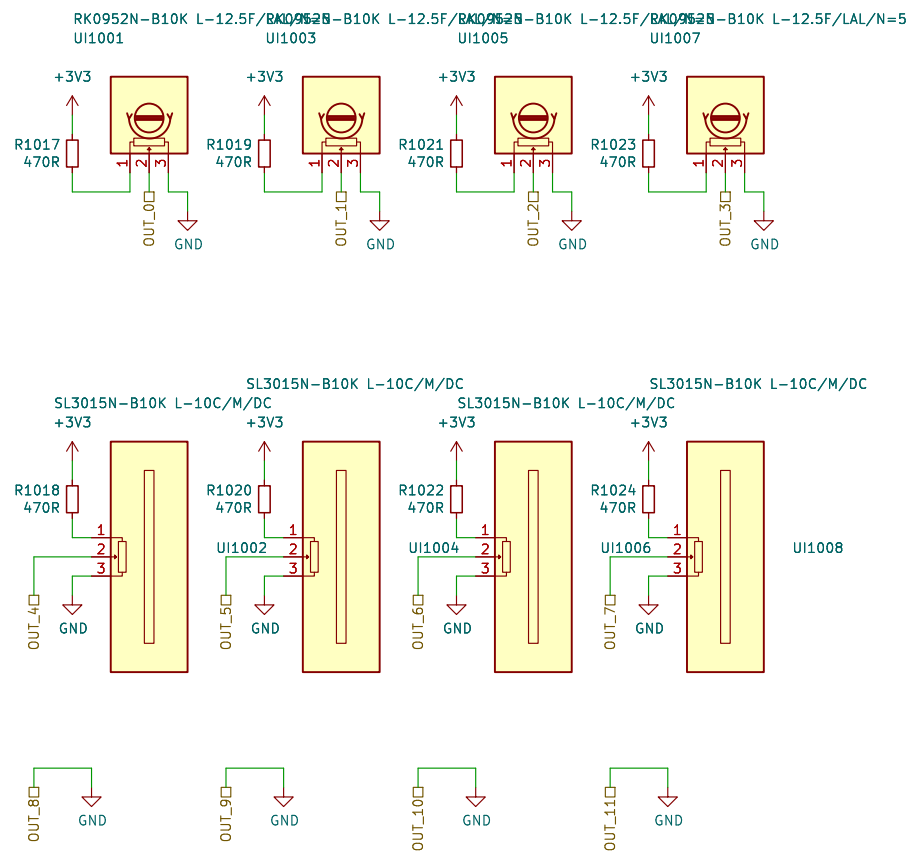


Common Sheets:  
500 GRID  
600 USB\_POWER  
700 MCU

Module Specific:  
800 HWCFG  
900 LED  
1000 UI

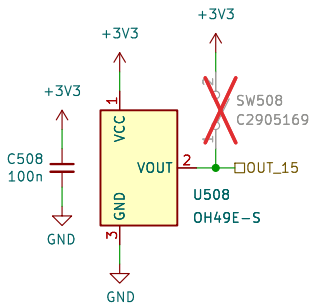
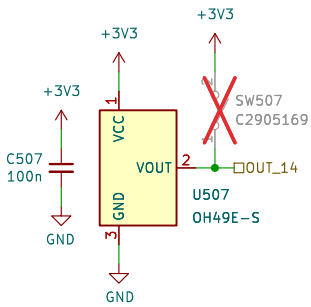
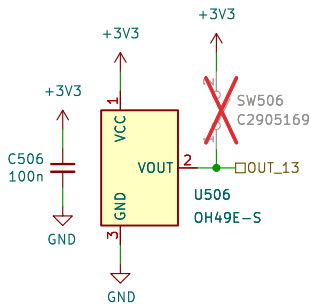
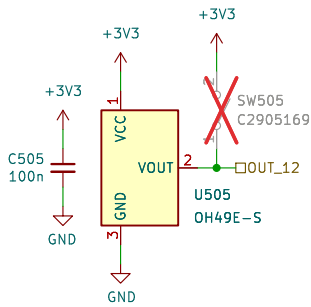
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Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.1	Id: 2/15	

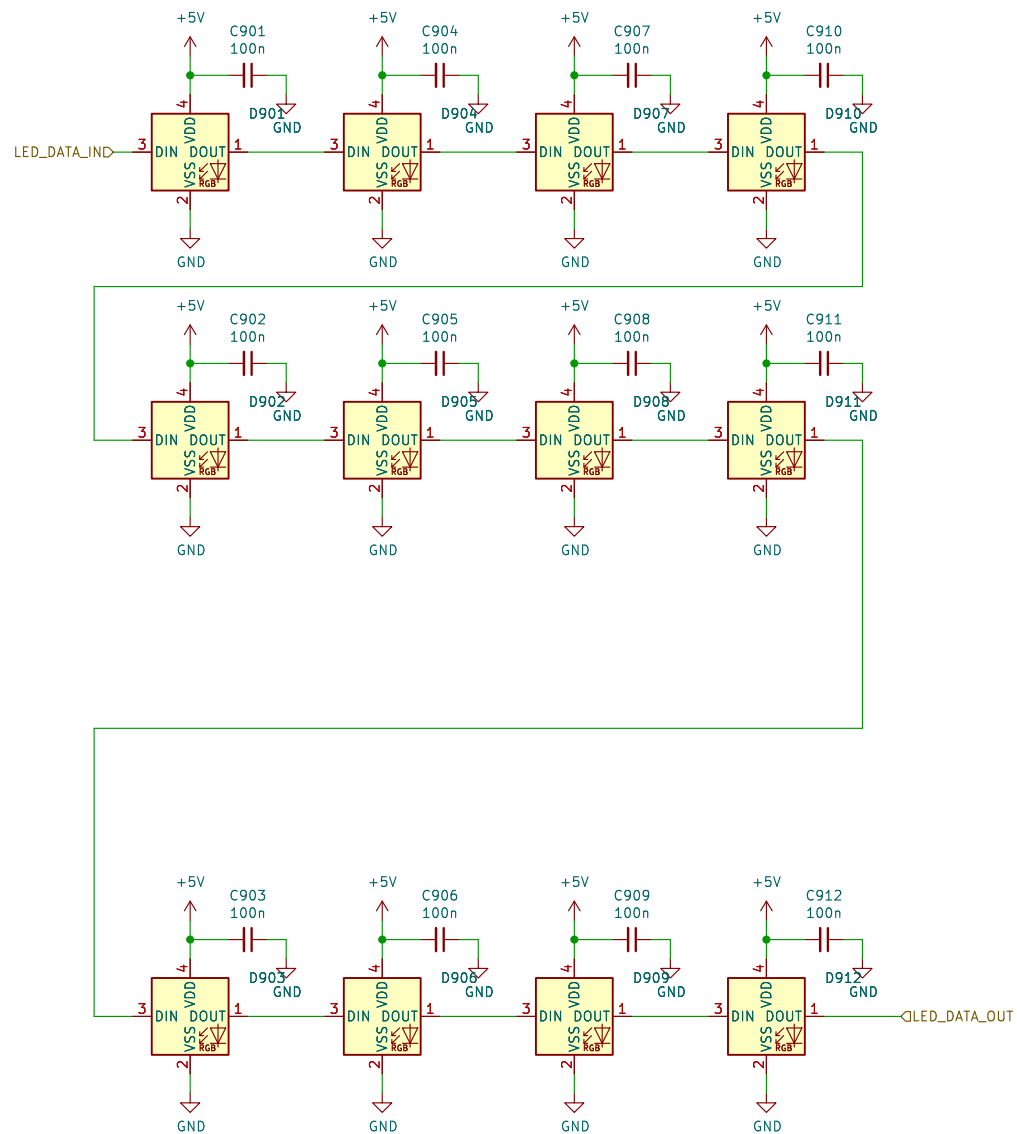
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Simulation:  
<http://tinyurl.com/y229mt4>



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Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.1	Id: 3/15	

# 900



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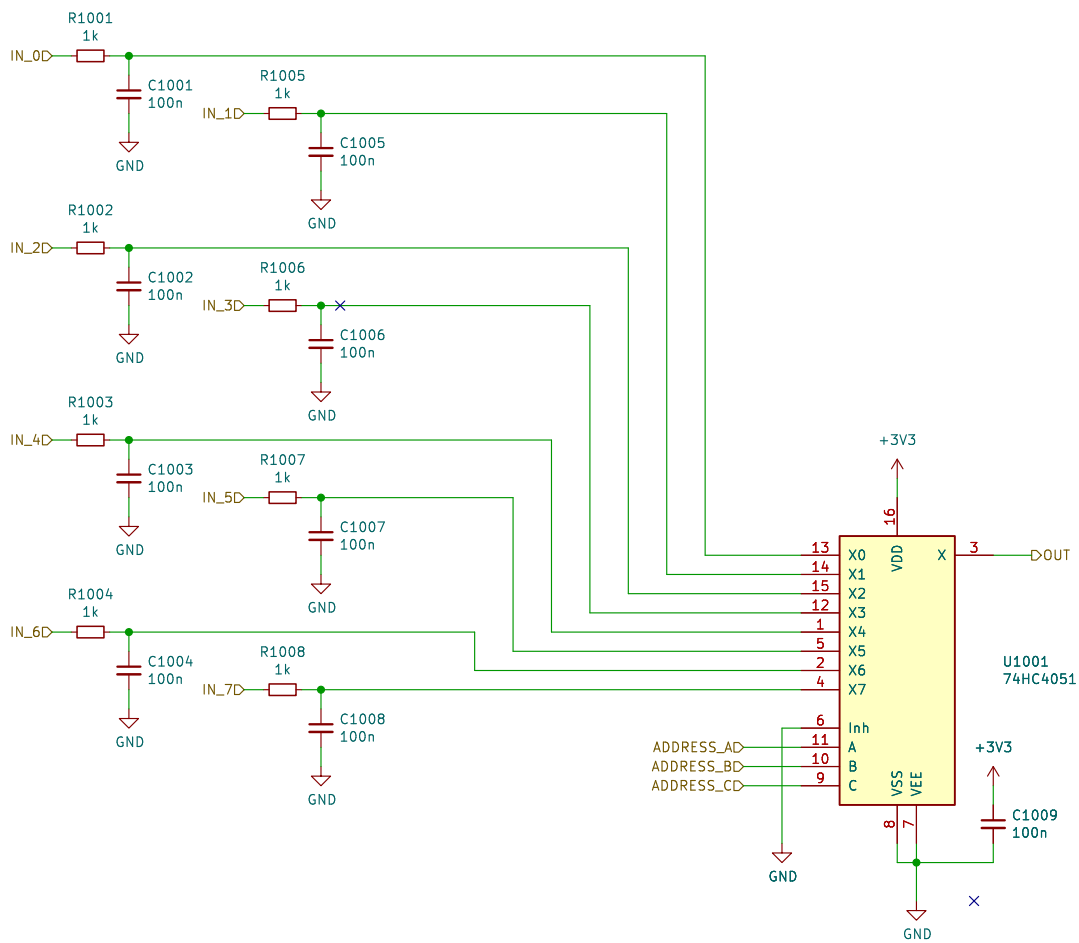
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KiCad E.D.A. 9.0.1

**Rev:**

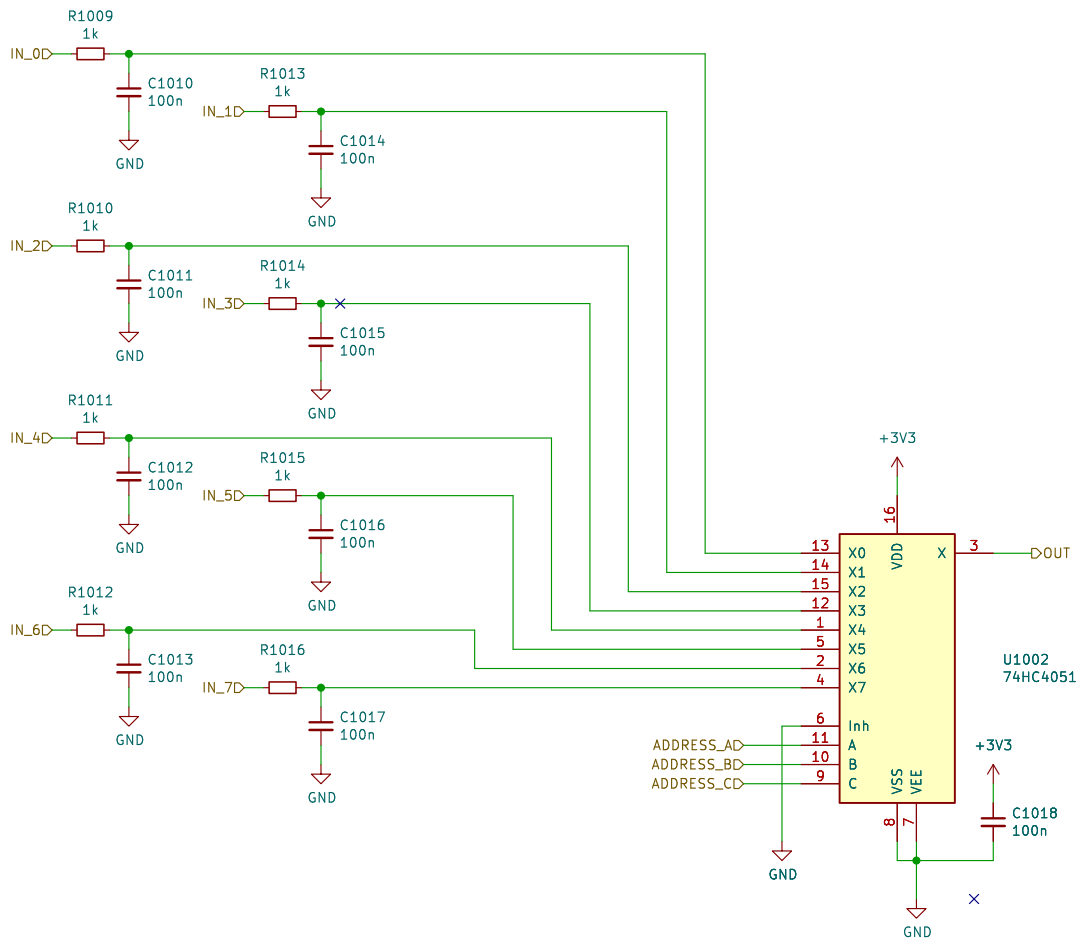
Id: 4/15

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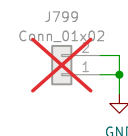
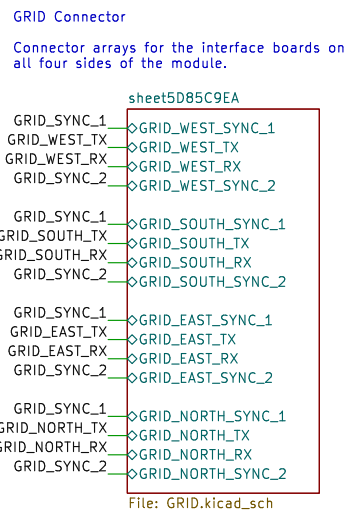
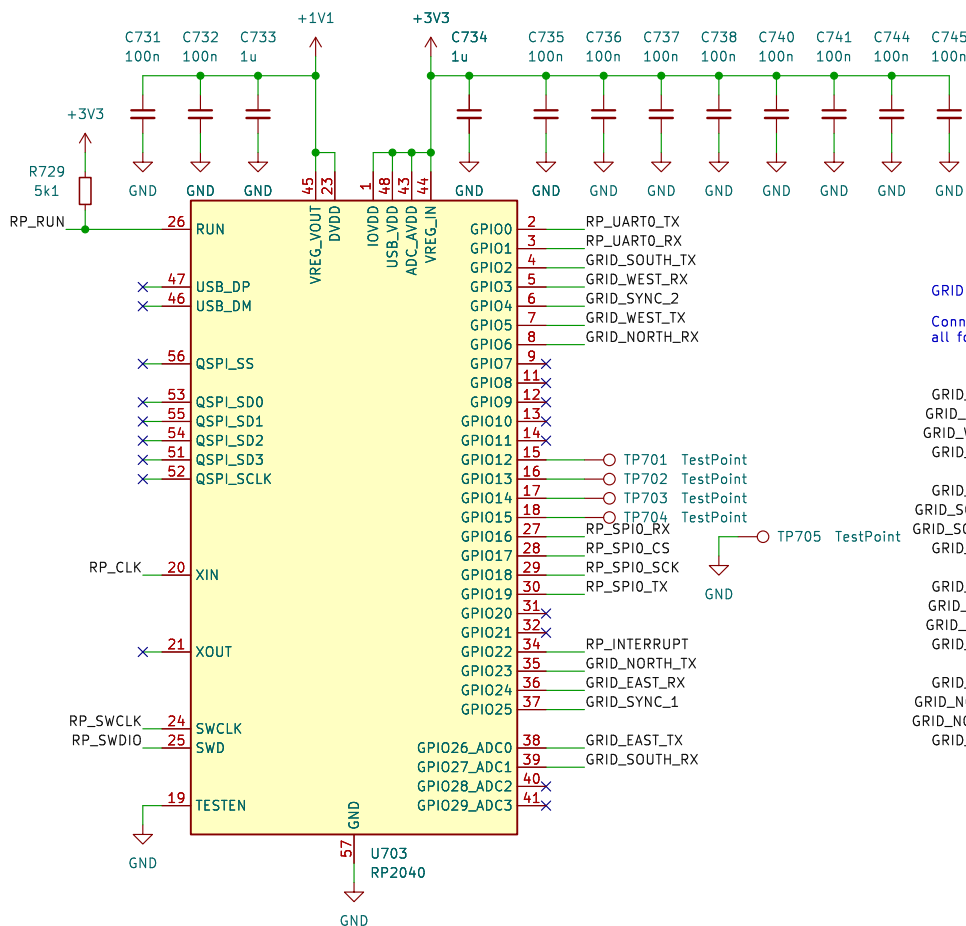
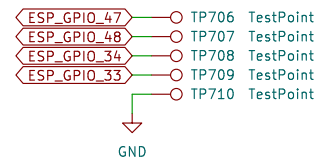
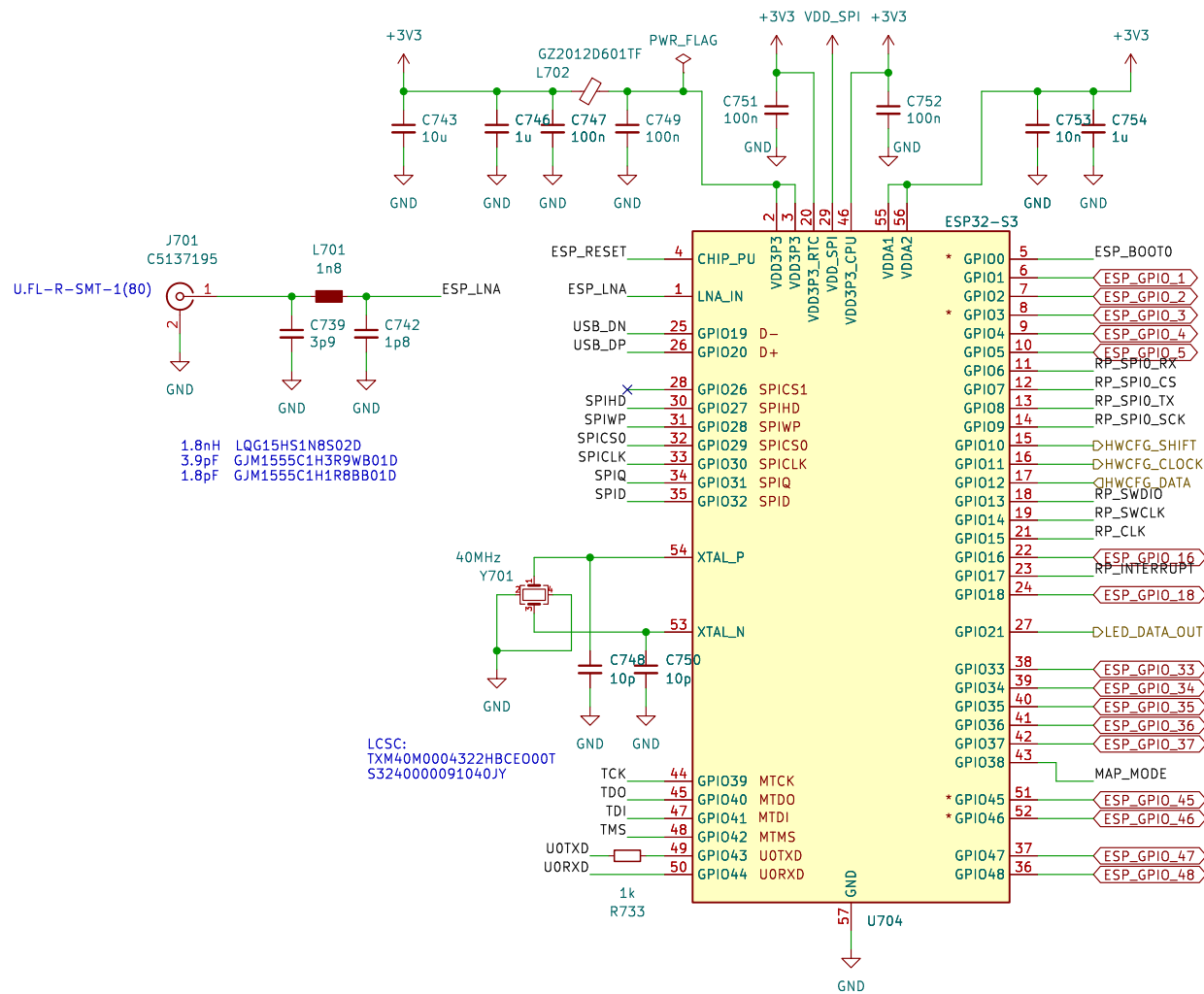
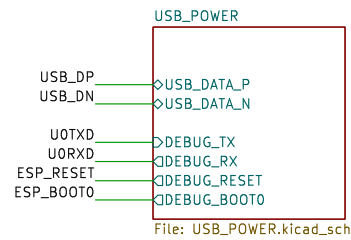


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KiCad E.D.A. 9.0.1	Id: 5/15	

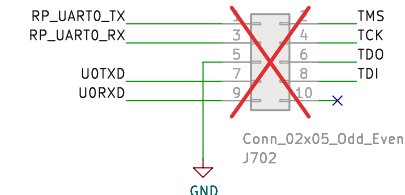
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700

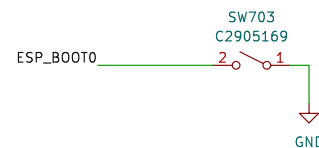
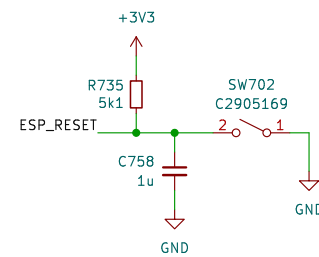
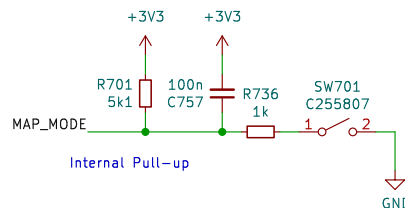


### Programming Interface



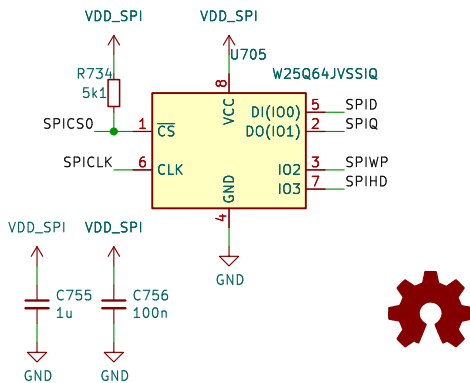
### Mapmode switch

This pusbutton is accessible through the housing, activates USB bootloader.



### QSPI Flash memory

This memory can be accessed thgrou the QSPI interface of the MCU. Can be used for configuration, static data or program execution.



**800**

The schematic shows a 74HC165 shift register (U801) configured for parallel input and serial output. The inputs are as follows:

- D0-D3 (SI pins 10-13):** Connected to HWCFG\_LOW.
- D4-D7 (D pins 3-6):** Connected to HWCFG\_HIGH.
- CLK (pin 2):** Connected to HWCFG\_CLOCKD.
- INH (pin 15):** Connected to HWCFG\_SHIFTD.
- SH/LD (pin 1):** Connected to GND.
- VCC (pin 16):** Connected to +3V3.
- GND (pins 8, 9):** Connected to GND.

The output is taken from pin 9 (Q), which is labeled HWCFG\_DATA. A capacitor C801 (100nF) is connected between the HWCFG\_HIGH signal line and GND.

**Board Identification**

Grid firmware can identify the hardware and the board revision through a 3 wire serial interface using one or more shift register as read only memory. The content of the memory is defined by pulling the inputs high or low through pcb traces or solderable configuration jumpers.

4b'Model + 4b'Revision + nb'Reserved (Multiple shift registers)

D0: MODEL (LSB)  
D1: MODEL  
D2: MODEL  
D3: MODEL (MSB)  
D4: REVISION (LSB)  
D5: REVISION  
D6: REVISION  
D7: REVISION (MSB)

**Model Codes (D3–D0):**

Po16 0000  
Bo16 0001  
PBF4 0010  
EN16 0011  
...

**Revision Codes (D7–D4):**

RevA 0000  
RevB 0001  
RevC 0010  
RevD 0011  
...

Sheet: /HWCFG/ File: HWCFG.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.1		Id: 10/15

Grid firmware can identify the hardware and the board revision through a 3 wire serial interface using one or more shift register as read only memory. The content of the memory is defined by pulling the inputs high or low through pcb traces or solderable configuration jumpers.

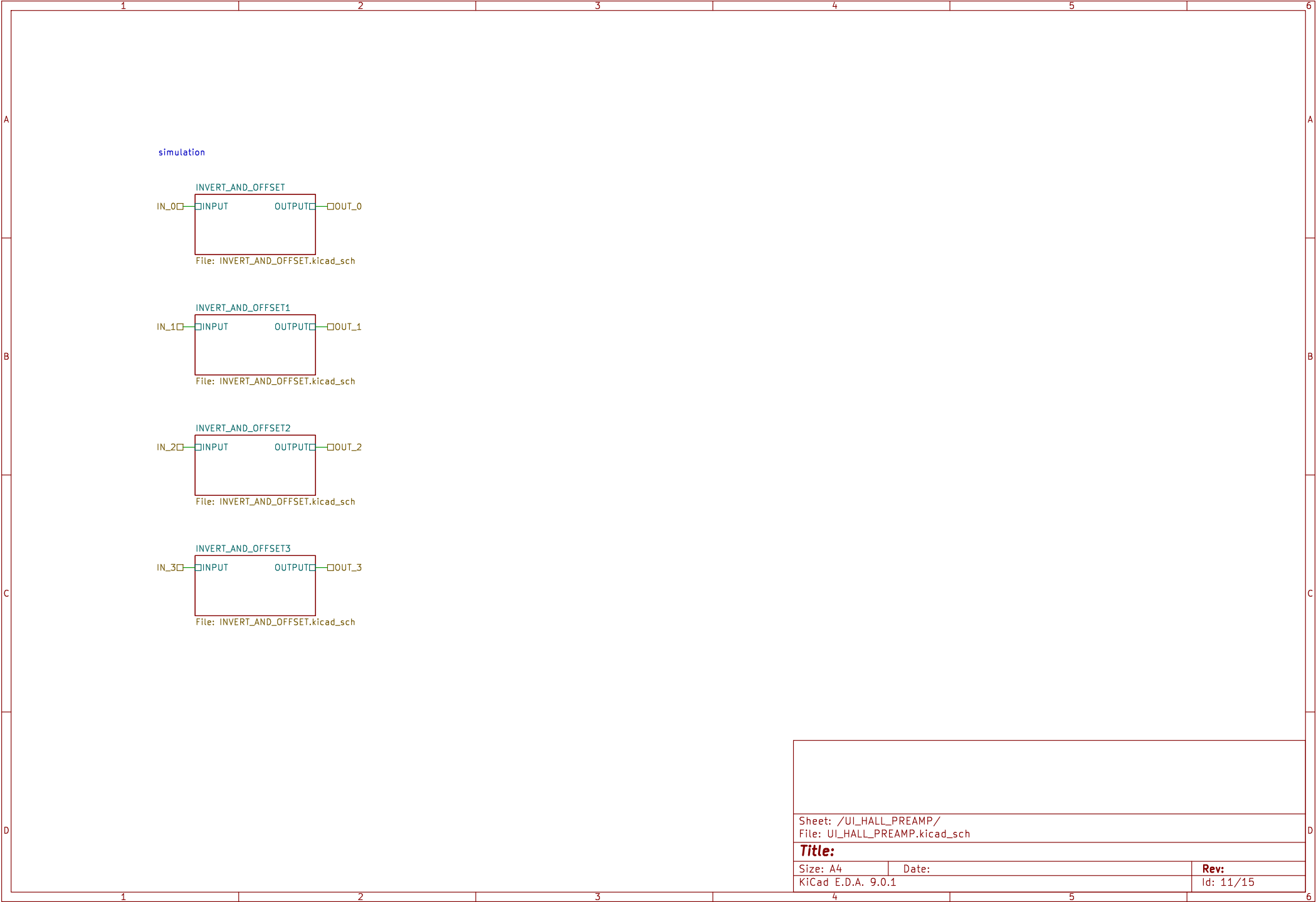
D0: MODEL (LSB)  
D1: MODEL  
D2: MODEL  
D3: MODEL (MSB)  
D4: REVISION (LSB)  
D5: REVISION  
D6: REVISION  
D7: REVISION (MSB)

Po16	0000
Bo16	0001
PBF4	0010
EN16	0011
...	

```
RevA 0000
RevB 0001
RevC 0010
RevD 0011
...
```

Sheet: /HWCFG/ File: HWCFG.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.1		Id: 10/15





500

GRID Connector  
Bi-Directional Data  
2x SYNC

Board Mounting Pattern

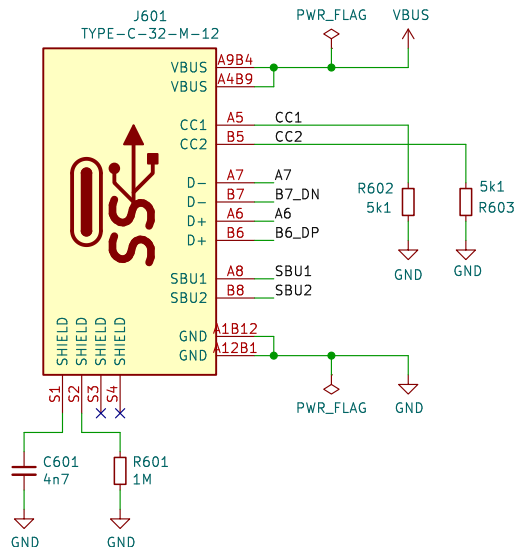


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KiCad E.D.A. 9.0.1	Id: 8/15	

600

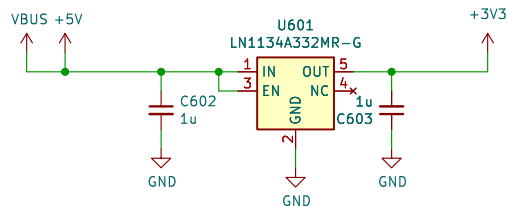
## USB Port

USB C upstream facing port configured for 5V 3A power consumption.



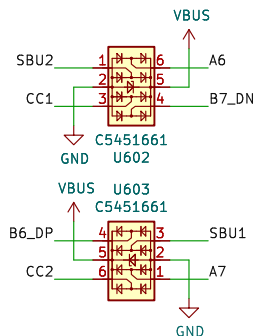
## 3V3 LDO

LDO regulator for generating the +3V3 power rail for the microcontroller and UI.

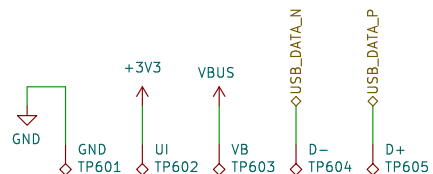


## ESD Prot.

ESP protection for all 8 signals externally accessible via the USB C connector.

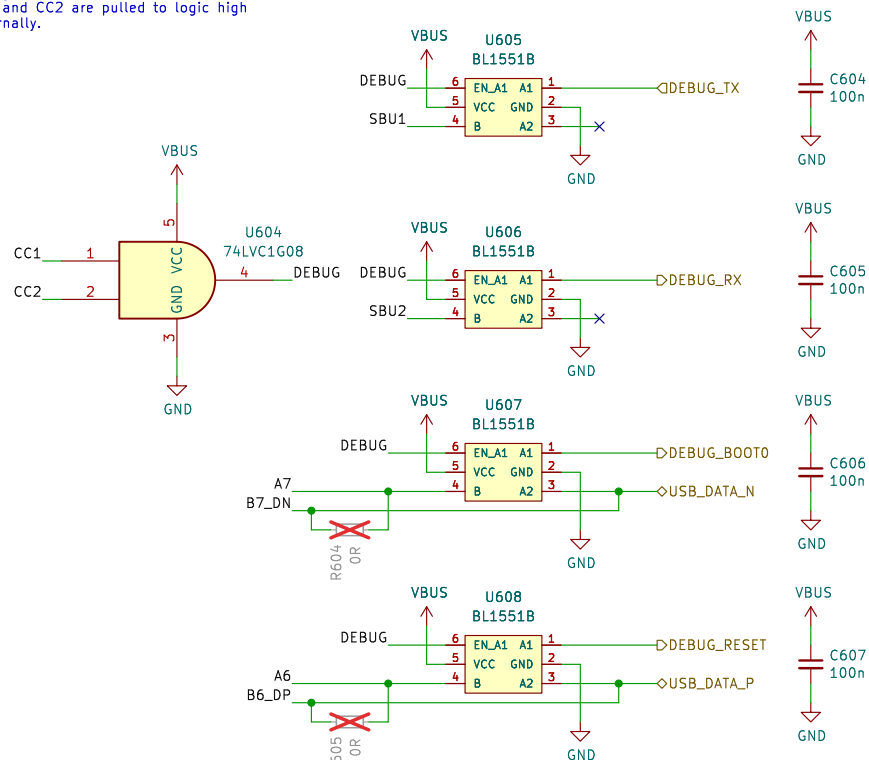


## Testpoints



## Debug-Mode Multiplexing

Debug.mode is activated when both CC1 and CC2 are pulled to logic high externally.



Sheet: /MCU/USB\_POWER/  
File: USB\_POWER.kicad\_sch

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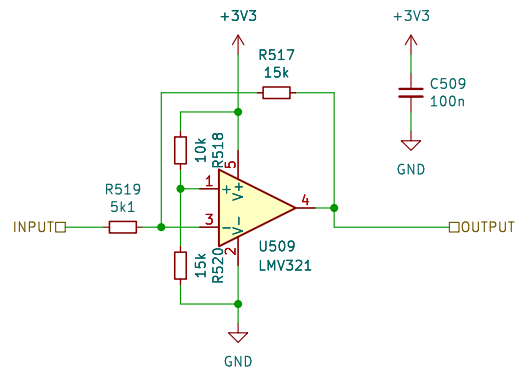
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Date:

KiCad E.D.A. 9.0.1

Rev:

Id: 9/15



Sheet: /UI\_HALL\_PREAMP/INVERT\_AND\_OFFSET/  
File: INVERT\_AND\_OFFSET.kicad\_sch

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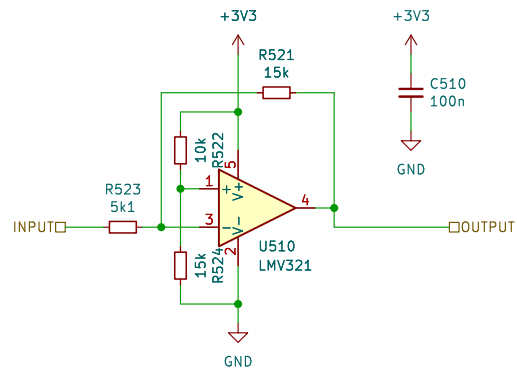
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Date:

**Rev:**

KiCad E.D.A. 9.0.1

Id: 16/15



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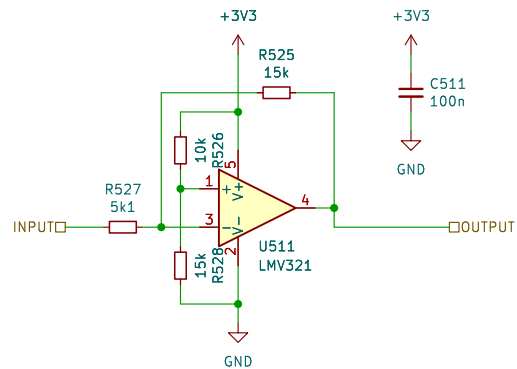
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Date:

**Rev:**

KiCad E.D.A. 9.0.1

Id: 17/15



Sheet: /UI\_HALL\_PREAMP/INVERT\_AND\_OFFSET2/  
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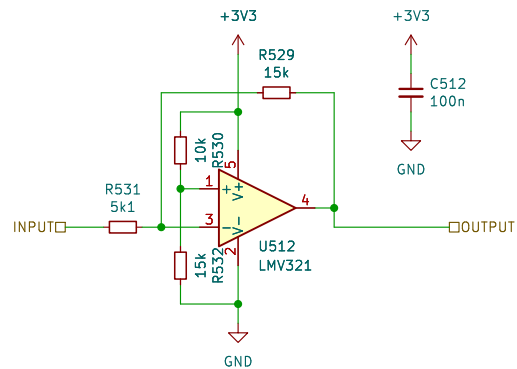
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Date:

**Rev:**

KiCad E.D.A. 9.0.1

Id: 18/15



Sheet: /UI\_HALL\_PREAMP/INVERT\_AND\_OFFSET3/  
File: INVERT\_AND\_OFFSET.kicad\_sch

**Title:**

Size: A4

Date:

**Rev:**

KiCad E.D.A. 9.0.1

Id: 19/15