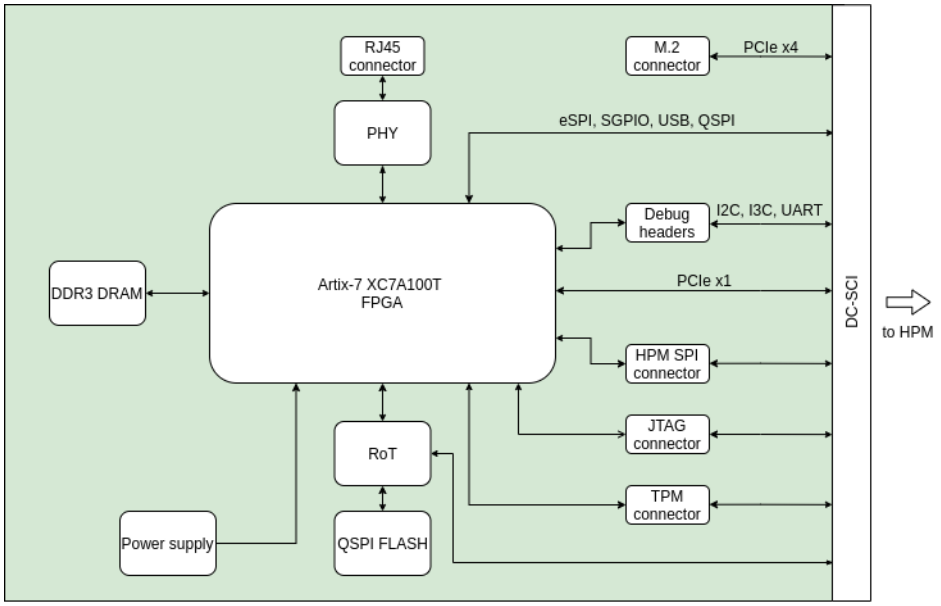
Artix – Datacenter Secure Control Module (DC-SCM)



Ethernet

File: ethernet.kicad_sch

PCIe-connector

File: pcie-conn.kicad_sch

RoT

File: rot.kicad_sch

Edge connector

File: edge-connector.kicad_sch

Interfaces

File: interfaces.kicad_sch

DDR3

File: ddr3.kicad_sch

Power supply

File: power-supply.kicad_sch

MP1
PCB_Mount_Hole_2.9_5.5

MP2
PCB_Mount_Hole_2.9_5.5

FPGA power supply

File: fpga-power-supply.kicad_sch

FPGA banks 13-16

File: fpga-banks-13-16.kicad_sch

FPGA banks 34-35 & CFG

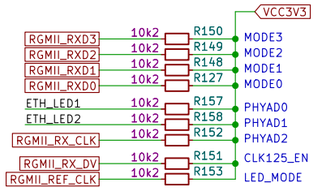
File: fpga-banks-34-25-cfg.kicad_sch

Sheet: /
File: artix-dc-scm.kicad_sch

Title: Artix – Datacenter Secure Control Module (DC-SCM)

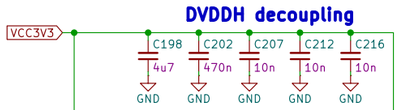
Size: A4	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A. eeschema 6.0.11+dfsg-1-bpo11+1		Id: 1/11

Bootstrap configuration

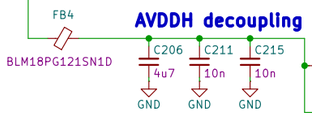


default:
MODE[3:0] : 1111 (see datasheet table 2-2)
PHYAD[4:0]: 00111
CLK125_EN: 1, enabled
LED_MODE: 1, Individual-LED

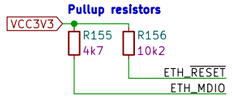
DVDDH decoupling



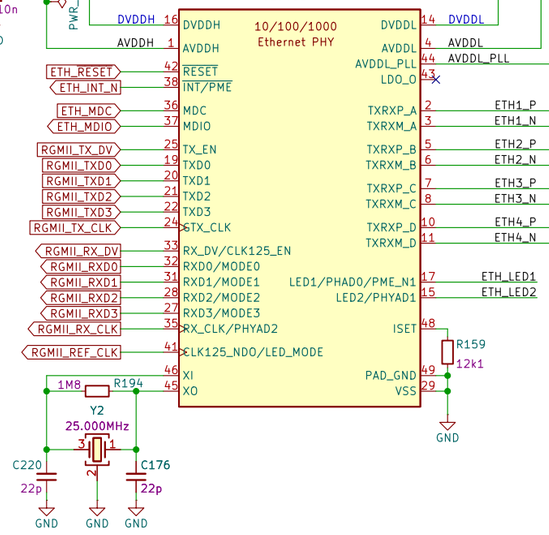
AVDDH decoupling



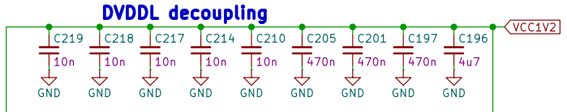
Pullup resistors



PHY

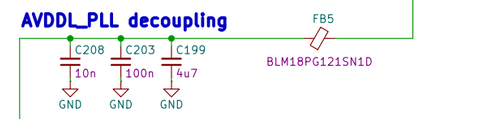


DVDDL decoupling

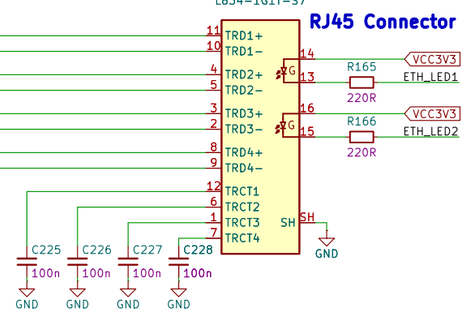


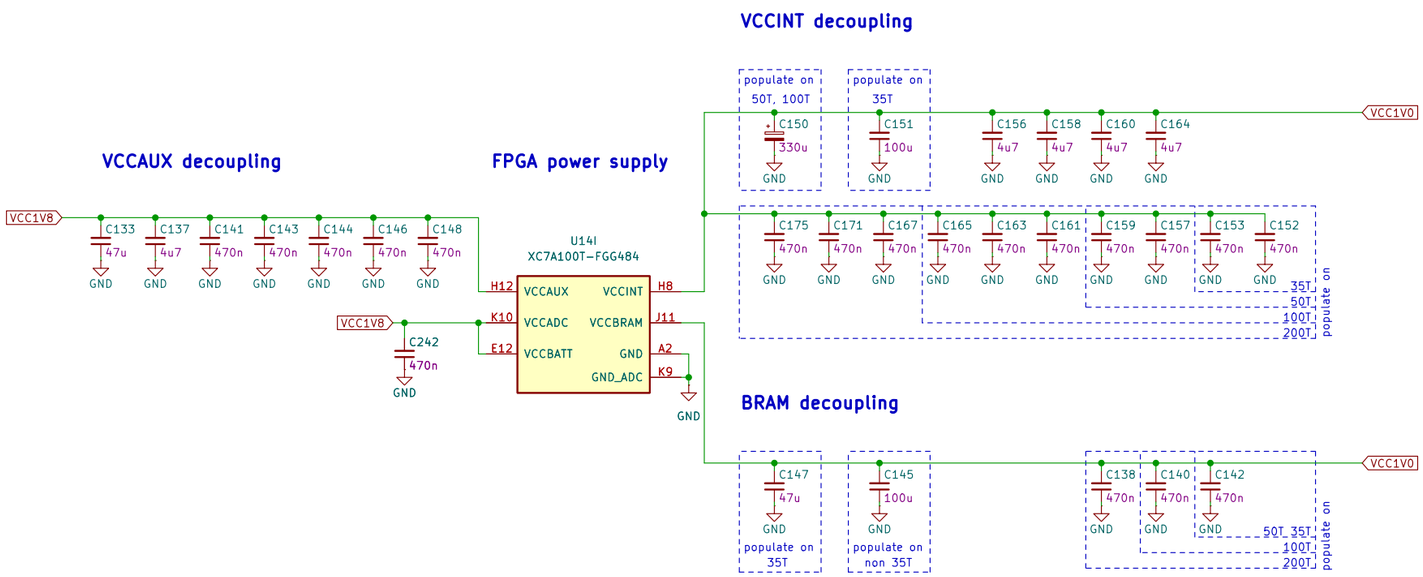
AVDDL decoupling

AVDDL_PLL decoupling



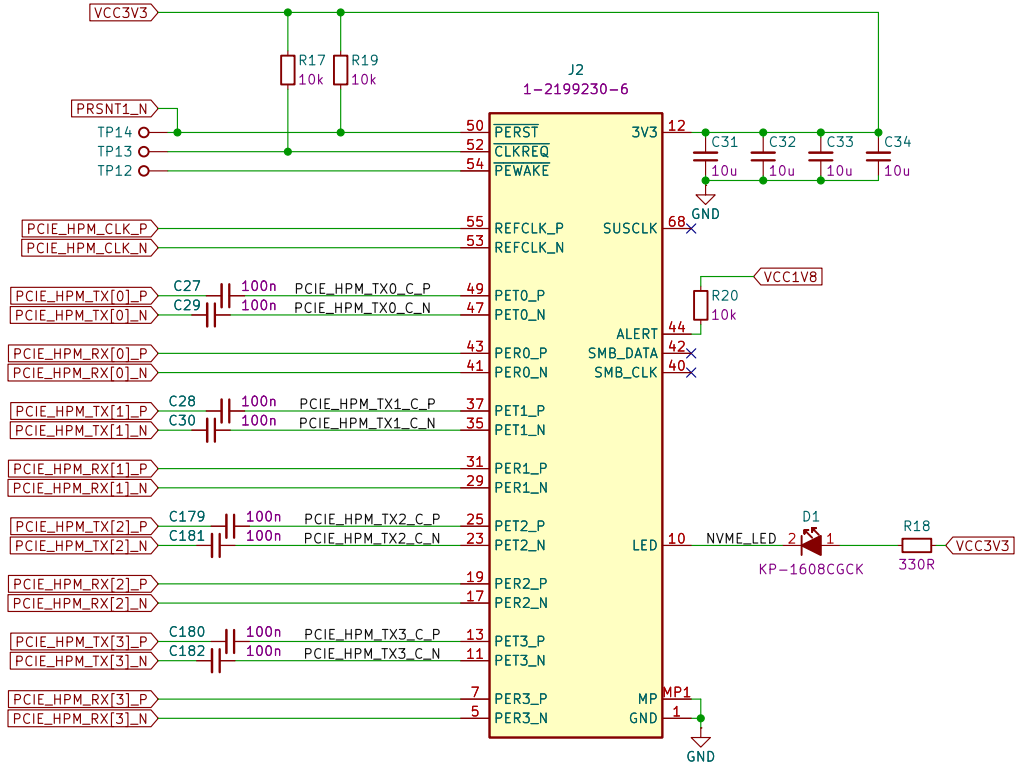
RJ45 Connector





Sheet: /FPGA power supply/		
File: fpga-power-supply.kicad_sch		
Title: Artix – Datacenter Secure Control Module (DC-SCM)		
Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A. eeschema 6.0.11+dfsg-1~bpo11+1		Id: 3/11

NVMe SSD

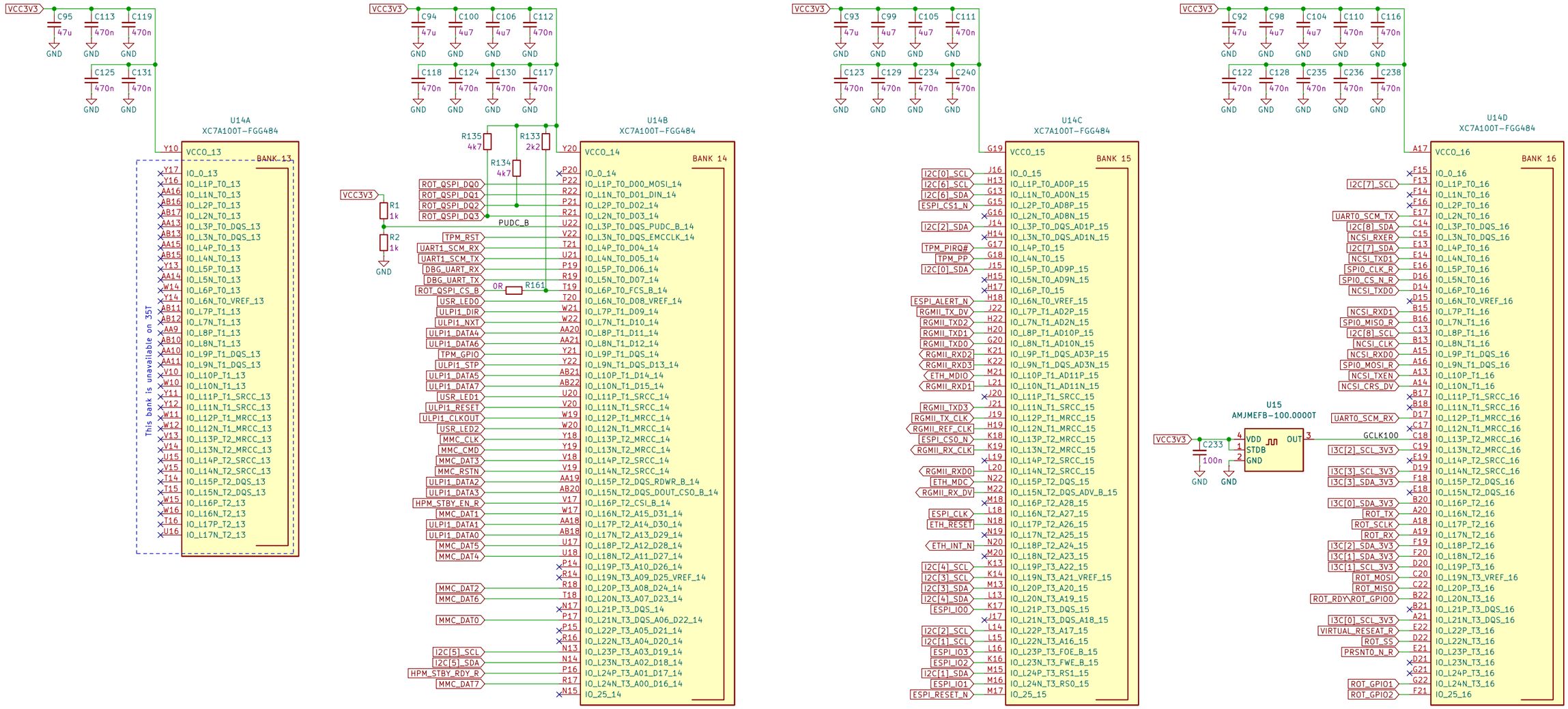


SP1
9774025151

Sheet: /PCIe-connector/
File: pcie-conn.kicad_sch

Title: Artix – Datacenter Secure Control Module (DC-SCM)

Size: A4	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A.	eeschema 6.0.11+dfsg-1-bpo11+1	Id: 4/11



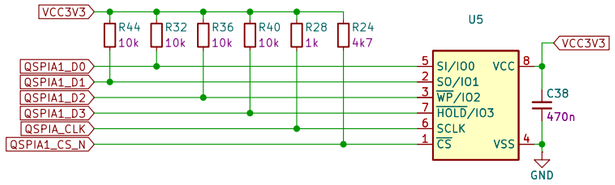
Sheet: /FPGA banks 13-16/
File: fpga-banks-13-16.kicad_sch

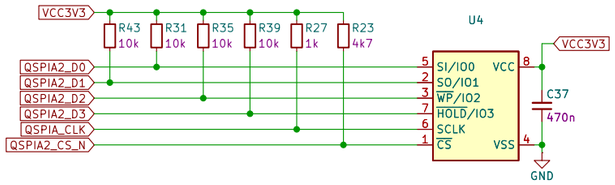
Title: Artix - Datacenter Secure Control Module (DC-SCM)

Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A.	eeschema 6.0.11+dfsg-1~bpo11+1	Id: 5/11

BIOS flash

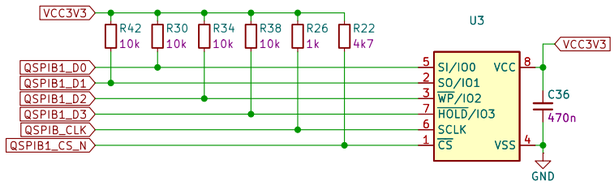
One or typically two flash devices used to contain the BIOS firmware image

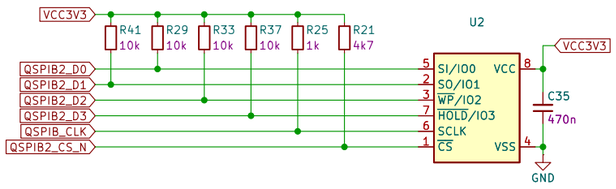




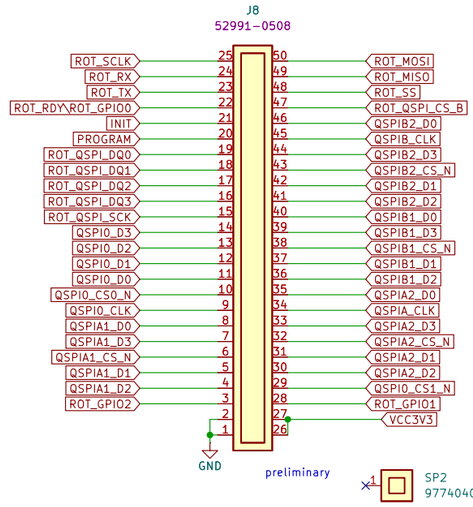
BMC flash

One or typically two flash devices used to contain the BMC firmware image

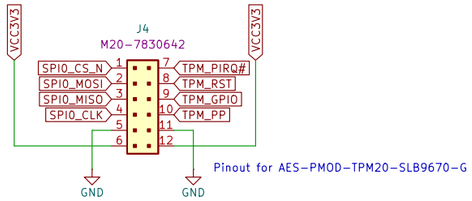




RoT module connector



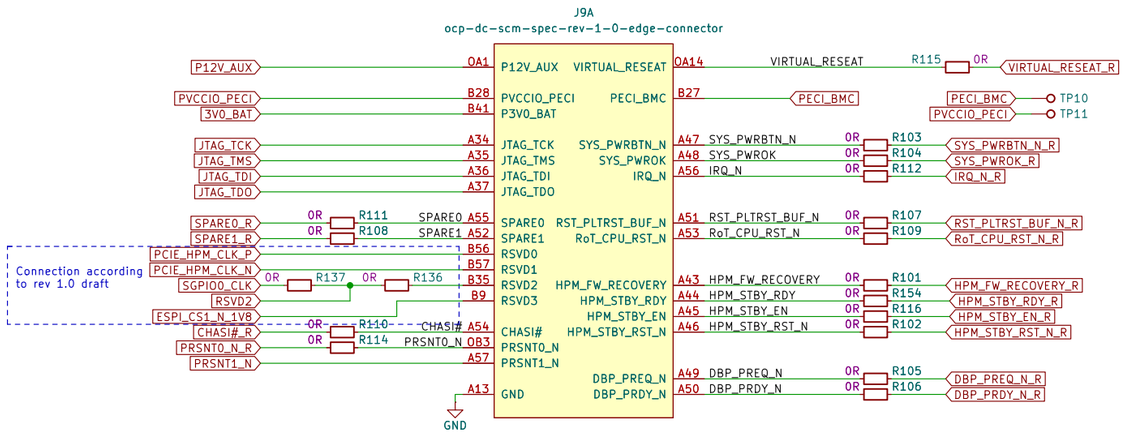
TPM connector



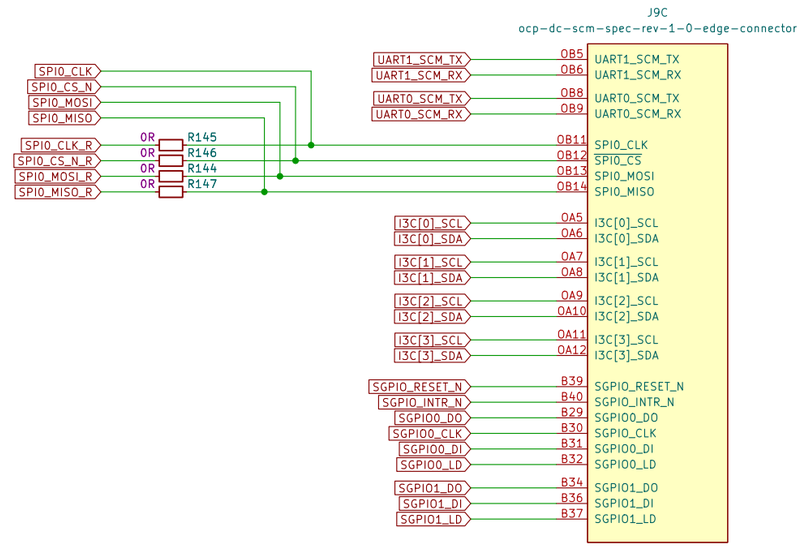
Sheet: /RoT/		
File: rot.kicad_sch		
Title: Artix – Datacenter Secure Control Module (DC-SCM)		
Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A. eeschema 6.0.11+dfsg-1~bpo11+1		Id: 6/11

Edge connector

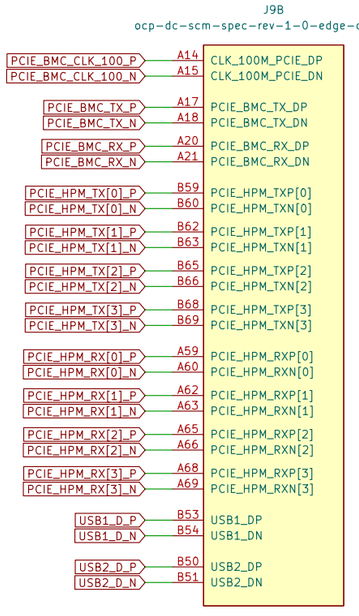
Power & CTRL



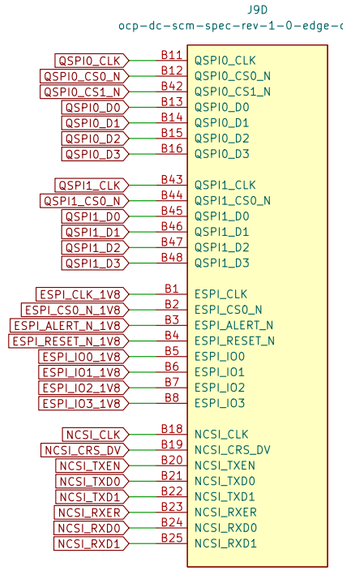
UART, SPI, I3C & SGPIO



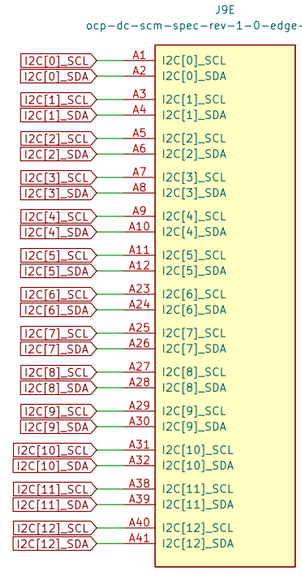
PCIe & USB



QSPI, ESPI & NCSI



I2C



Sheet: /Edge connector/
File: edge-connector.kicad_sch

Title: Artix – Datacenter Secure Control Module (DC-SCM)

Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A. eeschema 6.0.11+dfsg-1-bpo11+1		Id: 7/11

Transceiver supply

PCIe x1

U14H
XC7A100T-FGG484

MGTAVTT
MGTRREF_216
MGTAVCC
MGT
MGTPTXP0_216
MGTPTXN0_216
MGTPTXP1_216
MGTPTXN1_216
MGTPTXP2_216
MGTPTXN2_216
MGTPTXP3_216
MGTPTXN3_216
MGTPRXP0_216
MGTPRXN0_216
MGTPRXP1_216
MGTPRXN1_216
MGTPRXP2_216
MGTPRXN2_216
MGTPRXP3_216
MGTPRXN3_216
MGTREFCLK0P_216
MGTREFCLK0N_216
MGTREFCLK1P_216
MGTREFCLK1N_216

VCC1V2
VCC1V0
R143 100R
PCIE_BMC_TX_P
PCIE_BMC_TX_N
C195 100n PCIE_BMC_TX_C_P
C194 100n PCIE_BMC_TX_C_N
PCIE_BMC_RX_P
PCIE_BMC_RX_N
PCIE_BMC_CLK_100_P
PCIE_BMC_CLK_100_N

Debug USB

U19
FT4232H_QFN

VPHY
VPLL
VREGIN
VCCIO
VREGOUT
VCORE
RESET
EECS
EECLK
EEDATA
OSCI
OSCO
REF
TEST
ADBUS0
ADBUS1
ADBUS2
ADBUS3
ADBUS4
ADBUS5
ADBUS6
ADBUS7
BDBUS0
BDBUS1
BDBUS2
BDBUS3
BDBUS4
BDBUS5
BDBUS6
BDBUS7
CDBUS0
CDBUS1
CDBUS2
CDBUS3
CDBUS4
CDBUS5
CDBUS6
CDBUS7
DDBUS0
DDBUS1
DDBUS2
DDBUS3
DDBUS4
DDBUS5
DDBUS6
DDBUS7
PWREN
SUSPEND
AGND
GND

FB2 BLM15AG601SN1D
FB1 BLM15AG601SN1D
FT_VPHY
FT_VPLL
PWR_FLAG
VCC3V3
1V8_FT
VBUS
DBG_USB_D_P
DBG_USB_D_N
TP7
TP8
R197 4k7
R4 10k
D15 TPD2E009_SOT-9X3
Y1 12MHz
R3 12k1

J3
10118192-0001LF
VBUS
D+
D-
ID
GND
SHIELD

J6
0878311420
VCC3V3
GND

JTAG
D2 SP3011-06UTG
JTAG_TCK
JTAG_TDI
JTAG_TDO
JTAG_TMS
R160 22R
R191 22R
R192 22R
R193 22R
R195 22R
R196 22R
DBG_UART_RX
DBG_UART_TX

USB HOST

U17
USB3300-EZK-TR

VDD3.3
REG_EN
VDD1.8
VDDA1.8
DM
DP
ID
VBUS
CPEN
EXTVBUS
DATA[0]
DATA[1]
DATA[2]
DATA[3]
DATA[4]
DATA[5]
DATA[6]
DATA[7]
NXT
DIR
STP
CLKOUT
RESET
XO
XI
RBIAS
GND

USB1_D_N
USB1_D_P
VCC5V0
R6 1k
R10 0R
R5 12k
ULPI1_DATA0
ULPI1_DATA1
ULPI1_DATA2
ULPI1_DATA3
ULPI1_DATA4
ULPI1_DATA5
ULPI1_DATA6
ULPI1_DATA7
ULPI1_NXT
ULPI1_DIR
ULPI1_STP
ULPI1_CLKOUT
ULPI1_RESET

U24
ASEMB-24.000MHZ-LC-T
VDD
STDB
GND
OUT
C5 100n

USB CLIENT

U18
USB3300-EZK-TR

USB2_D_N
USB2_D_P
VCC5V0
R8 1k
R11 0R
R7 12k
ULPI2_DATA0
ULPI2_DATA1
ULPI2_DATA2
ULPI2_DATA3
ULPI2_DATA4
ULPI2_DATA5
ULPI2_DATA6
ULPI2_DATA7
ULPI2_NXT
ULPI2_DIR
ULPI2_STP
ULPI2_CLKOUT
ULPI2_RESET

U23
ASEMB-24.000MHZ-LC-T
C4 100n

I3C voltage level translation

U6
NVT2008BQ,115
VREFB
VREFA
EN
B1
B2
B3
B4
B5
B6
B7
B8
A1
A2
A3
A4
A5
A6
A7
A8
EP
GND

R53 200k
1V0_PG
Pull up via 10KOhm
1V0_EN
C39 100n
C17 100n
R46 357k
R45 357k
R48 357k
R47 357k
R50 357k
R49 357k
R52 357k
R51 357k
I3C[0]_SCL_3V3
I3C[0]_SDA_3V3
I3C[1]_SCL_3V3
I3C[1]_SDA_3V3
I3C[2]_SCL_3V3
I3C[2]_SDA_3V3
I3C[3]_SCL_3V3
I3C[3]_SDA_3V3
I3C[0]_SCL
I3C[0]_SDA
I3C[1]_SCL
I3C[1]_SDA
I3C[2]_SCL
I3C[2]_SDA
I3C[3]_SCL
I3C[3]_SDA

ESPI level translation

U21
LSF0108RKSR
VREFA
VREFB
EN
A1
A2
A3
A4
A5
A6
A7
A8
DNP
B1
B2
B3
B4
B5
B6
B7
B8
GND
EP

C253 100n
C251 100n
R12 200k
ESPI_CLK_1V8
ESPI_CS0_N_1V8
ESPI_ALERT_N_1V8
ESPI_RESET_N_1V8
ESPI_IO0_1V8
ESPI_IO1_1V8
ESPI_IO2_1V8
ESPI_IO3_1V8
ESPI_CLK
ESPI_CS0_N
ESPI_ALERT_N
ESPI_RESET_N
ESPI_IO0
ESPI_IO1
ESPI_IO2
ESPI_IO3

U22
LSF0101DRYR
C254 100n
C252 100n
R62 200k
ESPI_CS1_N_1V8
ESPI_CS1_N

eMMC

U1
MTFC16GAPALNA-AIT
VCC
VCCQ
VDDIM
DS
VSS
VSSQ
CLK
RST_N
CMD
DAT0
DAT1
DAT2
DAT3
DAT4
DAT5
DAT6
DAT7

C183 2u2
C184 2u2
C185 2u2
C186 100n
C187 100n
C232 100n
C223 100n
C224 100n
C229 100n
C230 100n
C231 100n
C188 4u7
C189 100n
TP3
R9 22R
R117 47k
R118 47k
R119 47k
R120 47k
R121 47k
R122 47k
R123 47k
R124 47k
R125 47k
R126 47k
MMC_CLK
MMC_RSTN
MMC_CMD
MMC_DAT0
MMC_DAT1
MMC_DAT2
MMC_DAT3
MMC_DAT4
MMC_DAT5
MMC_DAT6
MMC_DAT7

HPM SPI

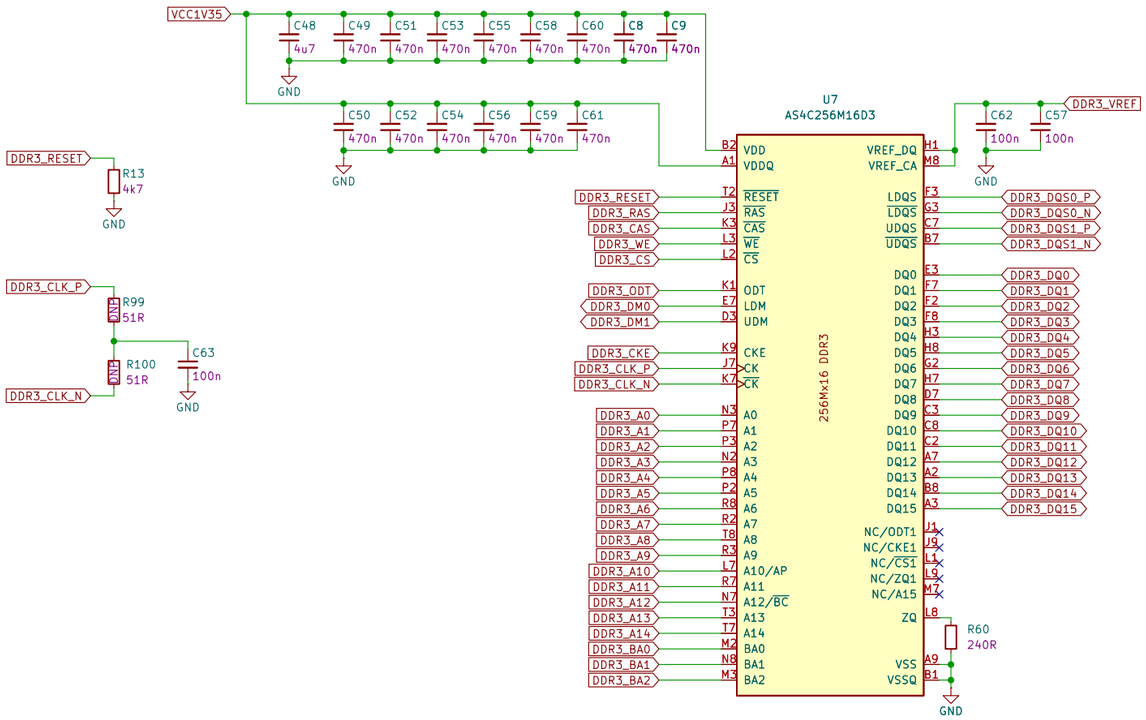
reserved for future use (as of DC-SCI OPC specification)

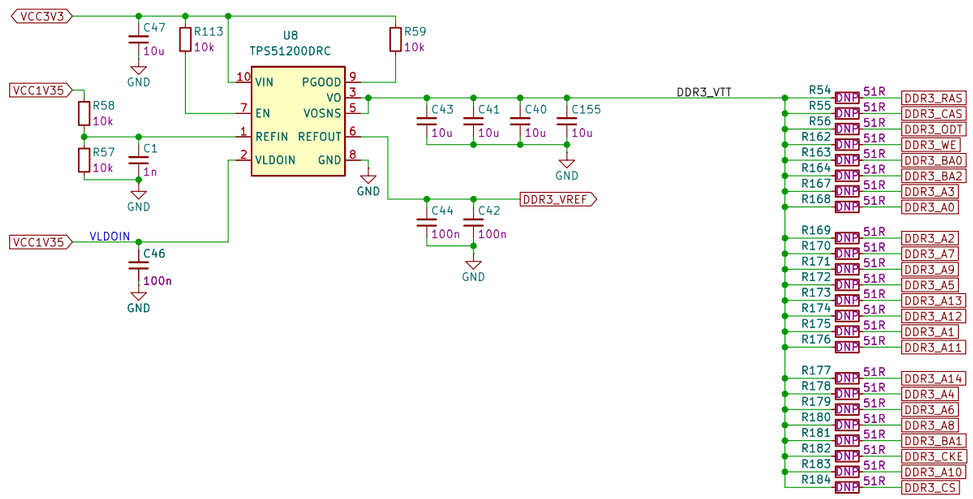
J7
61300611121
VCC3V3
SPI0_MOSI
SPI0_MISO
SPI0_CLK
SPI0_CS_N

Sheet: /Interfaces/
File: interfaces.kicad_sch

Title: Artix – Datacenter Secure Control Module (DC-SCM)

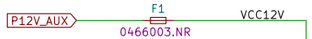
Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A.	eeschema 6.0.11+dfsg-1~bpo11+1	Id: 8/11



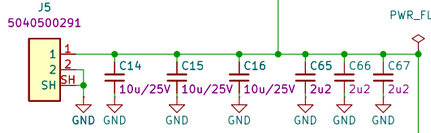


Sheet: /DDR3/		
File: ddr3.kicad_sch		
Title: Artix – Datacenter Secure Control Module (DC-SCM)		
Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A. eeschema 6.0.11+dfsg-1~bpo11+1		Id: 9/11

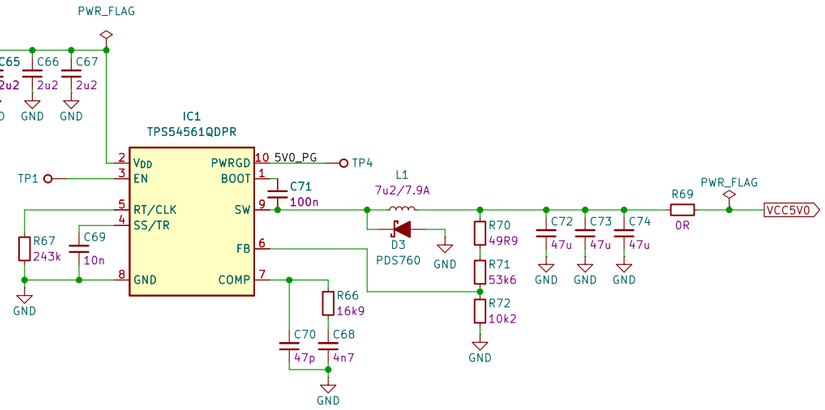
DC-SCM 12V supply



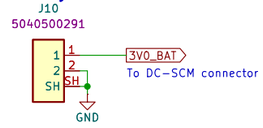
External 12V supply



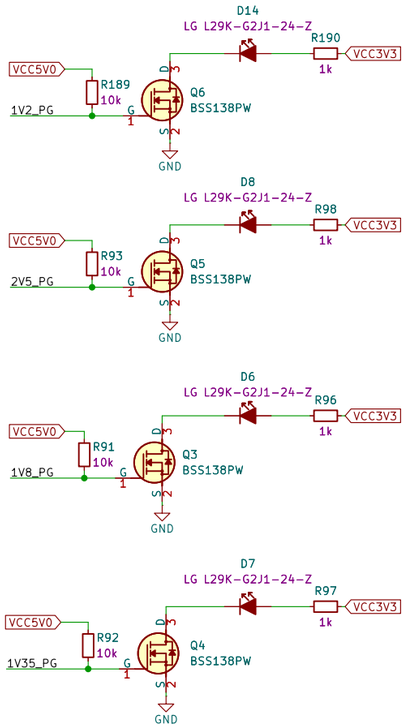
MainSupply (5V 5A)



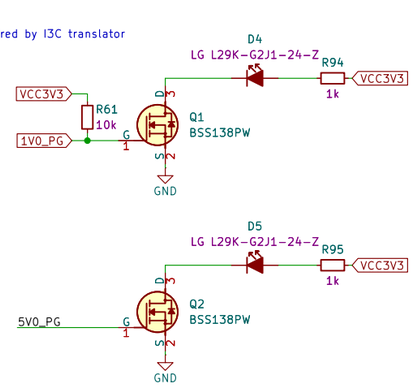
Battery connector



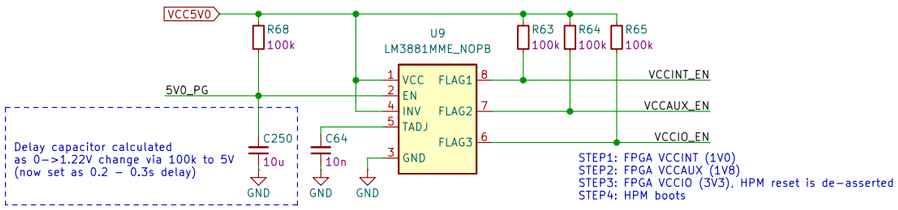
PWR_LED Indicators



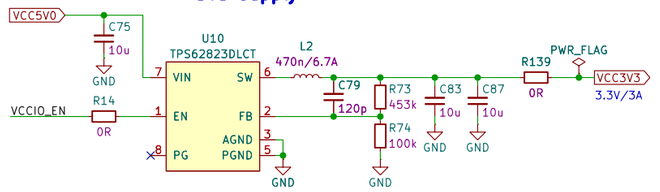
3v3 required by I3C translator



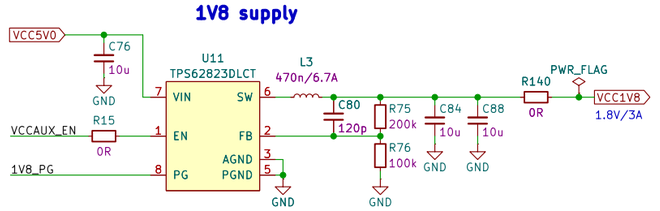
Power sequencer



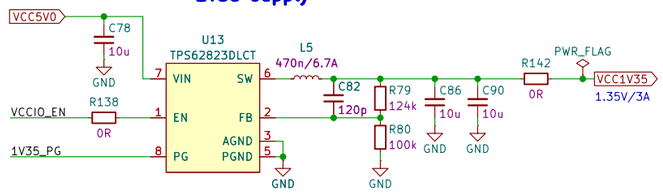
3V3 supply



1V8 supply



1V35 supply



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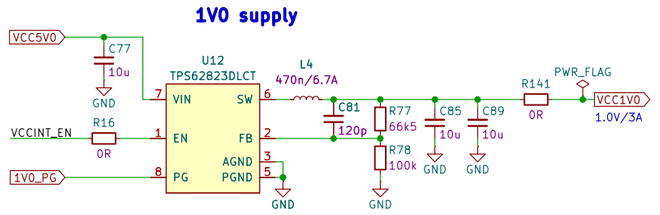
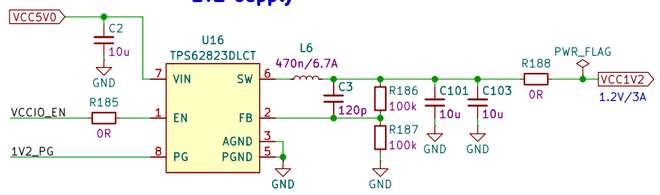


1V2 supply



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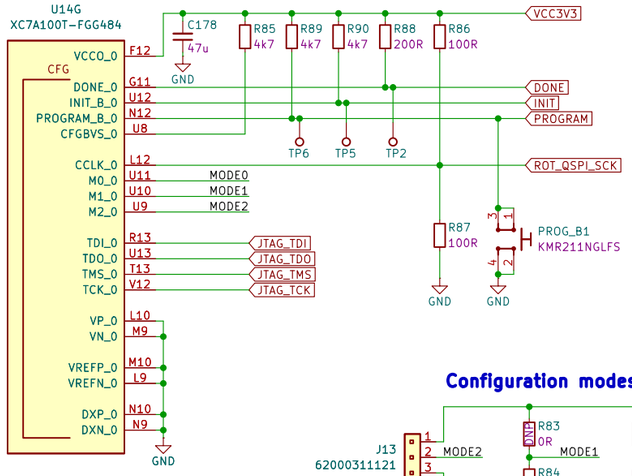
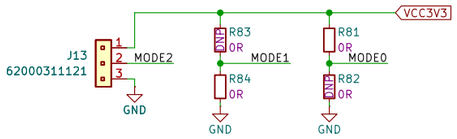
Title: Artix - Datacenter Secure Control Module (DC-SCM)		
Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
KiCad E.D.A. eeschema 6.0.11+dfsg-1~bpo11+1		Id: 10/11

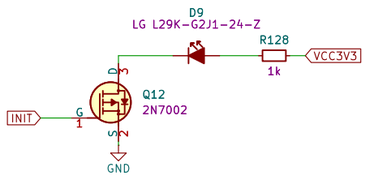
FPGA CFG

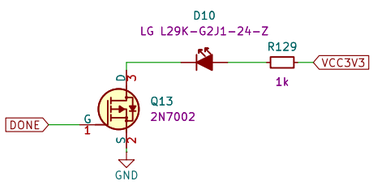


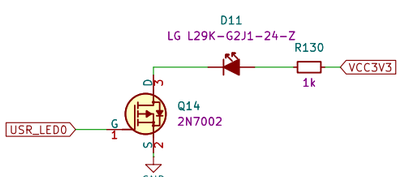
Configuration modes



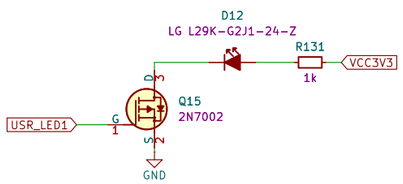
Status LEDs

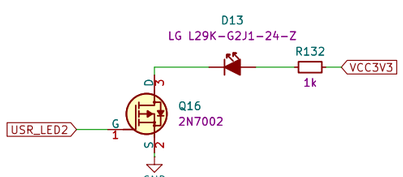


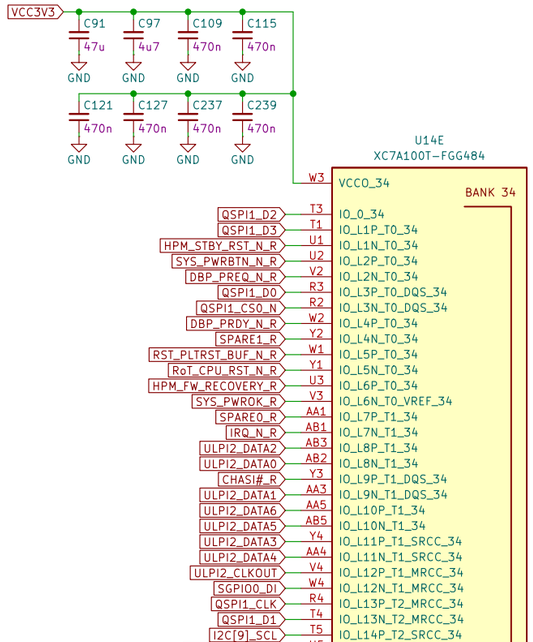


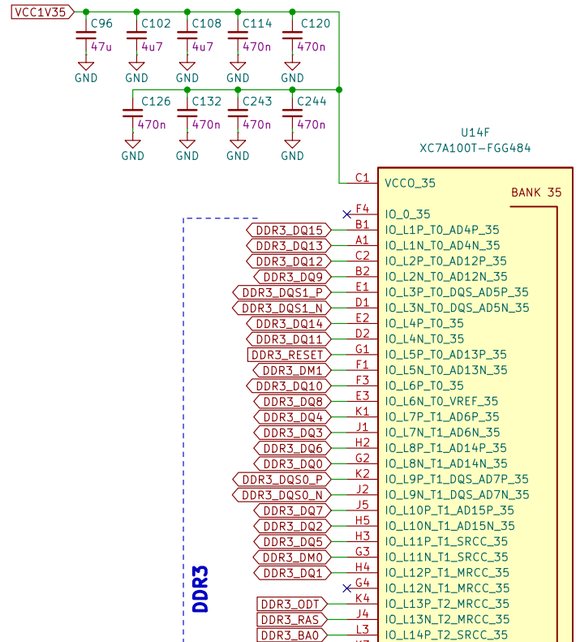


User LEDs









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Title: Artix - Datacenter Secure Control Module (DC-SCM)

Size: A3	Date: 2023-08-09	**Rev: 1.1.1**
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