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Sheet: / File: polarfire.com-kissed.sch

Title: PolarFire SoM

Size: A3 Date: 2024-04-03

KiCad E.D.A. kicad-cli 7.0.11

Id: 1/18

A

B

C

D

E

F

A

B

C

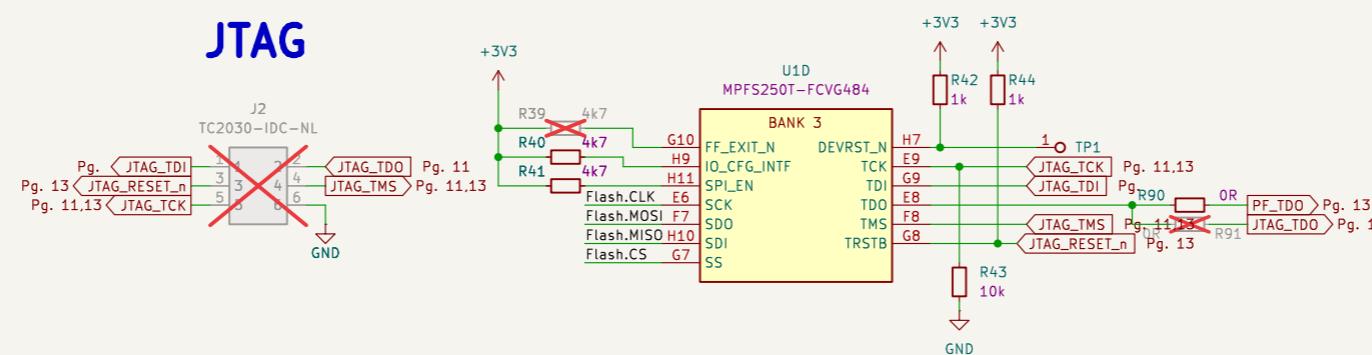
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E

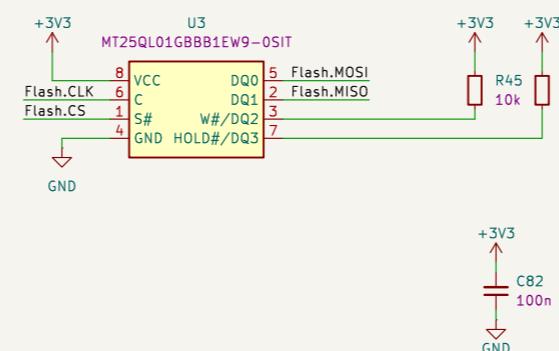
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PolarFire Bank 3 JTAG/DEDIO

JTAG



SPI FLASH



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Sheet: /FPGA Config/

File: fpga-config.kicad_sch

Title: PolarFire SoM

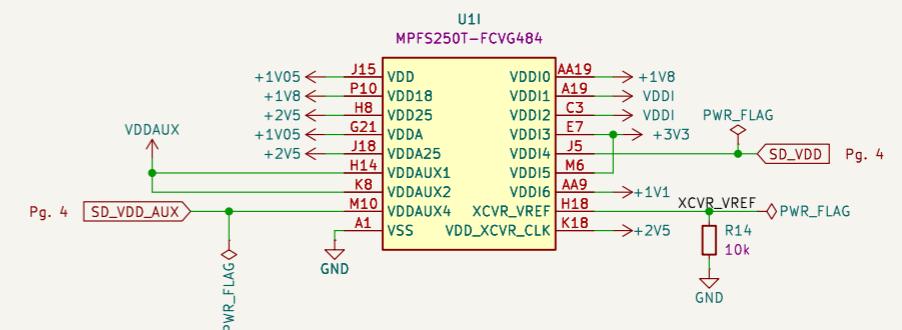
Size: A3 Date: 2024-04-03

KiCad E.D.A. kicad-cli 7.0.11

Rev: 1.0.0:36b61

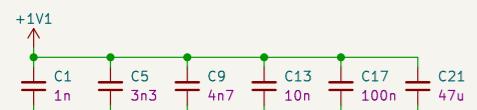
Id: 2/18

PolarFire power supply

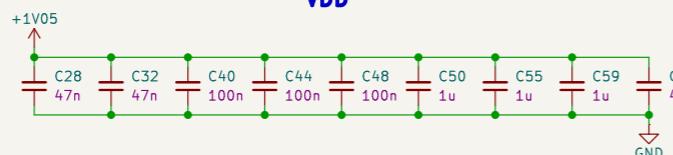


Decoupling capacitors

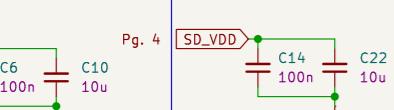
Bank 6 MSS DDR



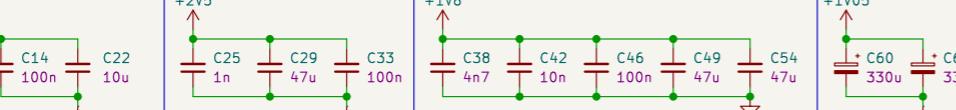
VDD



Bank 5



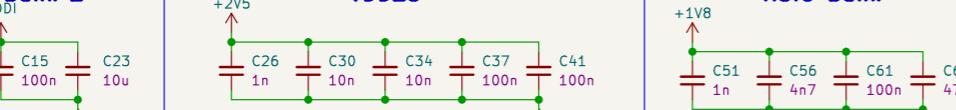
Bank 4



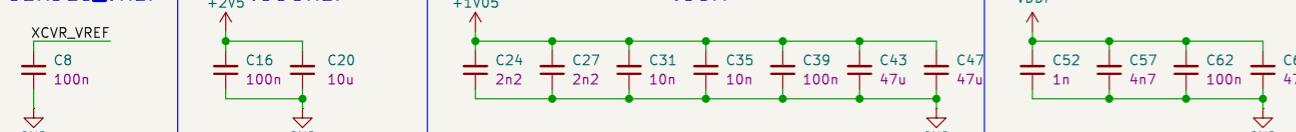
Bank 3 JTAG



Bank 2



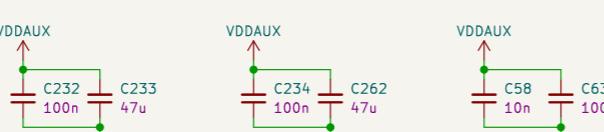
SERDES_VREF



VDDA



VDDAUX(GPIO)



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Sheet: /FPGA Supply/

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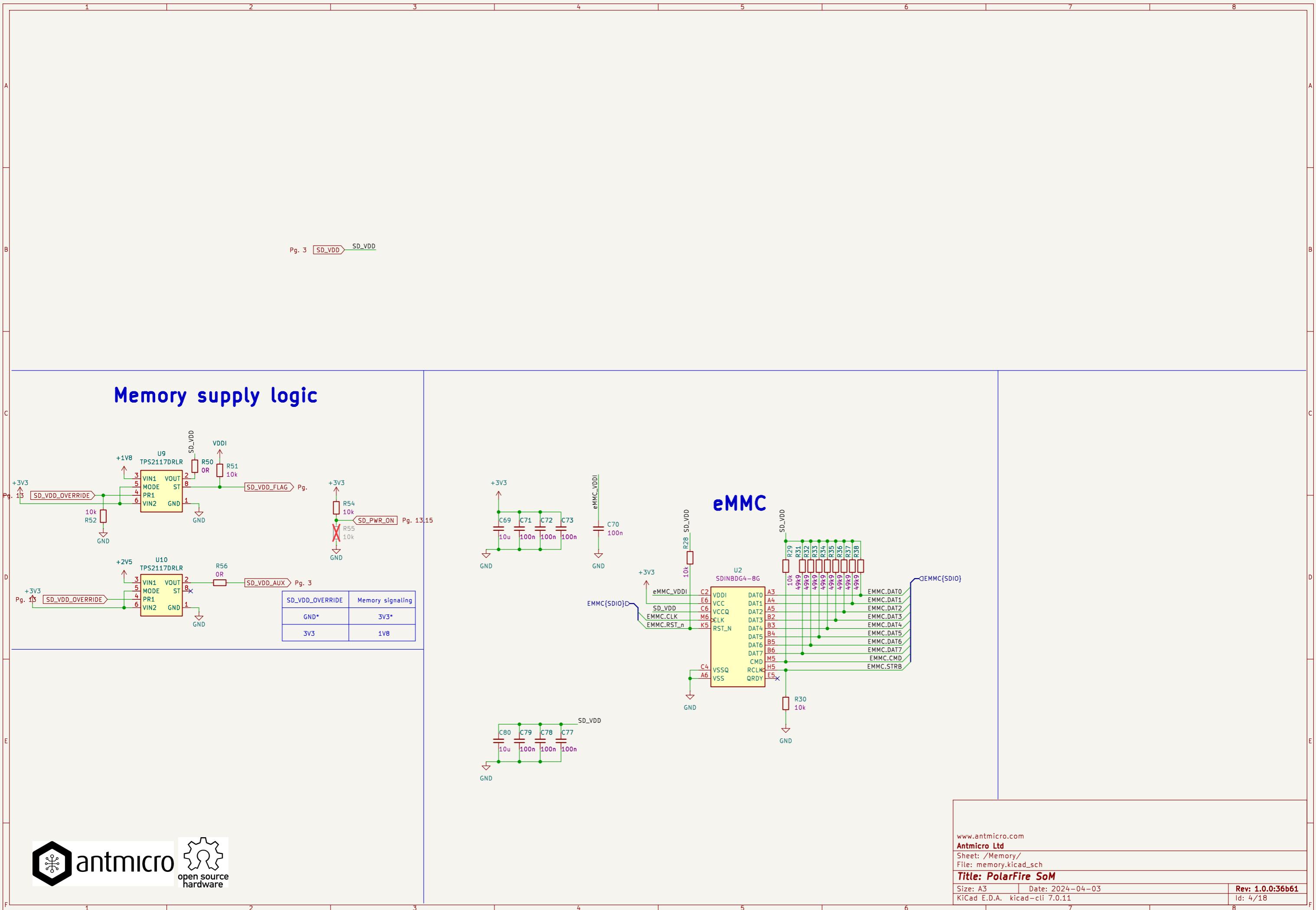
Title: PolarFire SoM

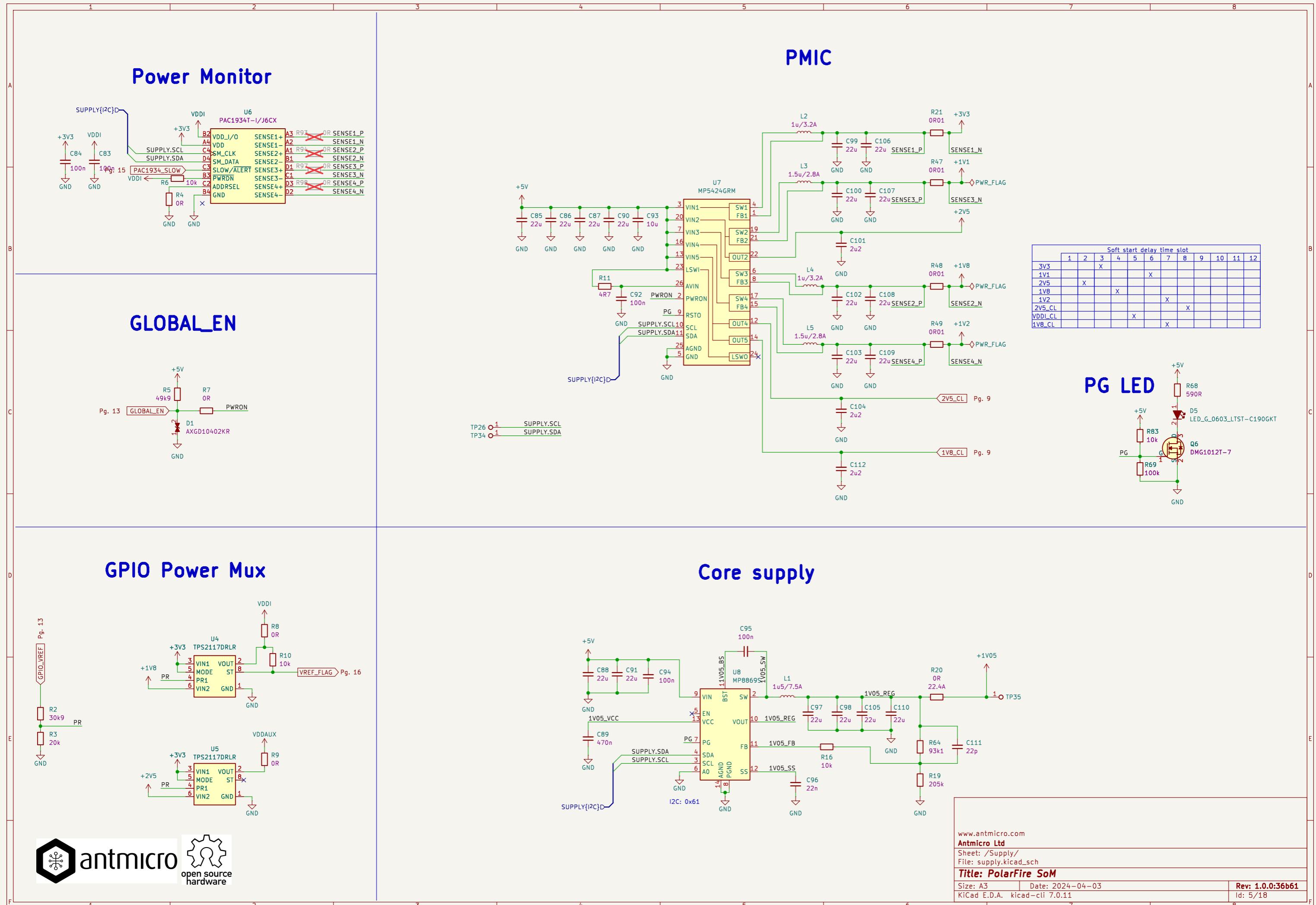
Size: A3 Date: 2024-04-03

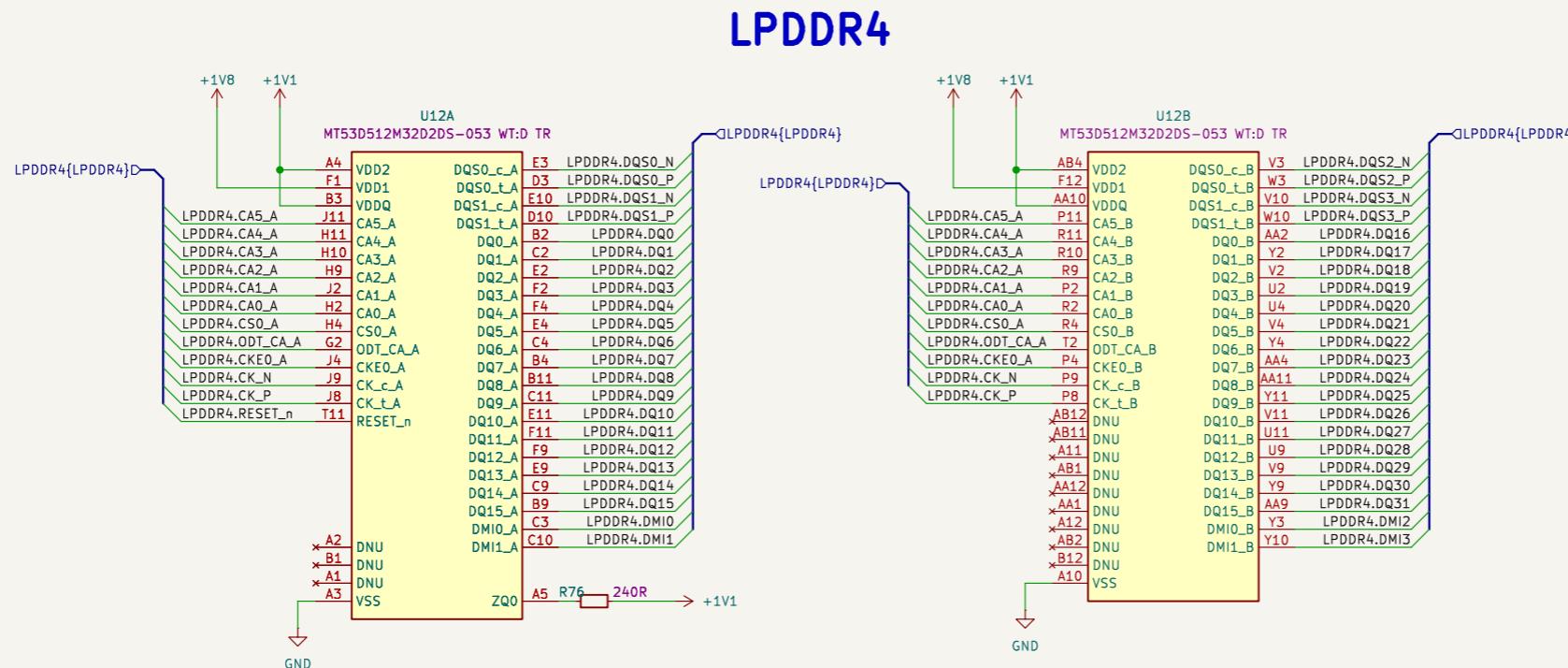
KiCad E.D.A. kicad-cli 7.0.11

Rev: 1.0.0:36b61

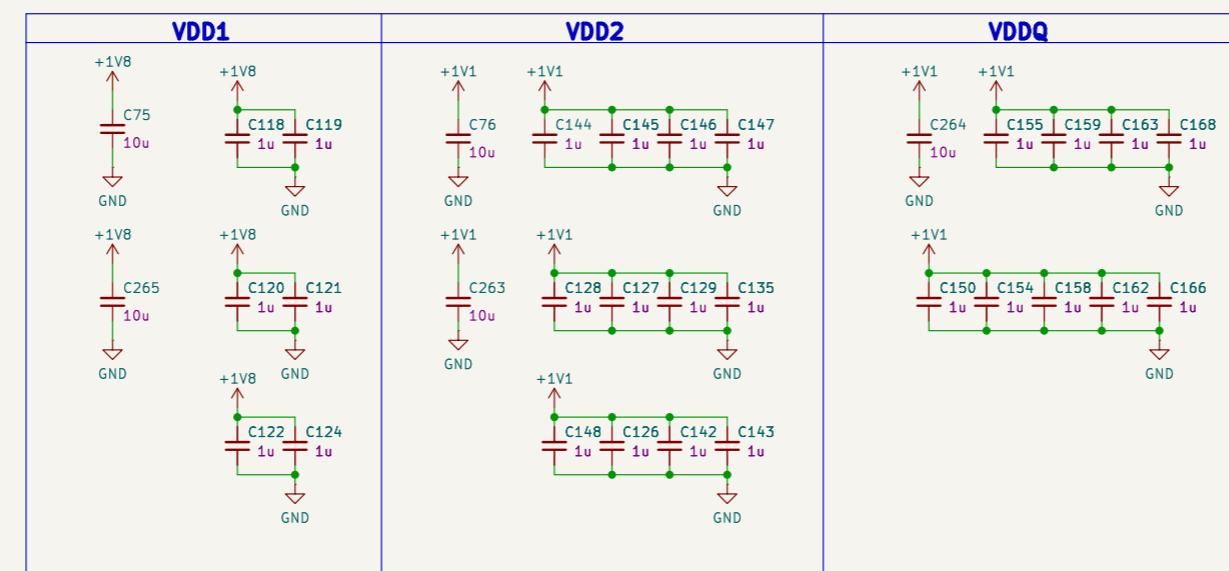
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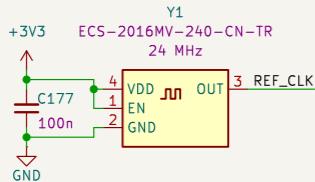




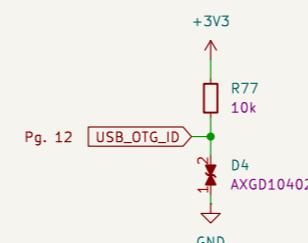


Decoupling capacitors

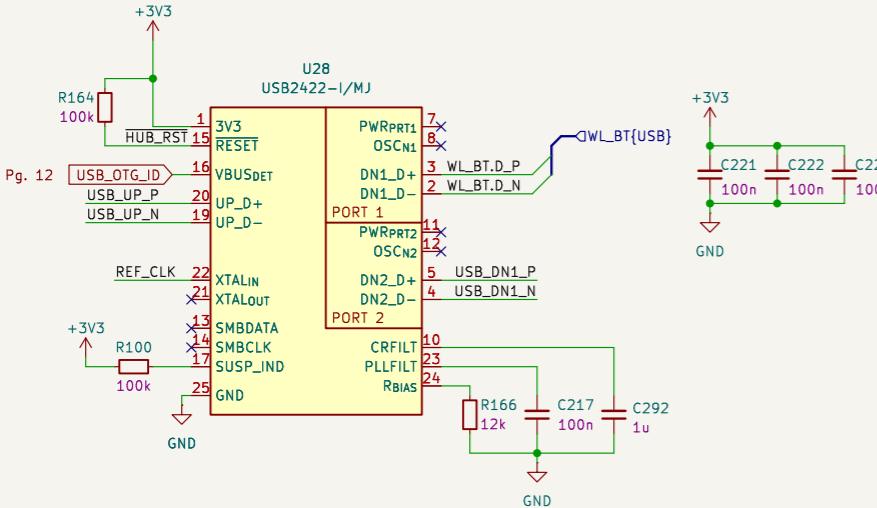




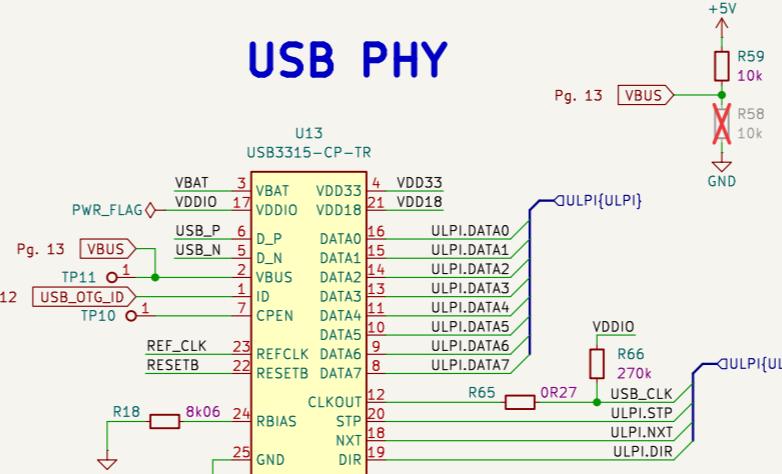
USB_OTG_ID



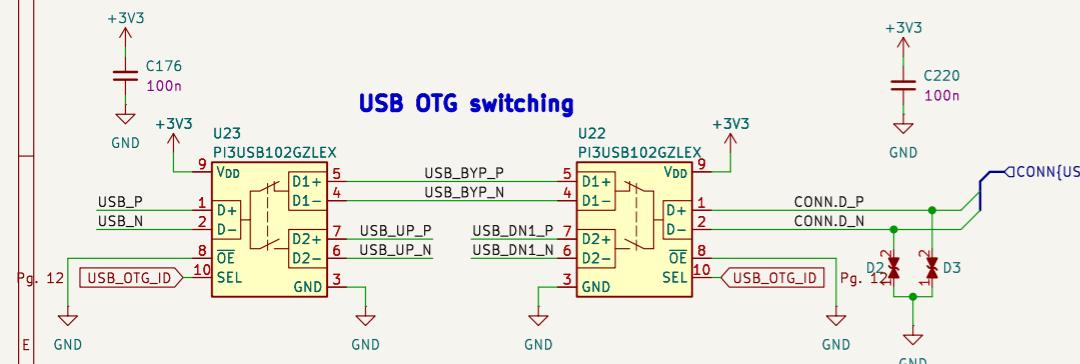
USB HUB



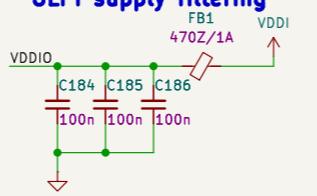
USB PHY



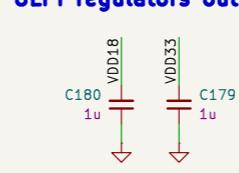
USB OTG switching



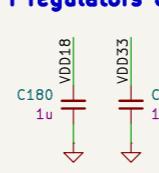
Supply filtering



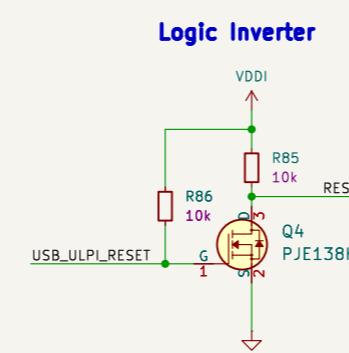
ULPI regulators input



ULPI regulators output



Logic Inverters



Truth table for PI3USB102G

SEL		D+		D-

L		D1+		D1-
H		D2+		D2-



A

A

B

B

C

C

D

D

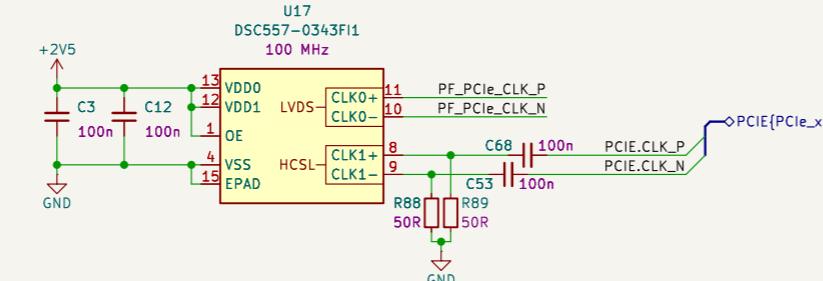
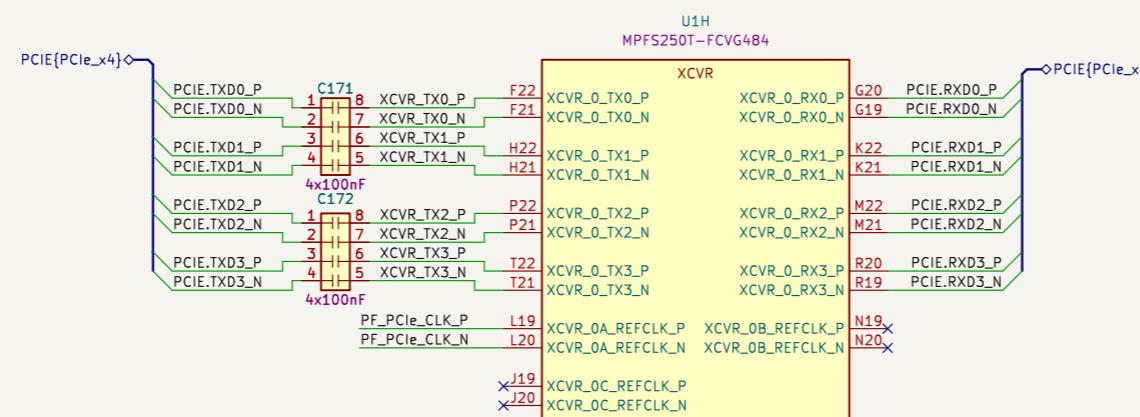
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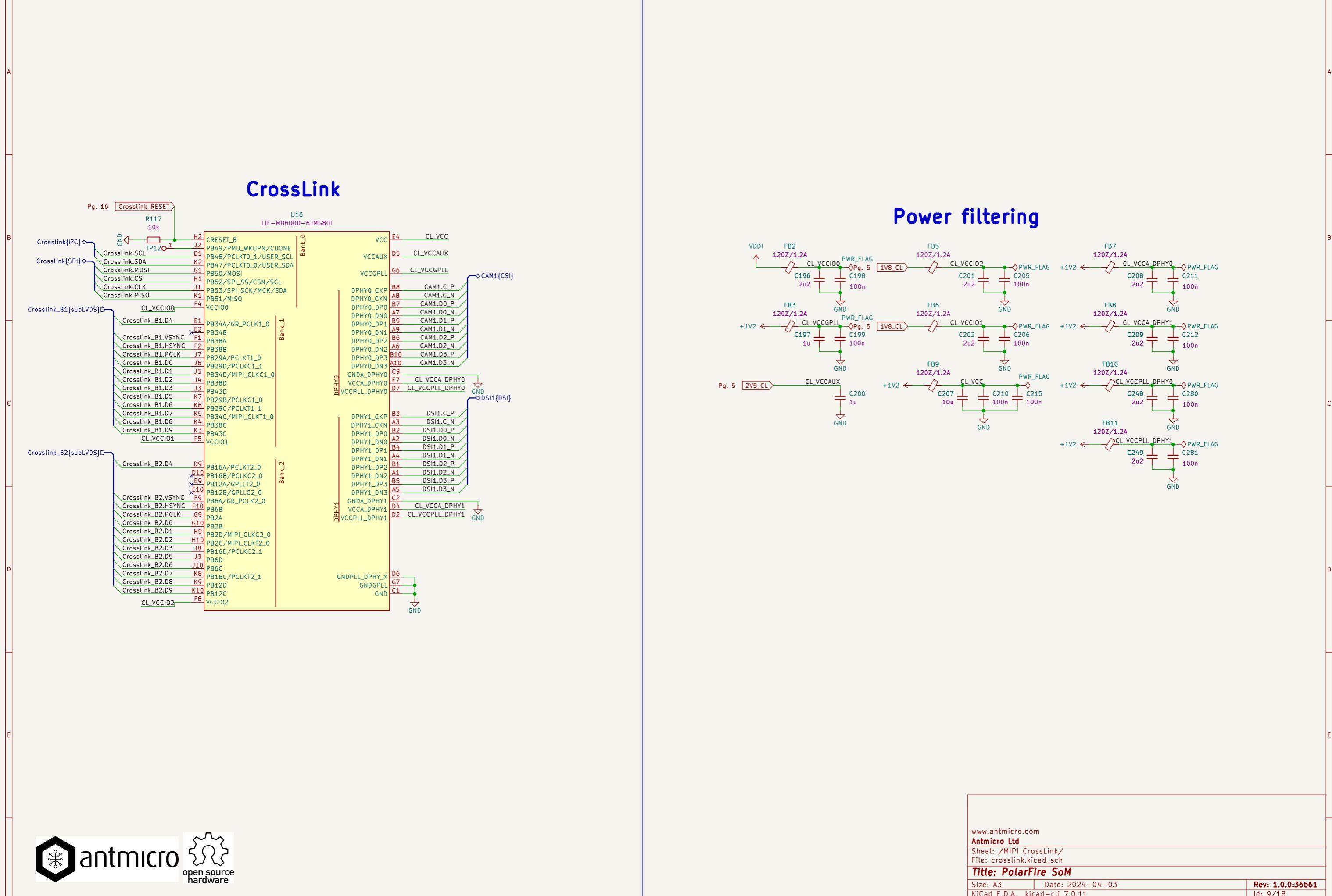
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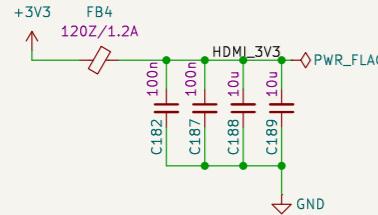
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F

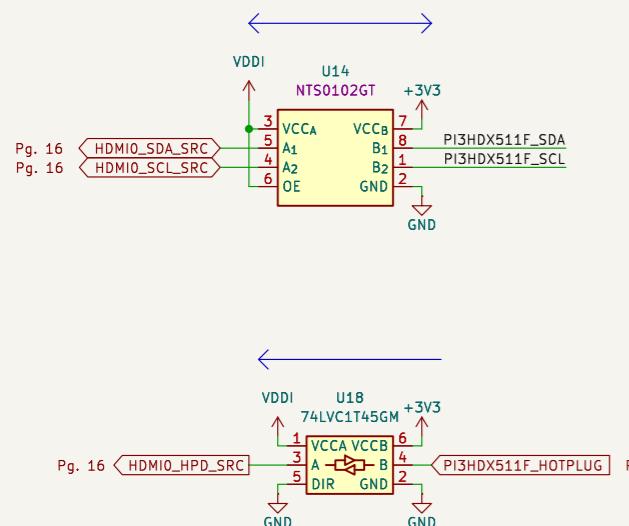
PolarFire Transceivers



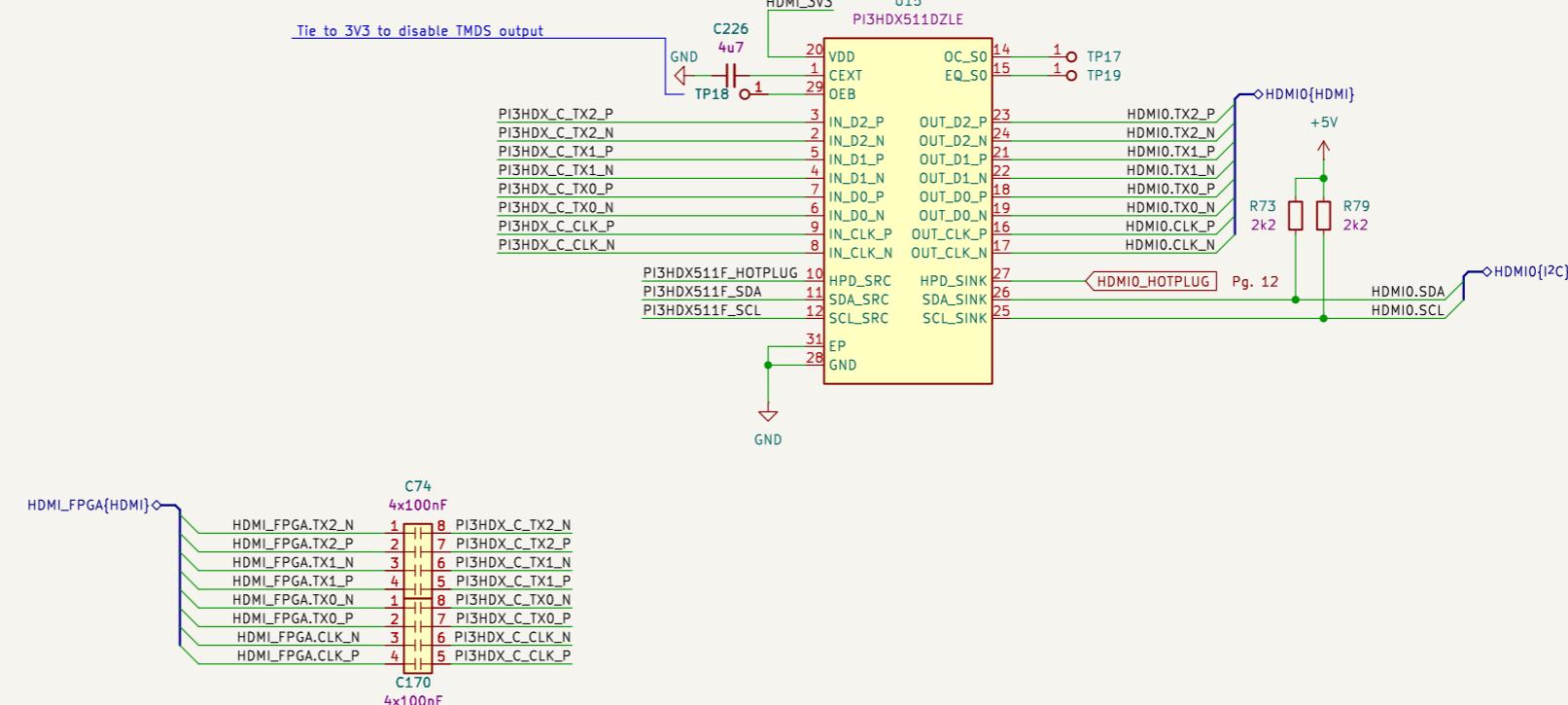




Level shifters



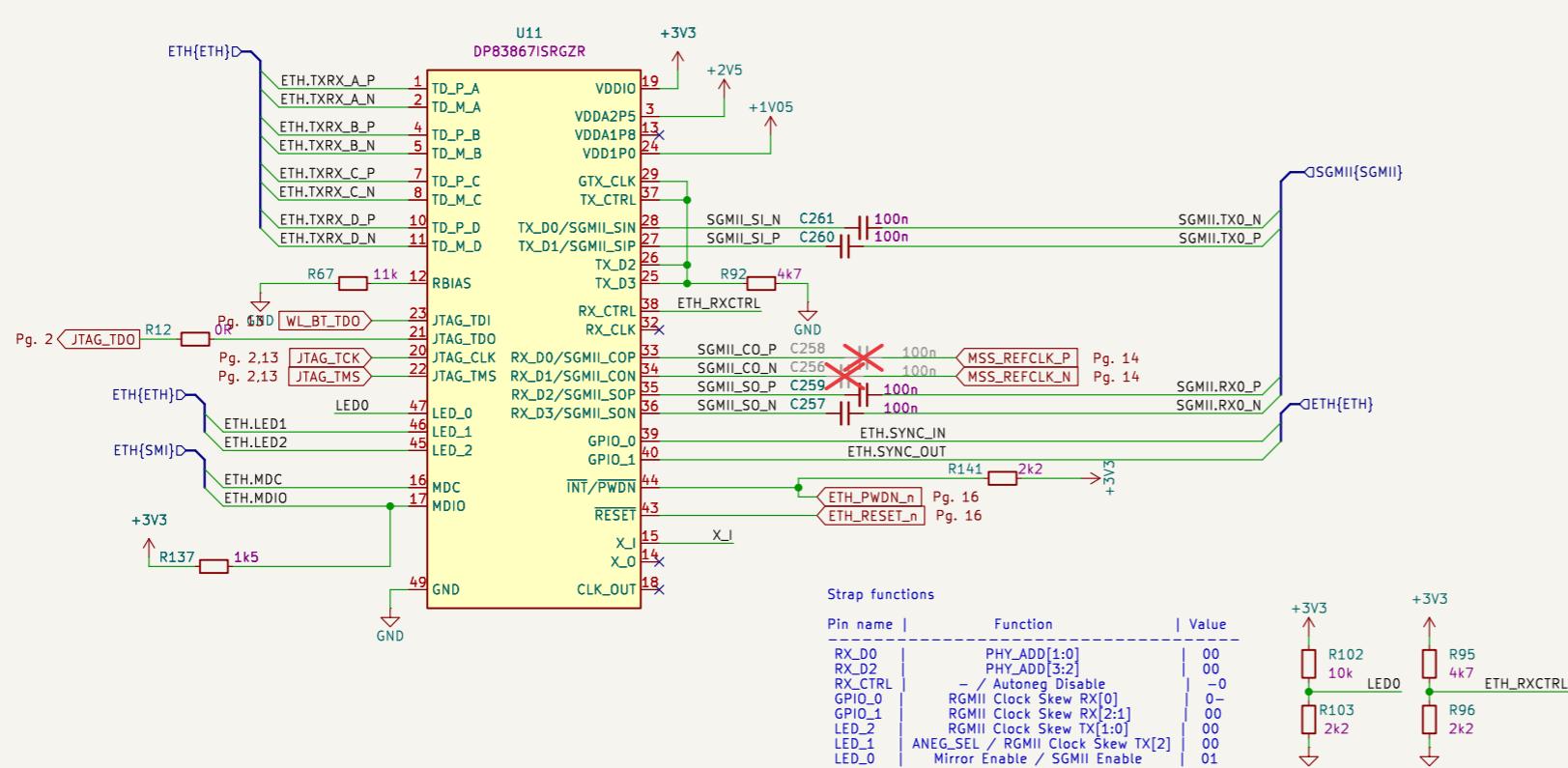
HDMI Driver



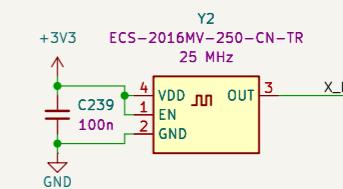
Gigabit Ethernet PHY transceiver with SGMII

SGMII routing guidelines:

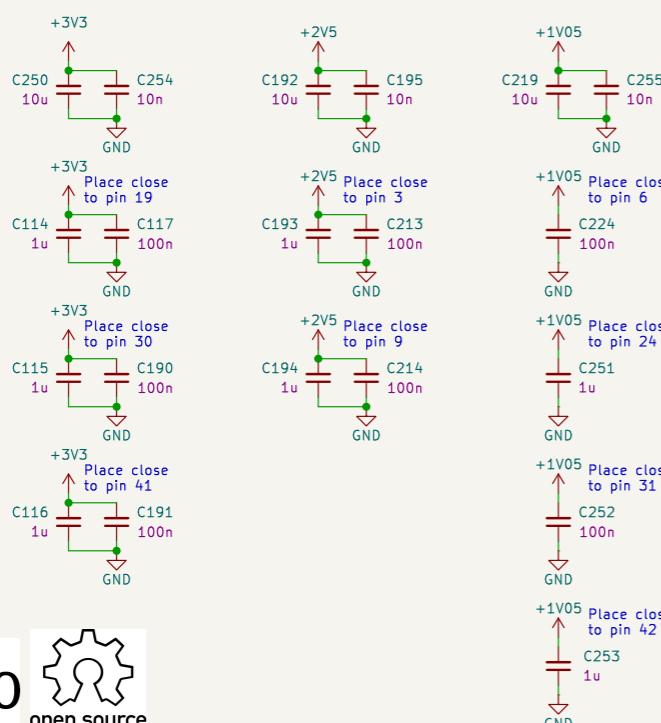
- * Traces must be routed with 100Ω differential impedance
- * Skew matching within a pair must be less than 5 pS
- * SGMII signals must be routed on the same layer
- * Pairs must be referenced to parallel ground plane

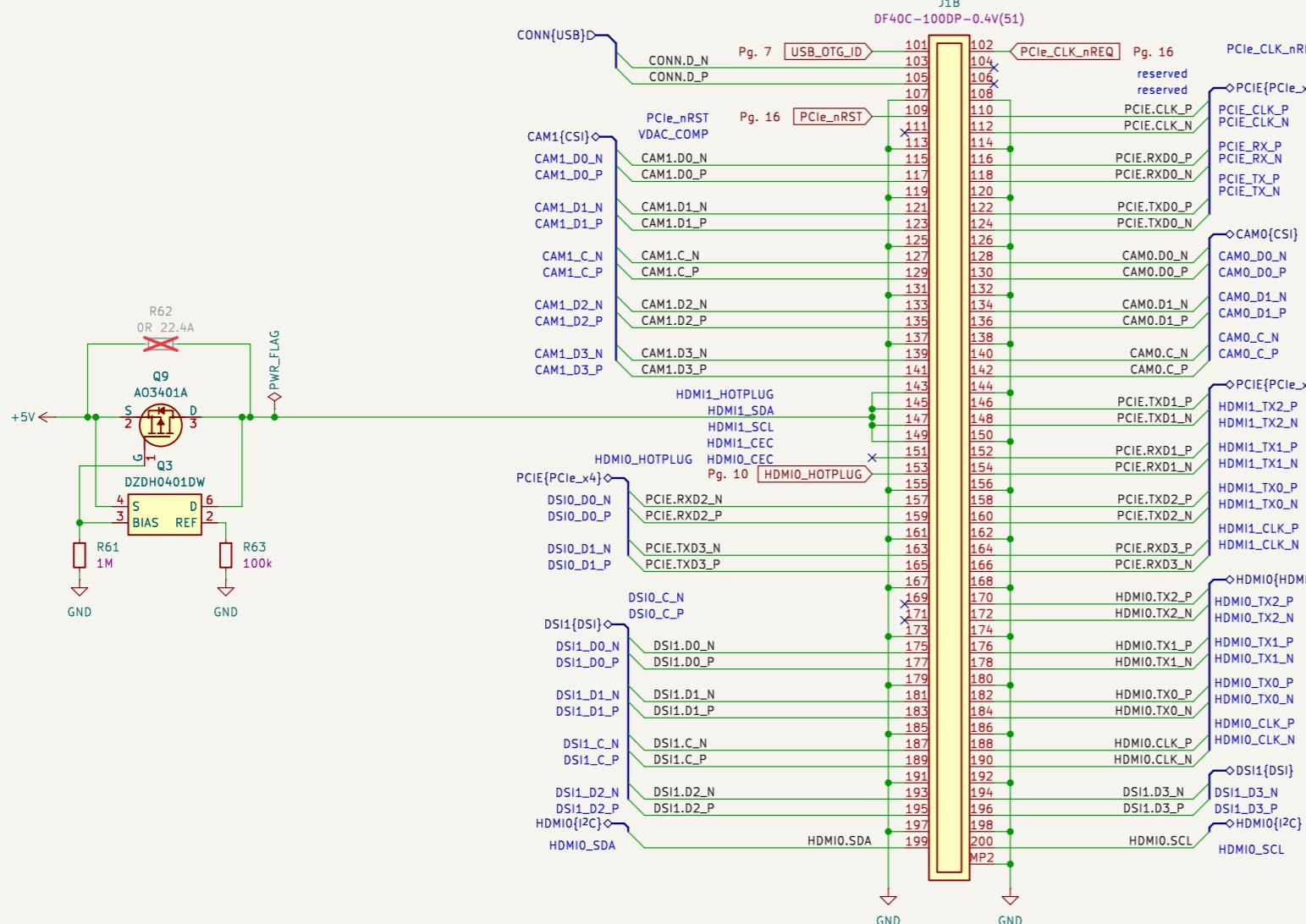


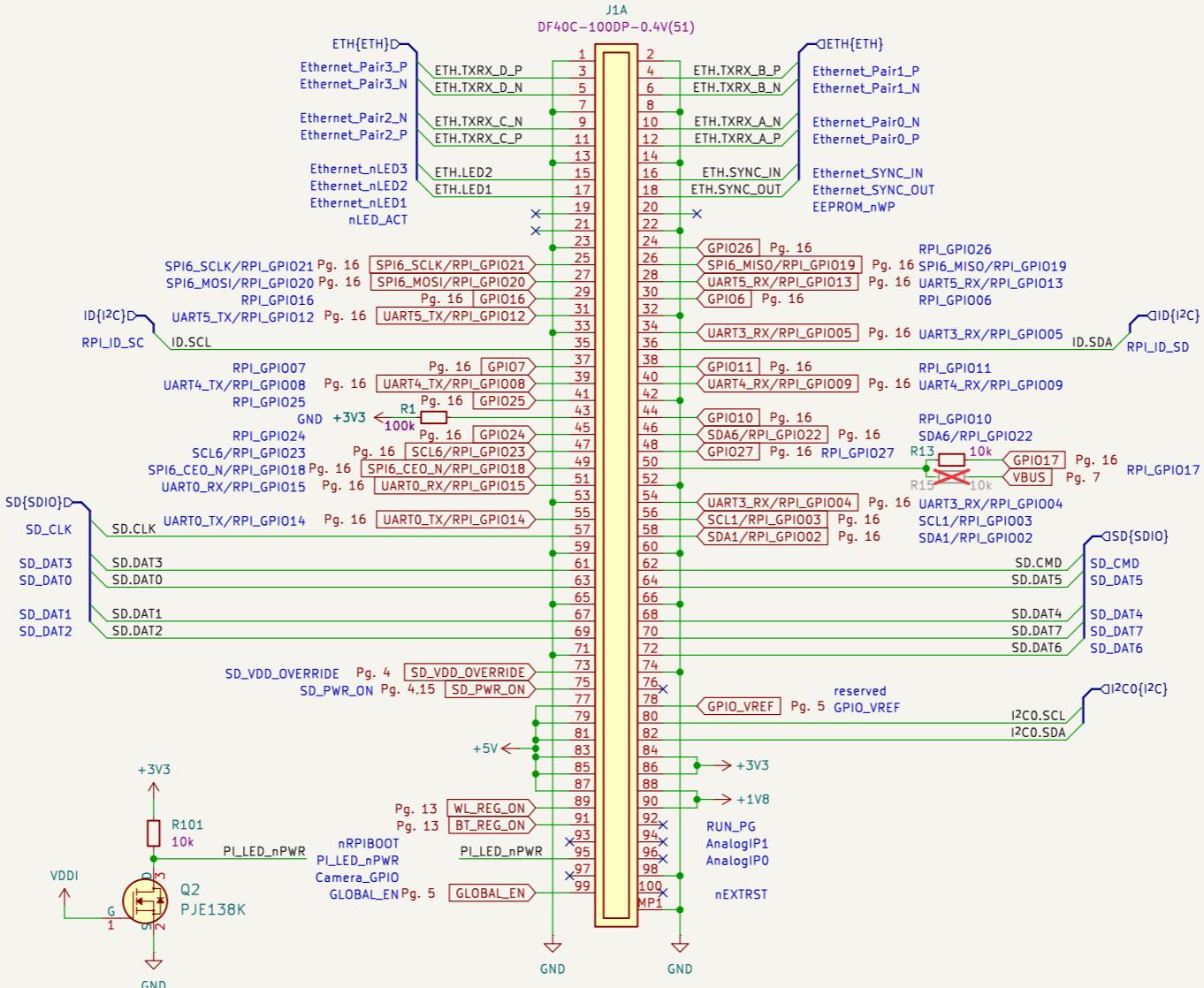
Clock



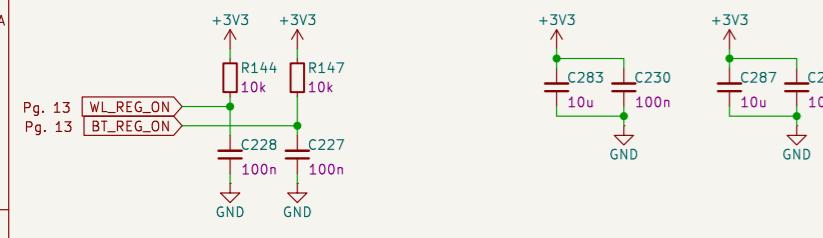
Decoupling capacitors



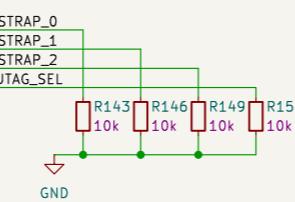




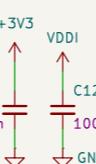
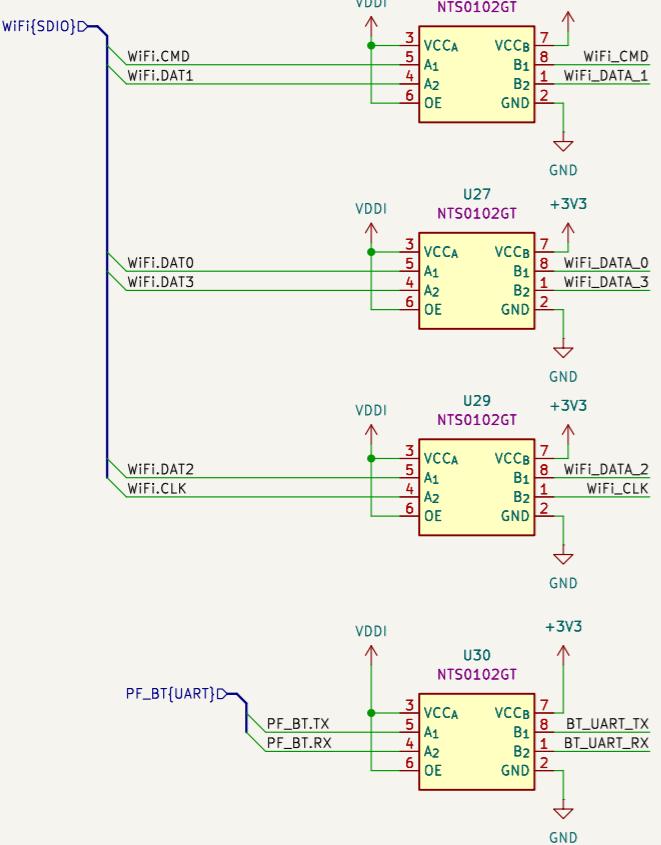
WL and BT Enable Decoupling



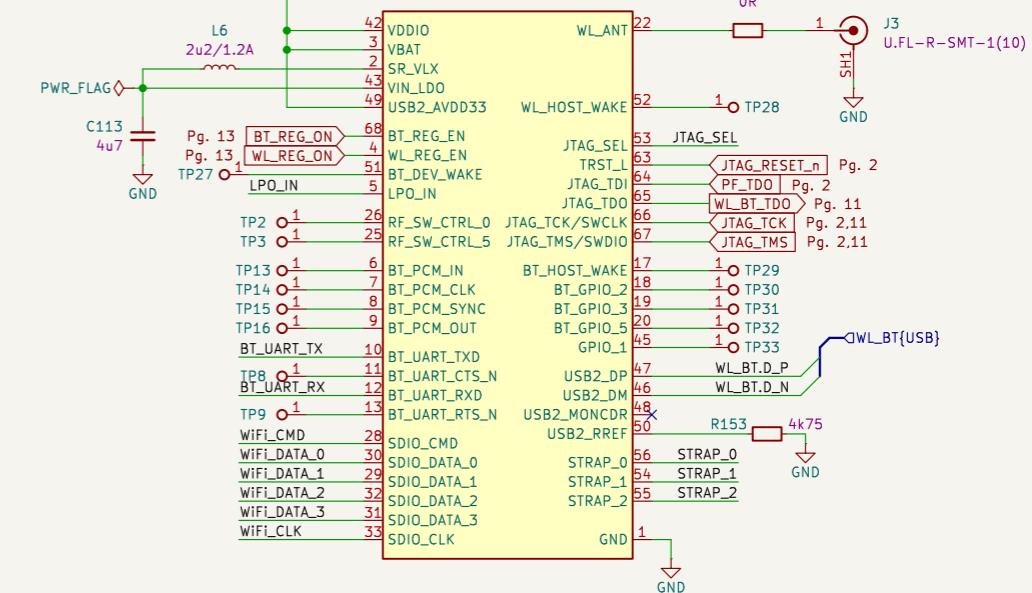
Config



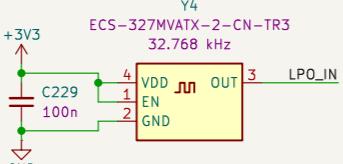
Level shifters



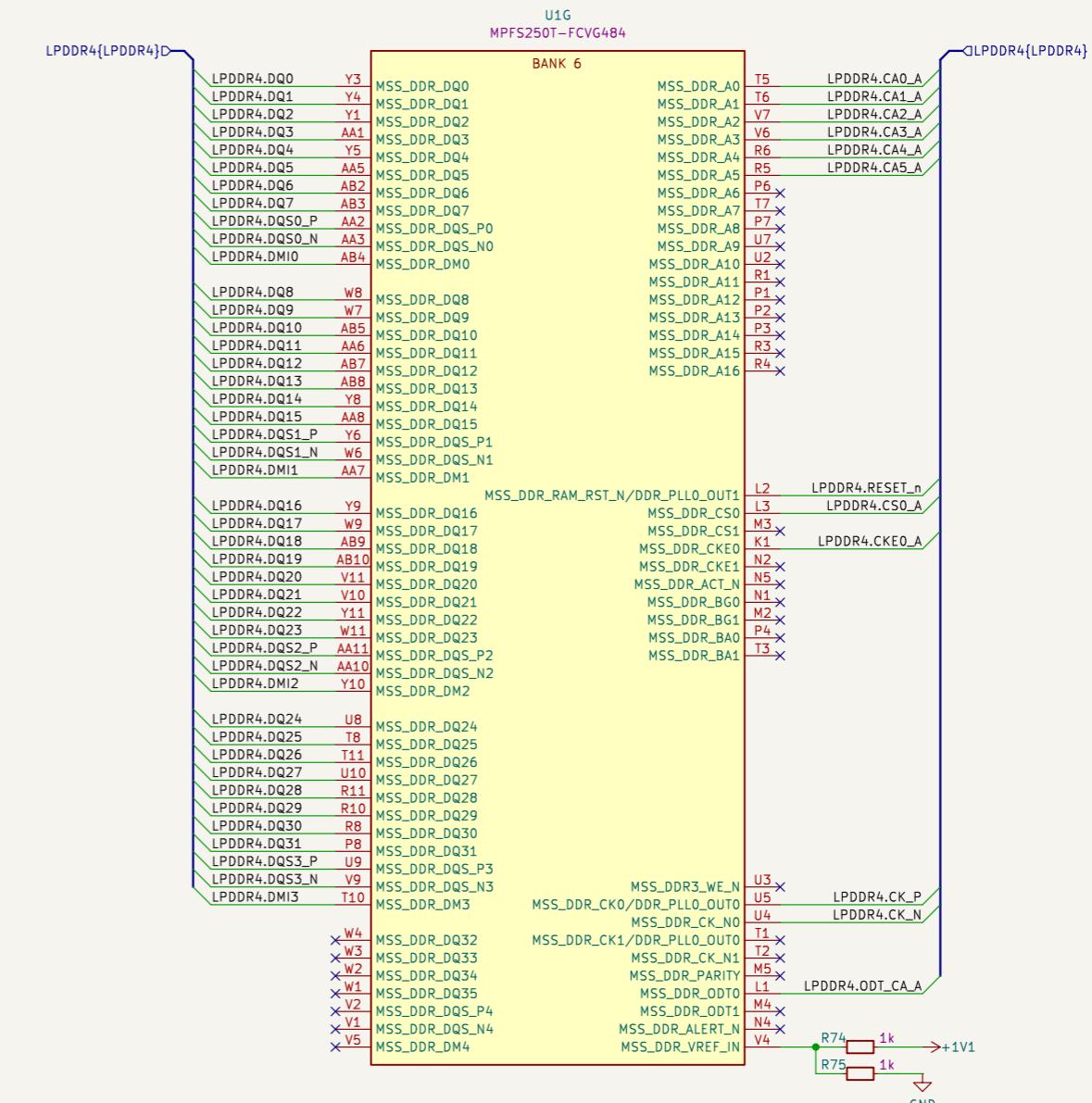
WiFi and Bluetooth Module



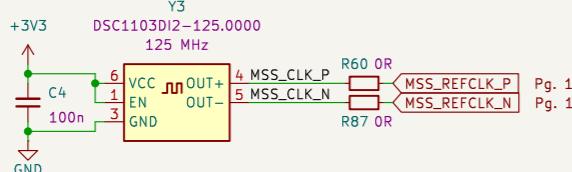
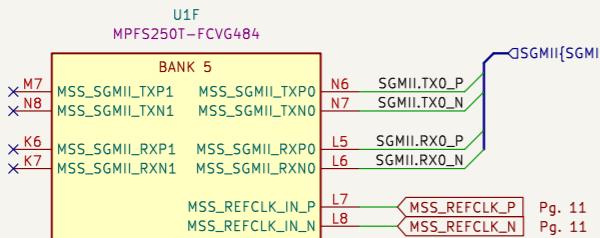
Sleep clock



PolarFire Bank 6 MSS_DDR



PolarFire Bank 5 MSS_SGMII



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Sheet: /FPGA MSS/

File: fpga-mss.kicad_sch

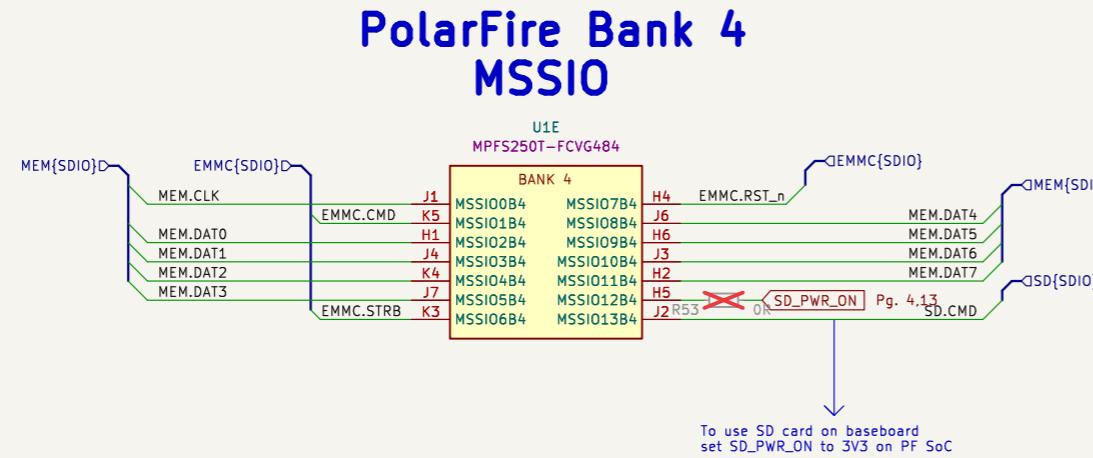
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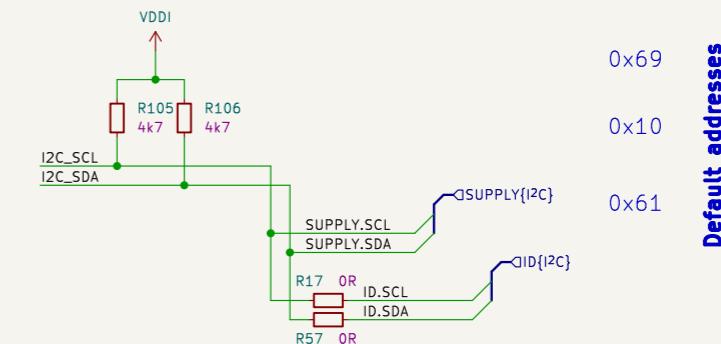
KiCad E.D.A. kicad-cli 7.0.11

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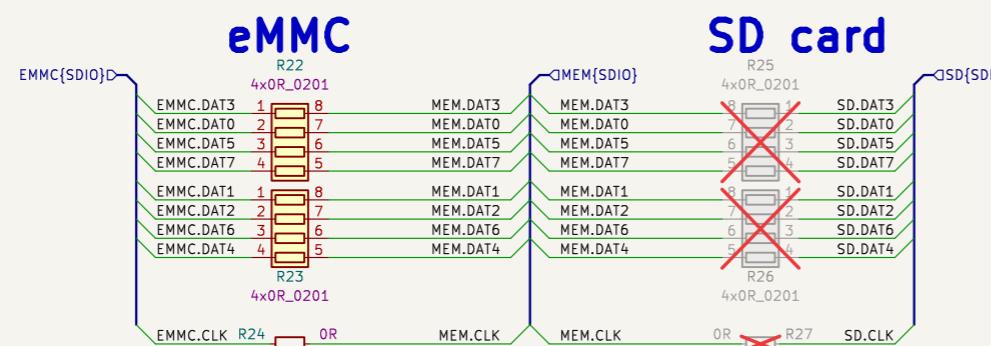
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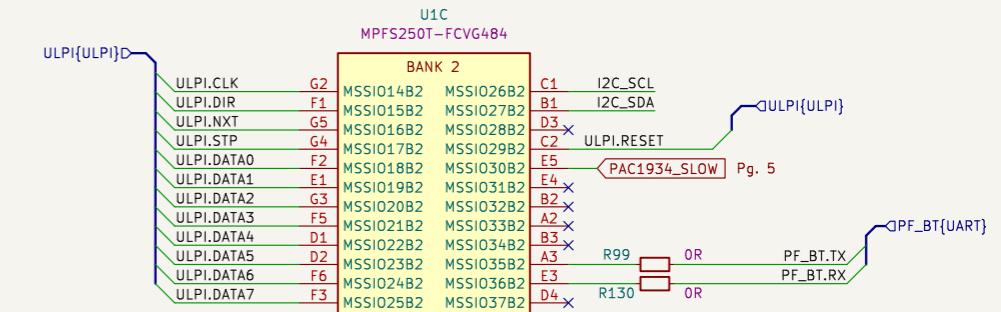
I2C devices connection



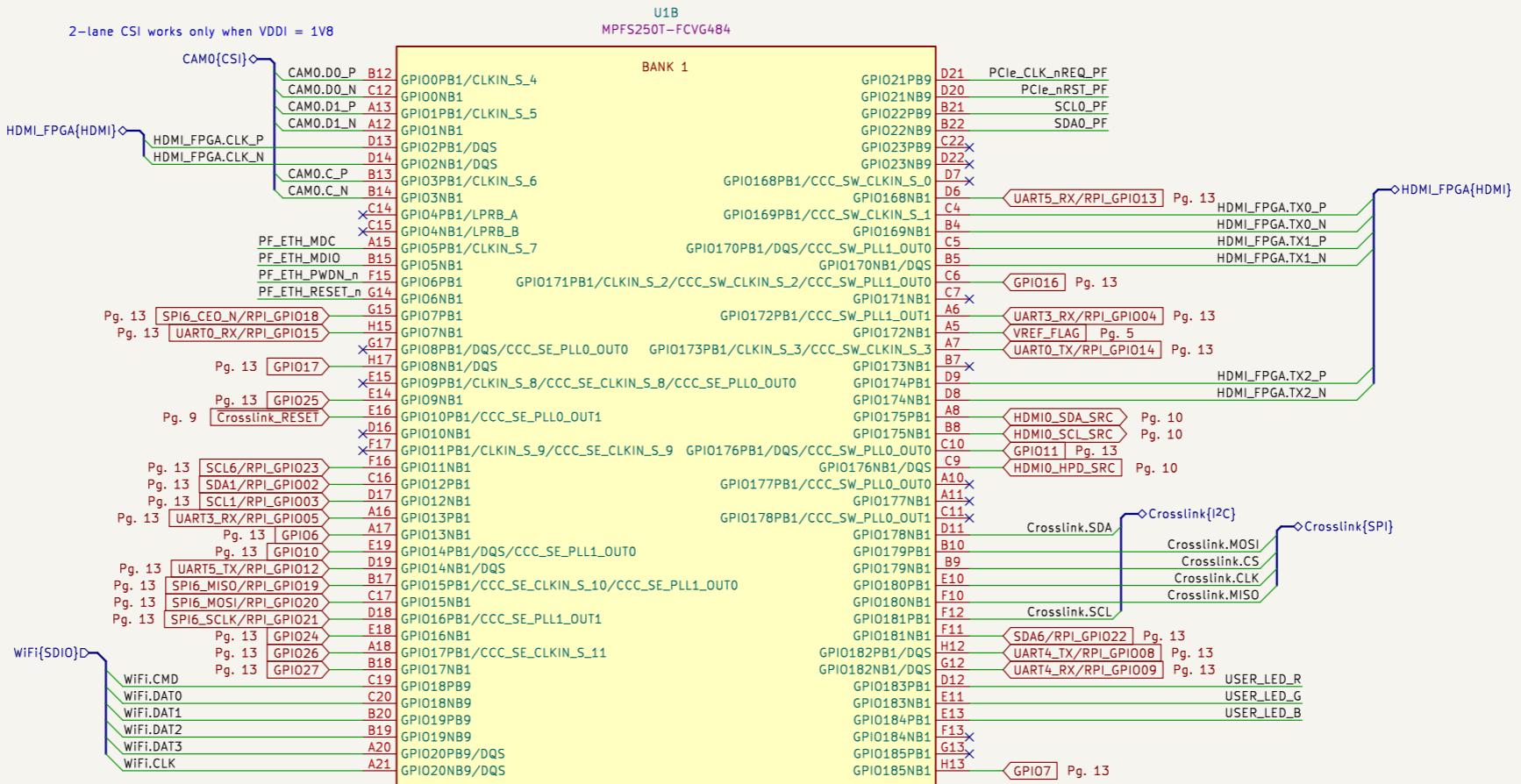
Memory selection



PolarFire Bank 2 MSSIO

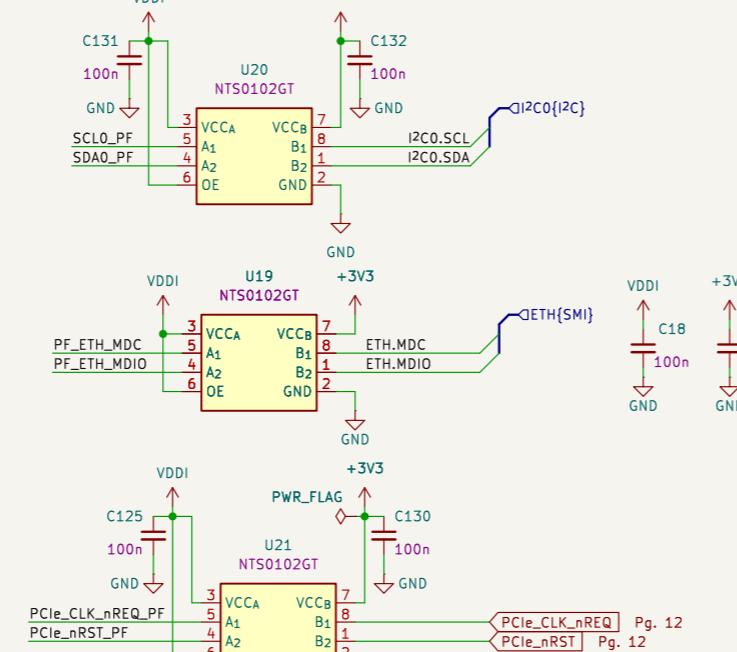
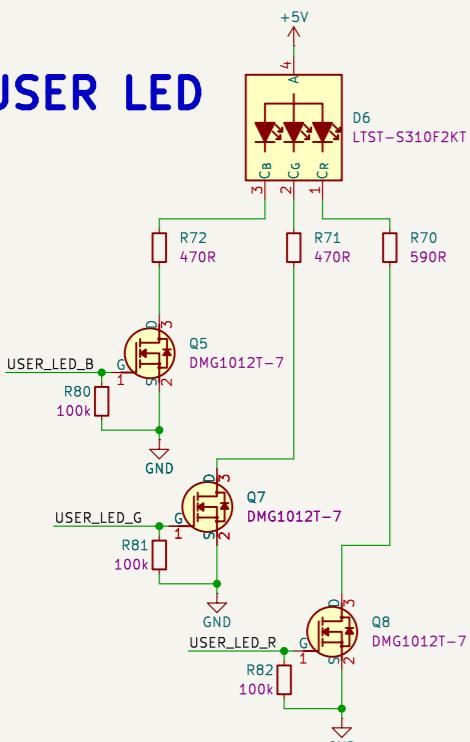


PolarFire Bank 1 GPIO



Logic shifters

USER LED



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Sheet: /FPGA GPIO/

File: fpga-gpio.kicad_sch

Title: PolarFire SoM

Size: A3 Date: 2024-04-03

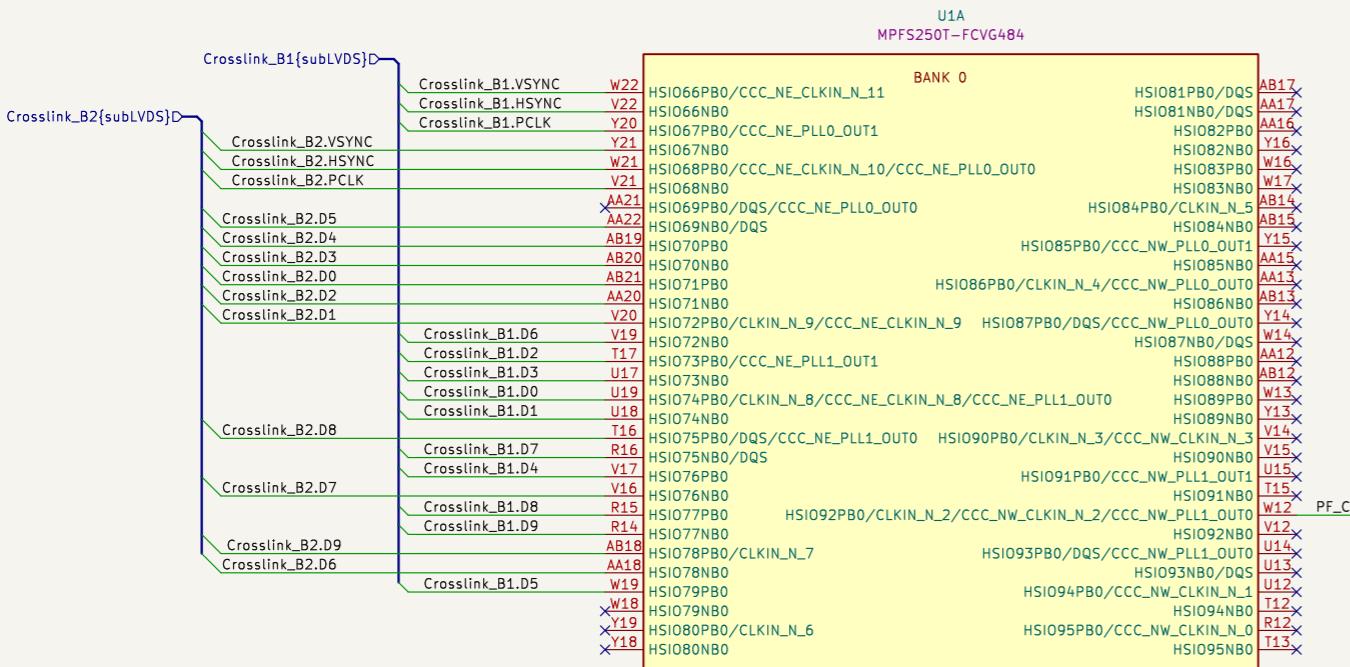
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Rev: 1.0.0:36b61

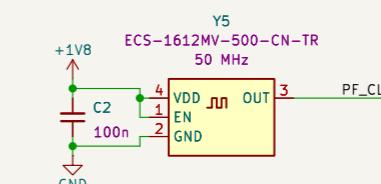
Id: 16/18

PolarFire Bank 0

HSIO



PolarFire clocks



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Sheet: /FPGA HSIO/

File: fpga-hsio.kicad_sch

Title: PolarFire SoM

Size: A3 Date: 2024-04-03

KiCad E.D.A. kicad-cli 7.0.11

Rev: 1.0.0:36b61

Id: 17/18