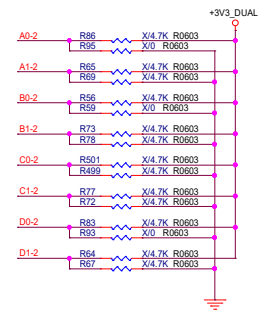
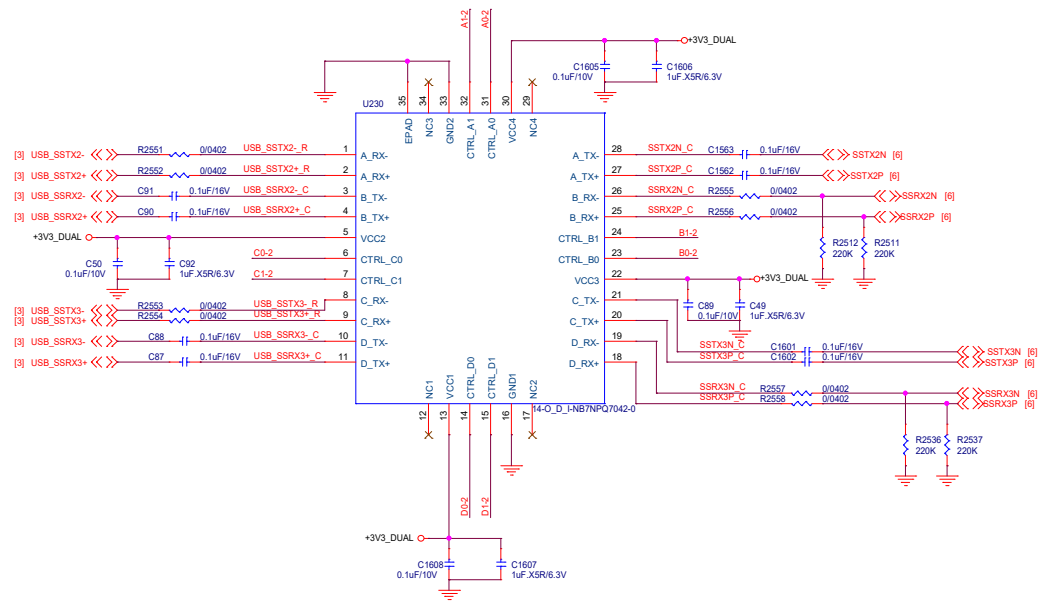
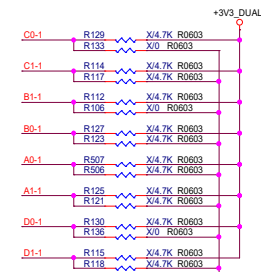
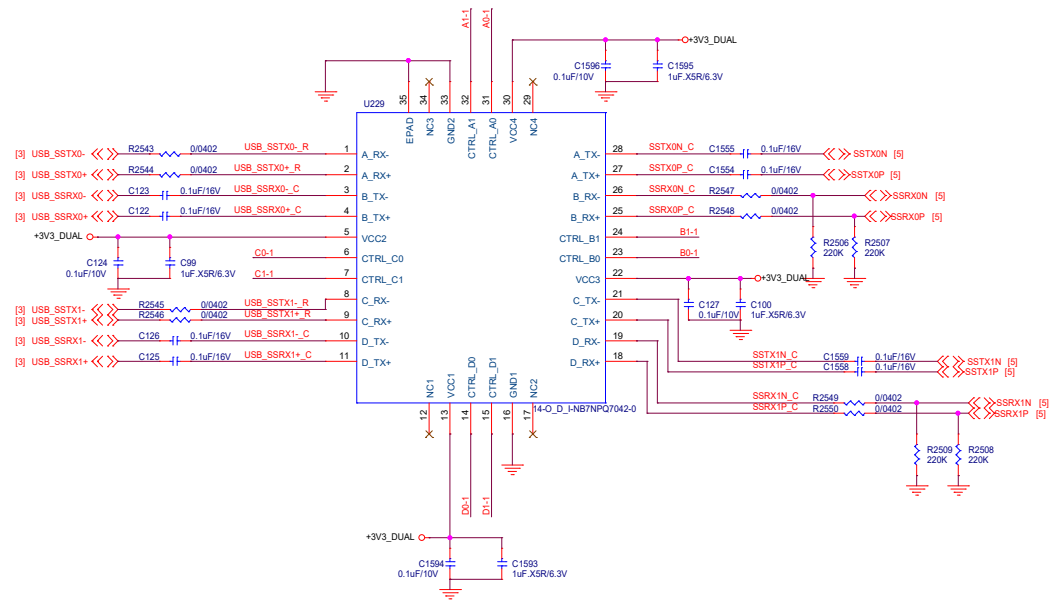
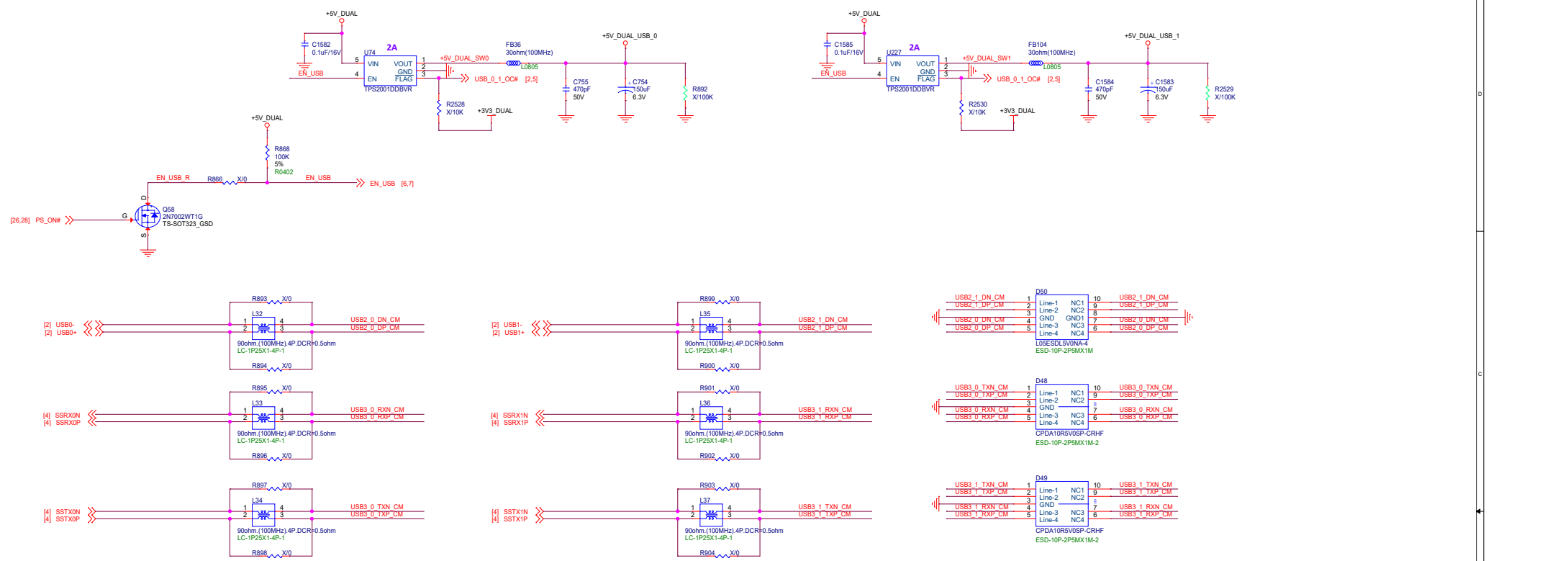


Page	Index
1	Cover Page
2	ROW A/B
3	ROW C/D
4	USB3.1 GEN2 Redriver
5	LAN with USB3.1
6	USB3.1 GEN2
7	USB2.0
8	SATA
9	Audio
10	Clock_Buffer
11	PCI Express Graphic
12	PCIe x4 Slots
13	LVDS
14	VGA
15	DP 1.4_Redriver & DP
16	DP 1.4_Redriver-1
17	DP 1.4_Redriver-2
18	DP Port x2
19	CANBUS / SMBUS / I2C
20	RESET + PWROK
21	SIO Card SLOT
22	Serial port
23	FAN + RTC
24	DIO
25	LPC
26	ATX Power + Front Panel
27	+5V_DUAL / +3V3_DUAL
28	+12V / +5V / +3V3
29	eDP+eDP/LVDS Switch

For design reference only

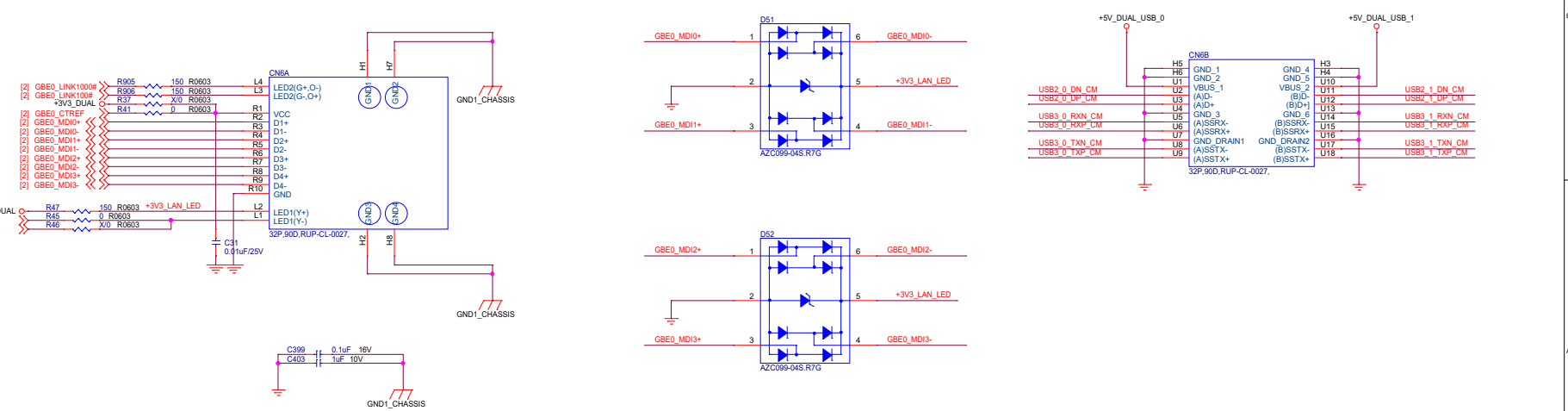


LAN & USB 3.1

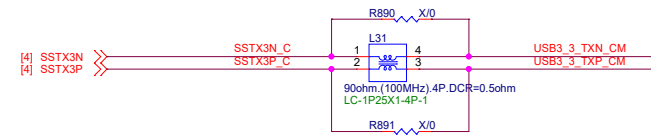
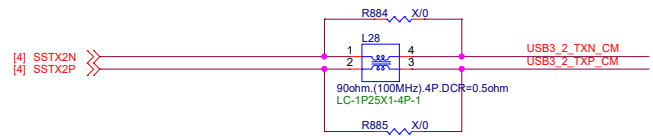
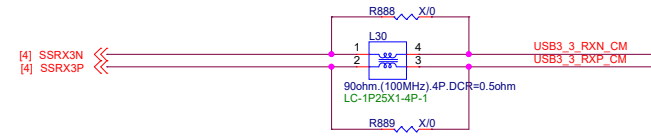
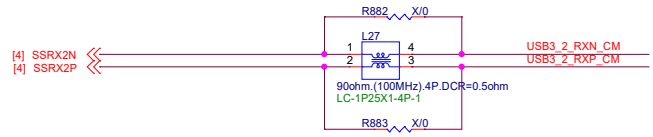
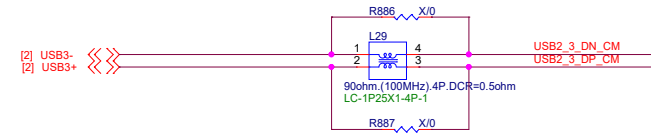
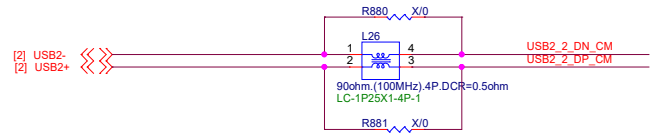
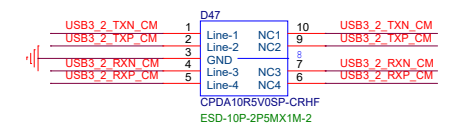
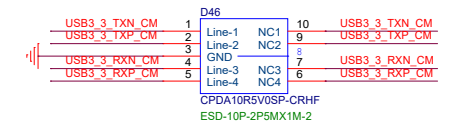
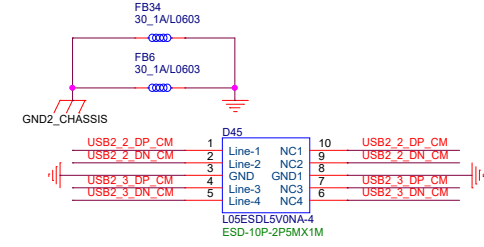
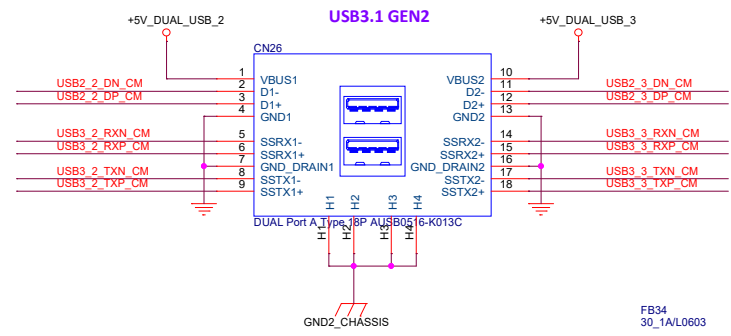
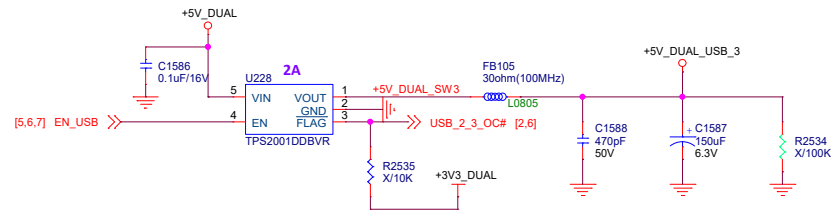
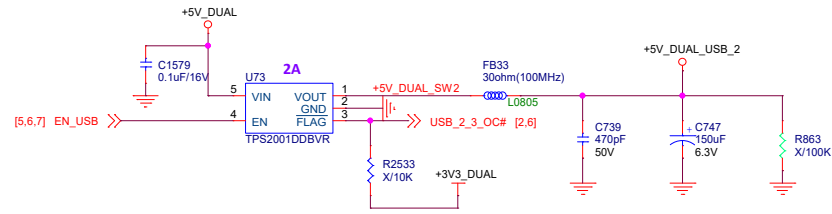


Upgrade to 2.5G LAN

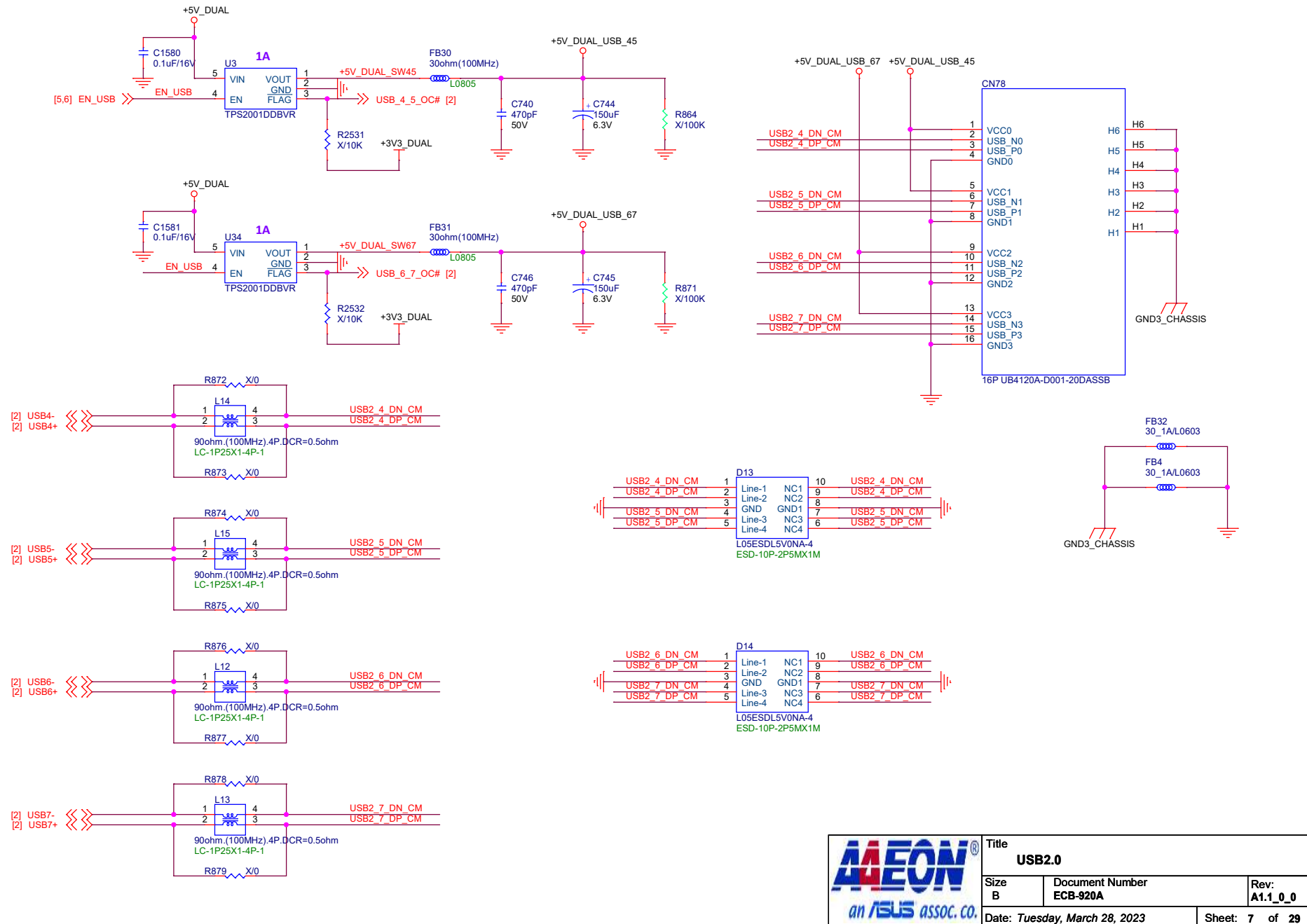
Upgrade to USB3.2 GEN2



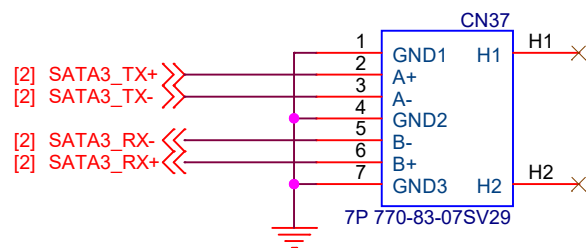
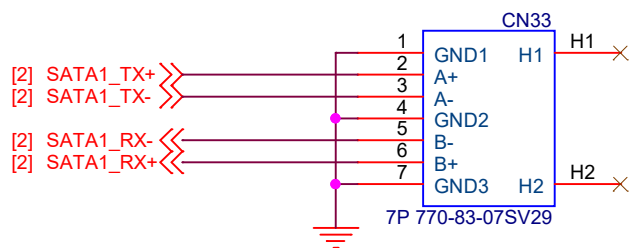
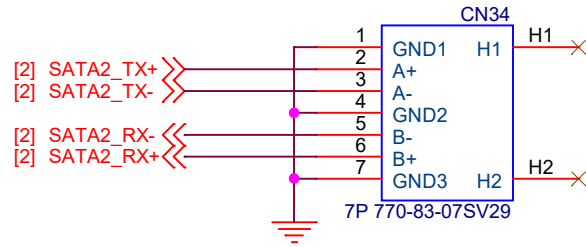
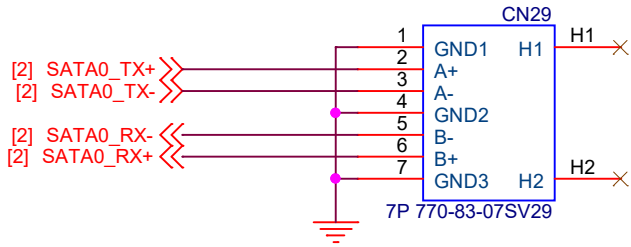
USB 3.1



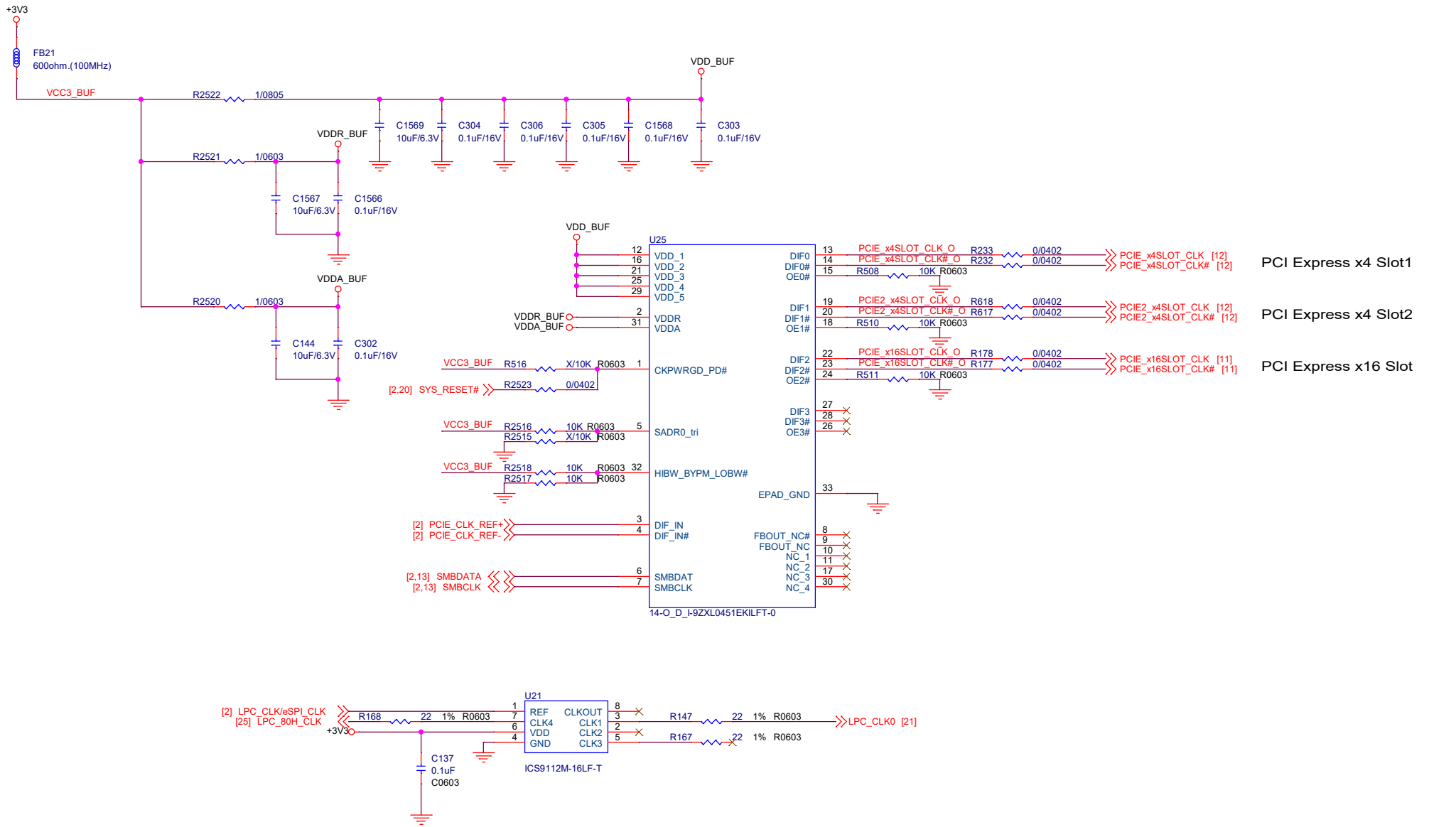
USB 2.0



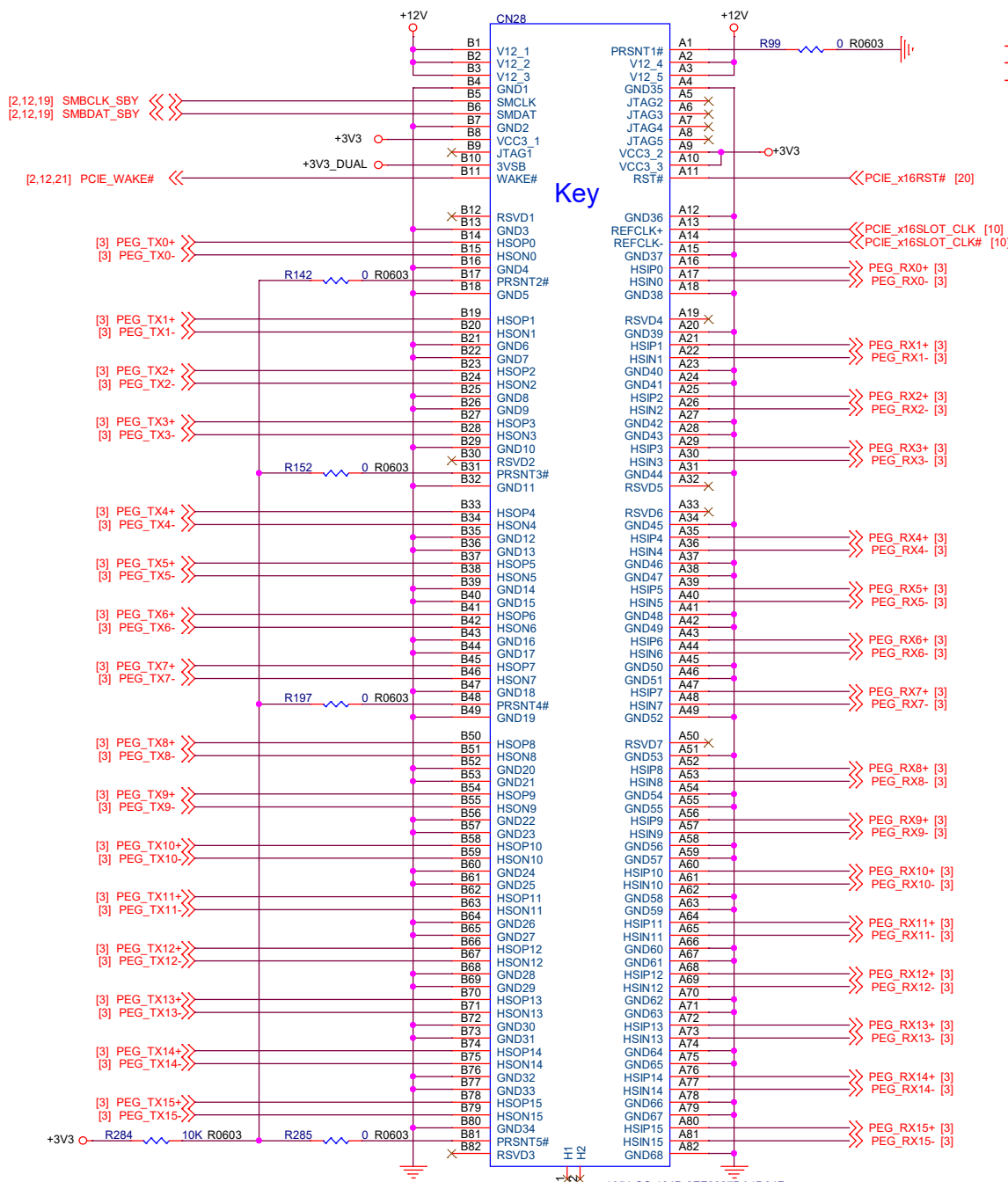
Title USB2.0		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 7 of 29	



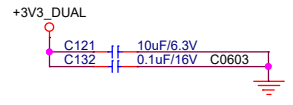
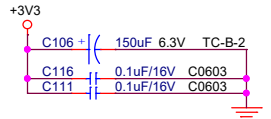
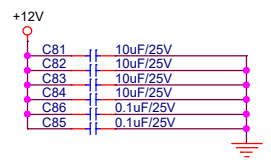
Title SATA		
Size A	Document Number ECB-920A	Rev: A1.1_0_0
Date: <i>Tuesday, March 28, 2023</i>		Sheet: 8 of 29



Title Clock Buffer		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023		Sheet: 10 of 29

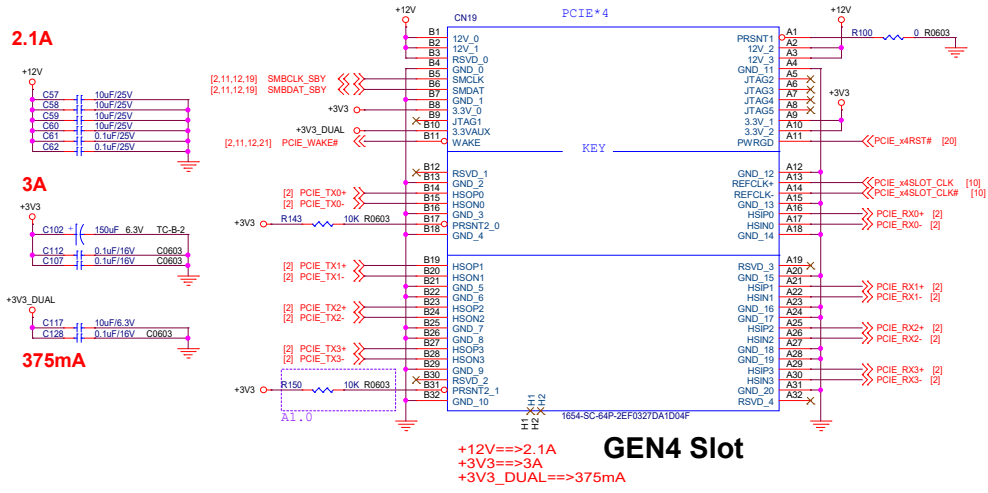


+12V==>5.5A
+3V3==>3A
+3V3_DUAL==>375mA



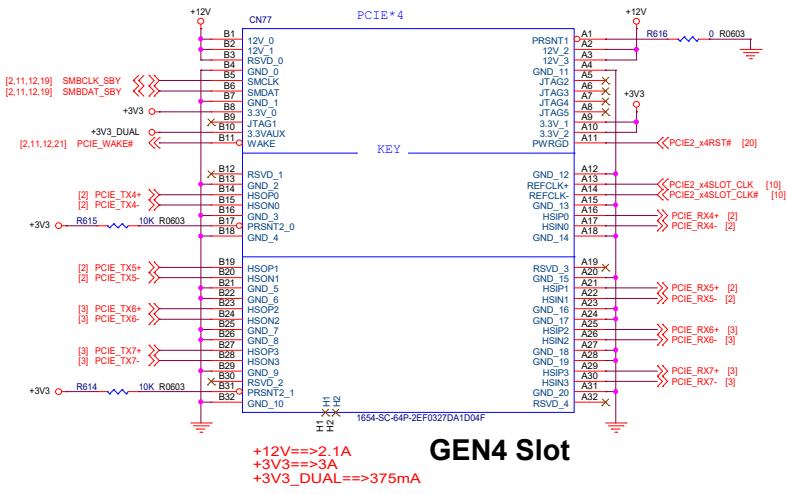
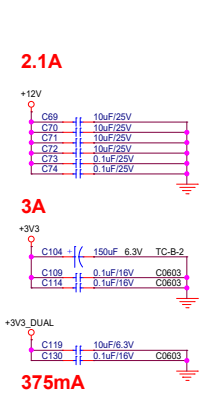
Title PCI Express Graphic		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 11 of 29	

PCIe x4 GEN4 Slots



	X1		x4/x8	x16	
Standard height	10 W ¹ (max)	25 W ¹ (max)	25 W (max)	25 W ² (max)	75 W ^{2,4} (max)
Low profile card ³	10 W (max)		25 W (max)	25 W (max)	

Power Rail	10 W Slot	25 W Slot	75 W Slot
+3.3V			
Voltage tolerance	± 9% (max)	± 9% (max)	± 9% (max)
Supply Current	3.0 A (max)	3.0 A (max)	3.0 A (max)
Capacitive Load	1000 µF (max)	1000 µF (max)	1000 µF (max)
+12V			
Voltage tolerance	± 8%	± 8%	± 8%
Supply Current	0.5 A	2.1 A (max)	5.5 A (max)
Capacitive Load	300 µF (max)	1000 µF (max)	2000 µF (max)
+3.3Vaux			
Voltage tolerance	± 9% (max)	± 9% (max)	± 9% (max)
Supply Current			
Wakeup Enabled	375 mA (max)	375 mA (max)	375 mA (max)
Non-wakeup Enabled	20 mA (max)	20 mA (max)	20 mA (max)
Capacitive Load	150 µF (max)	150 µF (max)	150 µF (max)

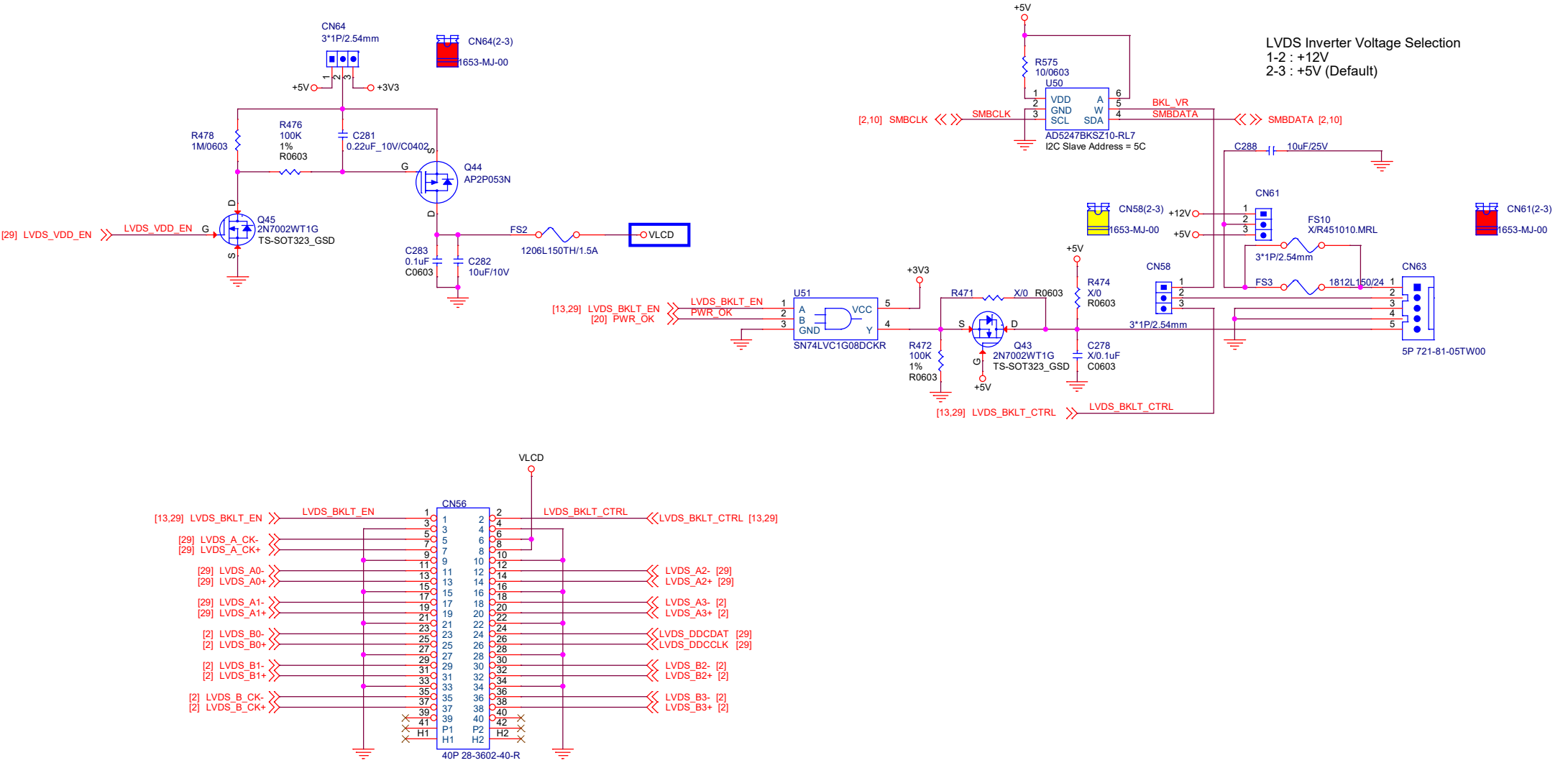


LVDS Operating Voltage Selection

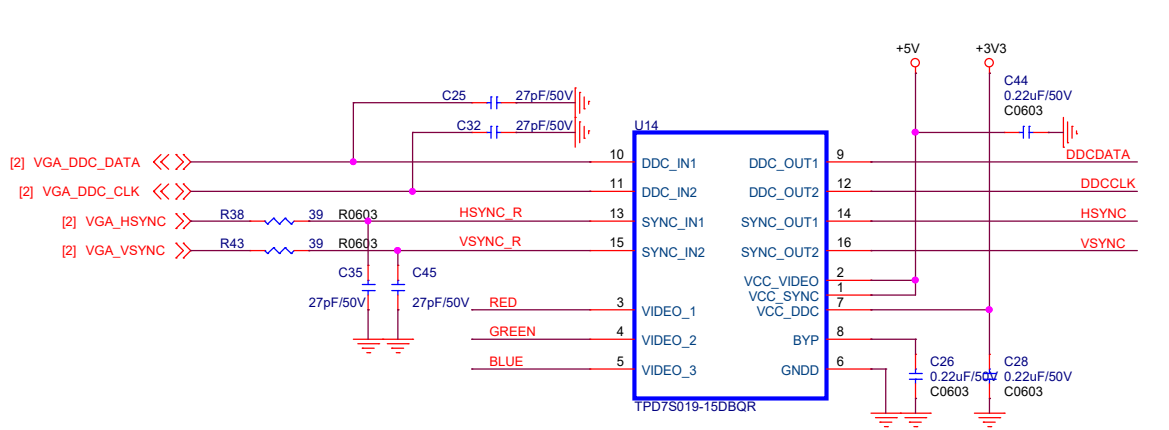
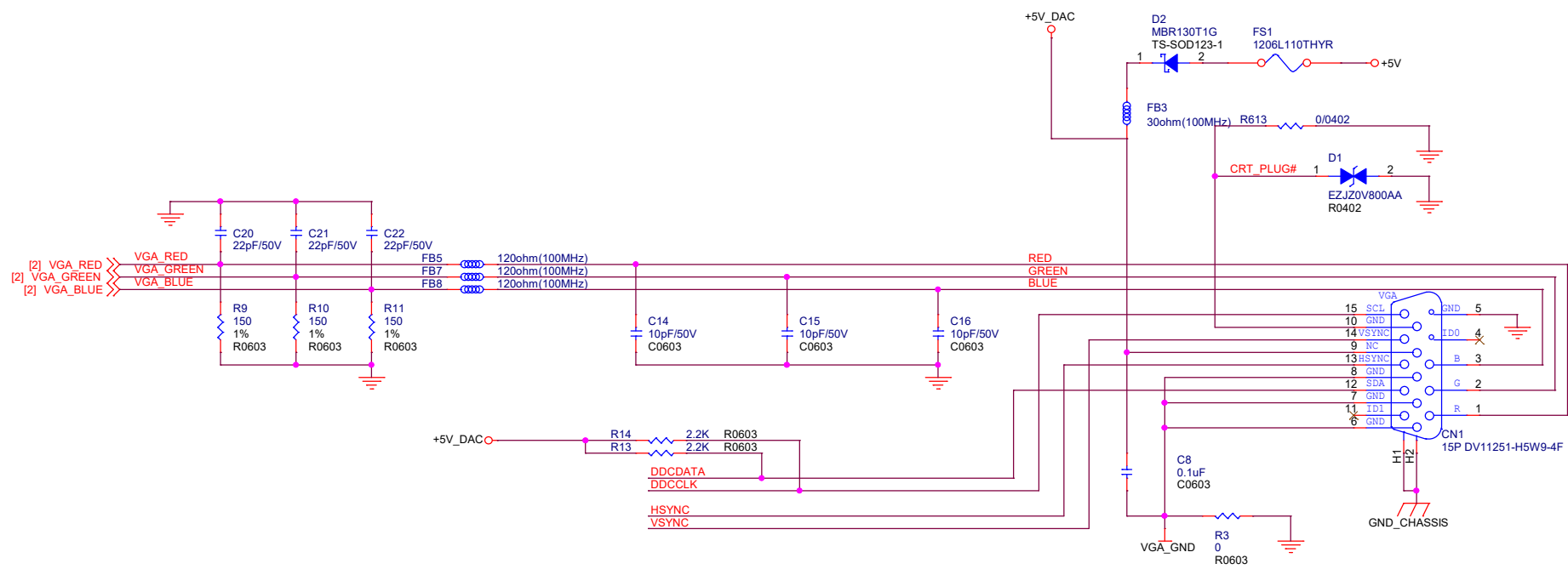
1-2 : +5V
2-3 : +3.3V (Default)

LVDS Inverter Voltage Selection

1-2 : +12V
2-3 : +5V (Default)

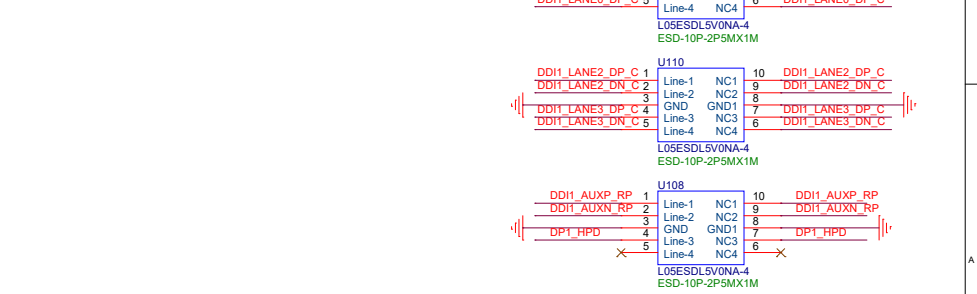
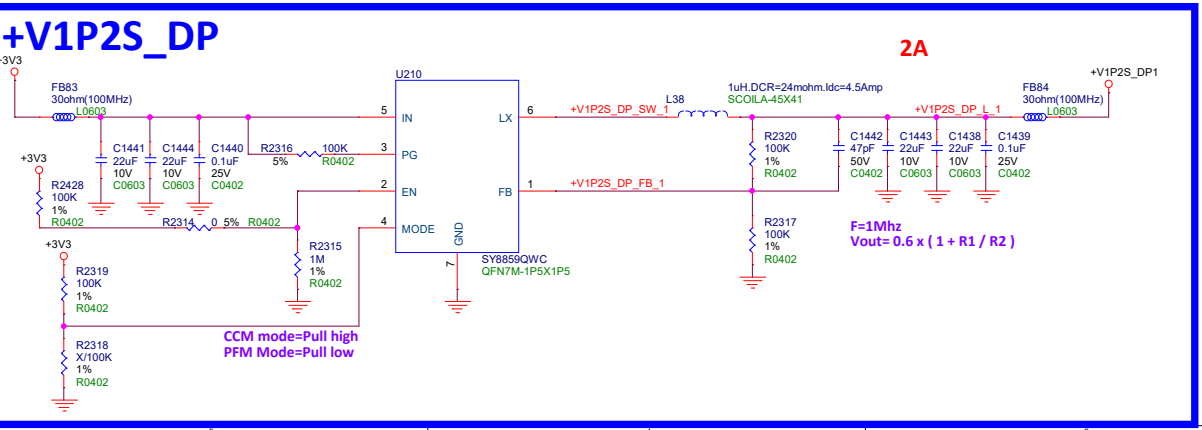
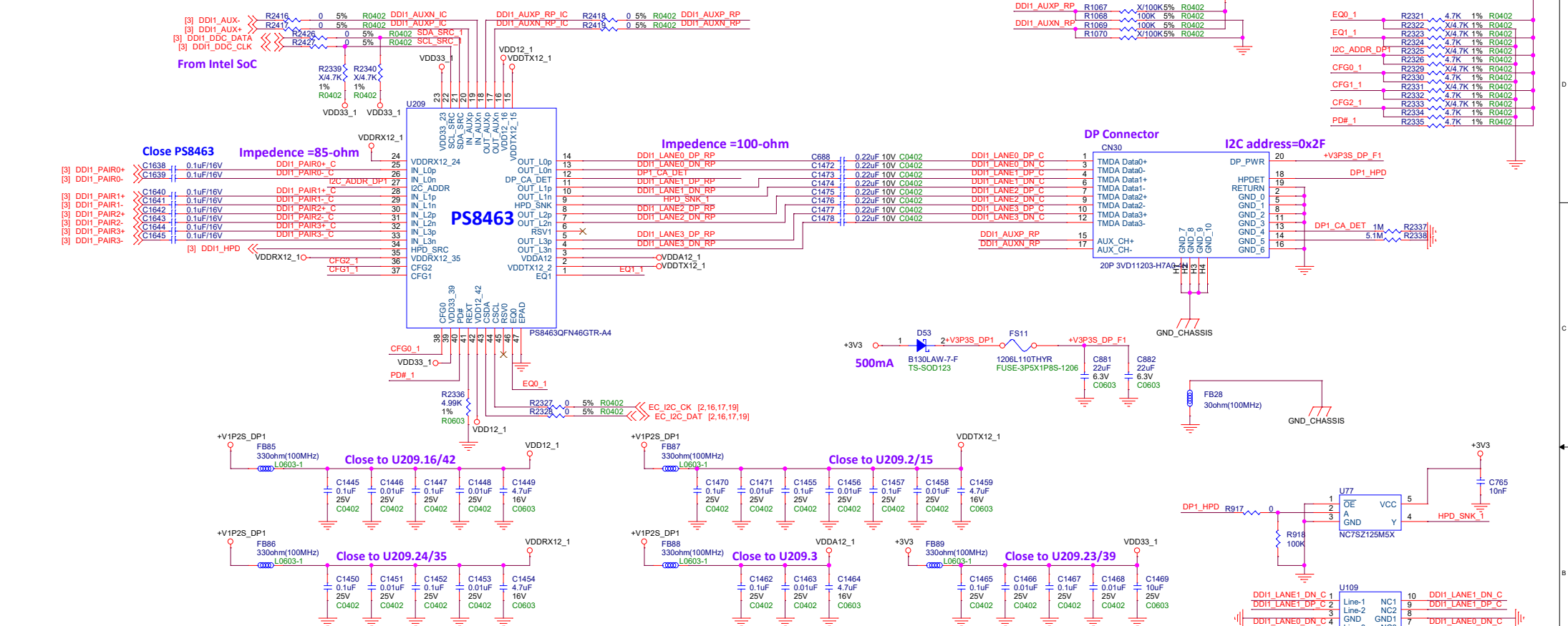


Title LVDS		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 13 of 29	

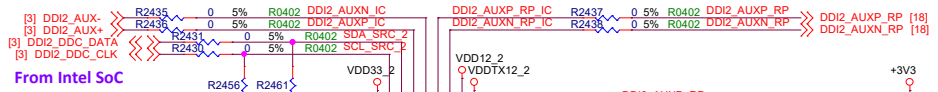


Title VGA		
Size Custom	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 14 of 29	

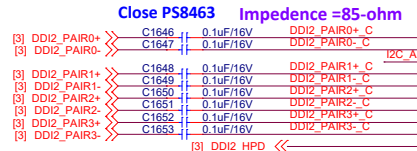
Display Port 1.4



		Title	
		DP 1.4_Redriver & DP	
Size	Document Number	Rev:	
Custom	ECB-920A	A1_1_0_0	
Date: Tuesday, March 28, 2023		Sheet: 15 of 29	



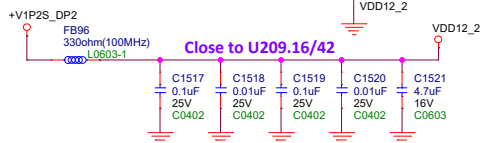
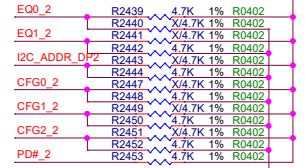
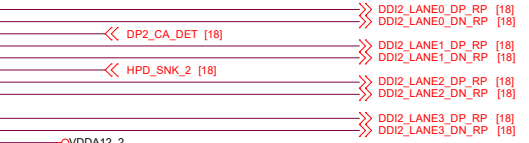
From Intel SoC



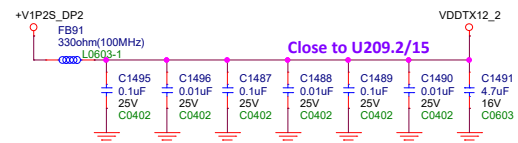
Close PS8463 Impedance =85-ohm

PS8463

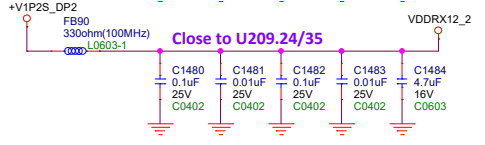
Impedance =100-ohm



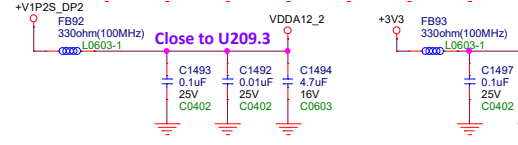
Close to U209.16/42



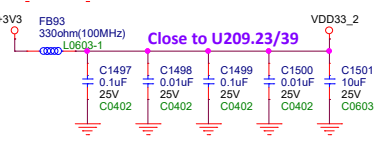
Close to U209.2/15



Close to U209.24/35

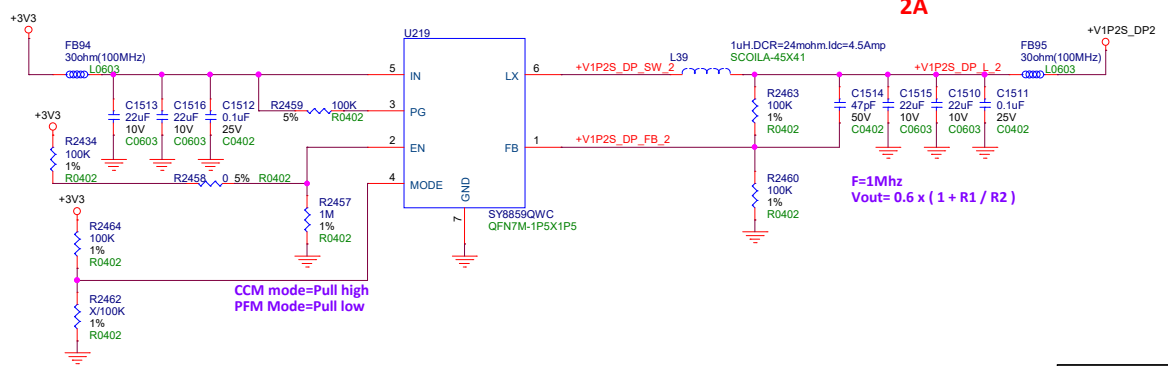


Close to U209.3



Close to U209.23/39

+V1P2S_DP

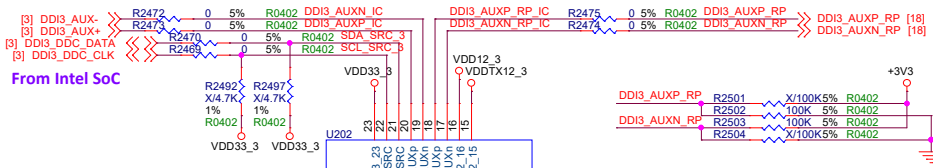


2A

1uH.DCR=24mohm.Idc=4.5Amp
SCOILA-45X41

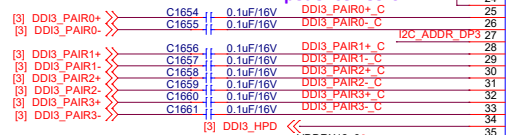
F=1Mhz
Vout=0.6 x (1 + R1 / R2)

CCM mode=Pull high
PFM Mode=Pull low

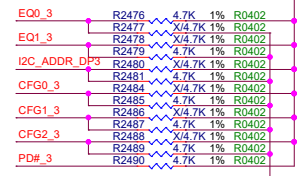


From Intel SoC

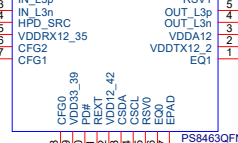
Close PS8463 Impedance =85-ohm



Impedance =100-ohm

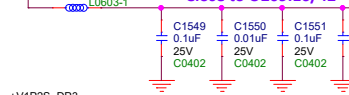


PS8463

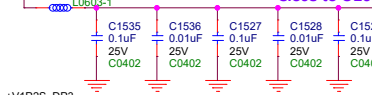


PS8463QFN46GTR-A4

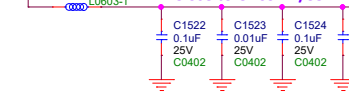
+V1P2S_DP3 Close to U209.16/42



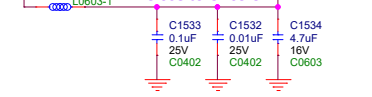
+V1P2S_DP3 Close to U209.2/15



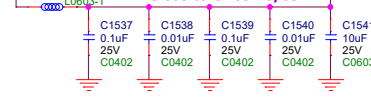
+V1P2S_DP3 Close to U209.24/35



+V1P2S_DP3 Close to U209.3

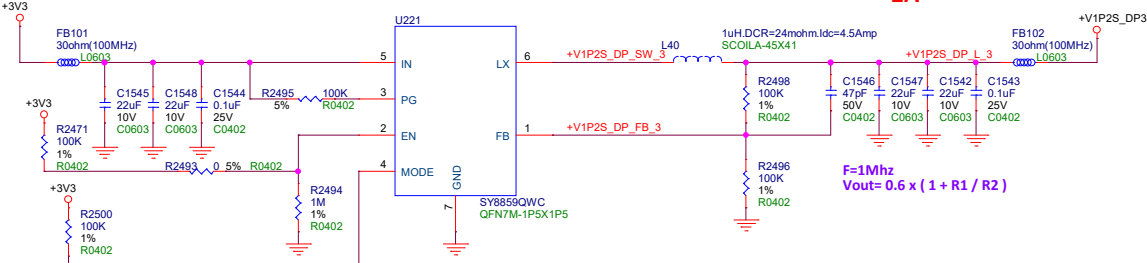


+3V3 Close to U209.23/39



+V1P2S_DP

2A



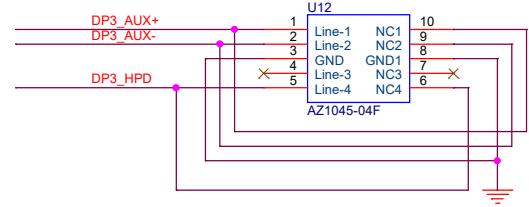
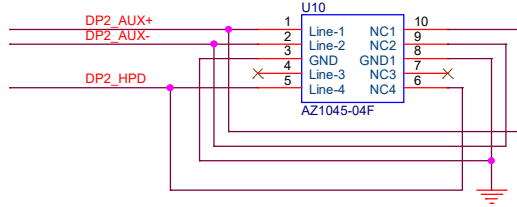
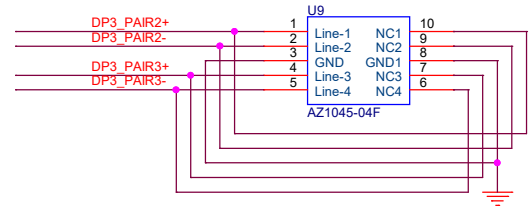
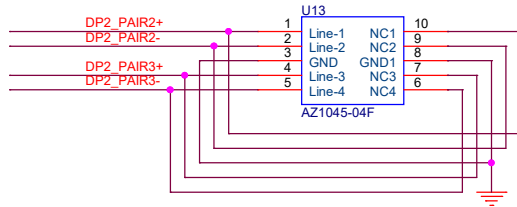
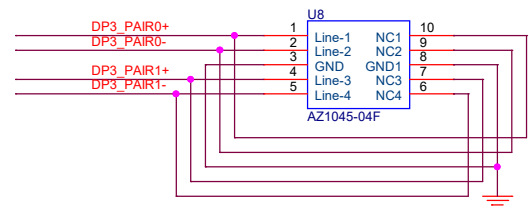
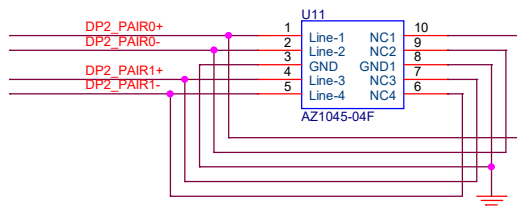
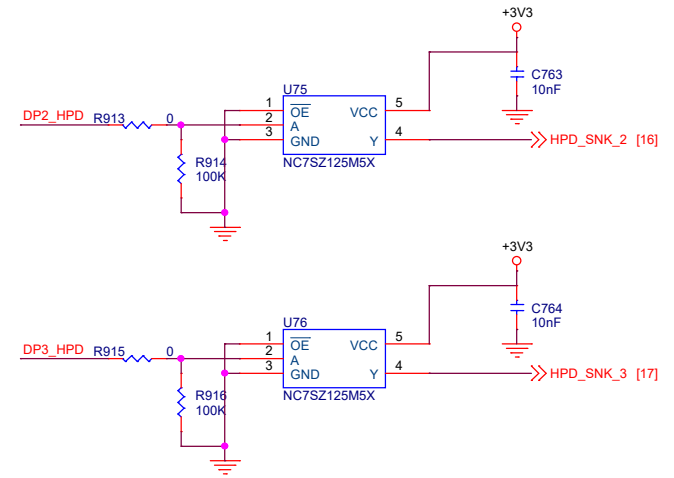
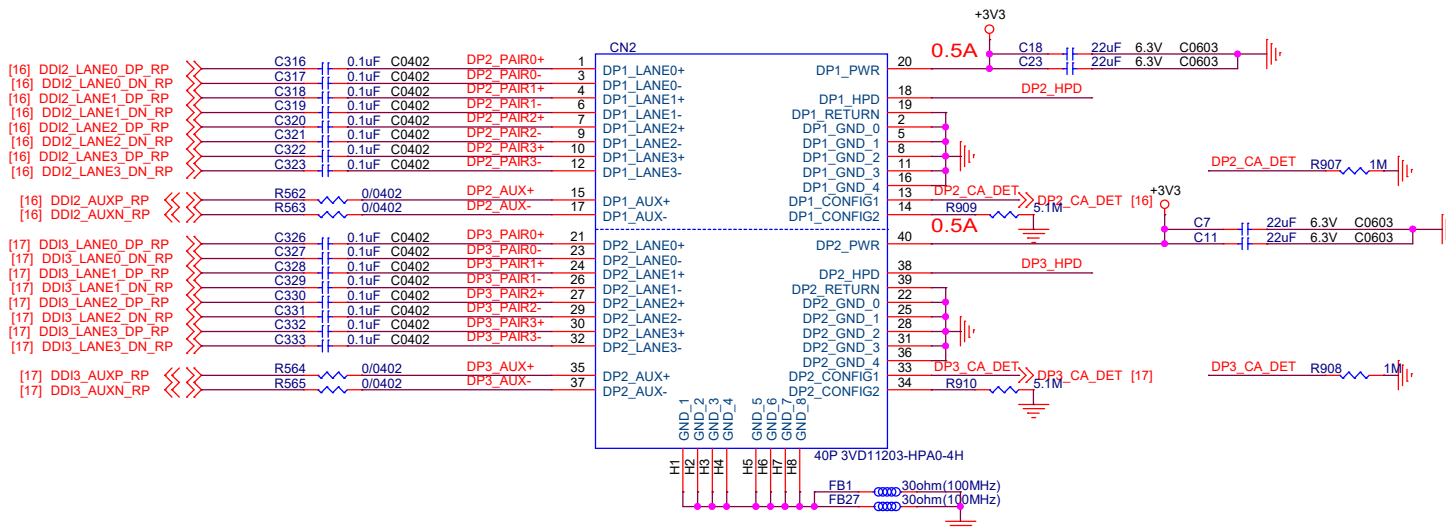
CCM mode=Pull high
PFM Mode=Pull low

$$F=1\text{Mhz}$$

$$V_{out}=0.6 \times (1 + R1 / R2)$$

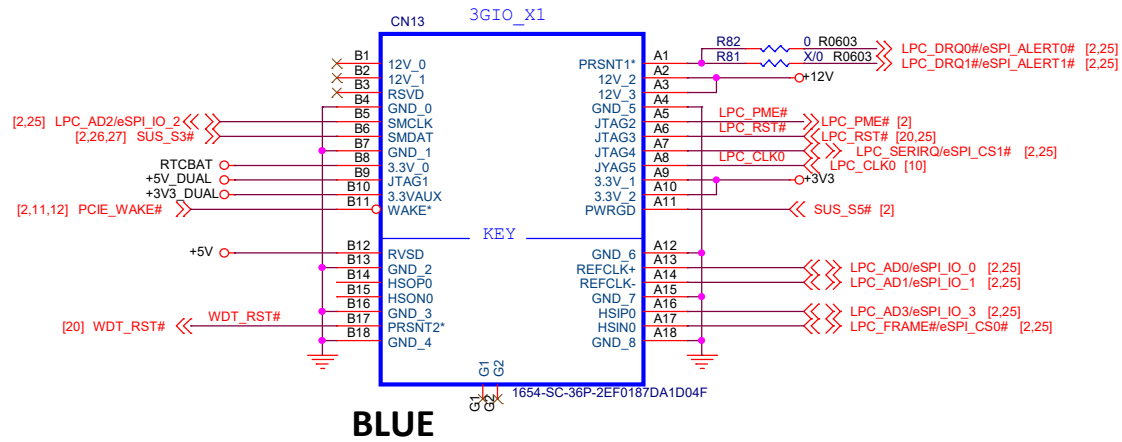


Title DP 1.4_Redriver-2		
Size Custom	Document Number ECB-820A	Rev. A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 17 of 29	

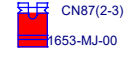
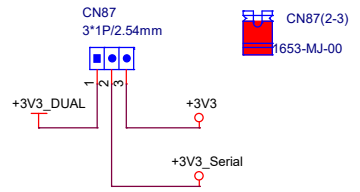
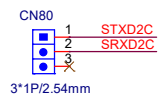
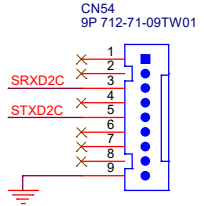
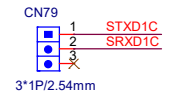
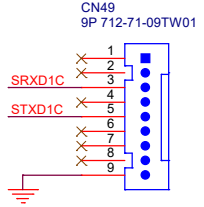
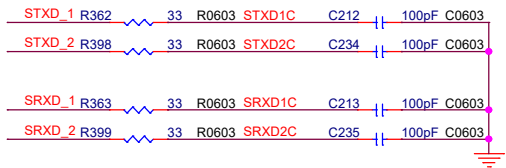
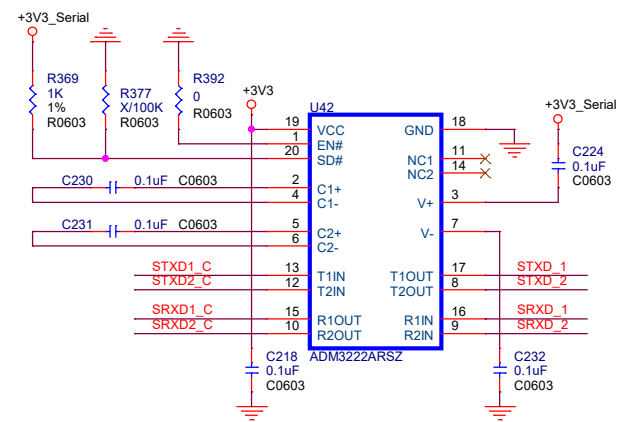
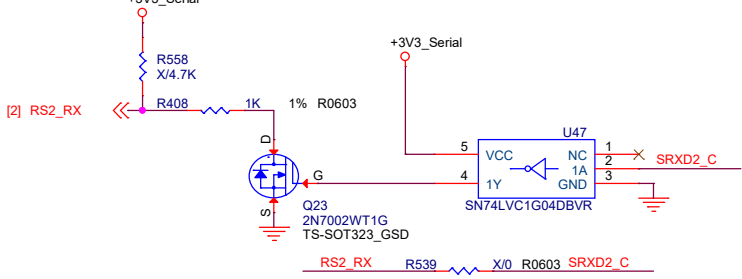
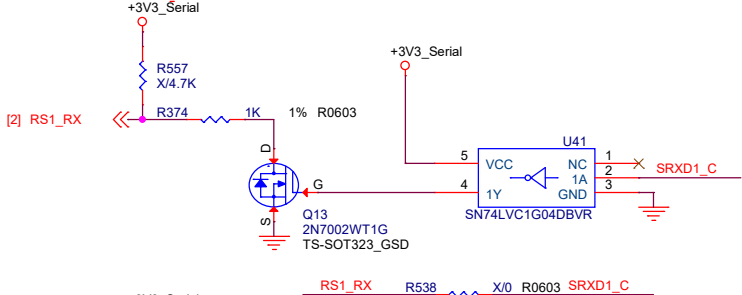
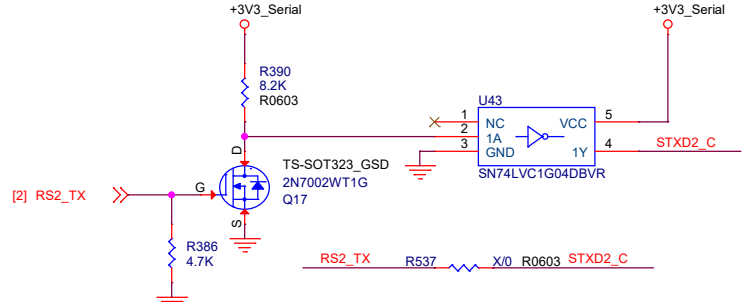
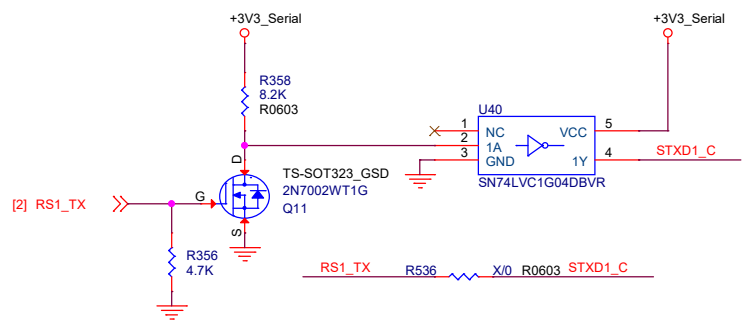


Title DP port x2		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 18 of 29	

SIO Slot

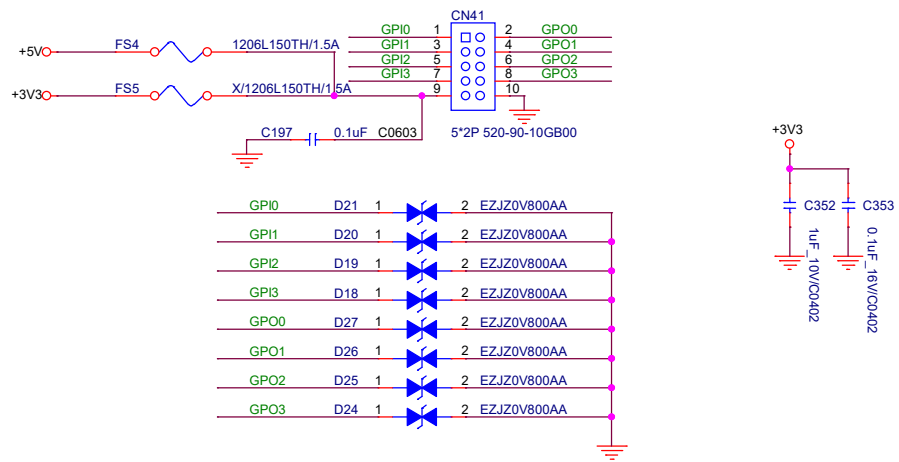


Title SIO Card Slot		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023		Sheet: 21 of 29



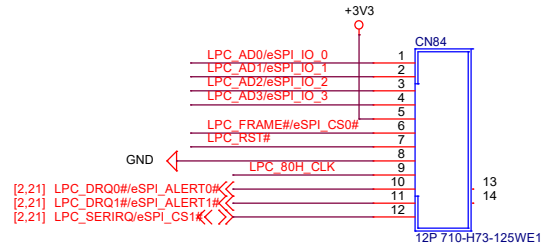
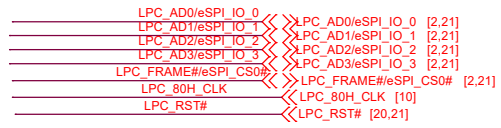
Title Serial port		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: Tuesday, March 28, 2023	Sheet: 22 of 29	

Digital I/O



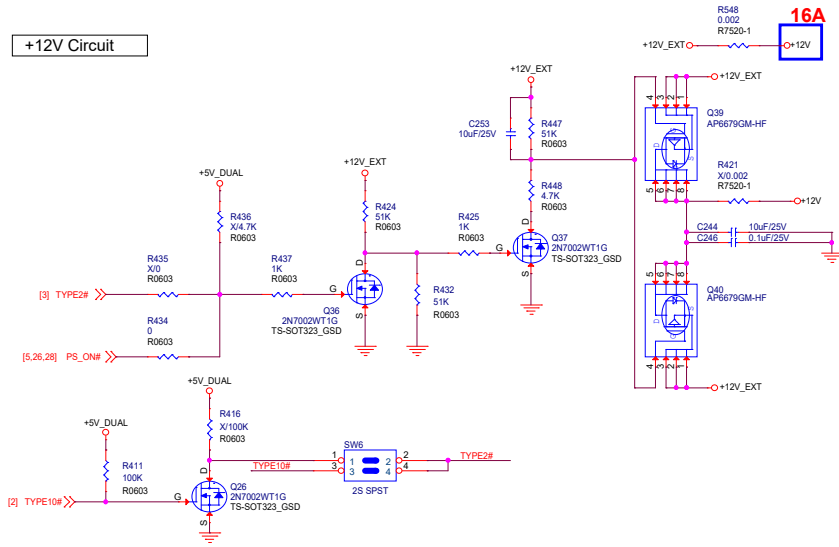
Title DIO		
Size B	Document Number ECB-920A	Rev: A1.1_0_0
Date: <i>Tuesday, March 28, 2023</i>		Sheet: 24 of 29

LPC/eSPI Debug Card

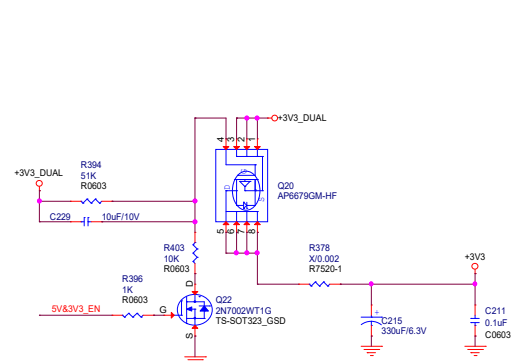
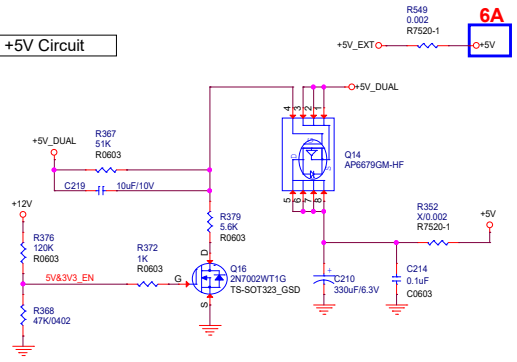


Title LPC		
Size Custom	Document Number ECB-920A	Rev: A1.1_0_0
Date: <i>Tuesday, March 28, 2023</i>		Sheet: 25 of 29

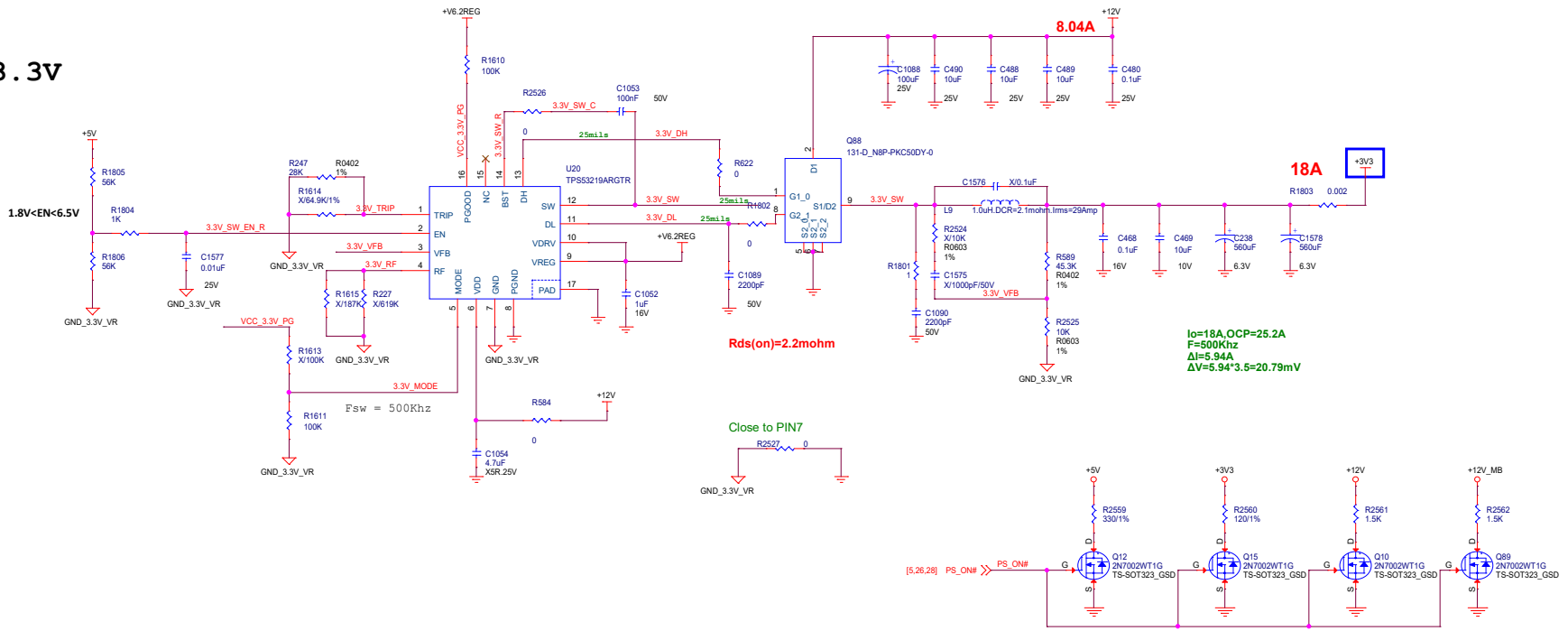
+12V Circuit

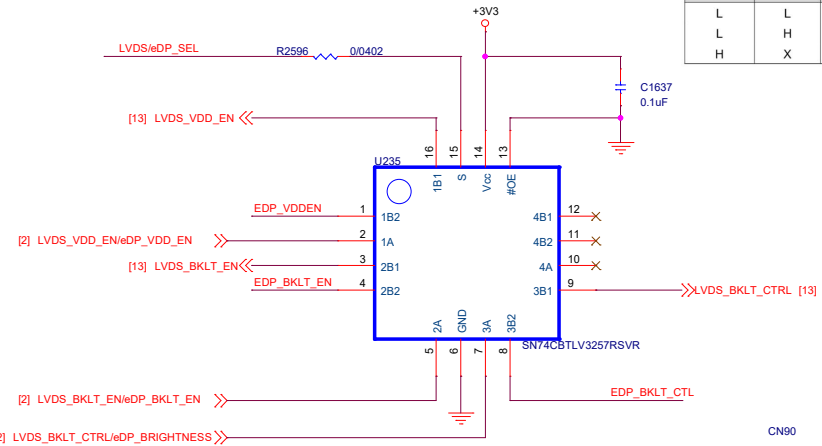
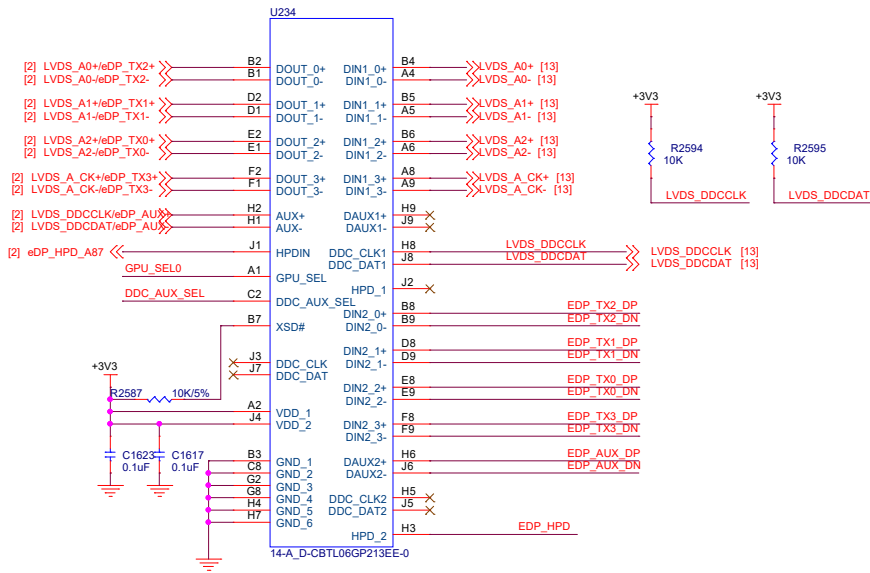


+5V Circuit

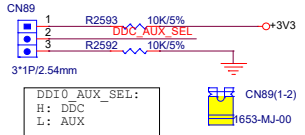
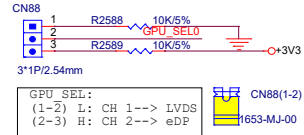
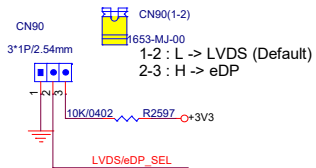


3.3V



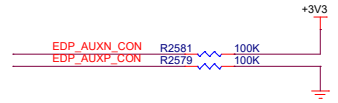
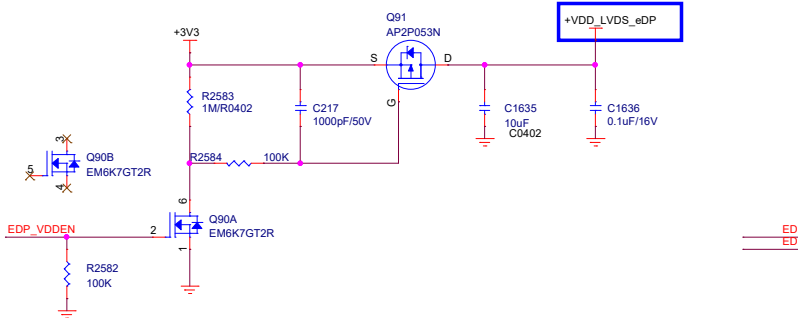
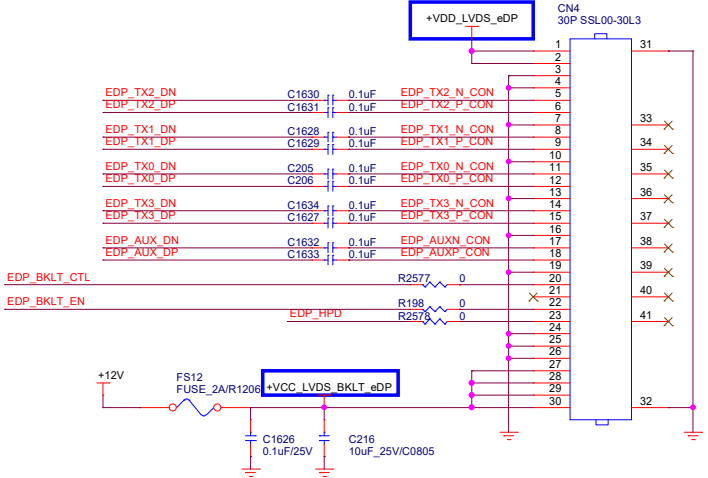
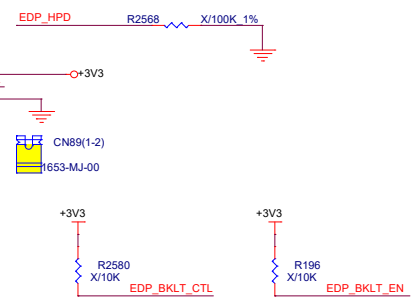


INPUTS		FUNCTION
OE	S	
L	L	A port = B1 port
L	H	A port = B2 port
H	X	Disconnect



GPU_SEL:
(1-2) L: CH 1--> LVDS
(2-3) H: CH 2--> eDP

DDI0_AUX_SEL:
H: DDC
L: AUX



Title
eDP+eDP/LVDS Switch

Size	Document Number	Rev:
Custom	ECB-920A	A1.1_0_0

Date: Tuesday, March 28, 2023 Sheet: 29 of 29