SCK-KR-05101
Robotics Starter Kit Carrier Card

NOTICE: These schematics are made available for users who are working with this specific Xilinx board and should not be considered an optimal board design reference. This board was designed for evaluation purposes with components that are potentially more complex and costly than would be used in an end customer system. Users are encouraged to leverage the Xilinx design guidelines as the optimal starting point for new board designs.

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2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
01 - Title Page

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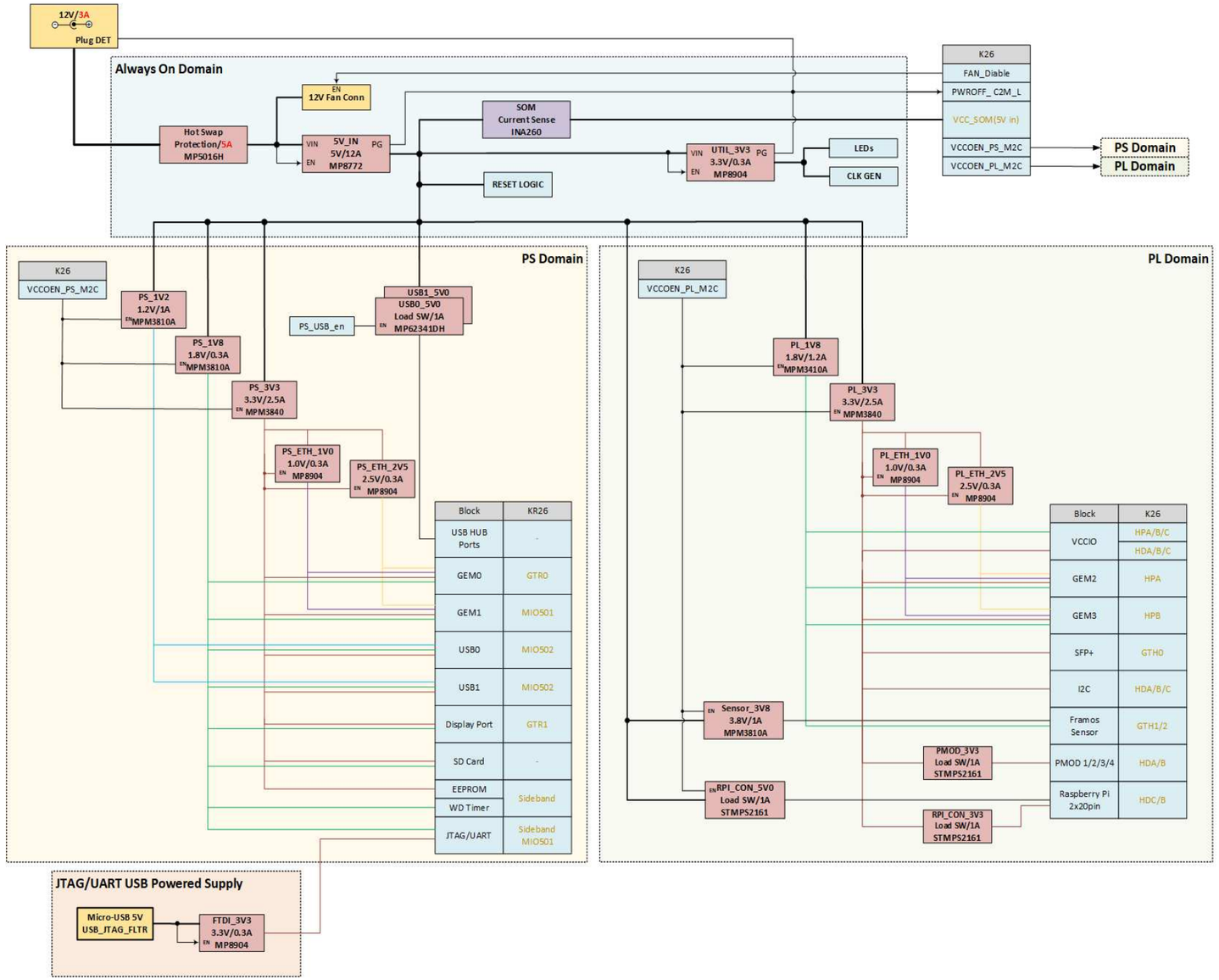
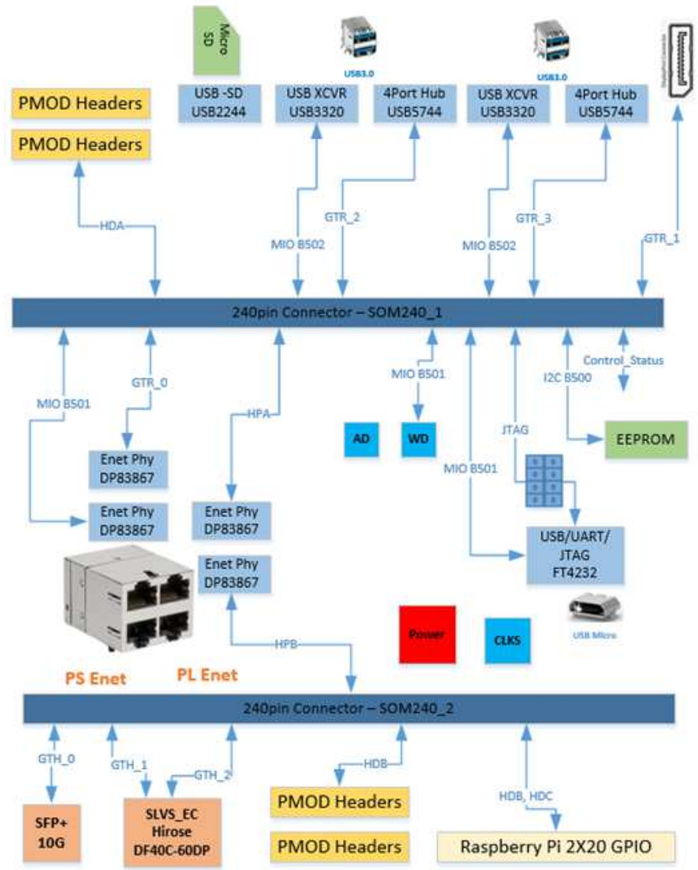
Engineer: RH/JW

POWER BLOCK DIAGRAM



PERIPHERAL BLOCK DIAGRAM



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SKIT

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02 - Block Diagram

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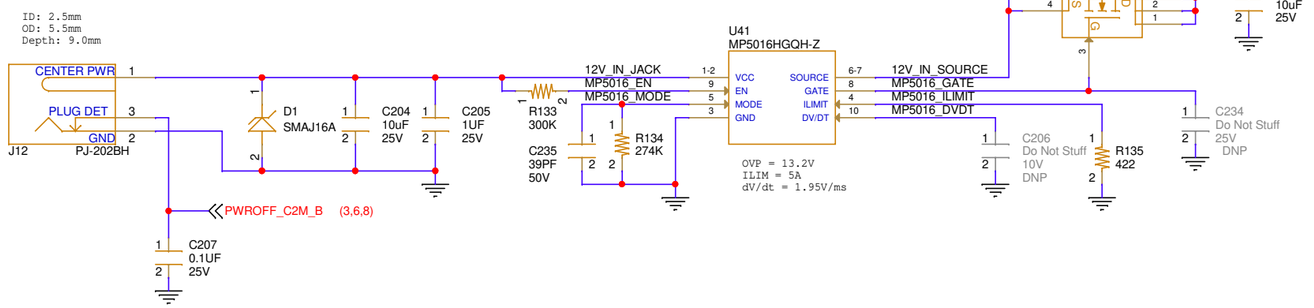
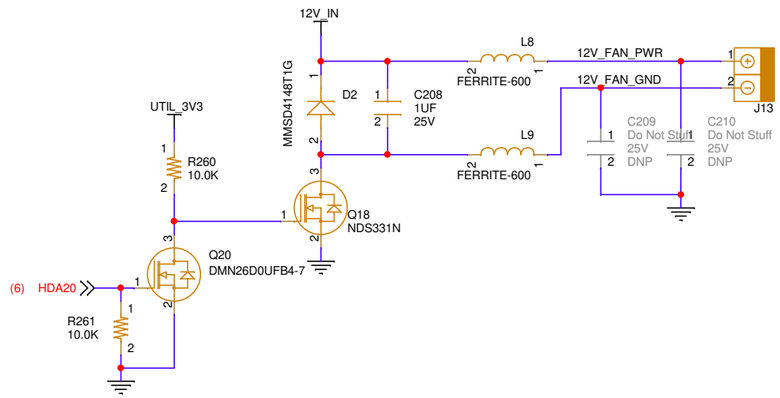
12V DC JACK

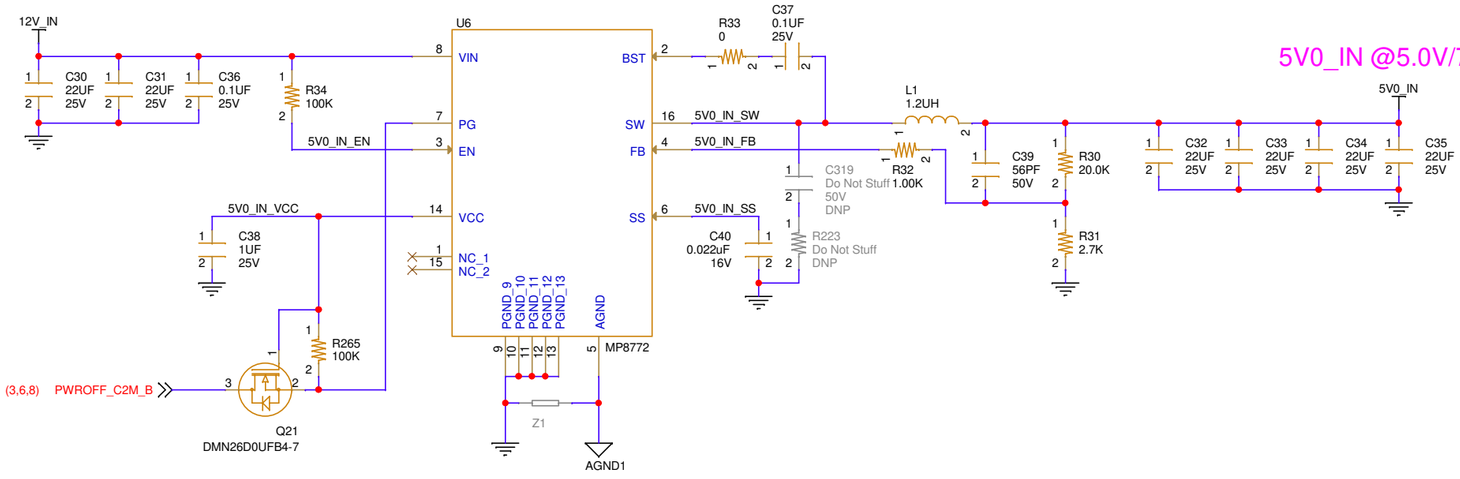


12V FAN HEADER



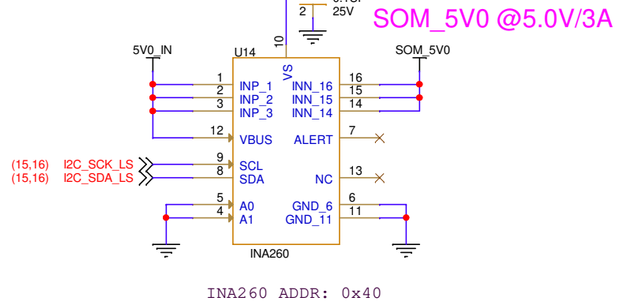
5V0_IN ALWAYS ON REGULATOR

5V0_IN @5.0V/7A



SOM_5V0 CURRENT MONITOR

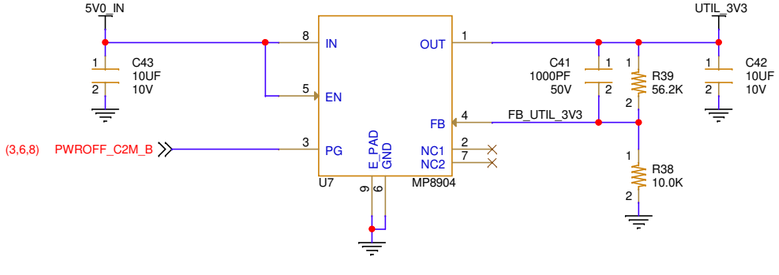
SOM_5V0 @5.0V/3A



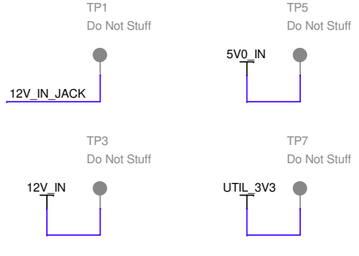
INA260 ADDR: 0x40

UTIL_3V3 ALWAYS ON REGULATOR

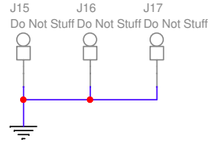
UTIL_3V3@3.3V/0.3A



POWER TEST POINTS



GROUND LOOPS



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03 - Always On Pwr, Fan Header

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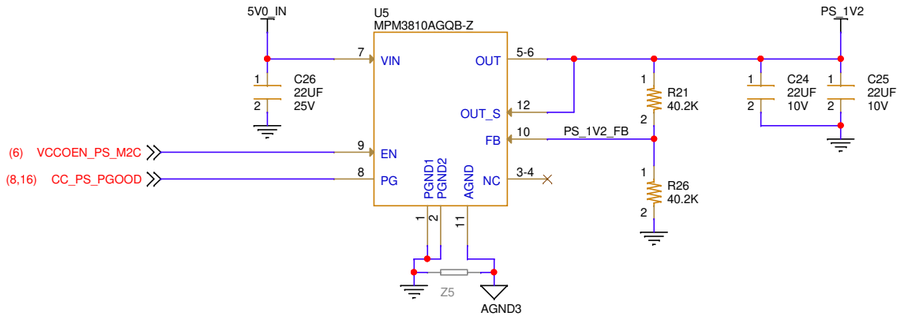
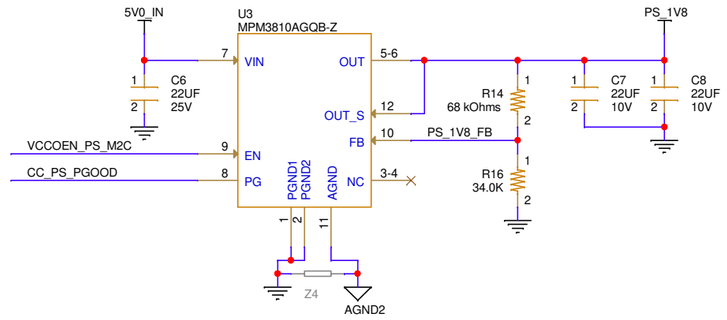
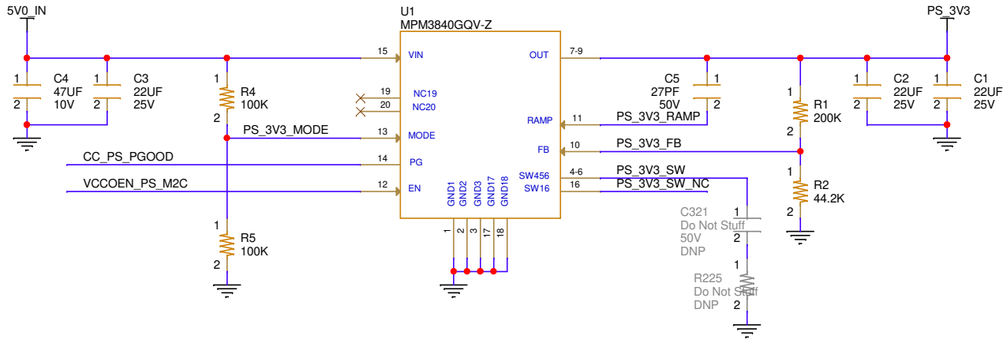
PS_1V2 @1.2V/1A



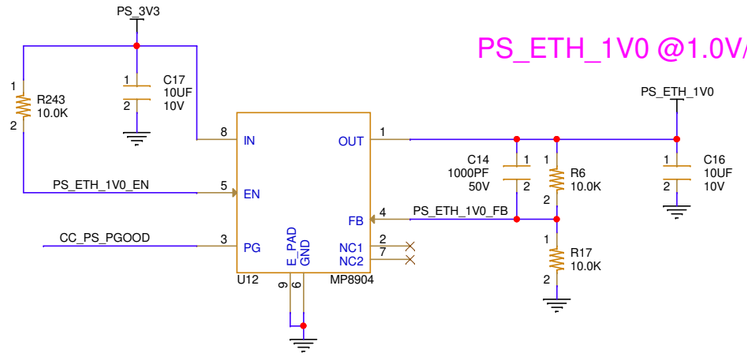
PS_1V8 @1.8V/0.5A



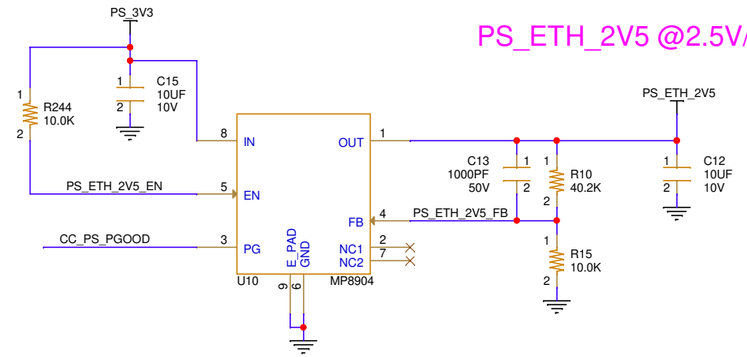
PS_3V3 @3.3V/2.5A



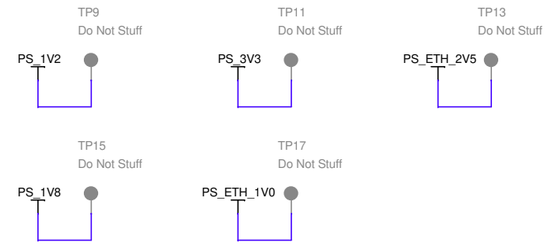
PS_ETH_1V0 @1.0V/0.3A



PS_ETH_2V5 @2.5V/0.3A



POWER TEST POINTS



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SKIT

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04 - PS Power

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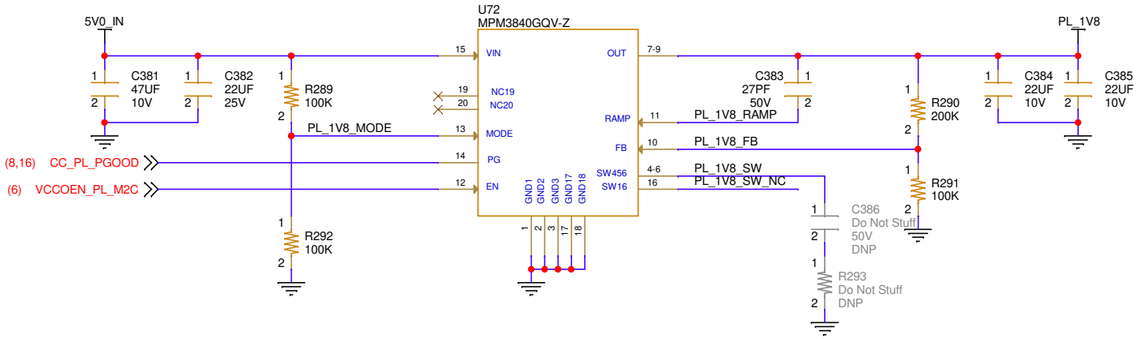
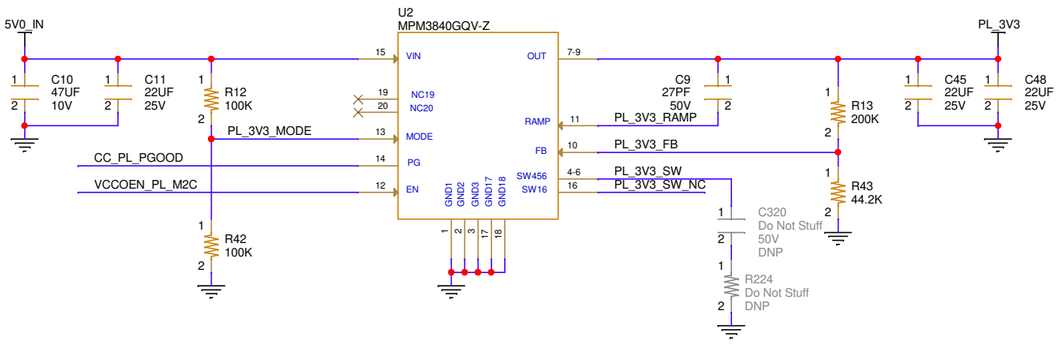
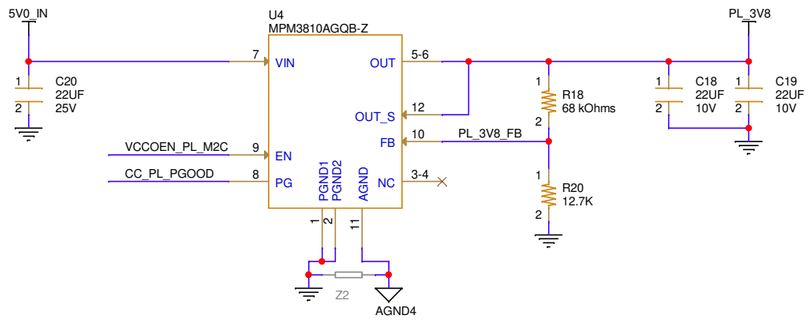
PL_1V8 @1.8V/1.4A



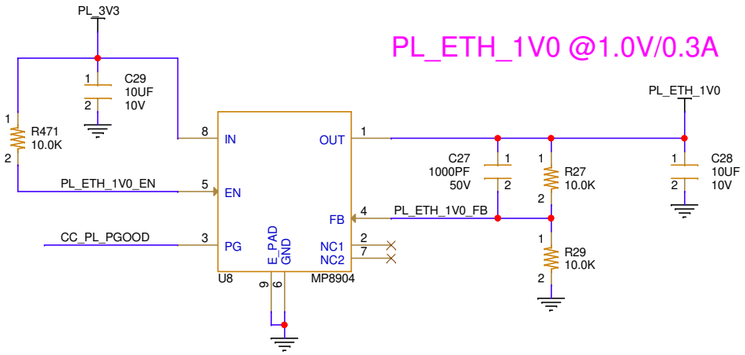
PL_3V3 @3.3V/3A



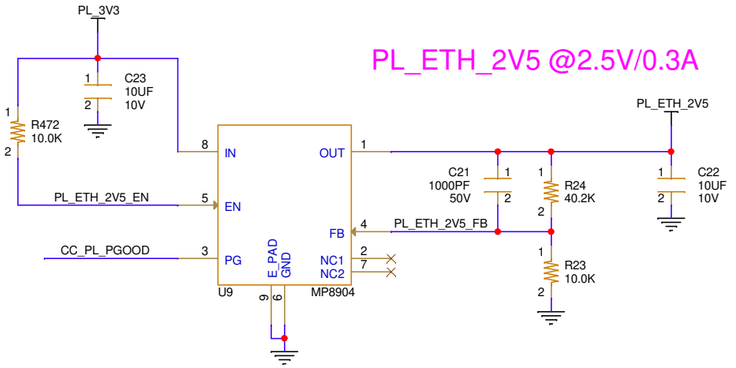
PL_3V8 @3.8V/1.0A



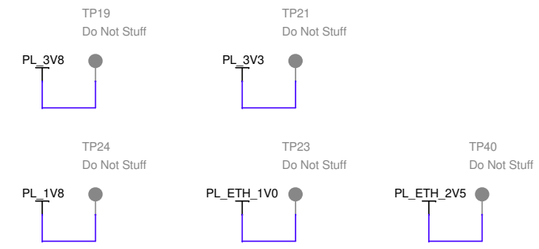
PL_ETH_1V0 @1.0V/0.3A



PL_ETH_2V5 @2.5V/0.3A



POWER TEST POINTS



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SKIT

Title: SCK-KR
05 - PL Power

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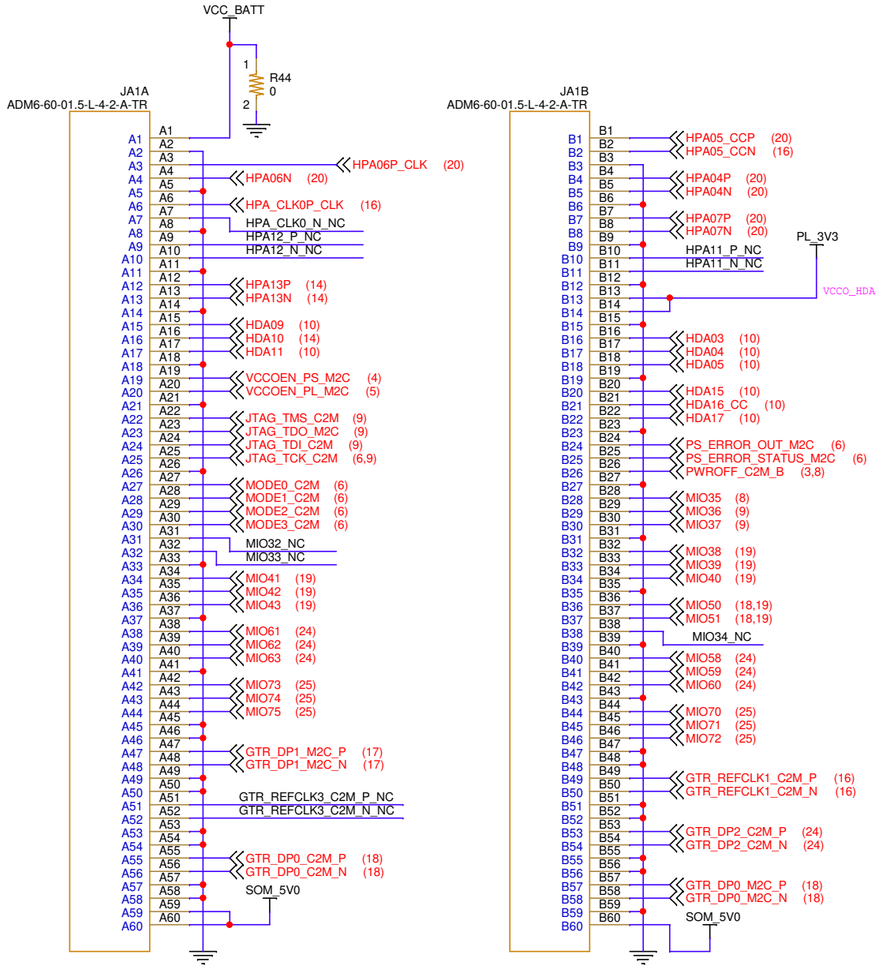
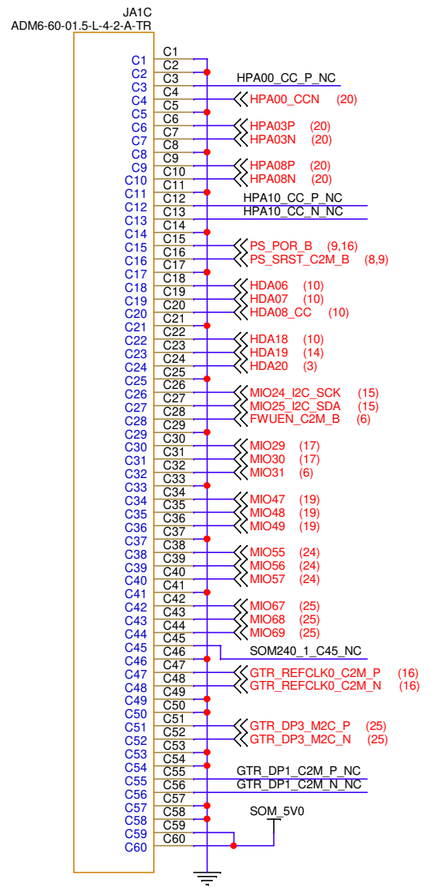
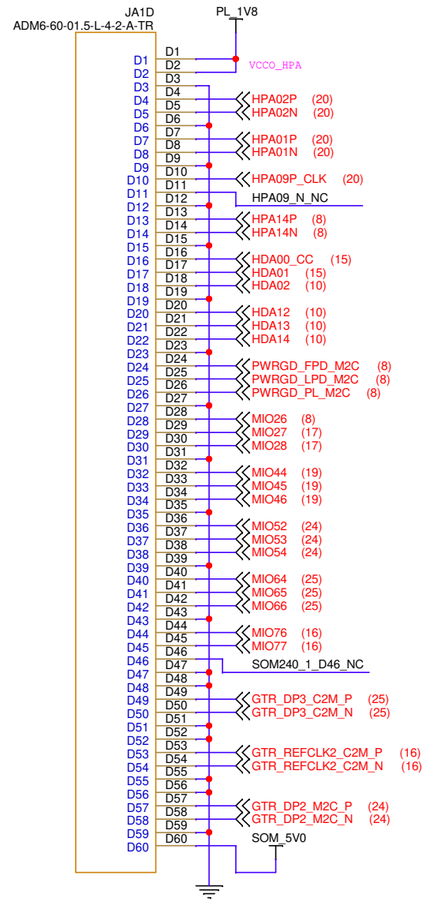
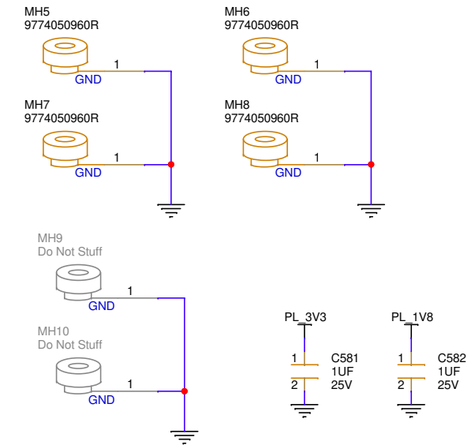
SOM240_1 CONNECTOR



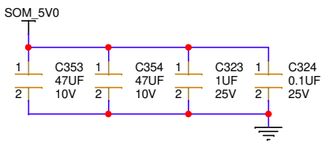




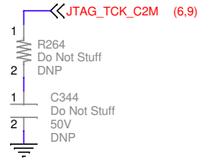
SOM STANDOFFS



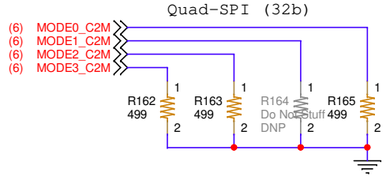
SOM_5V0 Connector Decoupling



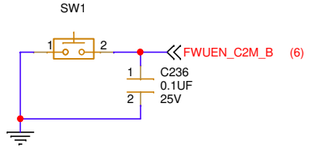
TCK TERM



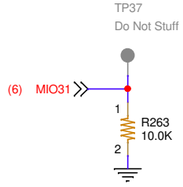
MODE PINS



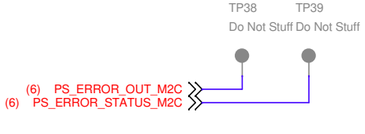
FWUEN BUTTON



SHUTDOWN



PS_ERROR_OUT/STATUS TEST POINTS



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2100 LOGIC DRIVE
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SKIT

Title: SCK-KR
06 - SOM240_1 Connector

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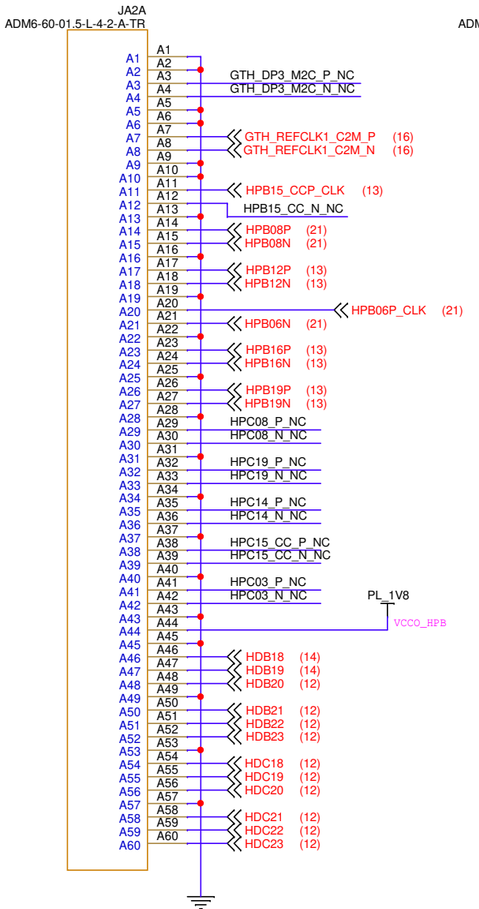
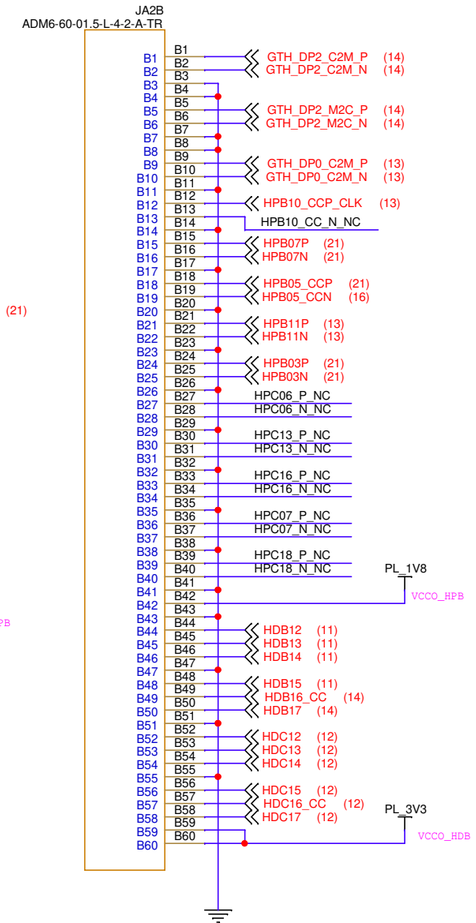
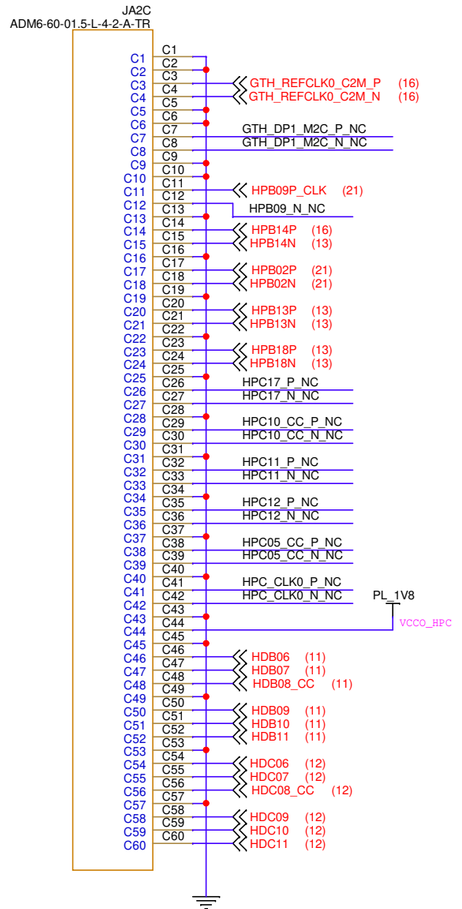
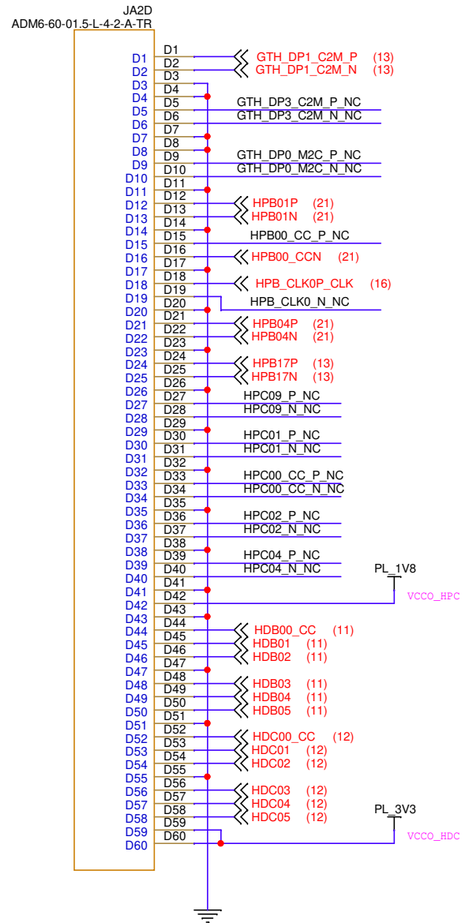
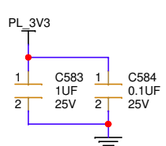
SOM240_2 CONNECTOR

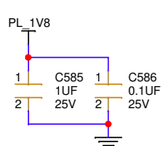




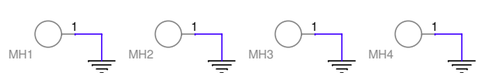








FOUR CORNER MOUNTING HOLES



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SKIT

Title: SCK-KR
07 - SOM240_2 Connector

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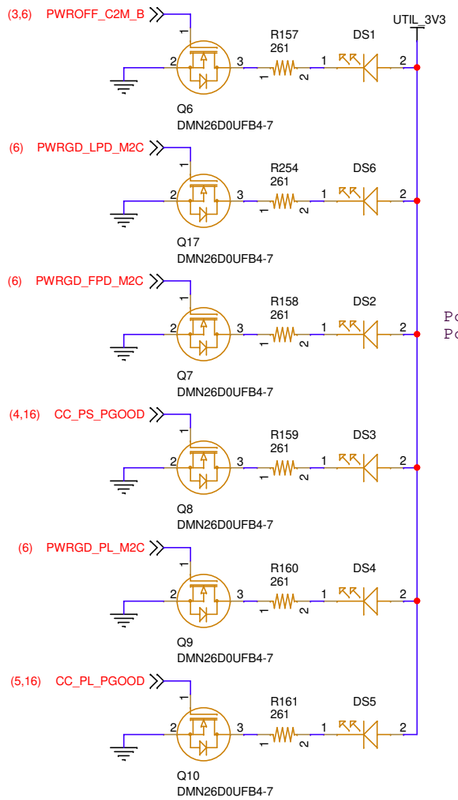
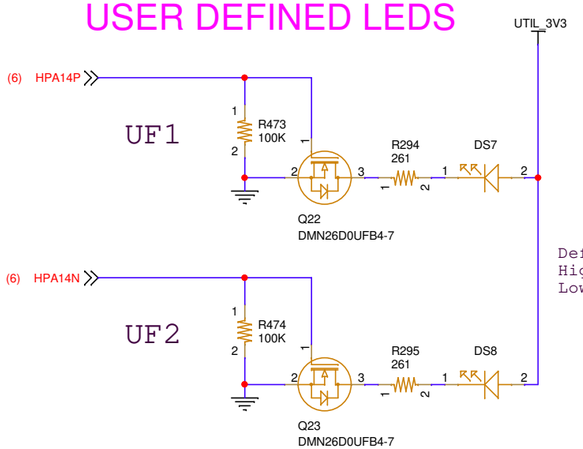
POWER STATUS LEDS



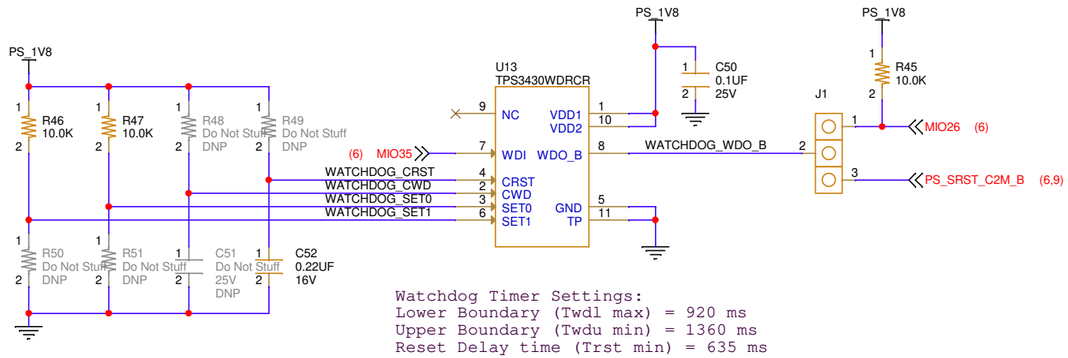
Power GOOD:ON
Power Failure:OFF

USER DEFINED LEDS



Default: OFF
High: ON
Low: OFF

WATCHDOG TIMER



Watchdog Timer Settings:
Lower Boundary (Twdl max) = 920 ms
Upper Boundary (Twdu min) = 1360 ms
Reset Delay time (Trst min) = 635 ms

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SKIT

Title: SCK-KR
08 - WD, LEDs

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Engineer: RH/JW

FTDI JTAG/UART

USB_JTAG_FLTR
C78 10uF 25V
R40 10.0K
FTDI_3V3_PG
U11 MP8904 IN EN PG FB OUT NC1 NC2 E_PAD GND
USB_PWRD_VCCIO = 3.3V
C44 1000PF 50V
R36 56.2K
FTDI_3V3_FB
R41 10.0K
C79 10UF 10V
USB_PWRD_VCCIO

USB_PWRD_VCCIO
L2 FERRITE-600
USB_JTAG_VPHY
C82 4.7UF 6.3V
C83 0.1UF 25V
USB_PWRD_VCCIO
L3 FERRITE-600
USB_JTAG_VPLL
C85 4.7UF 6.3V
C84 0.1UF 25V

USB_PWRD_VCCIO
R233 10.0K
LS_OE_B
USB_PWRD_VCCIO
R234 10.0K
PC4_CON_PGND
Q12 DMN26D0UFB4-7
FTDI_LS_OE_B
Q13 DMN26D0UFB4-7

USB_PWRD_VCCIO
C90 0.1UF 25V
U25 SN74AVC2T245 VCCA VCCB A1 A2 OE_B GND B1 B2 DIR1 DIR2
PS_1V8
C91 0.1UF 25V
FTDI_TMS
FTDI_TDO
LS_OE_B
JTAG_TMS_C2M (6)
JTAG_TDO_M2C (6)
USB_PWRD_VCCIO

USB_PWRD_VCCIO
C80 0.1UF 25V
U22 SN74AVC4T245 VCCA VCCB 1A1 1A2 2A1 2A2 1OE_B 2OE_B 1B1 1B2 2B1 2B2 1DIR 2DIR GND GND
PS_1V8
C81 0.1UF 25V
FTDI_TCK
FTDI_TDI
JTAG_VCCO_ON
R241 10.0K
LS_OE_B
R66 0
JTAG_TCK_C2M (6)
JTAG_TDI_C2M (6)
USB_PWRD_VCCIO

USB_PWRD_VCCIO
R266 10.0K
R267 10.0K
U23 NC7WZ07 VCC GND A1 A2 Y1 Y2
C86 0.1UF 25V
FTDI_PS_POR_B_LS
FTDI_PS_SRST_B_LS
PS_POR_B (6,16)
PS_SRST_C2M_B (6,8)

USB_JTAG_VBUS
X1 TPD4S012 VBUS NC GND D_P D_N ID
USB_JTAG_FLTR
L4 FERRITE-220
L5 FERRITE-220
J4 ZX62D_AB_5P8(30) VBUS SHLD1 SHLD2 SHLD3 SHLD4 SHLD5 SHLD6 GND D_P D_N ID
C89 1UF 25V
C87 0.1UF 25V
C88 0.1UF 25V

USB_JTAG_VCORE
USB_PWRD_VCCIO
U24 FT4232HL_LQFP64
VCORE1 VCORE2 VCORE3 VREGOUT VCCIO1 VCCIO2 VCCIO3 VCCIO4 VREGIN
USB_JTAG_VPHY
USB_JTAG_VPLL
VPHY VPLL
USB_JTAG_DM_N
USB_JTAG_DM_P
DM DP
RESET#
EECS EECLK EEDATA
OSCI OSCO TEST REF
ADBUS0 FTDI_TCK
ADBUS1 FTDI_TDI
ADBUS2 FTDI_TDO
ADBUS3 FTDI_TMS
ADBUS4 JTAG_VCCO_ON
ADBUS5 FTDI_LS_OE_B
ADBUS6 FTDI_PS_POR_B
ADBUS7 FTDI_PS_SRST_B
BDBUS0 FTDI_UARTB_TXD
BDBUS1 FTDI_UARTB_RXD
CDBUS0 CDBUS1 CDBUS2 CDBUS3 CDBUS4 CDBUS5 CDBUS6 CDBUS7
DDBUS0 FTDI_EEPROM_WC
DDBUS1 DDBUS2 DDBUS3 DDBUS4 DDBUS5 DDBUS6 DDBUS7
PWREN# SUSPEND#
FTDI_PWREN_B
AGND GND1 GND2 GND3 GND4 GND5 GND6 GND7 GND8
R235 10.0K
R268 10.0K
R262 10.0K
Q19 DMN26D0UFB4-7
EEPROM_WC_B (15)
R75 1.00K
R79 12.0K
R74 10.0K
R76 10.0K
R77 10.0K
R78 2.00K
U26 93LC56B VCC NC ORG_NC VSS CS CLK DI DO
C94 0.1UF 25V
X1 X2 X3 12.00MHZ
C103 27PF 50V
C104 27PF 50V
C95 4.7UF 6.3V
C96 0.1UF 25V
C97 0.1UF 25V
C98 0.1UF 25V
C99 0.1UF 25V
C100 0.1UF 25V
C101 0.1UF 25V
C102 0.1UF 25V
C105 0.1UF 25V

USB_PWRD_VCCIO
C355 0.1UF 25V
U71 SN74AVC2T245 VCCA VCCB A1 A2 OE_B GND B1 B2 DIR1 DIR2
C356 0.1UF 25V
FTDI_PS_POR_B
FTDI_PS_SRST_B
FTDI_PWREN_B
FTDI_PS_POR_B_LS
FTDI_PS_SRST_B_LS
USB_PWRD_VCCIO
C93 0.1UF 25V
U64 SN74AVC2T245 VCCA VCCB A1 A2 OE_B GND B1 B2 DIR1 DIR2
PS_1V8
C92 0.1UF 25V
SOM_UART1_RXD
SOM_UART1_TXD
MIO37 (6)
MIO36 (6)
USB_PWRD_VCCIO

PS_1V8
J3
JTAG_TMS_C2M
JTAG_TCK_C2M
JTAG_TDO_M2C
JTAG_TDI_C2M
PS_SRST_C2M_B
PC4_CON_PGND

XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
09 - JTAG/UART

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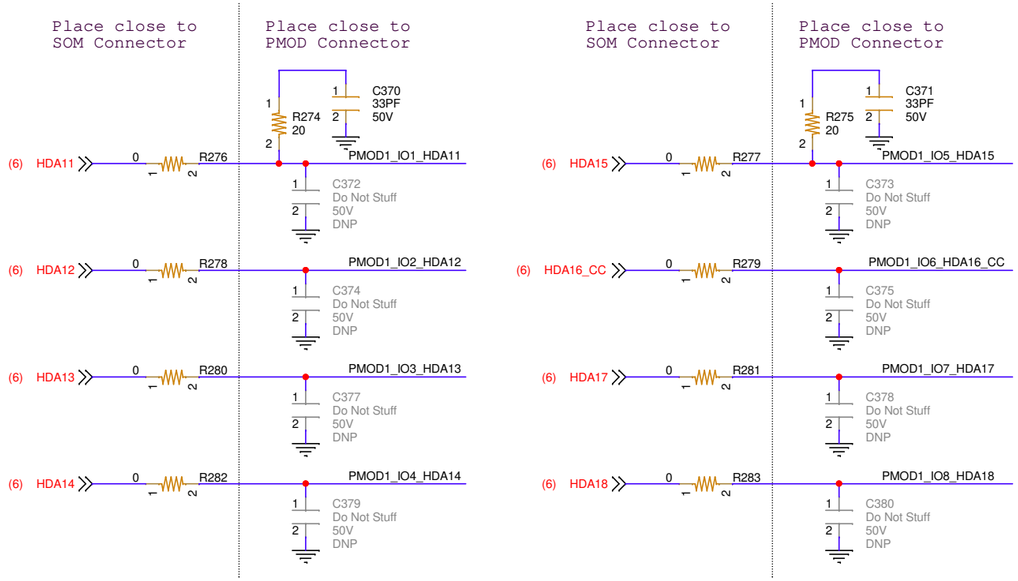
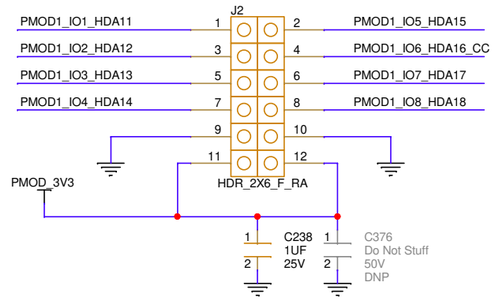
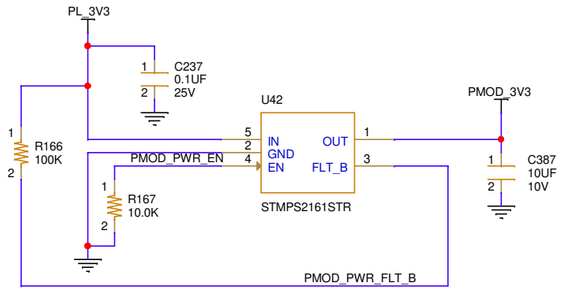
PMOD #1







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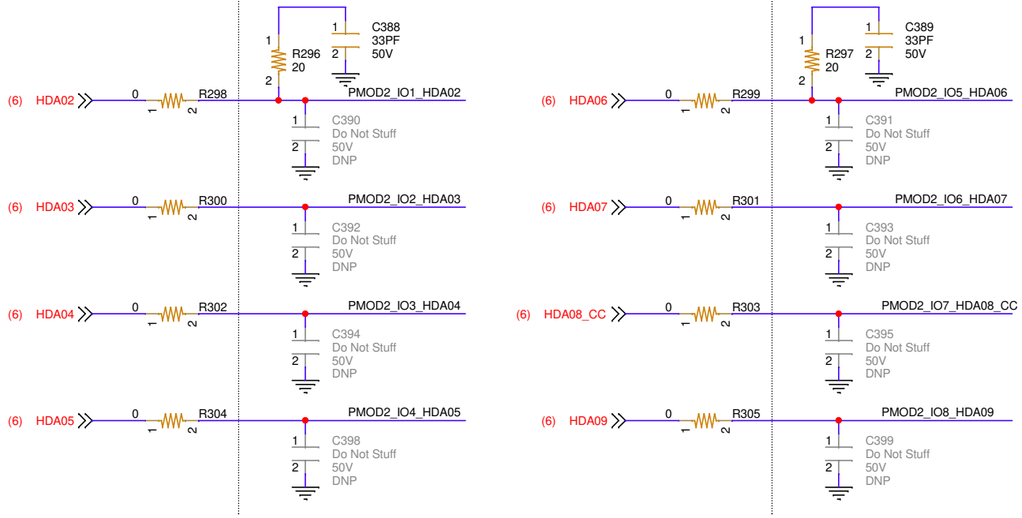

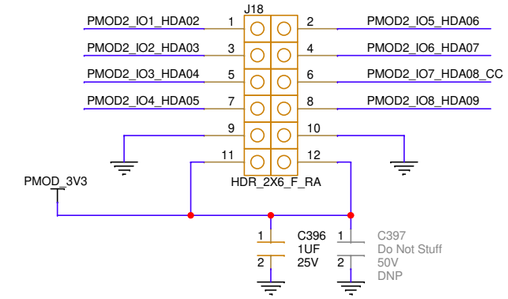

XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
10 - PMOD1&2

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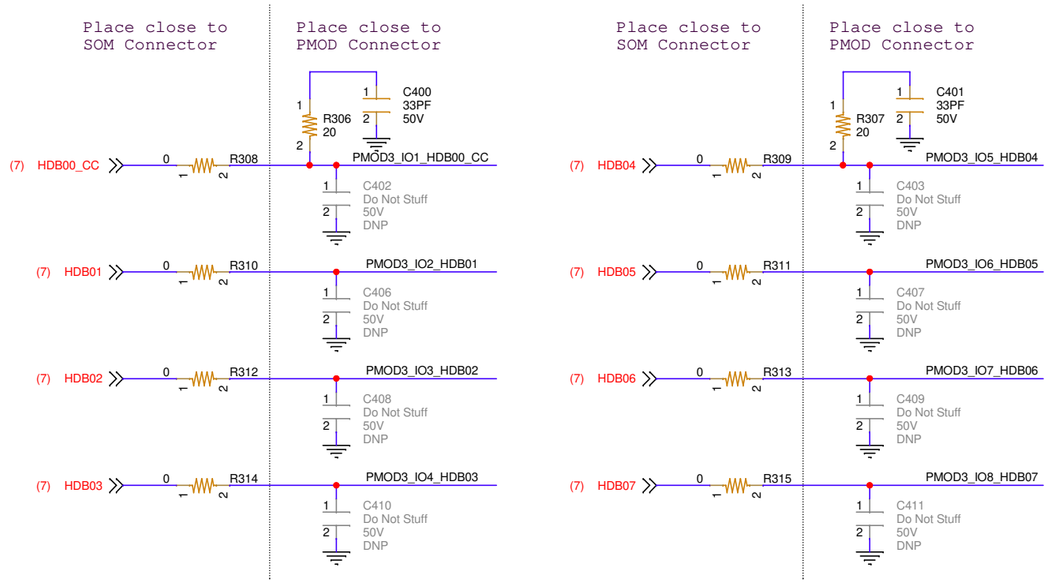
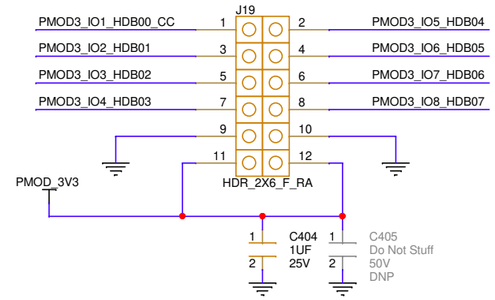
PMOD #3





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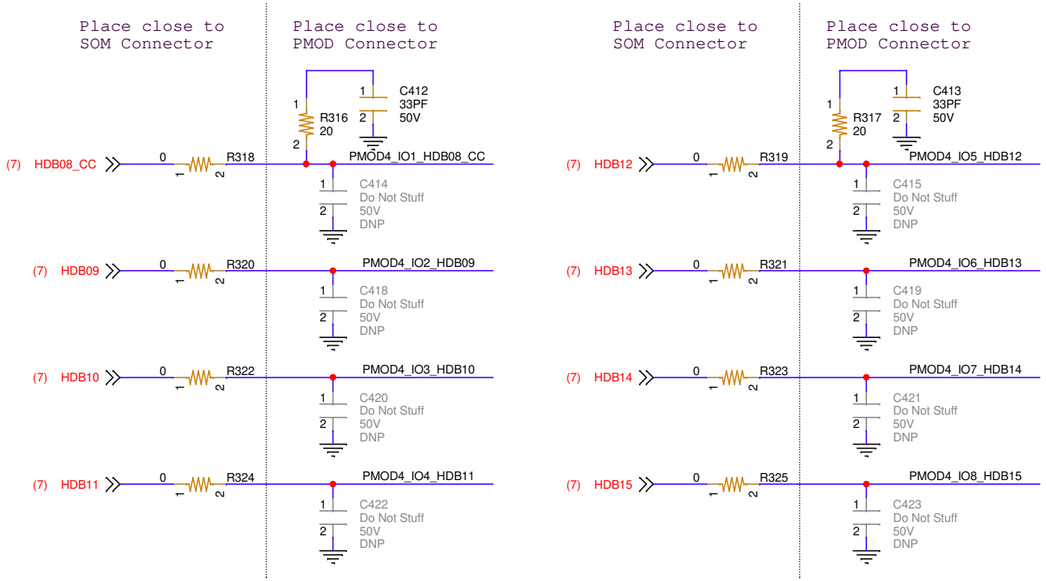

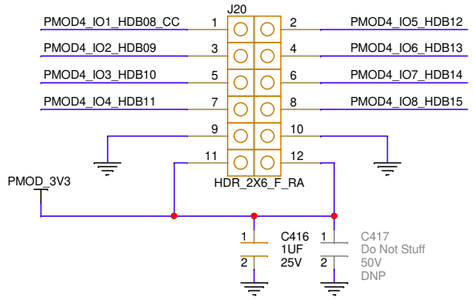

XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
11 - PMOD3&4

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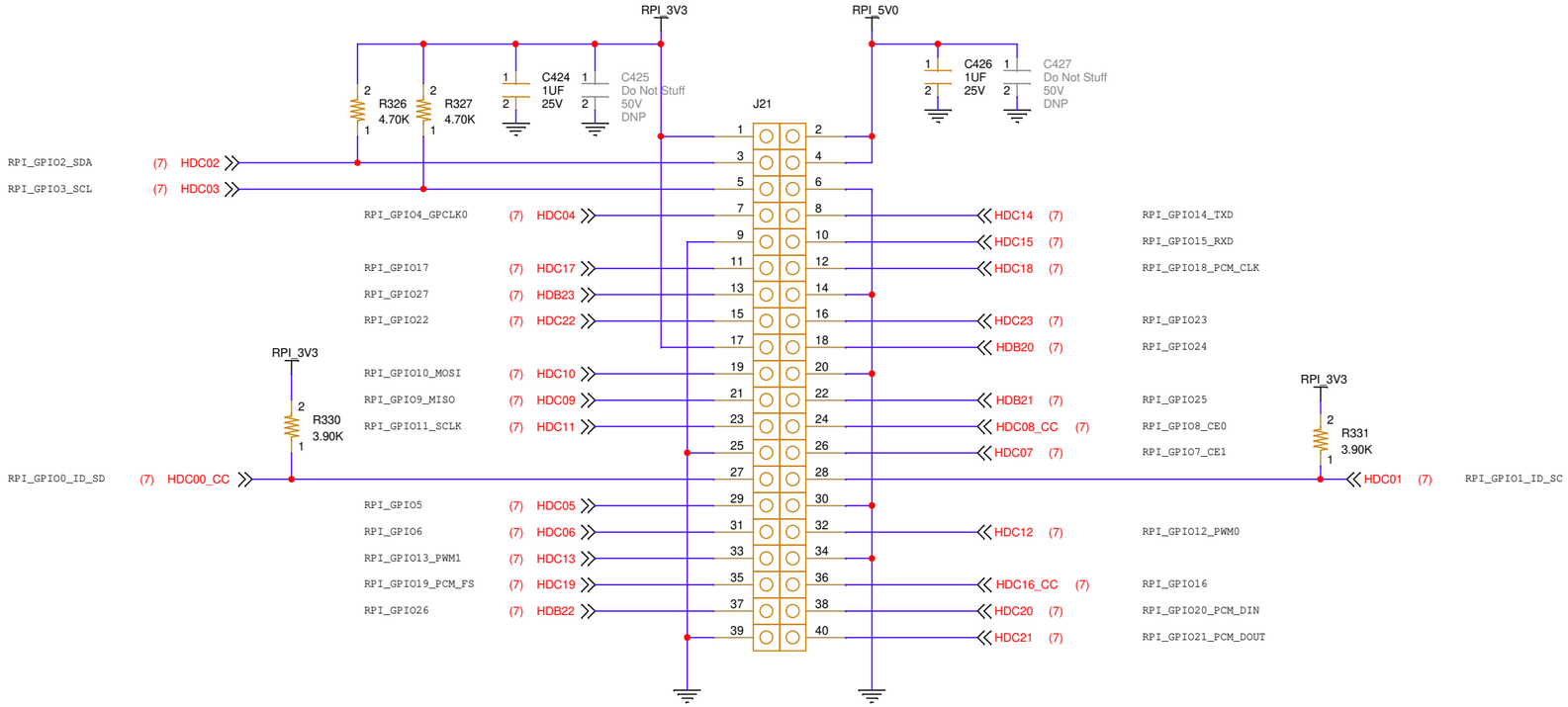
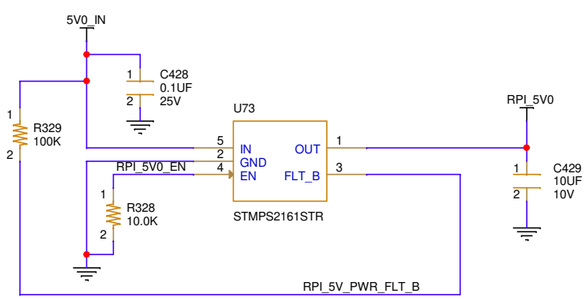
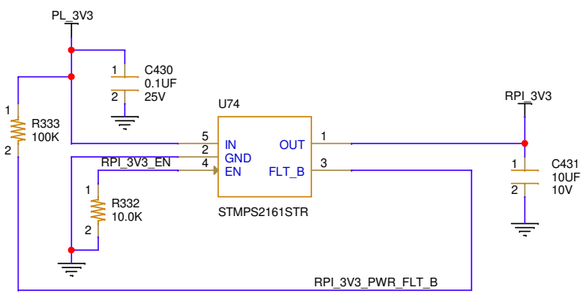
Raspberry Pi Expansion Header







XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
12 - RPI Expansion CONN

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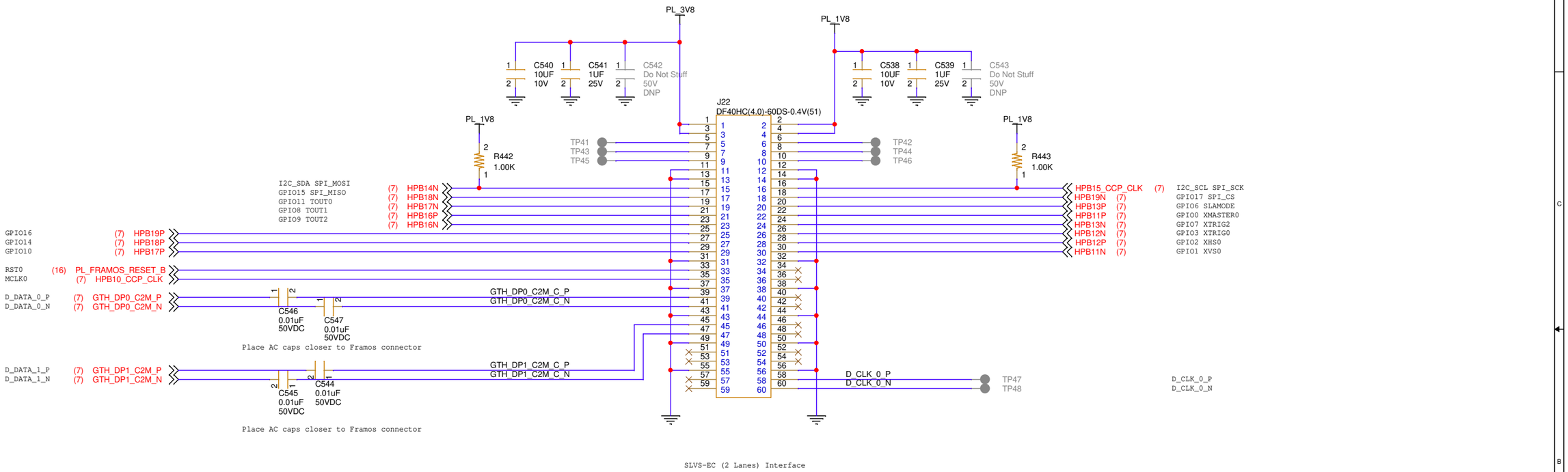
Framos FPA SLVS-EC



XILINX 2100 LOGIC DRIVE SAN JOSE CA		SKIT
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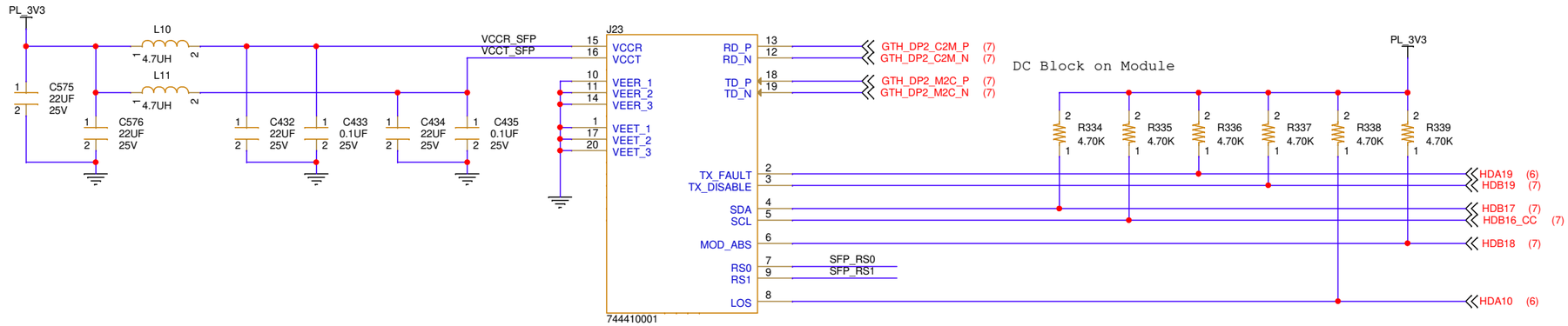
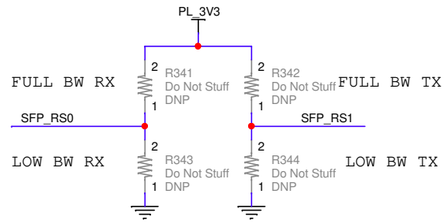
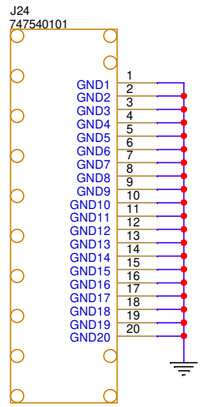
SFP+ Connector

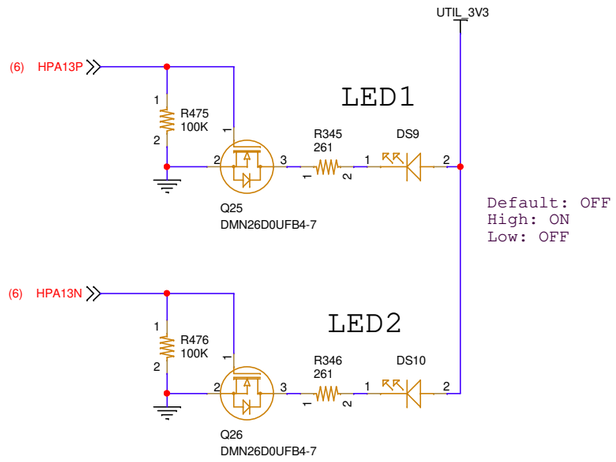




SFP+ Cage



SFP+ LEDs



XILINX 2100 LOGIC DRIVE SAN JOSE CA		SKIT
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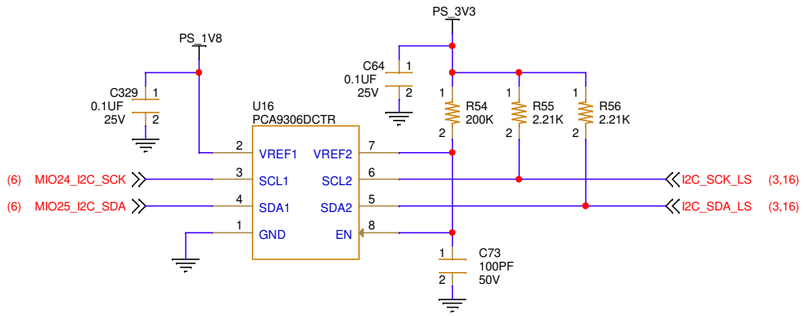
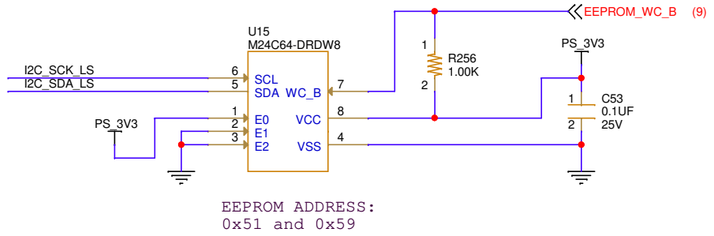
MIO I2C LEVEL SHIFTER

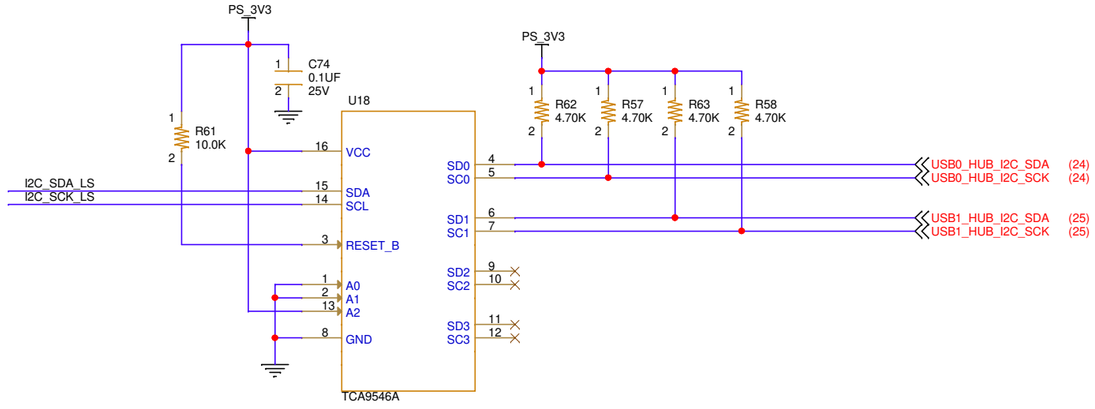


SYSTEM EEPROM



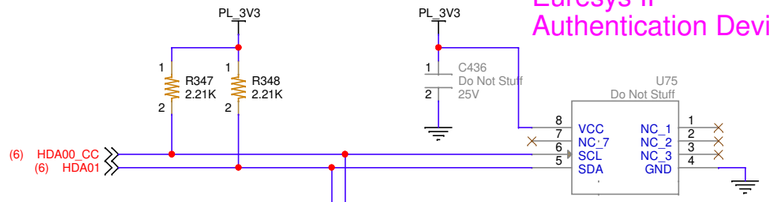
EEPROM ADDRESS:
0x51 and 0x59

MIO I2C SWITCH



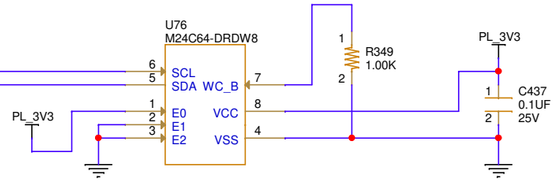
I2C ADDR = 0x74

Euresys IP Authentication Device



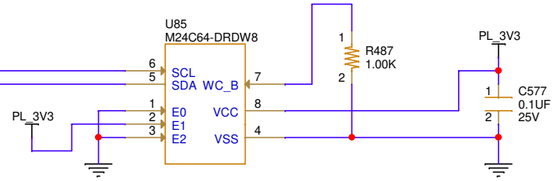
I2C ADDRESS IS PROGRAMMABLE
DEFAULT ADDRESS IS 0x64

Euresys IP EEPROM



EEPROM ADDRESS:
0x51 and 0x59

EtherCAT IP EEPROM



EEPROM ADDRESS:
0x52 and 0x5A

XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
15 - I2C, EEPROM

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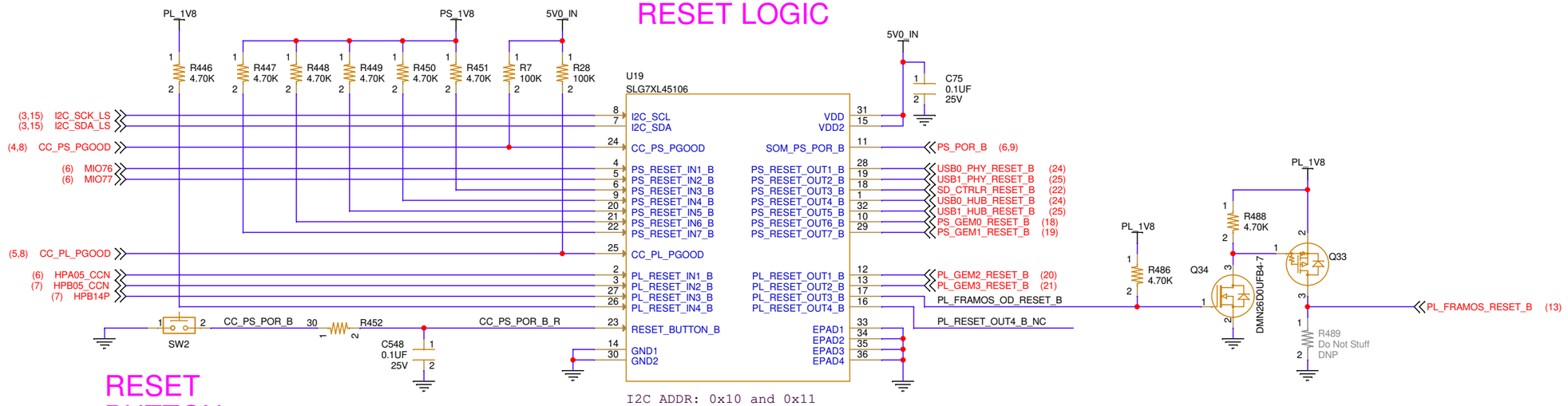
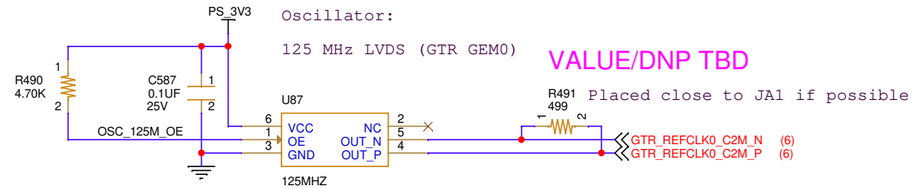
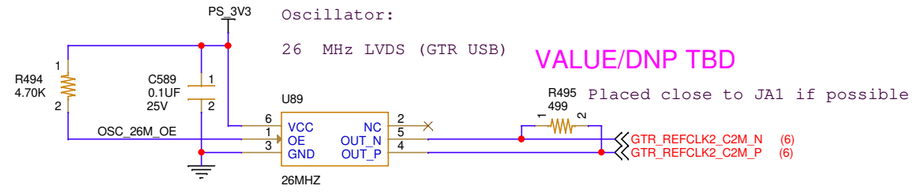
RESET LOGIC

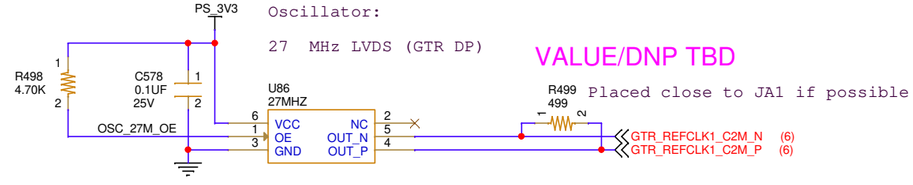


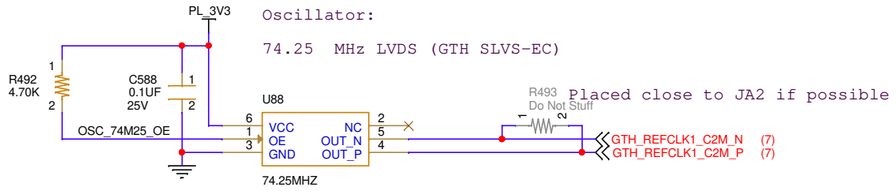
RESET BUTTON

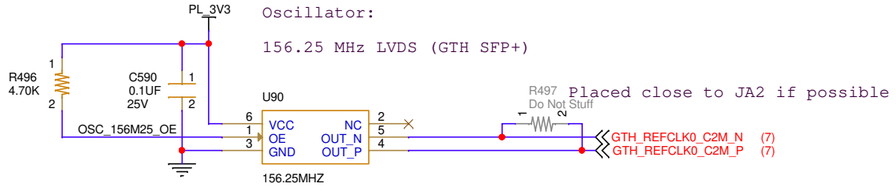
VALUE/DNP TBD

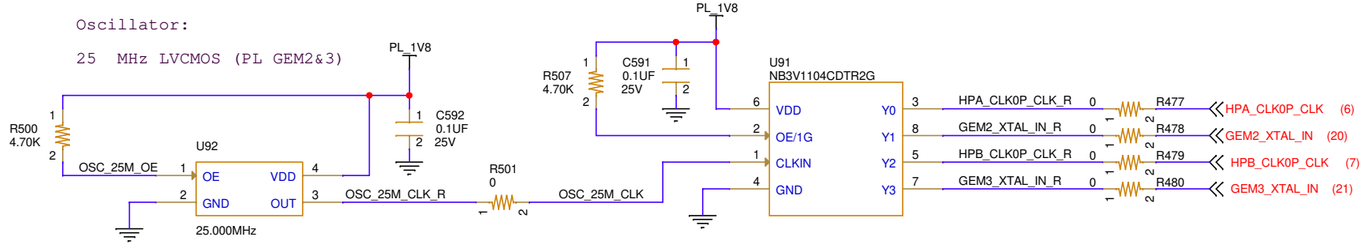












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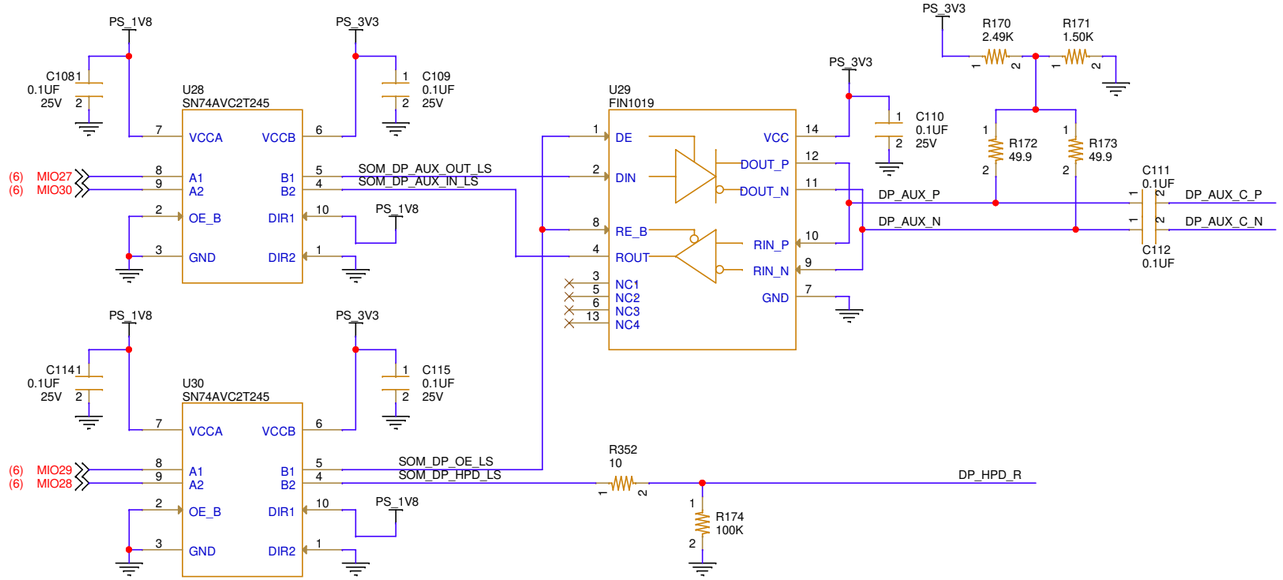
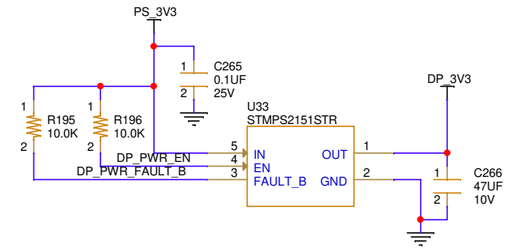
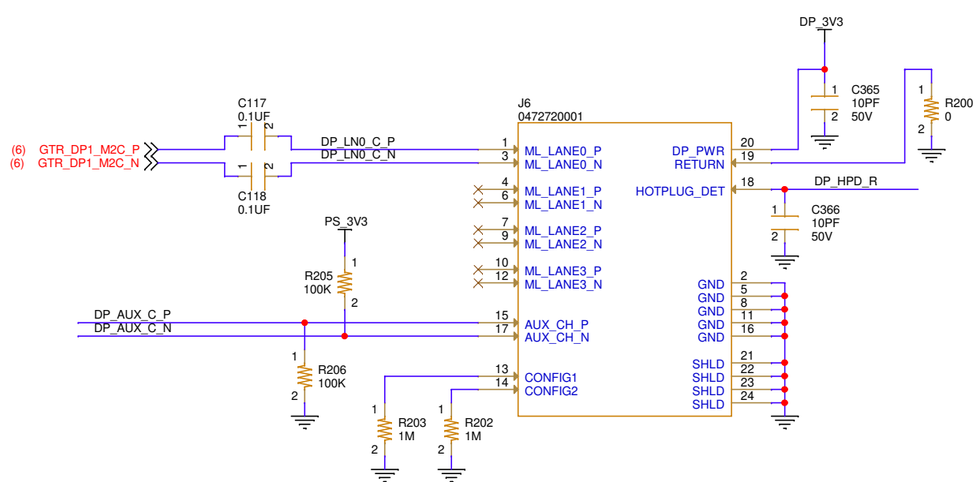
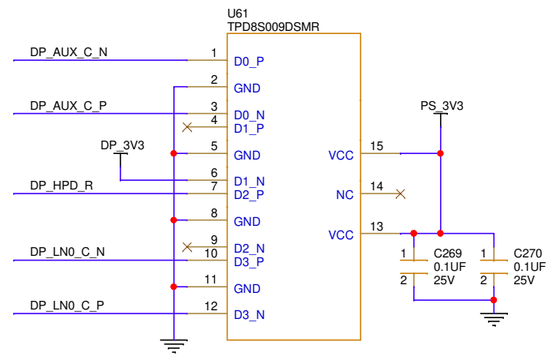
DISPLAY PORT









XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
17_DisplayPort

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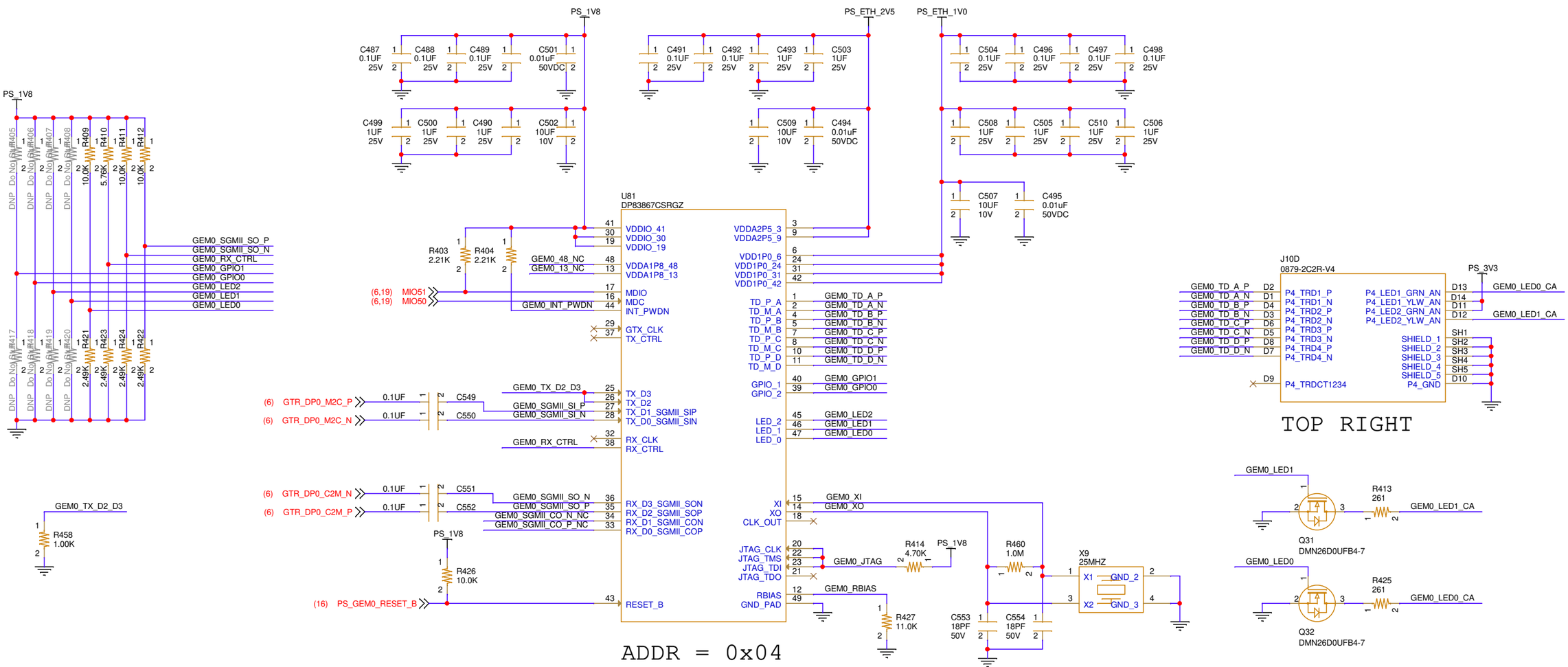
PS GEM0 SGMII ETHERNET



XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
18_PS_GEM0

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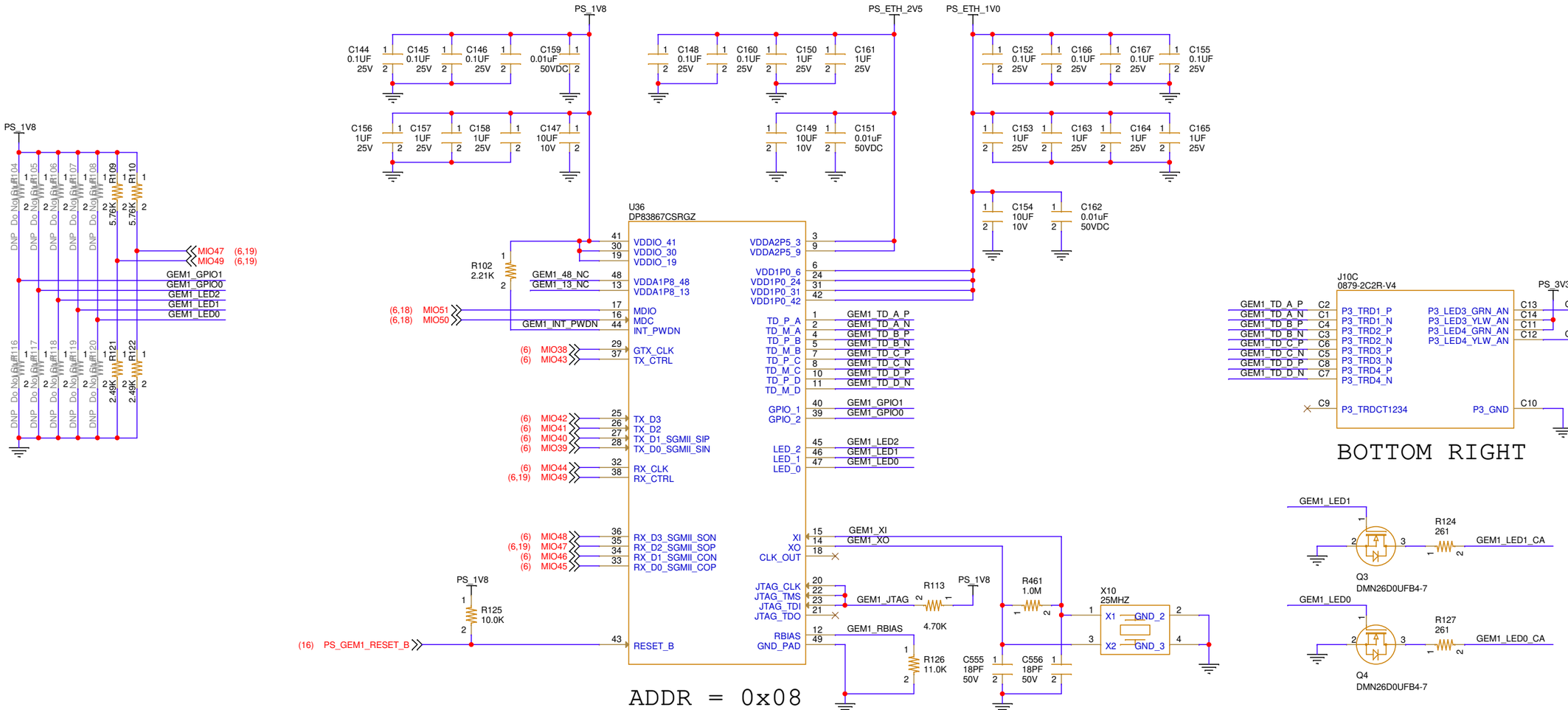
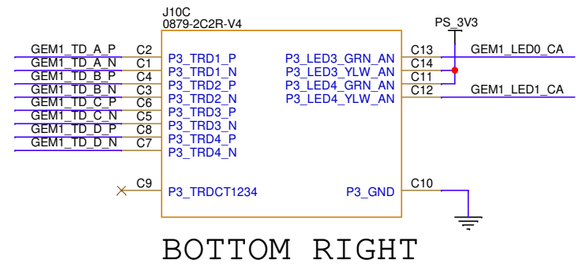
PS GEM1 RGMII ETHERNET





XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
19_PS_GEM1

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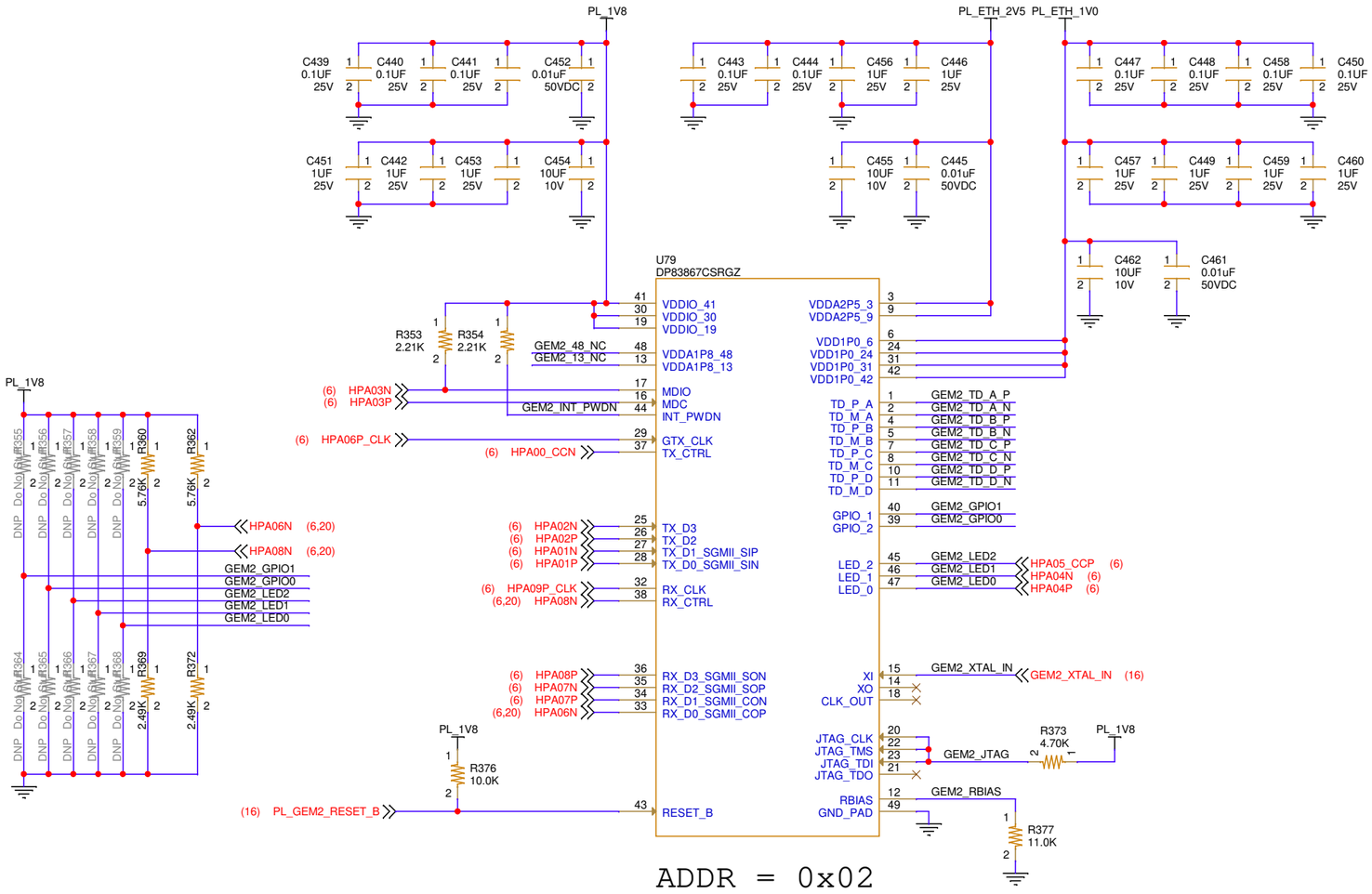
PL GEM2 RGMII ETHERNET



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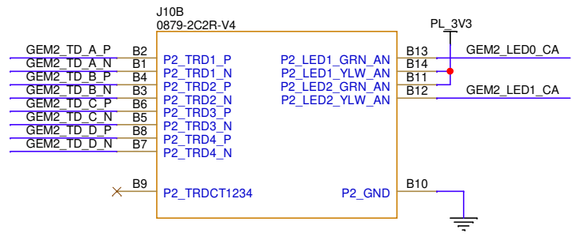

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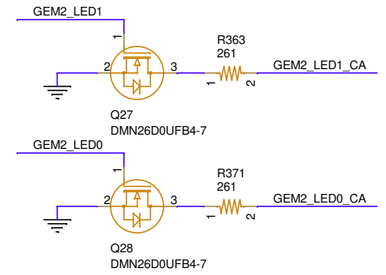

XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
20_PL_GEM2

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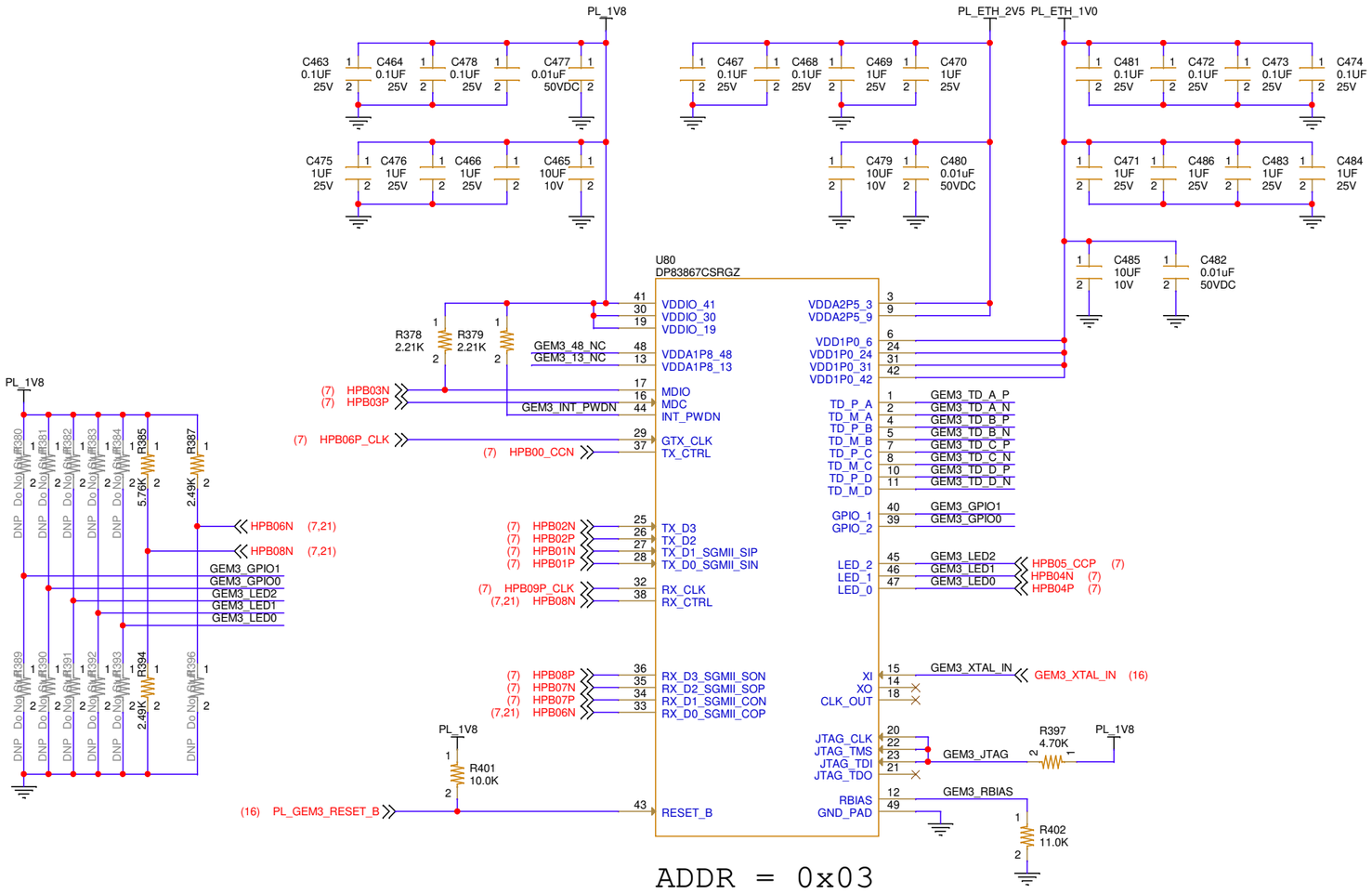
PL GEM3 RGMII ETHERNET



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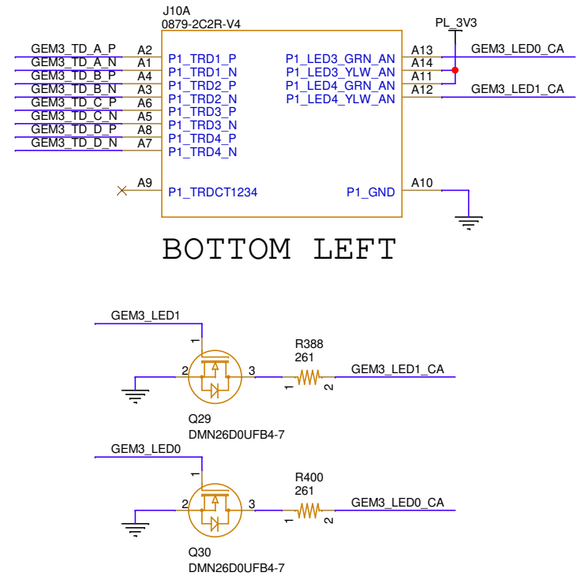

BOTTOM LEFT

XILINX
2100 LOGIC DRIVE
SAN JOSE CA

SKIT

Title: SCK-KR
21_PL_GEM3

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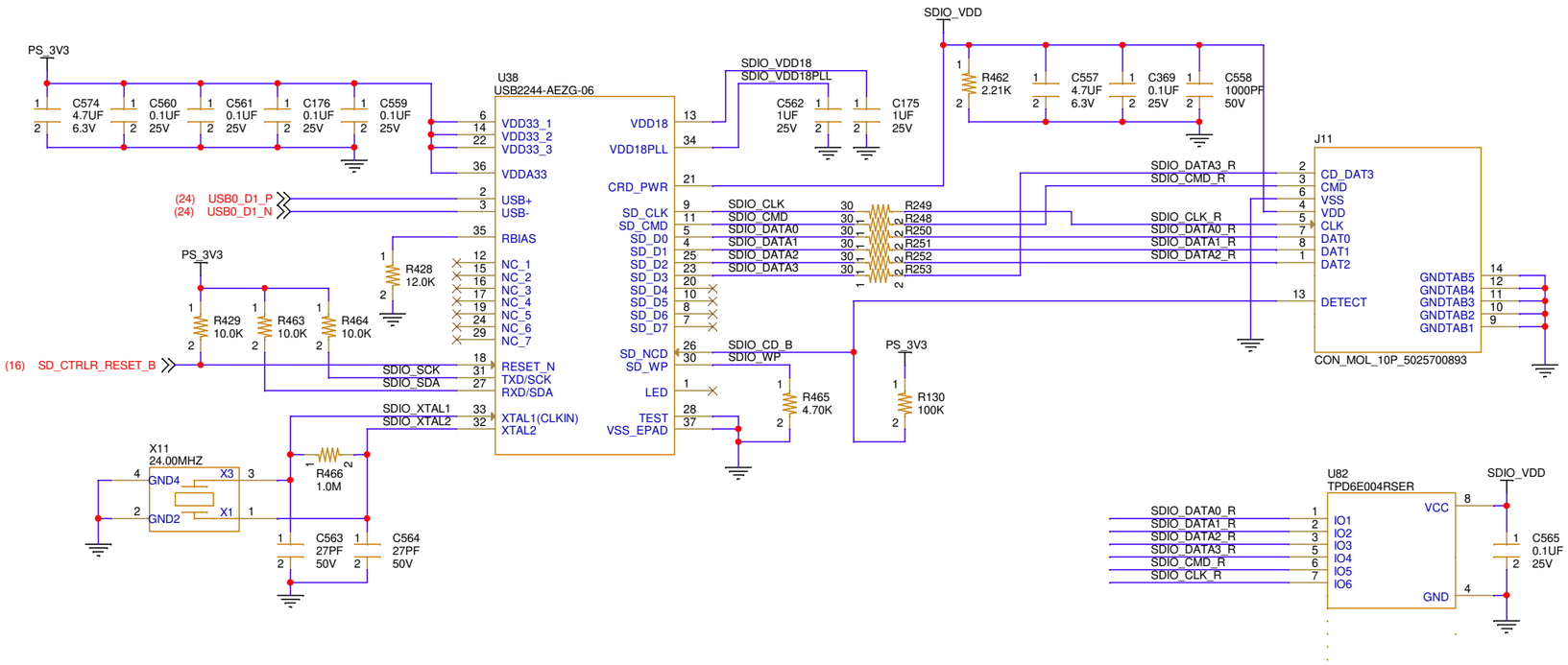
SD 2.0



XILINX 2100 LOGIC DRIVE SAN JOSE CA		SKIT	
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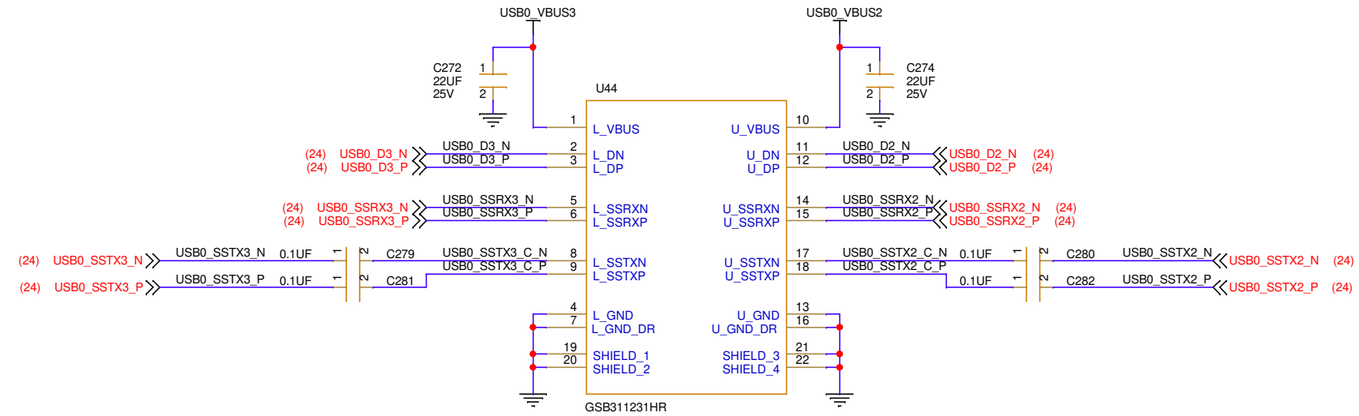
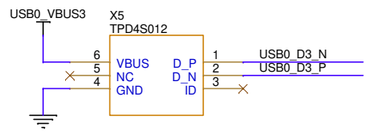
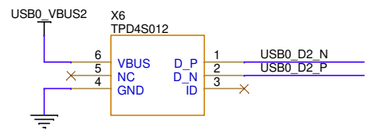
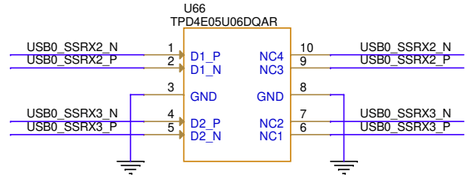
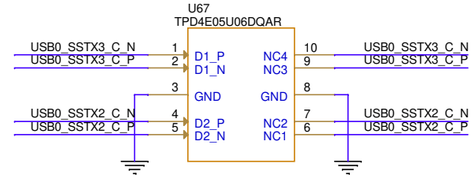
USB CONNECTORS

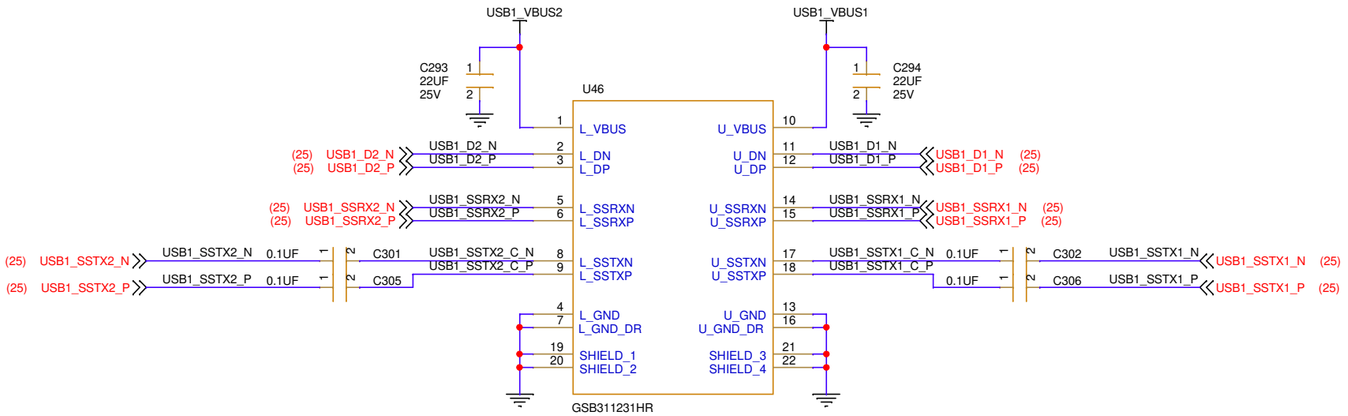


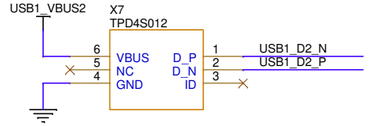


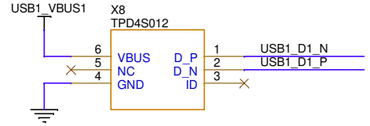


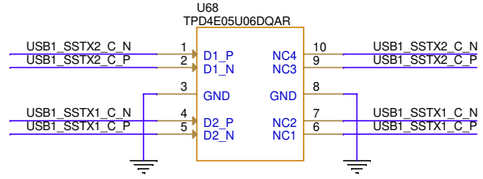


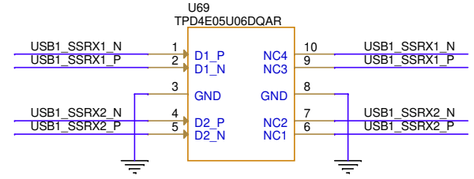












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23_USB Connectors

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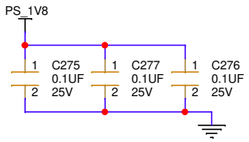
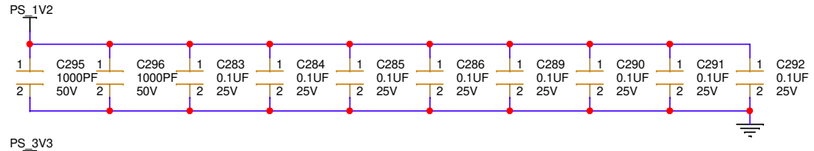
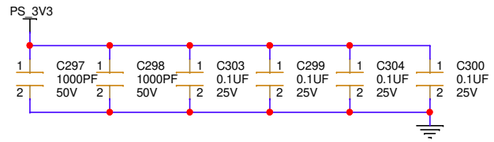
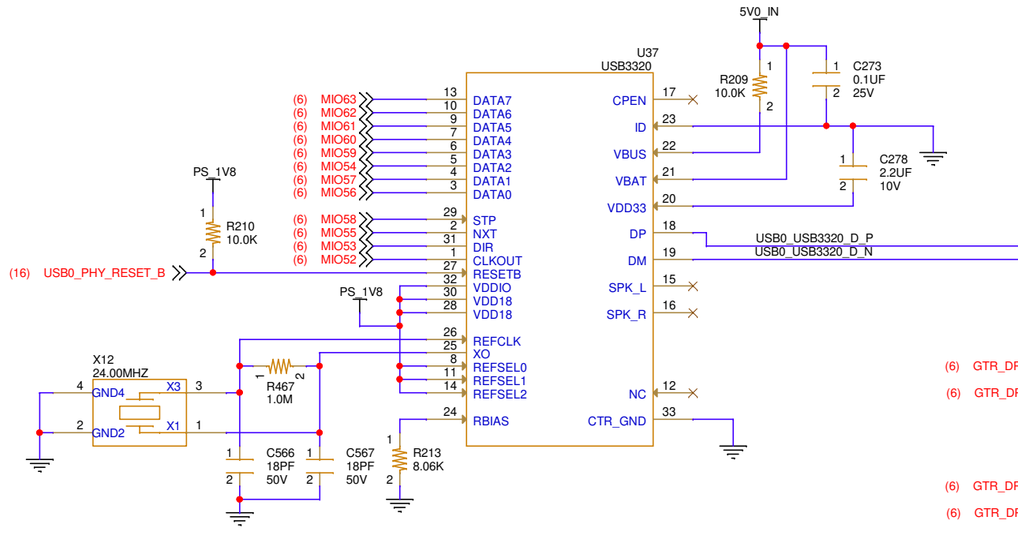
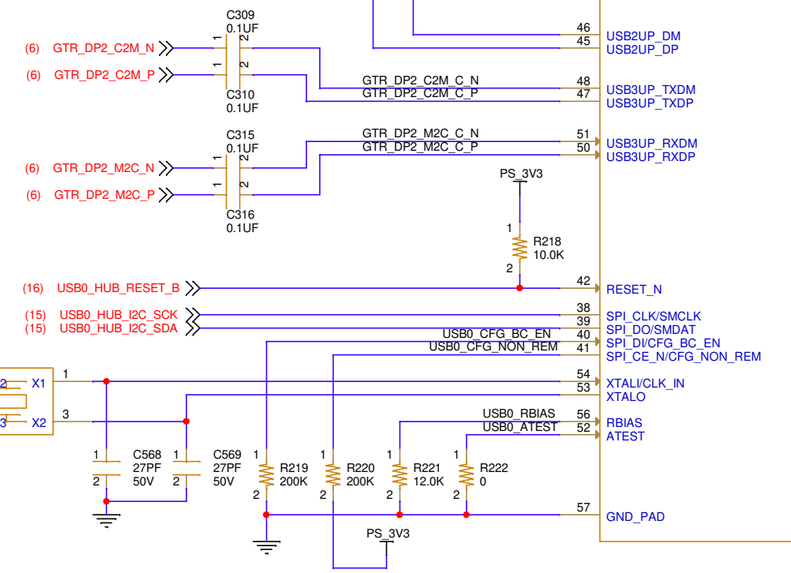
USB0 PHY AND HUB

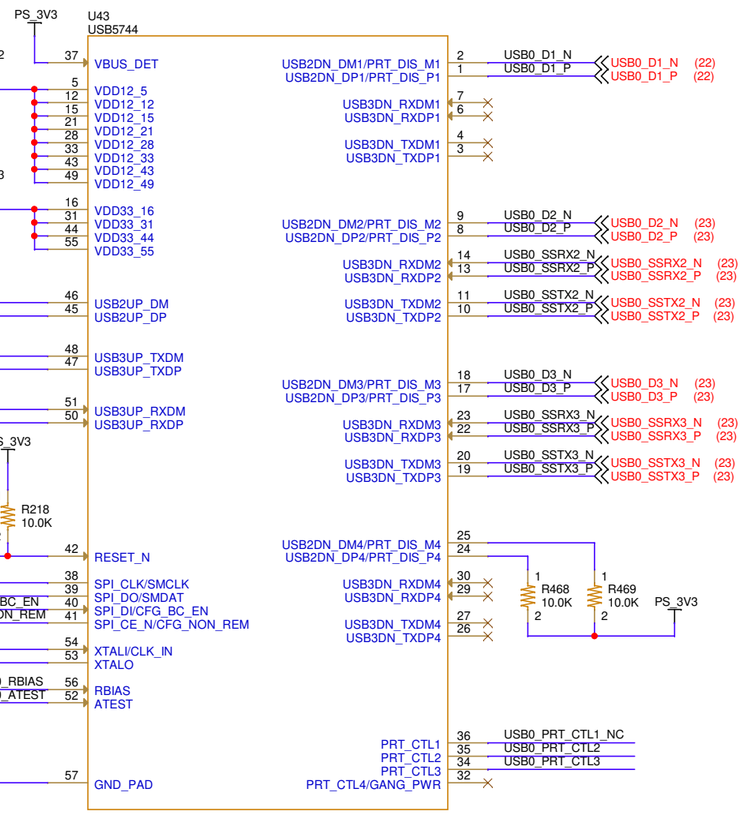


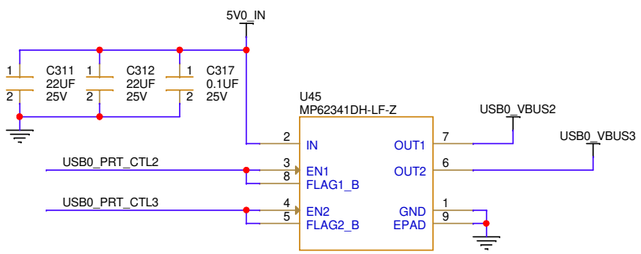












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SKIT

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24_USB0 PHY and Hub

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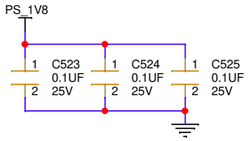
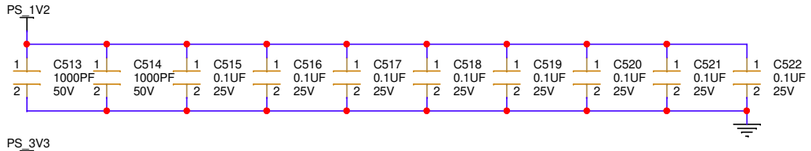
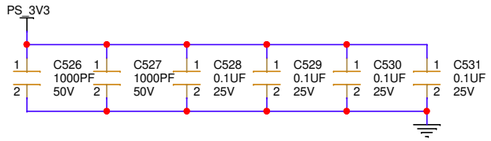
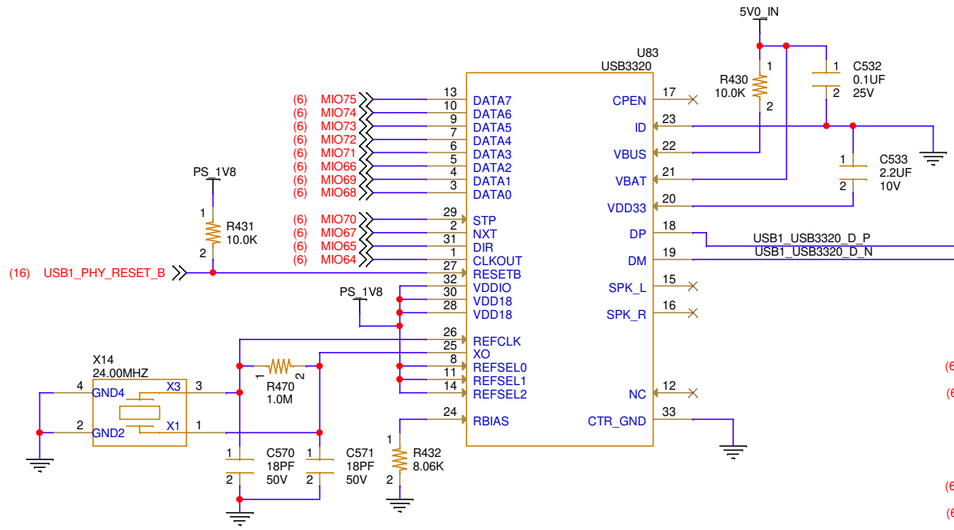
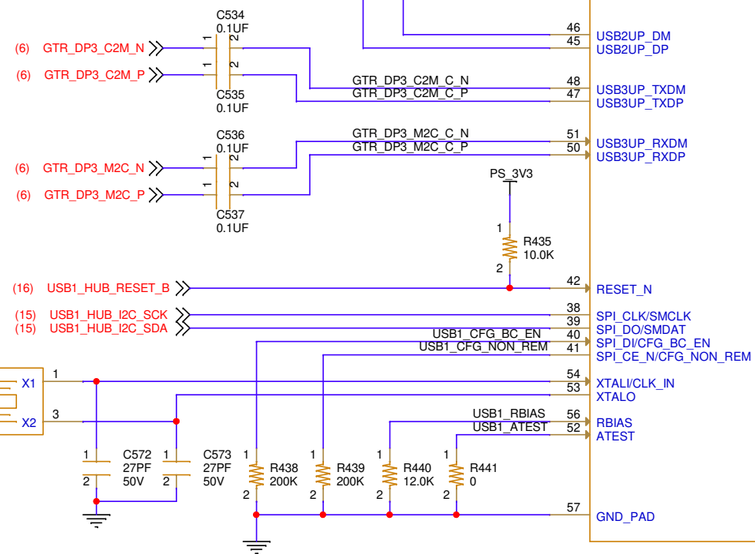
USB1 PHY AND HUB

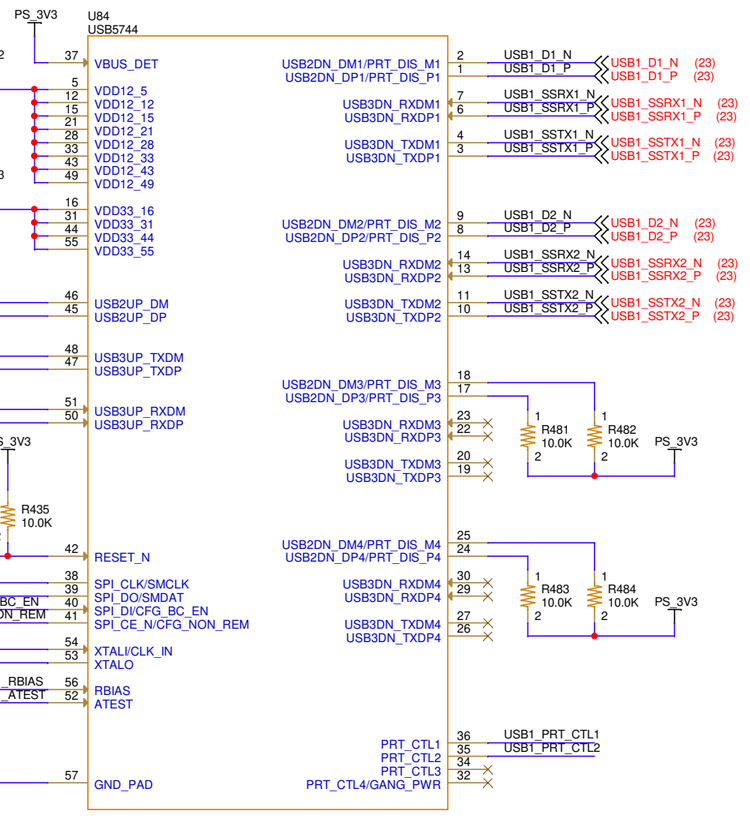


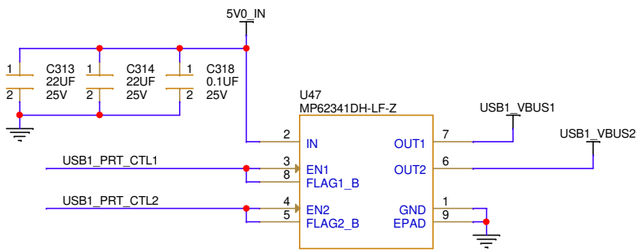












XILINX
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SKIT

Title: SCK-KR
25_USB1 PHY and Hub

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