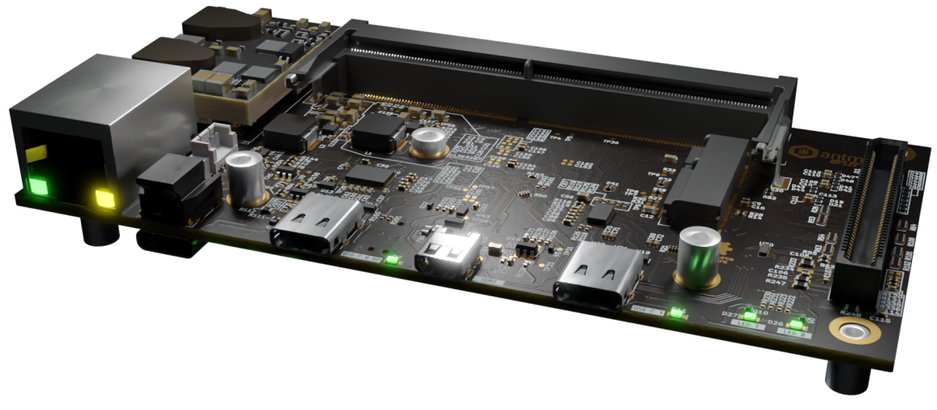
Jetson Orin Baseboard

github.com/antmicro/jetson-orin-baseboard



SoM
File: som.kicad_sch

M.2
File: m-2.kicad_sch

USB Debug, DP
File: usb.kicad_sch

USB3
File: usb3.kicad_sch

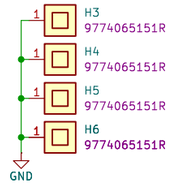
HDMI
File: hdmi.kicad_sch

Ethernet
File: ethernet.kicad_sch

CSI
File: csi.kicad_sch

Peripherals
File: peripherals.kicad_sch

Supply
File: supply.kicad_sch



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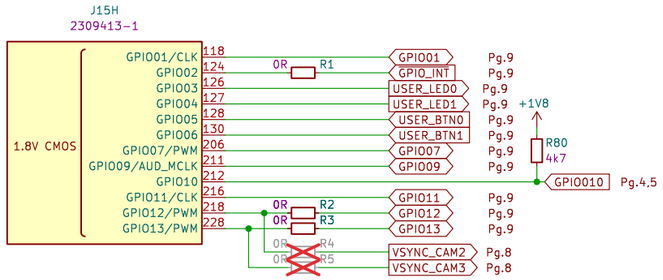
Sheet: /
File: jetson-orin-baseboard.kicad_sch

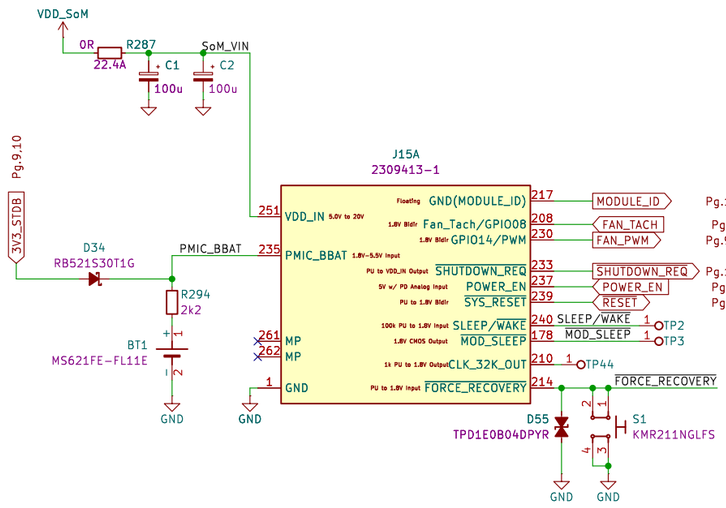
Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 1/10

GPIO

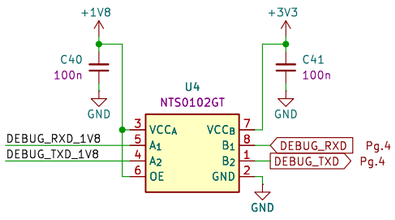


Power & CTRL



Miscellaneous

DEBUG UART LEVEL SHIFTER



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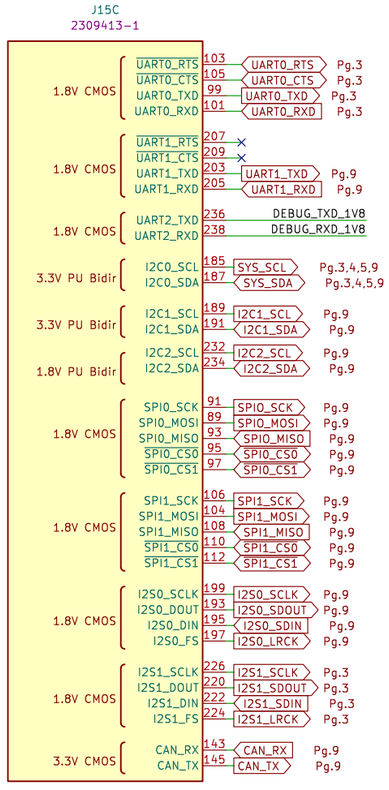
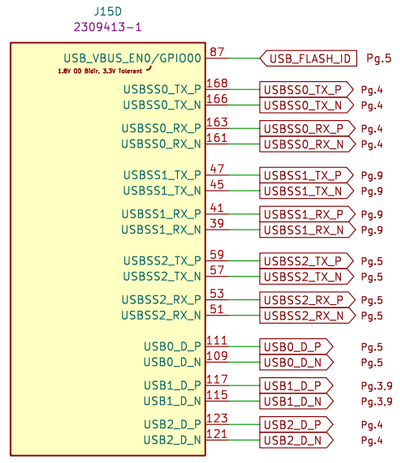
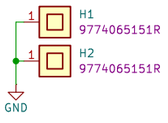
UART/I2C/SPI/I2S/CAN

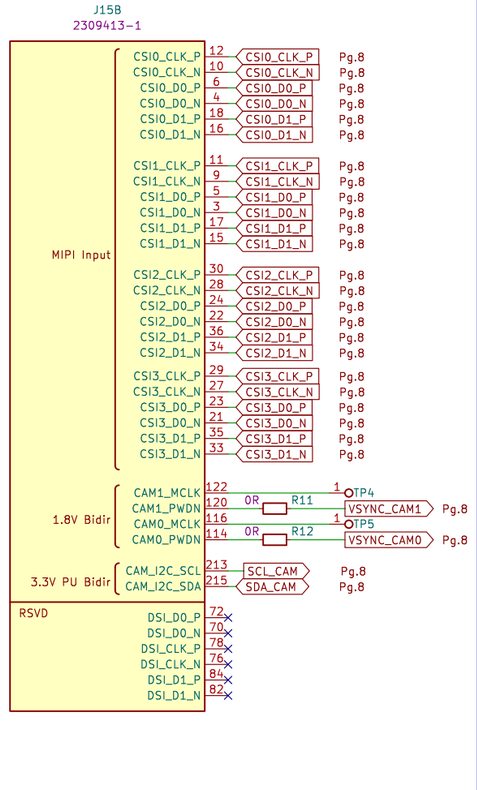


USB

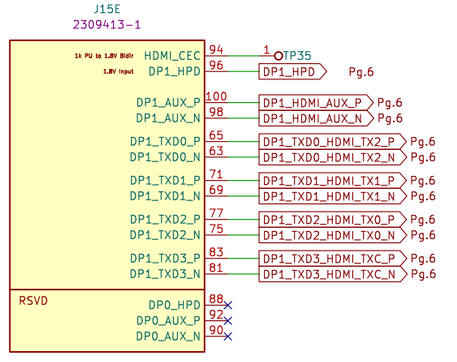




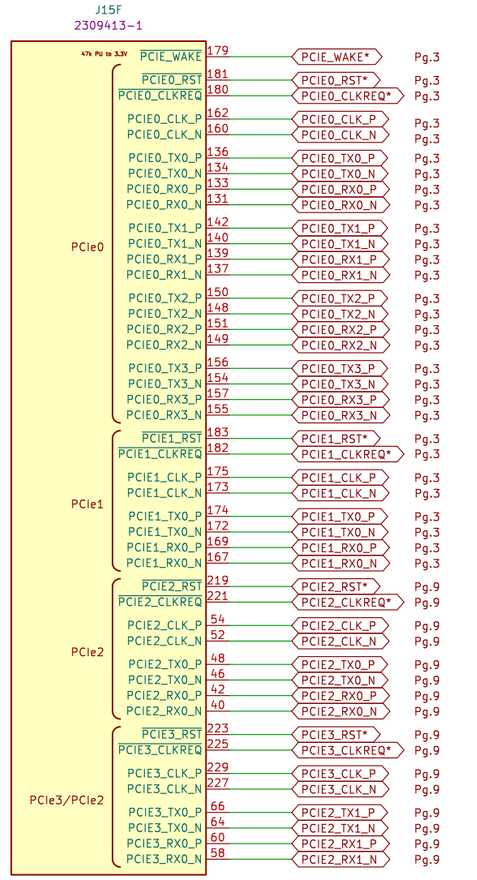
CSI



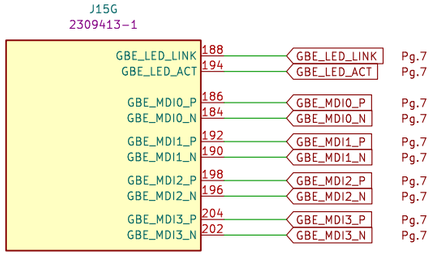
Video Output



PCIe



GbE



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Sheet: /SoM/

File: som.kicad_sch

Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 2/10

PCIe0 Root Port / Endpoint mode selector

NOTE:
DNP for M.2 key M
endpoint role

PCIE_WAKE_SEL0 — 0R — R16 — M2_M_PEWAKE0
Pg.2 PCIE0_CLKREQ* — 0R — R17 — M2_M_CLKREQ0
Pg.2 PCIE0_RST* — 0R — R18 — M2_M_PERST
32.7KHZ_OUT — 0R — R19 — M2_M_SUSCLK

NOTE:
DNP for M.2 key M
root port role

U2 74LVC2G07GV,125
3V3_M2 — C8 100n — GND
3V3_M2 — Vcc
PCIE_WAKE_SEL0
Pg.2 PCIE0_CLKREQ*
M2_M_PEWAKE0
M2_M_CLKREQ0
U3 74LVC2G07GV,125
Pg.2 PCIE0_RST*
+3V3 — C7 100n — GND
M2_M_PERST

NOTE about PCIe 0 role switching:
For details, refer to the PCIe section of
"Jeton Orin NX Series Product Design Guide"
https://developer.nvidia.com/jetson-orin-nx-series-design-guide

M.2 PCIE_WAKE selector

Pg.2 PCIE_WAKE* — 0R — R13 — PCIE_WAKE_SEL0
0R — R14 — PCIE_WAKE_SEL1
0R — R15 — PCIE_WAKE_SEL_EXT — Pg.9

PCIe0 1x4 key M

+3V3 — R37 47k — R38 47k
M2_M_PERST
M2_M_CLKREQ0
M2_M_PEWAKE0

J2
1-2199230-6
PERST KEY M
CLKREQ
PEWAKE
3V3 — 12
REFCLK_P — 55
REFCLK_N — 53
SUSCLK — 68 M2_M_SUSCLK
PET0_P — 49
PET0_N — 47
PER0_P — 43
PER0_N — 41
PET1_P — 37
PET1_N — 35
PER1_P — 31
PER1_N — 29
PET2_P — 25
PET2_N — 23
PER2_P — 19
PER2_N — 17
PET3_P — 13
PET3_N — 11
PER3_P — 7
PER3_N — 5
ALERT — 44 M2_M_ALERT — TP10
SMB_DATA — 42 M2_M_SMB_DATA — TP11
SMB_CLK — 40 M2_M_SMB_CLK — TP12
LED — 10
MP — MP1 — GND

Pg.2 PCIE0_CLK_P / PCIE0_CLK_N
Pg.2 PCIE0_TX0_P / PCIE0_TX0_N — C13 220n — C17 220n — C_PCIE0_TX0_P / C_PCIE0_TX0_N
Pg.2 PCIE0_RX0_P / PCIE0_RX0_N
Pg.2 PCIE0_TX1_P / PCIE0_TX1_N — C14 220n — C18 220n — C_PCIE0_TX1_P / C_PCIE0_TX1_N
Pg.2 PCIE0_RX1_P / PCIE0_RX1_N
Pg.2 PCIE0_TX2_P / PCIE0_TX2_N — C15 220n — C19 220n — C_PCIE0_TX2_P / C_PCIE0_TX2_N
Pg.2 PCIE0_RX2_P / PCIE0_RX2_N
Pg.2 PCIE0_TX3_P / PCIE0_TX3_N — C16 220n — C20 220n — C_PCIE0_TX3_P / C_PCIE0_TX3_N
Pg.2 PCIE0_RX3_P / PCIE0_RX3_N

PWR_FLAG
NOTE: Place bulk caps near to the M.2 power pads
+3V3 — R143 0R 22.4A
3V3_M2
C21 10u — C22 10u — C23 10u — C24 10u — GND

+3V3 — R39 200R — D1 Green

M3 Mech_M2_2280_H2.5mm
SP8 Spacer_Drill3.7mm_H2.5mm_9774025151R — GND

SUSCLK SOURCE

Y1
ECS-327MVATX-2-CN-TR3
32.768 kHz
+3V3 — C25 100n — GND
VDD — 4
EN — 1
GND — 2
OUT — 3 — 32.7KHZ_OUT

PCIe1 1x1 key E

+3V3 — R27 47k — R28 47k
J1
2199230-6
Pg.2 PCIE1_RST* — PERST0 KEY E — 52
Pg.2 PCIE1_CLKREQ* — CLKREQ0 — 53
PCIE_WAKE_SEL1 — PEWAKE0 — 55
3.3V — 2

NOTE: Place bulk caps near to the M.2 power pads
+3V3 — C11 10u — C12 10u — GND

Pg.2 PCIE1_CLK_P / PCIE1_CLK_N — REFCLK0_P/N — 47/49
SUSCLK — 50 M2_E_SUSCLK — 0R — R29 — 32.7KHZ_OUT
Pg.2 PCIE1_TX0_P / PCIE1_TX0_N — C9 220n — C10 220n — C_PCIE1_TX0_P / C_PCIE1_TX0_N — PET0_P/N — 35/37
Pg.2 PCIE1_RX0_P / PCIE1_RX0_N — PER0_P/N — 41/43
REFCLK1_P/N — 71/73
W_DISABLE1 — 56 M2_E_W_DIS_1 — TP7
W_DISABLE2 — 54 M2_E_W_DIS_2 — TP8
PET1_P/N — 59/61
PER1_P/N — 65/67
UIM_SWP — 66
UIM_POWER_SNK — 68
UIM_POWER_SRC — 70
COEX_RXD — 48
COEX_TXD — 46
COEX3 — 44
PCM_CLK — R21 4x0R_0201 — 8 M2_E_PCM_CLK
PCM_SYNC — 10 M2_E_PCM_SYNC
PCM_OUT — 14 M2_E_PCM_OUT
PCM_IN — 12 M2_E_PCM_IN
Pg.2 I2S1_SCLK / I2S1_LRCK / I2S1_SDIN / I2S1_SDOUT
VENDOR_1/2/3 — 38/40/42
USB_D_P — 0R — R20 — USB_E_P — 3
USB_D_N — 0R — R52 — USB_E_N — 5
Pg.2,9 USB1_D_P / USB1_D_N
LED_1 — 6 LED1 — WLAN — +3V3 — R186 200R — D51 Green
LED_2 — 16 LED2 — BT — +3V3 — R187 200R — D52 Green
SDIO_CLK — 9
SDIO_CMD — 11
SDIO_D0 — 13
SDIO_D1 — 15
SDIO_D2 — 17
SDIO_D3 — 19
SDIO_WAKE — 21
SDIO_RESET — 23
RFU — 64
MP — 1 — GND

+3V3 — 47k — R32 — 1 TP9
M2_E_UART_WAKE — 20
M2_E_UART_TX — 32
M2_E_UART_RX — 22
M2_E_UART_RTS — 36
M2_E_UART_CTS — 34
R22 4x0R_0201
M2_E_UART_TX — 8 — UART0_TXD — Pg.2
M2_E_UART_CTS — 7 — UART0_CTS — Pg.2
M2_E_UART_RTS — 6 — UART0_RTS — Pg.2
M2_E_UART_RX — 5 — UART0_RXD — Pg.2
Pg.2,4,5,9 SYS_SDA / SYS_SCL — 0R — R30 / R31 — M2_E_I2C_DAT / M2_E_I2C_CLK — 58/60 — TP6

A2 Mech_M2_2242_H2.5mm
SP7 Spacer_Drill3.7mm_H2.5mm_9774025151R — GND

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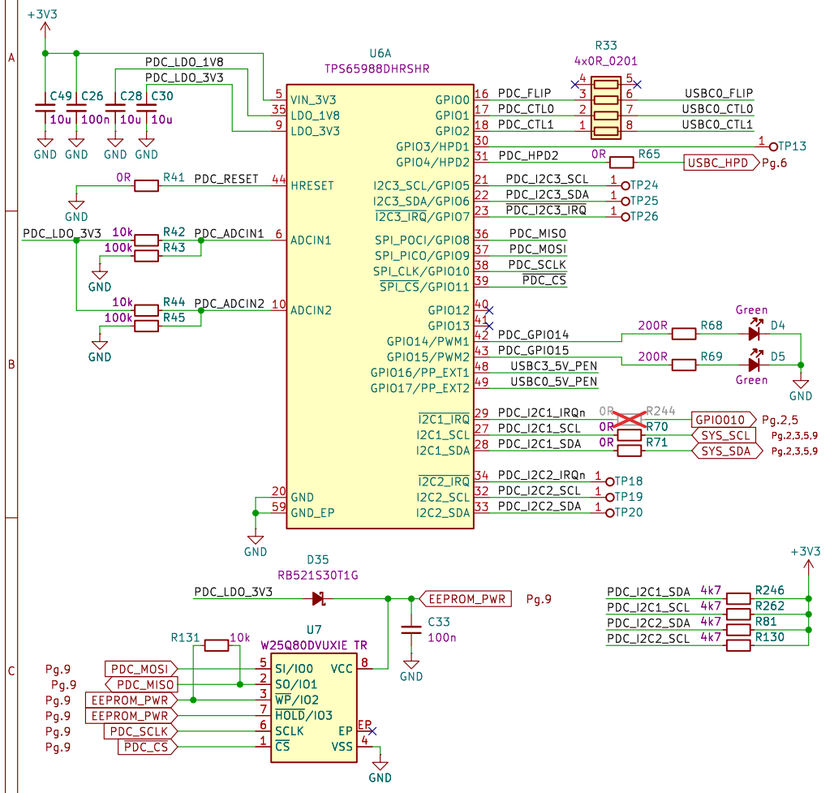
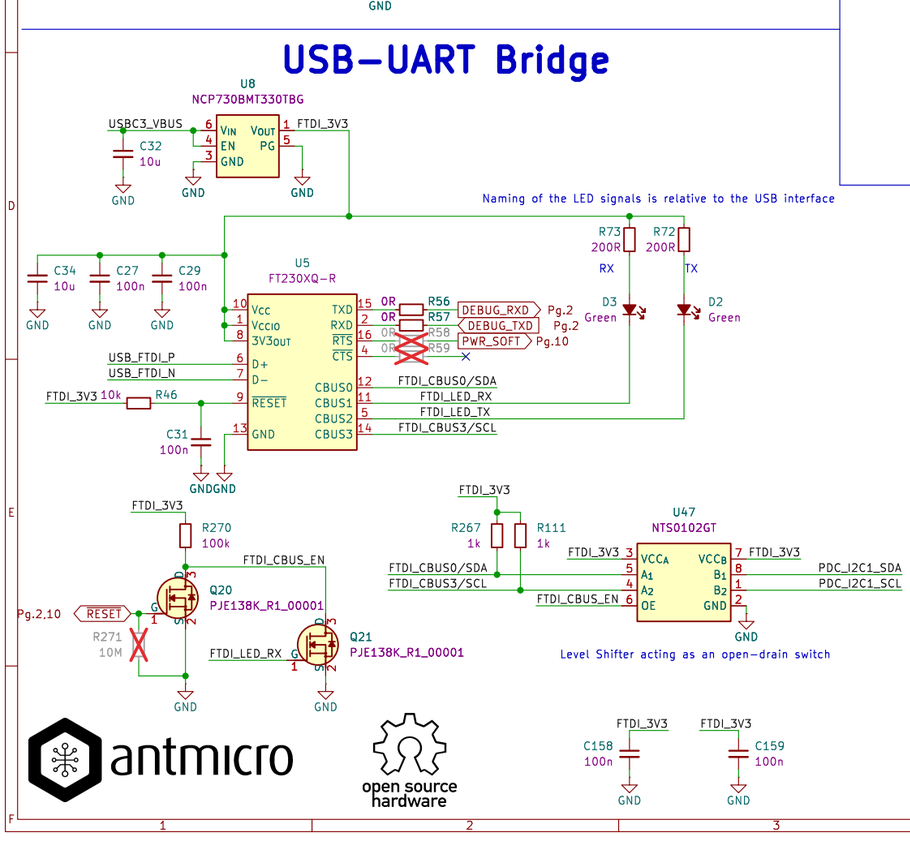
Sheet: /M.2/
File: m-2.kicad_sch
Title: Jetson Orin Baseboard
Size: A3 | Date: 2025-03-12 | **Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7 | Id: 3/10

USB PD Controller

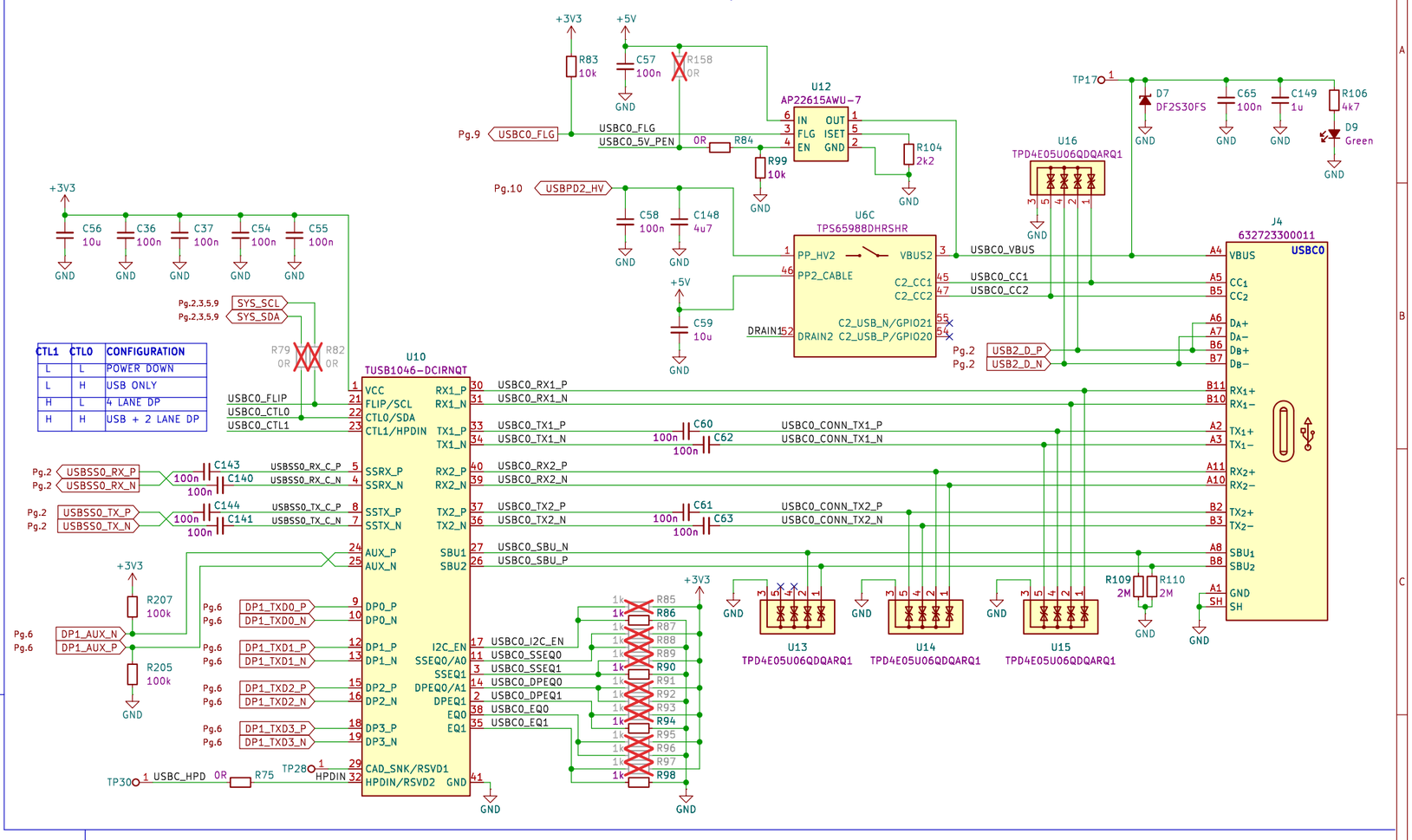


USB-UART Bridge



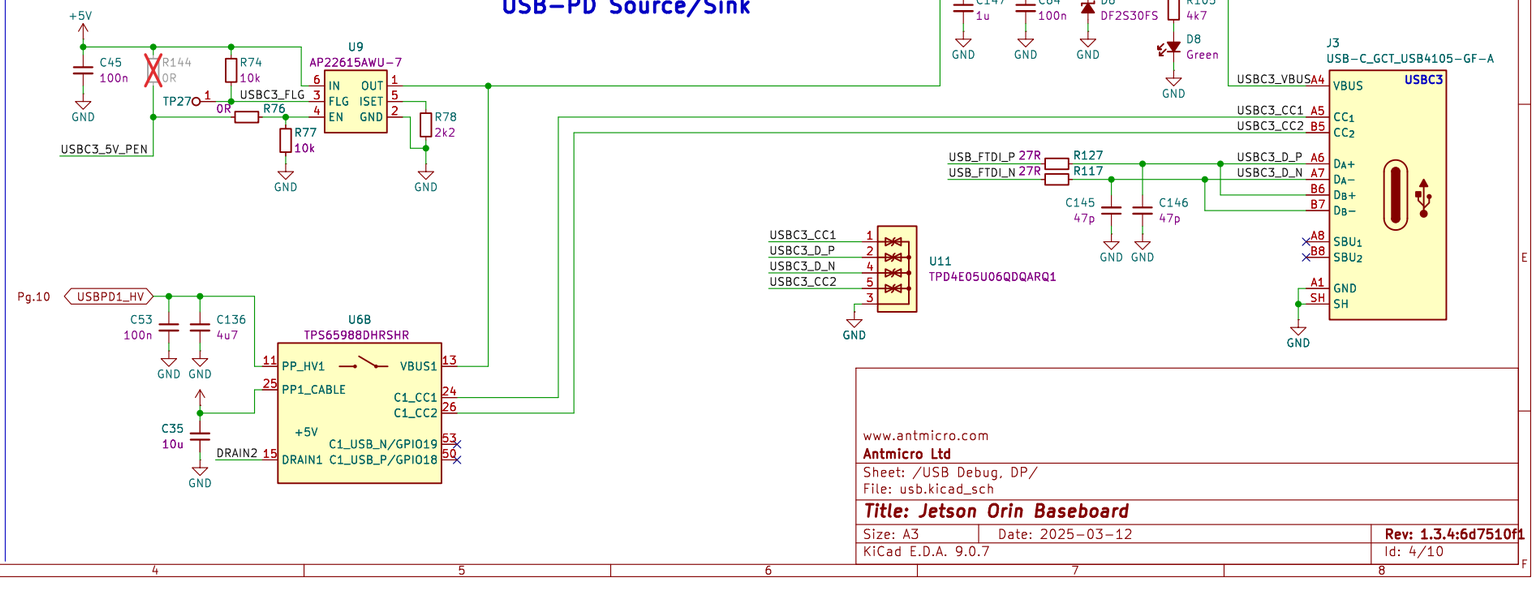
USB-C 0 Display Port alt mode

USB-PD Source/Sink



Debug USB-C 3

USB-PD Source/Sink



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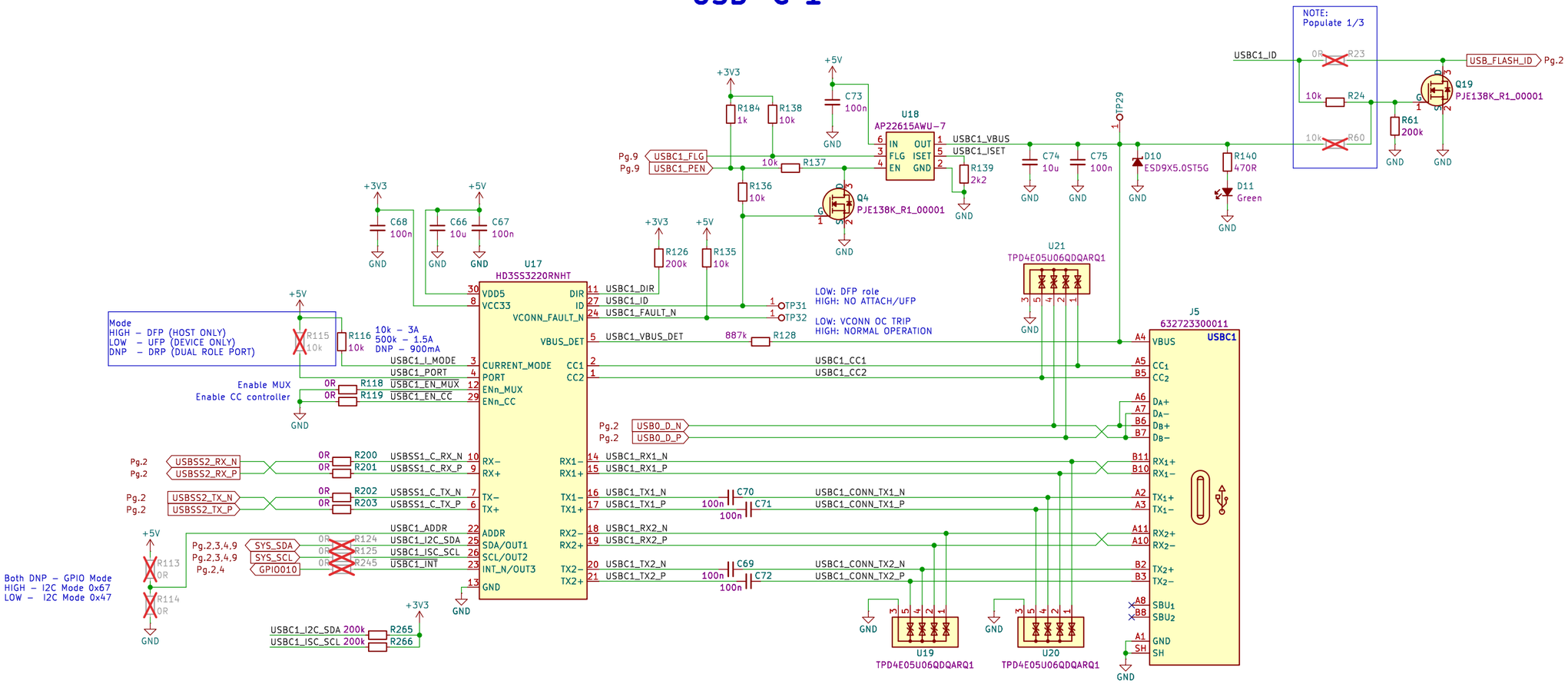
Sheet: /USB Debug, DP/
File: usb.kicad_sch

Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	Rev: 1.3.4:6d7510f1
KiCad E.D.A. 9.0.7		Id: 4/10

USB-C 1



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Sheet: /USB3/
File: usb3.kicad_sch

Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 5/10

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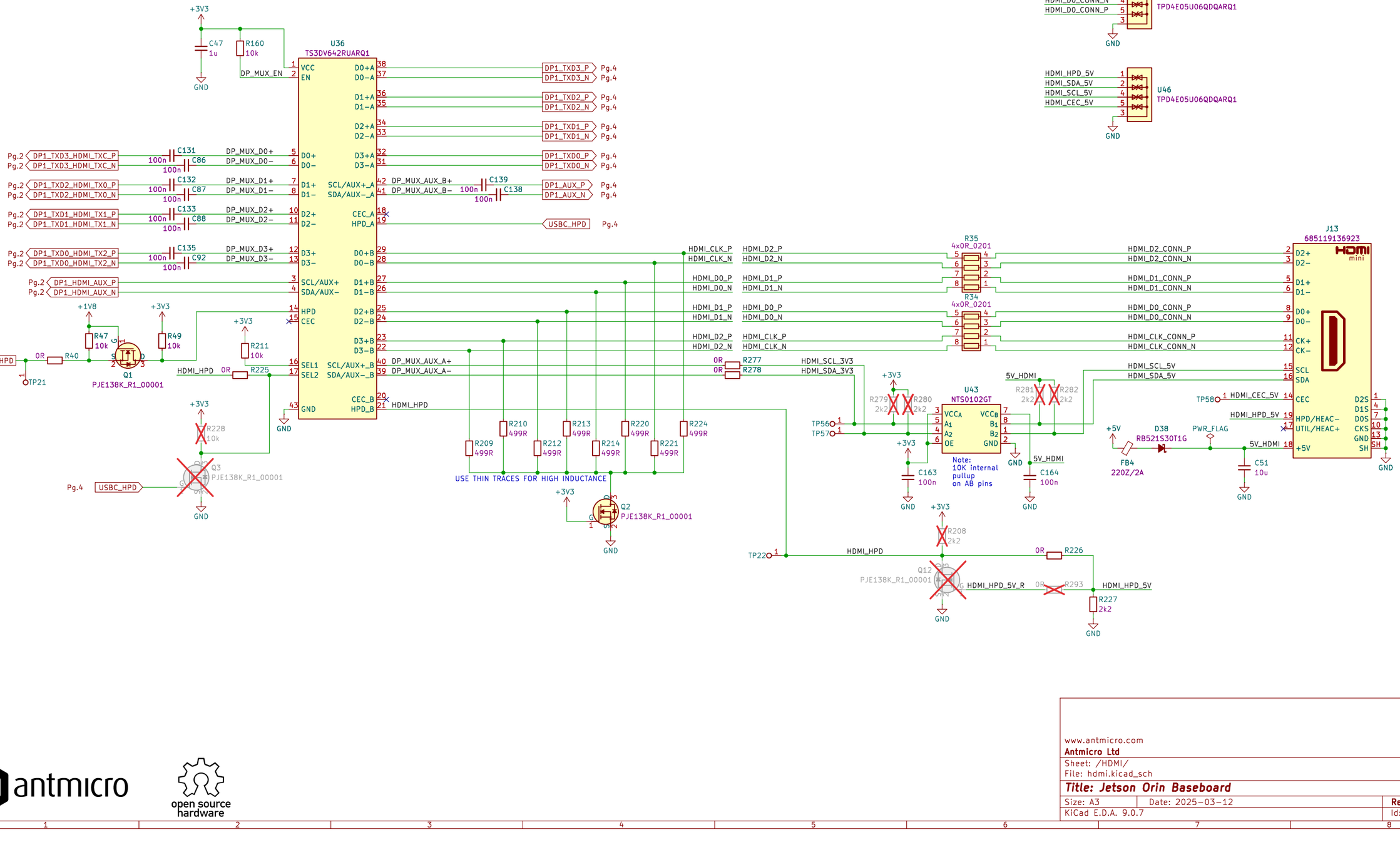
HDMI Connector



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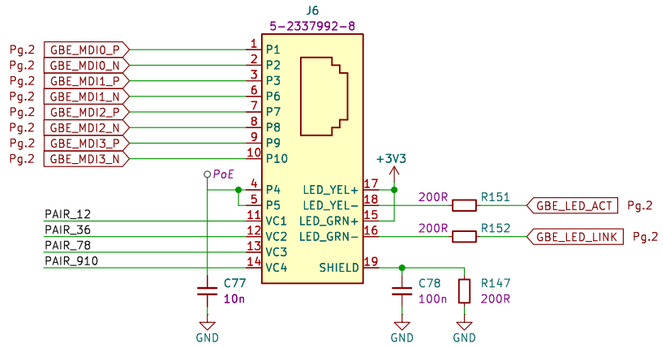
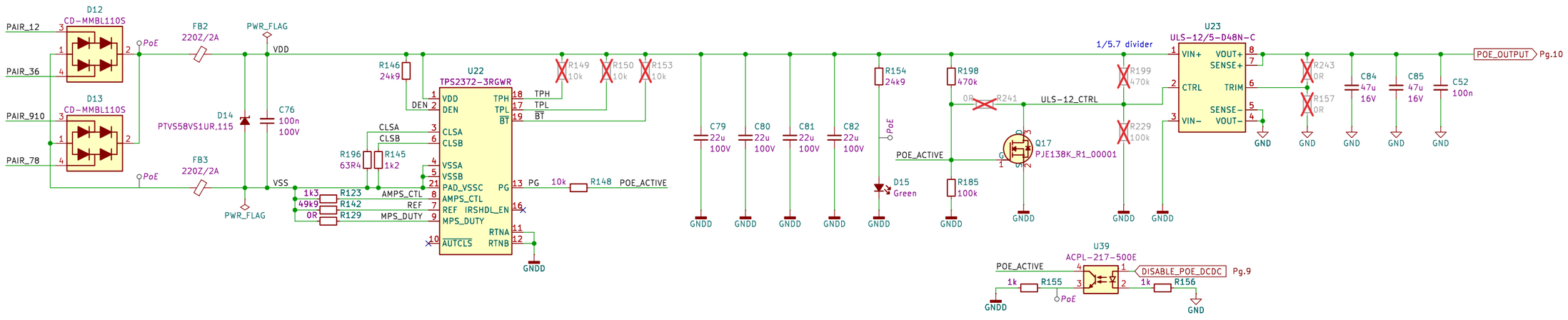
Sheet: /HDMI/		
File: hdmi.kicad_sch		
Title: Jetson Orin Baseboard		
Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 6/10

Ethernet Connector



Alternative MPNs: 6-2337992-8, TMJG4926HENL

Power over Ethernet



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Sheet: /Ethernet/
File: ethernet.kicad_sch

Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 7/10

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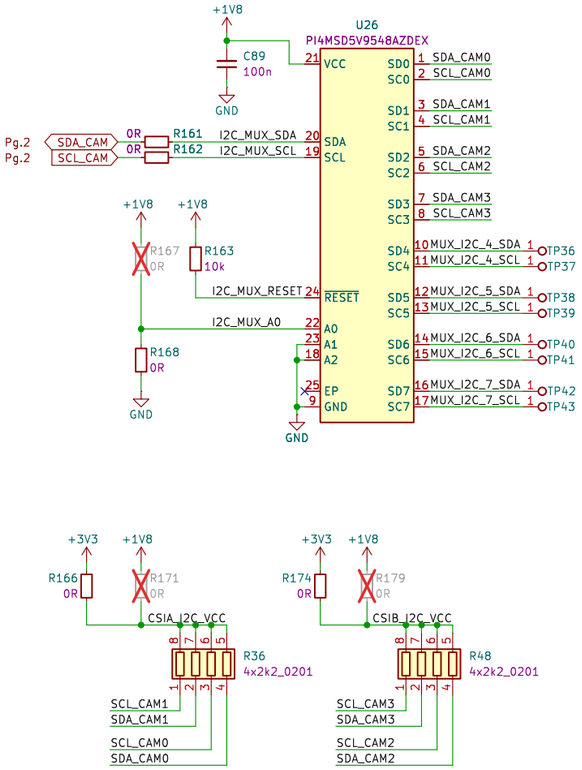
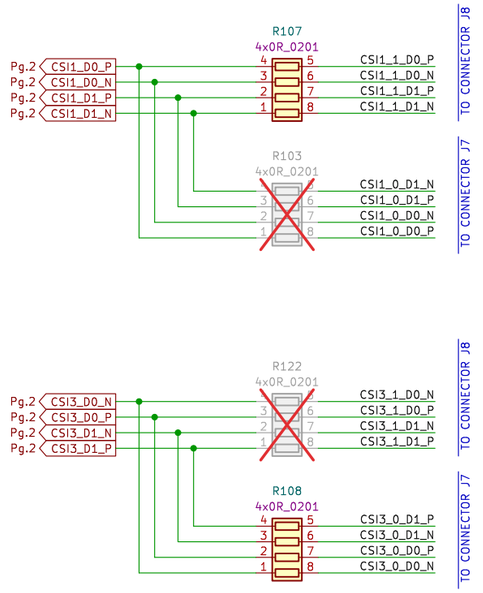
I2C Mux



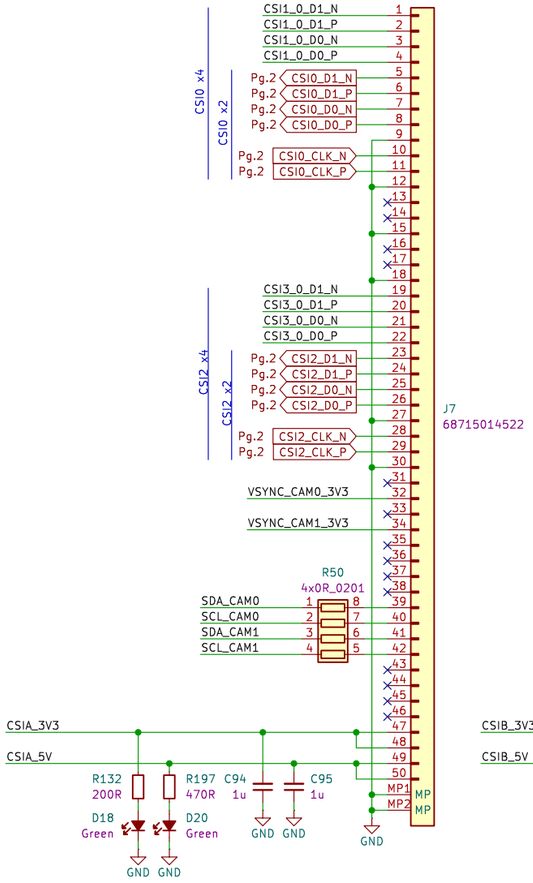
CSI Mux



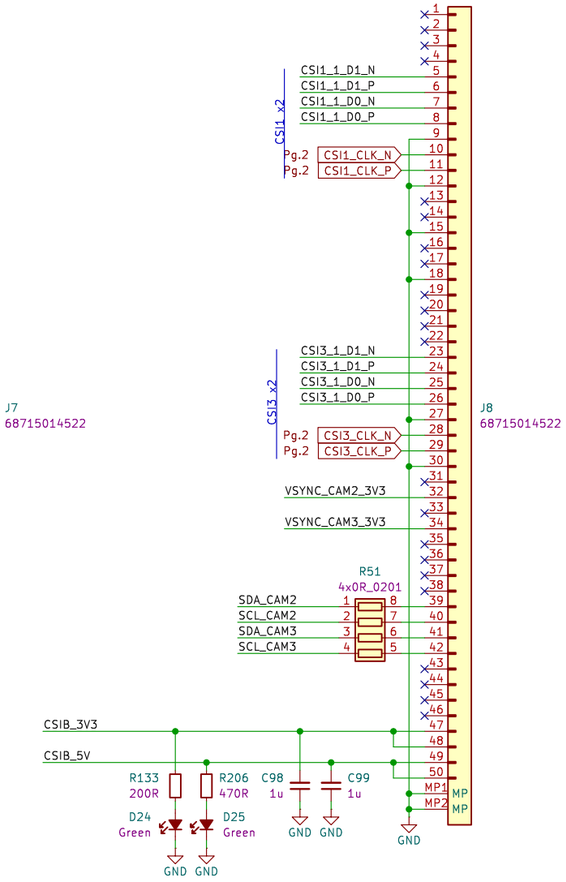
AVAILABLE CSI CONFIGURATIONS:

CONNECTOR J7	CONNECTOR J8
CSI0x4 CSI2x4	NONE
CSI0x4 CSI2x2	CSI3x2
CSI0x2 CSI2x4	CSI1x2
CSI0x2 CSI2x2	CSI3x2 CSI1x2

CSI connector J7

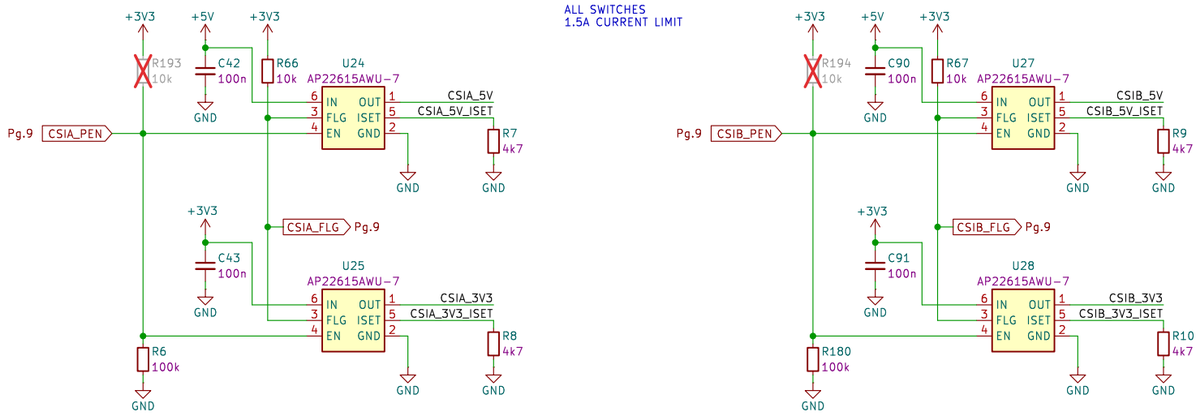


CSI connector J8

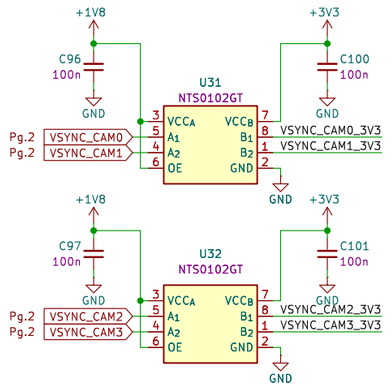


Power switches

ALL SWITCHES
1.5A CURRENT LIMIT



Level shifters



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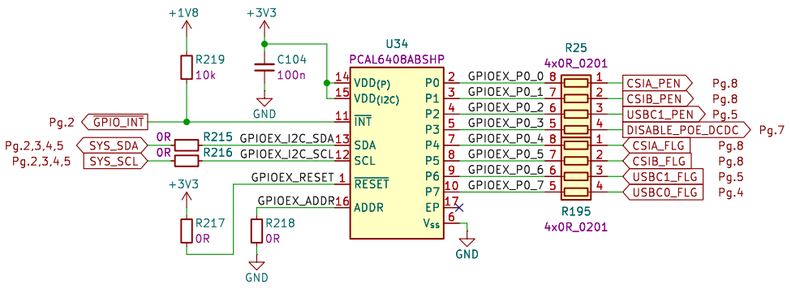
Sheet: /CSI/
File: csi.kicad_sch

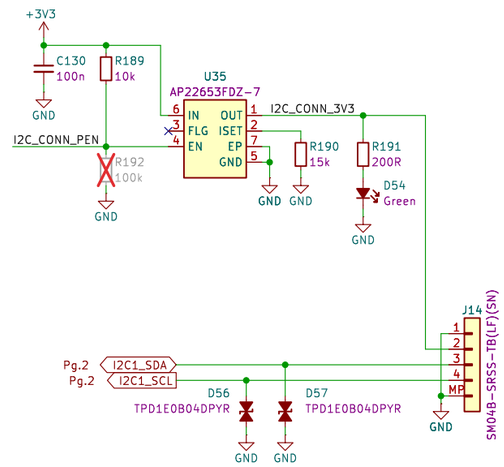
Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 8/10

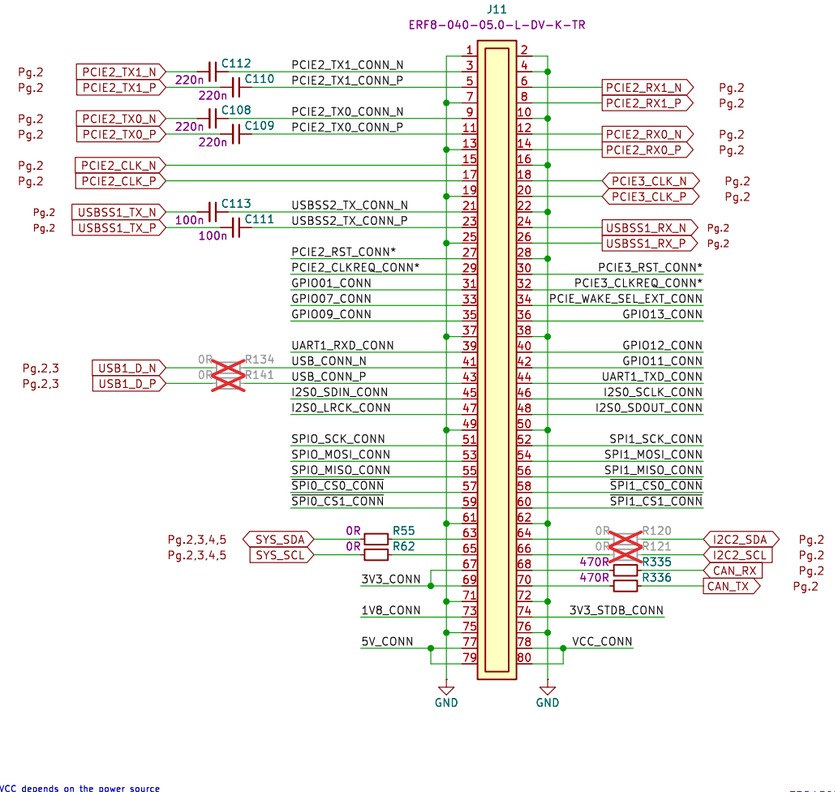
GPIO expander



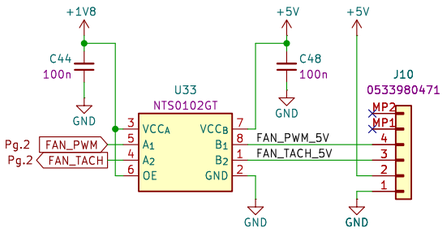
I2C connector



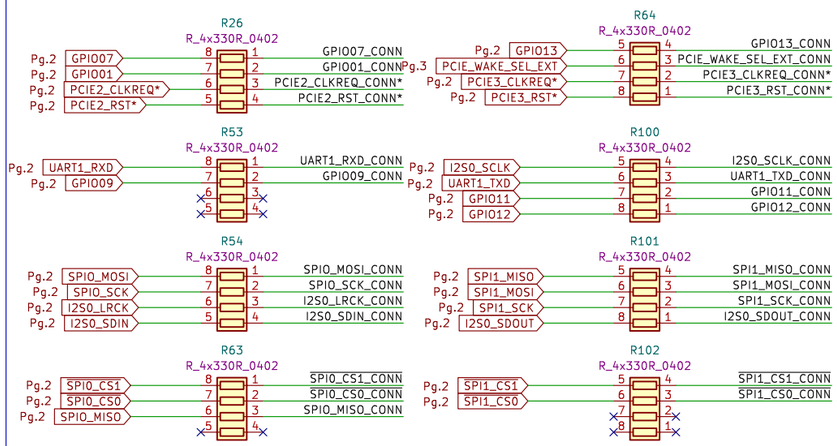
Expansion connector

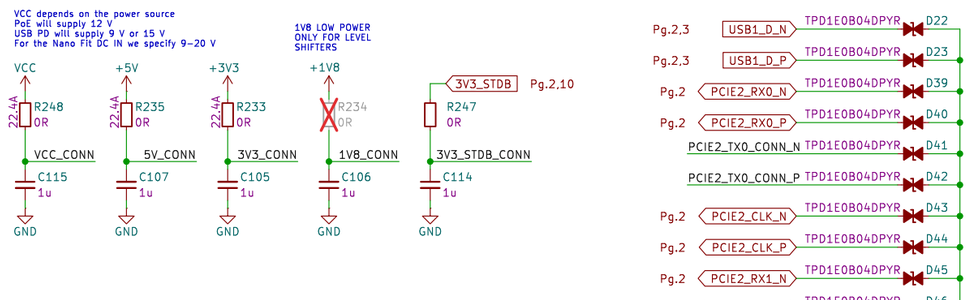


Fan connector



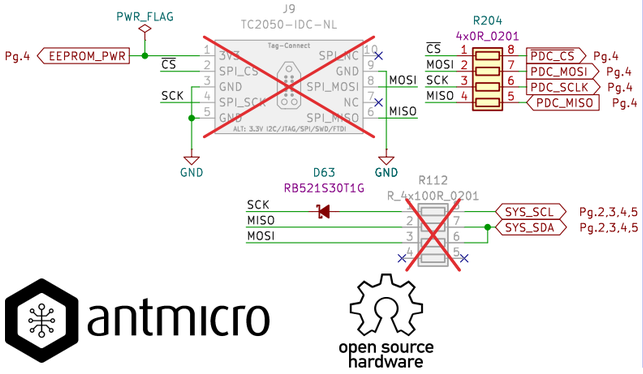
Expansion connector resistors



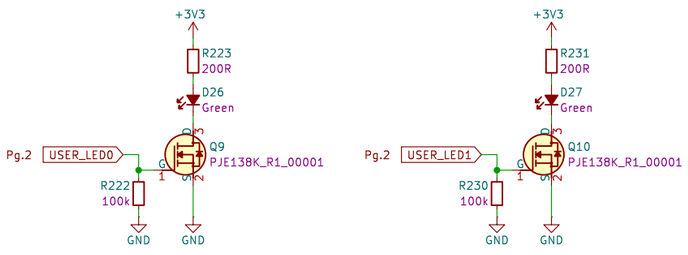


Debug connector

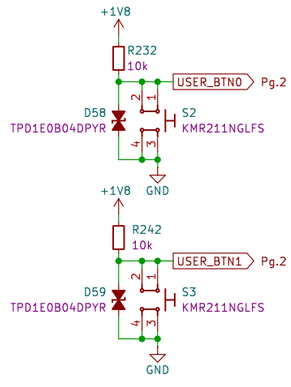
pinout compatible with
www.github.com/antmicro/ftdi-toolkit

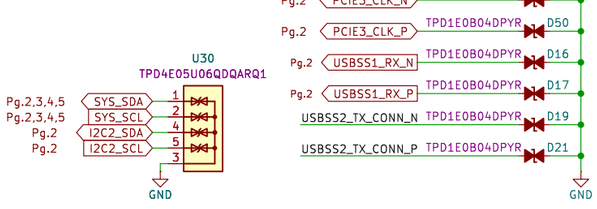


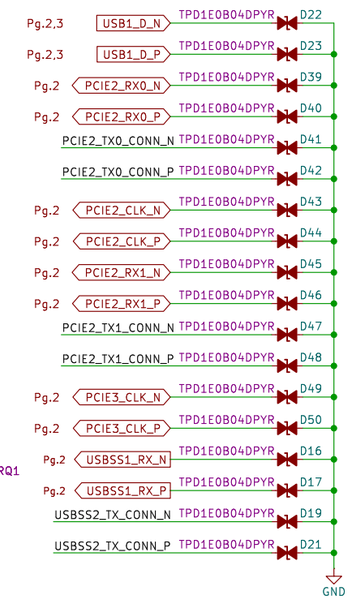
LED indicators



Buttons







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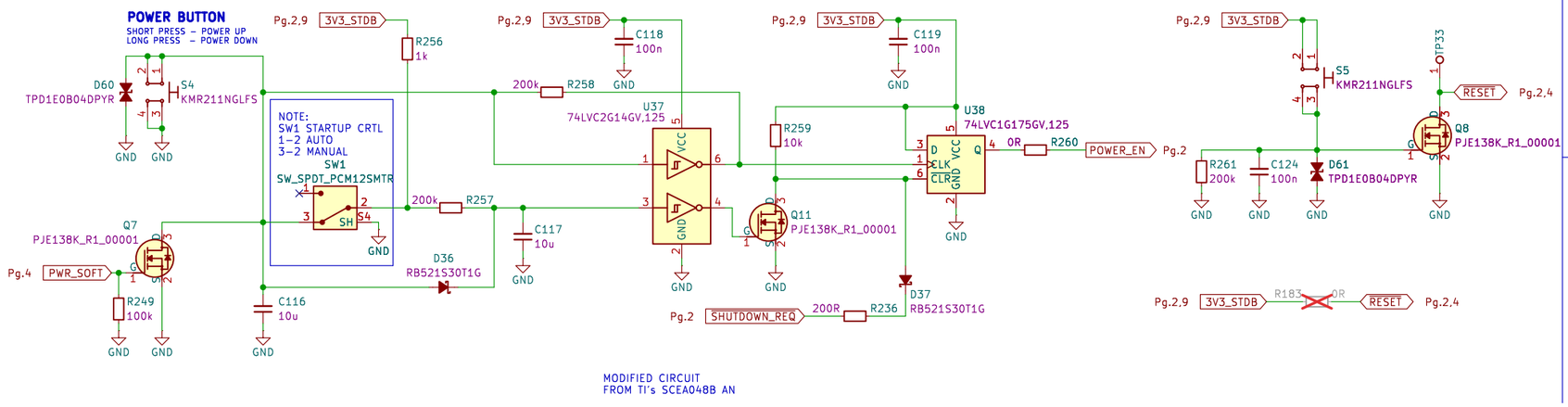
File: peripherals.kicad_sch

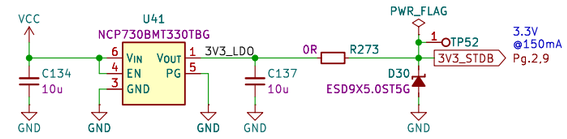
Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
KiCad E.D.A. 9.0.7		Id: 9/10

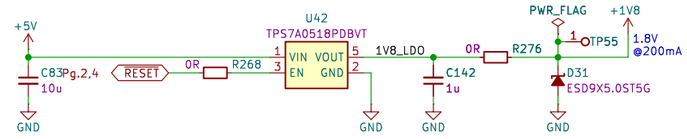
POWER-UP AND RESET CIRCUITRY



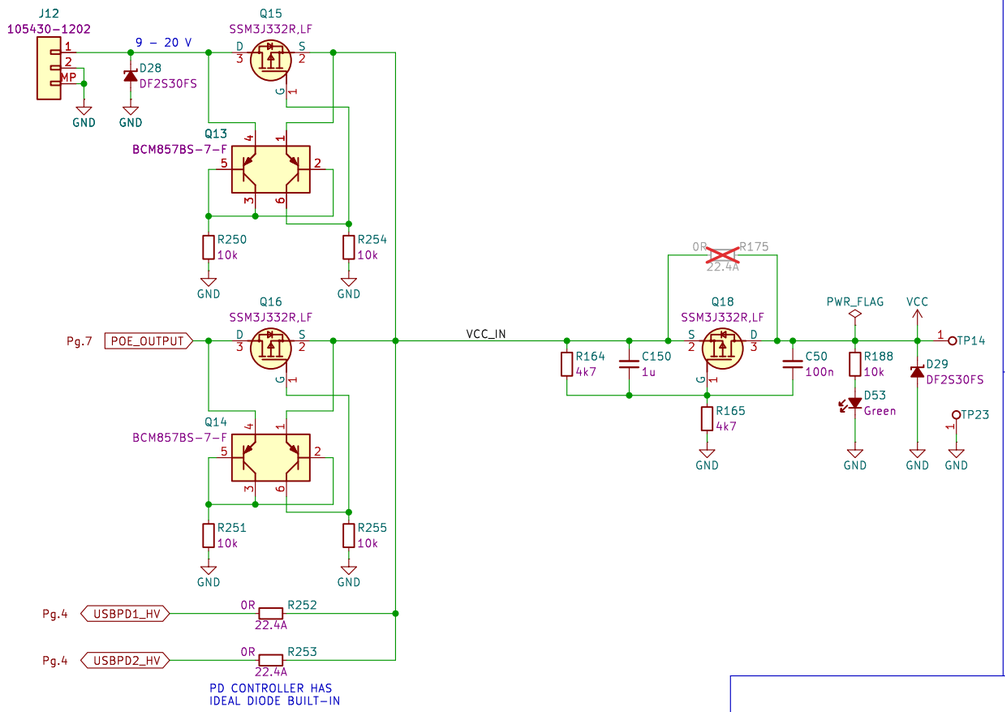
3V3 STANDBY LDO



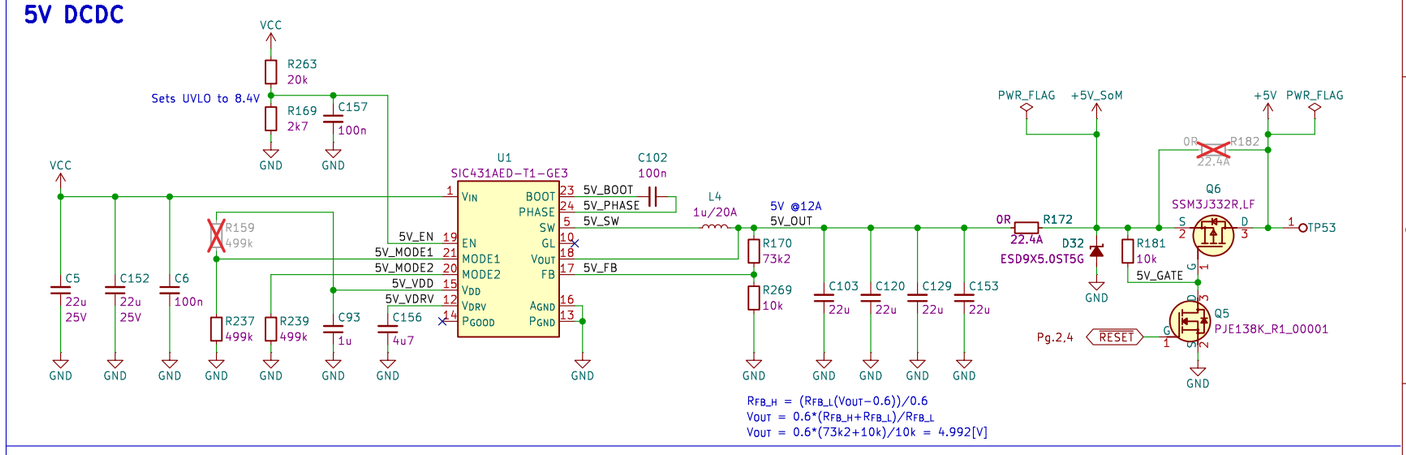
1V8 LDO



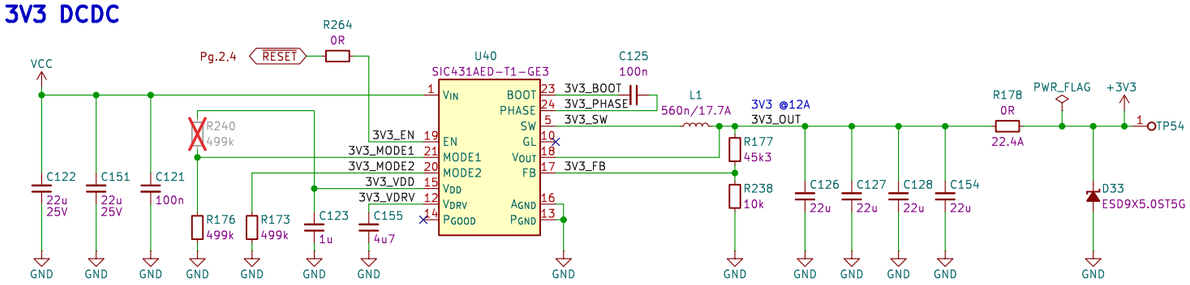
INPUT SELECTOR AND SOFT START



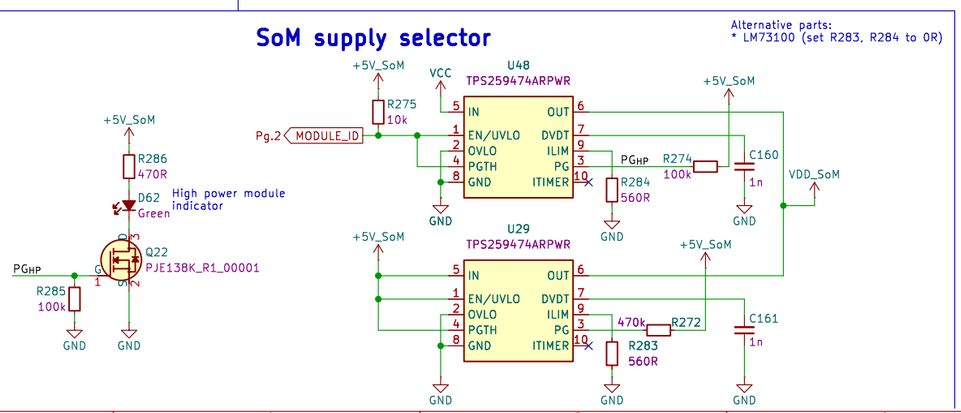
5V DCDC



3V3 DCDC



SoM supply selector



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File: supply.kicad_sch

Title: Jetson Orin Baseboard

Size: A3	Date: 2025-03-12	**Rev: 1.3.4:6d7510f1**
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