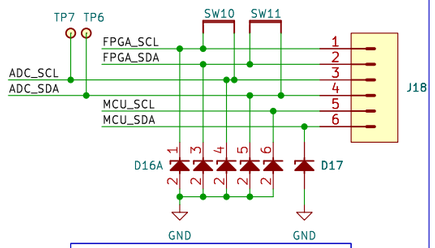
Inputs



FPGA/MCU I2C Headers

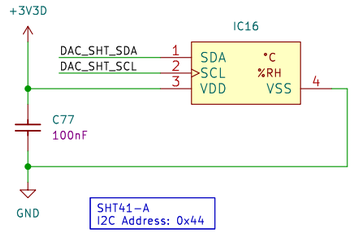


J17 (board oriented with ACCURATE up):
|| Use I2C from FPGA (Default)
..
ii Use I2C from MCU



J18 (board oriented with ACCURATE up):
|| Use I2C from FPGA (Default)
..
ii Use I2C from MCU

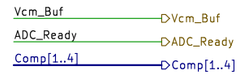
Humidity and Temperature sensor



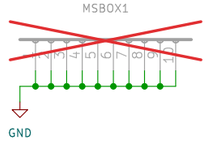
SHT41-A
I2C Address: 0x44

Routing note:
– Place close to ACCURATE2 ASIC

Outputs



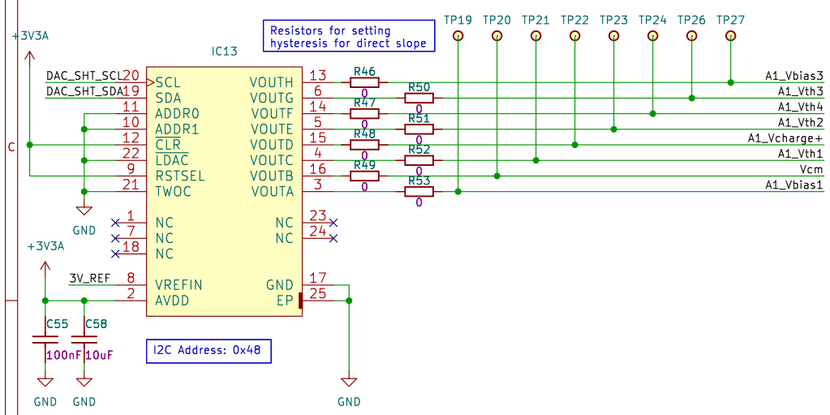
Shielding box



Routing note:
– Add shielding guard similar to Lambda1 board (EDA-03726-V3-0)
– Place J3 and J4 connectors inside shield box on bottom side of board
– Every component on this sheet except for headers should be below the shield

DACs

Routing note:
– Place capacitors close to the destination
– Possible to swap signals for easier routing

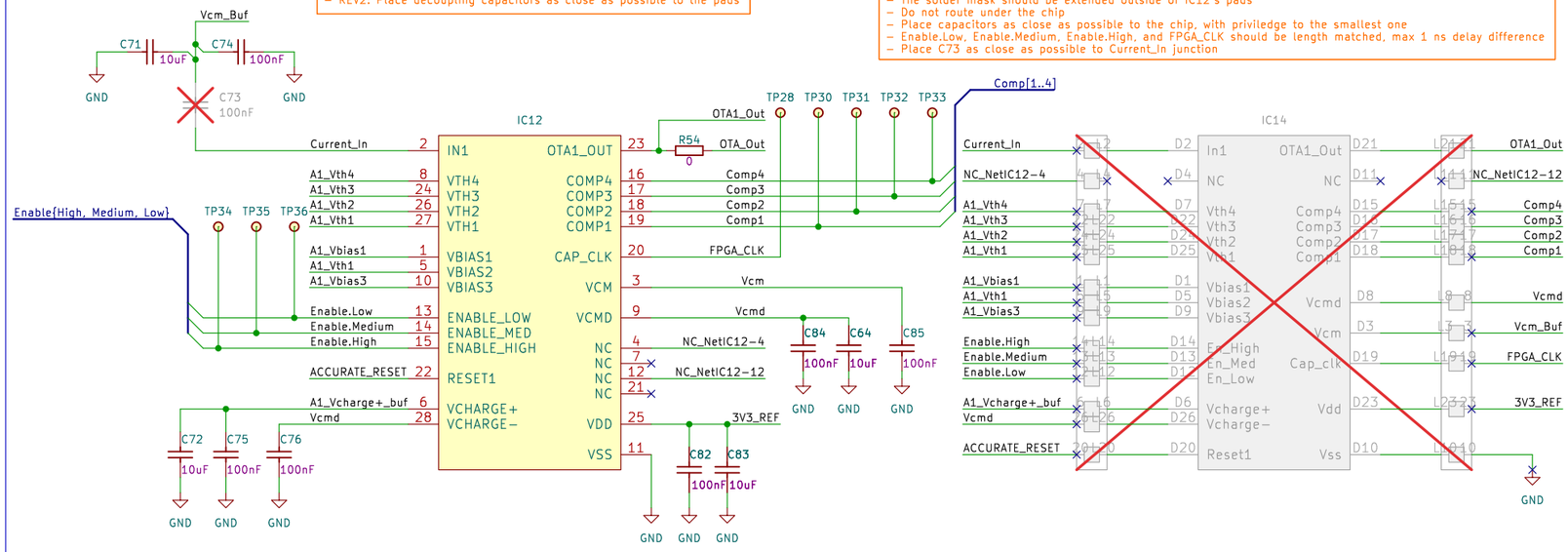


I2C Address: 0x48

Accurate ASIC

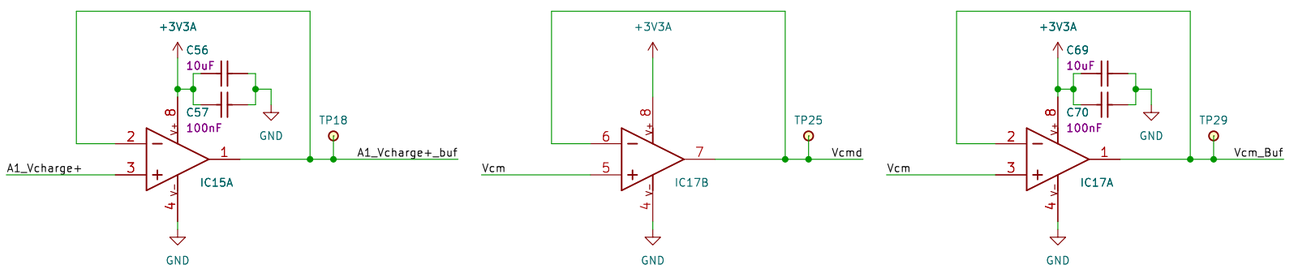
Routing note:
– REV2: Put solder mask on input lines
– REV2: Smaller capacitors must be placed closest to chip
– REV2: Place decoupling capacitors as close as possible to the pads

Routing note:
– IC14 shall be placed in the middle of IC12. The PCB-pads of IC14 shall be deleted in the layout. This is to have both the option of the packaged and bonded version of the ASIC
– The solder mask should be extended outside of IC12's pads
– Do not route under the chip
– Place capacitors as close as possible to the chip, with priviledge to the smallest one
– Enable.Low, Enable.Medium, Enable.High, and FPGA_CLK should be length matched, max 1 ns delay difference
– Place C73 as close as possible to Current_In junction

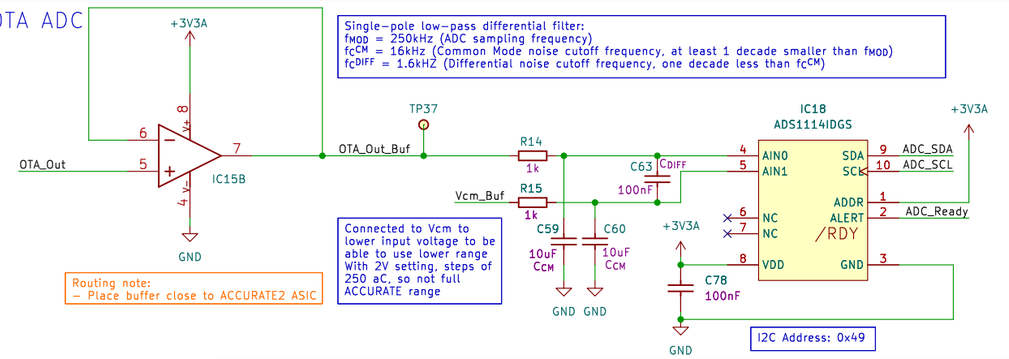


Buffers

Buffers required due to dynamic loads which needs large bypass caps to drive.



OTA ADC



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Project/Equipment:	**CROME**
	KiCad E.D.A. 8.99.0-2230-g1cc11bc589
Document	**ACCURATE 2 Evaluation Board**
	/ACCURATE ASIC/
RP-IL	
Designer	
Drawn by	Liverud, Consani
Checked by	
Last Mod.	2025-01-22
File:	ACCURATE ASIC.kicad_sch
Sheet:	5 of 6
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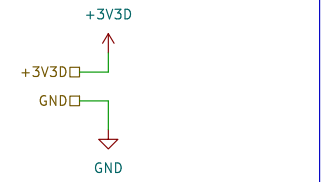
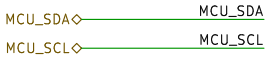
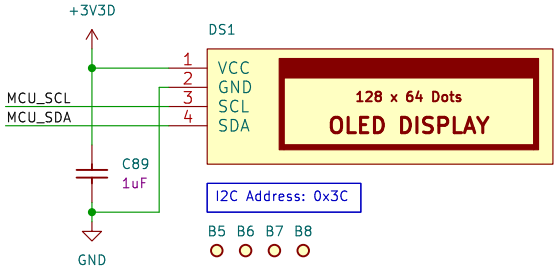
Power Ports



Inputs



OLED Display



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Project/Equipment:	**CROME**
KiCad E.D.A.	8.99.0–2230–g1cc11bc589
Document	**ACCURATE 2 Evaluation Board**
	/Display/
Designer	
Drawn by	Håkon Liverud
Checked by	
Last Mod.	2025–01–22
File:	Display.kicad_sch
Sheet:	6 of 6
RP–IL	
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