P3509-A01

Jetson Xavier NX Carrier Board
HDMI, DP, USB3.1, M.2 Key-E & M, GBe, CAM

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ASSEMBLY	Jetson Xavier NX Carrier Board
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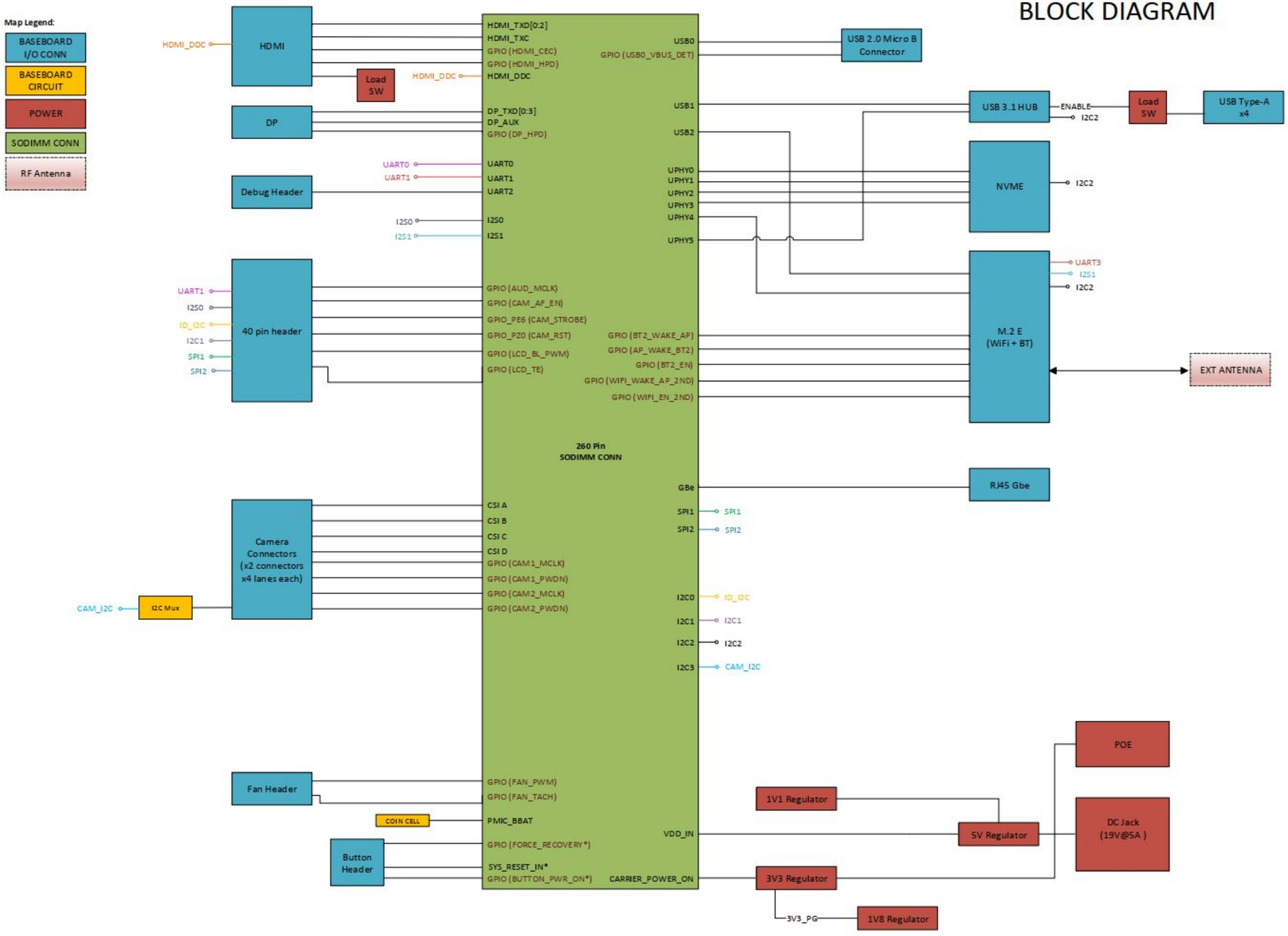
BLOCK DIAGRAM



ASSEMBLY	Jetson Xavier NX Carrier Board
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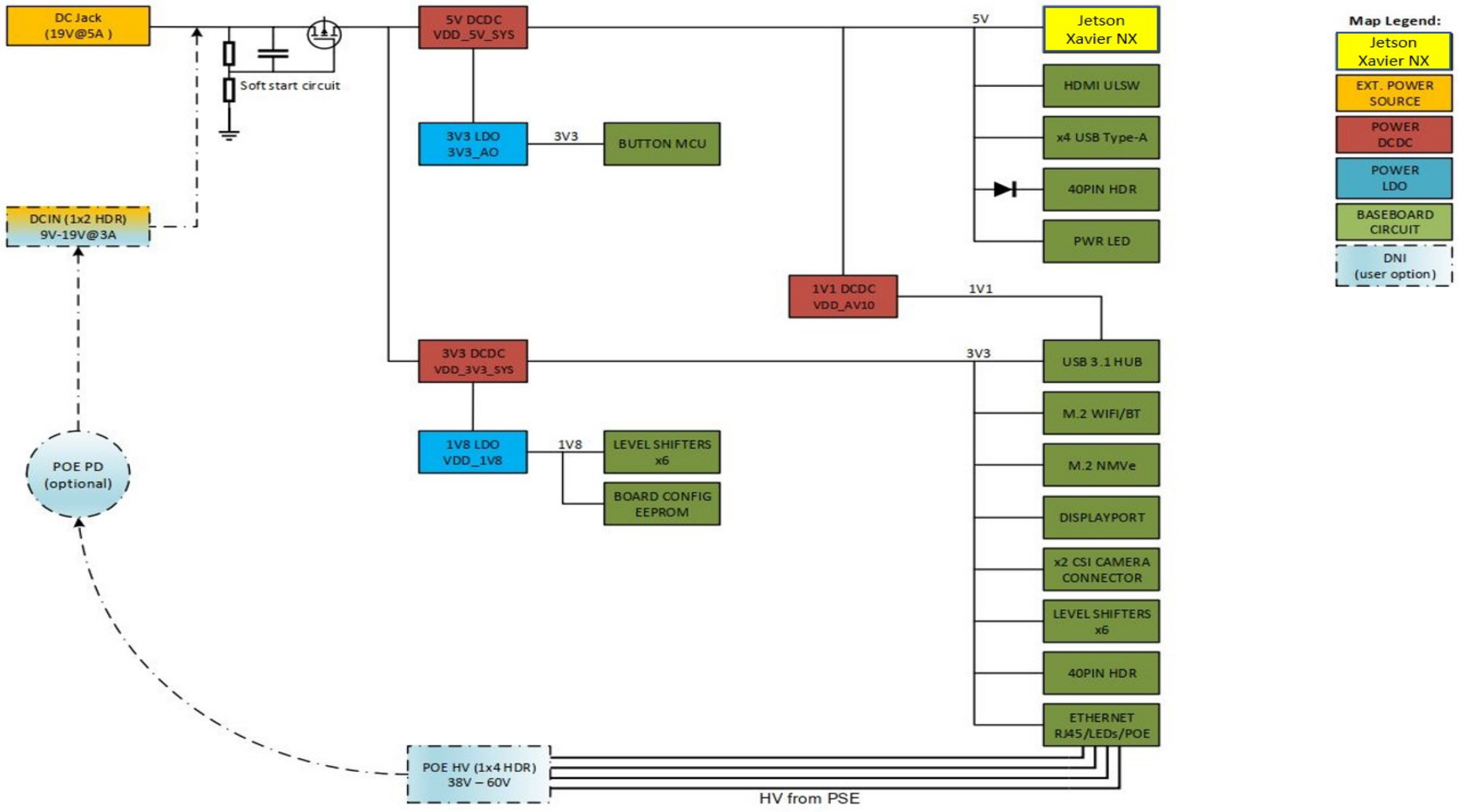
Power Topology



Map Legend:

- Jetson Xavier NX
- EXT. POWER SOURCE
- POWER DCDC
- POWER LDO
- BASEBOARD CIRCUIT
- DNI (user option)

ASSEMBLY	Jetson Xavier NX Carrier Board
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UART, I2C, CAN and GPIOs

5V
VDD_5V_SYS
C145 330uF COMMON 20% 6.3V@85degC TA-Polymer 0.855A@85degC,100KHz 0.040ohm SMD_3528
C146 330uF COMMON 20% 6.3V@85degC TA-Polymer 0.855A@85degC,100KHz 0.040ohm SMD_3528
C147 330uF COMMON 20% 6.3V@85degC TA-Polymer 0.855A@85degC,100KHz 0.040ohm SMD_3528
GND

J2
1-2309413-1
SMD260_MNT2_JETSON
CHANGED
SODIMM CVB CON
SECTION 1 OF 3

251	VDD_IN	I2C0_SCL	185	50OHM_NETCLASS2	ID_I2C_SCL
252	VDD_IN	I2C0_SDA	187	50OHM_NETCLASS2	ID_I2C_SDA
253	VDD_IN	I2C1_SCL	189	50OHM_NETCLASS2	I2C1_SCL
254	VDD_IN	I2C1_SDA	191	50OHM_NETCLASS2	I2C1_SDA
255	VDD_IN	I2C2_SCL	232	50OHM_NETCLASS2	I2C2_SCL
256	VDD_IN	I2C2_SDA	234	50OHM_NETCLASS2	I2C2_SDA
257	VDD_IN				
258	VDD_IN				
259	VDD_IN				
260	VDD_IN				
1	GND				
2	GND				
7	GND				
8	GND				
13	GND				
14	GND				
19	GND				
20	GND				
25	GND				
26	GND				
31	GND				
32	GND				
37	GND				
38	GND				
43	GND				
44	GND				
49	GND				
50	GND				
55	GND				
56	GND				
61	GND				
62	GND				
67	GND				
68	GND				
73	GND				
74	GND				
79	GND				
80	GND				
85	GND				
86	GND				
102	GND				
107	GND				
113	GND				
119	GND				
125	GND				
129	GND				
132	GND				
135	GND				
138	GND				
141	GND				
144	GND				
146	GND				
147	GND				
152	GND				
153	GND				
158	GND				

UART0_TXD	99	50OHM_NETCLASS2	UART0_TXD	OUT	20.2C<
UART0_RXD	101	50OHM_NETCLASS2	UART0_RXD	IN	20.2C>
UART0_RTS	103	50OHM_NETCLASS2	UART0_RTS	IN	20.2C<
UART0_CTS	105	50OHM_NETCLASS2	UART0_CTS	OUT	20.2C>
UART1_TXD	203	50OHM_NETCLASS2	UART1_TXD	OUT	22.2E<>
UART1_RXD	205	50OHM_NETCLASS2	UART1_RXD	IN	22.2E<>
UART1_RTS	207	50OHM_NETCLASS2	UART1_RTS	OUT	22.2A<>
UART1_CTS	209	50OHM_NETCLASS2	UART1_CTS	IN	22.2E<>
(DEBUG) UART2_TXD	236	50OHM_NETCLASS2	UART2_TXD	OUT	23.4B<
(DEBUG) UART2_RXD	238	50OHM_NETCLASS2	UART2_RXD	IN	23.4B<
(CAN_RX) RSVD	143		CAN_RX	IN	4.5E>
(CAN_TX) RSVD	145		CAN_TX	OUT	4.5E<
MOD_SLEEP	178		MOD_SLEEP*	OUT	4.5F< 16.2A< 23.4G<
POWER_EN	237		POWER_EN	IN	11.3A> 17.2B<
SHUTDOWN_REQ	233		SHUTDOWN_REQ*	OUT	7.3G> 11.3H<
PMIC_BBAT	235		BBAT		
SYS_RESET	239		SYS_RST*	OUT	11.4F< 23.3E>
FORCE_RECOVERY	214		FORCE_RECOVERY*	OUT	23.3E>
SLEEP/WAKE	240		PWR_BTN*		

GND	159				
GND	164				
GND	165				
GND	170				
GND	171				
GND	176				
GND	177				
GND	200				
GND	201				
GND	217				
GND	231				
GND	241				
GND	242				
GND	243				
GND	244				
GND	245				
GND	246				
GND	247				
GND	248				
GND	249				
GND	250				
MNT	261				
MNT	262				

M.2 WIFI/BT
40PIN GPIO EXPANSION HEADER
DEBUG

D1 TPD1E10B06 NORM 5.5V 12pF COMMON
D2 TPD1E10B06 NORM 5.5V 12pF COMMON
D3 TPD1E10B06 NORM 5.5V 12pF COMMON
GND

R232 0ohm 0402 5% NO STUFF
0.100
D4 LS345G SOD-123 30V 2A COMMON
BBAT_CONN
J3 3000TR SMD_9PIN NO STUFF
PLACE J45 ON BACK OF PCB
COIN CELL: CR1225
GND

I2C PULL-UP
3.3V VDD_3V3_SYS
1.8V VDD_1V8
3.3V VDD_3V3_SYS
R3 47k 5% 0402 NO STUFF
R4 47k 5% 0402 NO STUFF
R5 47k 5% 0402 NO STUFF
R6 47k 5% 0402 NO STUFF
R8 47k 5% 0402 NO STUFF
R10 47k 5% 0402 NO STUFF
NO STUFF THESE

ID_I2C_SCL	OUT	22.4H<	
ID_I2C_SDA	BI	22.4F<>	
I2C1_SCL	OUT	22.4F<	
I2C1_SDA	BI	22.4F<>	
I2C2_SDA	BI	20.4F<> 23.2H<>	21.4B<
I2C2_SCL	OUT	20.4F<	21.4B< 23.2H<>

PULL-UP FOR POWER BUTTON
5V
VDD_5V_SYS
nv_res
R9 10k 5% 0402 COMMON
PWR_BTN* IN 11.2F< 23.3E<

CAN BUS
3.3V VDD_3V3_SYS
4.3E> IN CAN_TX
4.3E< OUT CAN_RX
J17 ACZ100-0011-001-HH MALE 2.54MM 0 NORM NO STUFF
GND

POWER LED
5V
VDD_5V_SYS
DS1 LED_SMD_0603 25mA 2.35V Green 0603 CHANGED
PWR_LED
nv_res
R7 1.8k 5% 0402 COMMON
23.4G< 5.4A> IN PWR_LED_CTRL
R1 nv_res 0ohm 0402 5% COMMON
23.4G< 16.2A< 4.3E> IN MOD_SLEEP*
R2 nv_res 0ohm 0402 5% NO STUFF
LEDD_CTRL
1G1D1S
Q1 DMN26D0UFB4 DFN1006 COMMON
MAX_VOLTAGE=20V
CONTINUOUS_CURRENT=0.14A
MAX_ON_RESISTANCE=3.6Ω
R_DS_ON@VGS=4.5V / 3900mohm@4.5V / 4000mohm@2.5V
MAX_WATTAGE=0.35W
V_BE_ON=10V
GND

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GPIOs, USB2.0, I2S, SPI, GBe and CSI

J2
1-2309413-1
SMD260_MNT2_JETSON
CHANGED

SODIMM CVB CON
SECTION 2 OF 3

uUSB Con
USB0_AP_P — USB0_AP — 90DIFF_NETCLASS1 — 111 — USB0_D
USB0_AP_N — USB0_AP — 90DIFF_NETCLASS1 — 109 — USB0_D

USB Type-A Con
USB1_AP_P — USB1_AP — 90DIFF_NETCLASS1 — 117 — USB1_D
USB1_AP_N — USB1_AP — 90DIFF_NETCLASS1 — 115 — USB1_D

M.2 BT
USB2_AP_P — USB2_AP — 90DIFF_NETCLASS1 — 123 — USB2_D
USB2_AP_N — USB2_AP — 90DIFF_NETCLASS1 — 121 — USB2_D

40Pin GPIO HDR
I2S0_SDOUT — 50OHM_NETCLASS1 — 193 — I2S0_DOUT
I2S0_SDIN — 50OHM_NETCLASS2 — 195 — I2S0_DIN
I2S0_LRCK — 50OHM_NETCLASS2 — 197 — I2S0_FS
I2S0_SCLK — 50OHM_NETCLASS2 — 199 — I2S0_SCLK

M.2 BT
I2S1_SDOUT — 50OHM_NETCLASS1 — 220 — I2S1_DOUT
I2S1_SDIN — 50OHM_NETCLASS2 — 222 — I2S1_DIN
I2S1_LRCK — 50OHM_NETCLASS2 — 224 — I2S1_FS
I2S1_SCLK — 50OHM_NETCLASS2 — 226 — I2S1_SCLK

ETHERNET CON
GBE_LED_LINK — 188 — GBE_LED_LINK
GBE_LED_ACT — 194 — GBE_LED_ACT
GBE_MDI0_P — DP_GBE_MDI0 — GENERIC_DEZ1 — 186 — GBE_MDI0
GBE_MDI0_N — DP_GBE_MDI0 — GENERIC_DEZ1 — 184 — GBE_MDI0
GBE_MDI1_P — DP_GBE_MDI1 — GENERIC_DEZ1 — 192 — GBE_MDI1
GBE_MDI1_N — DP_GBE_MDI1 — GENERIC_DEZ1 — 190 — GBE_MDI1
GBE_MDI2_P — DP_GBE_MDI2 — GENERIC_DEZ1 — 198 — GBE_MDI2
GBE_MDI2_N — DP_GBE_MDI2 — GENERIC_DEZ1 — 196 — GBE_MDI2
GBE_MDI3_P — DP_GBE_MDI3 — GENERIC_DEZ1 — 204 — GBE_MDI3
GBE_MDI3_N — DP_GBE_MDI3 — GENERIC_DEZ1 — 202 — GBE_MDI3

M.2 KEY-E DFT
SDIO_D0 — 50OHM_NETCLASS1 — 219 — SDMMC_DAT0
SDIO_D1 — 50OHM_NETCLASS1 — 221 — SDMMC_DAT1
SDIO_D2 — 50OHM_NETCLASS1 — 223 — SDMMC_DAT2
SDIO_D3 — 50OHM_NETCLASS1 — 225 — SDMMC_DAT3
SDIO_CMD — 50OHM_NETCLASS1 — 227 — SDMMC_CMD
SDIO_CLK — 50OHM_NETCLASS1 — 229 — SDMMC_CLK

PCB CO-LAYOUT
M2M_ALERT* — R185 0ohm 0402 COMMON — SDIO_D1
M2_SDIO_D1 — R186 0ohm 0402 NO STUFF

USB0_VBUS_DET* — 87 — GPIO00 (USB_VBUS_EN0)
GPIO01 — 118 — GPIO01 (CLK)
BT_M2_WAKE_AP — 124 — GPIO02
BT_M2_EN — 126 — GPIO03
PWR_LED_CTRL — 127 — GPIO04
W_DISABLE1_CTRL — 128 — GPIO05
CAM_MUX_SEL — 130 — GPIO06
GPIO07 — 206 — GPIO07 (PWM)
FAN_TACH — 208 — GPIO08 (SDMMC_CD)
GPIO09 — 211 — GPIO09 (AUD_MCLK)
M2E_ALERT* — 212 — GPIO10
GPIO11 — 216 — GPIO11 (CLK)
GPIO12 — 218 — GPIO12
GPIO13 — 228 — GPIO13 (PWM)
FAN_PWM — 230 — GPIO14 (PWM)

CAM FPC Con
CSI0_D0 — 6 — 90DIFF_NETCLASS1 — CSI0_D0 — CSI0_D0_P
CSI0_D0 — 4 — 90DIFF_NETCLASS1 — CSI0_D0 — CSI0_D0_N
CSI0_D1 — 18 — 90DIFF_NETCLASS1 — CSI0_D1 — CSI0_D1_P
CSI0_D1 — 16 — 90DIFF_NETCLASS1 — CSI0_D1 — CSI0_D1_N
CSI0_CLK — 12 — 90DIFF_NETCLASS1 — CSI0_CLK — CSI0_CLK_P
CSI0_CLK — 10 — 90DIFF_NETCLASS1 — CSI0_CLK — CSI0_CLK_N

PUT TESTPOINT ON BOTTOM OF PCB
CSI1_D0 — 5 — 90DIFF_NETCLASS1 — CSI1_D0 — CSI1_D0_P — TP31
CSI1_D0 — 3 — 90DIFF_NETCLASS1 — CSI1_D0 — CSI1_D0_N — TP32
CSI1_D1 — 17 — 90DIFF_NETCLASS1 — CSI1_D1 — CSI1_D1_P — TP33
CSI1_D1 — 15 — 90DIFF_NETCLASS1 — CSI1_D1 — CSI1_D1_N — TP34
(CSI1_CLK) RSVD — 11 — 90DIFF_NETCLASS1 — CSI1_CLK — CSI1_CLK_P — TP35
(CSI1_CLK) RSVD — 9 — 90DIFF_NETCLASS1 — CSI1_CLK — CSI1_CLK_N — TP36

CAM FPC Con
CSI2_D0 — 24 — 90DIFF_NETCLASS1 — CSI2_D0 — CSI2_D0_P
CSI2_D0 — 22 — 90DIFF_NETCLASS1 — CSI2_D0 — CSI2_D0_N
CSI2_D1 — 36 — 90DIFF_NETCLASS1 — CSI2_D1 — CSI2_D1_P
CSI2_D1 — 34 — 90DIFF_NETCLASS1 — CSI2_D1 — CSI2_D1_N
CSI2_CLK — 30 — 90DIFF_NETCLASS1 — CSI2_CLK — CSI2_CLK_P
CSI2_CLK — 28 — 90DIFF_NETCLASS1 — CSI2_CLK — CSI2_CLK_N

PUT TESTPOINT ON BOTTOM OF PCB
CSI3_D0 — 23 — 90DIFF_NETCLASS1 — CSI3_D0 — CSI3_D0_P — TP37
CSI3_D0 — 21 — 90DIFF_NETCLASS1 — CSI3_D0 — CSI3_D0_N — TP38
CSI3_D1 — 35 — 90DIFF_NETCLASS1 — CSI3_D1 — CSI3_D1_P — TP39
CSI3_D1 — 33 — 90DIFF_NETCLASS1 — CSI3_D1 — CSI3_D1_N — TP40
CSI3_CLK — 29 — 90DIFF_NETCLASS1 — CSI3_CLK — CSI3_CLK_P — TP41
CSI3_CLK — 27 — 90DIFF_NETCLASS1 — CSI3_CLK — CSI3_CLK_N — TP42

CSI4_D2 — 42 — 90DIFF_NETCLASS1 — CSI4_D2 — CSI4_D2_P — TP15
CSI4_D2 — 40 — 90DIFF_NETCLASS1 — CSI4_D2 — CSI4_D2_N — TP16
CSI4_D0 — 48 — 90DIFF_NETCLASS1 — CSI4_D0 — CSI4_D0_P — TP17
CSI4_D0 — 46 — 90DIFF_NETCLASS1 — CSI4_D0 — CSI4_D0_N — TP18
CSI4_CLK — 54 — 90DIFF_NETCLASS1 — CSI4_CLK — CSI4_CLK_P — TP19
CSI4_CLK — 52 — 90DIFF_NETCLASS1 — CSI4_CLK — CSI4_CLK_N — TP20
CSI4_D1 — 60 — 90DIFF_NETCLASS1 — CSI4_D1 — CSI4_D1_P — TP21
CSI4_D1 — 58 — 90DIFF_NETCLASS1 — CSI4_D1 — CSI4_D1_N — TP22
CSI4_D3 — 66 — 90DIFF_NETCLASS1 — CSI4_D3 — CSI4_D3_P — TP23
CSI4_D3 — 64 — 90DIFF_NETCLASS1 — CSI4_D3 — CSI4_D3_N — TP24

CAM0_MCLK — 116 — 50OHM_NETCLASS1 — CAM0_MCLK
CAM0_PWDN — 114 — CAM0_PWDN
CAM1_MCLK — 122 — 50OHM_NETCLASS1 — CAM1_MCLK
CAM1_PWDN — 120 — CAM1_PWDN

CAM FPC Con
USB3.1 HUB
CAM_I2C_SCL — 213 — 50OHM_NETCLASS2 — CAM_I2C_SCL
CAM_I2C_SDA — 215 — 50OHM_NETCLASS2 — CAM_I2C_SDA

VDD_3V3_SYS (3.3V)
R12 1.6k 0402 5% COMMON — CAM_I2C_SDA
R11 1.6k 0402 5% COMMON — CAM_I2C_SCL

40Pin GPIO HDR
SPI0_SCK — 91 — 50OHM_NETCLASS1 — SPI0_SCK
SPI0_MISO — 93 — 50OHM_NETCLASS2 — SPI0_MISO
SPI0_MOSI — 89 — 50OHM_NETCLASS2 — SPI0_MOSI
SPI0_CS0 — 95 — 50OHM_NETCLASS2 — SPI0_CS0
SPI0_CS1 — 97 — 50OHM_NETCLASS2 — SPI0_CS1

SPI1_SCK — 106 — 50OHM_NETCLASS1 — SPI1_SCK
SPI1_MISO — 108 — 50OHM_NETCLASS2 — SPI1_MISO
SPI1_MOSI — 104 — 50OHM_NETCLASS2 — SPI1_MOSI
SPI1_CS0 — 110 — 50OHM_NETCLASS2 — SPI1_CS0
SPI1_CS1 — 112 — 50OHM_NETCLASS2 — SPI1_CS1

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CSI (contn'd), HDMI, DP, DSI, USBSS and PCIE

J2
1-2309413-1
SMD260_MNT2_JETSON
CHANGED

SODIMM CVB CON
SECTION 3 OF 3

TESTPOINT

TP25	CSI5_D0_P	CSI5_D0	90DIFF_NETCLASS1	72	DSI_D0	
TP26	CSI5_D0_N	CSI5_D0	90DIFF_NETCLASS1	70	DSI_D0	
TP27	CSI5_D1_P	CSI5_D1	90DIFF_NETCLASS1	84	DSI_D1	
TP28	CSI5_D1_N	CSI5_D1	90DIFF_NETCLASS1	82	DSI_D1	
TP29	CSI5_CLK_P	CSI5_CLK	90DIFF_NETCLASS1	78	DSI_CLK	
TP30	CSI5_CLK_N	CSI5_CLK	90DIFF_NETCLASS1	76	DSI_CLK	

DP Con

17.4B< OUT	DP0_TXD0_P	DP0_TXD0	DP_SIGNALS	41	DP0_TXD0	
17.4B< OUT	DP0_TXD0_N	DP0_TXD0	DP_SIGNALS	39	DP0_TXD0	
17.3B< OUT	DP0_TXD1_P	DP0_TXD1	DP_SIGNALS	47	DP0_TXD1	
17.3B< OUT	DP0_TXD1_N	DP0_TXD1	DP_SIGNALS	45	DP0_TXD1	
17.3B< OUT	DP0_TXD2_P	DP0_TXD2	DP_SIGNALS	53	DP0_TXD2	
17.3B< OUT	DP0_TXD2_N	DP0_TXD2	DP_SIGNALS	51	DP0_TXD2	
17.3B< OUT	DP0_TXD3_P	DP0_TXD3	DP_SIGNALS	59	DP0_TXD3	
17.3B< OUT	DP0_TXD3_N	DP0_TXD3	DP_SIGNALS	57	DP0_TXD3	
17.2B<> BI	DP0_AUX_P	DP0_AUX	90DIFF_NETCLASS1	92	DP0_AUX	
17.2B<> IN	DP0_AUX_N	DP0_AUX	90DIFF_NETCLASS1	90	DP0_AUX	
17.1D> IN	DP0_HPD			88	DP0_HPD	

HDMI Con

16.4A< OUT	HDMI_TX2_P	HDMI_TX2	DVI_HDMI_SIGNALS	65	DP1_TXD0 (HDMI_TXD2)	
16.4A< OUT	HDMI_TX2_N	HDMI_TX2	DVI_HDMI_SIGNALS	63	DP1_TXD0 (HDMI_TXD2)	
16.4A< OUT	HDMI_TX1_P	HDMI_TX1	DVI_HDMI_SIGNALS	71	DP1_TXD1 (HDMI_TXD1)	
16.3A< OUT	HDMI_TX1_N	HDMI_TX1	DVI_HDMI_SIGNALS	69	DP1_TXD1 (HDMI_TXD1)	
16.3A< OUT	HDMI_TX0_P	HDMI_TX0	DVI_HDMI_SIGNALS	77	DP1_TXD2 (HDMI_TXD0)	
16.3A< OUT	HDMI_TX0_N	HDMI_TX0	DVI_HDMI_SIGNALS	75	DP1_TXD2 (HDMI_TXD0)	
16.3A< OUT	HDMI_TXC_P	HDMI_TXC	DVI_HDMI_SIGNALS	83	DP1_TXD3 (HDMI_TXC)	
16.3A< OUT	HDMI_TXC_N	HDMI_TXC	DVI_HDMI_SIGNALS	81	DP1_TXD3 (HDMI_TXC)	
16.2C< BI	HDMI_DDC_SCL			100	DP1_AUX_P (HDMI_DDC_SCL)	
16.2C<> OUT	HDMI_DDC_SDA			98	DP1_AUX_N (HDMI_DDC_SDA)	
16.1E> IN	HDMI_HPD			96	DP1_HPD (HDMI_HPD)	
16.2D<> BI	HDMI_CEC			94	HDMI_CEC	

SUSCLK_32KHZ				210	CLK_32K_OUT

PCIE_WAKE	179			PCIE_WAKE	IN	20.2G> 21.3C>
PCIE0_RST	181			PCIE0_RST	OUT	21.3C<
PCIE0_CLKREQ	180			PCIE0_CLKREQ	IN	21.3C>
PCIE0_CLK	162	90DIFF_NETCLASS1	PCIE0_CLK	PCIE0_CLK_P	OUT	21.3H<
PCIE0_CLK	160	90DIFF_NETCLASS1	PCIE0_CLK	PCIE0_CLK_N	OUT	21.3H<
PCIE0_TX0	136	90DIFF_NETCLASS1	PCIE0_TX0	PCIE0_TX0_P	OUT	21.3H<
PCIE0_TX0	134	90DIFF_NETCLASS1	PCIE0_TX0	PCIE0_TX0_N	OUT	21.3H<
PCIE0_RX0	133	90DIFF_NETCLASS1	PCIE0_RX0	PCIE0_RX0_P	IN	21.3H>
PCIE0_RX0	131	90DIFF_NETCLASS1	PCIE0_RX0	PCIE0_RX0_N	IN	21.3H>
PCIE0_TX1	142	90DIFF_NETCLASS1	PCIE0_TX1	PCIE0_TX1_P	OUT	21.3H<
PCIE0_TX1	140	90DIFF_NETCLASS1	PCIE0_TX1	PCIE0_TX1_N	OUT	21.3H<
PCIE0_RX1	139	90DIFF_NETCLASS1	PCIE0_RX1	PCIE0_RX1_P	IN	21.3H>
PCIE0_RX1	137	90DIFF_NETCLASS1	PCIE0_RX1	PCIE0_RX1_N	IN	21.3H>
PCIE0_TX2	150	90DIFF_NETCLASS1	PCIE0_TX2	PCIE0_TX2_P	OUT	21.3H<
PCIE0_TX2	148	90DIFF_NETCLASS1	PCIE0_TX2	PCIE0_TX2_N	OUT	21.3H<
PCIE0_RX2	151	90DIFF_NETCLASS1	PCIE0_RX2	PCIE0_RX2_P	IN	21.3H>
PCIE0_RX2	149	90DIFF_NETCLASS1	PCIE0_RX2	PCIE0_RX2_N	IN	21.3H>
PCIE0_TX3	156	90DIFF_NETCLASS1	PCIE0_TX3	PCIE0_TX3_P	OUT	21.3H<
PCIE0_TX3	154	90DIFF_NETCLASS1	PCIE0_TX3	PCIE0_TX3_N	OUT	21.3H<
PCIE0_RX3	157	90DIFF_NETCLASS1	PCIE0_RX3	PCIE0_RX3_P	IN	21.3H>
PCIE0_RX3	155	90DIFF_NETCLASS1	PCIE0_RX3	PCIE0_RX3_N	IN	21.3H>

nvme

USBSS_TX	168	90DIFF_NETCLASS1		USBSS_TX_P	OUT	13.3C<
USBSS_TX	166	90DIFF_NETCLASS1		USBSS_TX_N	OUT	13.3C<
USBSS_RX	163	USBSS_RX_P	C4 | 0.1uF 0402 | 6.3V 10% X5R COMMON	USBSS_TX_HUB_P	IN	13.3C>
USBSS_RX	161	USBSS_RX_N	C5 | 0.1uF 0402 | 6.3V 10% X5R COMMON	USBSS_TX_HUB_N	IN	13.3C>

USB Type-A Con (USBSS)

(PCIE1_RST) RSVD	183			PCIE1_RST	OUT	20.2B<
(PCIE1_CLKREQ) RSVD	182			PCIE1_CLKREQ	OUT	20.2G>
(PCIE1_CLK) RSVD	175	90DIFF_NETCLASS1	PCIE1_CLK	PCIE1_CLK_P	OUT	20.2G<
(PCIE1_CLK) RSVD	173	90DIFF_NETCLASS1	PCIE1_CLK	PCIE1_CLK_N	OUT	20.2G<
(PCIE1_TX0) RSVD	174	90DIFF_NETCLASS1	PCIE1_TX0	PCIE1_TX0_P	OUT	20.2G<
(PCIE1_TX0) RSVD	172	90DIFF_NETCLASS1	PCIE1_TX0	PCIE1_TX0_N	OUT	20.2G<
(PCIE1_RX0) RSVD	169	90DIFF_NETCLASS1	PCIE1_RX0	PCIE1_RX0_P	IN	20.2G>
(PCIE1_RX0) RSVD	167	90DIFF_NETCLASS1	PCIE1_RX0	PCIE1_RX0_N	IN	20.2G>

M.2 key e wifi/bt

1.8V
VDD_1V8

U1
74LVC1G07GW/SN74LVC1G07DCKRE4
SC70_5
COMMON

3.3V
VDD_3V3_SYS

R13
10K
5 %
0402
COMMON

M2E_SUSCLK_32KHZ

OUT 20.2C<

GND

ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	SODIMM Connector 3/3

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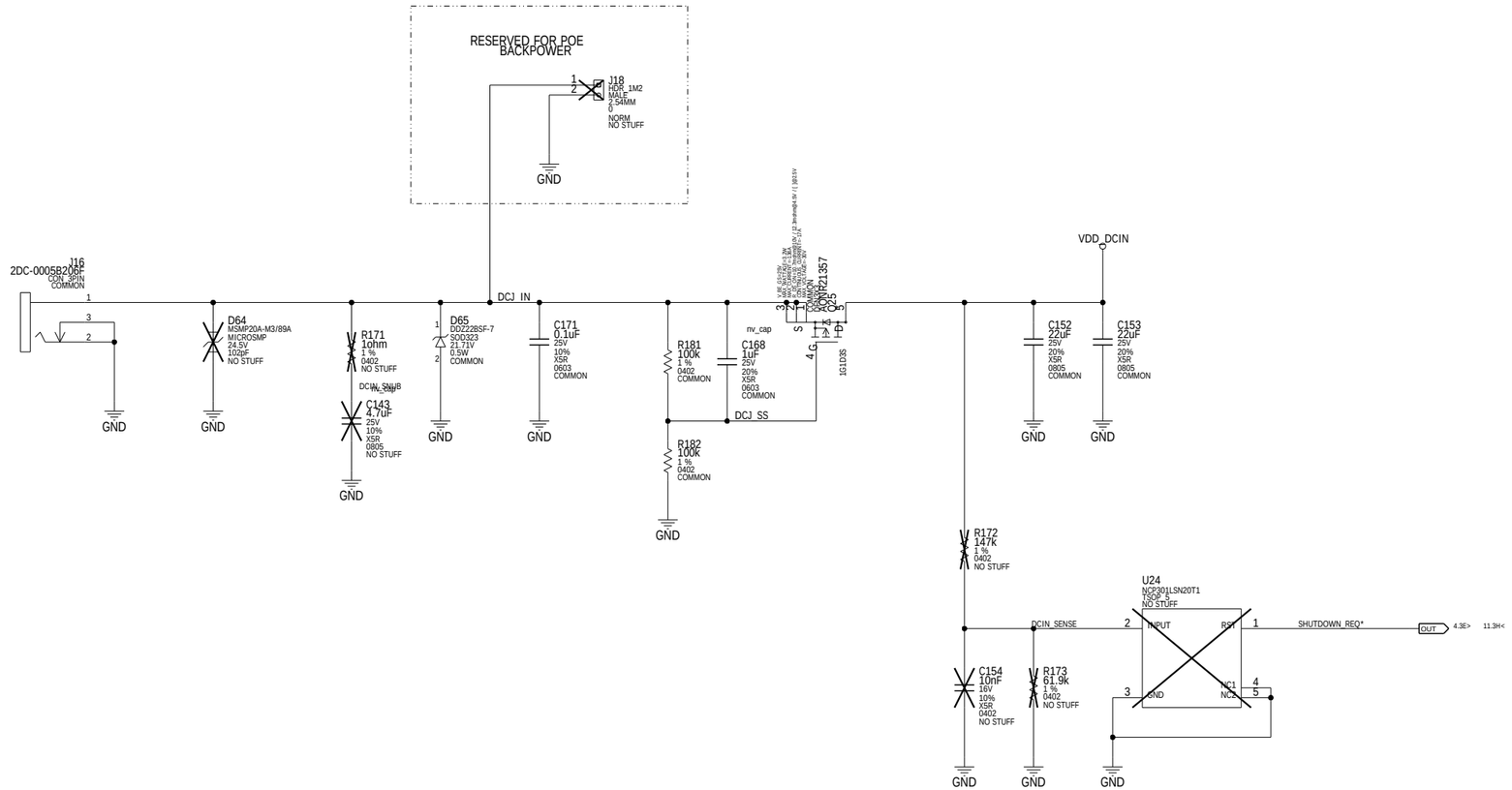
DC JACK POWER PATH



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	DC_JACK

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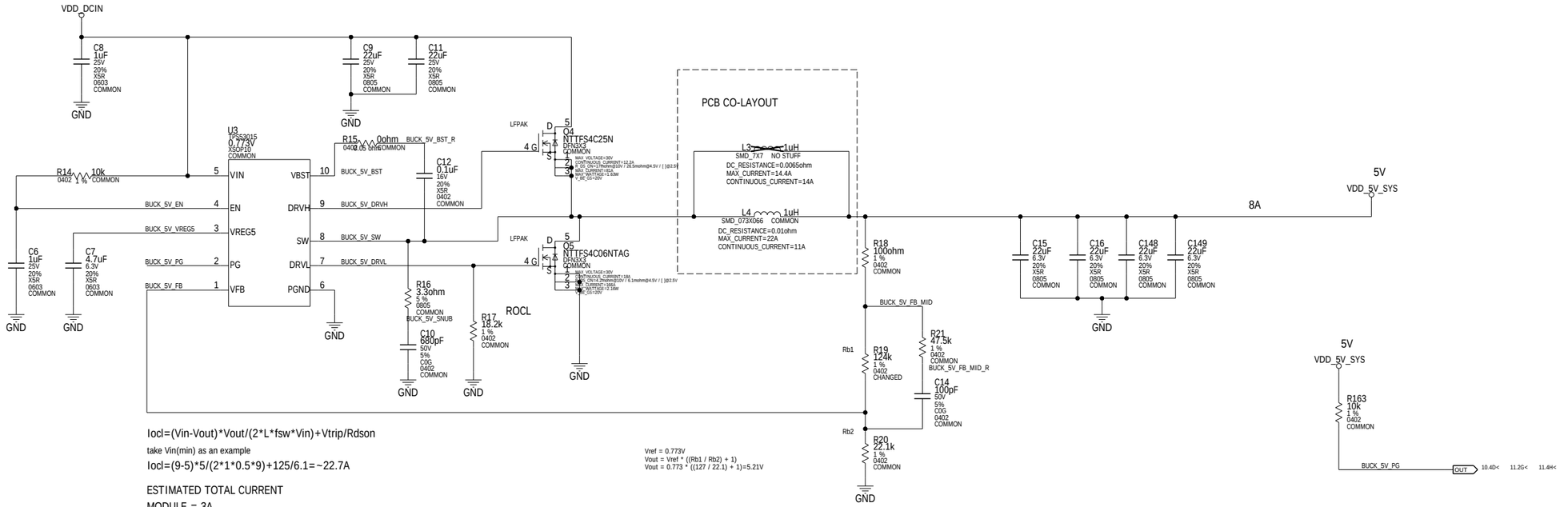
PRE-REG 5V DCDC



Iocl=(Vin-Vout)*Vout/(2*L*fsw*Vin)+Vtrip/Rdson

take Vin(min) as an example

Iocl=(9-5)*5/(2*1*0.5*9)+125/6.1=~22.7A

Vref = 0.773V
Vout = Vref * ((Rb1 / Rb2) + 1)
Vout = 0.773 * ((127 / 22.1) + 1)=5.21V

ESTIMATED TOTAL CURRENT

MODULE = 3A
USB = 0.9A (x4) = 3.6A
40PIN HDR = 1

TOTAL = 7.6A

ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	PRE-REG 5V

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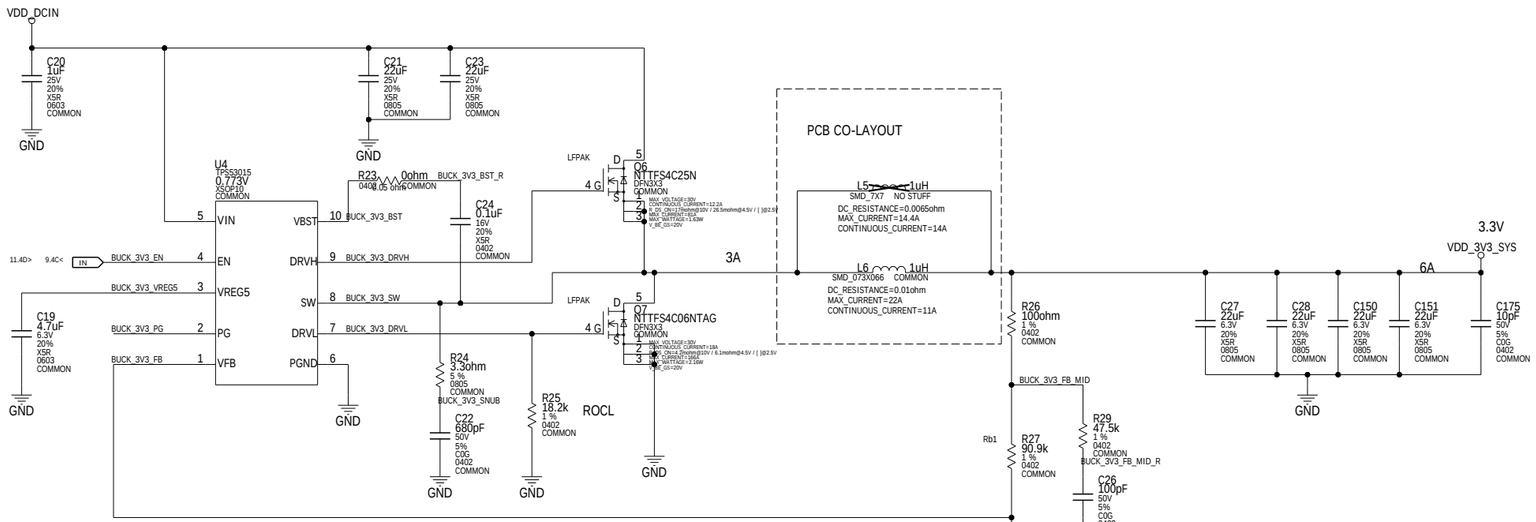
PRE-REG 3V3 DCDC



Iocl=(Vin-Vout)*Vout/(2*L*fsw*Vin)+Vtrip/Rdson

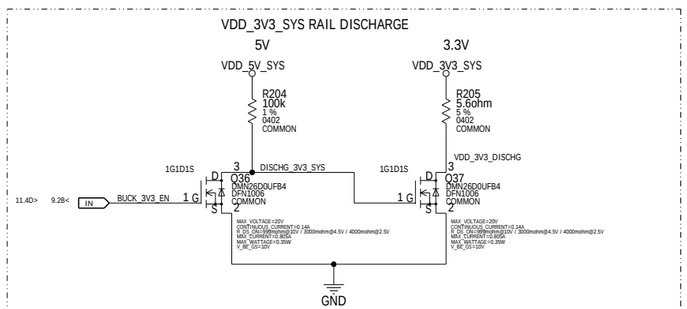
take Vin(min) as an example

Iocl=(9-3.3)*3.3/(2*1*0.5*9)+125/6.1=~20.5A

ESTIMATED TOTAL CURRENT

M.2 WIFI/BT = 2.5A
M.2 NVME = 2.5A
MISC = 0.5A
TOTAL = 5.5A

Vref = 0.773V
Vout = Vref * ((Rb1 / Rb2) + 1)
Vout = 0.773 * ((90.9 / 27.4) + 1)=3.33V



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	PRE-REG 3V3

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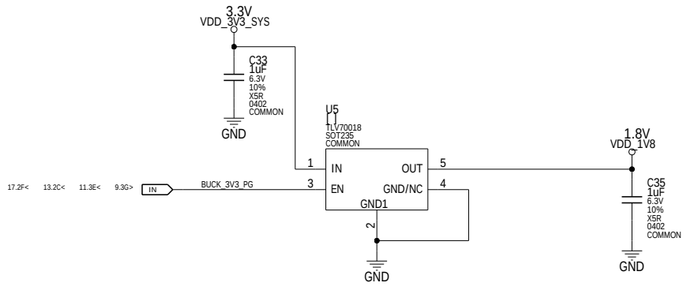
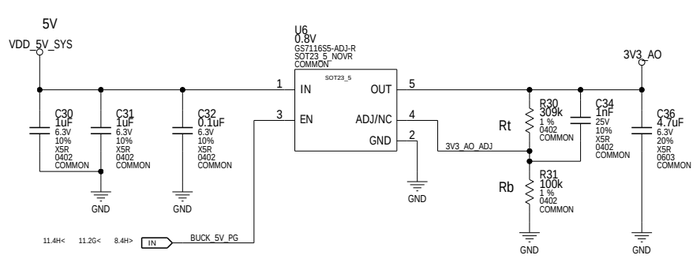
1V8 LDO AND 3V3 A0 RAILS

1V8 LDO



5V



VOUT=VREF(0.8V)* (1+(RT/RB))+Iadj(1nA)*Rt
RT=309k
RB=100k
VOUT=3.272V

ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	1V8 LDO & 3V3 AO Rails

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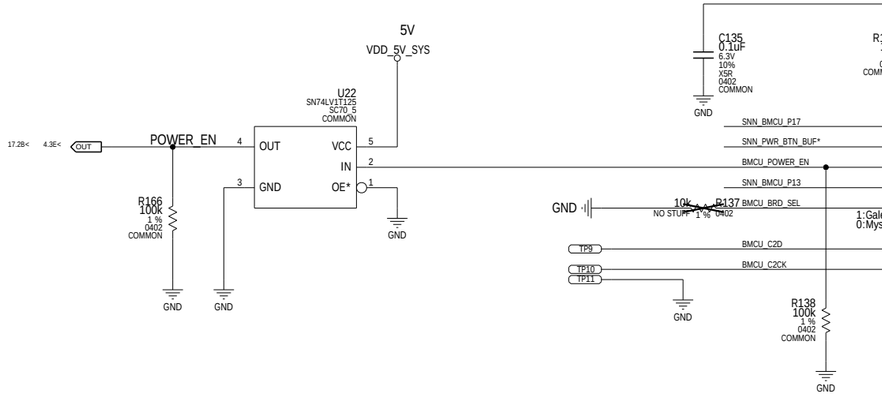
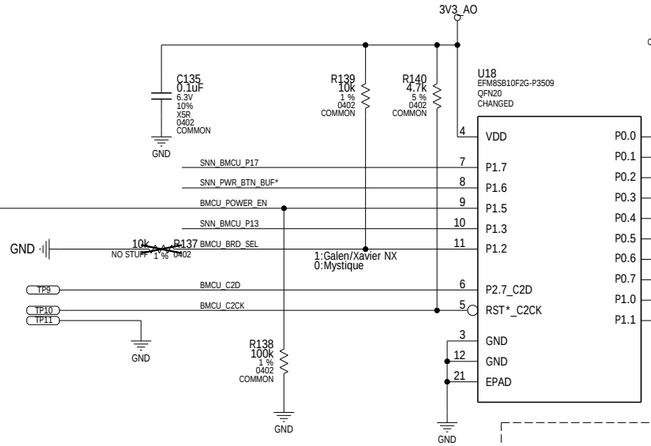
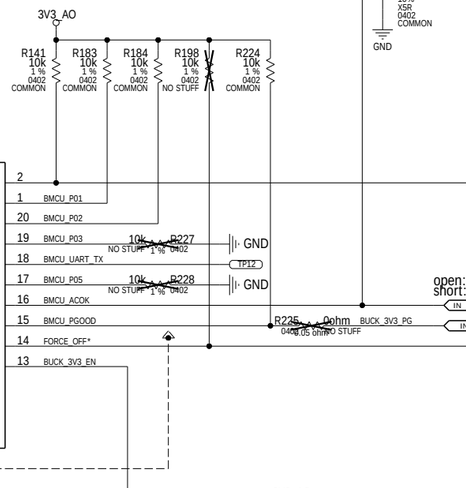
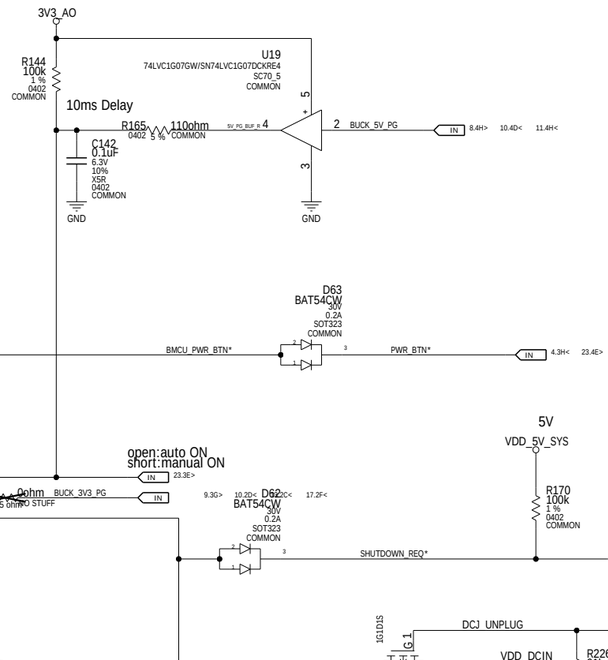
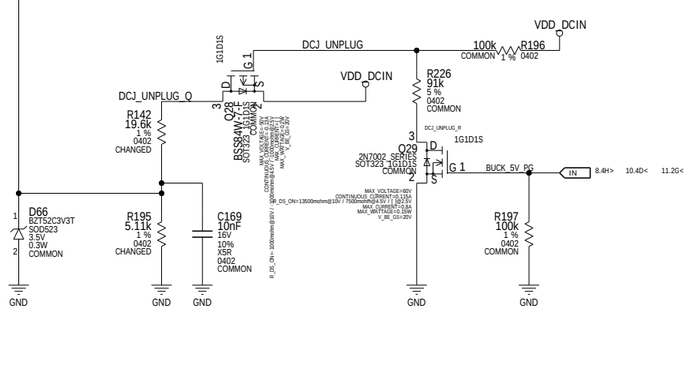
BUTTON MCU FOR POWER UP



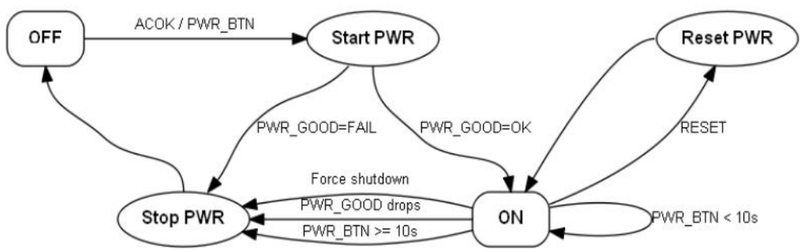








STATE DIAGRAM



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	BUTTON MCU

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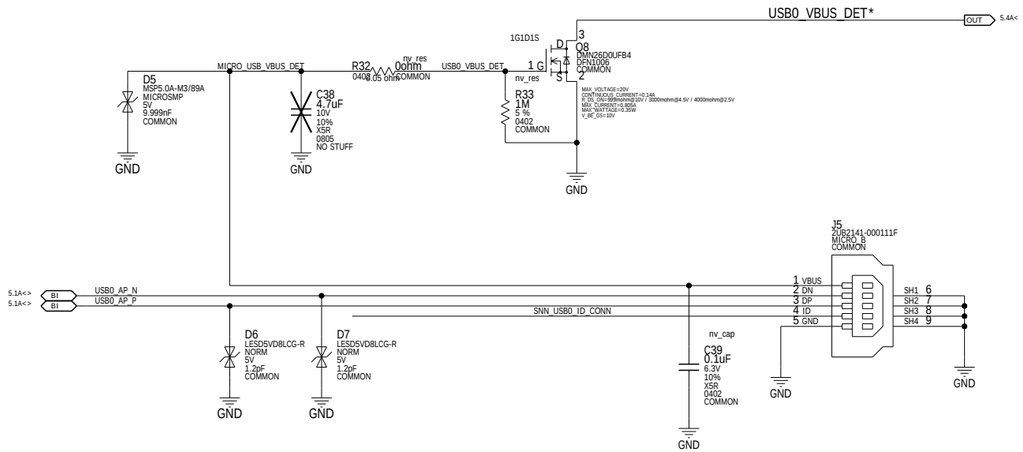
MICRO USB (DEVICE MODE ONLY)



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	MICRO USB2.0

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USB3.1 GEN2 HUB x4 PORTS

DECOUPLING CAPS

VDD_AV10_HUB

VS1	VIRTUAL_SHORT SHUNT COMMON	AV10_1	C40	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS2	VIRTUAL_SHORT SHUNT COMMON	AV10_2	C41	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS3	VIRTUAL_SHORT SHUNT COMMON	AV10_3	C42	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS4	VIRTUAL_SHORT SHUNT COMMON	AV10_4	C43	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS5	VIRTUAL_SHORT SHUNT COMMON	AV10_5	C44	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS6	VIRTUAL_SHORT SHUNT COMMON	AV10_6	C45	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS7	VIRTUAL_SHORT SHUNT COMMON	AV10_7	C46	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS8	VIRTUAL_SHORT SHUNT COMMON	AV10_8	C47	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS17	VIRTUAL_SHORT SHUNT COMMON	AV10_9	C155	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS18	VIRTUAL_SHORT SHUNT COMMON	AV10_10	C156	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON

GND — FOR AV10 PINS

3.3V

VDD_3V3_SYS

VS9	VIRTUAL_SHORT SHUNT COMMON	AV33_2	C48	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS10	VIRTUAL_SHORT SHUNT COMMON	AV33_3	C49	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON

GND — FOR AV33 PINS

3.3V

VDD_3V3_SYS

VS12	VIRTUAL_SHORT SHUNT COMMON	5V_LDO	C51	nv_cap 0.1uF 0402	6.3V 10% X5R COMMON
VS13	VIRTUAL_SHORT SHUNT COMMON	5V_LDO	C52	nv_cap 10uF 0603	6.3V 20% X5R COMMON

GND — FOR 5V_LDO PIN

SPI FLASH FOR RTS5489

3.3V

VDD_3V3_SYS

nv_res R199 10K 5 % 0402 COMMON

nv_res R200 10K 5 % 0402 COMMON

nv_res R201 10K 5 % 0402 COMMON SPI_FL_HLD

U28 W25Q20CLSNIG-P3509 SO-8 CHANGED

SPI_FL_WP

SPI_HUB_CS — HOLD* / WP*/NC / CS*

SPI_HUB_MOSI — DIO

SPI_HUB_MISO — DO

SPI_HUB_SCK — CLK

VCC — nv_cap C170 0.1uF 6.3V 10% X5R 0402 COMMON — GND

GND

5V 1V1 DCDC FOR USB HUB

5V

VDD_5V_SYS

C163 10uF 6.3V 20% X5R 0603 NO STUFF

C164 10uF 6.3V 20% X5R 0603 COMMON

GND

U26 MP2152 QFN6 COMMON

17.2E< 10.3D< 11.3E<

9.3G> IN — BUCK_3V3_PG

R175 20k 1 % 0402 NO STUFF

Vin_H > 1.2V

3 VIN — 4 EN — 1 GND — 2 SW — 6 OUT — 5 FB

BUCK_1V1_SW — L19 1uH 2520 COMMON

DC_RESISTANCE=0.042ohm
CONTINUOUS_CURRENT=3.2A
MAX_CURRENT=3.8A

BUCK_1V1_FB

BUCK_1V1_FB_MID

VOUT=(0.6V)/ (Rb/(Rt+Rb))
Rt=100k
Rb=121k
VOUT=1.095V

VDD_AV10_HUB

R176 100ohm 1 % 0402 COMMON

C166 10uF 6.3V 20% X5R 0603 COMMON

C167 10uF 6.3V 20% X5R 0603 COMMON

GND

C165 22pF 50V 5% C0G 0402 NO STUFF

R177 100k 1 % 0402 COMMON — Rt

R178 121k 1 % 0402 COMMON — Rb

GND

PULL-UP FOR OCP

VDD_3V3_SYS

nv_res R38 100k 1 % 0402 COMMON — HUB_DSP12_OCP

VDD_3V3_SYS

nv_res R36 100k 1 % 0402 COMMON — HUB_DSP34_OCP

POWER ON/OFF CONTROL

VDD_3V3_SYS

nv_res R37 10K 5 % 0402 COMMON — HUB_PWR_DET

SELF POWER DETECTION

12MHz CRYSTAL FOR RTS5411S SYSTEM CLOCK

Y1 7M12070053 SMD 3225 12MHz COMMON

HUB_XTAL_IN — 1 — 4 — 3 — 2 — HUB_XTAL_OUT

C61 nv_cap 22pF 0402 50V 5% C0G COMMON

C63 nv_cap 22pF 0402 50V 5% C0G COMMON

GND

U7 RTS5489-GR QFN88 COMMON

1 / 2

SNN_5V_IN1	83	5V_IN	ADC_CAP	40	HUB_ADC_CAP
SNN_5V_IN2	87	5V_IN			
5V_LDO	41	5V_LDO			
	22	AV33			
AV33_2	42	AV33			
AV33_3	85	AV33			
AV10_1	1	AV10			
AV10_2	7	AV10			
AV10_3	16	AV10			
AV10_4	23	AV10			
AV10_5	29	AV10			
AV10_6	35	AV10			
AV10_7	46	AV10			
AV10_8	57	AV10			
AV10_9	72	AV10			
AV10_10	81	AV10			
		GND		4	
		GND		26	
		GND		32	
		EPAD		89	

nv_cap C55 0.1uF 0402 6.3V 10% X5R COMMON — GND

3.3V

VDD_3V3_SYS

nv_cap C58 10uF 6.3V 20% X5R 0603 COMMON

nv_cap C56 0.1uF 6.3V 10% X5R 0402 COMMON

GND

GND

U7 RTS5489-GR QFN88 COMMON

2 / 2

5.1A<>	BI	USB1_AP_P	47	USP_D_P	DSP1_D_P	49	90DIFF_NETCLASS1 — DSP1_DP — BI — 14.2A<>
5.1A<>	BI	USB1_AP_N	48	USP_D_N	DSP1_D_N	50	90DIFF_NETCLASS1 — DSP1_DN — BI — 14.2A<>
6.3G<	OUT	USBSS_TX_HUB_P	77	USP_TX_P	DSP1_TX_P	12	90DIFF_NETCLASS1 — DSP1_SSTX_P — OUT — 14.3A<
6.4G<	OUT	USBSS_TX_HUB_N	78	USP_TX_N	DSP1_TX_N	13	90DIFF_NETCLASS1 — DSP1_SSTX_N — OUT — 14.3A<
6.3G>	IN	USBSS_TX_P — C60 0.1uF 0402 6.3V 10% X5R COMMON — USBSS_RX_HUB_P	74	USP_RX_P	DSP1_RX_P	9	90DIFF_NETCLASS1 — DSP1_SSRX_P — IN — 14.2A>
6.3G>	IN	USBSS_TX_N — C62 0.1uF 0402 6.3V 10% X5R COMMON — USBSS_RX_HUB_N	73	USP_RX_N	DSP1_RX_N	8	90DIFF_NETCLASS1 — DSP1_SSRX_N — IN — 14.2A>
		SPI_HUB_MISO	58	SPI_MISO	DSP2_D_P	51	90DIFF_NETCLASS1 — DSP2_DP — BI — 14.4A<>
		SPI_HUB_MOSI	59	SPI_MOSI	DSP2_D_N	52	90DIFF_NETCLASS1 — DSP2_DN — BI — 14.4A<>
		SPI_HUB_SCK	60	SPI_SCK	DSP2_TX_P	5	90DIFF_NETCLASS1 — DSP2_SSTX_P — OUT — 14.4A<
		SPI_HUB_CS	61	SPI_SCS_N	DSP2_TX_N	6	90DIFF_NETCLASS1 — DSP2_SSTX_N — OUT — 14.4A<
		SNN_HUB_I2C_CLK	17	I2C_CLK	DSP2_RX_P	3	90DIFF_NETCLASS1 — DSP2_SSRX_P — IN — 14.4A>
		SNN_HUB_I2C_DAT	66	I2C_DAT	DSP2_RX_N	2	90DIFF_NETCLASS1 — DSP2_SSRX_N — IN — 14.4A>
		SNN_HUB_I2C_INT#	67	I2C_INT*	DSP3_D_P	53	90DIFF_NETCLASS1 — DSP3_DP — BI — 15.2B<>
		SNN_HUB_SM_INT#	68	SM_INT*	DSP3_D_N	54	90DIFF_NETCLASS1 — DSP3_DN — BI — 15.2B<>
18.4B< 5.4G>	IN	CAM_I2C_SCL	69	SM_CLK	DSP3_TX_P	33	90DIFF_NETCLASS1 — DSP3_SSTX_P — OUT — 15.3B<
18.5B<> 5.4G<>	BI	CAM_I2C_SDA	70	SM_DAT	DSP3_TX_N	34	90DIFF_NETCLASS1 — DSP3_SSTX_N — OUT — 15.3B<
					DSP3_RX_P	31	90DIFF_NETCLASS1 — DSP3_SSRX_P — IN — 15.2B>
14.1E>	IN	HUB_DSP12_OCP	21	DSP1_OCP	DSP3_RX_N	30	90DIFF_NETCLASS1 — DSP3_SSRX_N — IN — 15.2B>
			62	DSP2_OCP			
15.1E>	IN	HUB_DSP34_OCP	20	DSP3_OCP	DSP4_D_P	55	90DIFF_NETCLASS1 — DSP4_DP — BI — 15.4B<>
			63	DSP4_OCP	DSP4_D_N	56	90DIFF_NETCLASS1 — DSP4_DN — BI — 15.4B<>
		HUB_XTAL_IN	43	XTLI	DSP4_TX_P	27	90DIFF_NETCLASS1 — DSP4_SSTX_P — OUT — 15.4B<
		HUB_XTAL_OUT	44	XTLO	DSP4_TX_N	28	90DIFF_NETCLASS1 — DSP4_SSTX_N — OUT — 15.4B<
		GND — R35 6.19K 0402 1 % nv_res COMMON — RREF	45	RREF	DSP4_RX_P	25	90DIFF_NETCLASS1 — DSP4_SSRX_P — IN — 15.4B>
					DSP4_RX_N	24	90DIFF_NETCLASS1 — DSP4_SSRX_N — IN — 15.4B>
		HUB_PWR_DET	39	LOC_PWR			
			36	BPWR_DET	DSP1_PWR_EN	19	HUB_DSP12_PWR_EN — OUT — 14.1C<
		SNN_HUB_GPIO14	71	GPIO14	DSP2_PWR_EN	64	
		SNN_HUB_ADC_IN0	37	ADC_IN0	DSP3_PWR_EN	18	HUB_DSP34_PWR_EN — OUT — 15.1C<
		SNN_HUB_ADC_IN1	38	ADC_IN1	DSP4_PWR_EN	65	
		SNN_HUB_NC01	10	NC	NC	79	SNN_HUB_NC07
		SNN_HUB_NC02	11	NC	NC	80	SNN_HUB_NC08
		SNN_HUB_NC03	14	NC	NC	82	SNN_HUB_NC09
		SNN_HUB_NC04	15	NC	NC	84	SNN_HUB_NC10
		SNN_HUB_NC05	75	NC	NC	86	SNN_HUB_NC11
		SNN_HUB_NC06	76	NC	NC	88	SNN_HUB_NC12

I2C slave addrs: 7'1101010b = 7'h6A

ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	USB3.1 HUB

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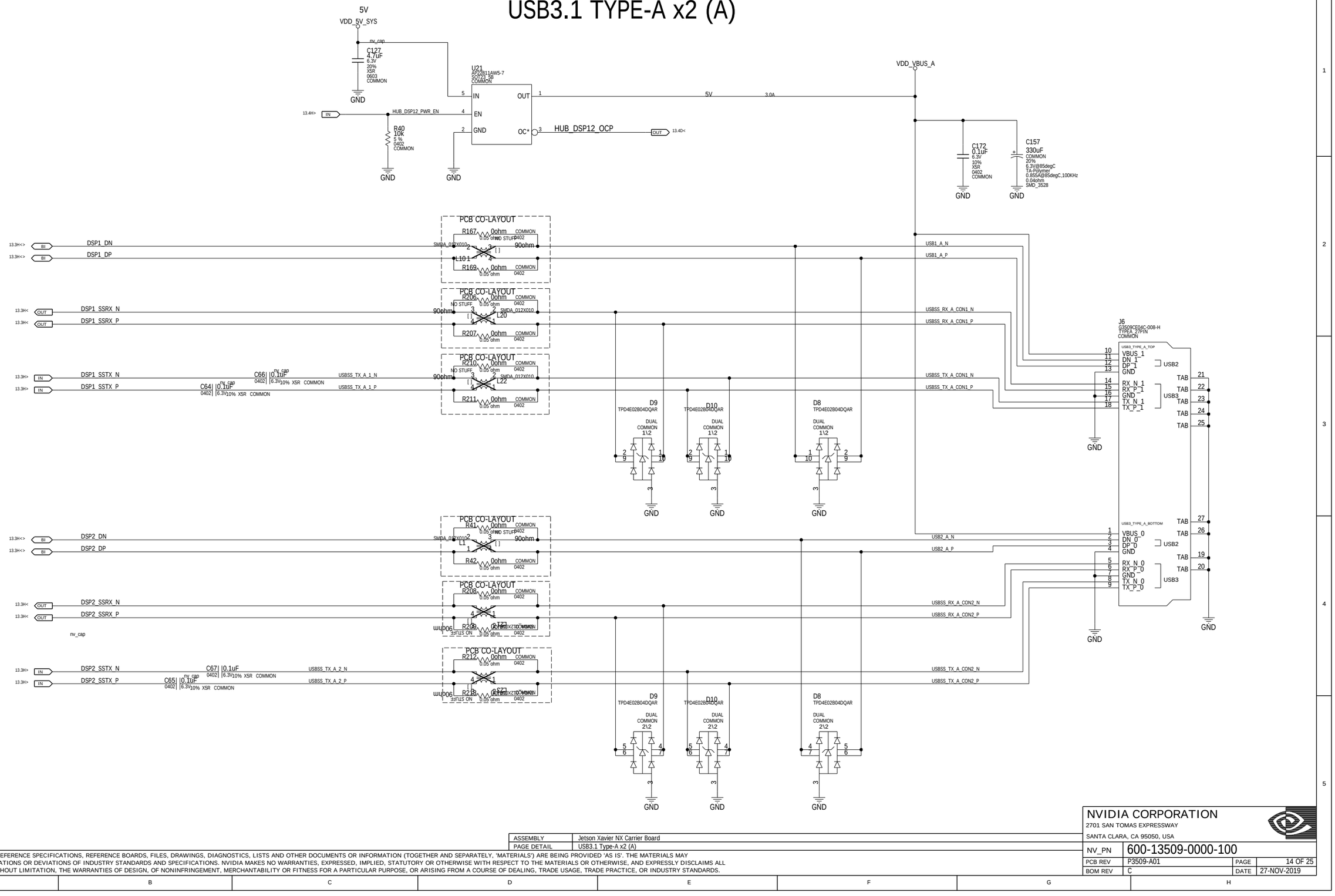
USB3.1 TYPE-A x2 (A)



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	USB3.1 Type-A x2 (A)

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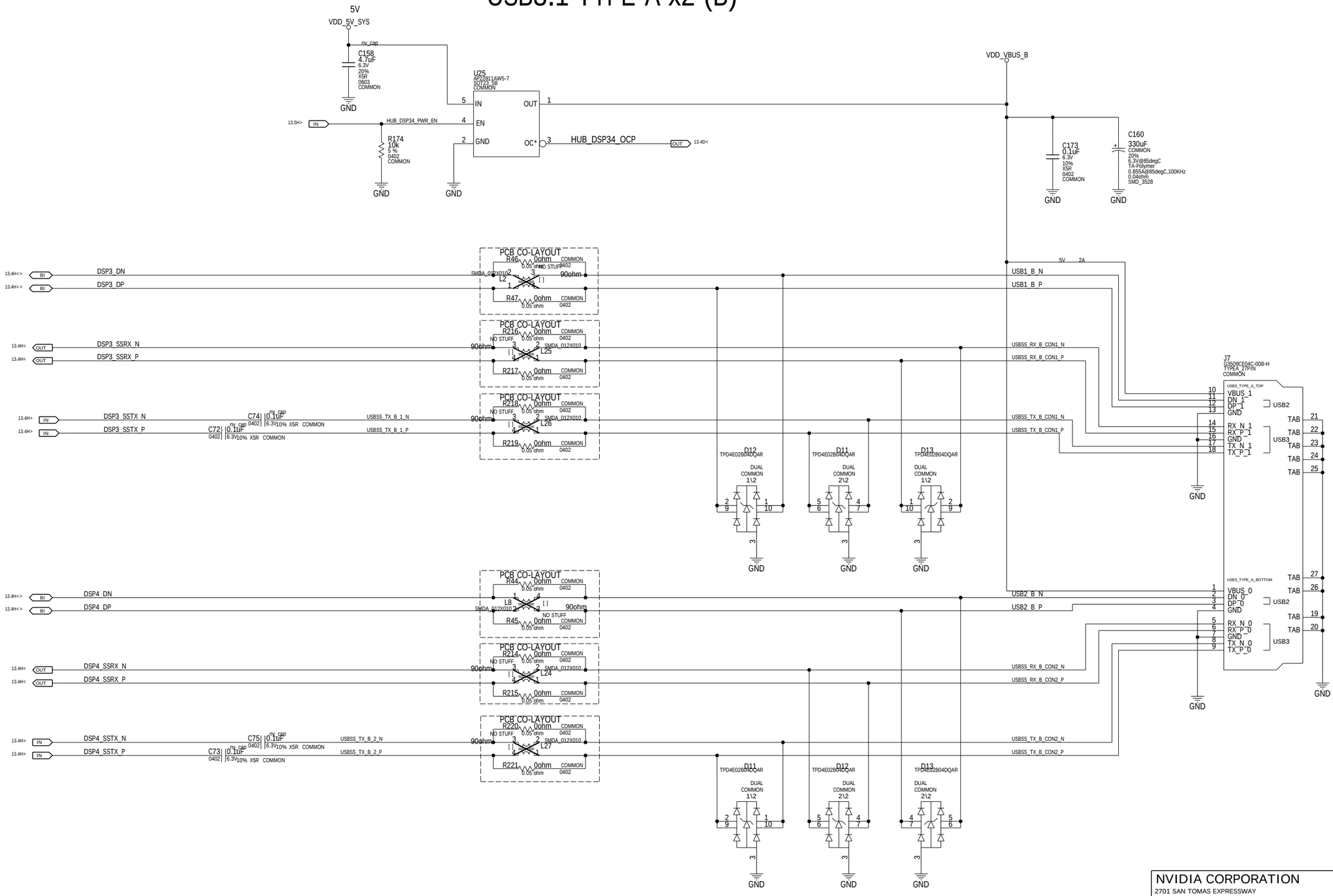
USB3.1 TYPE-A x2 (B)



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	USB3.1 Type-A x2 (B)

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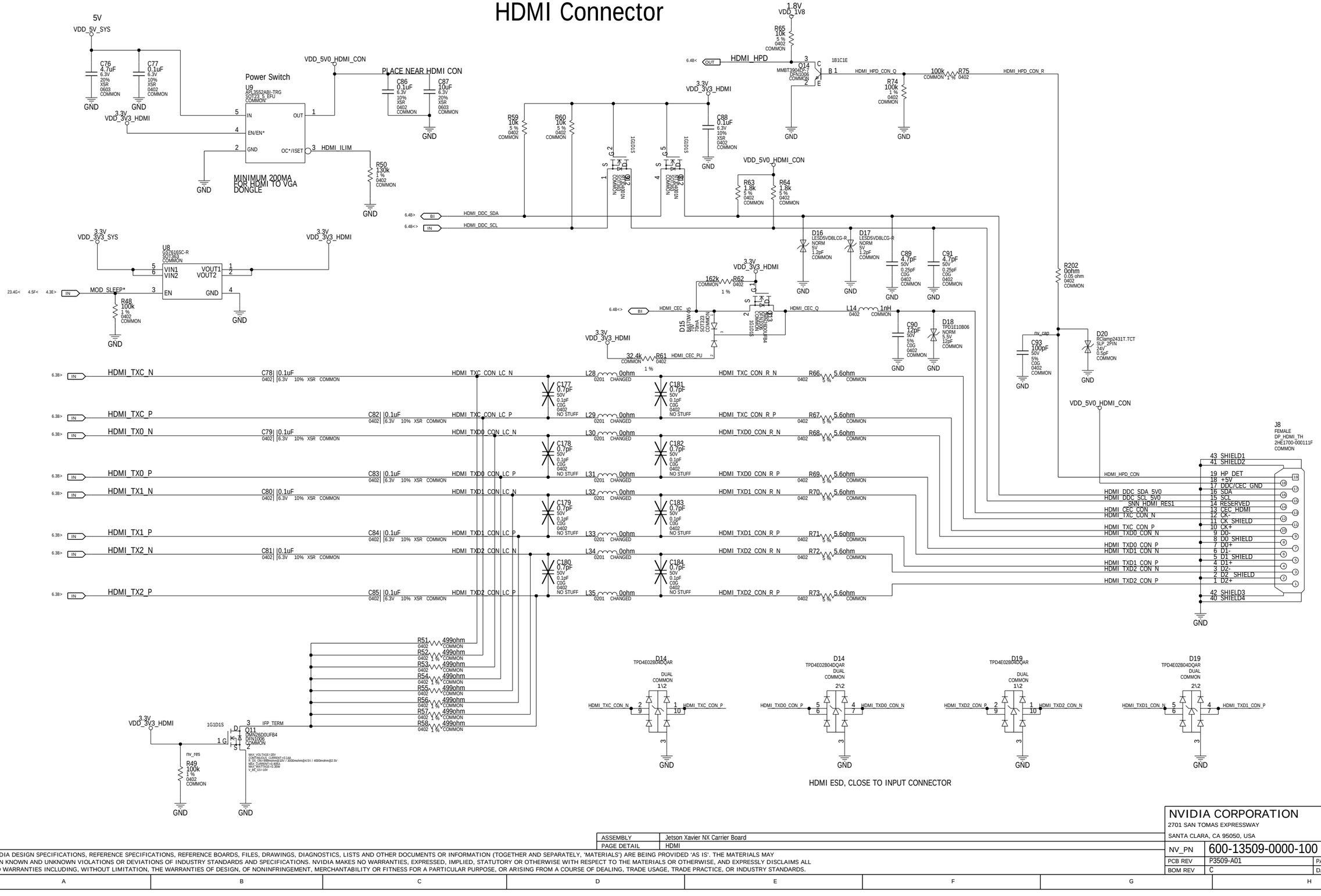
HDMI Connector



HDMI ESD, CLOSE TO INPUT CONNECTOR

ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	HDMI

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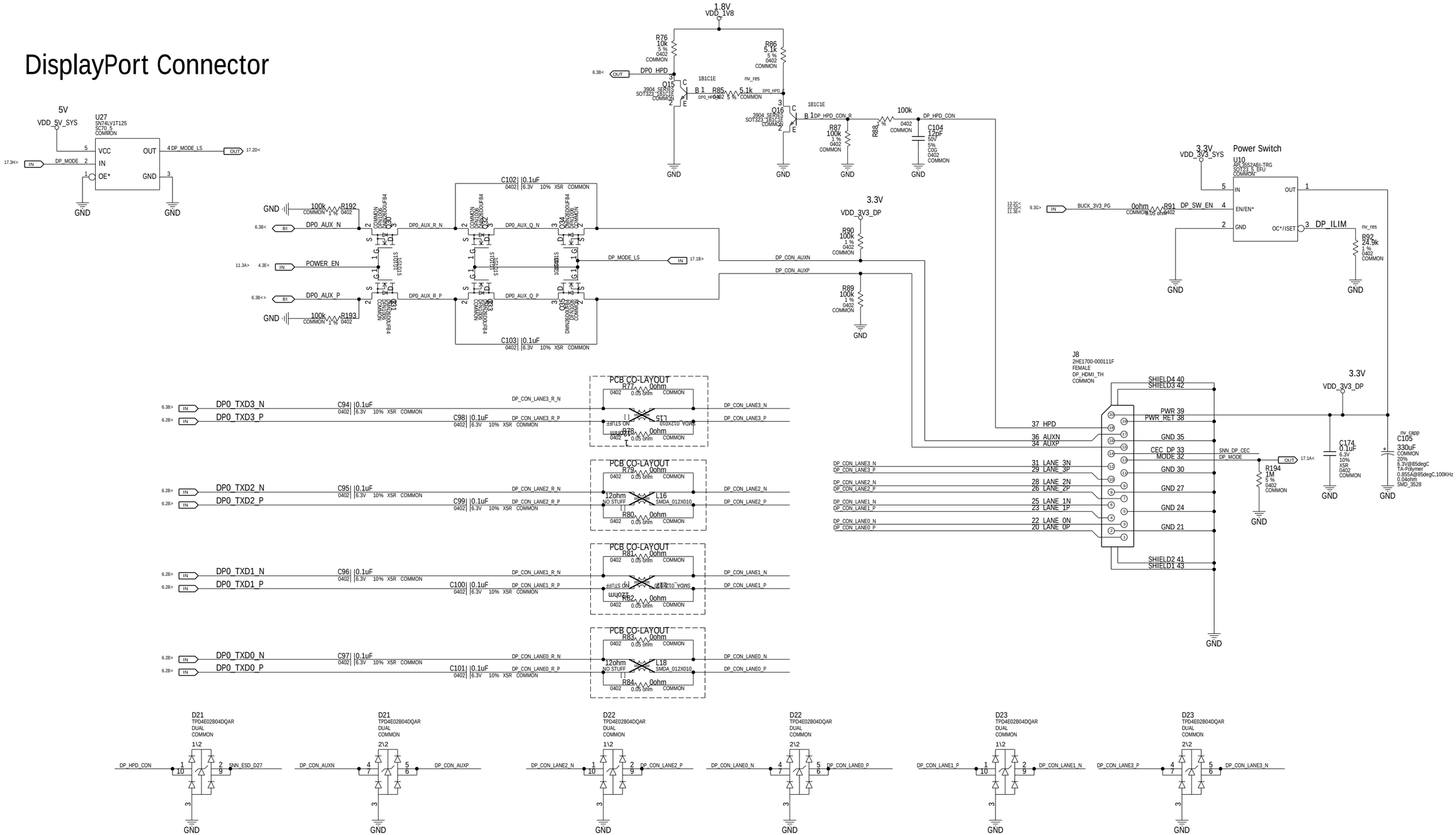
DisplayPort Connector



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	DISPLAY PORT

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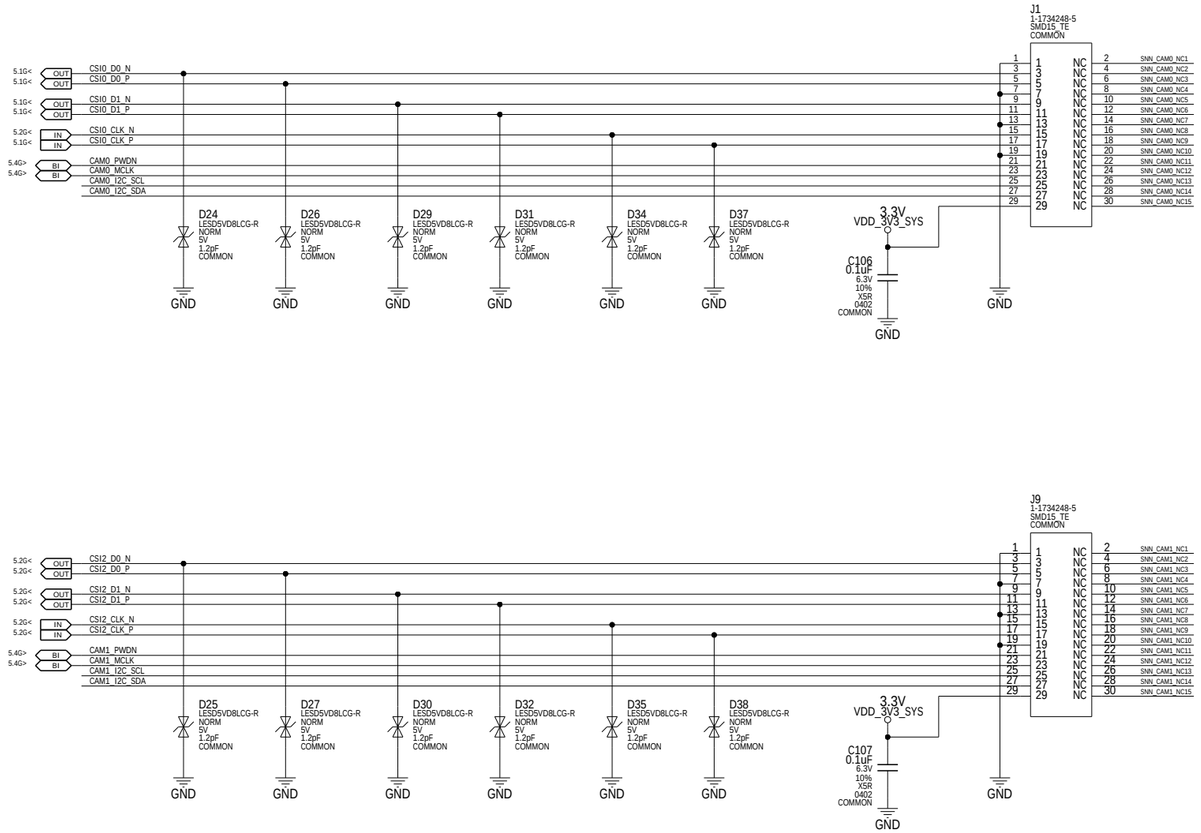
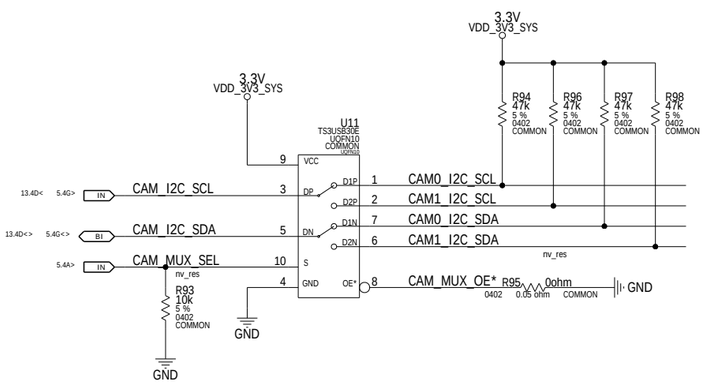
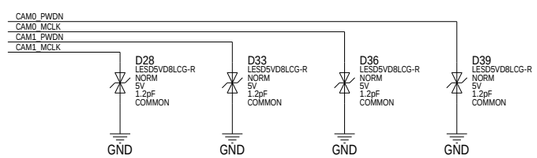
CSI CAM CONNECTOR







ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	CAMERA

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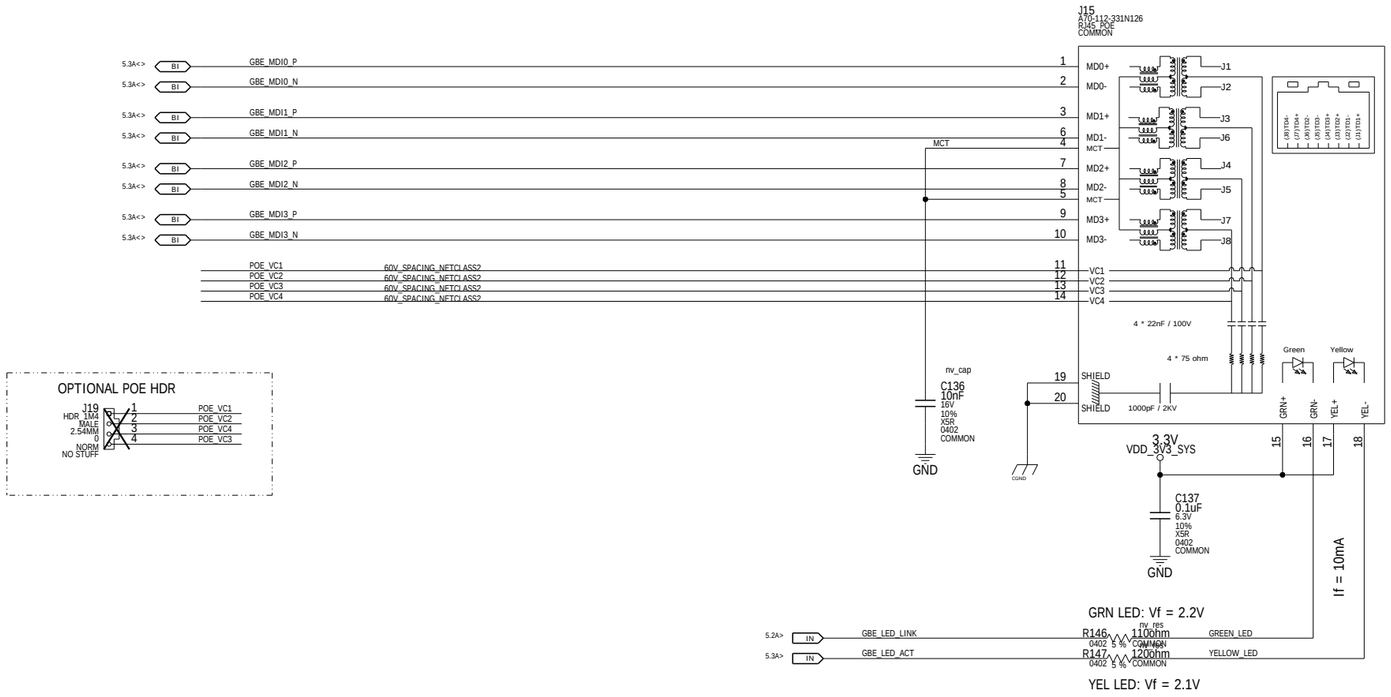
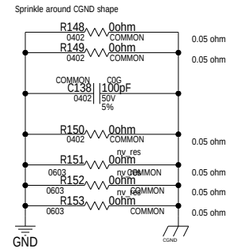
GIGABIT ETHERNET W/ POE





ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	ETHERNET

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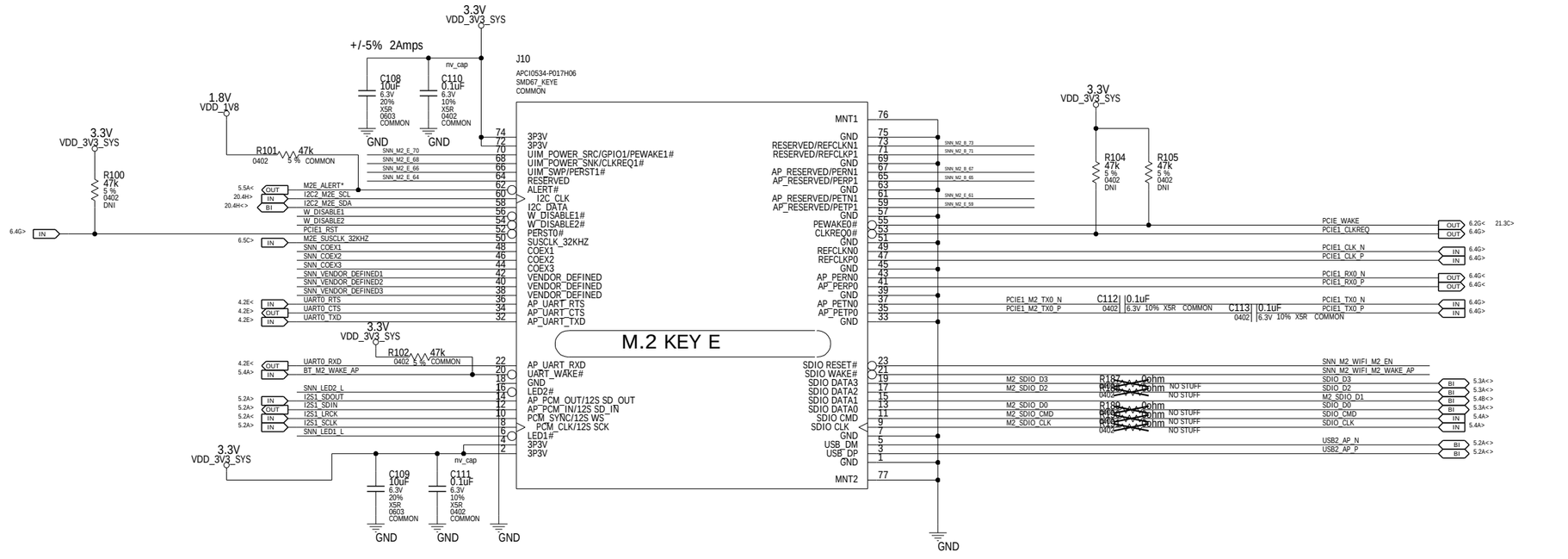
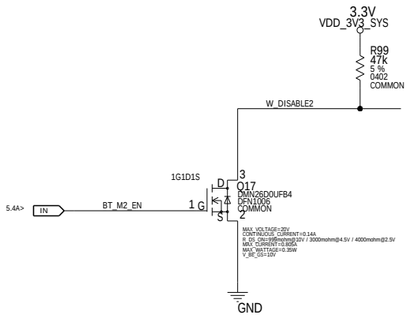
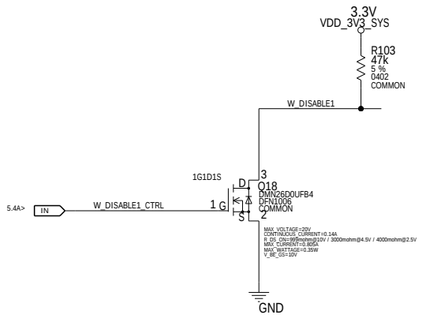
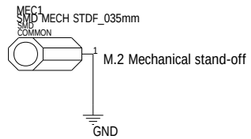
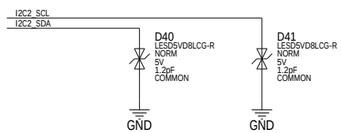
M.2 KEY-E (WIFI/BT)

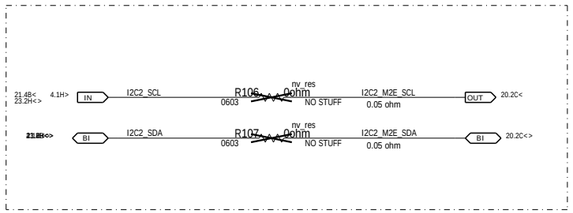












ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	M.2 KEY-E (WIFI/BT)

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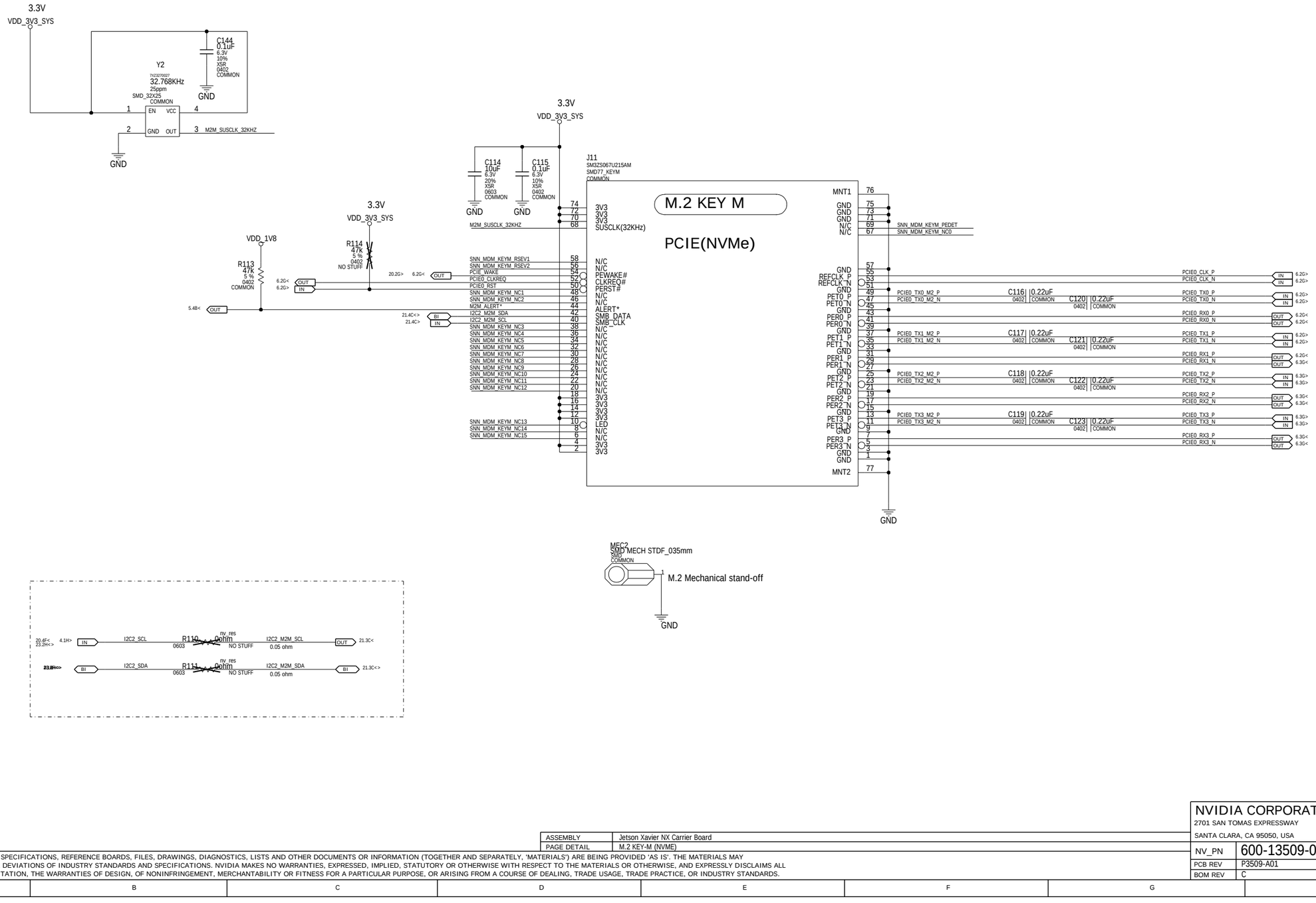
M.2 KEY-M (NVME)



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	M.2 KEY-M (NVME)

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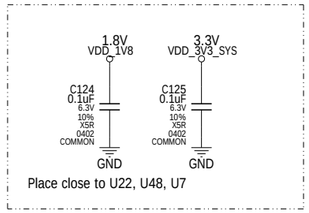
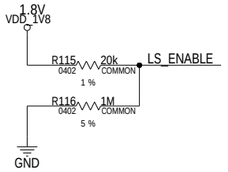
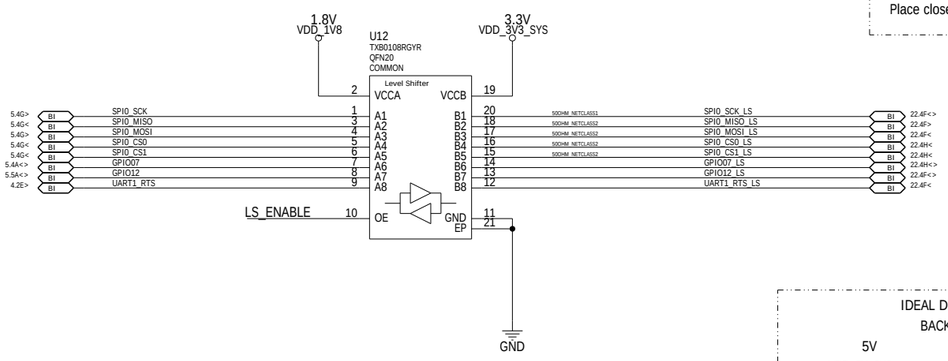
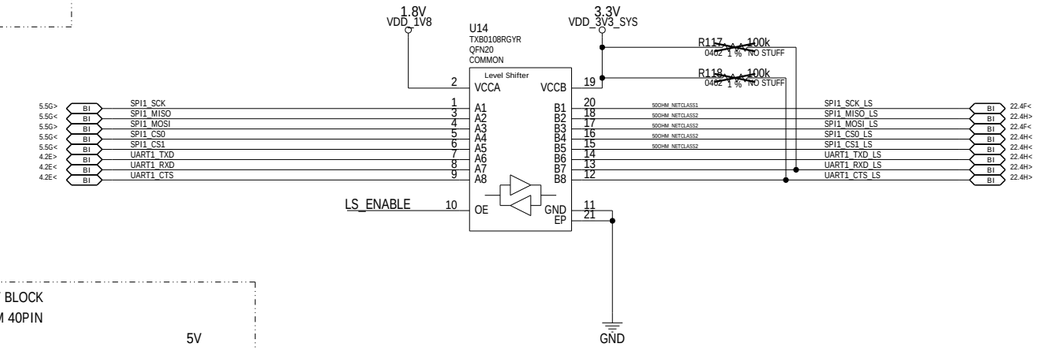
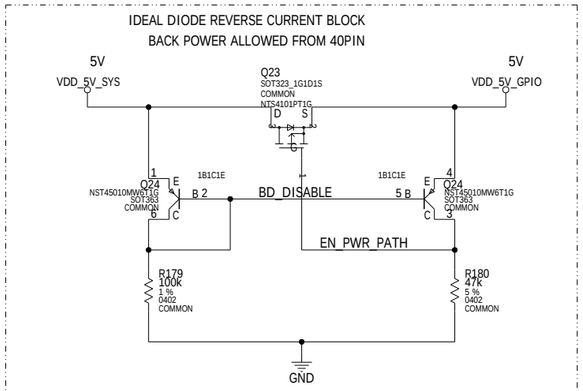
40PIN GPIO EXPANSION HDR

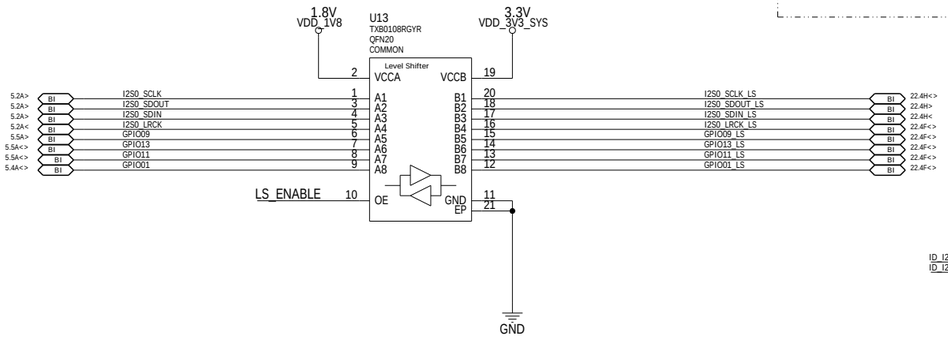


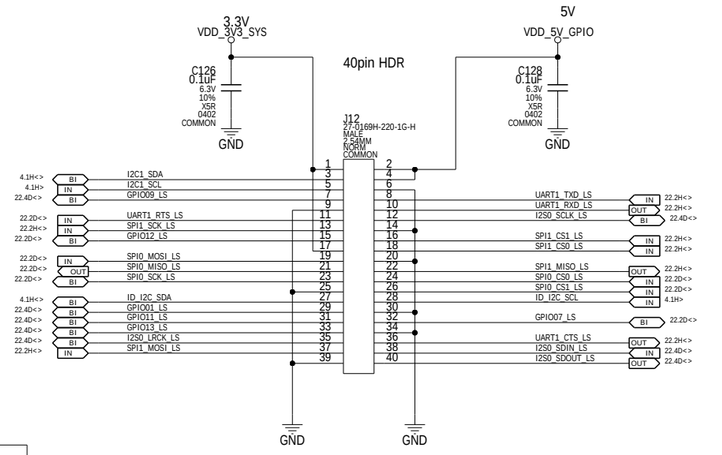


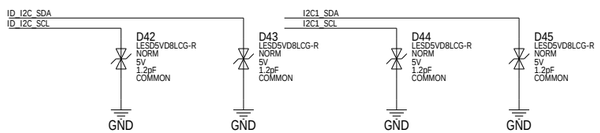












ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	40PIN GPIO Expansion HDR

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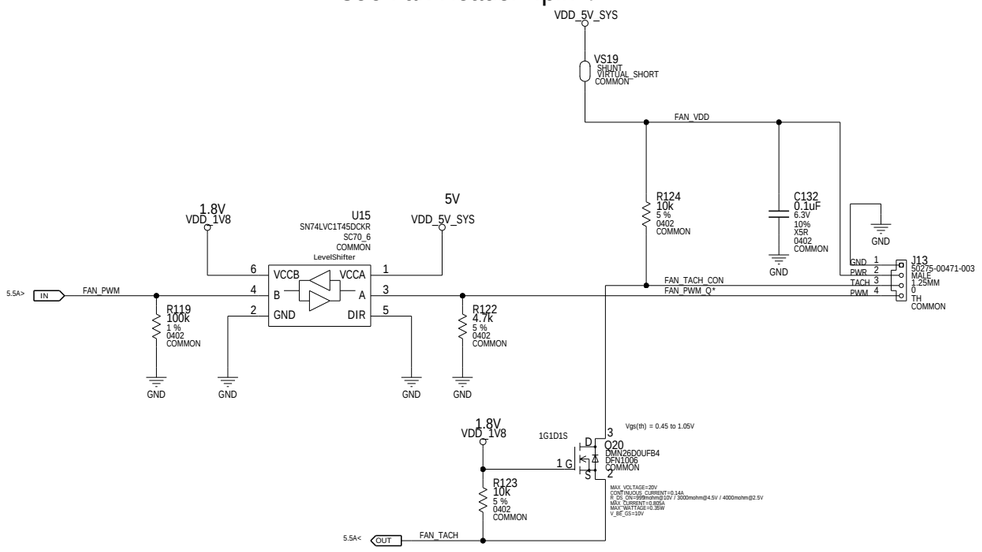
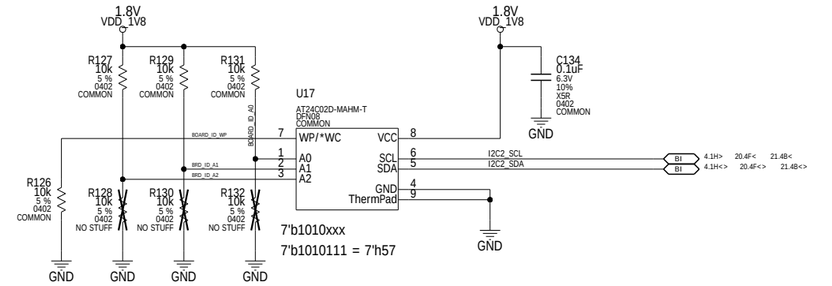
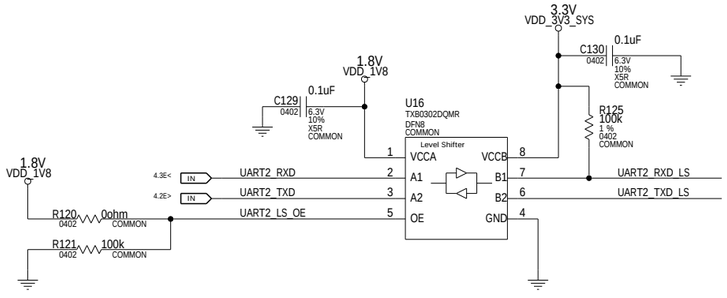
SoC Fan Header 4pin



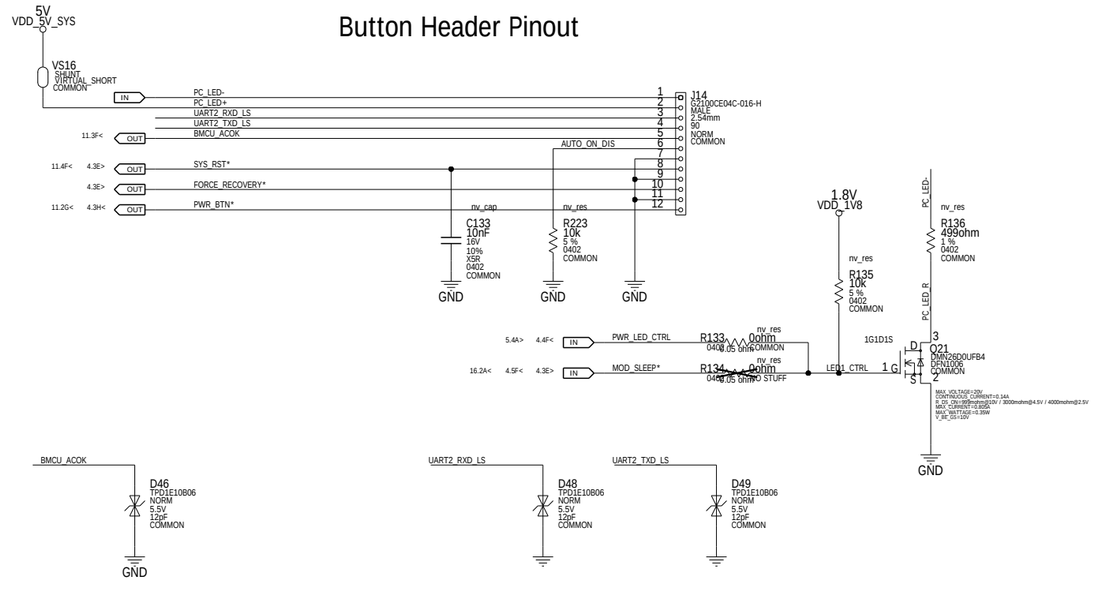
Carrier board config



Serial Port



Button Header Pinout



ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	FAN, DEBUG and EEPROM

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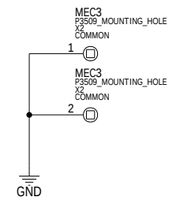
MECHANICAL

Mounting holes for Module



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ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	MECHANICAL

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REVISION HISTORY

ASSEMBLY	Jetson Xavier NX Carrier Board
PAGE DETAIL	REVISION HISTORY

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