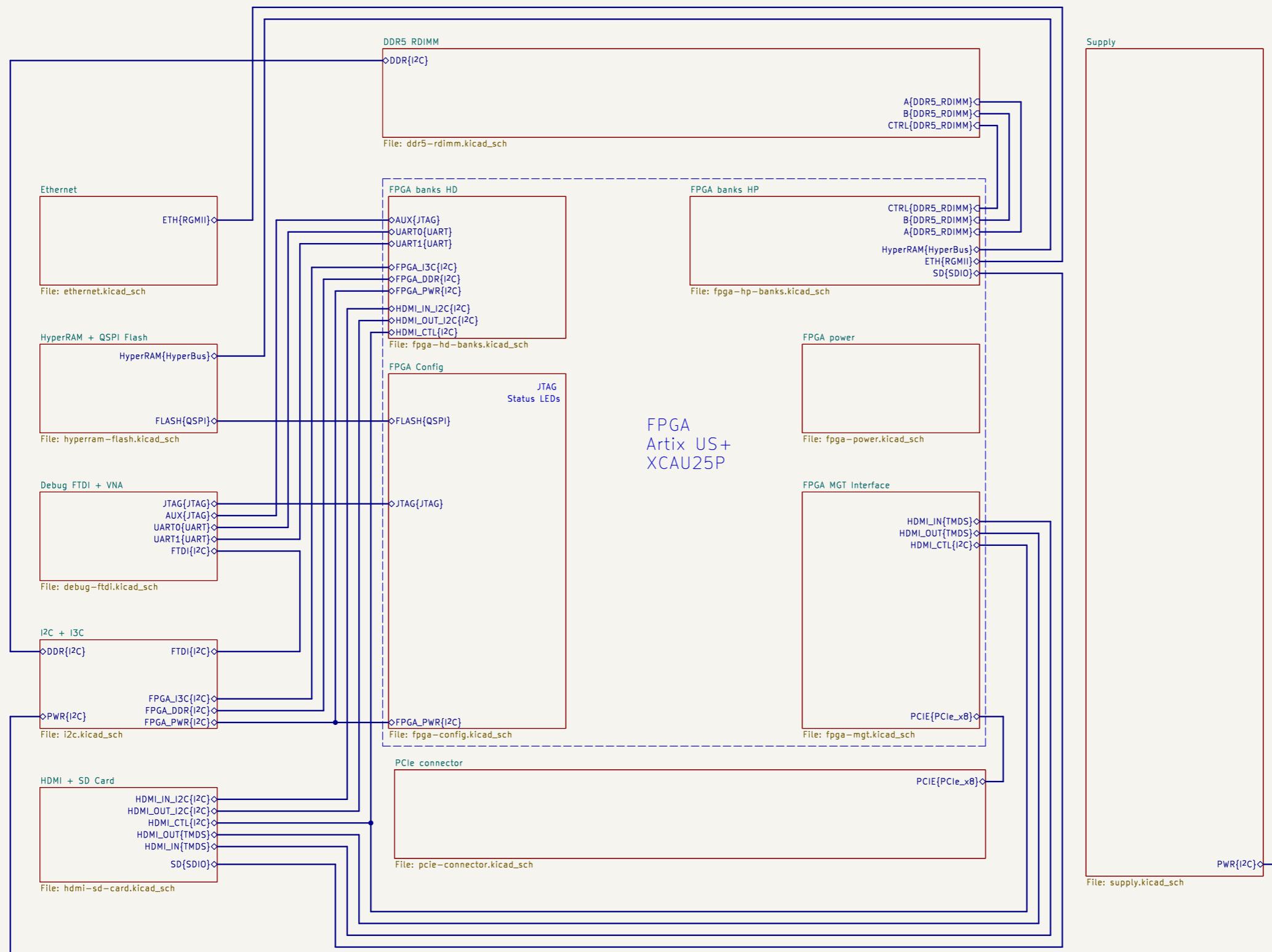


# RDIMM DDR5 Tester



## Mechanical



Antmicro  
www.antmicro.com

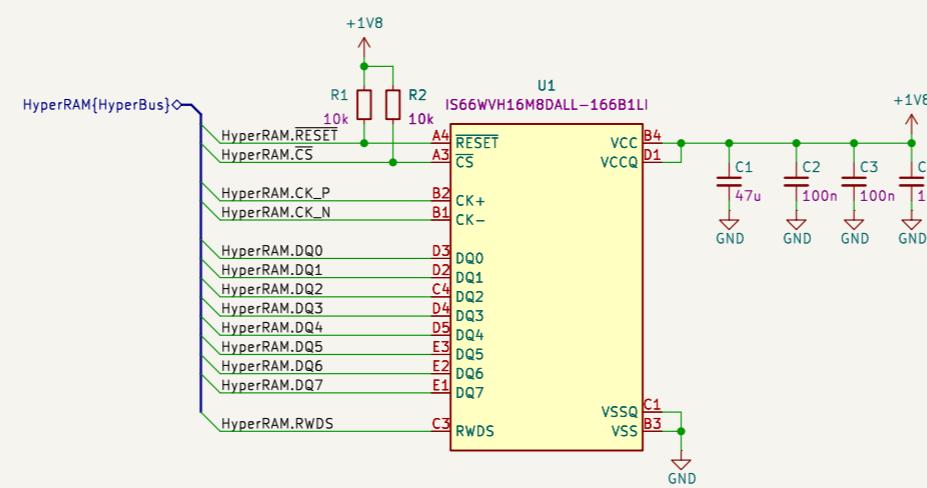
Sheet: /  
File: data-center-rdimm-ddr5-tester.kicad\_sch

**Title: RDIMM DDR5 Tester**

Size: A3 | Date: 2024-12-20  
KiCad E.D.A. 8.0.7

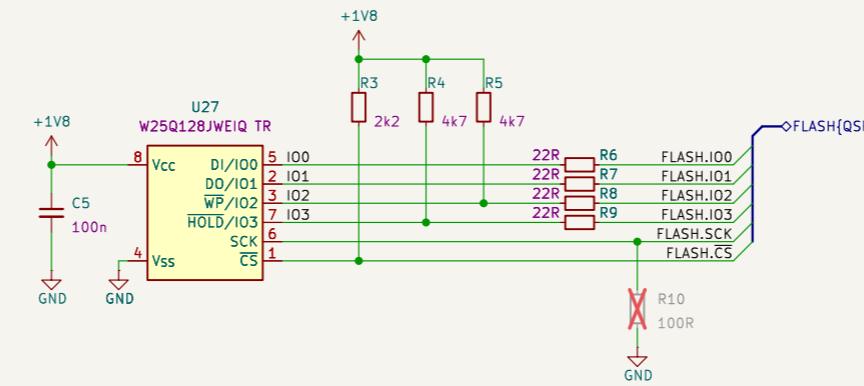
Rev: 2.1.0 | Id: 1/17

# HyperRAM

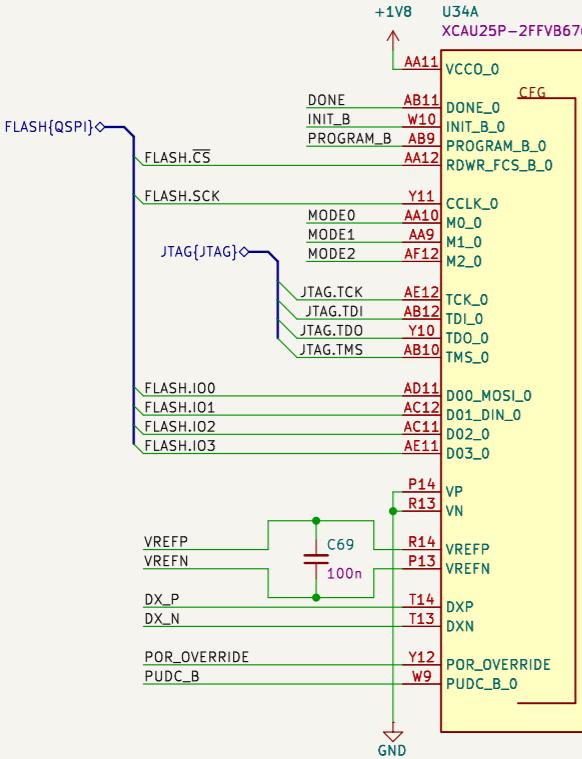


# (Q)SPI flash

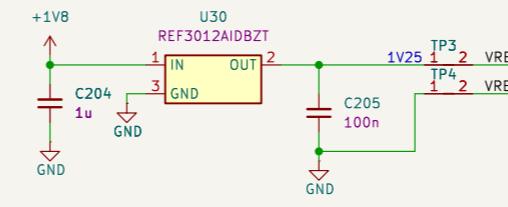
Master SPI Quad (x4) configuration scheme  
Follows FPGAs Configuration User Guide UG570



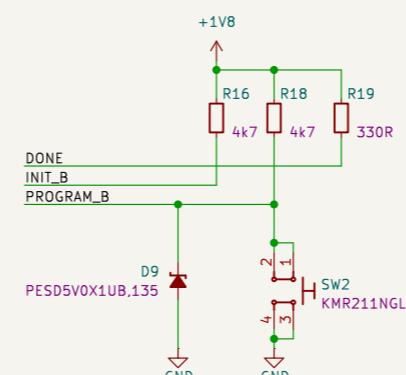
## FPGA BANK 0



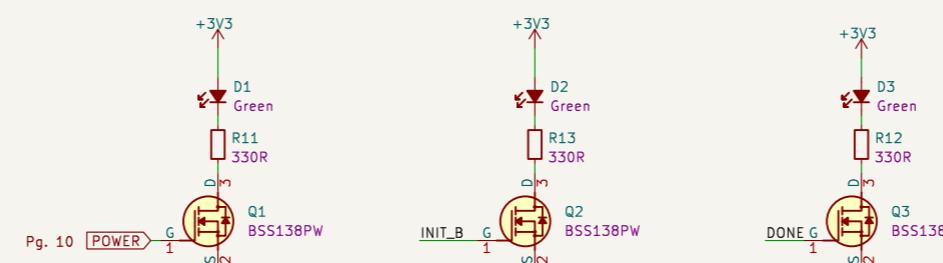
## LDO



## Pull-ups

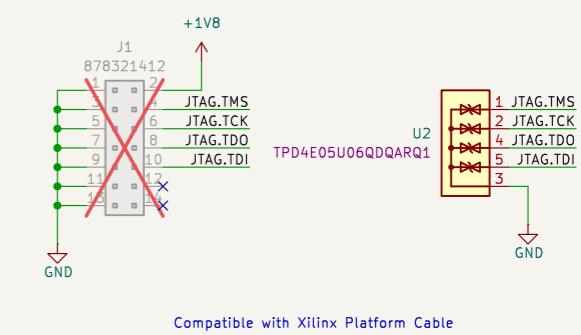


## STATUS LEDs

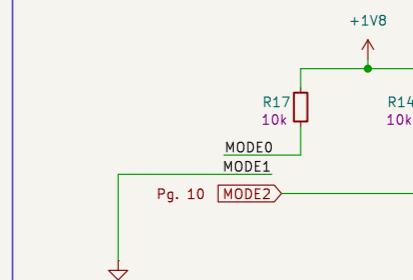


## JTAG Connector

## Probes



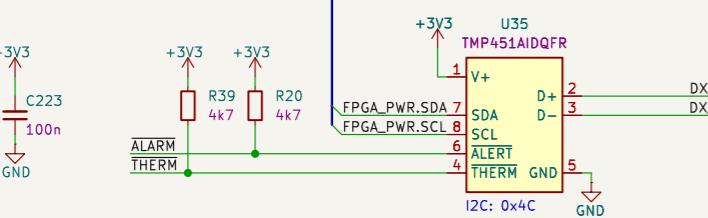
## Configuration Modes



Config. mode	MODE[2:0]
Master Serial	000
Master SPI	001
Master BPI	010
Master SelectMAP	100
JTAG	101
Slave SelectMAP	110
Slave Serial	111

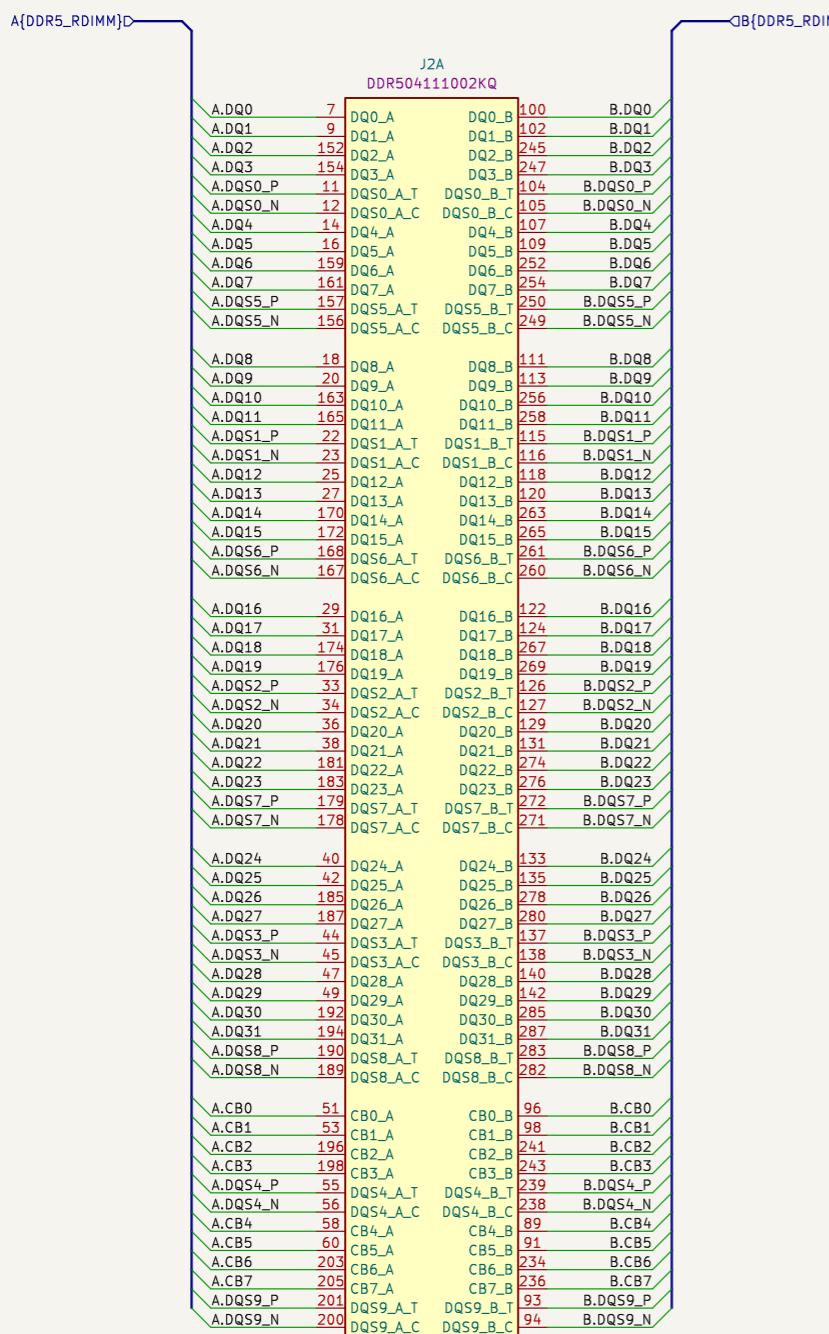
For details, see UG570

## Temp sensor



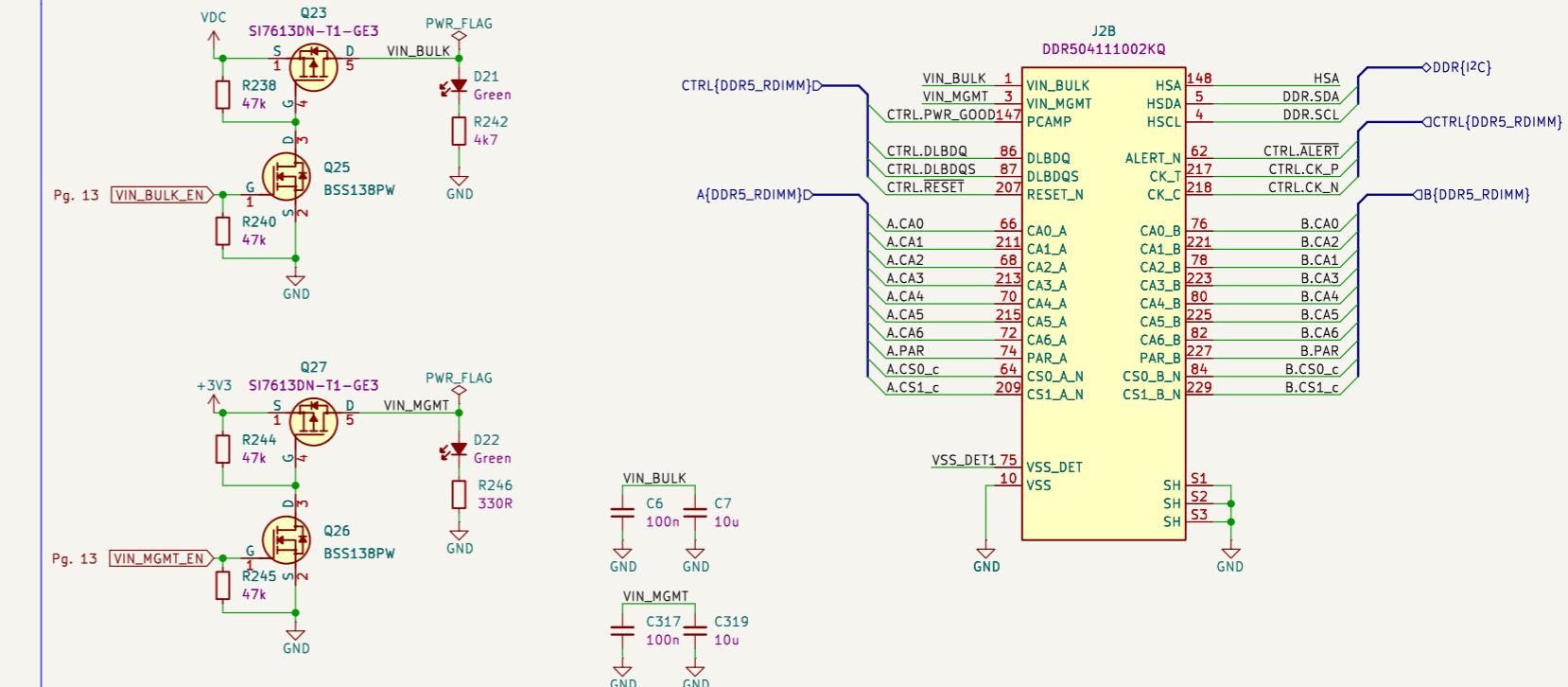
# DDR5 RDIMM connector

Subchannel A

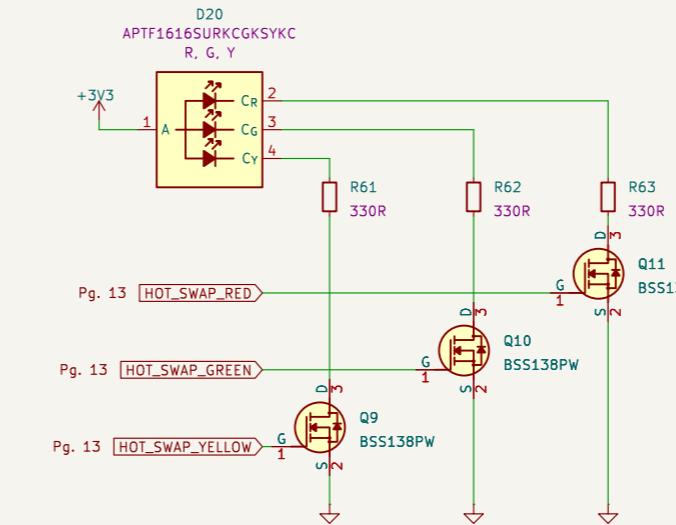


Subchannel B

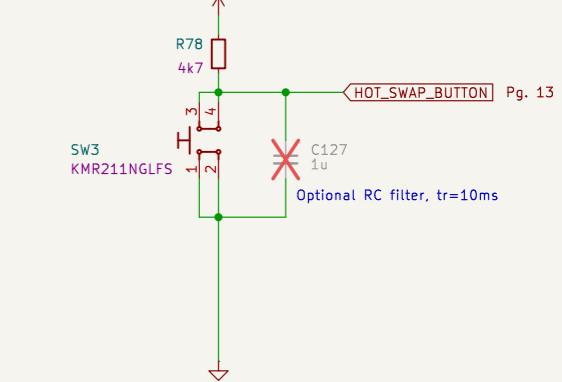
## Power, address command and control



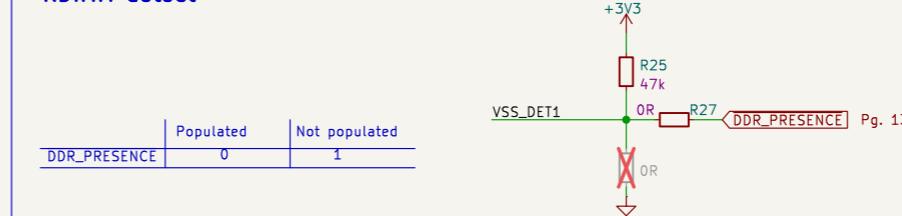
## HOT SWAP status LED



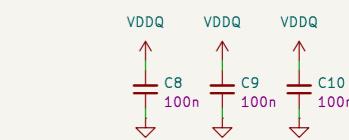
## HOT SWAP eject button



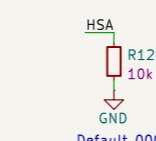
## RDIMM detect



## Plane decoupling



## Serial adress select



Antmicro

[www.antmicro.com](http://www.antmicro.com)

Antmicro Ltd.

Sheet: /DDR5 RDIMM/

File: ddr5-rdimm.kicad\_sch

Title: RDIMM DDR5 Tester

Size: A3 Date: 2024-12-20

KiCad E.D.A. 8.0.7

Rev: 2.1.0

Id: 4/17

1

2

3

4

5

6

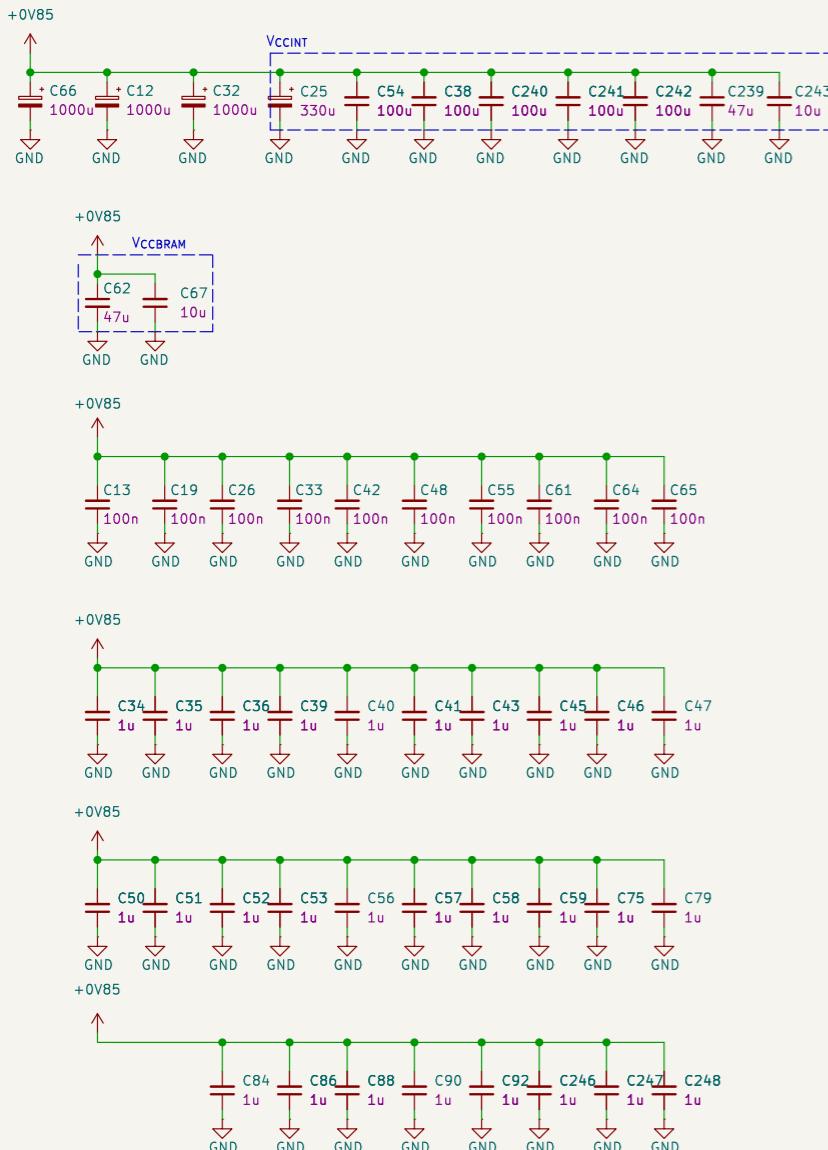
7

8

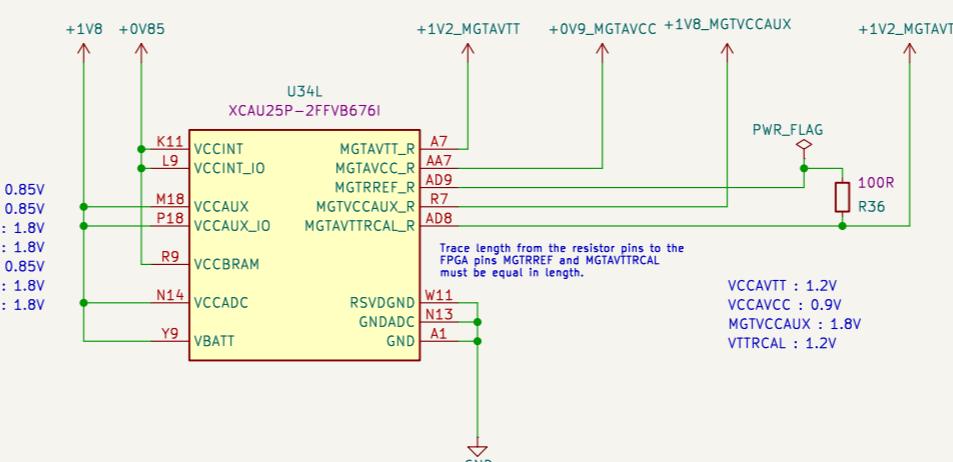
## FPGA Power rails

Bank marked by dashed line  
referenced from US+ Series FPGAs  
PCB Design Guide UG583  
(AUP25P+ XCKU5P FFVB Package worst case)  
MGT decoupling marked by dashed line  
referenced from US+ Series FPGAs  
PCB Design Guide UG576  
(AUP25P+ XCKU5P FFVB Package worst case)

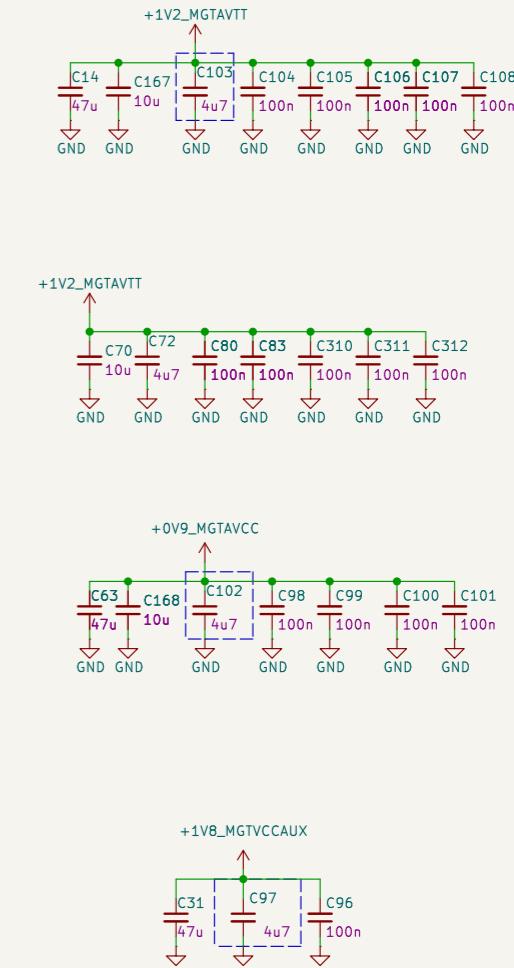
### VCCINT decoupling



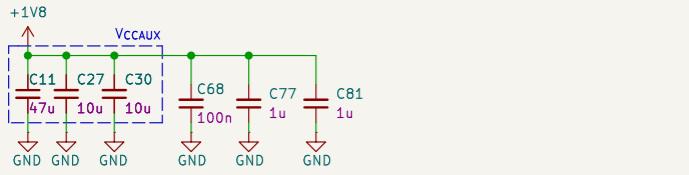
## FPGA



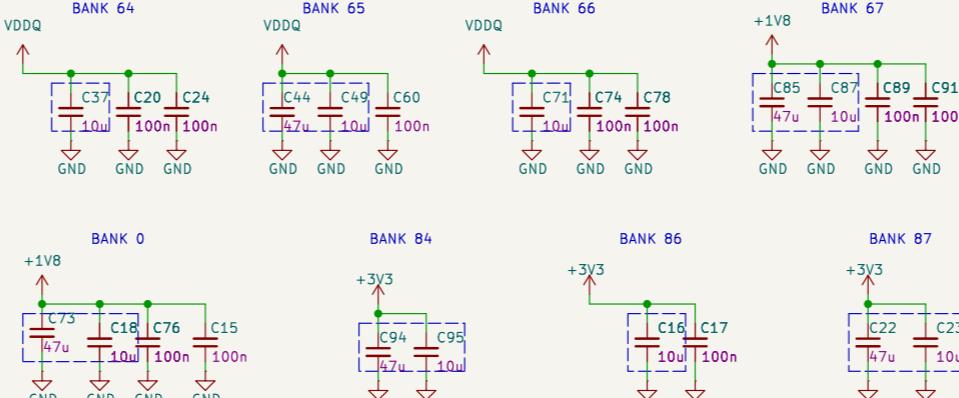
### MGT decoupling



### VCCINT decoupling



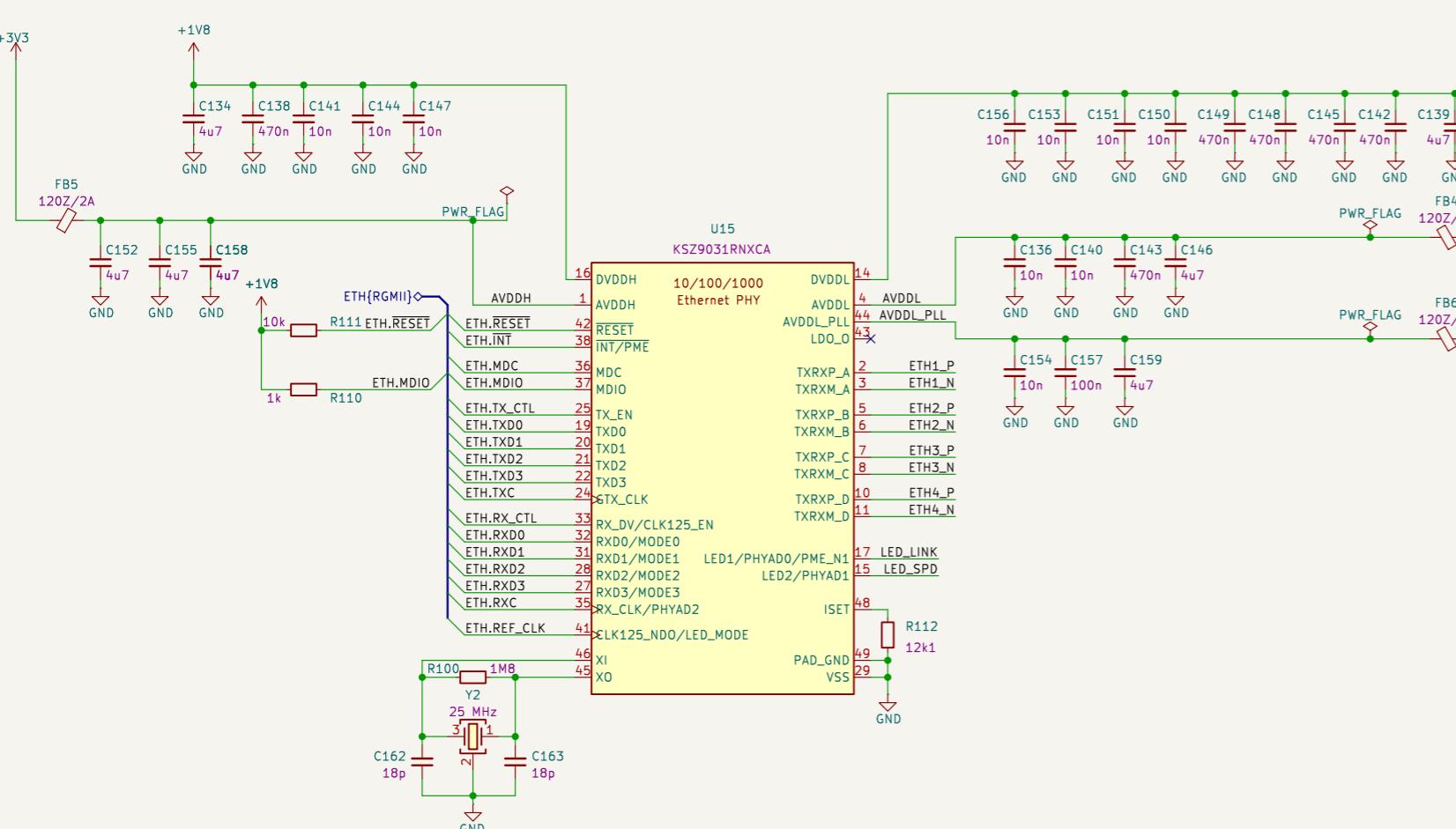
### Bank decoupling



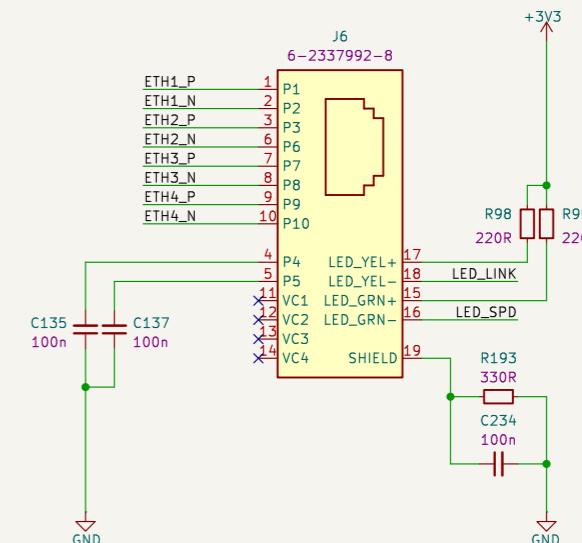


# Gigabit Ethernet

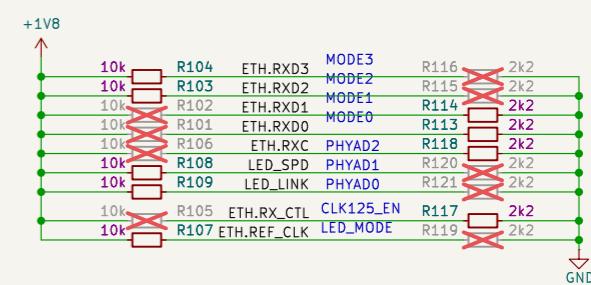
## Ethernet PHY



## RJ45 connector

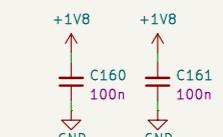


## Bootstrap configuration



MODE[3:0] : 1100 (RMII mode – Advertise 1000BASE-T full-duplex only)  
PHYAD[4:0]: 00011  
CLK125\_EN: 0, disabled  
LED\_MODE: 1, Single LED mode

## Reference plane decoupling



Antmicro  
[www.antmicro.com](http://www.antmicro.com)

Sheet: /Ethernet/  
File: ethernet.kicad\_sch

Title: RDIMM DDR5 Tester

Size: A3 Date: 2024-12-20  
KiCad E.D.A. 8.0.7

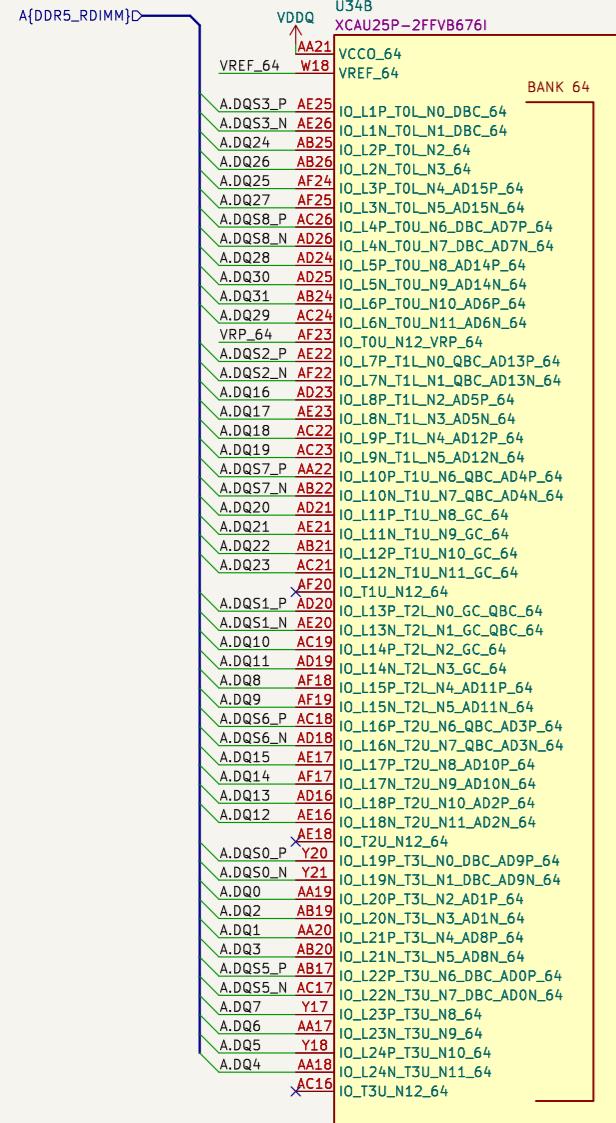
Rev: 2.1.0  
Id: 8/17

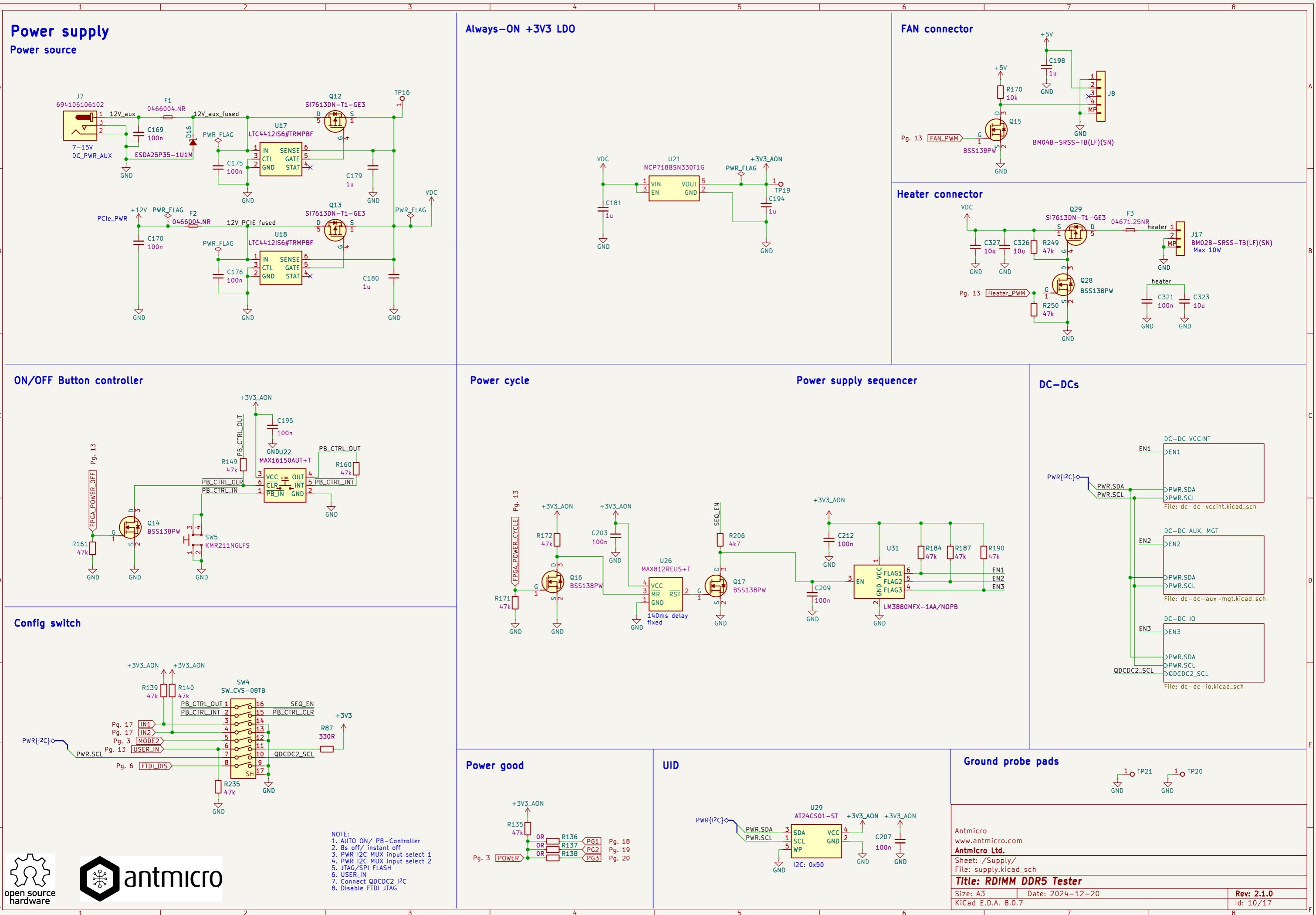


# HP Banks

VCCO (HP banks) max: 1.9V

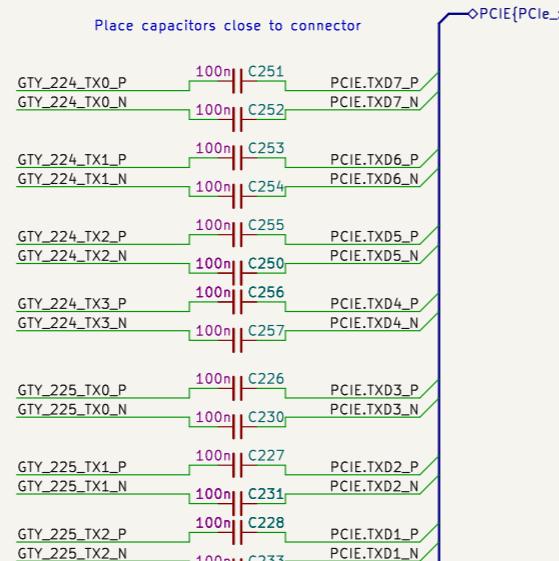
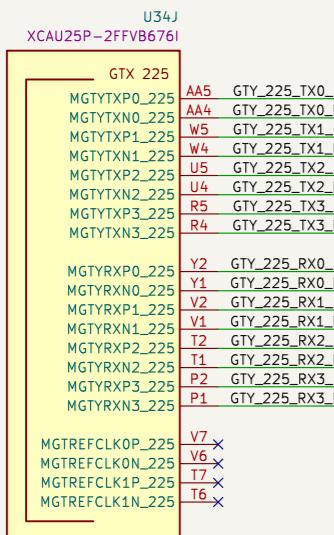
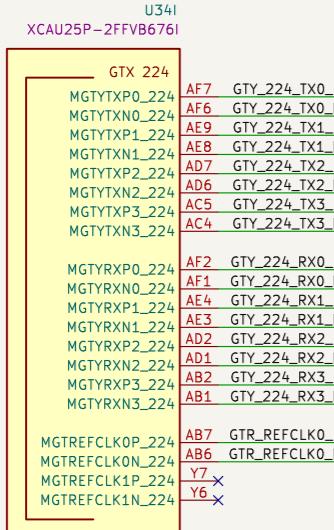
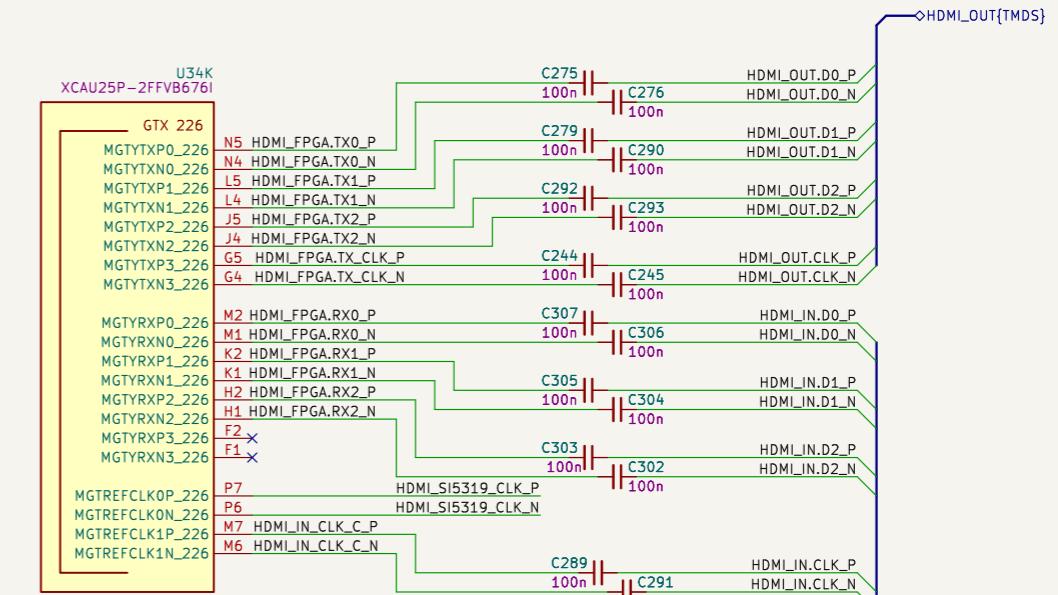
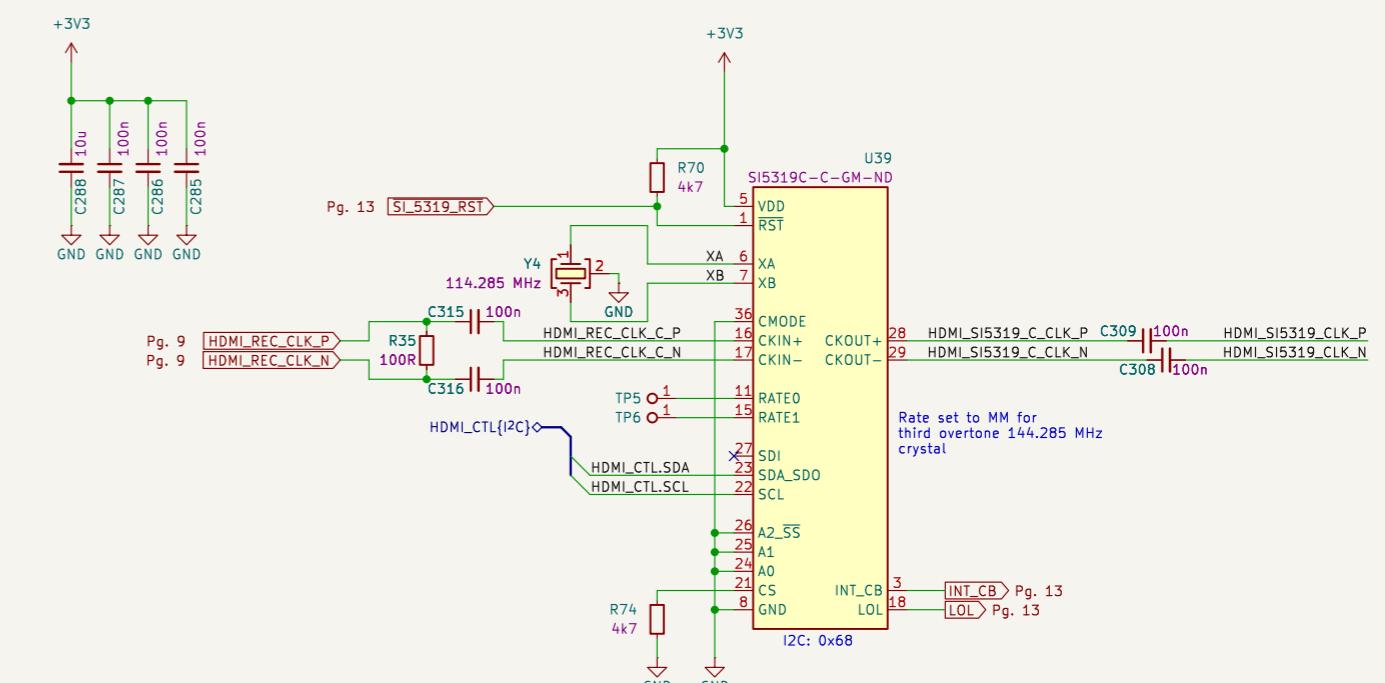
A





**MGT Interface**

PCIe 3.0 x8

**HDMI****Clock multiplier**

Antmicro  
www.antmicro.com

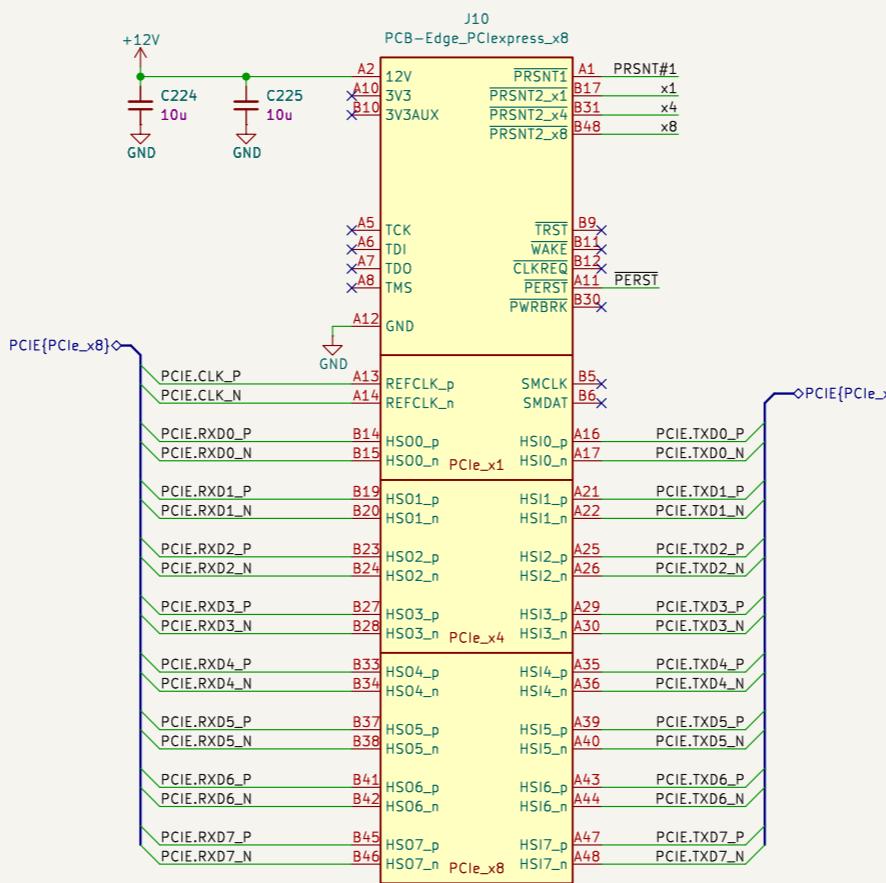
Sheet: /FPGA MGT Interface/  
File: fpga-mgt.kicad\_sch

**Title: RDIMM DDR5 Tester**

Size: A3 Date: 2024-12-20  
KiCad E.D.A. 8.0.7

Rev: 2.1.0  
Id: 11/17

# PCIe



Antmicro  
www.antmicro.com

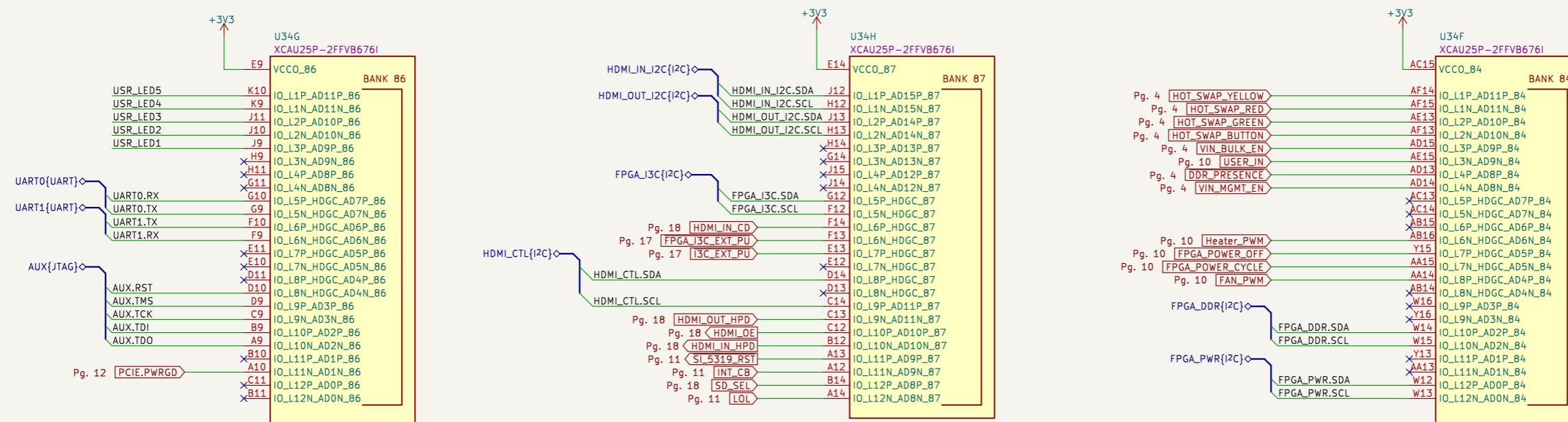
Sheet: /PCIe connector/  
File: pcie-connector.kicad\_sch

**Title: RDIMM DDR5 Tester**

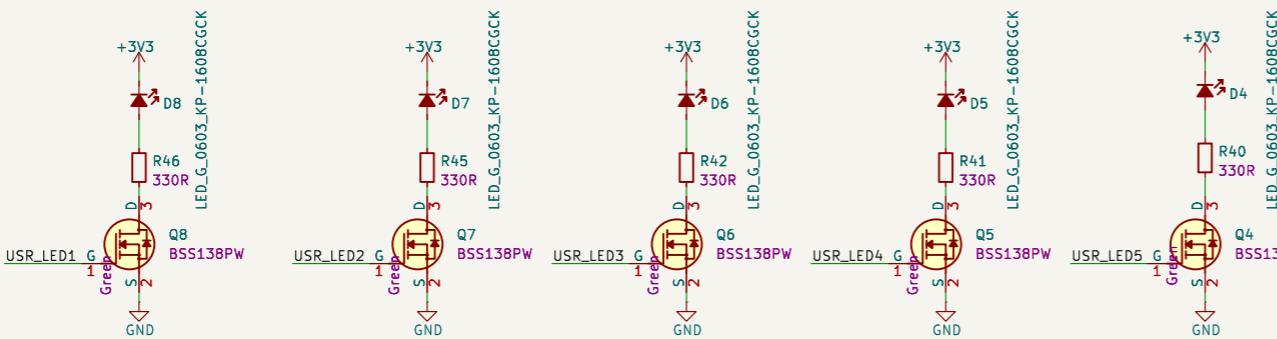
Size: A3 | Date: 2024-12-20  
KiCad E.D.A. 8.0.7

Rev: 2.1.0 | Id: 12/17

# BANKS HD



## User LEDs



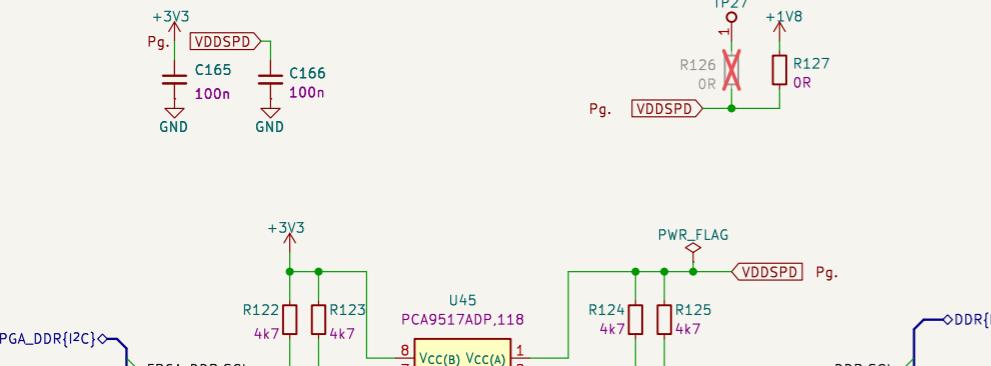
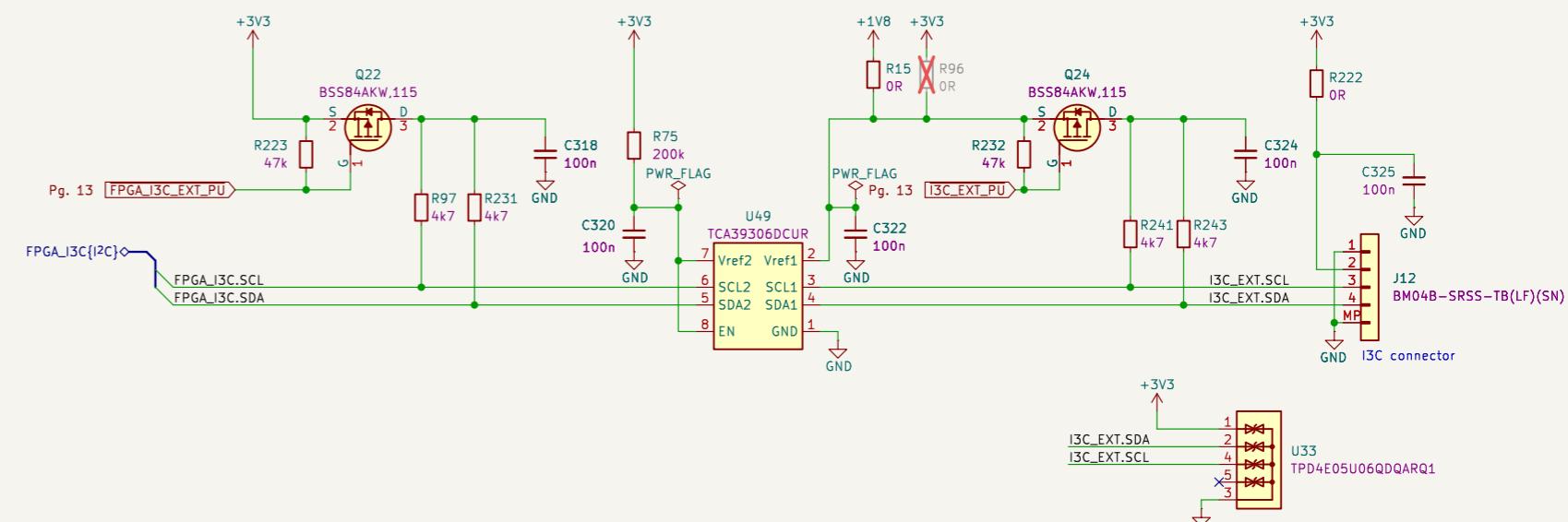
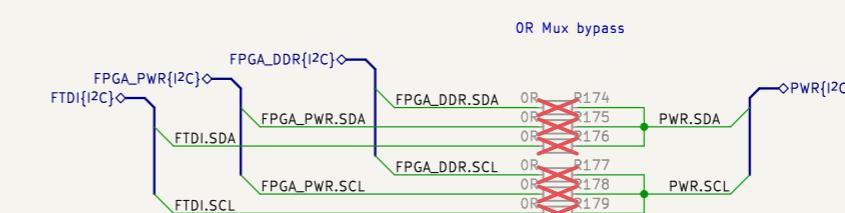
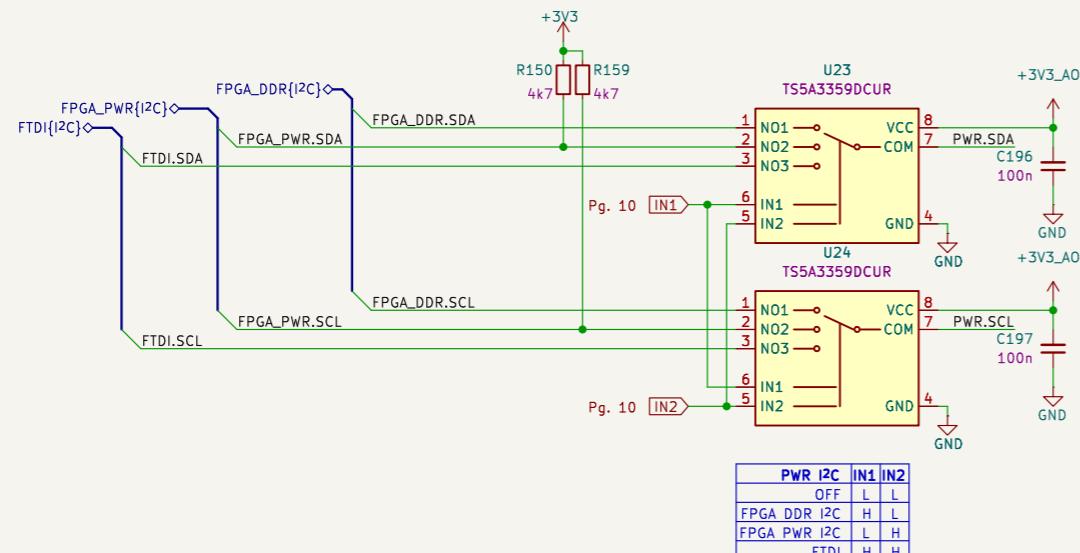
Antmicro  
www.antmicro.com

Sheet: /FPGA banks HD/  
File: fpga-hd-banks.kicad\_sch

Title: RDIMM DDR5 Tester

Size: A3 Date: 2024-12-20  
KiCad E.D.A. 8.0.7

Rev: 2.1.0  
Id: 13/17

I<sup>2</sup>CI<sup>3</sup>CPWR I<sup>2</sup>C MUX

Antmicro  
www.antmicro.com

Sheet: /I<sup>2</sup>C + I<sup>3</sup>C/  
File: i2c.kicad\_sch

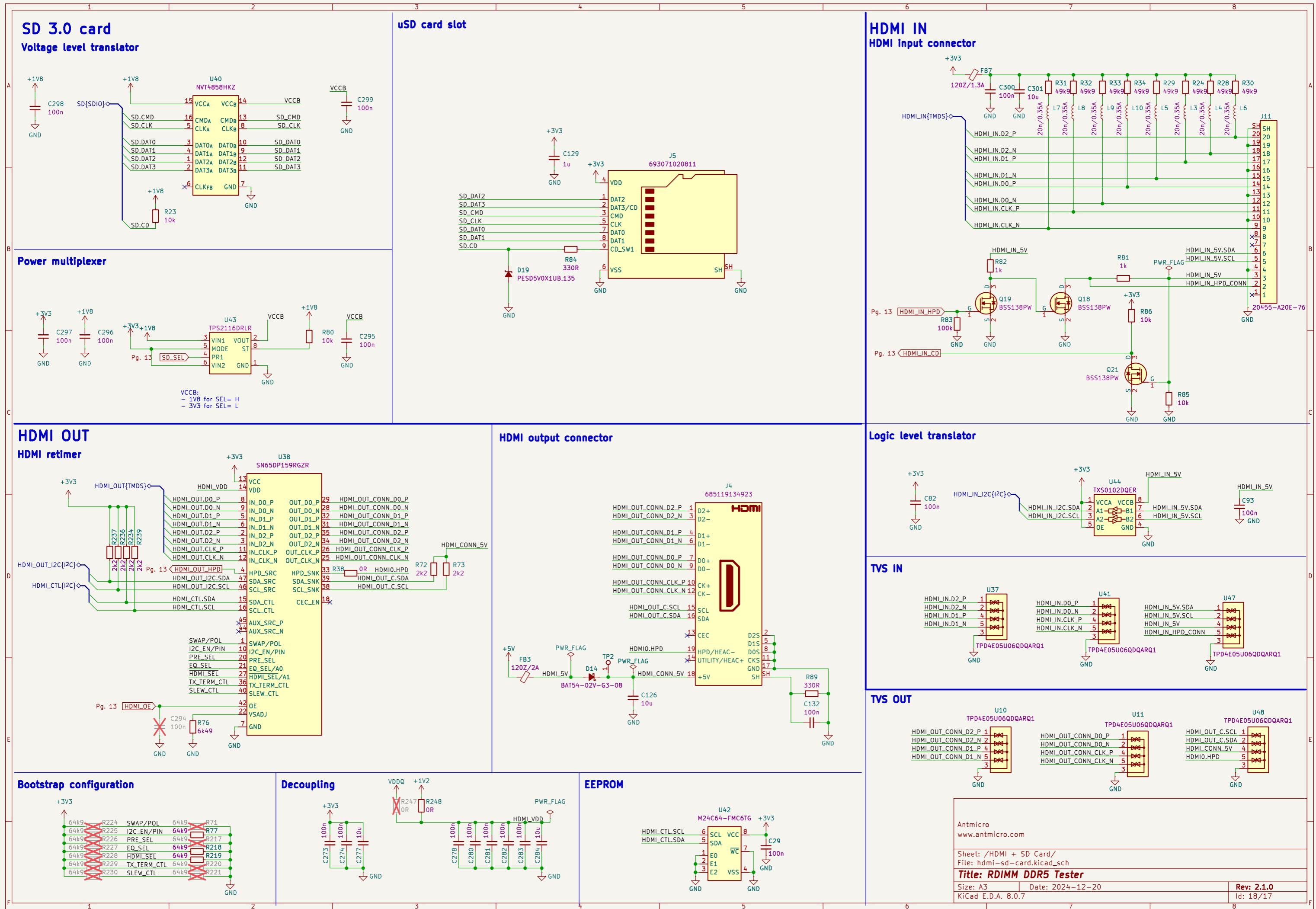
Title: RDIMM DDR5 Tester

Size: A3 Date: 2024-12-20

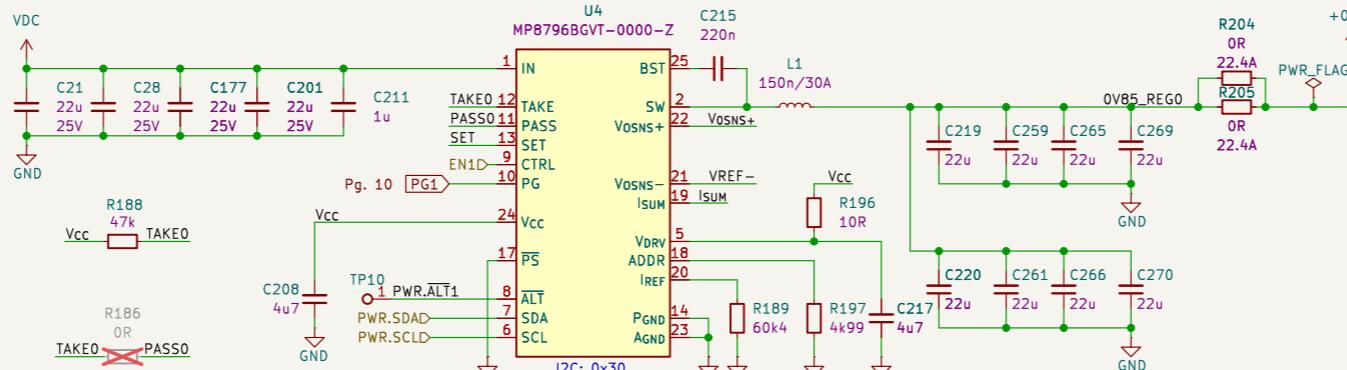
KiCad E.D.A. 8.0.7

Rev: 2.1.0

Id: 17/17



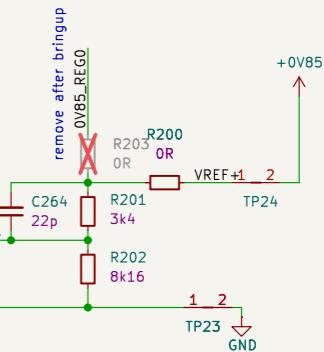
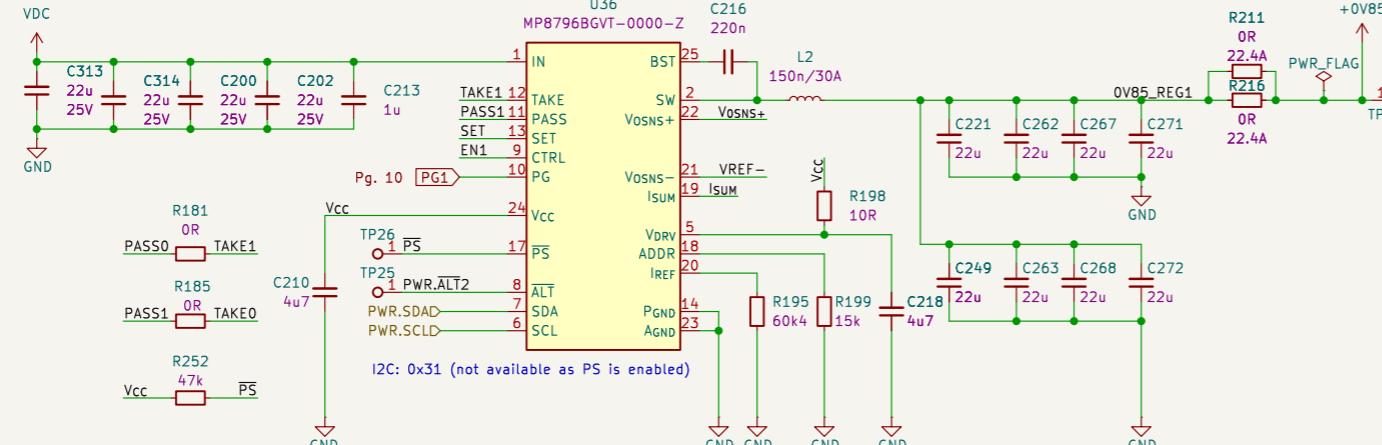
# DC-DC INT



MP8796BGVT-0000-Z selected due to its wide availability on the market  
Replace with MPQ8655GVT when it becomes available on the market

Pin compatible PN: MPQ8645P, MPQ8655GVT

Second phase is for VCCINT > 20A applications  
Do Not Populate if not required  
(place R188 instead)



Antmicro  
www.antmicro.com

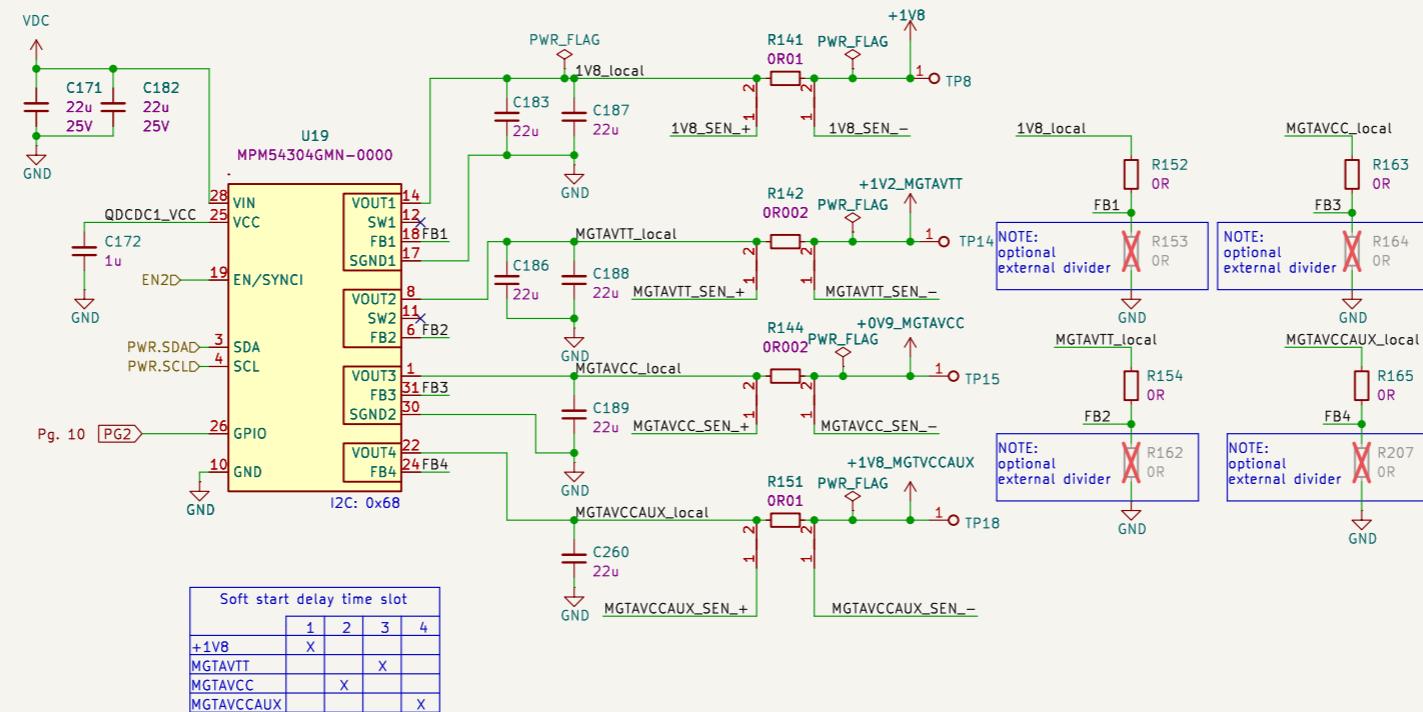
Sheet: /Supply/DC-DC\_VCCINT/  
File: dc-dc-vccint.kicad\_sch

Title: RDIMM DDR5 Tester

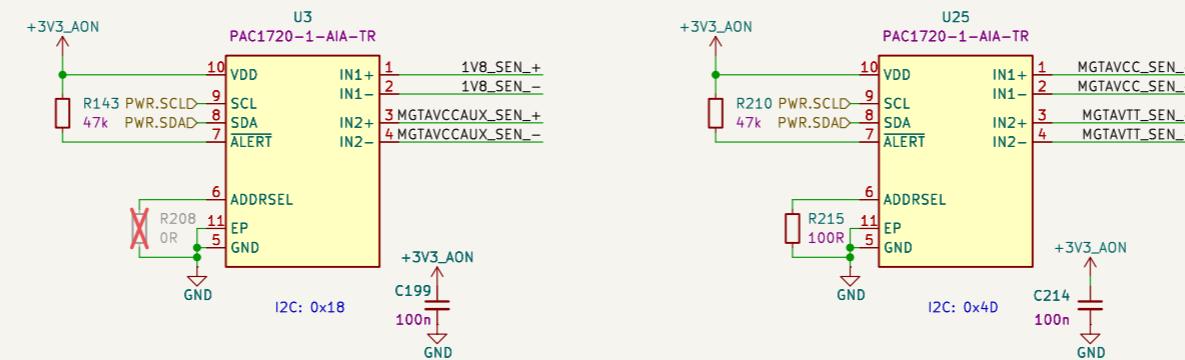
Size: A3 | Date: 2024-12-20  
KiCad E.D.A. 8.0.7

Rev: 2.1.0 | Id: 18/17

# DC-DC AUX, MGT



## Current sense monitors



Antmicro  
www.antmicro.com

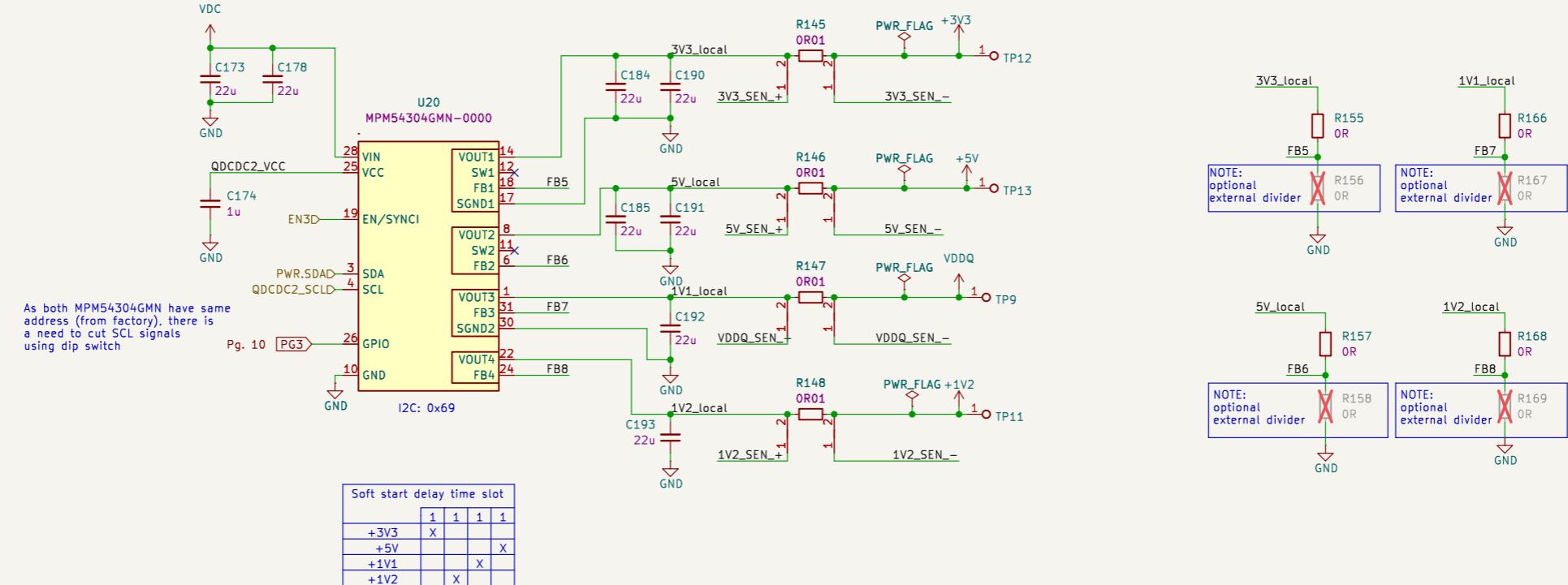
Sheet: /Supply/DC-DC AUX, MGT/  
File: dc-dc-aux-mgt.kicad\_sch

Title: RDIMM DDR5 Tester

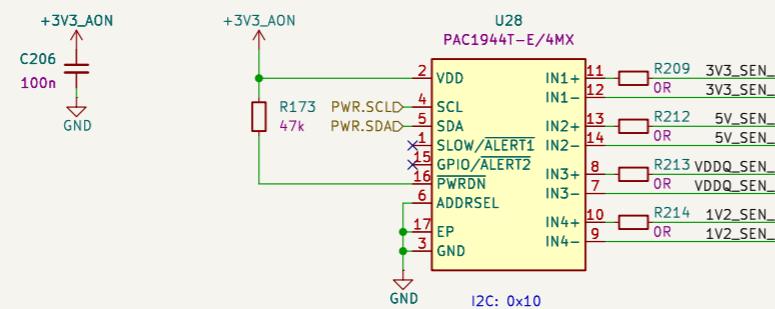
Size: A3 Date: 2024-12-20  
KiCad E.D.A. 8.0.7

Rev: 2.1.0  
Id: 19/17

## DC-DC IO



## Current sense monitor



Antmicro  
www.antmicro.com

Sheet: /Supply/DC-DC IO/  
File: dc-dc-io.kicad\_sch

**Title: RDIMM DDR5 Tester**

Size: A3 | Date: 2024-12-20  
KiCad E.D.A. 8.0.7

Rev: 2.1.0 | Id: 20/17