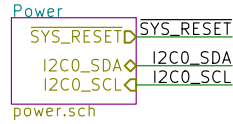
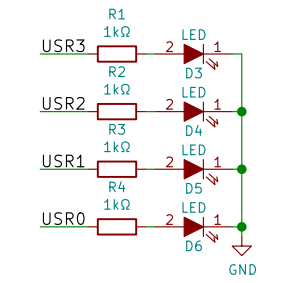


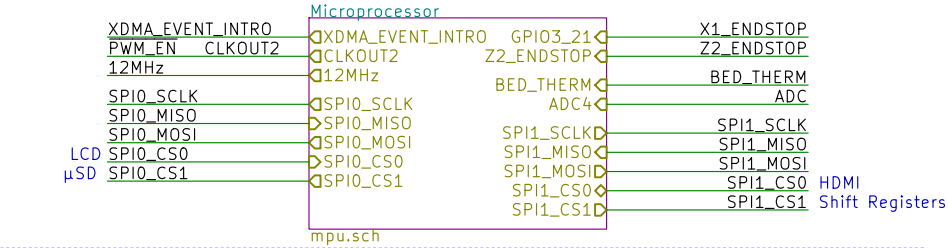
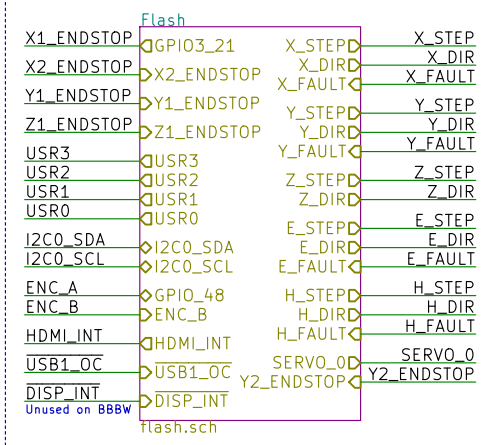
Power



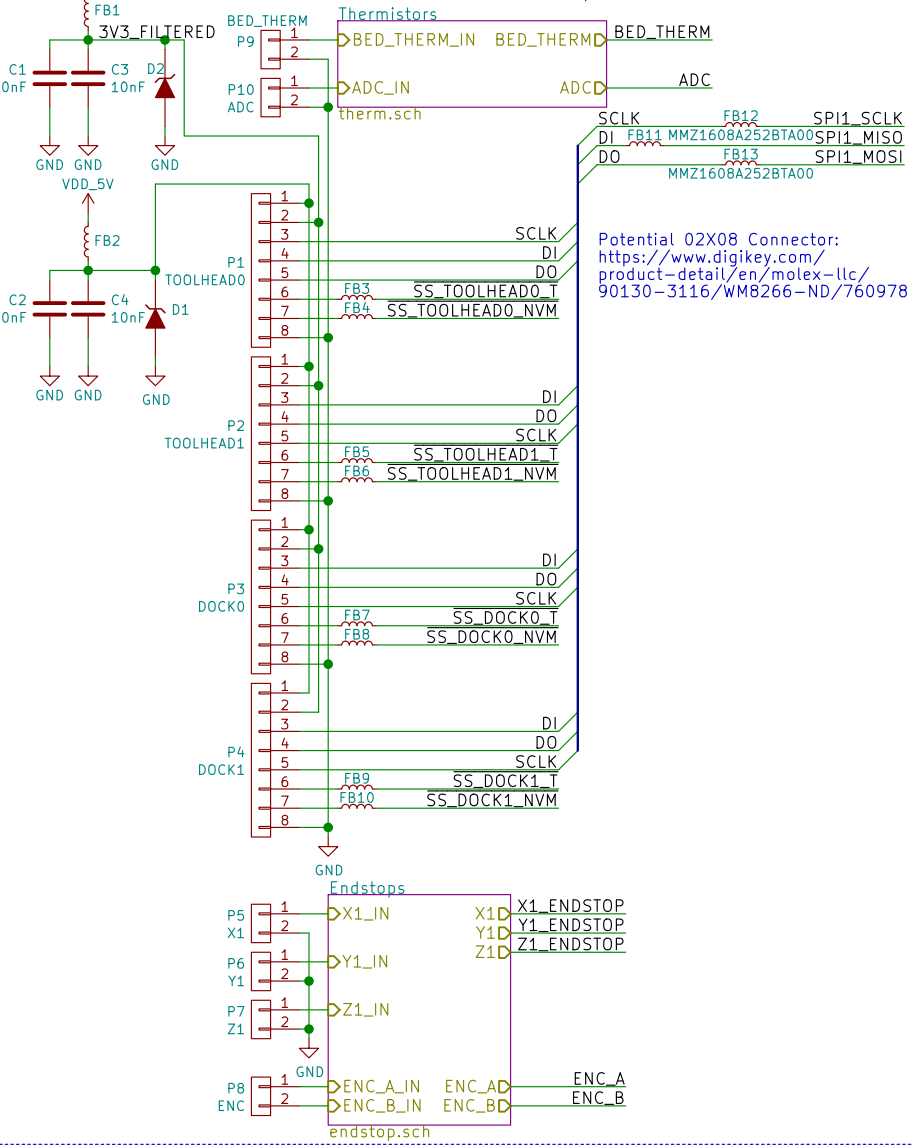
User LEDs



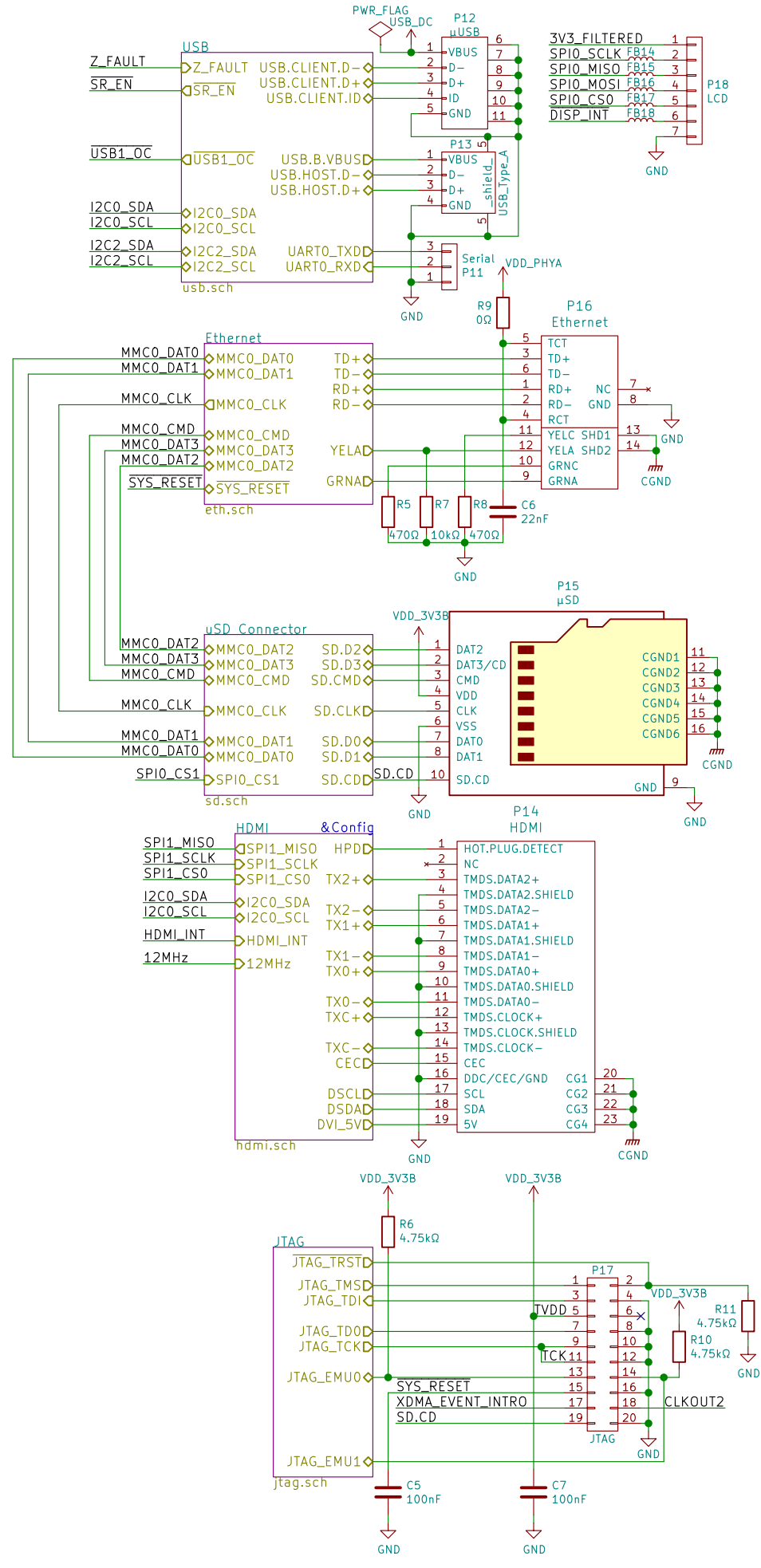
eMMC



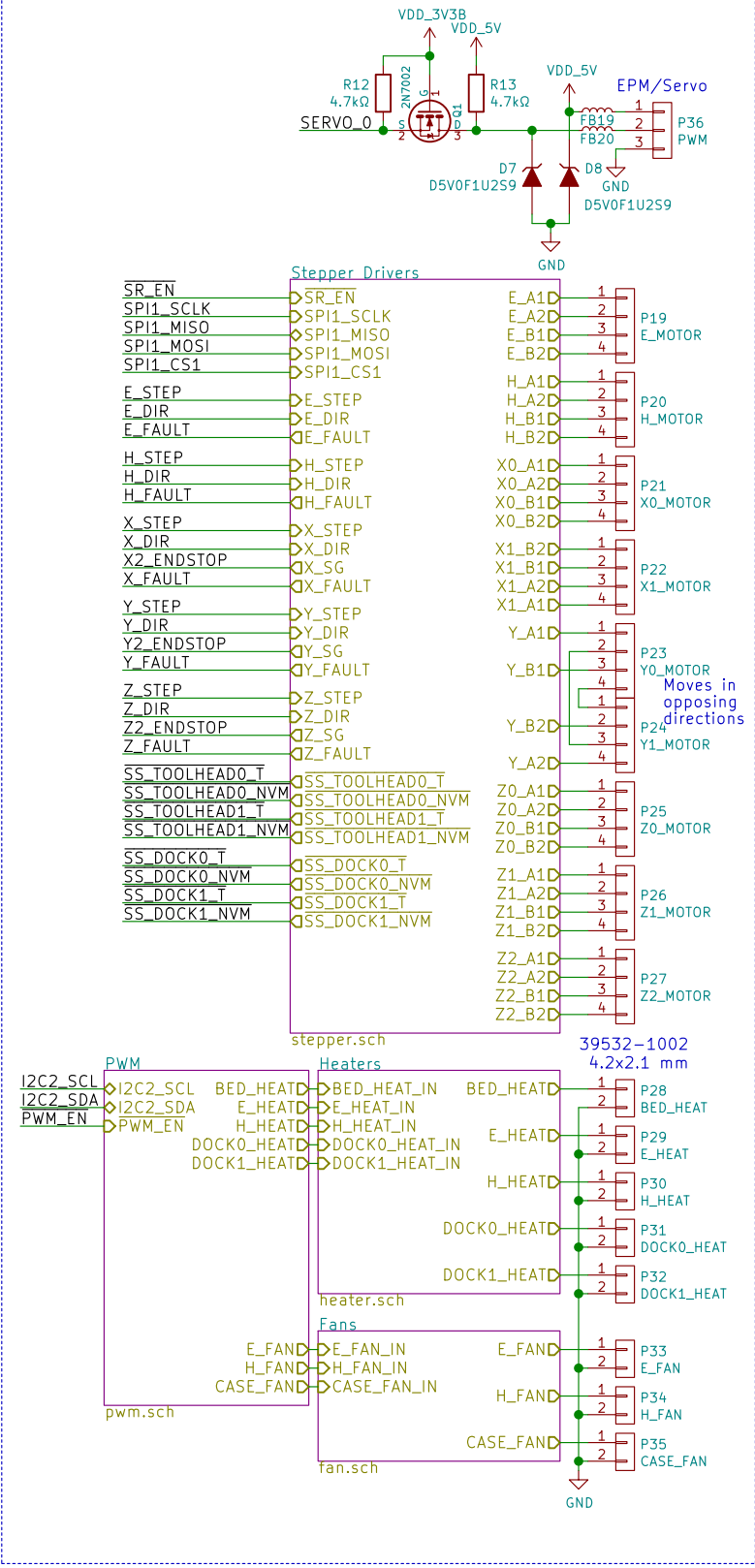
Feedback Input



Interfaces



Output



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Aleph Objects Inc.

Sheet: /

File: KiMBo.sch

Title: KiMBo

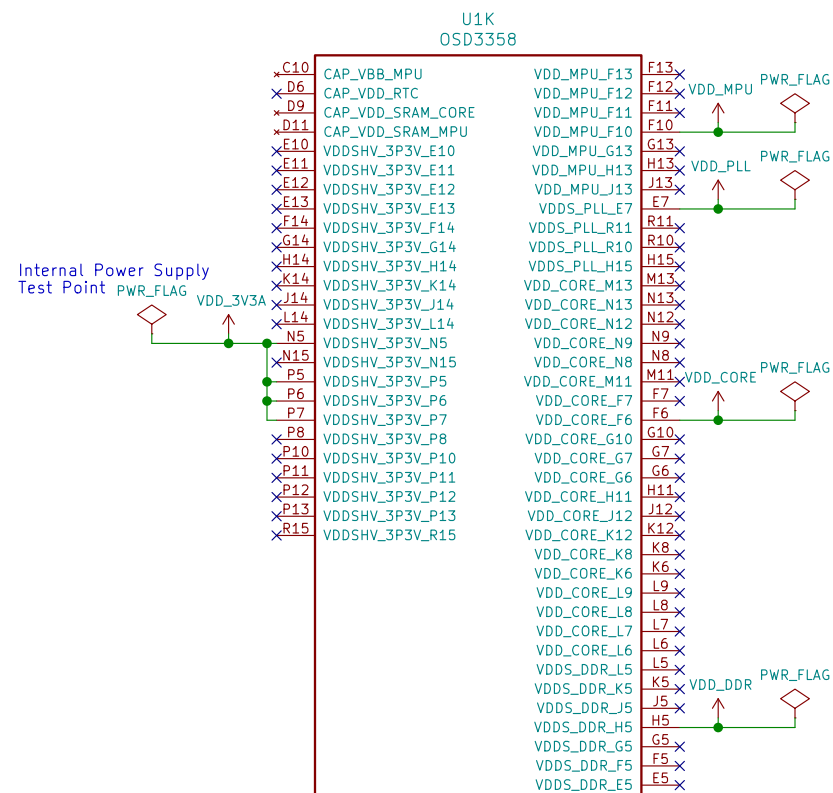
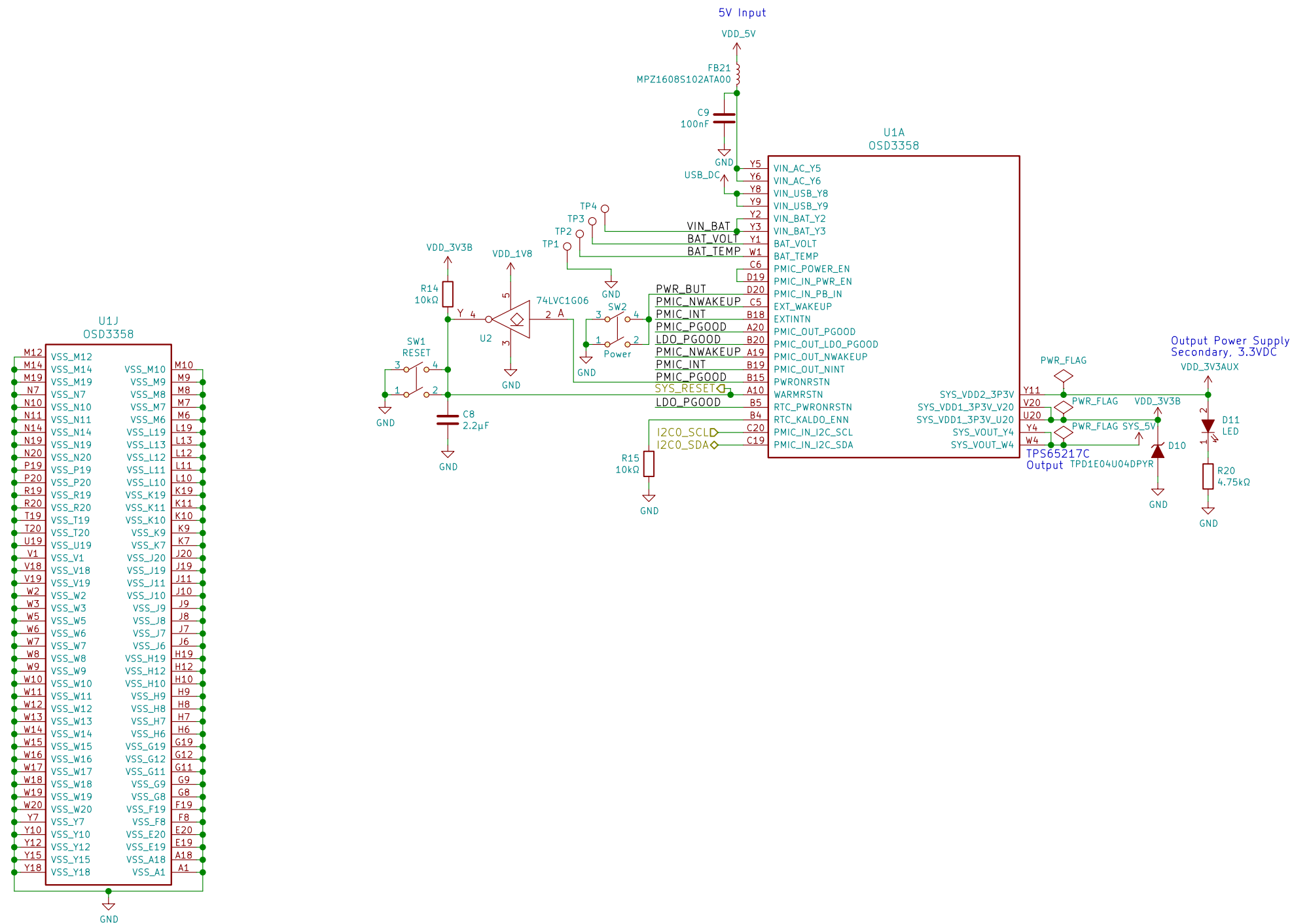
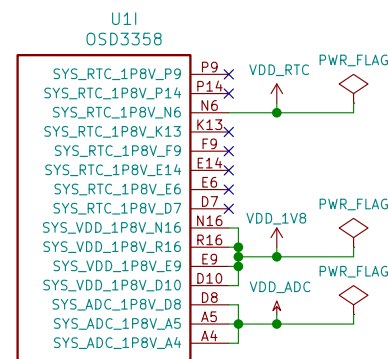
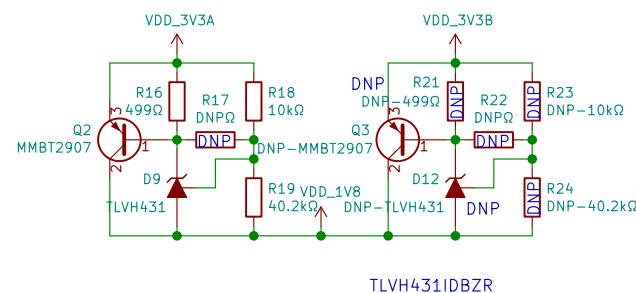
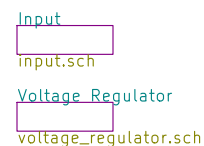
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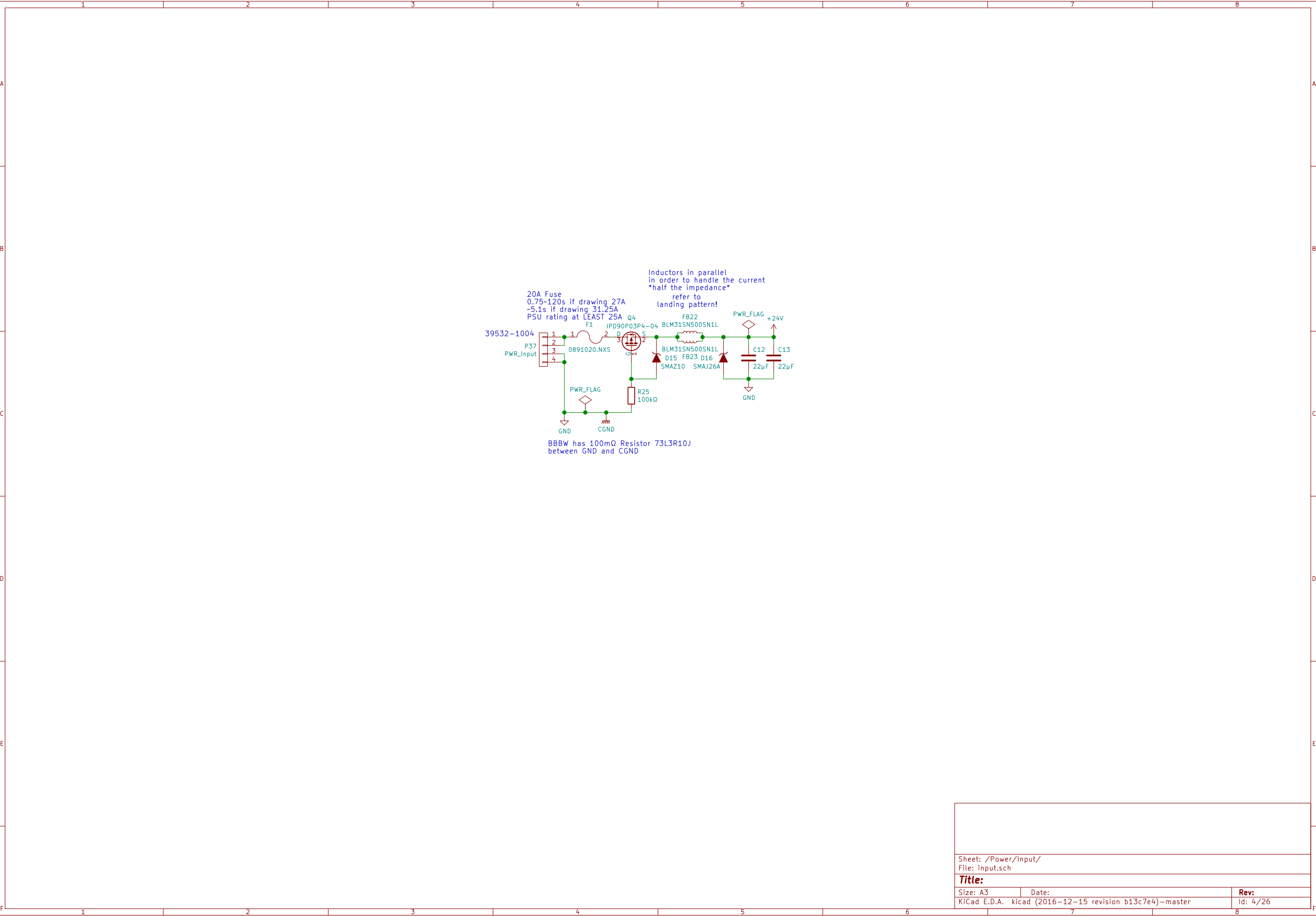
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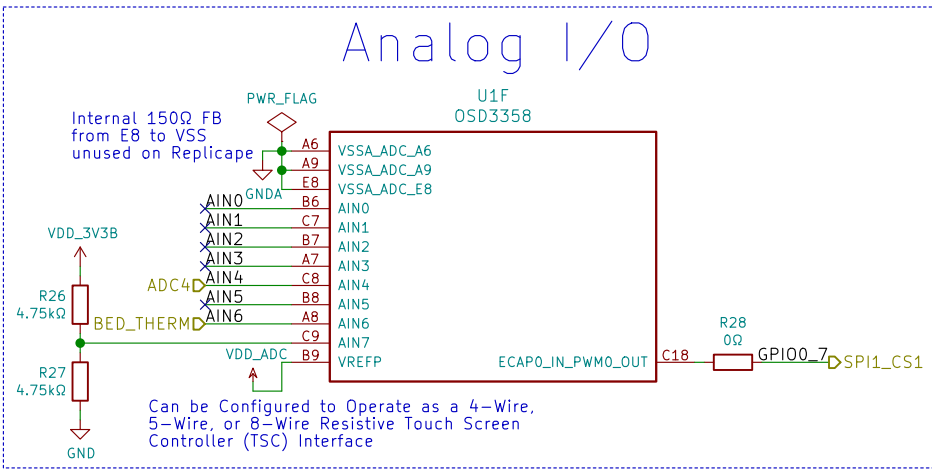
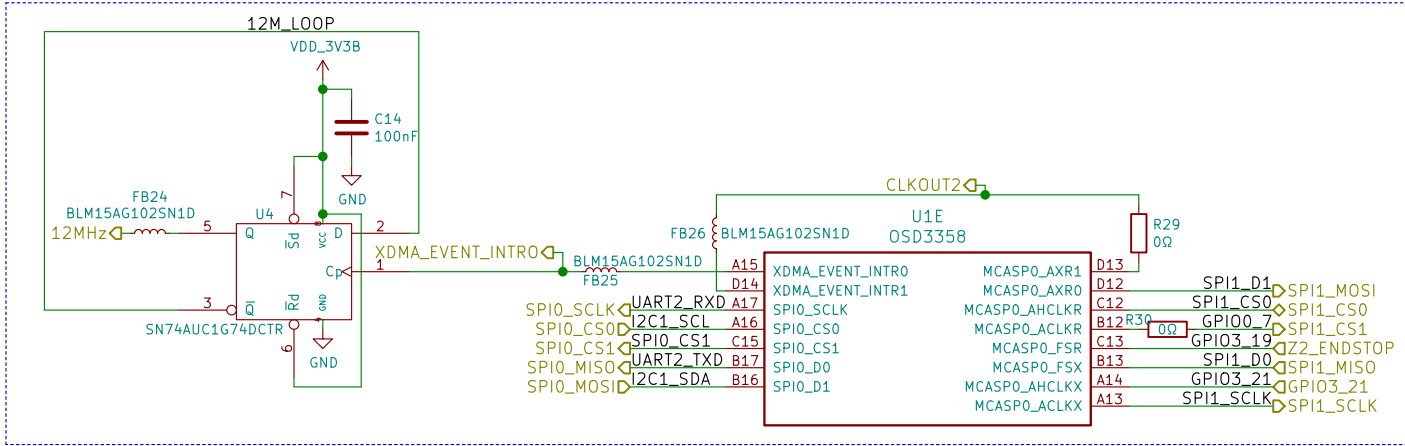
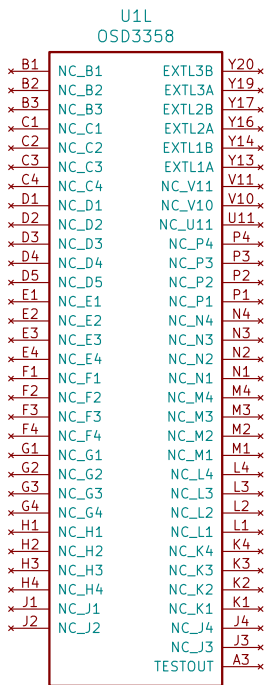
Rev:

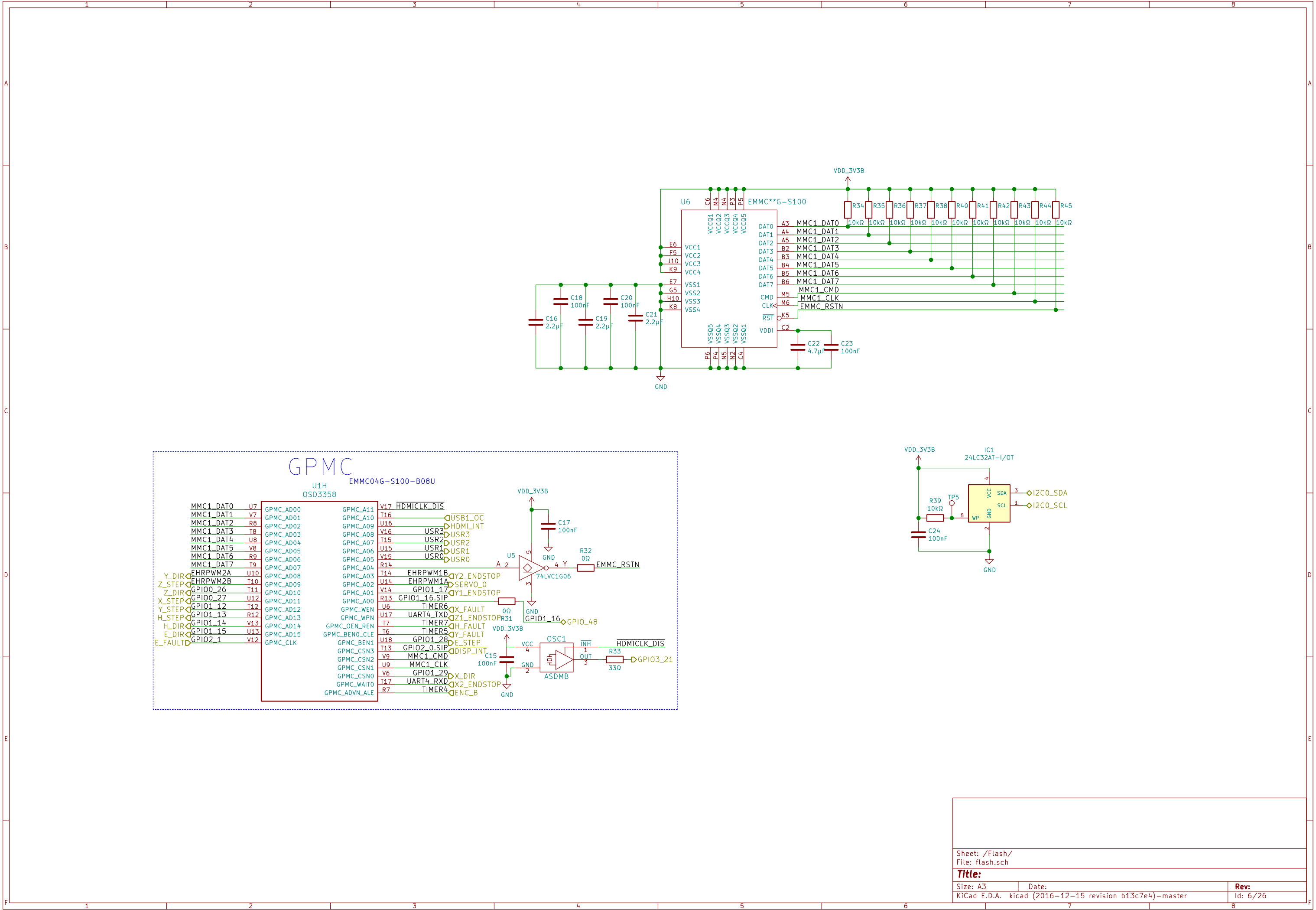
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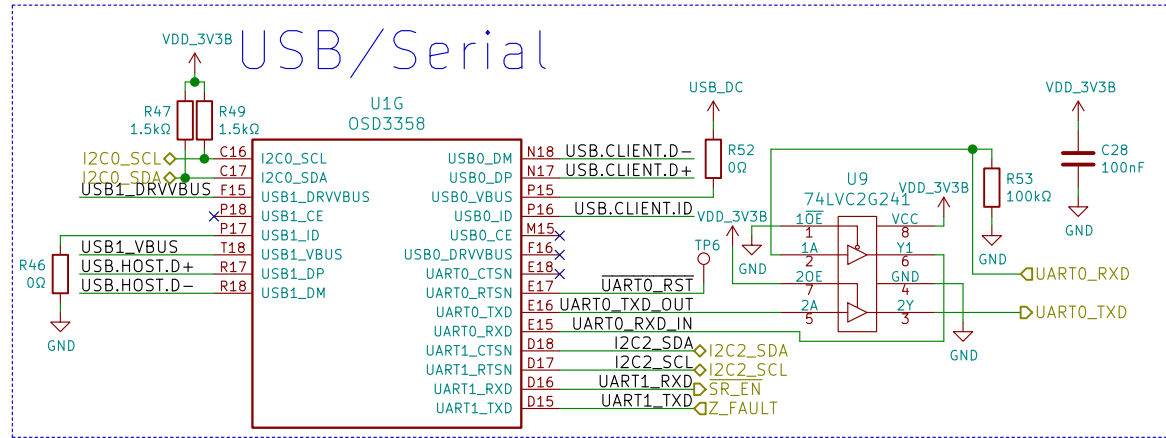
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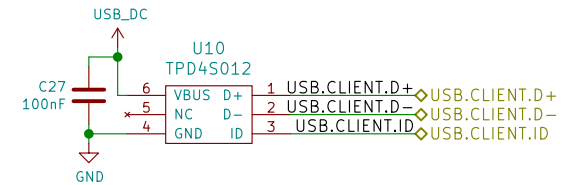
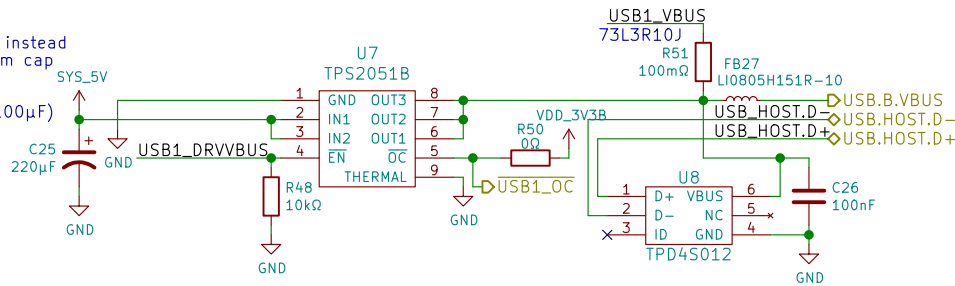








Used a tantalum cap instead of the large aluminium cap TAJD227M010RNJ instead of AVE107M06D16T-F (100µF)



Sheet: /USB/
File: usb.sch

Title:

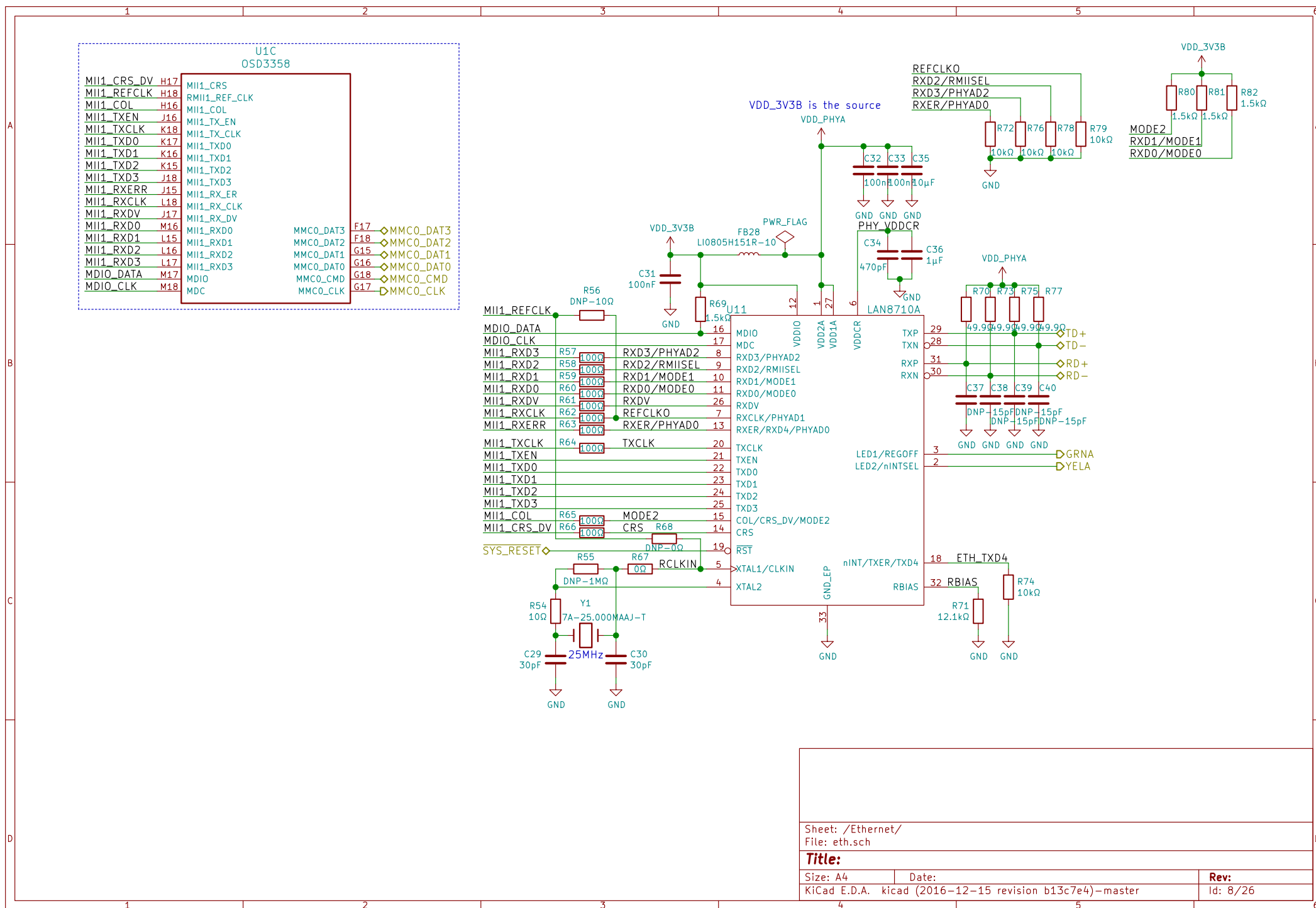
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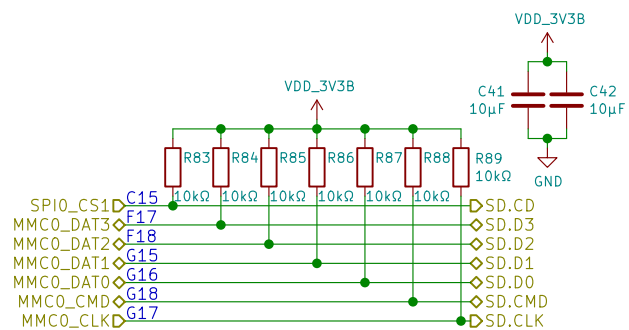
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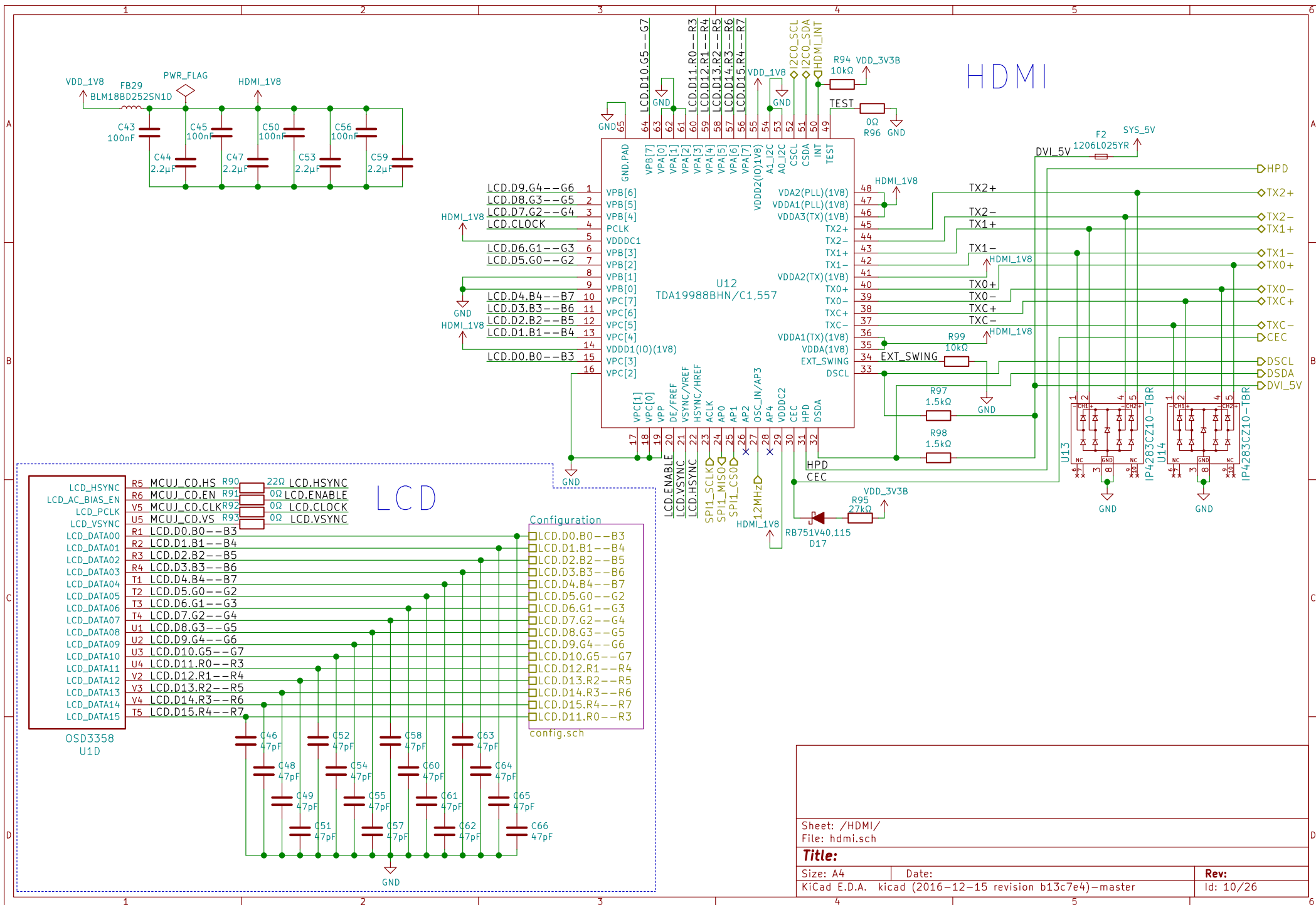




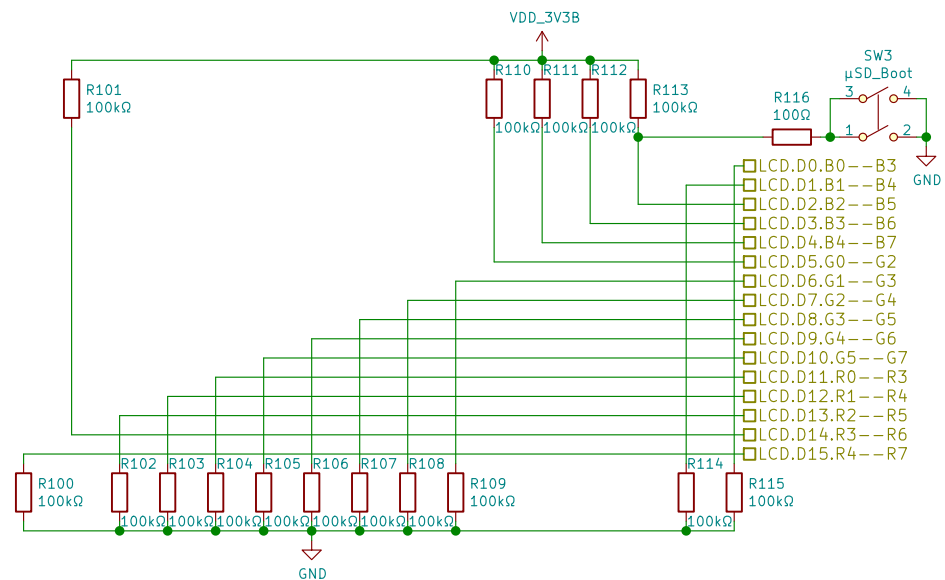
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File: sd.sch

Title:

Size: A4	Date:	Rev:
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Sheet: /HDMI/		
File: hdmi.sch		
Title:		
Size: A4	Date:	Rev:
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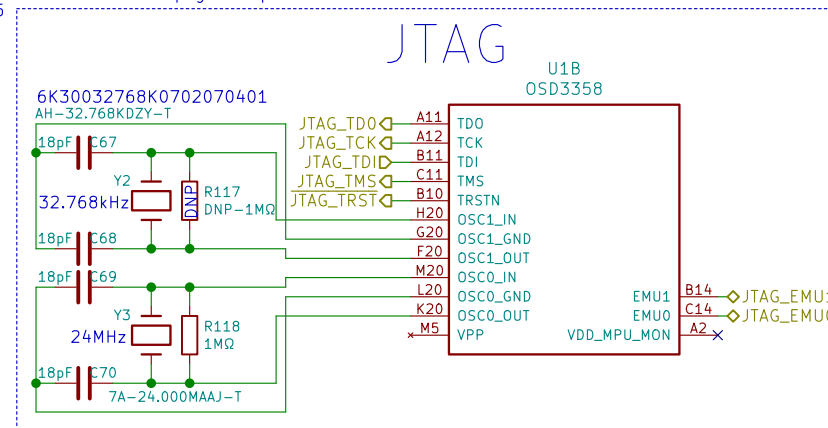
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File: config.sch

Title:

Size: A4 Date:
KiCad E.D.A. kicad (2016-12-15 revision b13c7e4)-master

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<https://www.digikey.com/products/en/crystals-oscillators-resonators/crystals/171?k=&keyword=&pv46=14783&FV=8c0011%2C22c0060%2C8640003%2C1f140000%2Cffe000ab%2C402f3e&mnonly=0&newproducts=0&ColumnSort=0&page=1&quantity=0&ptm=0&fid=0&pageSize=25>



Sheet: /JTAG/
File: jtag.sch

Title:

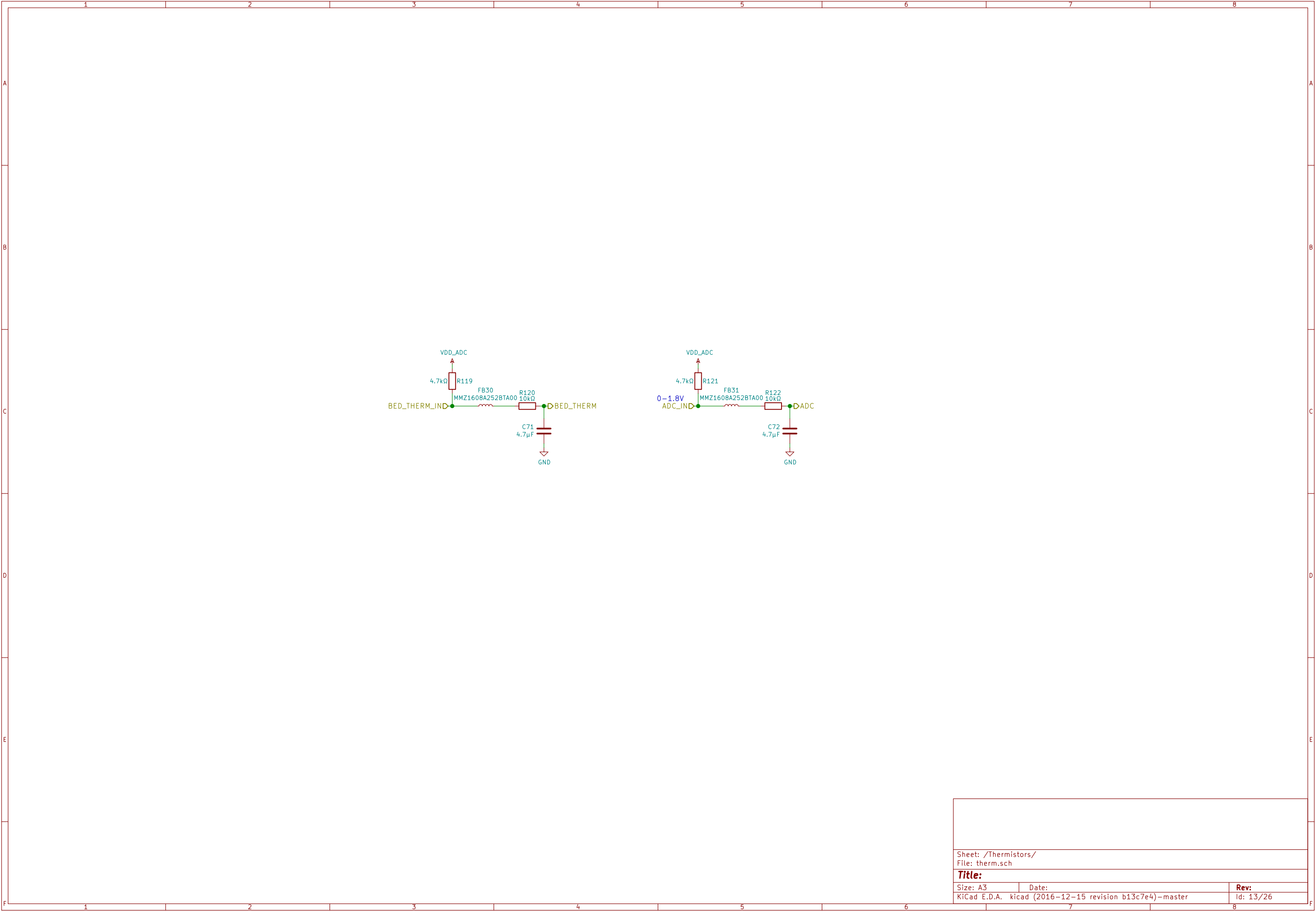
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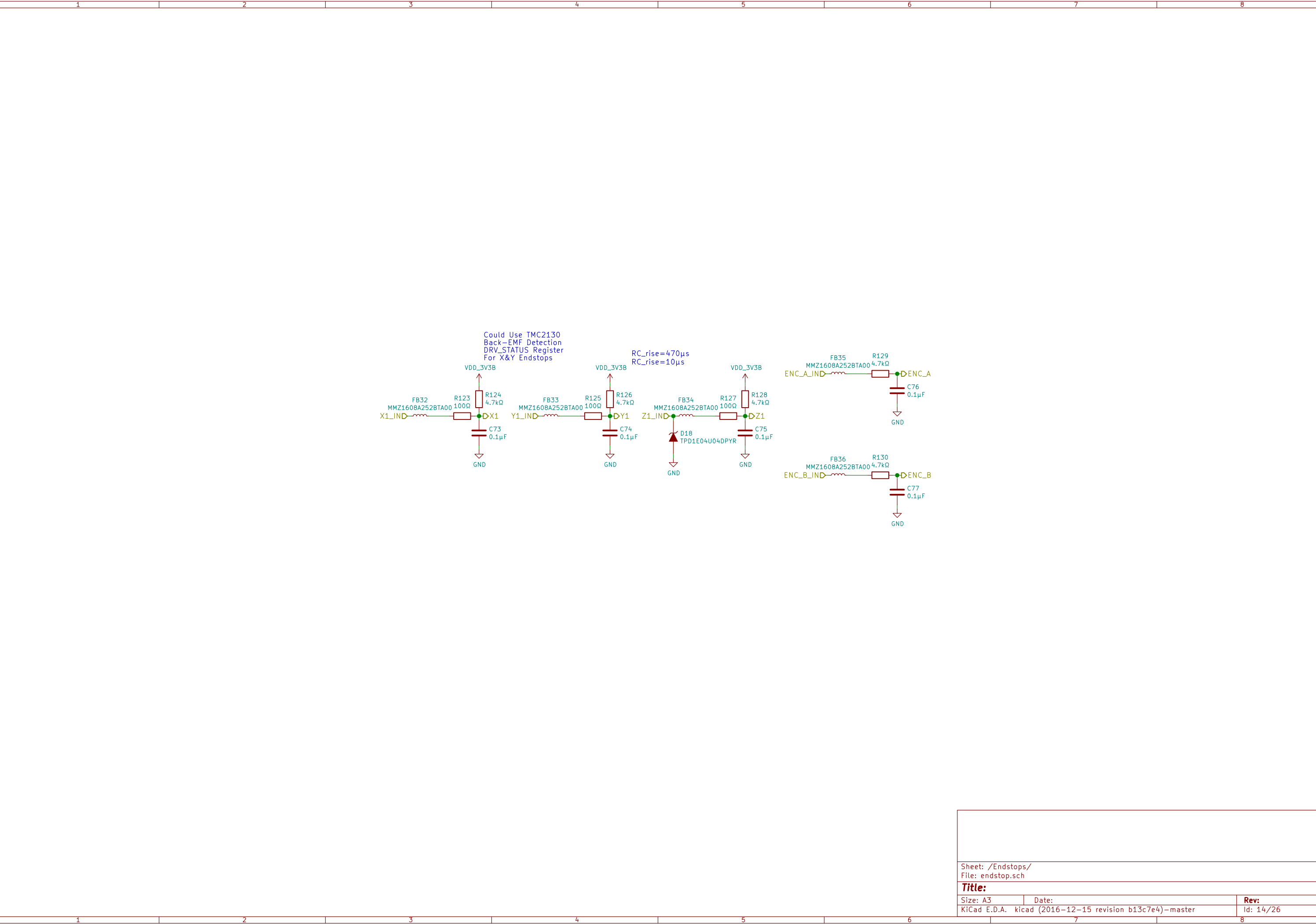
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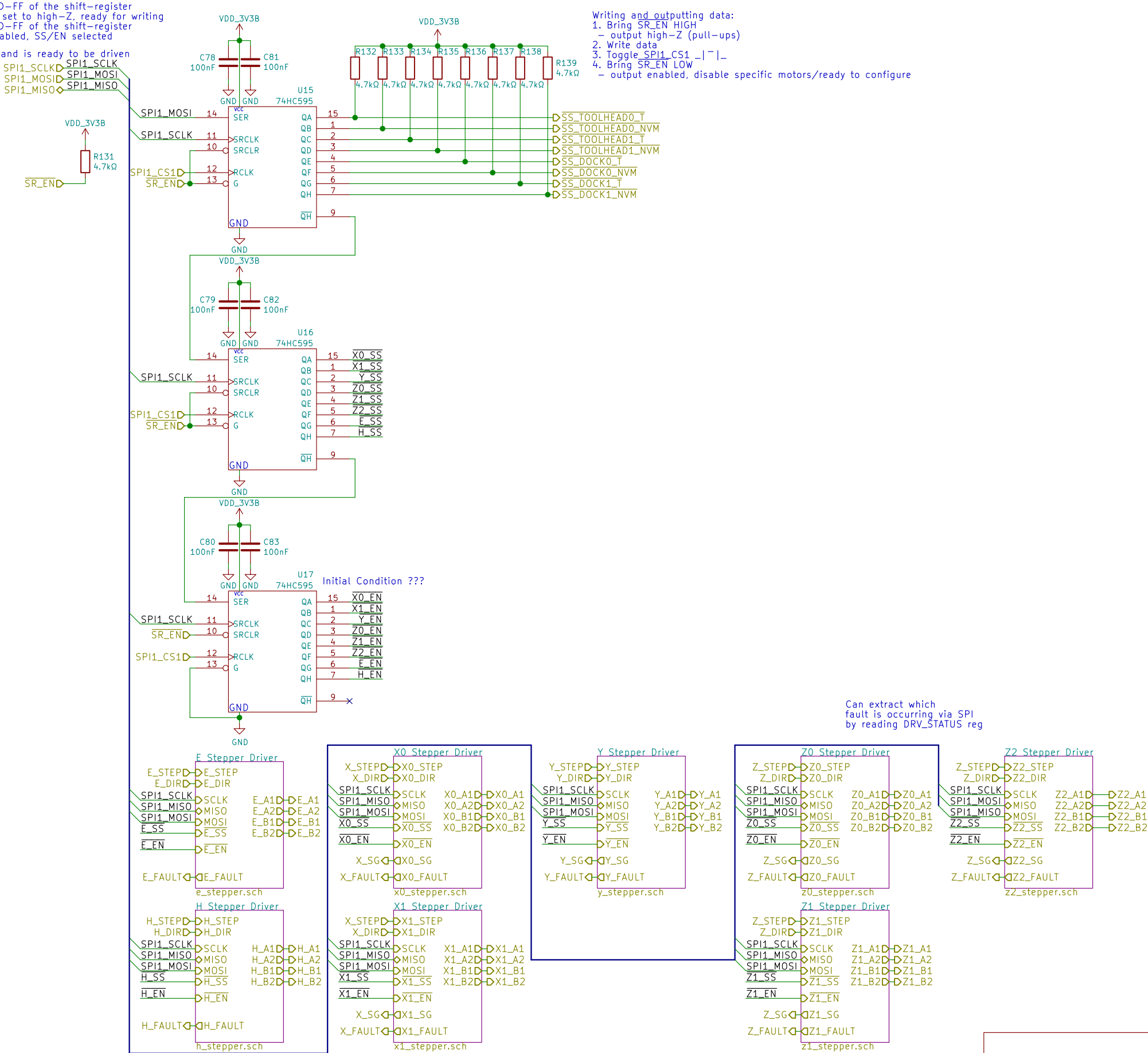
Rev:

Id: 12/26





When SR_EN transitions from LOW to HIGH each D-FF of the shift-register come out of their reset states and the output is set to high-Z, ready for writing
When SR_EN transitions from HIGH to LOW each D-FF of the shift-register goes into their reset states and the output is enabled, SS/EN selected
SPI1_CS1 captures the data in the shift register and is ready to be driven by the second stage of D-FFs



Place sense resistors and all filter capacitors as close as possible to the related IC pins. Use a solid common GND for all GND connections, also for sense resistor GND. Connect 5VOUT filtering capacitor directly to 5VOUT and GND pin. See layout hints for more details. Low ESR electrolytic capacitors are recommended for VS filtering.

place a ceramic filtering capacitor (470nF) as close as possible (1–2mm) to VCC pin with GND return going to ground plane.

[illegible]
$$I_{rms} = (CS+1)/32 \times V_{fs}/(R_{sense}+20m\Omega) \times 1/\sqrt{2}$$

CS is the current scale setting as set by IHOLD IRUN and coolStep
VFS is the full scale voltage as determined by vsense control bit

When *I_scale_analog* is enabled for analog scaling of V_{FS} , the resulting voltage V_{FS}' is calculated by:

$$V'_{FS} = V_{FS} * \frac{V_{AIN}}{2.5V}$$

```
Rsense = 100m0hm:
Vsense = 1 : 26.516504mA res : 397.747564mA range : 0.450780573A to 0.848528137A
Vsense = 0 : 47.877022mA res : 718.155325mA range : 0.813909368A to 1.532064693A
```

```
Rsense = 150m0hm:
Vsense = 1 : 18.717532mA res : 280.762986mA range : 0.318198052A to 0.598961038A
Vsense = 0 : 33.795545mA res : 506.933170mA range : 0.574524260A to 1.081457430A
```

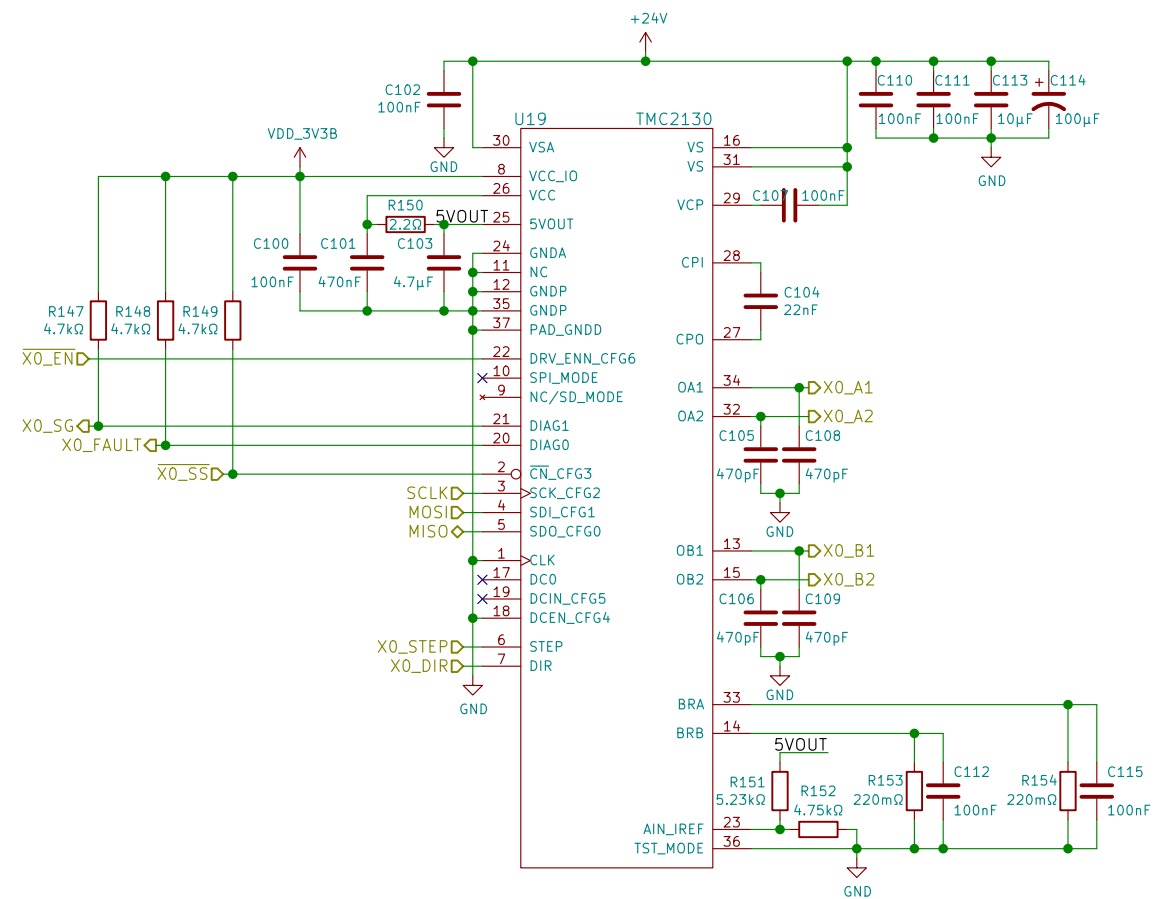
```
Rsense = 220mOhm:
Vsense = 1 : 15.909903mA res : 238.648538mA range : 0.270468344A to 0.509116882A
Vsense = 0 : 28.726213mA res : 430.893195mA range : 0.488345621A to 0.919238816A
```

```
Rsense = 220mOhm:
Vsense = 1 : 15.775726mA res : 236.635888mA range : 0.26818734A to 0.504823228A
Vsense = 0 : 28.483949mA res : 427.259243mA range : 0.484227141A to 0.911486384A
```

For best precision, choose the sense resistors in a way that the desired maximum current is reached with AIN in the range 2V to 2.4V

The sense resistor voltage range can be selected by the vsense bit in CHOPCONF. The low sensitivity setting (high sense resistor voltage, vsense=0) brings *best and most robust current regulation*, while high sensitivity (low sense resistor voltage, vsense=1) reduces power dissipation in the sense resistor. The high sensitivity setting reduces the power dissipation in the sense resistor by nearly half.

Sheet: /Stepper Drivers/E Stepper Driver/ File: e_stepper.sch		
Title:		
Size: A3	Date:	Rev:
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Sheet: /Stepper Drivers/X0 Stepper Driver/
File: x0_stepper.sch

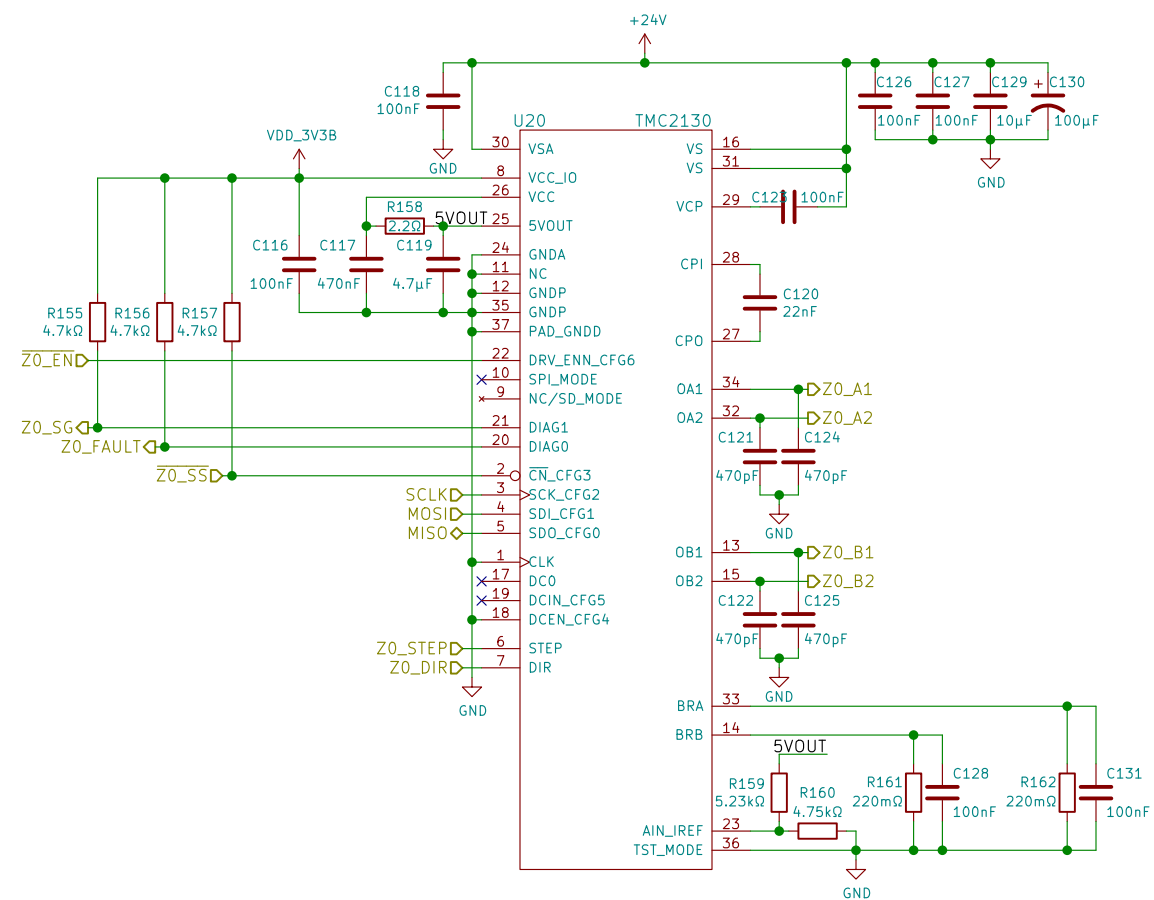
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Size: A3

Date:

Size: AS	Date:
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Sheet: /Stepper Drivers/Z0 Stepper Driver/
File: z0_stepper.sch

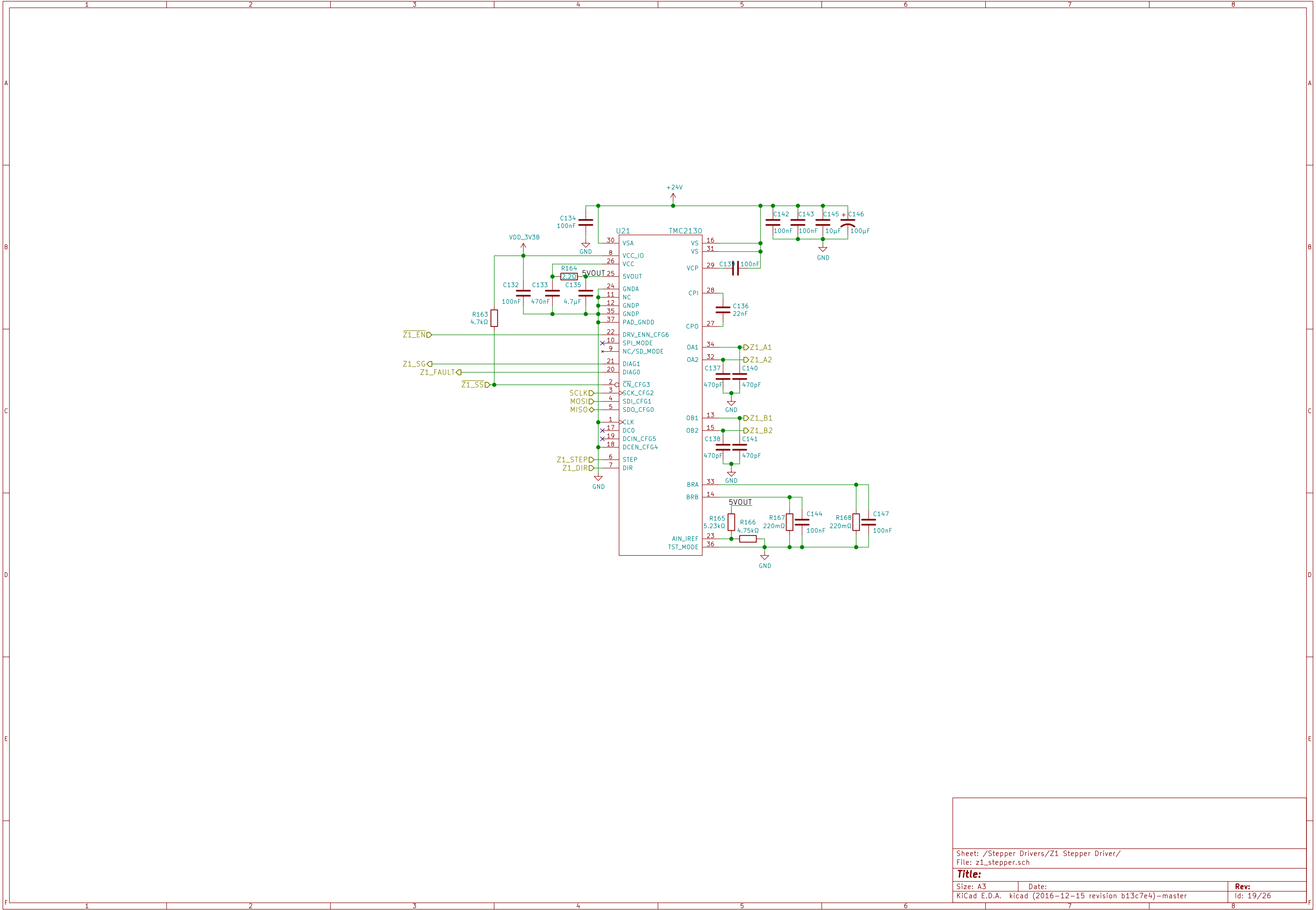
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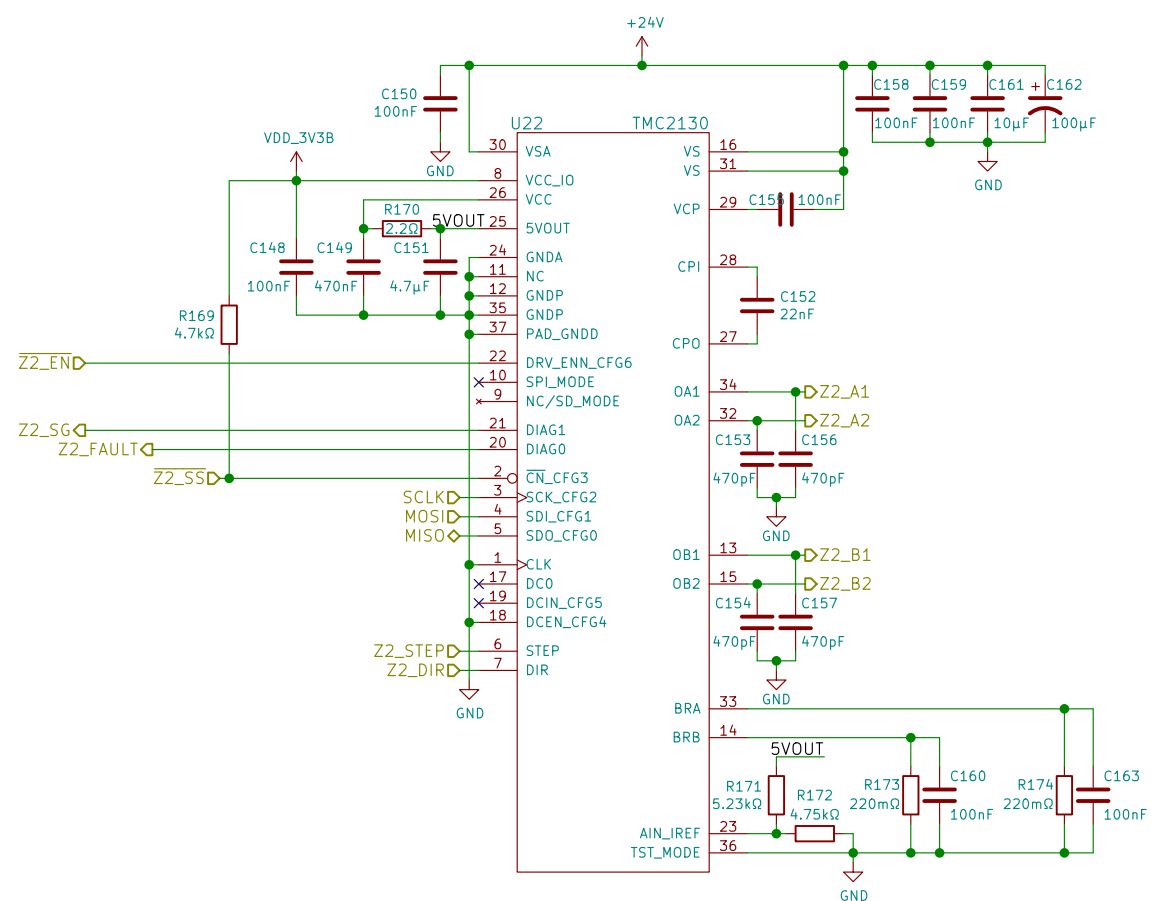
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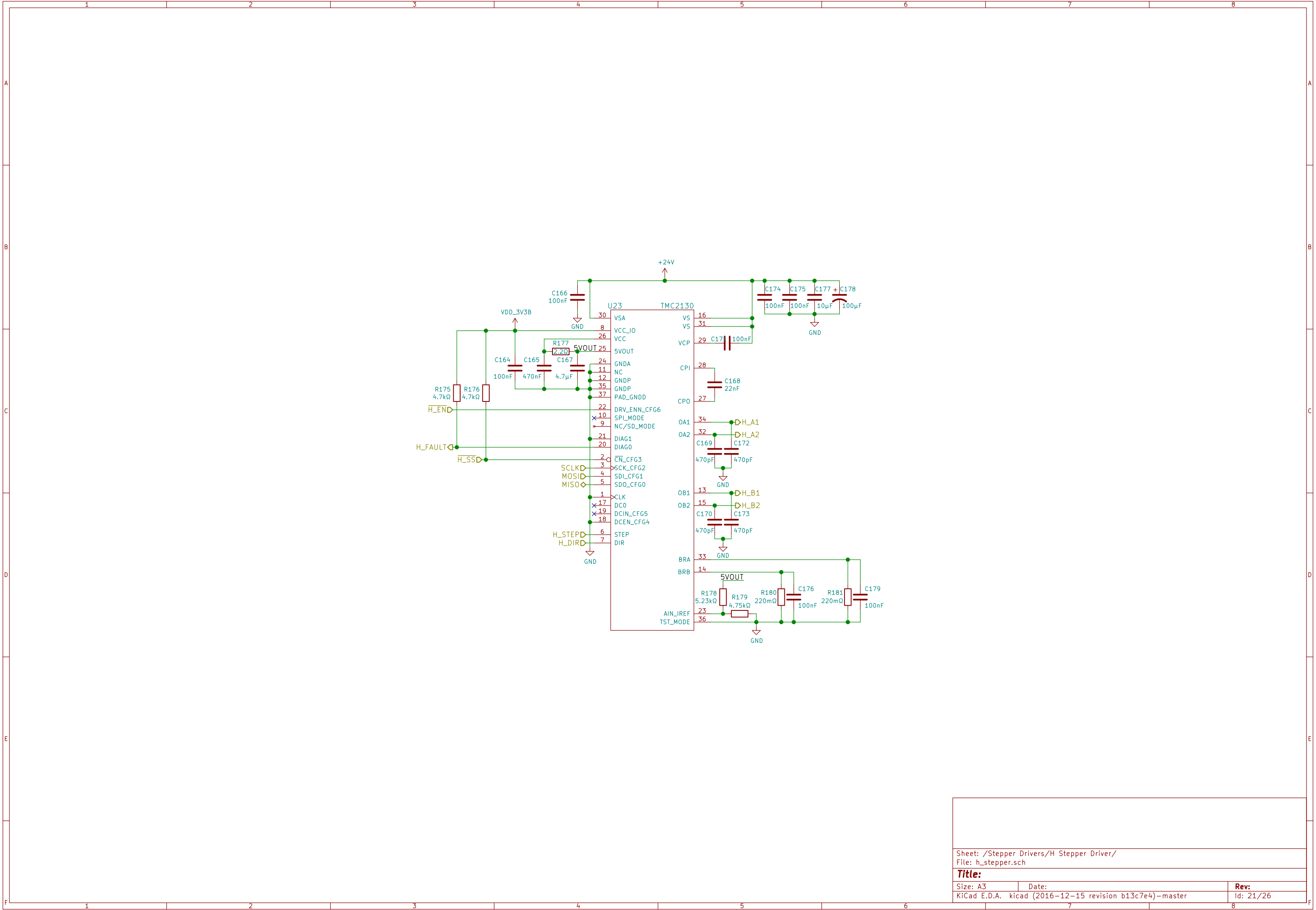


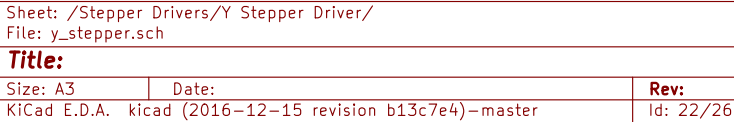


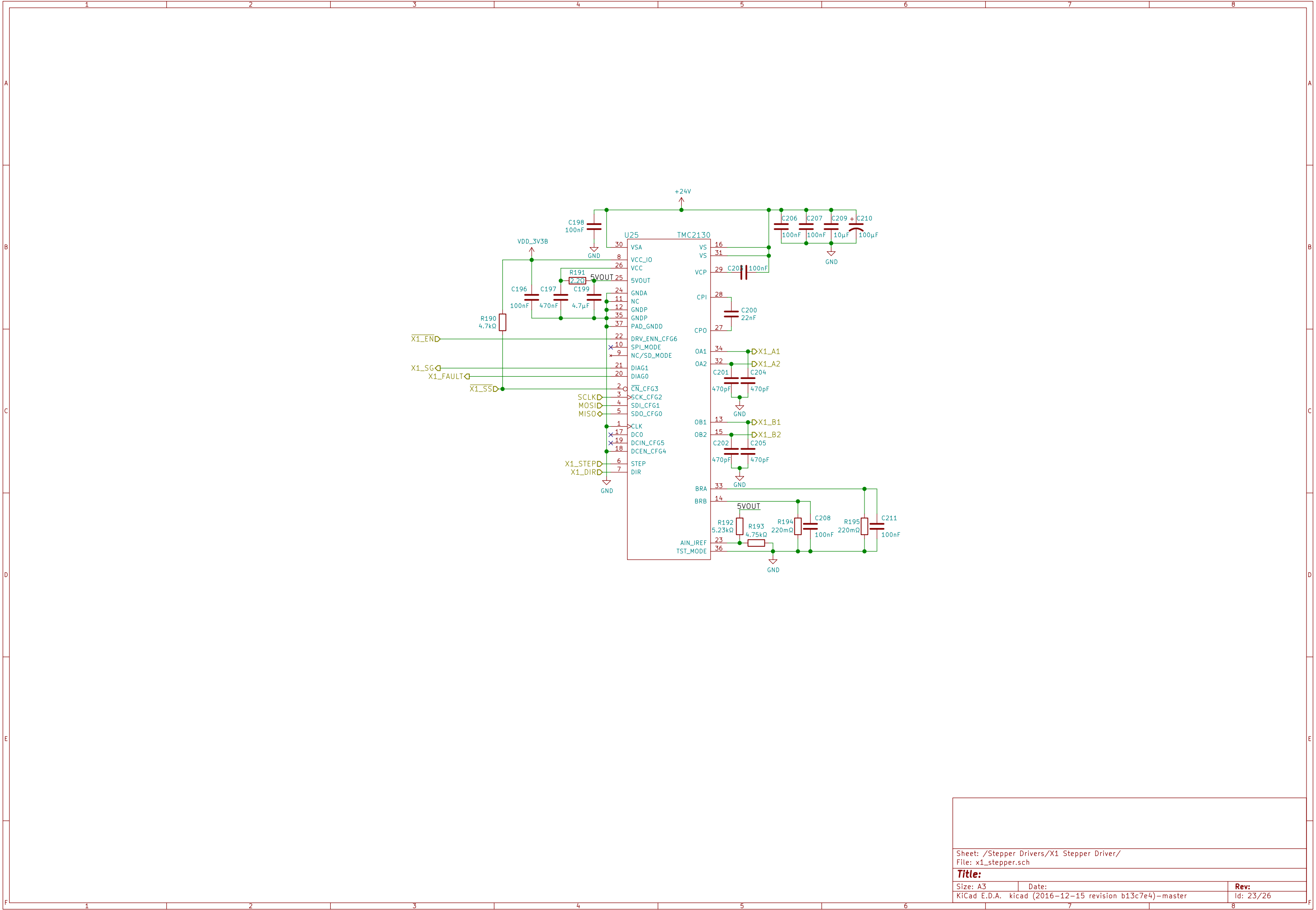
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File: z2_stepper.sch

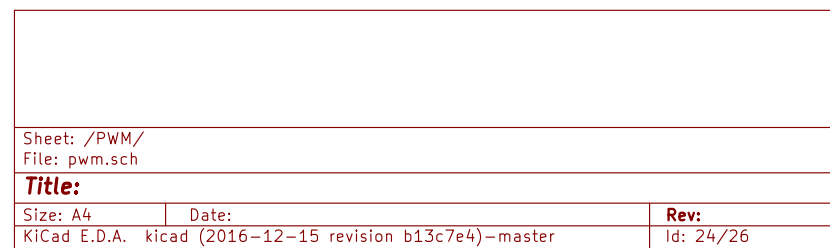
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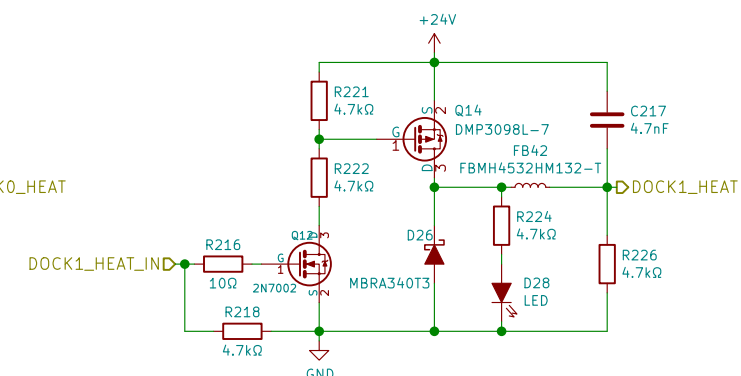
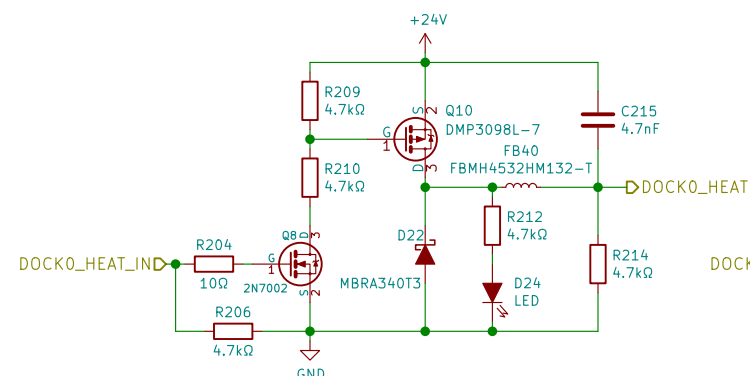
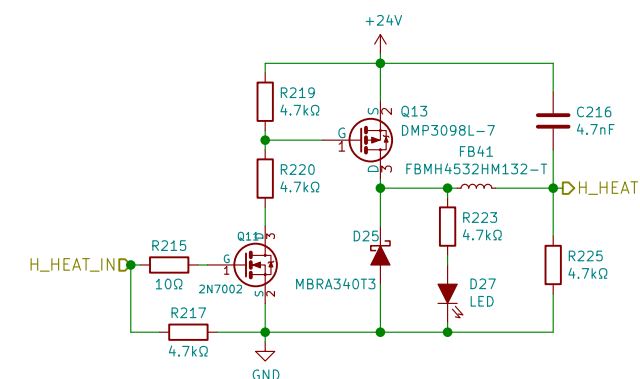
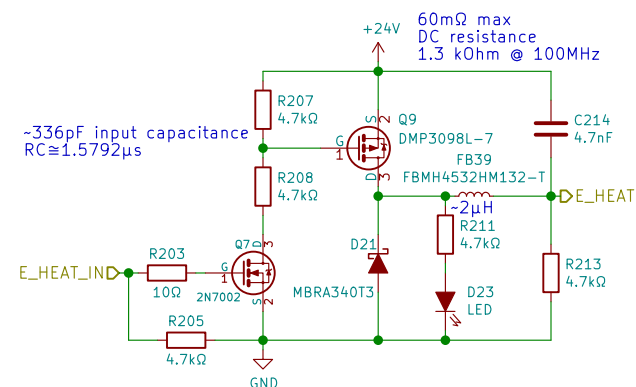
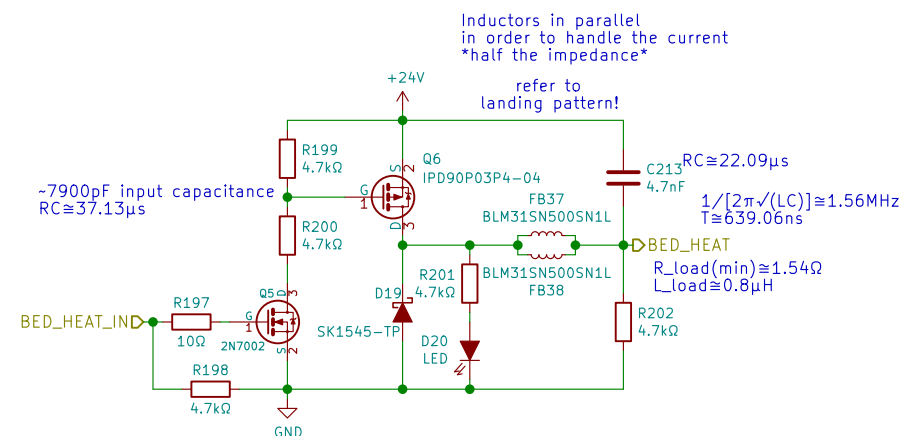
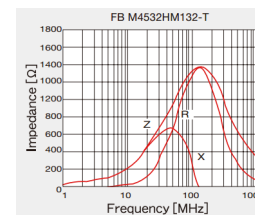
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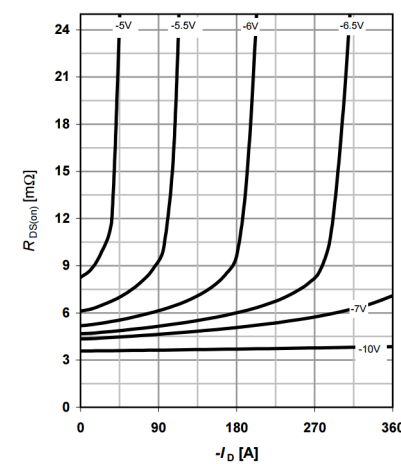






6 Typ. drain-source on-state resistance

$$R_{DS(on)} = (I_D); T_j = 25\text{ }^{\circ}\text{C}$$

parameter: V_{GS} 

8 Typ. drain-source on-state resistance

$$R_{DS(on)} = f(T_j); I_D = -90 \text{ A}; V_{GS} = -10 \text{ V}$$

