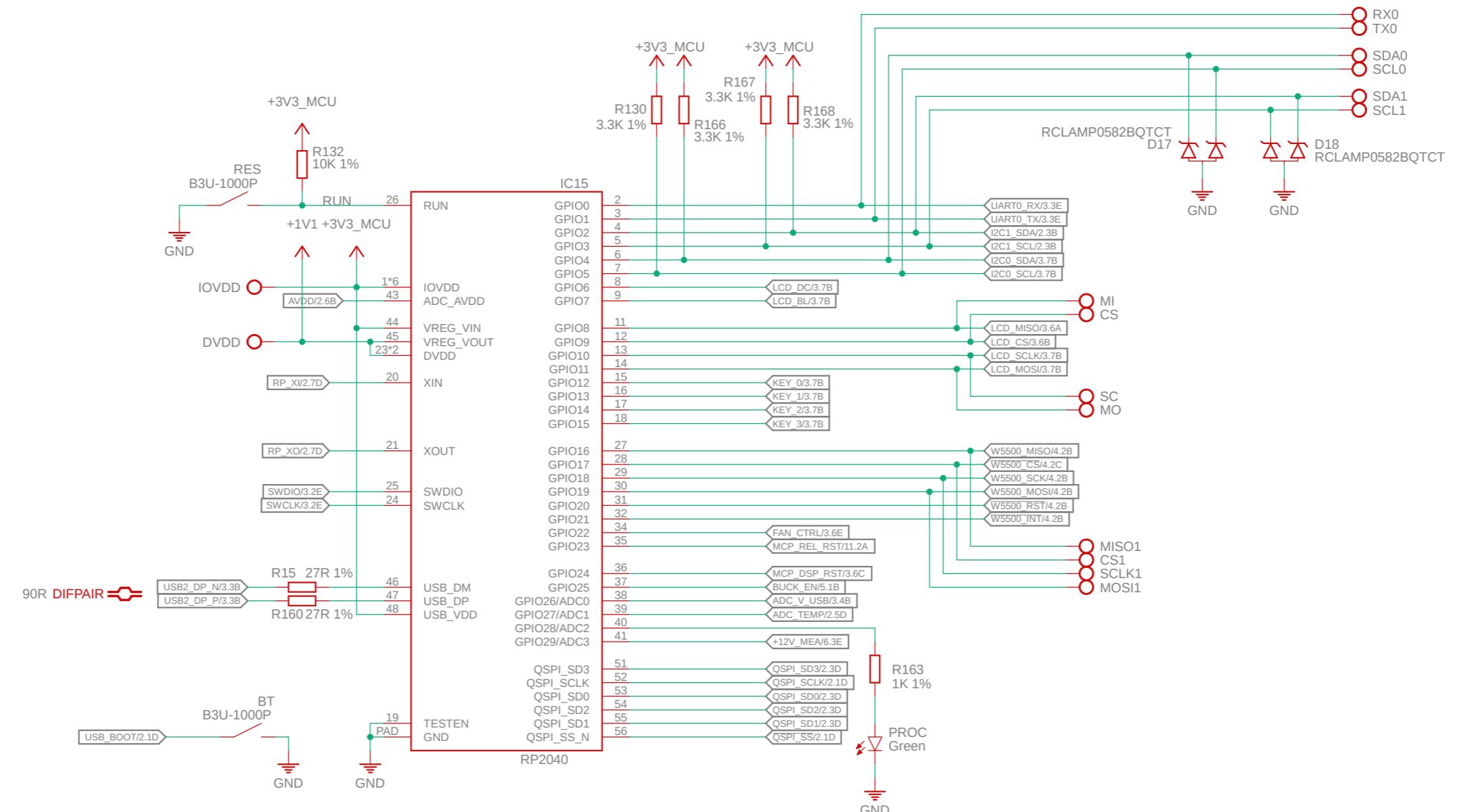
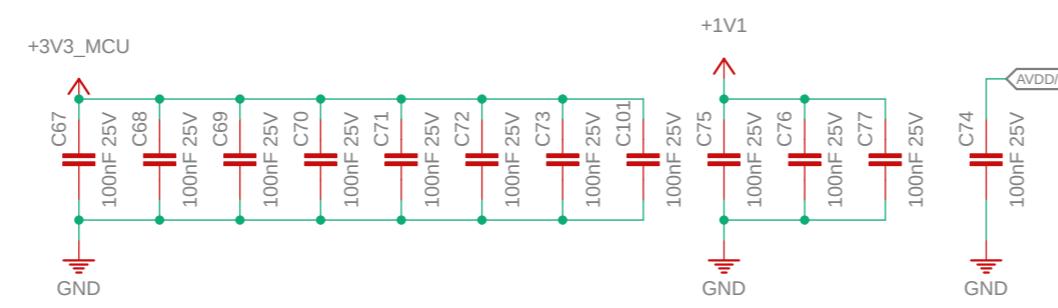


RP2040 MCU



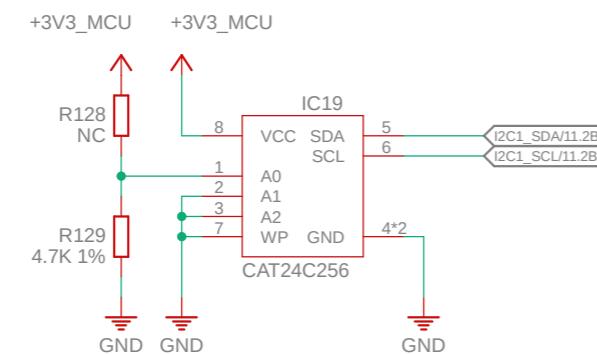
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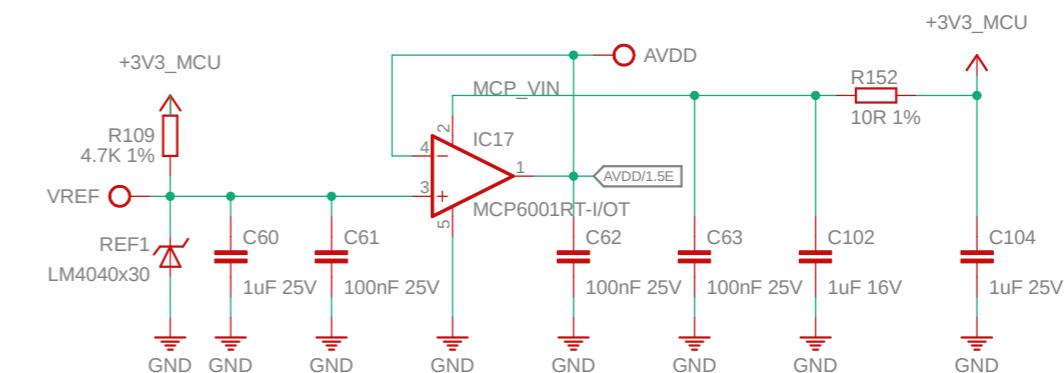
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PERIPHERALS

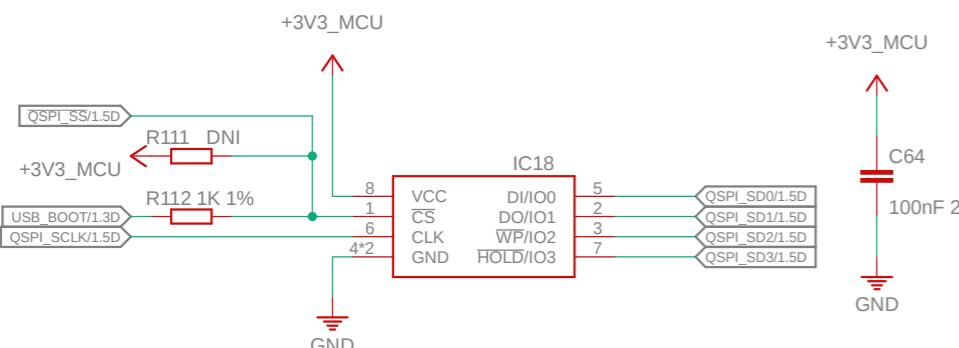
USER MEMORY



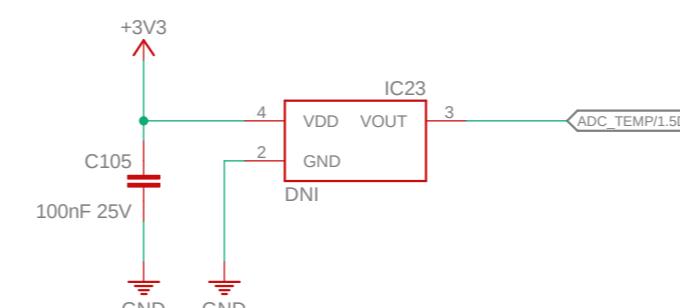
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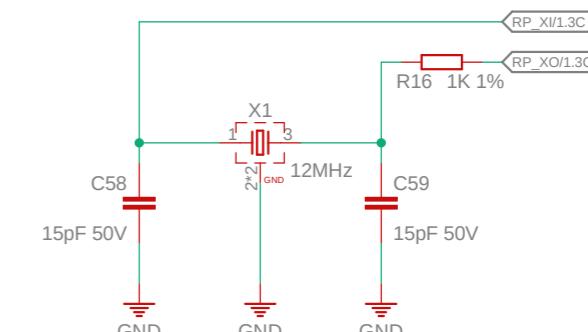
RP2040 FLASH



TEMPERATURE SENSOR



12MHZ CRYSTAL



MAIN BOARD

1.1.0

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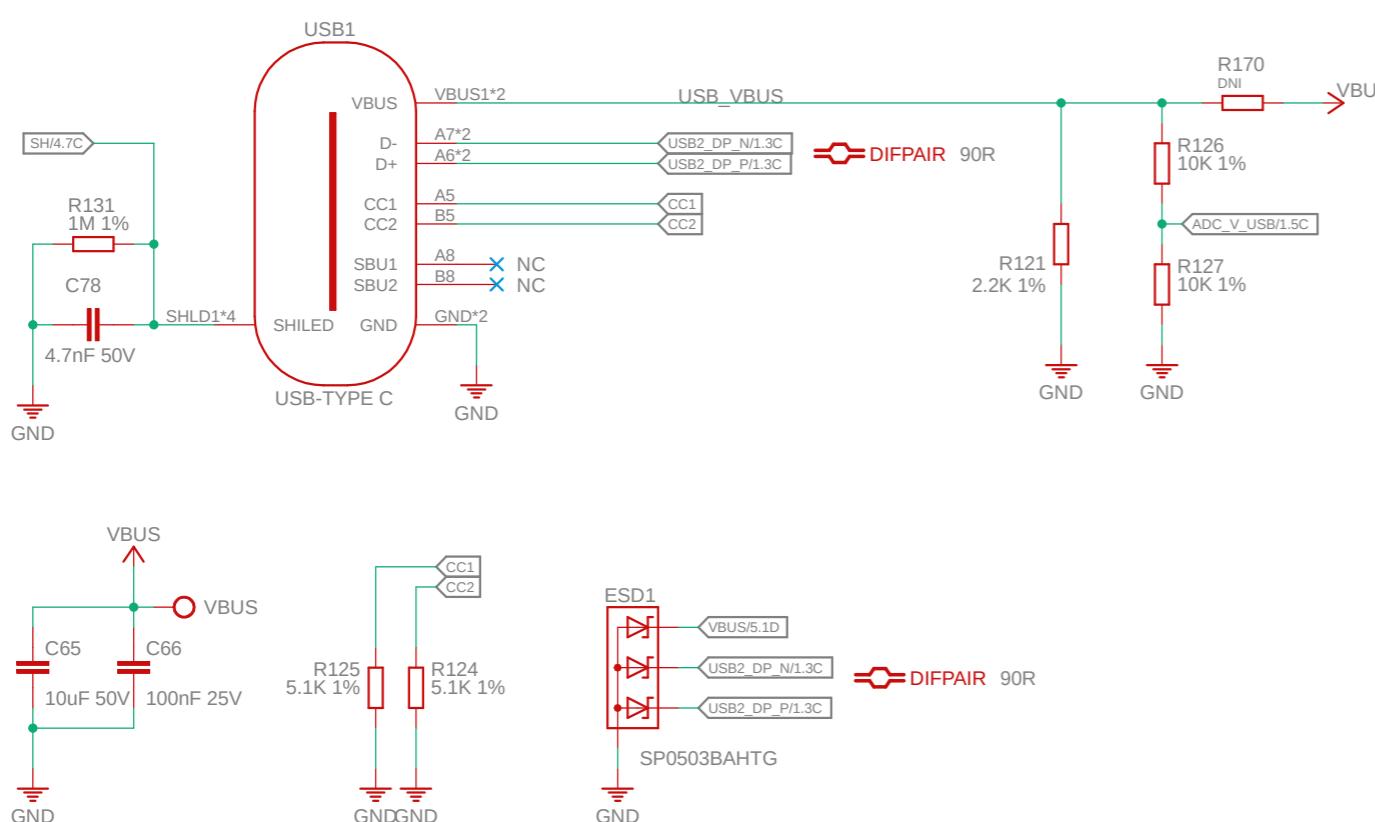
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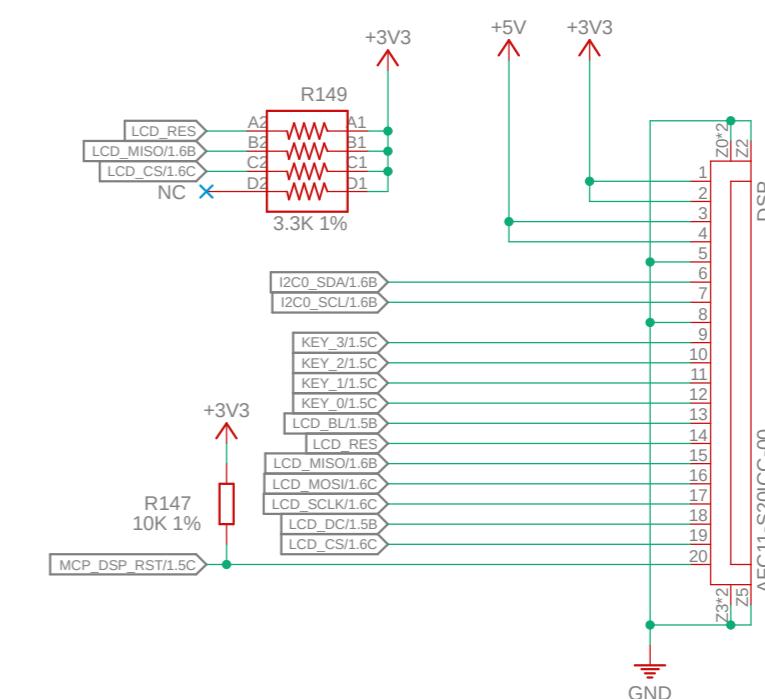
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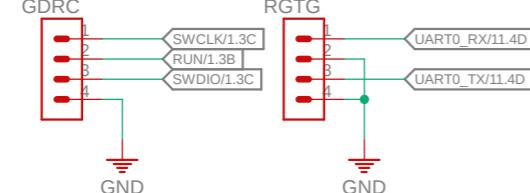
USB-C CONNECTOR



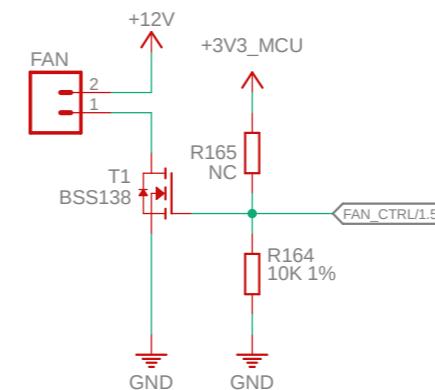
BOARD CONNECTOR



DEBUG CONNECTOR



FAN CONNECTOR



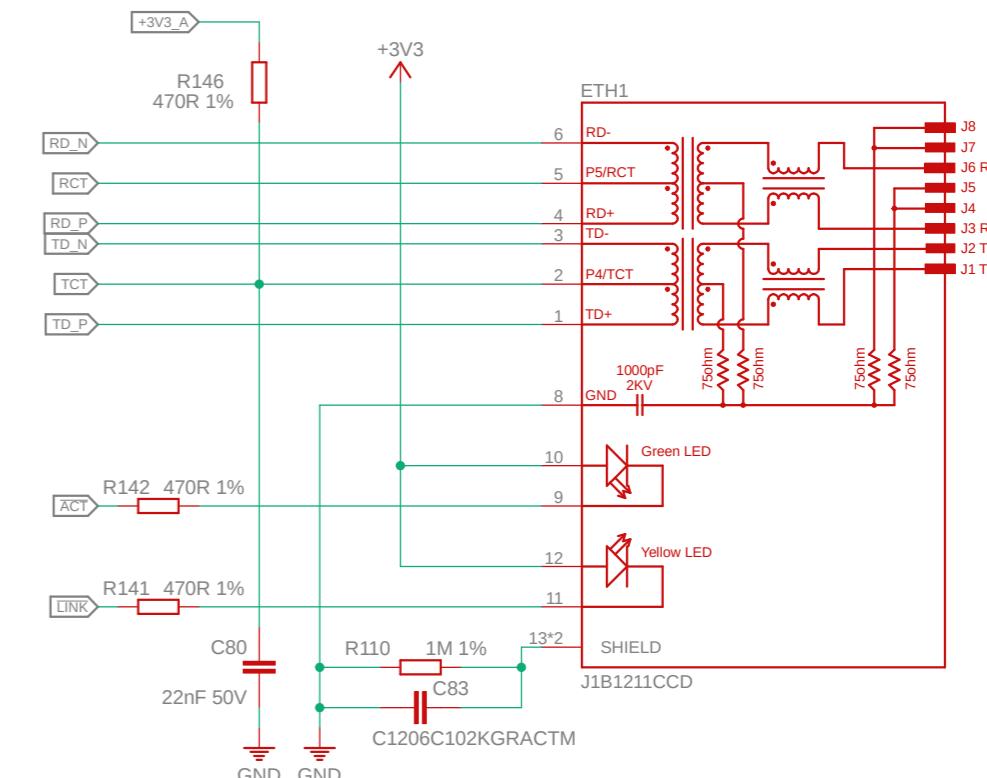
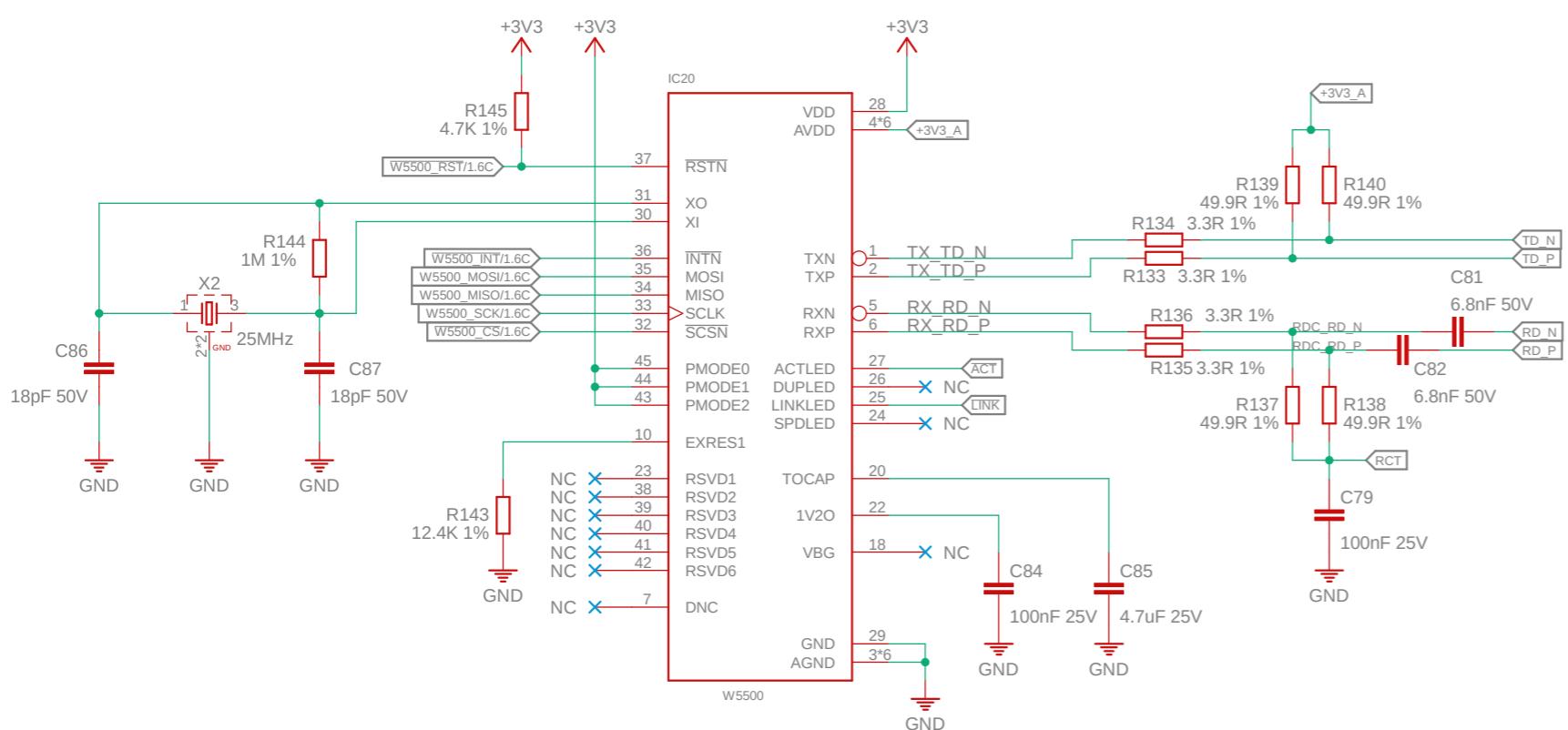
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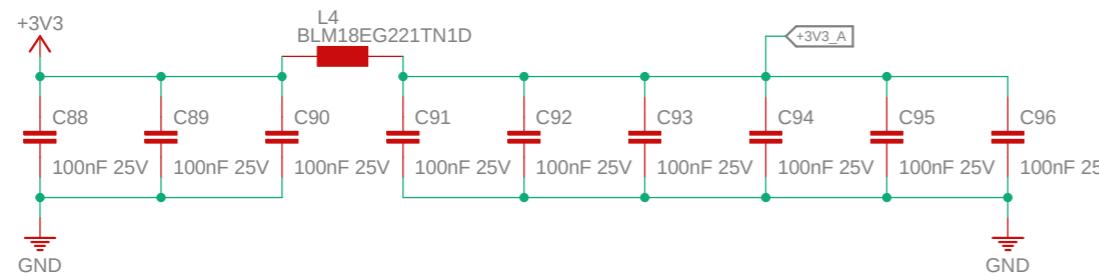
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W5500 ETHERNET CONTROLLER

RJ45-CAT5

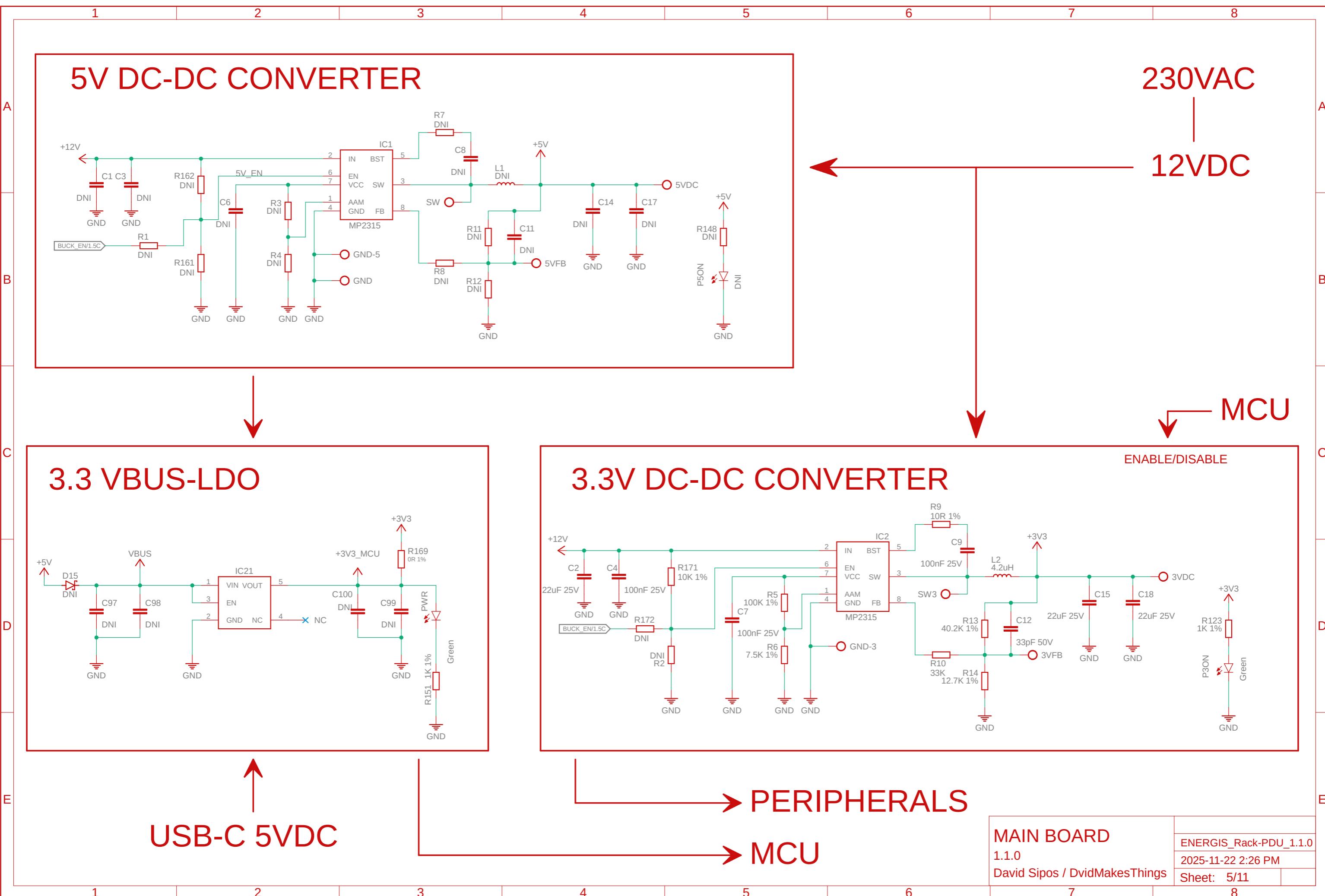


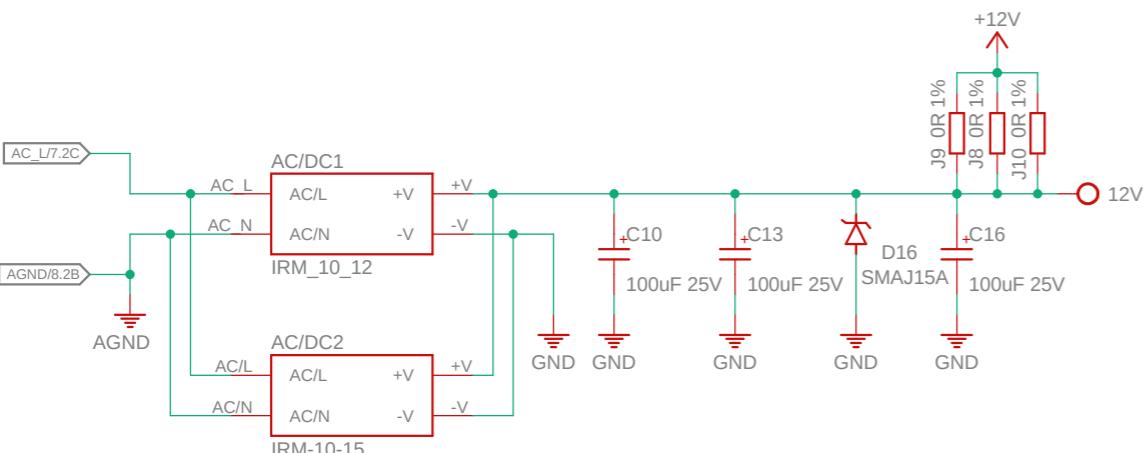
DECOUPLING



MAIN BOARD

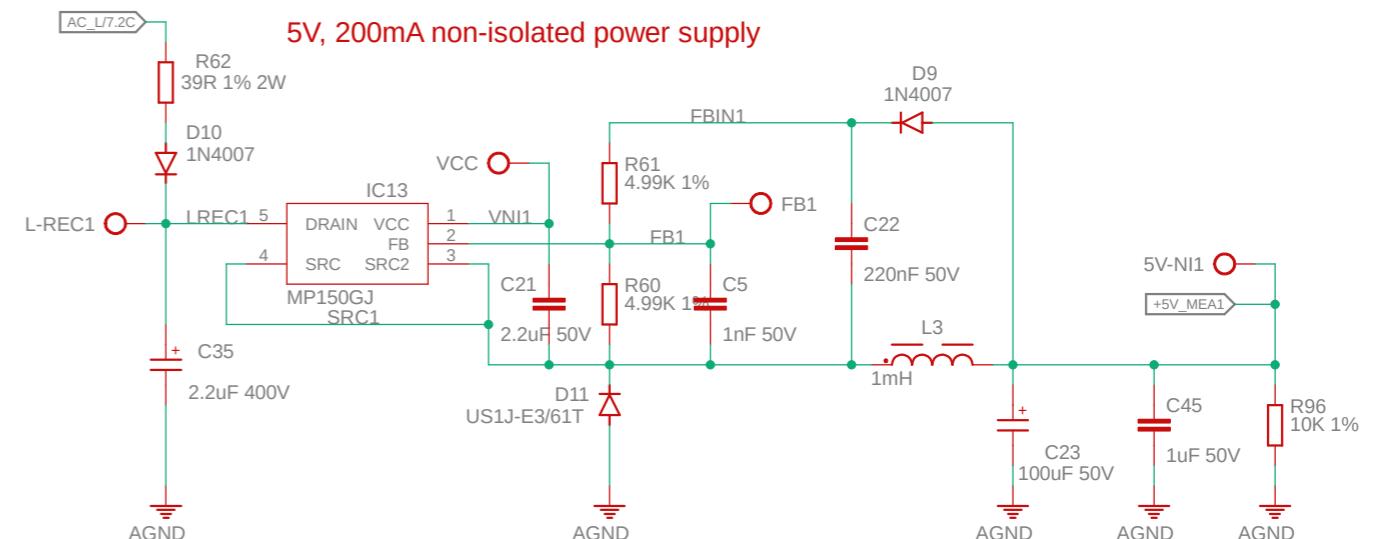
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David Sipos / DvidMakesThings
Sheet: 4/11



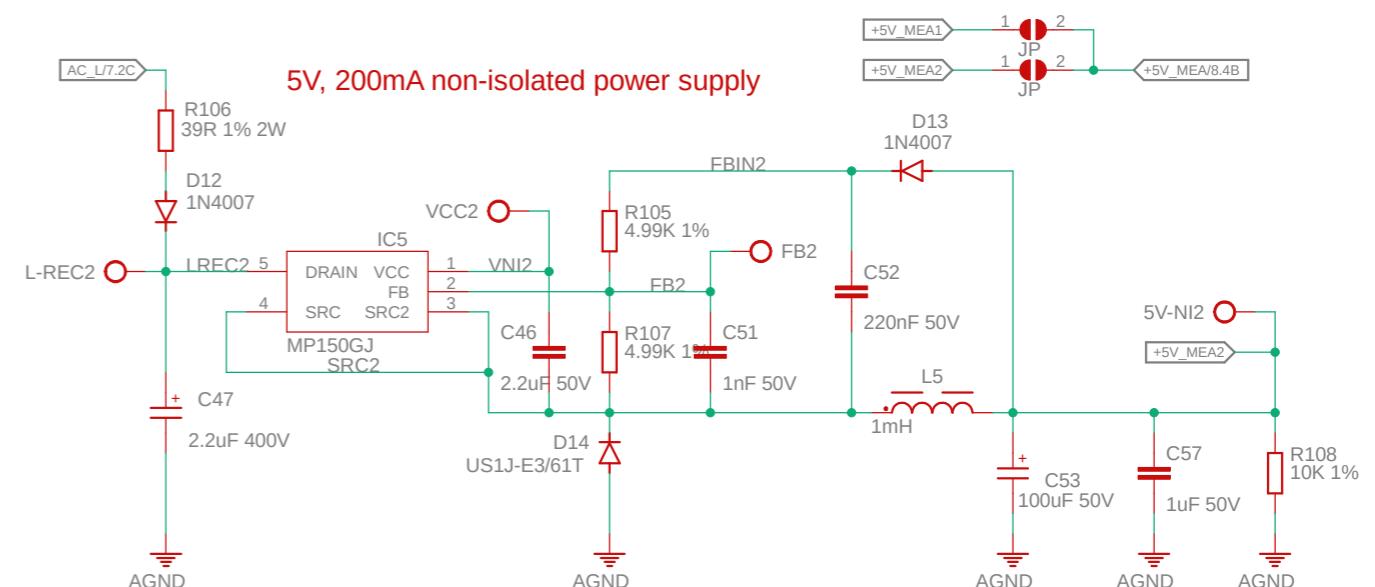
12V - 10W FLYBACK CONVERTER**5V NON-ISOLATED**

Design Note — 12 V supply (Mean Well IRM-10 series), universal 110 V/230 V AC

This schematic uses the Mean Well IRM-10 encapsulated AC-DC module (e.g., IRM-10-12) to produce 12 VDC. The IRM-10 series is specified for a wide input range of 85–305 VAC (47–440 Hz) and 120–430 VDC, meaning it operates from both ~115 VAC and ~230 VAC mains with no selector or changes to the circuit. Safety approvals (IEC/UL/EN 62368-1), Class II construction, and built-in EMI/EMC compliance are provided by the module.



5V, 200mA non-isolated power supply



5V, 200mA non-isolated power supply

AC-INPUT

Design Note — 5 V / 200 mA non-isolated supply (MP150), universal 110 V/230 V AC

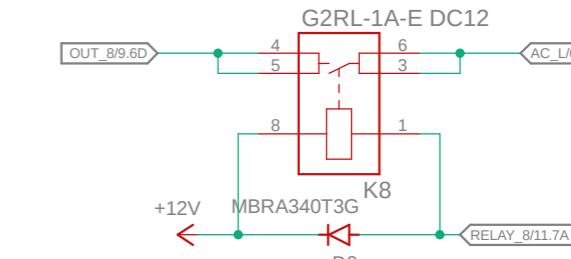
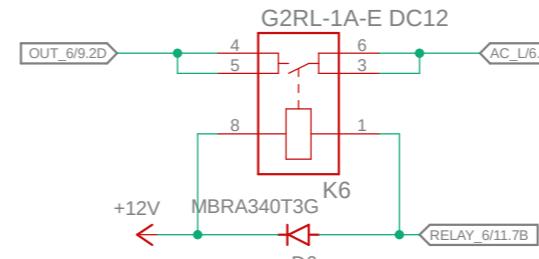
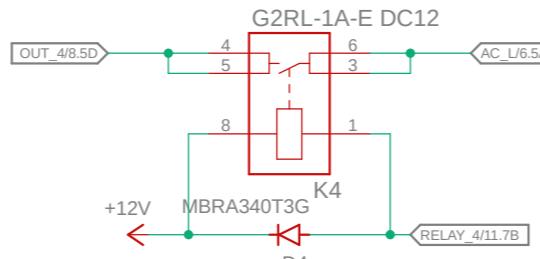
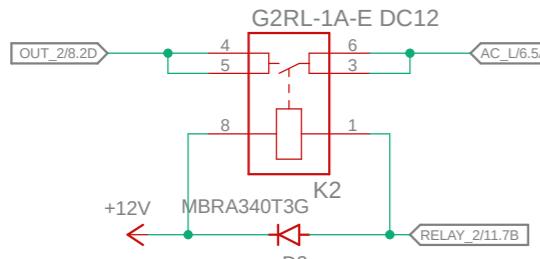
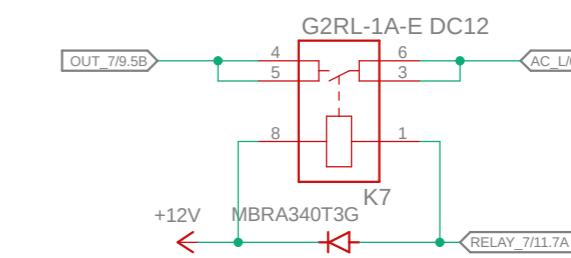
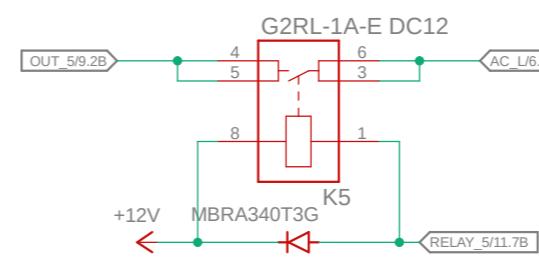
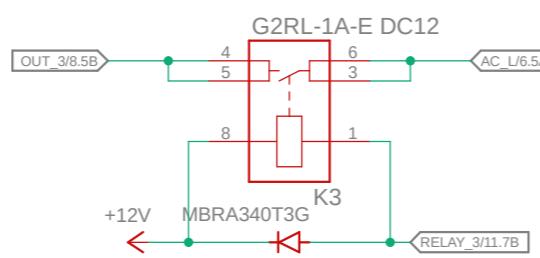
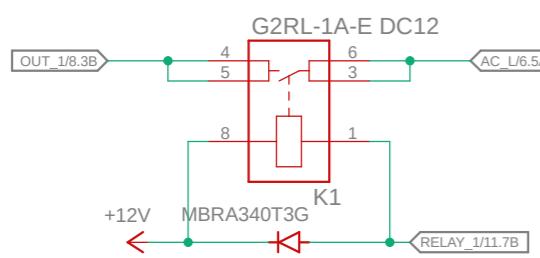
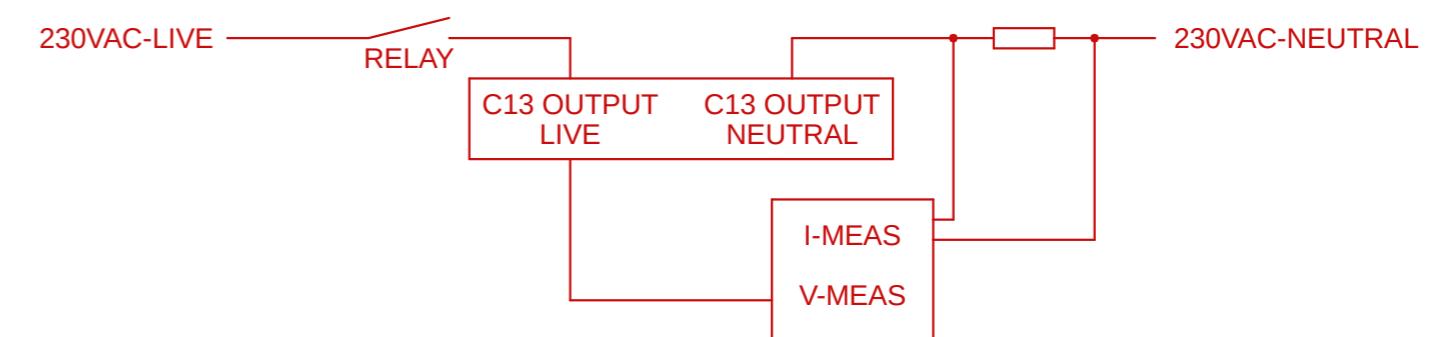
This design uses MPS MP150 in high-side buck to generate 5 V/200 mA directly from rectified mains. MP150 integrates a 500 V MOSFET (Drain-to-Source rating 500 V), covering the ~325 VDC peak from 230 VAC and ~155 VDC from 115 VAC, so the circuit from 85–265 VAC ("universal input").

MAIN BOARD

1.1.0
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Sheet: 6/11

1 2 3 4 5 6 7 8

A OUTPUT RELAYS



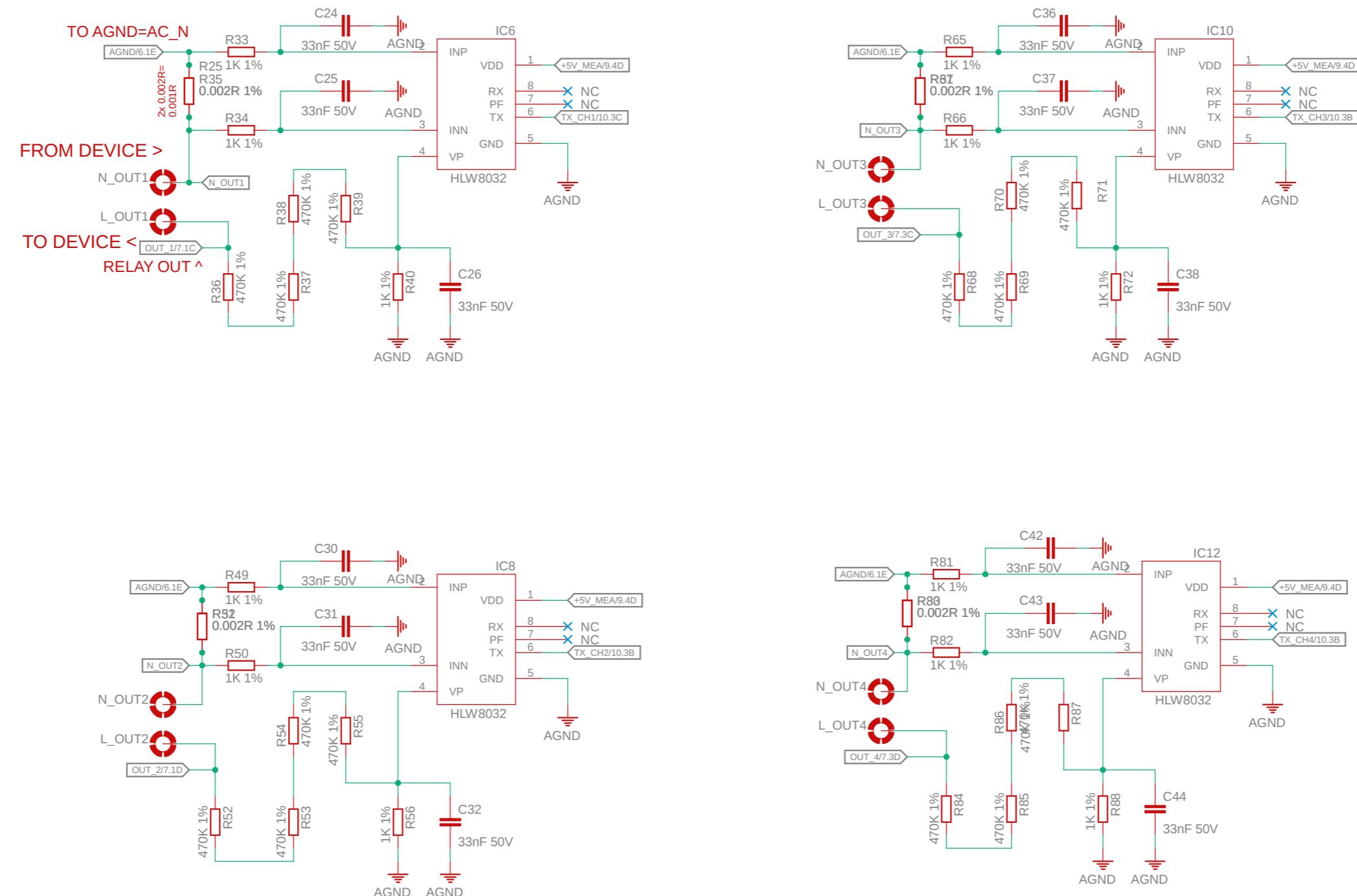
MAIN BOARD

1.1.0
2025-11-22 2:26 PM
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Sheet: 7/11

ENERGIS_Rack-PDU_1.1.0
2025-11-22 2:26 PM
Sheet: 7/11

1 2 3 4 5 6 7 8

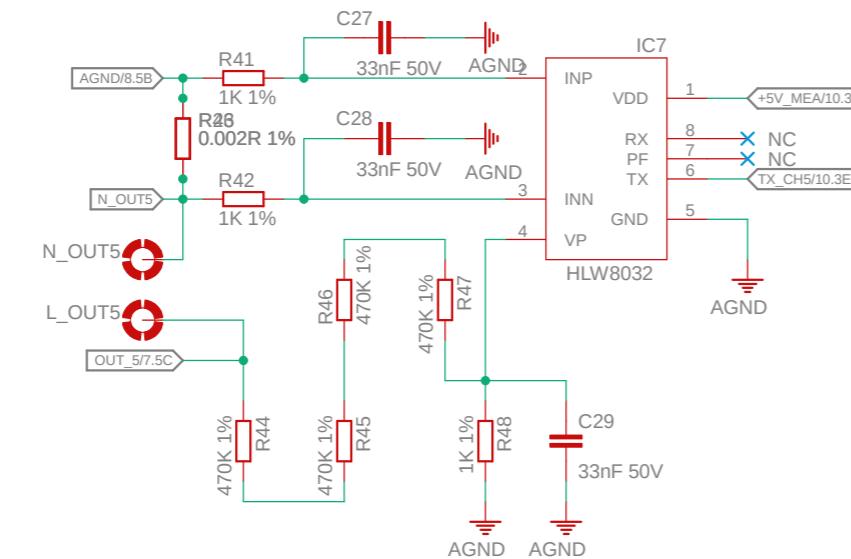
AC CHANNEL MEASUREMENT



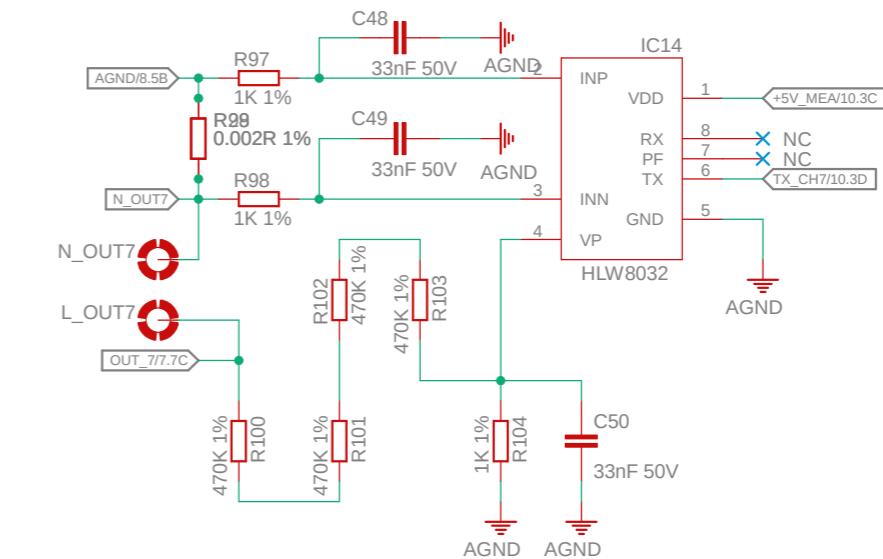
MAIN BOARD	
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David Sipos / DvidMakesThings	
Sheet: 8/11	

AC CHANNEL MEASUREMENT

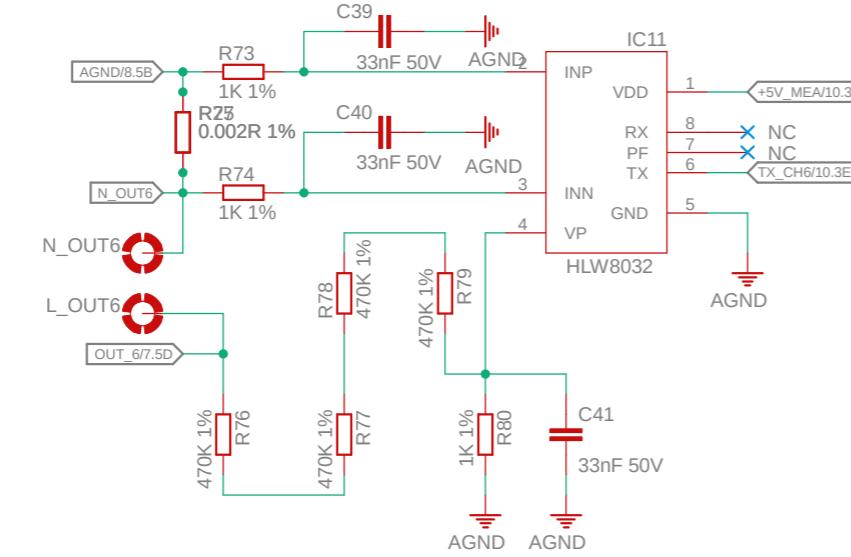
A



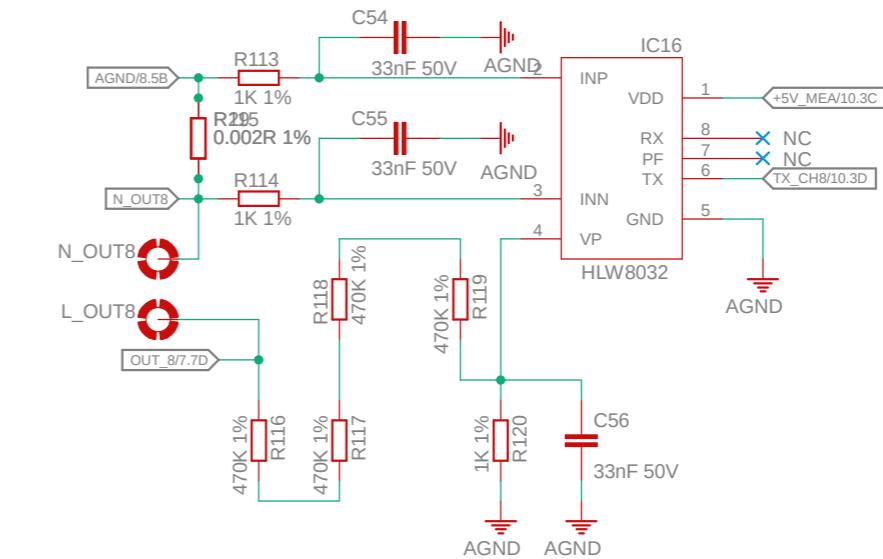
B



C



D



E

MAIN BOARD

1.1.0

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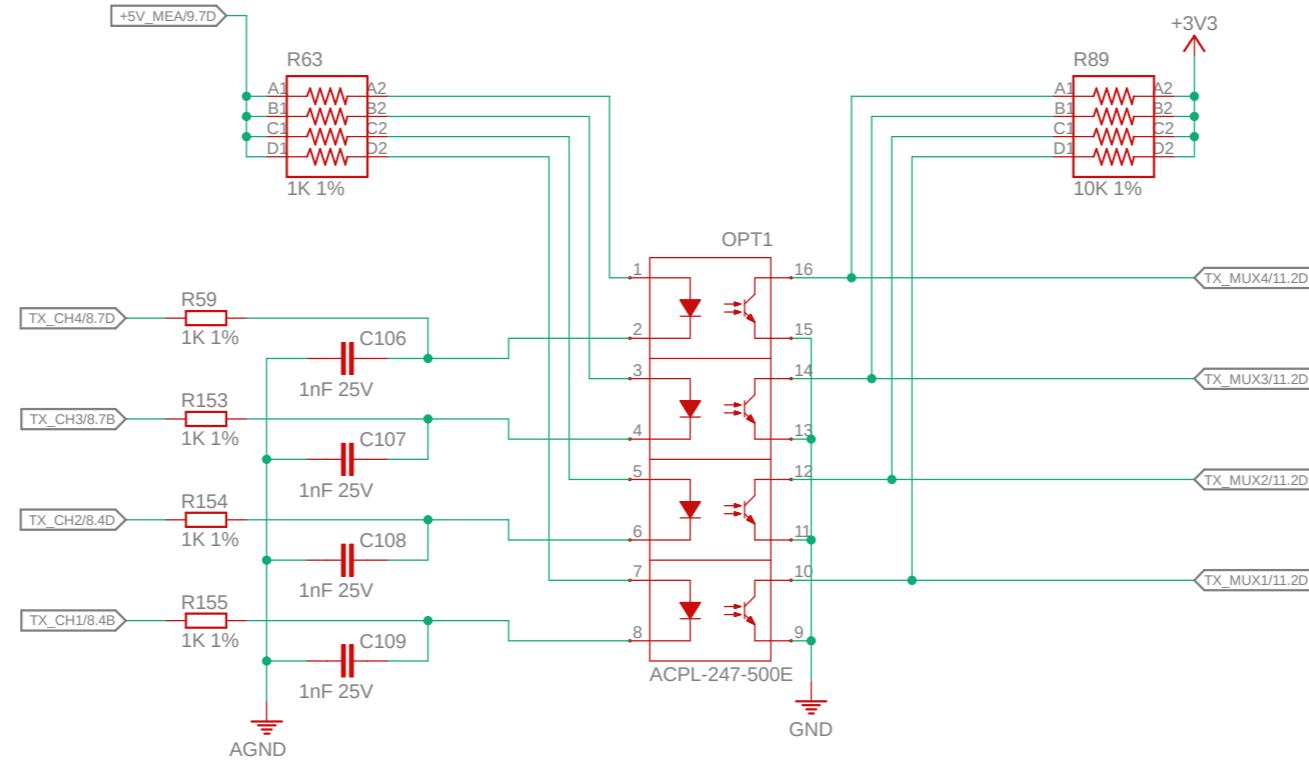
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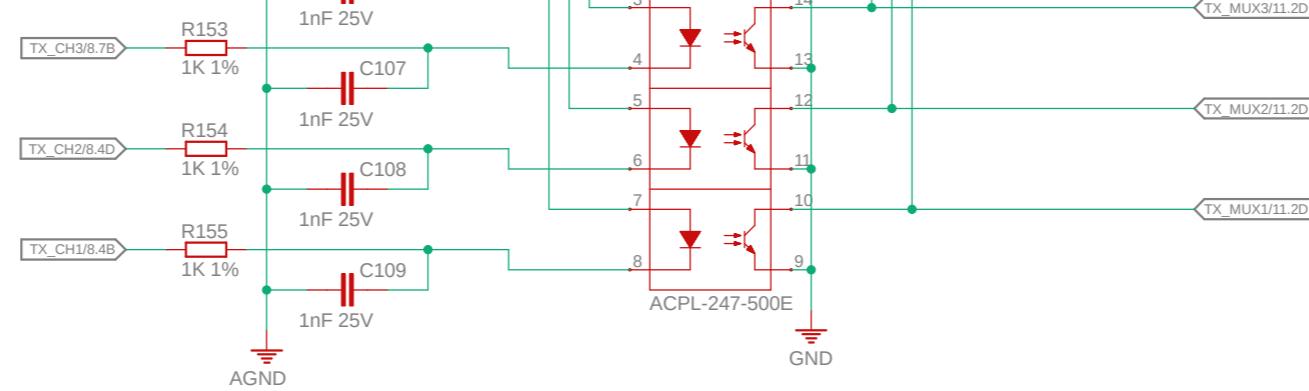
SERIAL OPTOISOLATOR

A



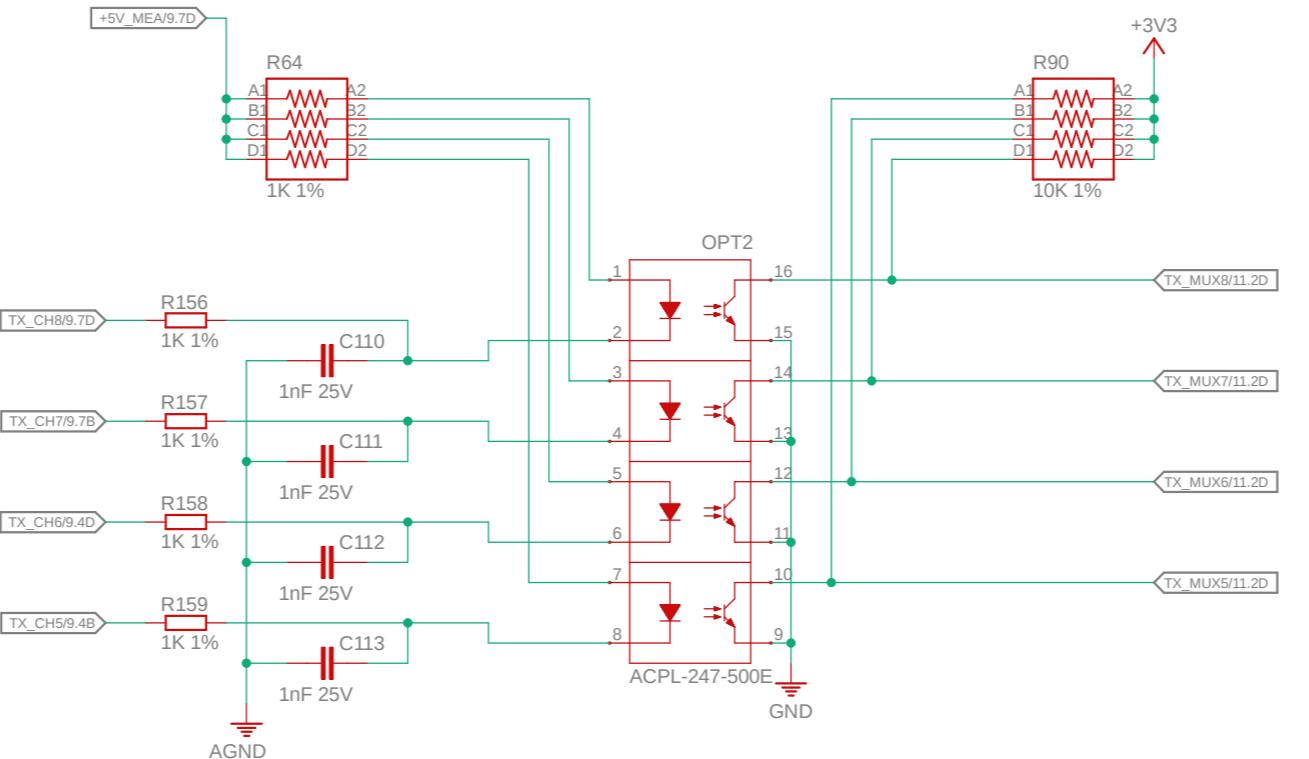
A

B



B

C



C

D

E

MAIN BOARD

1.1.0

David Sipos / DvidMakesThings

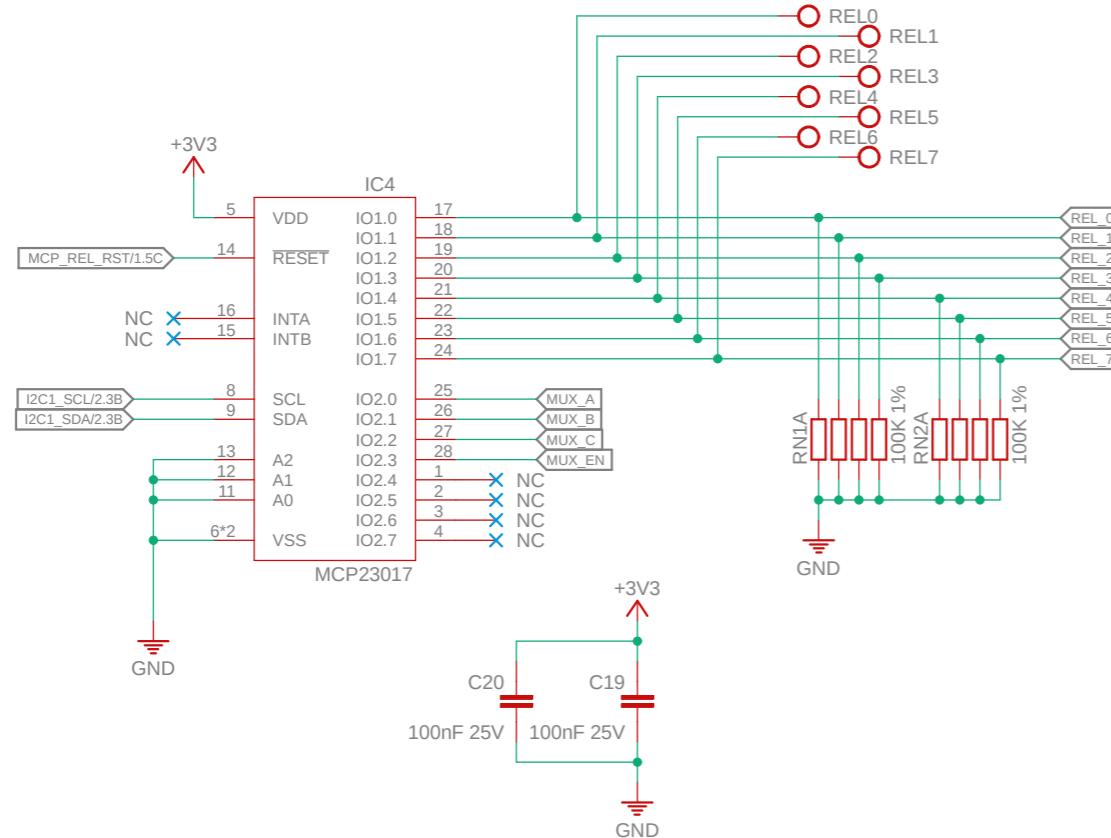
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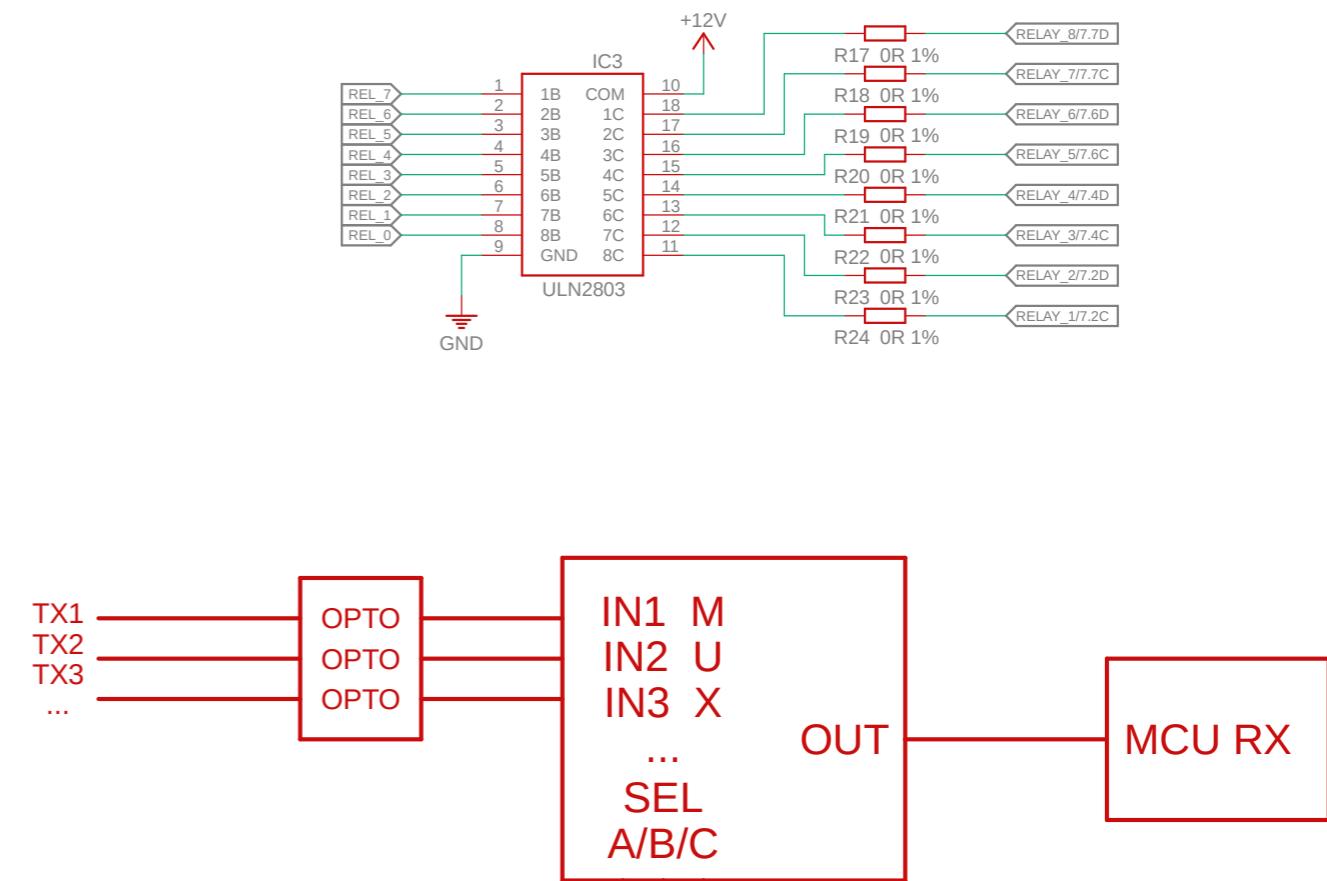
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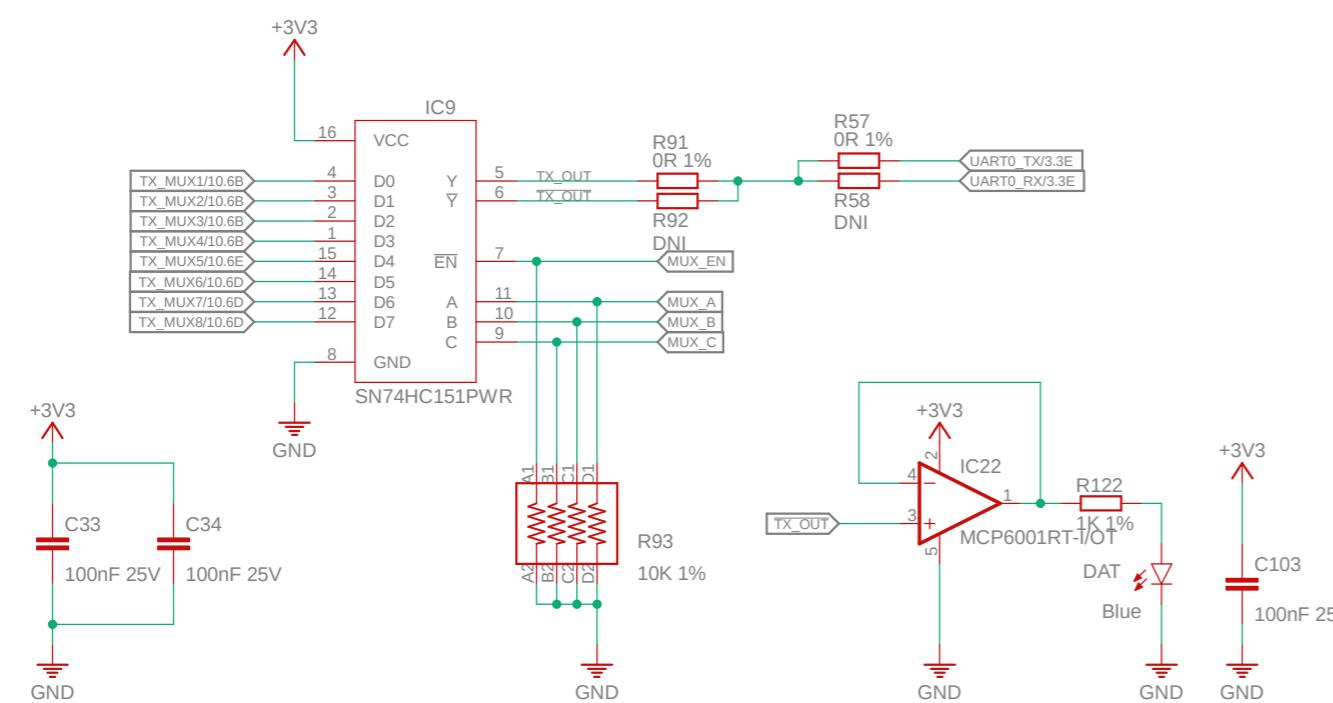
IO DRIVER



ULN2803 RELAY DRIVER



SERIAL MUX



MAIN BOARD

1.1.0
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Sheet: 11/11

ENERGIS_Rack-PDU_1.1.0

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1 2 3 4 5 6 7 8