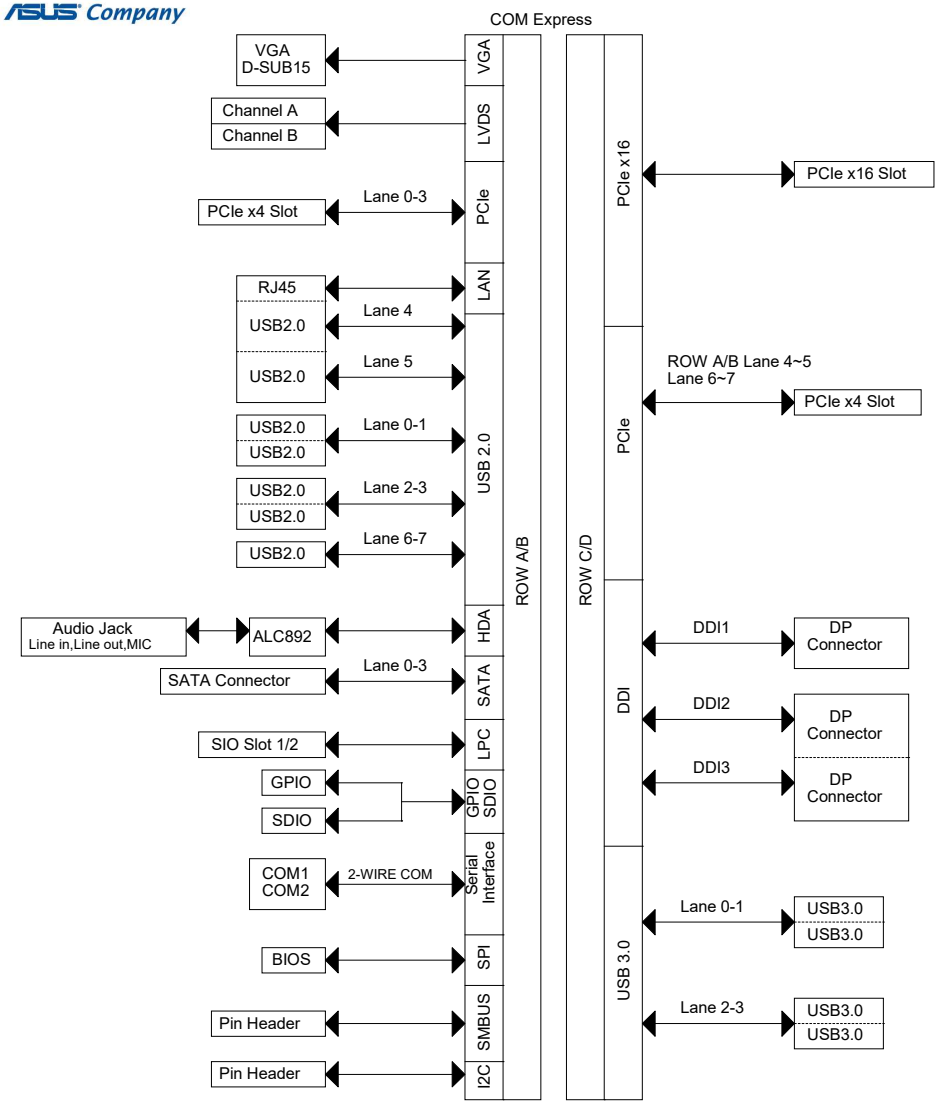
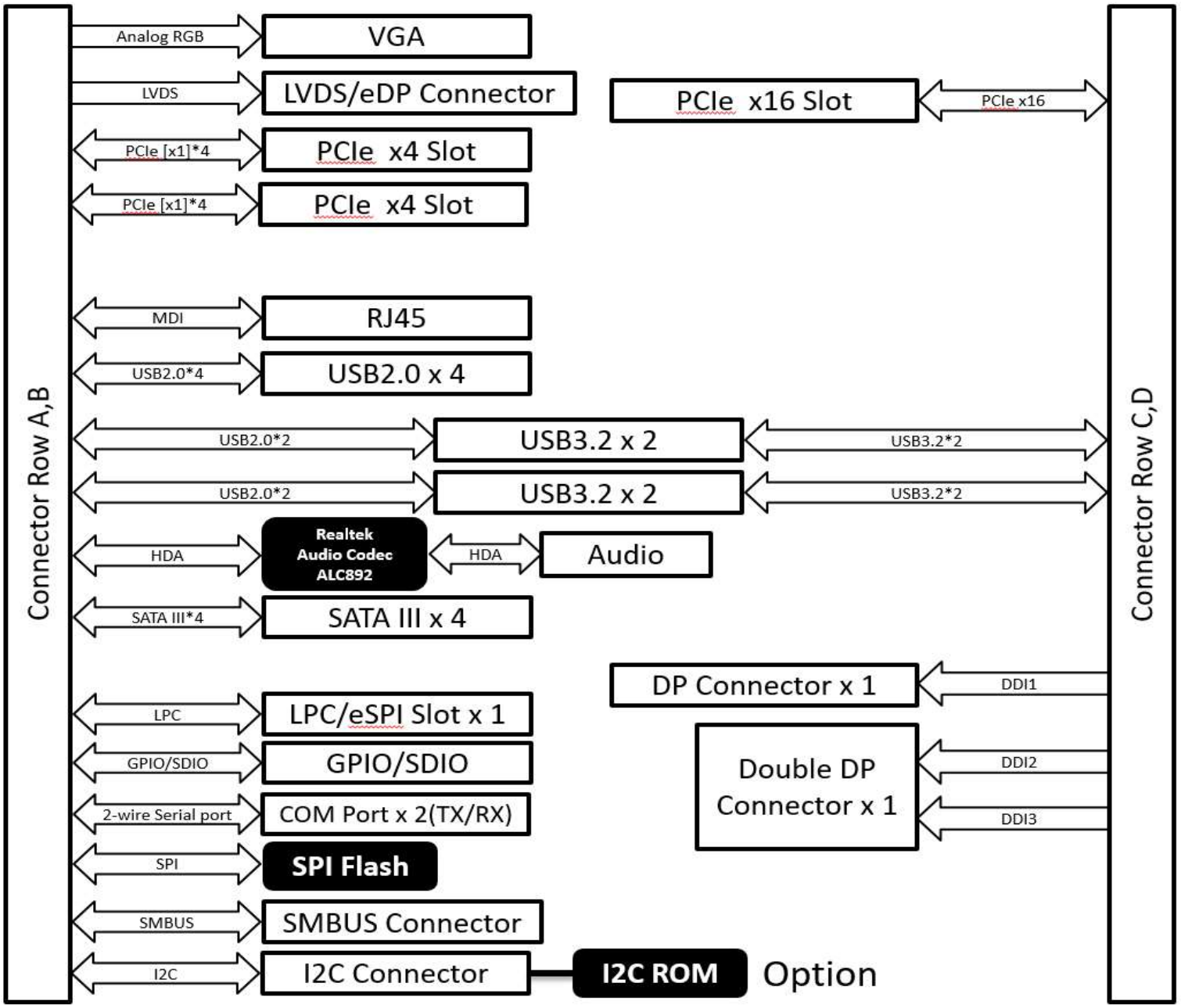
ECB-920A Rev.A1.0_0_0
COM Express (COM.0 Rev 2.1) Type 6/1/10 Carrier Board

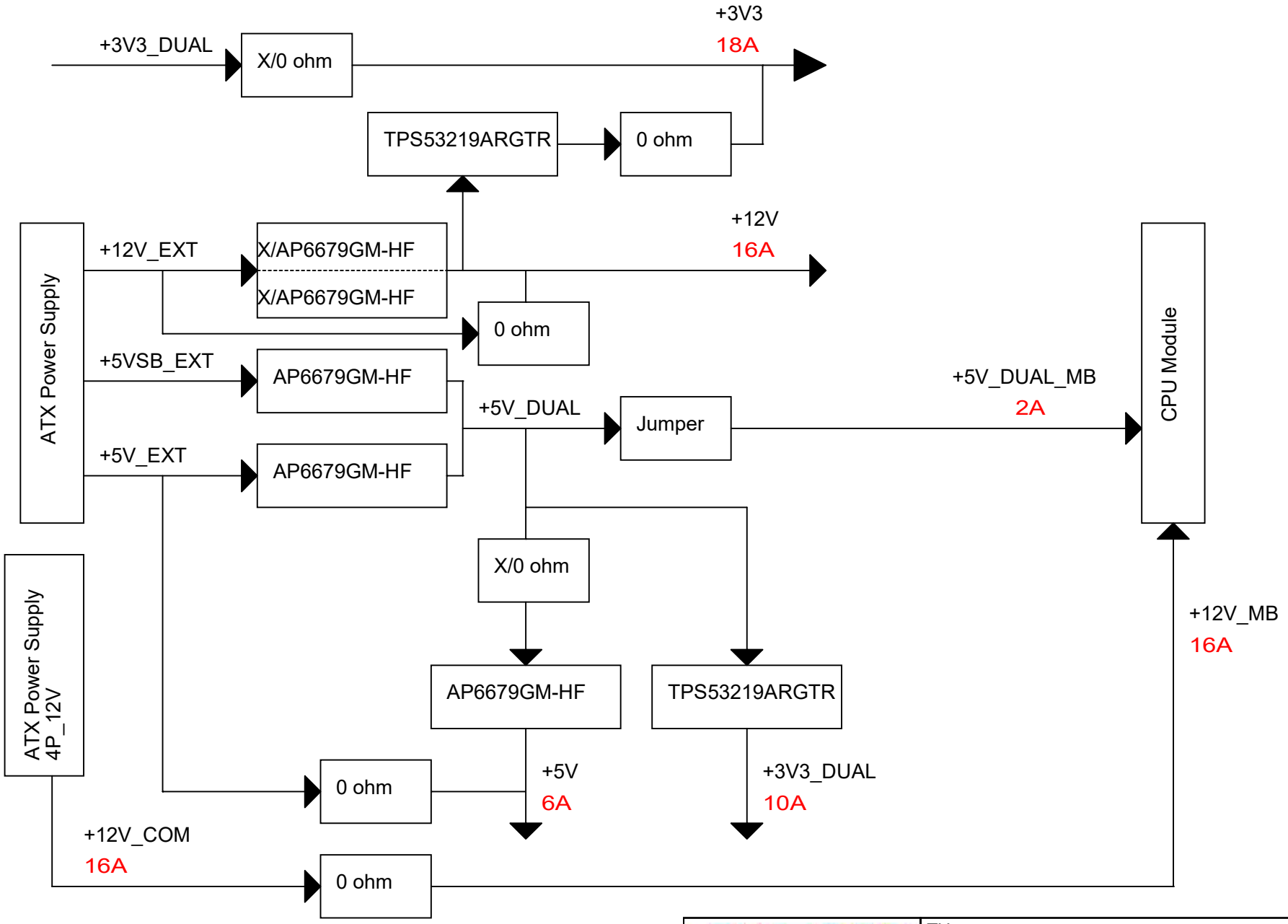


Title: Cover Sheet		
Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
Date: Thursday, May 14, 2020		Sheet: 1 of 32

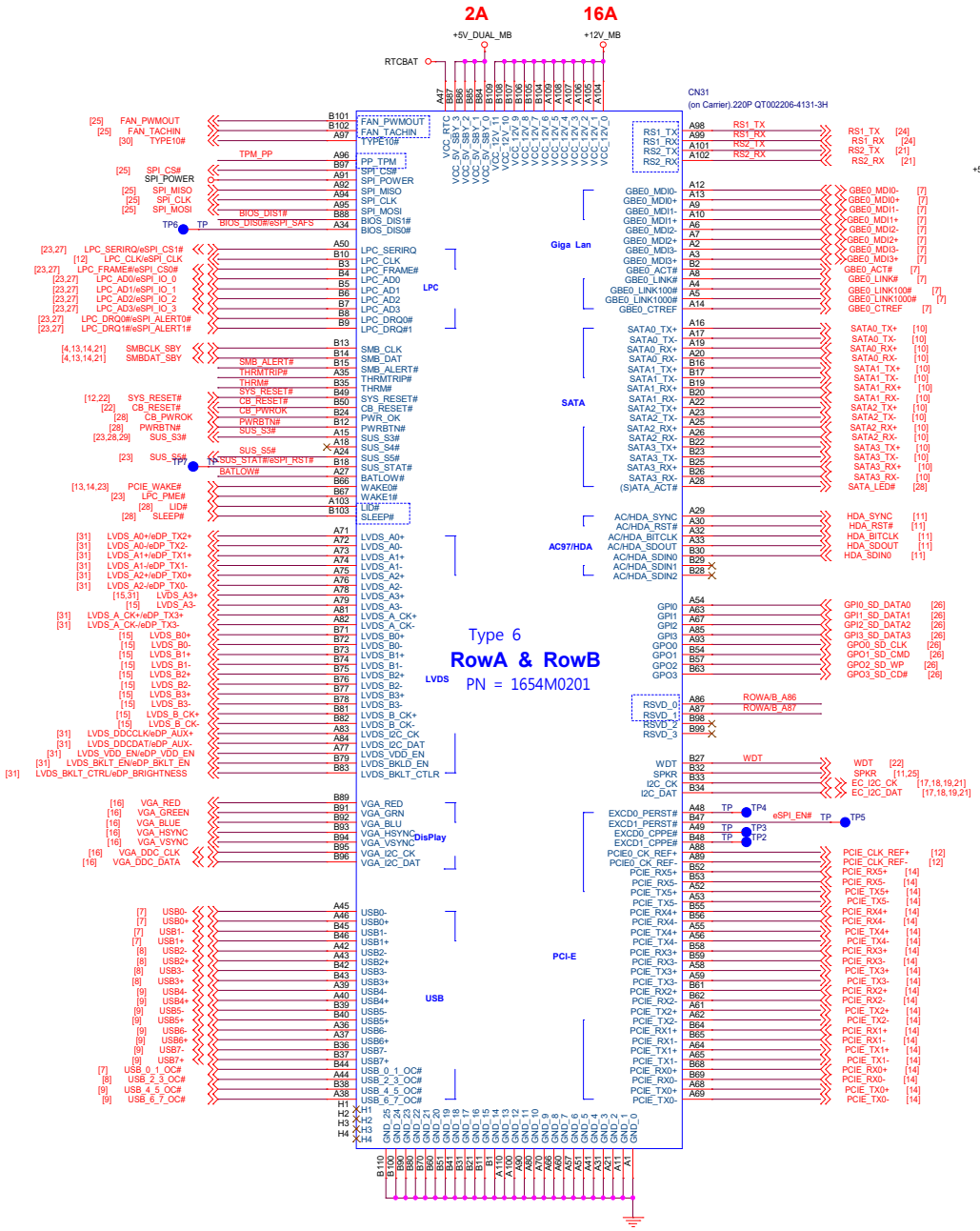
ECB-920A

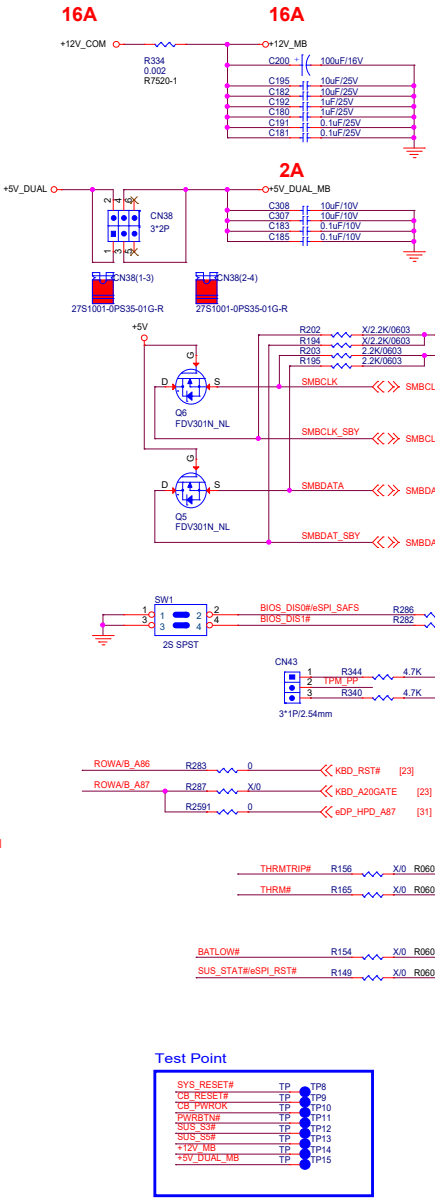


Title: Block Diagram			
Size: Custom	Document Number: ECB-920A		Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*		Sheet: 2 of 32	



AAEON an ASUS assoc. co.	Title: **Power Map**	
Size: A	Document Number: **ECB-920A**	Rev: **A1.1_0_0**
Date: *Thursday, May 14, 2020*	Sheet: **3** of **32**	





COM Express® Signal	SD card interface signals
GPI0	SD_DATA0
GPI1	SD_DATA1
GPI2	SD_DATA2
GPI3	SD_DATA3
GPO0	SD_CLK
GPO1	SD_CMD
GPO2	SD_WP
GPO3	SD_CD#

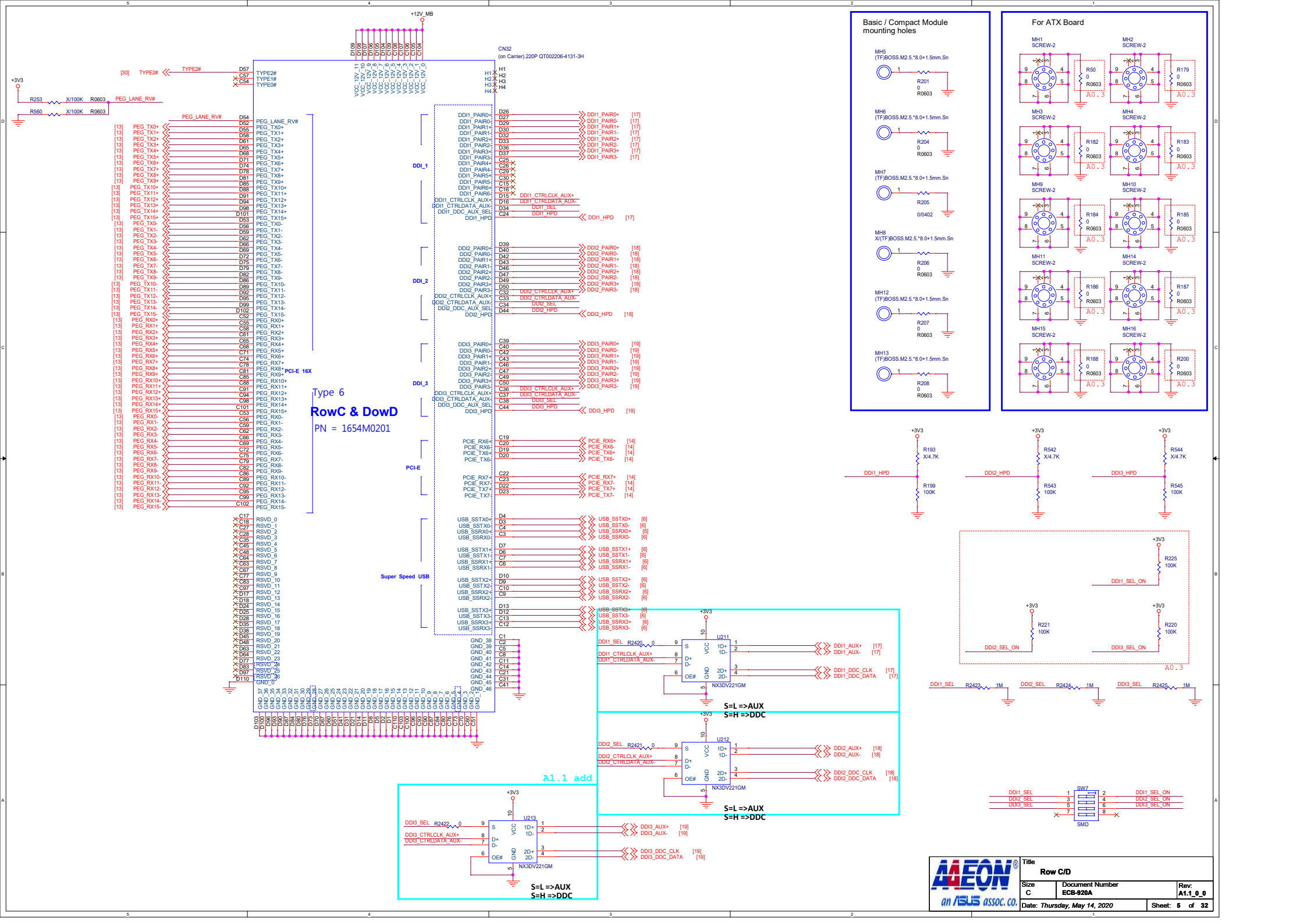
Power Rail	Module Pin Current Capability (Amps)	Nominal Input (Volts)	Input Range (Volts)	Derated Input (Volts)	Max Input Ripple (mV)	Max Module Input Power (w. derated input) (Watts)	Assumed Conversion Efficiency	Max Load Power (Watts)
VCC_12V	12	12	11.4 - 12.6	11.4	+/- 100	137	85%	116
VCC_5V_SBY	2	5	4.75 - 5.25	4.75	+/- 50	9		
VCC_RTC	0.5	3	2.0 - 3.3		+/- 20			

AAEON an ASUS assoc. co.

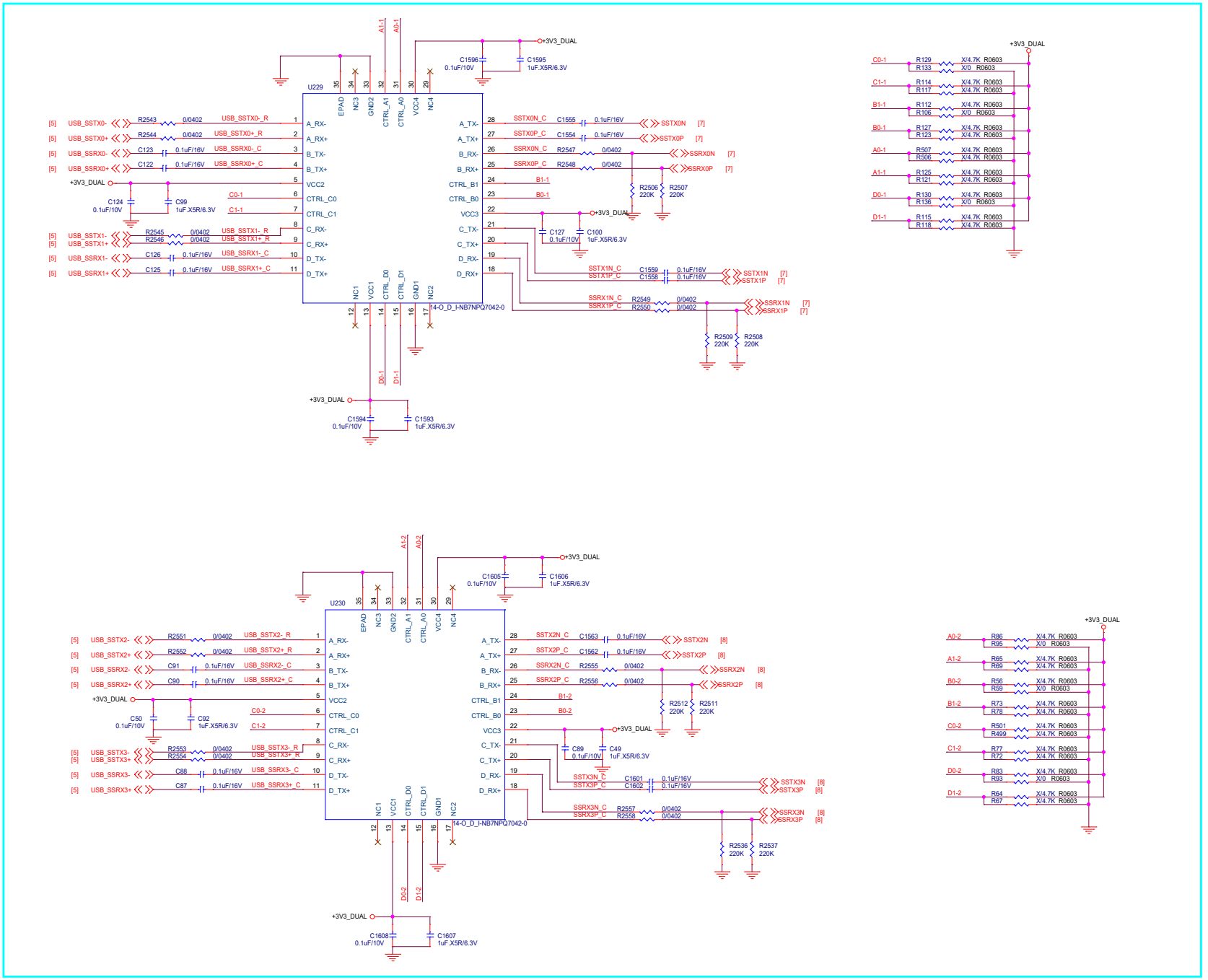
Title: Row A/B

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

Date: Thursday, May 14, 2020 | Sheet: 4 of 32


CN32
(on Carrier).220P QT002206-4131-3H
Type 6
RowC & DowD
PN = 1654M0201
PCI-E 16X
DDI_1
DDI_2
DDI_3
PCI-E
Super Speed USB
A1.1 add
S=L =>AUX
S=H =>DDC
Basic / Compact Module mounting holes
For ATX Board
Title
Row C/D
Size C
Document Number ECB-920A
Rev: A1.1_0_0
Date: Thursday, May 14, 2020
Sheet: 5 of 32

A1.1 add



AAEON an ASUS assoc. co.

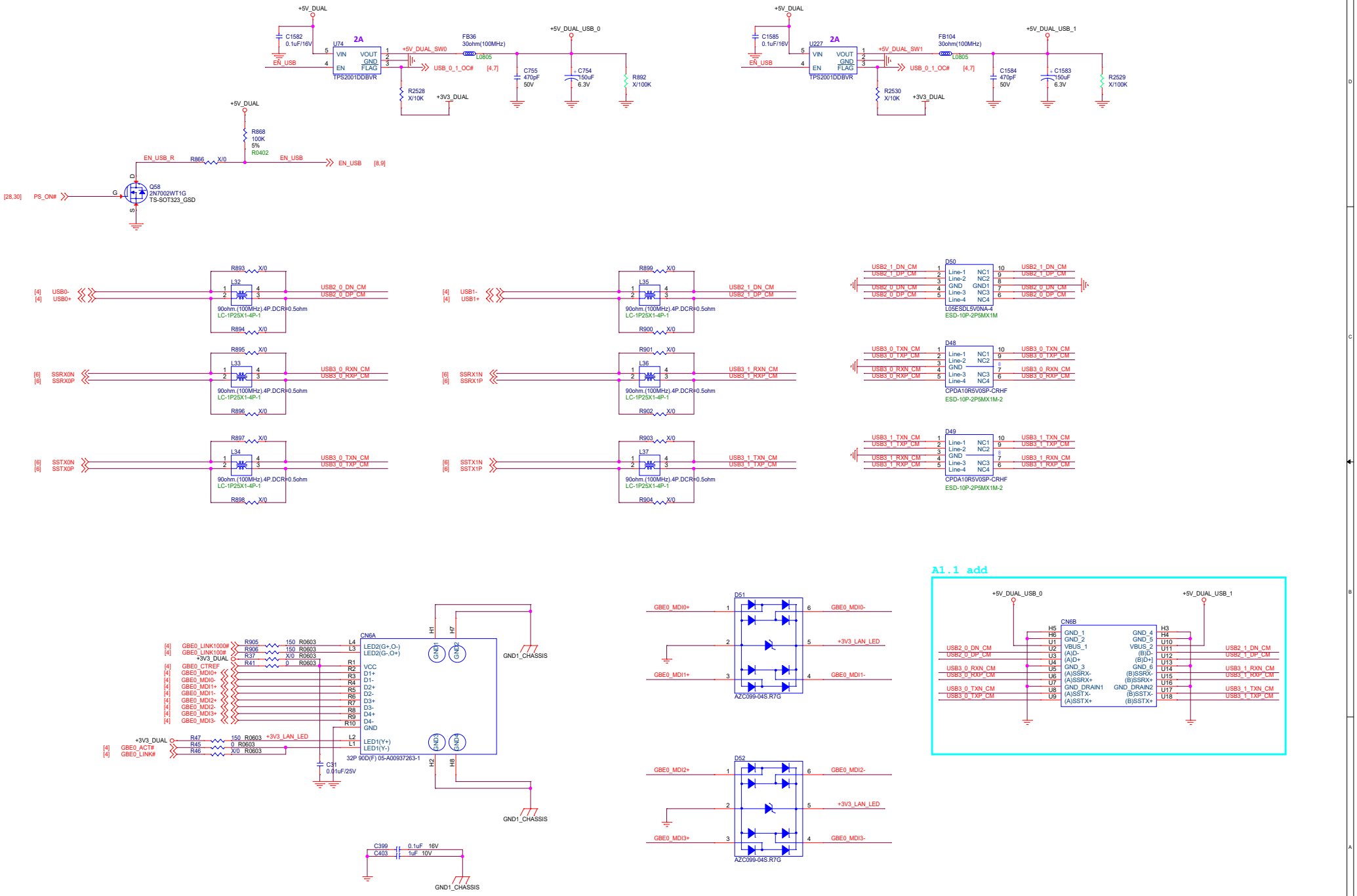
Title: USB3.1 GEN2 Redriver

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

Date: Thursday, May 14, 2020 | Sheet: 6 of 32

LAN & USB 3.1

A1.1 change for USB3.1 GEN2

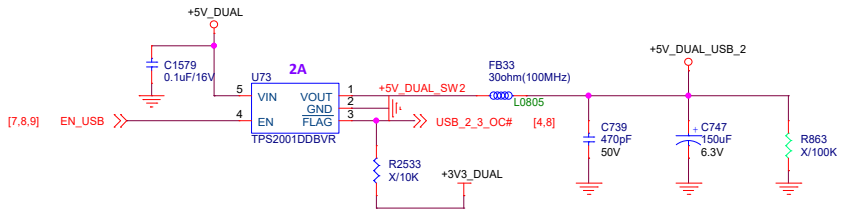


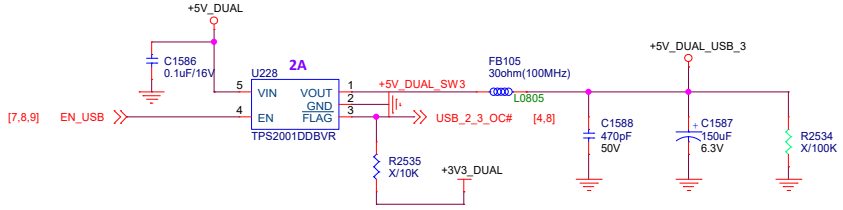
AAEON an ASUS assoc. co.	Title: LAN with USB3.1		
	Size: C	Document Number: ECB-920A	Rev: A1.1_0_0
	Date: Thursday, May 14, 2020	Sheet: 7 of 32	

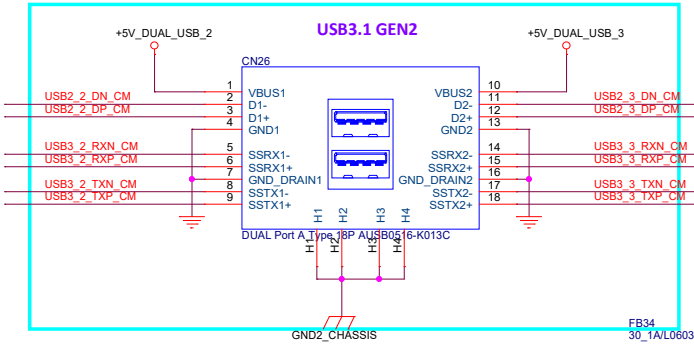
USB 3.1

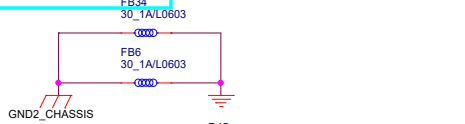
A1.1 change for USB3.1 GEN2

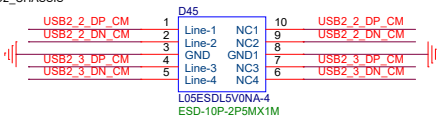
A1.1 add

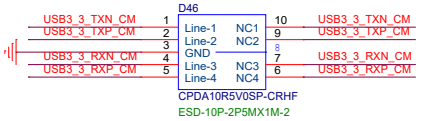


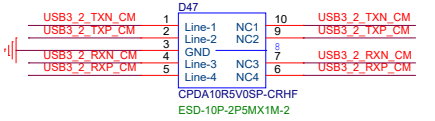


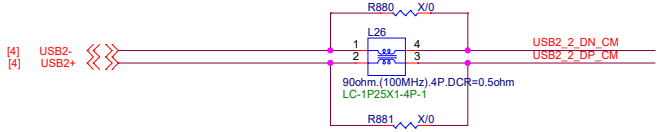


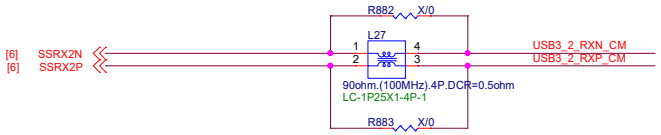


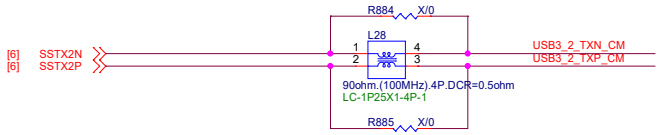


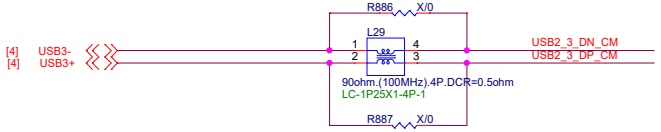


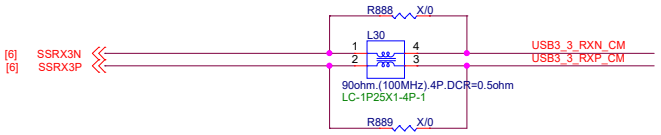


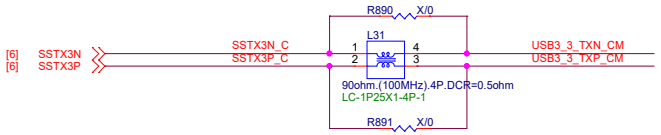








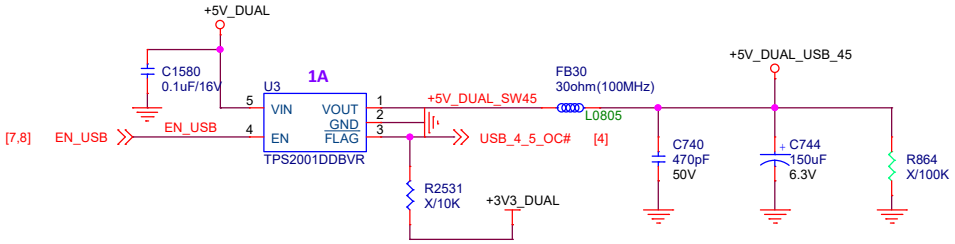


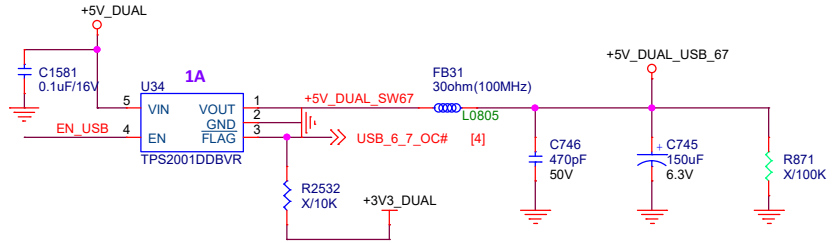


AAEON an ASUS assoc. co.	Title: USB3.1 GEN2	
Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
Date: Thursday, May 14, 2020	Sheet: 8 of 32	

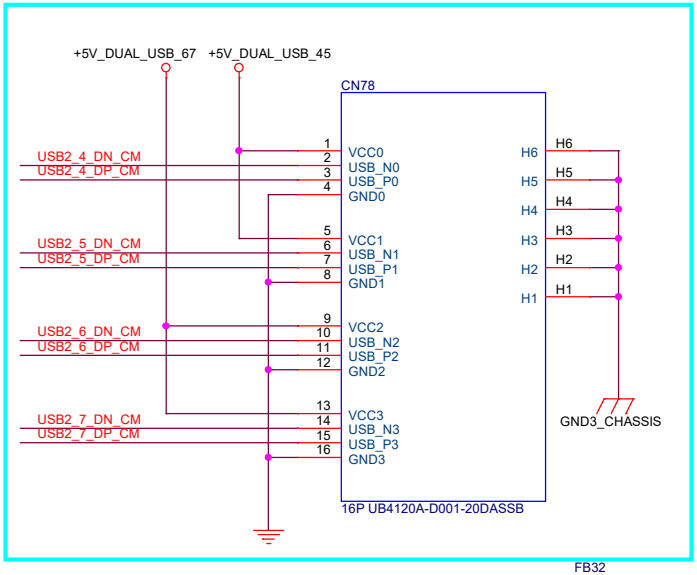
USB 2.0

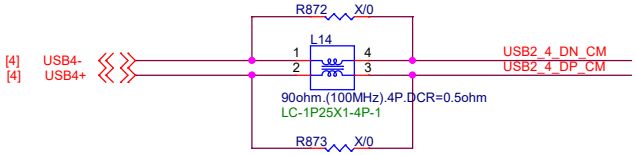
A1.1 change to quad port

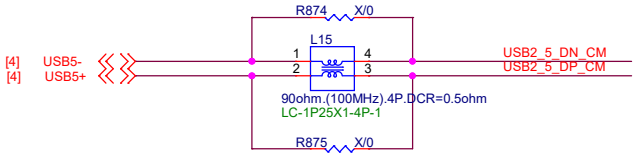


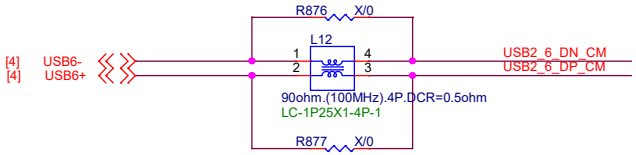


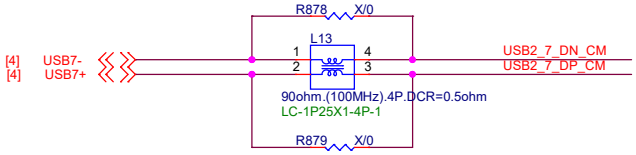
A1.1 add

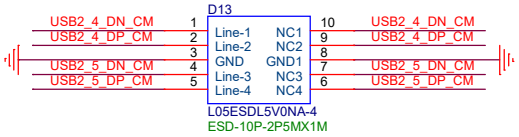


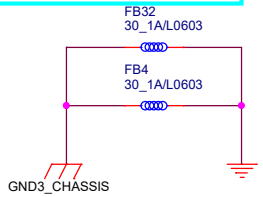


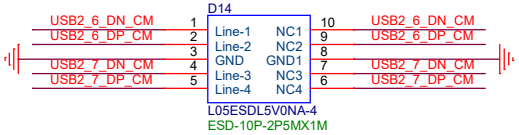












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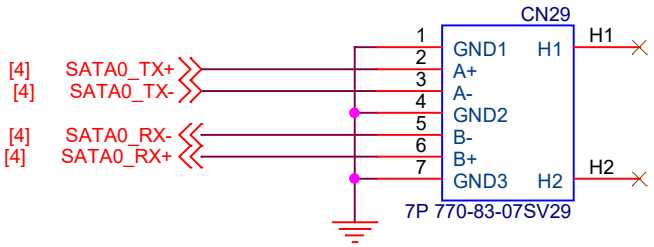
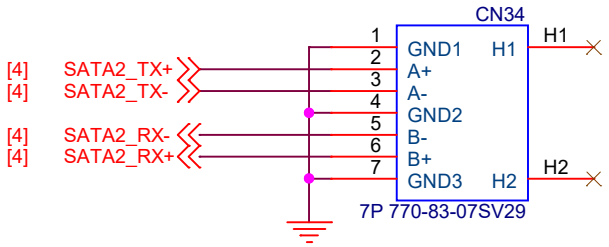
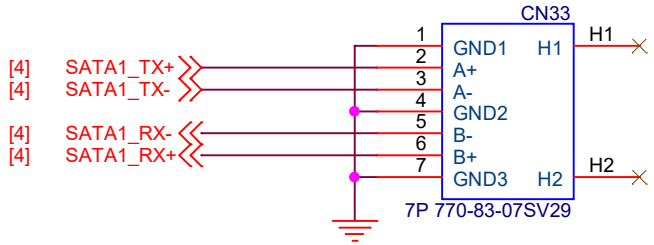
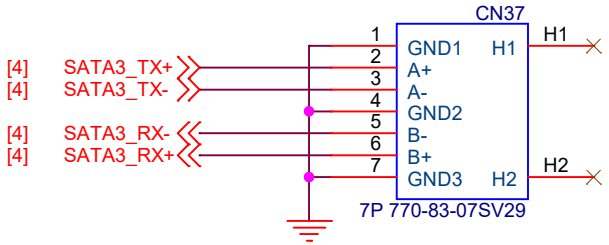
Title: USB2.0		
Size: B	Document Number: ECB-920A	Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*	Sheet: 9 of 32	







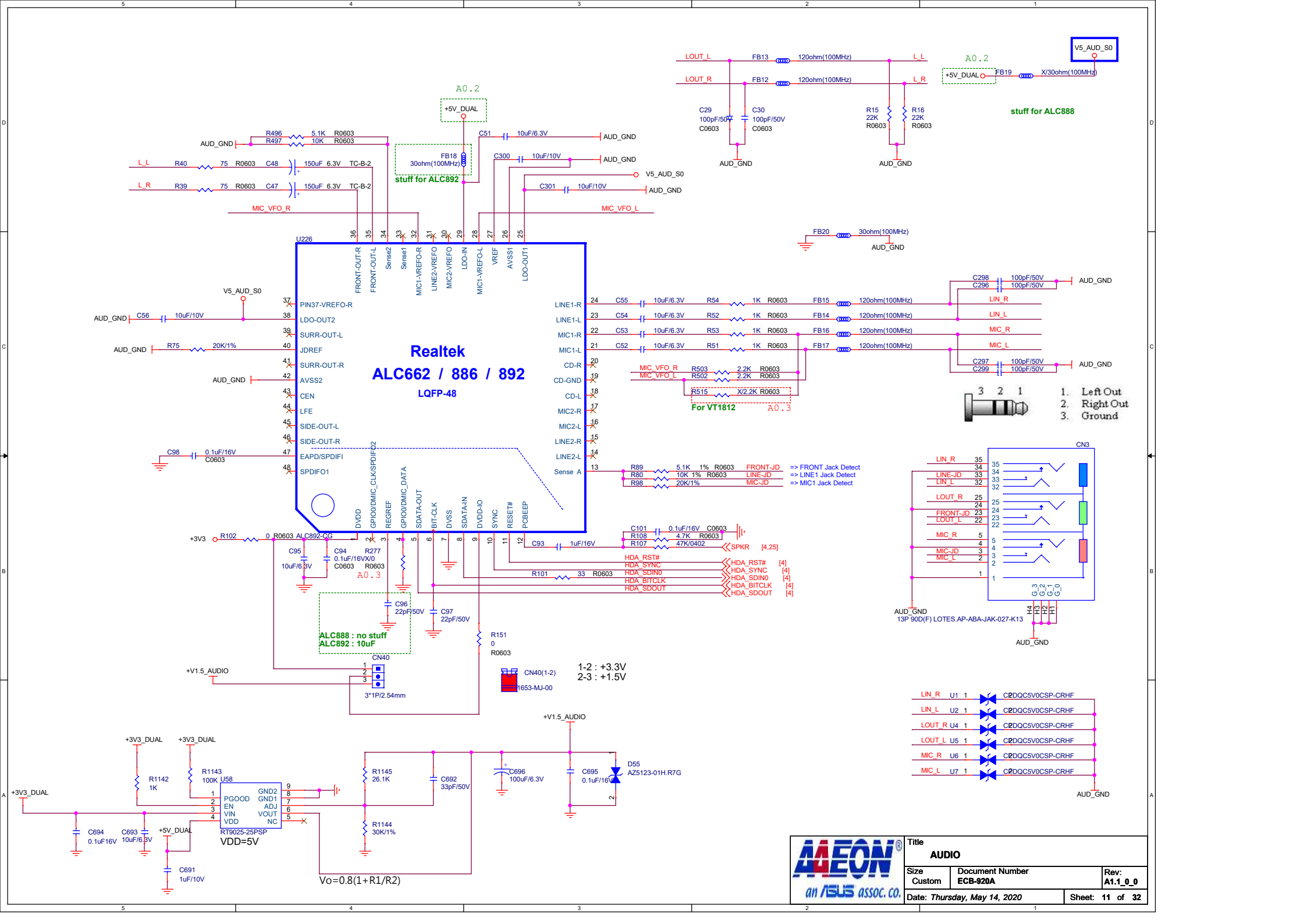


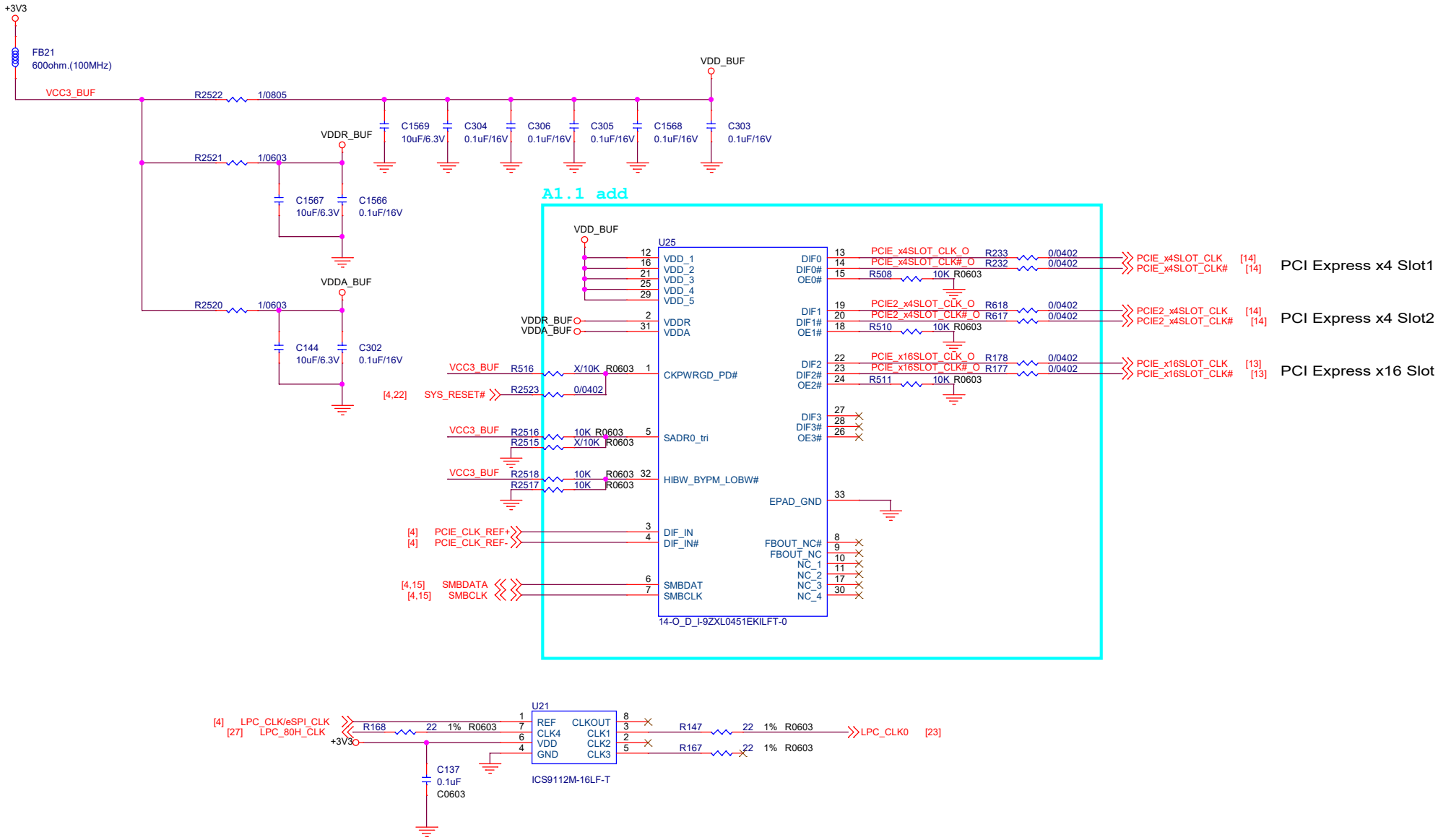
AAEON an ASUS assoc. co.

Title
SATA

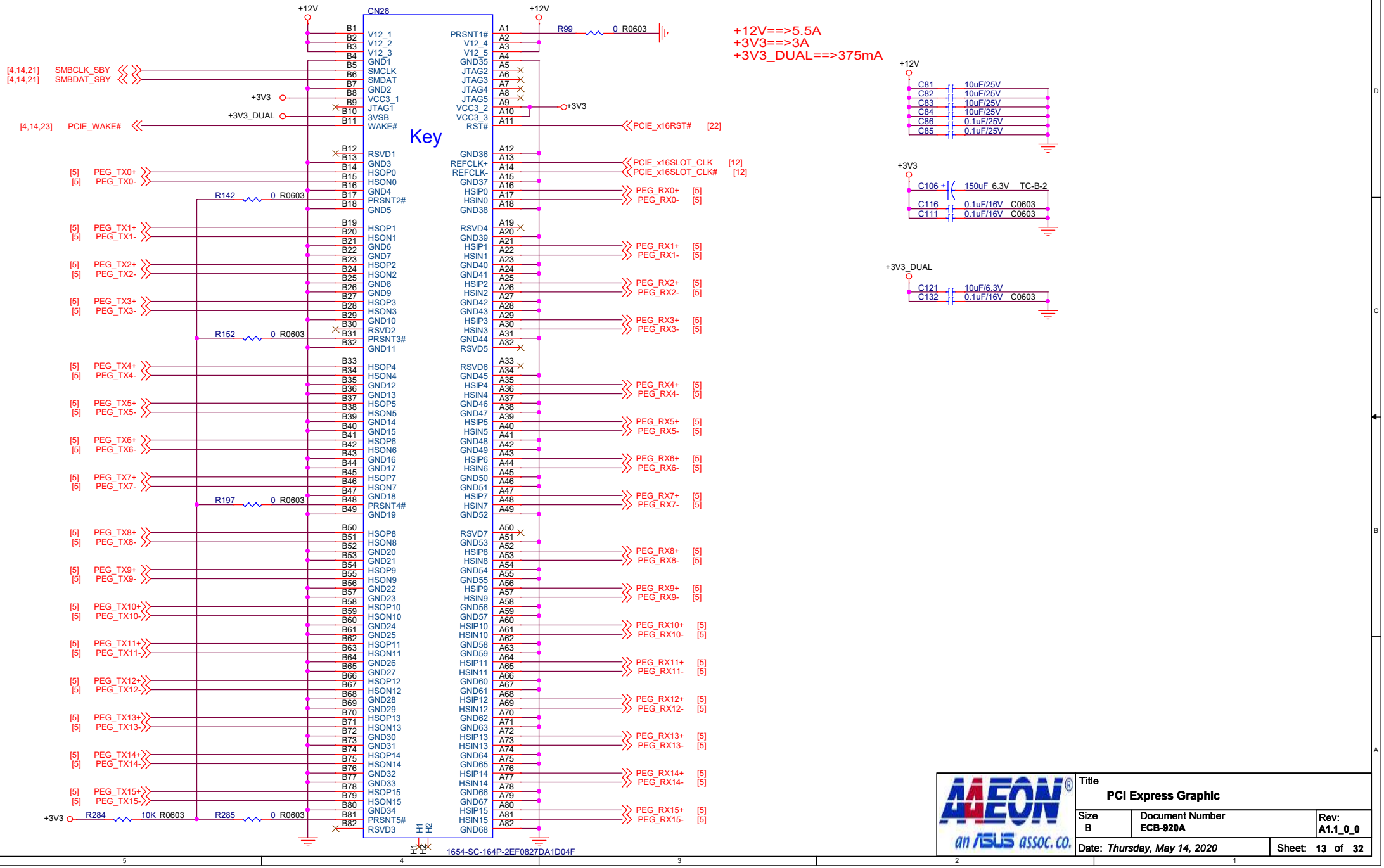
Size	Document Number	Rev:
A	**ECB-920A**	**A1.1_0_0**

Date: *Thursday, May 14, 2020* Sheet: **10** of **32**


Realtek
ALC662 / 886 / 892
LQFP-48
U226
PIN37-VREFO-R
LDO-OUT2
SURR-OUT-L
JDREF
SURR-OUT-R
AVSS2
CEN
LFE
SIDE-OUT-L
SIDE-OUT-R
EAPD/SPDIFI
SPDIFO1
FRONT-OUT-R
FRONT-OUT-L
Sense2
Sense1
MIC1-VREFO-R
LINE2-VREFO
MIC2-VREFO
LDO-IN
MIC1-VREFO-L
VREF
AVSS1
LDO-OUT1
LINE1-R
LINE1-L
MIC1-R
MIC1-L
CD-R
CD-GND
CD-L
MIC2-R
MIC2-L
LINE2-R
LINE2-L
Sense A
DVDD
GPIO0/DMIC_CLK/SPDIFO2
REGREF
GPIO0/DMIC_DATA
SDATA-OUT
BIT-CLK
DVSS
SDATA-IN
DVDD-IO
SYNC
RESET#
PCBEEP
LOUT_L
LOUT_R
FB13 120ohm(100MHz)
FB12 120ohm(100MHz)
L_L
L_R
C29 100pF/50V C0603
C30 100pF/50V C0603
R15 22K R0603
R16 22K R0603
AUD_GND
A0.2
+5V_DUAL
FB19 X/30ohm(100MHz)
V5_AUD_S0
stuff for ALC888
FB18 30ohm(100MHz)
stuff for ALC892
R496 5.1K R0603
R497 10K R0603
C51 10uF/6.3V
C300 10uF/10V
C301 10uF/10V
R40 75 R0603 C48 150uF 6.3V TC-B-2
R39 75 R0603 C47 150uF 6.3V TC-B-2
MIC_VFO_R
MIC_VFO_L
FB20 30ohm(100MHz)
C56 10uF/10V
R75 20K/1%
C98 0.1uF/16V C0603
C55 10uF/6.3V R54 1K R0603 FB15 120ohm(100MHz)
C54 10uF/6.3V R52 1K R0603 FB14 120ohm(100MHz)
C53 10uF/6.3V R53 1K R0603 FB16 120ohm(100MHz)
C52 10uF/6.3V R51 1K R0603 FB17 120ohm(100MHz)
C298 100pF/50V
C296 100pF/50V
C297 100pF/50V
C299 100pF/50V
LIN_R
LIN_L
MIC_R
MIC_L
R503 2.2K R0603
R502 2.2K R0603
R515 X/2.2K R0603
For VT1812
A0.3
1. Left Out
2. Right Out
3. Ground
R89 5.1K 1% R0603 FRONT-JD => FRONT Jack Detect
R80 10K 1% R0603 LINE-JD => LINE1 Jack Detect
R98 20K/1% MIC-JD => MIC1 Jack Detect
CN3
LINE-JD
LOUT_R
FRONT-JD
LOUT_L
MIC-JD
13P 90D(F) LOTES.AP-ABA-JAK-027-K13
+3V3
R102 0 R0603 ALC892-CG
C95 10uF/6.3V
C94 0.1uF/16V
VX/0 C0603 R0603
C96 22pF/50V
C97 22pF/50V
C101 0.1uF/16V C0603
R108 4.7K R0603
R107 47K/0402
SPKR [4,25]
C93 1uF/16V
HDA_RST# [4]
HDA_SYNC [4]
HDA_SDIN0 [4]
HDA_BITCLK [4]
HDA_SDOUT [4]
R101 33 R0603
ALC888 : no stuff
ALC892 : 10uF
R151 0 R0603
CN40
3*1P/2.54mm
CN40(1-2)
1653-MJ-00
1-2 : +3.3V
2-3 : +1.5V
+V1.5_AUDIO
+3V3_DUAL
R1142 1K
R1143 100K
U58
PGOOD
EN
VIN
VDD
GND2
GND1
ADJ
VOUT
NC
RT9025-25PSP
VDD=5V
R1145 26.1K
R1144 30K/1%
C692 33pF/50V
C696 100uF/6.3V
C695 0.1uF/16V
D55 AZ5123-01H.R7G
C694 0.1uF16V
C693 10uF/6.3V
C691 1uF/10V
Vo=0.8(1+R1/R2)
LIN_R U1 1
LIN_L U2 1
LOUT_R U4 1
LOUT_L U5 1
MIC_R U6 1
MIC_L U7 1
C2DQC5V0CSP-CRHF
Title
AUDIO
Size Custom
Document Number ECB-920A
Rev: A1.1_0_0
Date: Thursday, May 14, 2020
Sheet: 11 of 32
AAEON
an ASUS assoc. co.

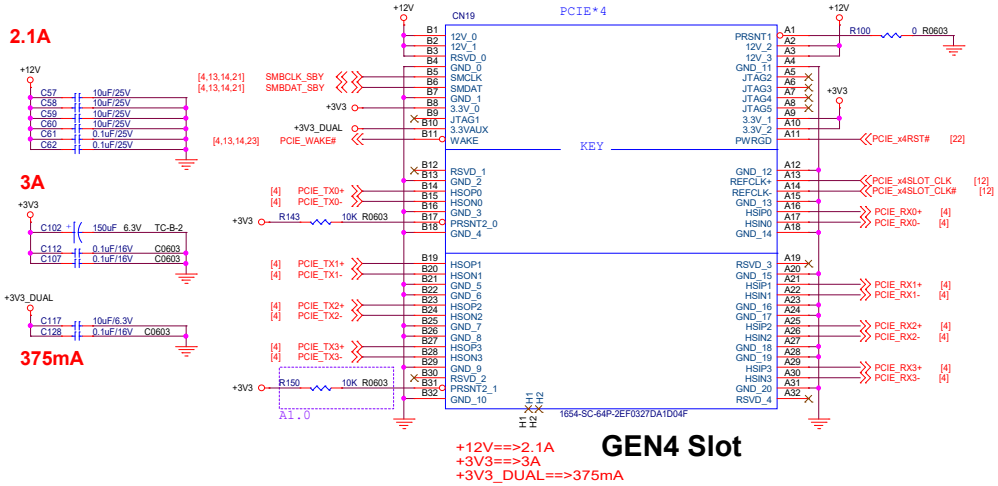


AAEON an ASUS assoc. co.	Title: **Clock Buffer**	
Size: B	Document Number: **ECB-920A**	Rev: **A1.1_0_0**
Date: *Thursday, May 14, 2020*	Sheet: **12** of **32**	

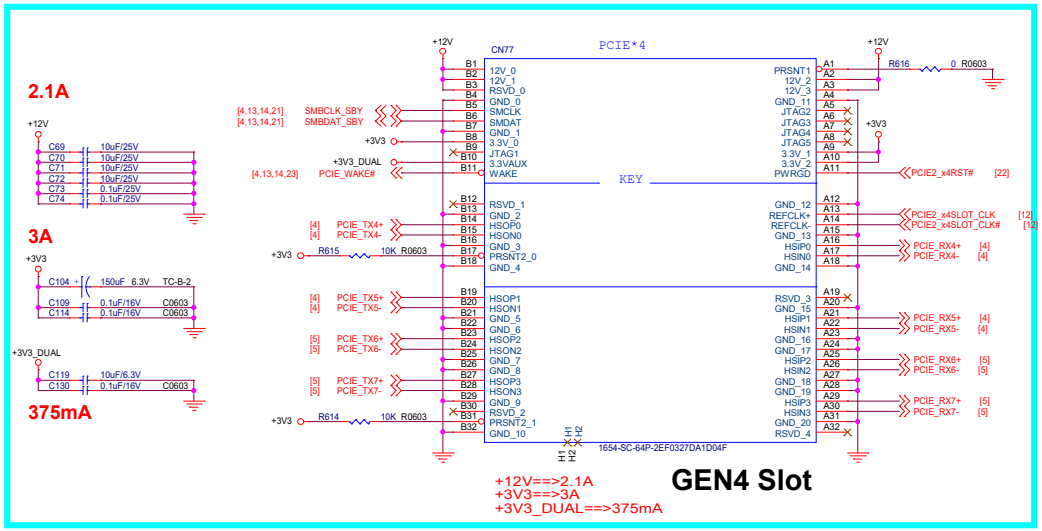


AAEON an ASUS assoc. co.	Title: PCI Express Graphic		
	Size: B	Document Number: ECB-920A	Rev: A1.1_0_0
	Date: Thursday, May 14, 2020		Sheet: 13 of 32

PCIe x4 GEN4 Slots



A1.1 add



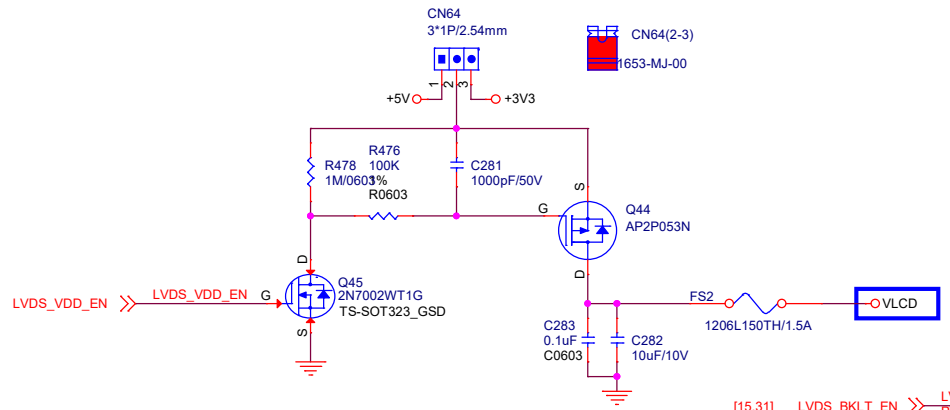
	X1		x4/x8	x16	
Standard height	10 W[1] (max)	25 W[1] (max)	25 W (max)	25 W[2] (max)	75 W[2, 4] (max)
Low profile card[3]	10 W (max)		25 W (max)	25 W (max)	

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)

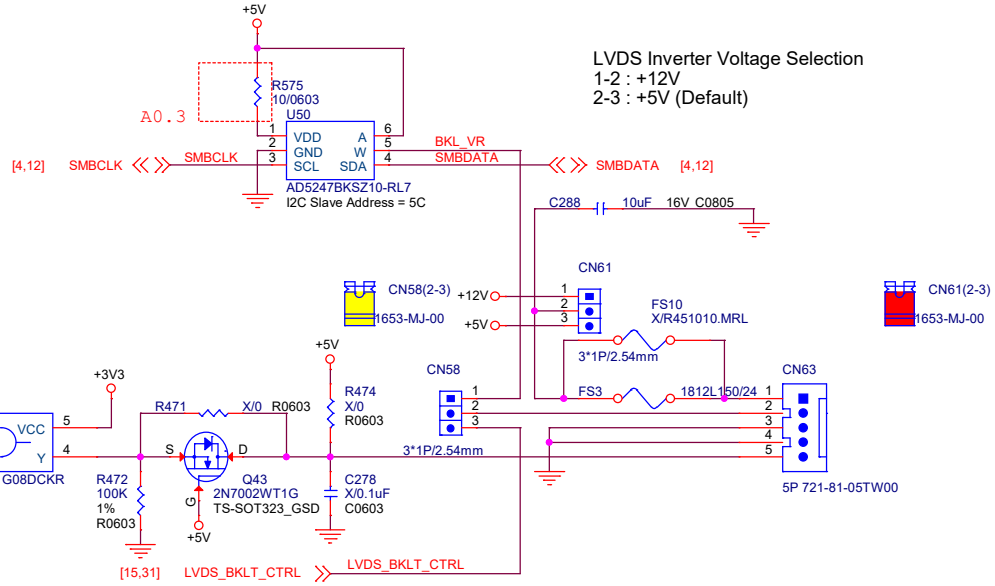
AAEON an ASUS assoc. co.

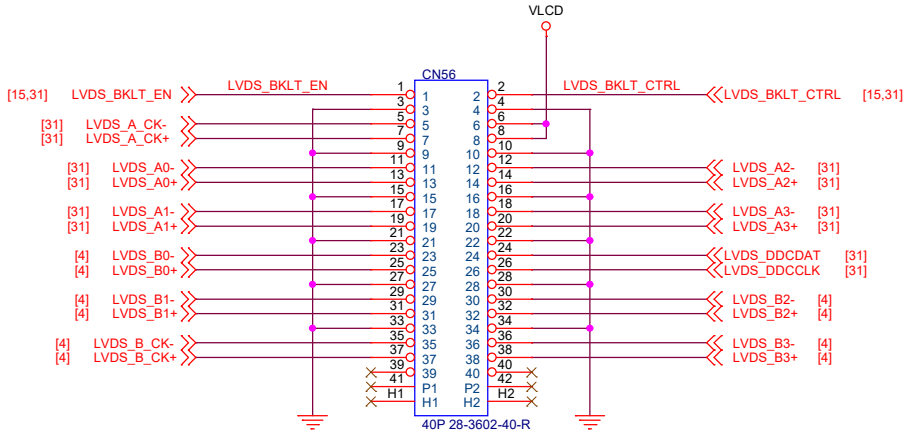
Title: PCIe x4 Slots		
Size: C	Document Number: ECB-920A	Rev: A1.1_0_0
Date: Thursday, May 14, 2020	Sheet: 14 of 32	

LVDS Operating Voltage Selection
1-2 : +5V
2-3 : +3.3V (Default)



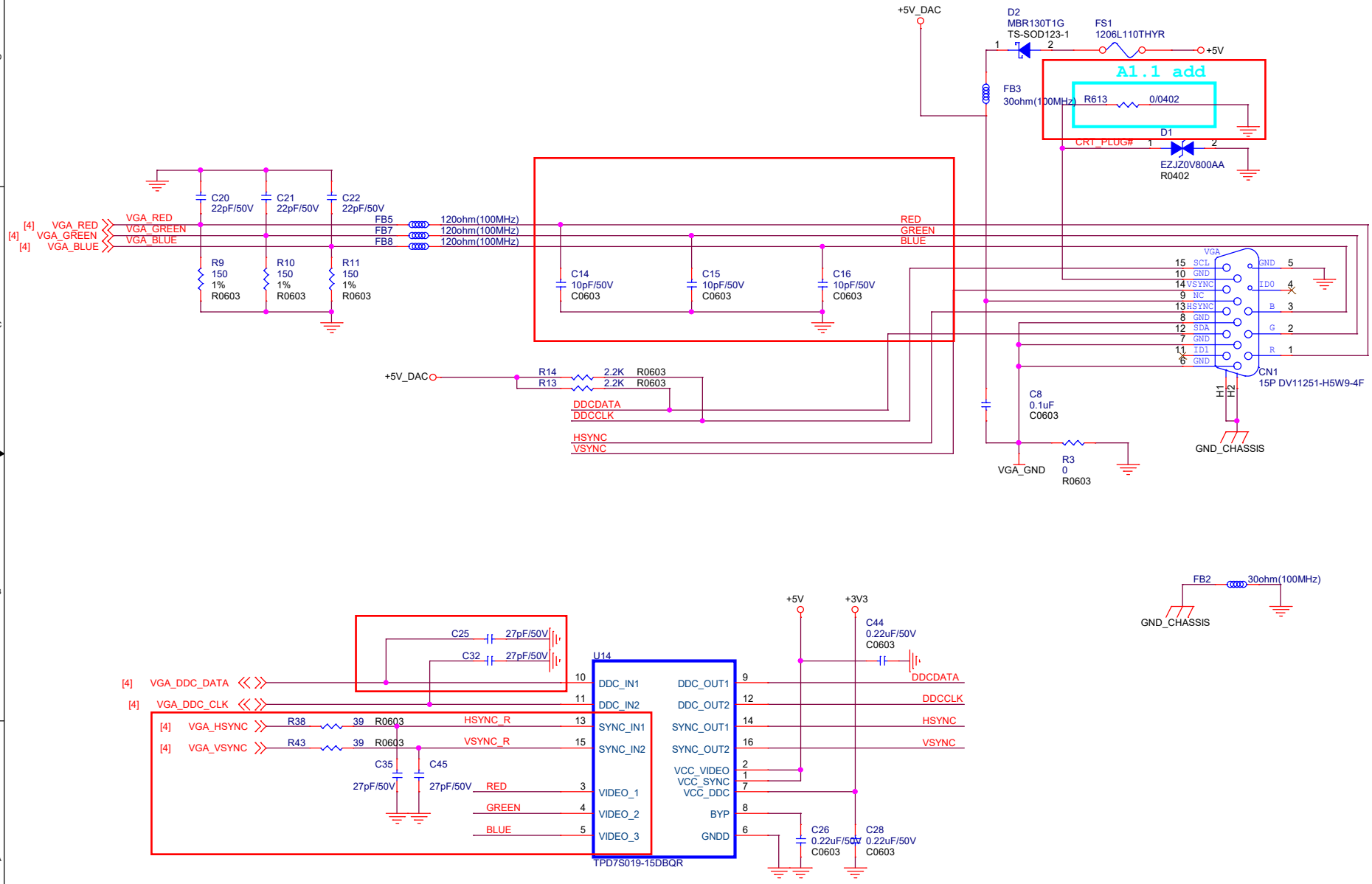
LVDS Inverter Voltage Selection
1-2 : +12V
2-3 : +5V (Default)





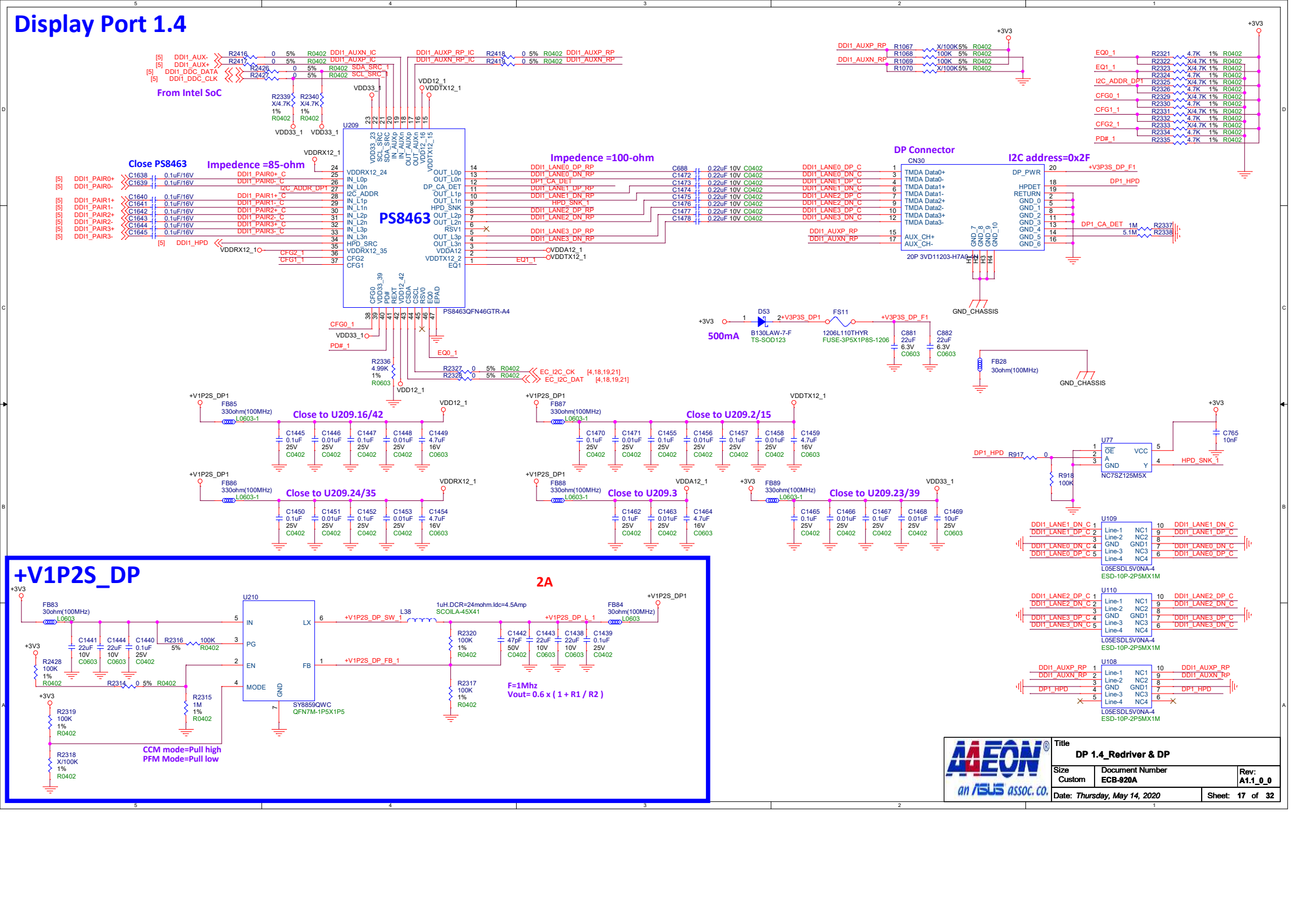
AAEON an ASUS assoc. co.

Title: LVDS		
Size: B	Document Number: ECB-920A	Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*	Sheet: 15 of 32	

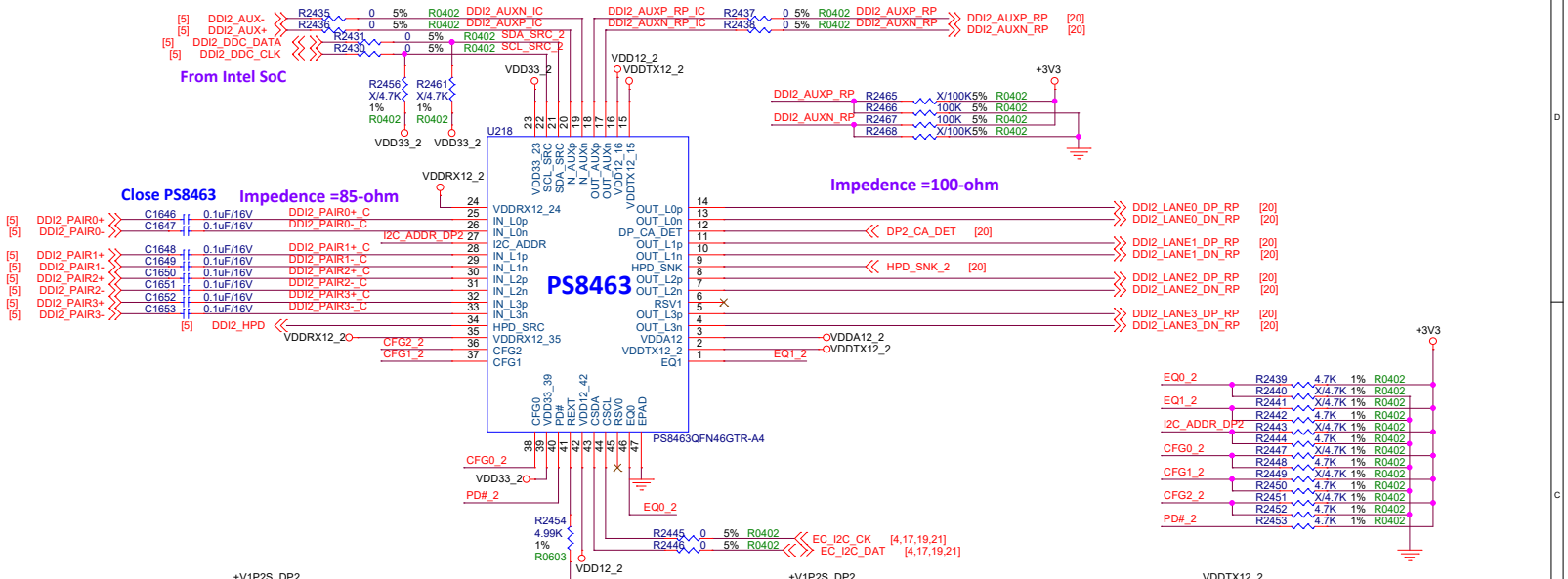


AAEON an ASUS assoc. co.	Title: VGA	
	Size: Custom	Document Number: ECB-920A
	Rev: A1.1_0_0	
	Date: *Thursday, May 14, 2020*	Sheet: 16 of 32

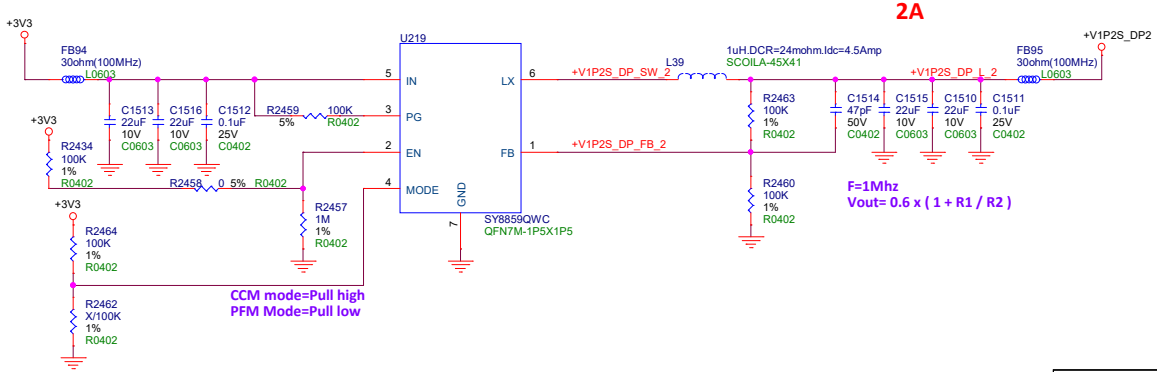
Display Port 1.4



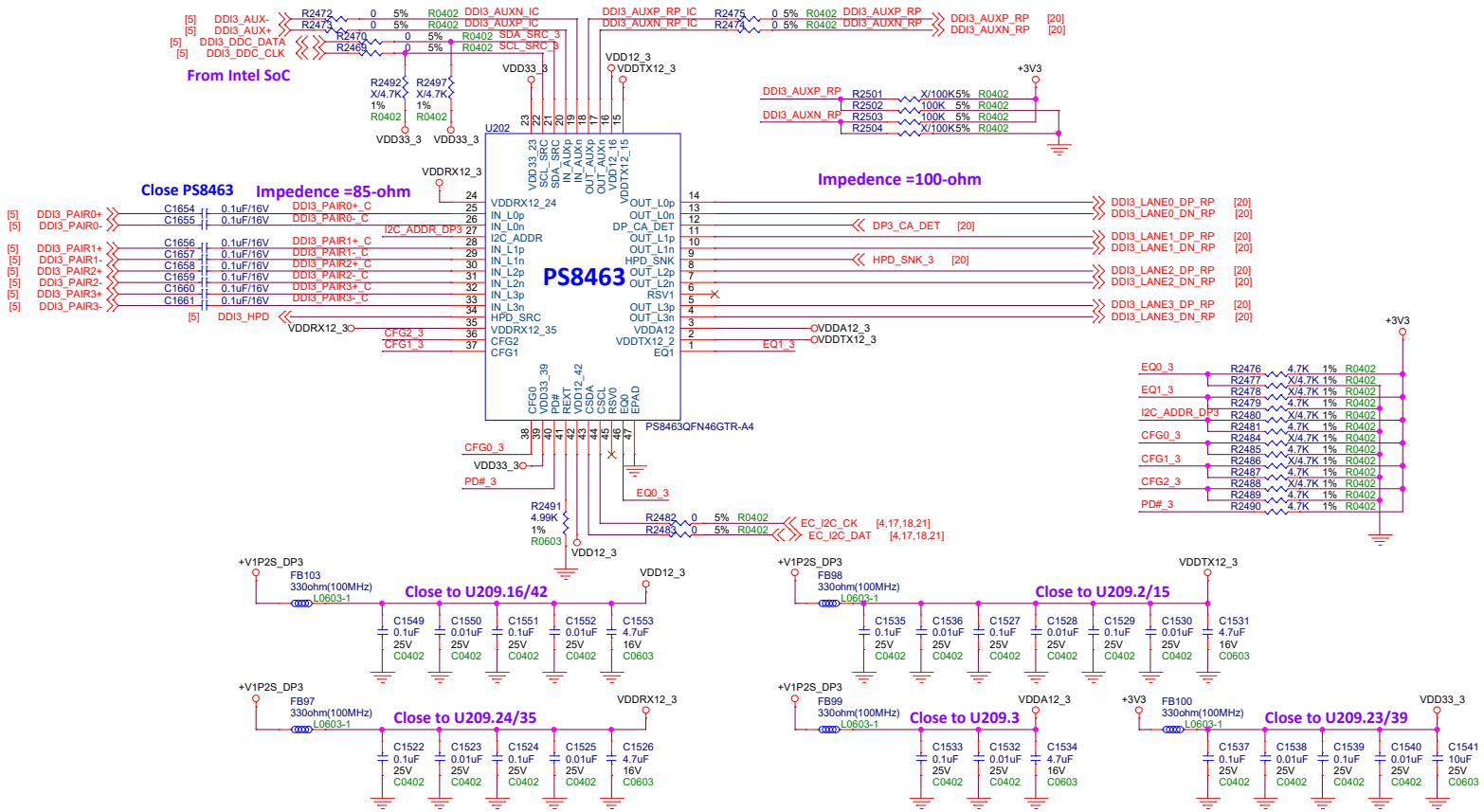
Title	DP 1.4_Redriver & DP		
Size	Custom	Document Number ECB-920A	Rev: A1.1_0_0
Date:	Thursday, May 14, 2020	Sheet: 17 of 32	



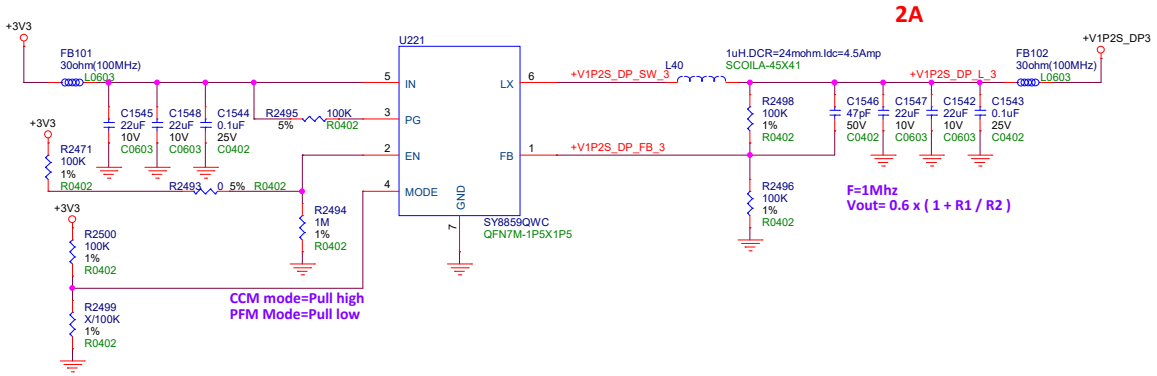
+V1P2S_DP



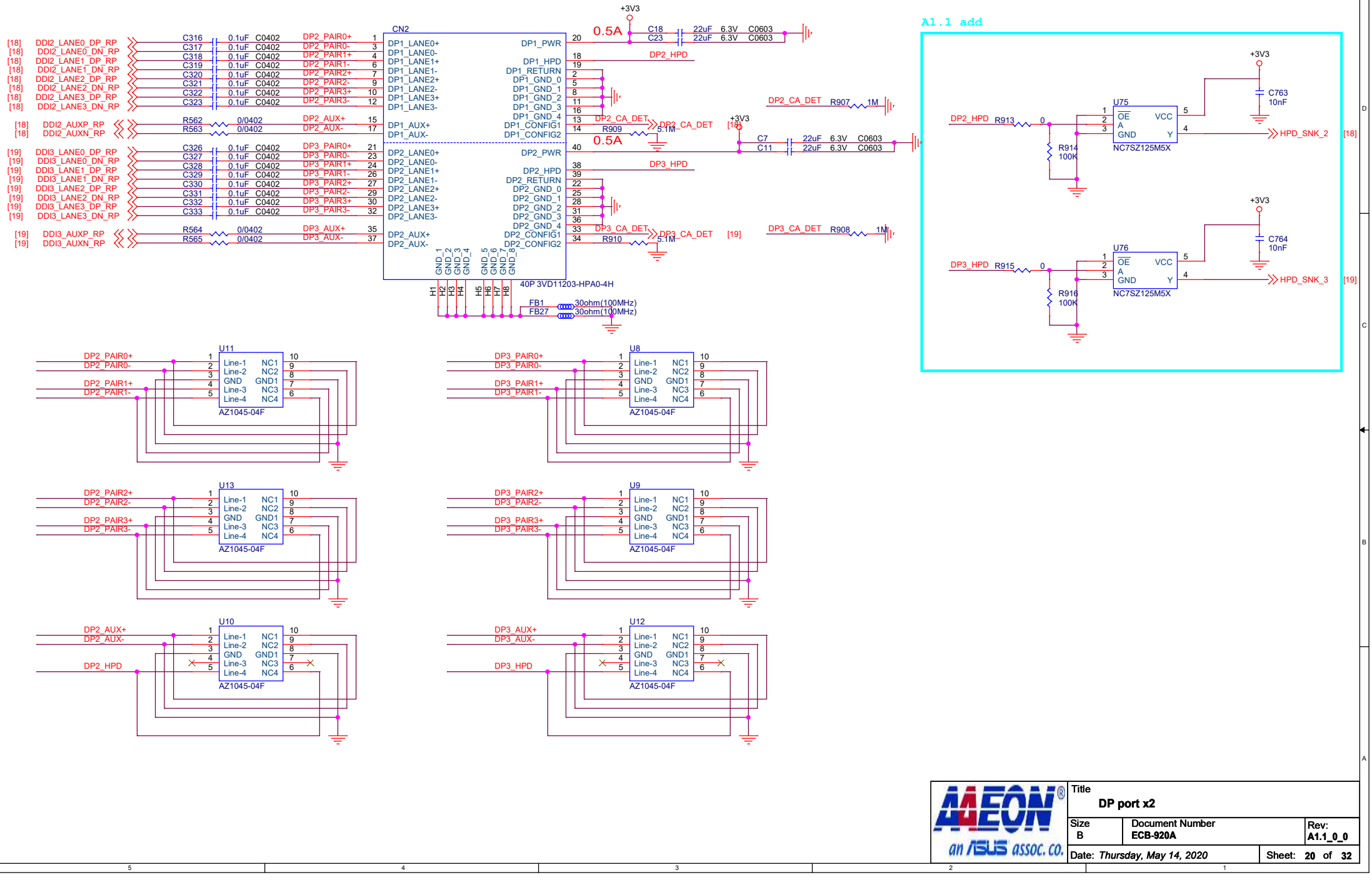
AAEON an ASUS assoc. co.	Title: DP 1.4_Redriver-1		
	Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
	Date: Thursday, May 14, 2020	Sheet: 18 of 32	



+V1P2S_DP

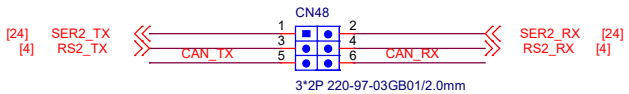


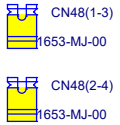
Title: DP 1.4_Redriver-2		
Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
Date: Thursday, May 14, 2020	Sheet: 19 of 32	

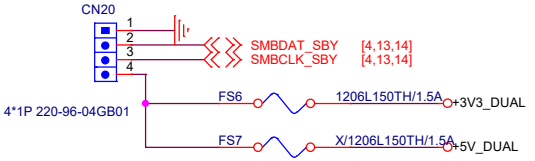


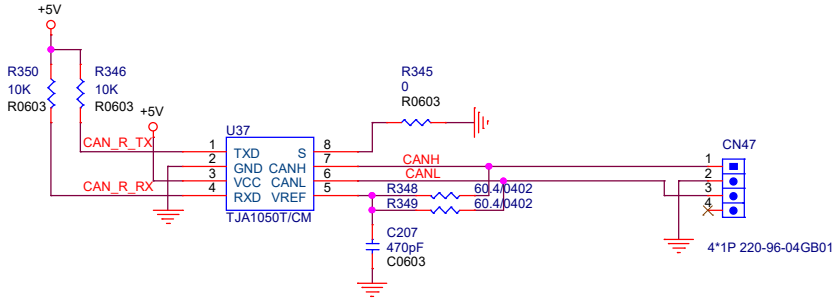
Title	DP port x2	
Size: B	Document Number: ECB-920A	Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*	Sheet: 20 of 32	

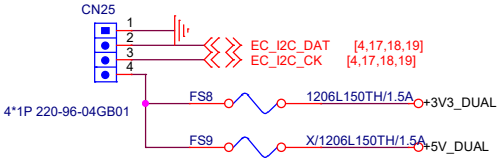
1-3 , 2-4 : Serial port (default)
3-5 , 4-6 : CAN BUS

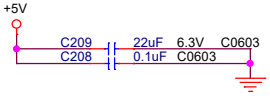


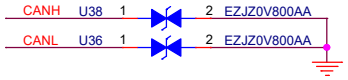


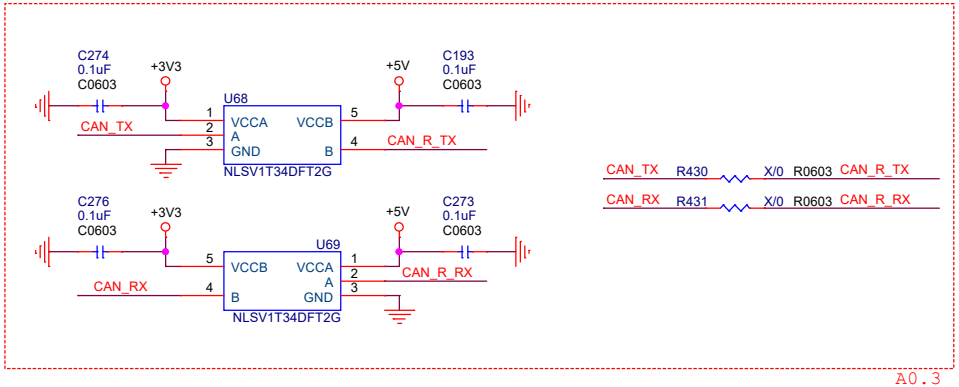




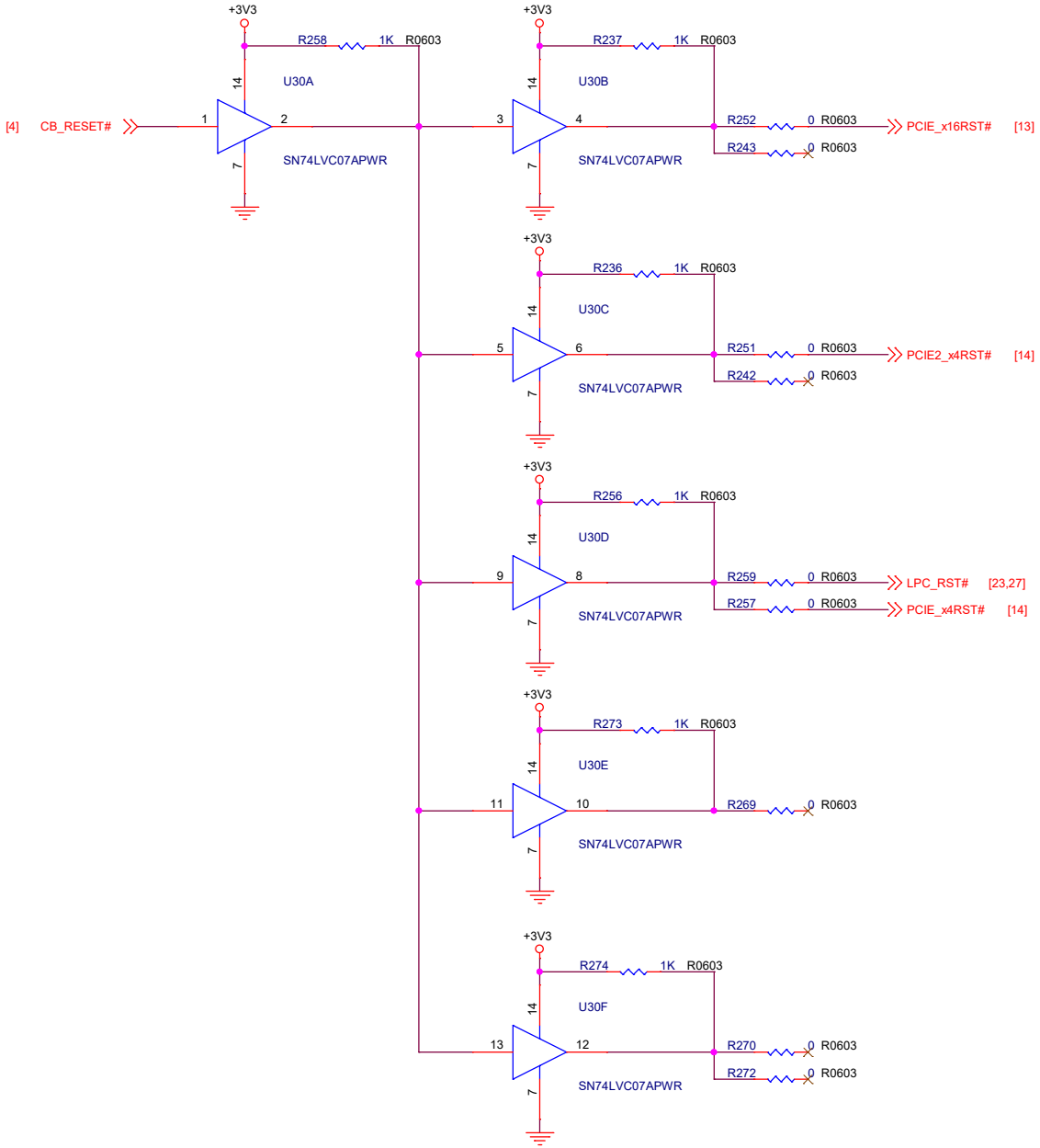


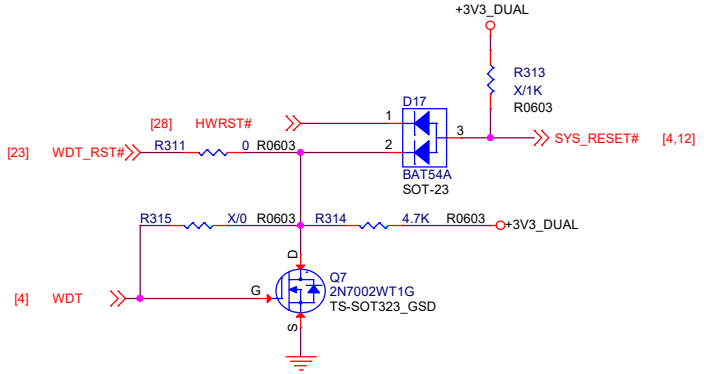


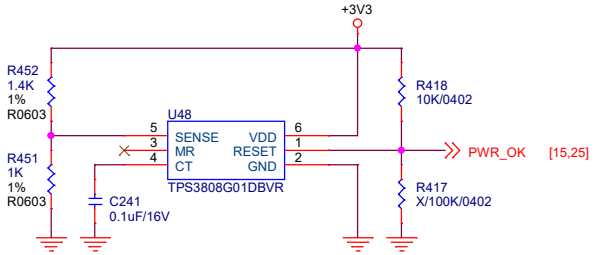




AAEON an ASUS assoc. co.	Title: **CANBUS / SMBUS / I2C**	
Size: B	Document Number: **ECB-920A**	Rev: **A1.1_0_0**
Date: *Thursday, May 14, 2020*	Sheet: **21** of **32**	



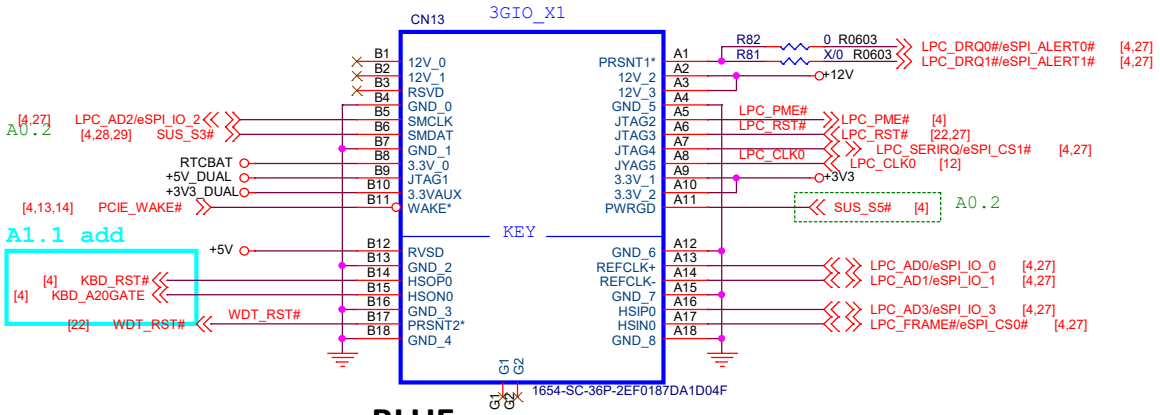




$$C_T\,(\mathrm{nF}) = \left[t_D\,(\mathrm{s}) - 0.5 \times 10^{-3}\,(\mathrm{s})\right] \times 175$$

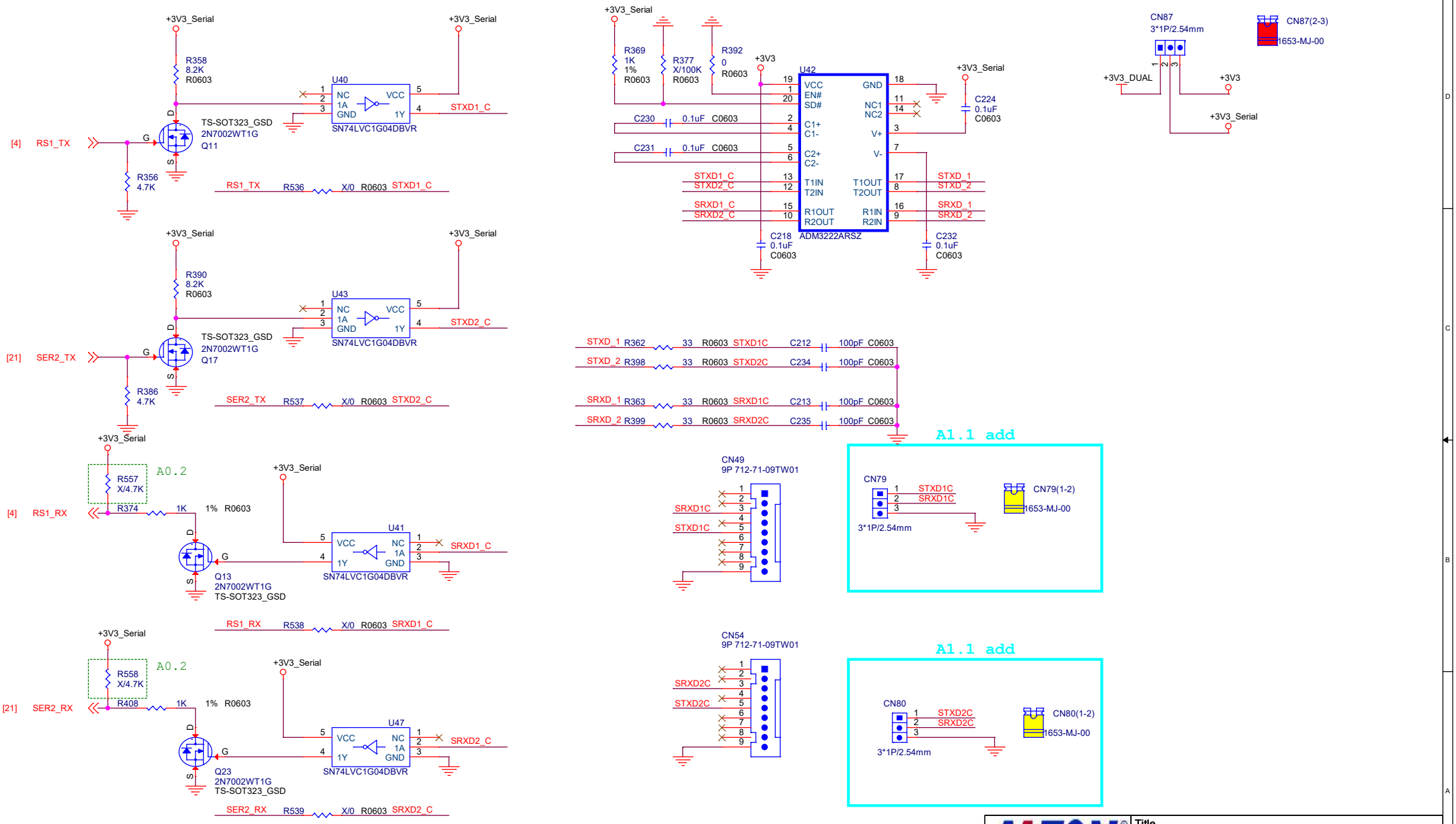
AAEON an ASUS assoc. co.	Title: **RESET + PWROK**	
Size: **B**	Document Number: **ECB-920A**	Rev: **A1.1_0_0**
Date: *Thursday, May 14, 2020*	Sheet: **22** of **32**	

SIO Slot



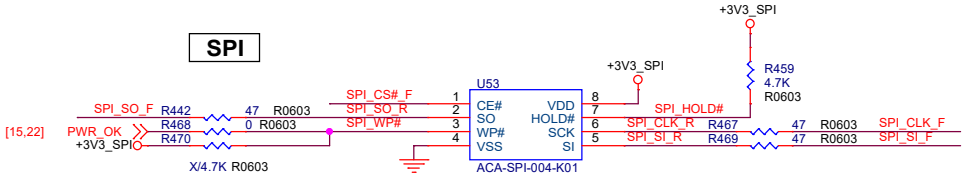
BLUE

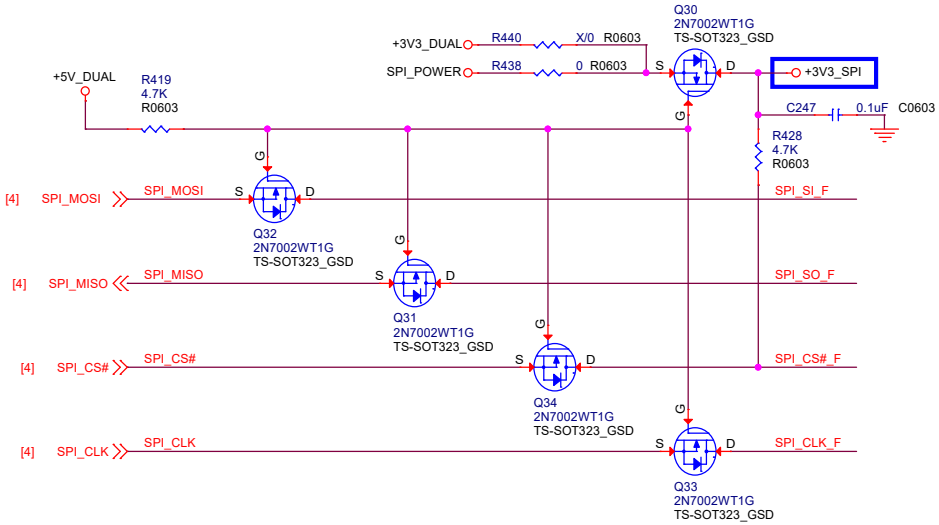
AAEON an ASUS assoc. co.	Title: **SIO Card Slot**	
Size: B	Document Number: **ECB-920A**	Rev: **A1.1_0_0**
Date: *Thursday, May 14, 2020*	Sheet: **23** of **32**	

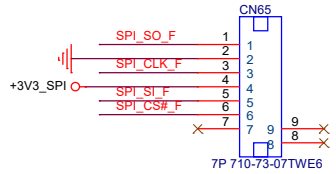


Title: **Serial port**		
Size: B	Document Number: **ECB-920A**	Rev: **A1.1_0_0**
Date: *Thursday, May 14, 2020*	Sheet: **24** of **32**	

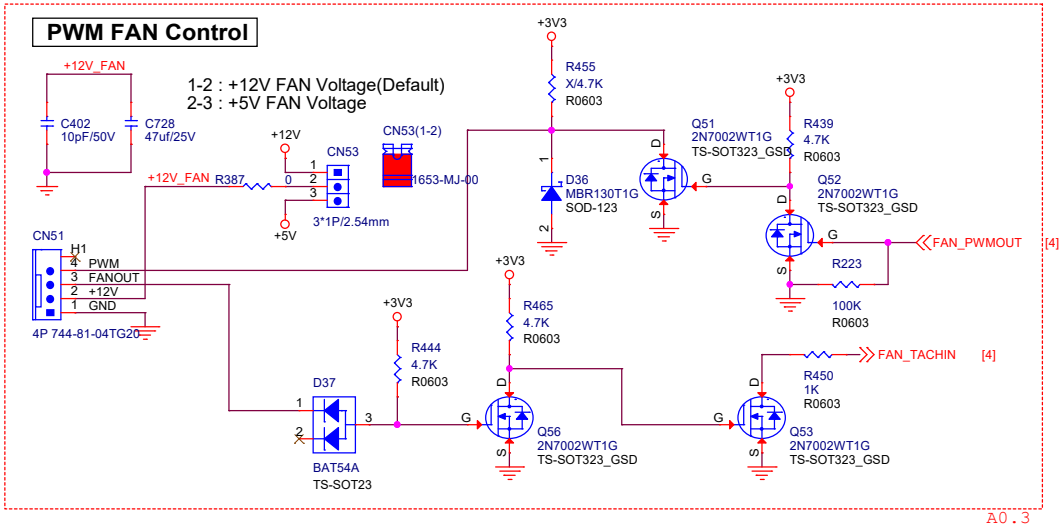
SPI



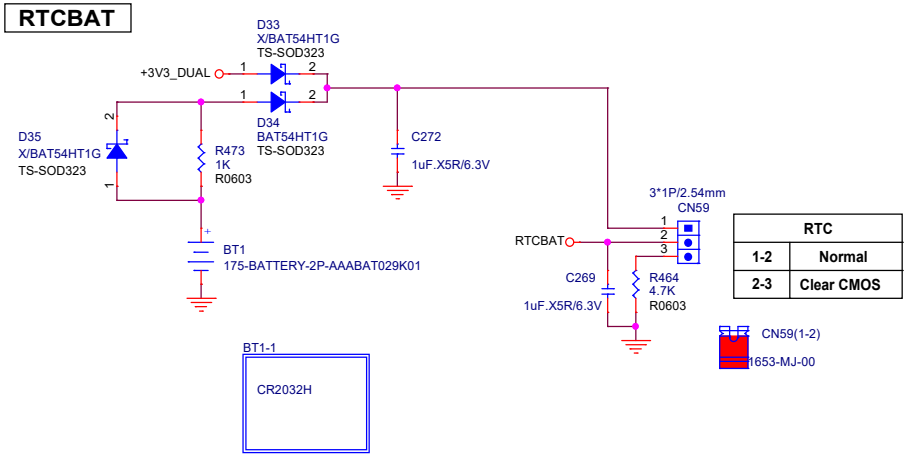




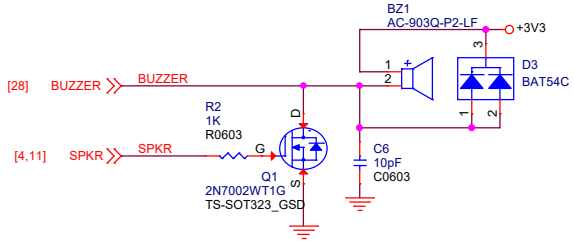
PWM FAN Control



RTCBAT



Buzzer



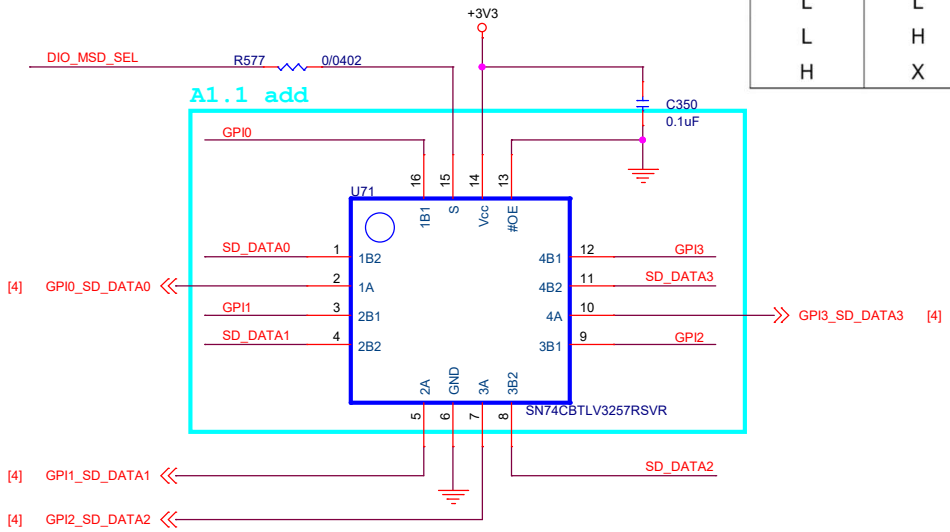
AAEON an ASUS assoc. co.

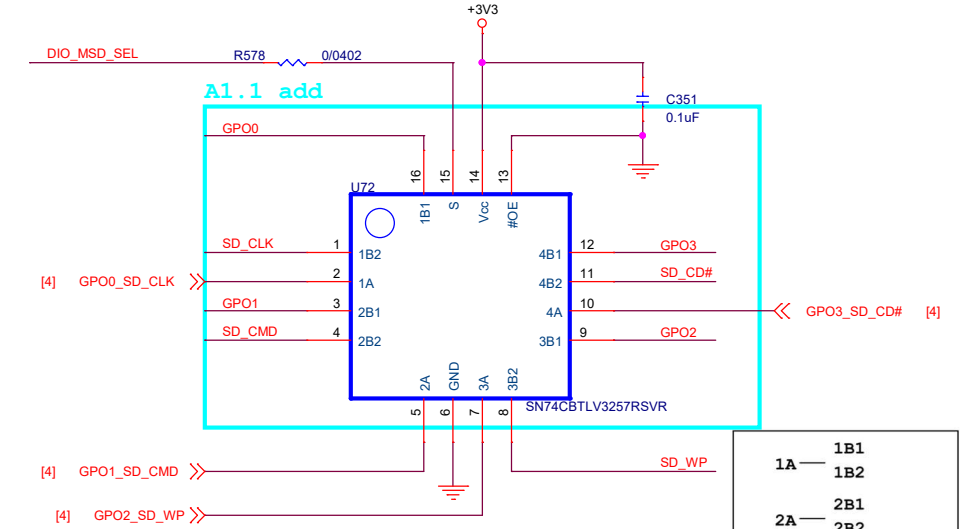
Title: SPI + Buzzer + FAN + RTC		
Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
Date: Thursday, May 14, 2020	Sheet: 25 of 32	

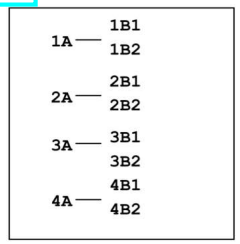
DIO/ Micro SD

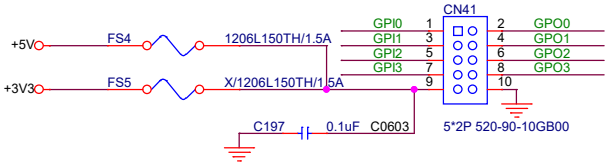
Digital I/O

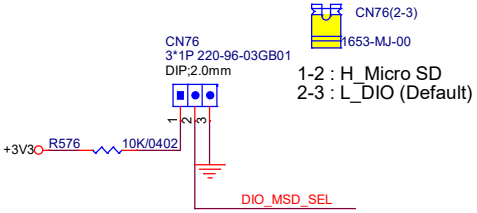
INPUTS		FUNCTION
$\overline{OE}$	S	
L	L	A port = B1 port
L	H	A port = B2 port
H	X	Disconnect

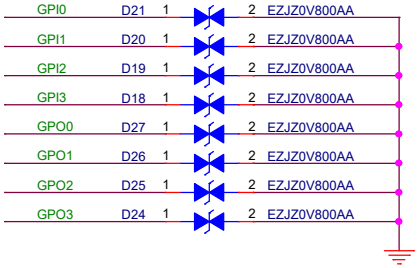


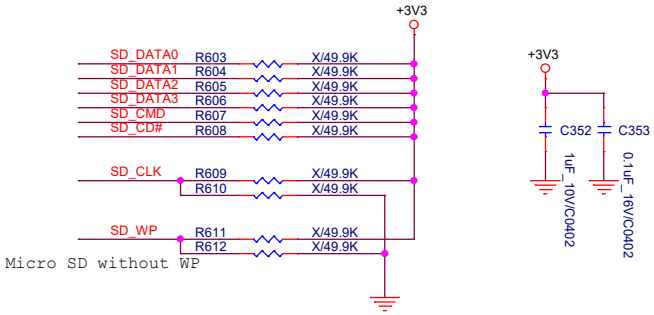


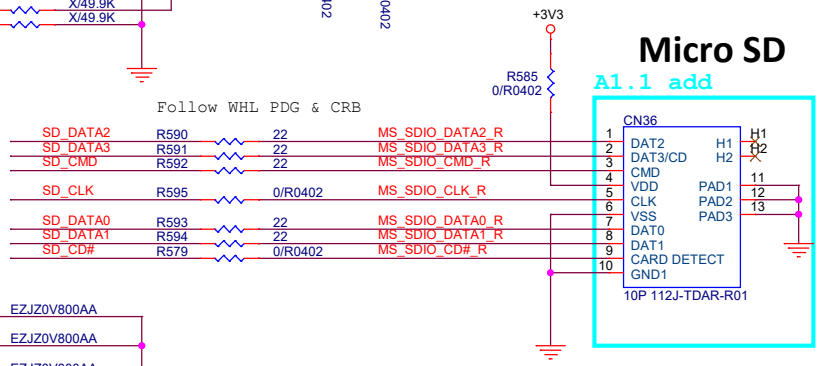


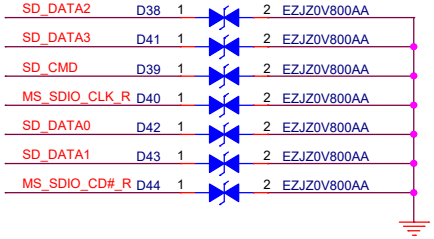








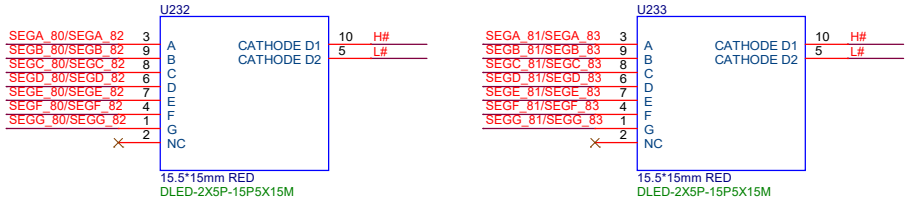




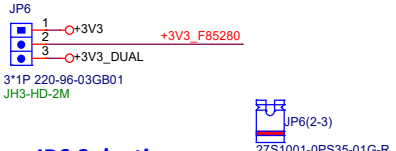
AAEON an ASUS assoc. co.

Title: DIO/ Micro SD		
Size: B	Document Number: ECB-920A	Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*	Sheet: 26 of 32	

LPC/eSPI Debug Card

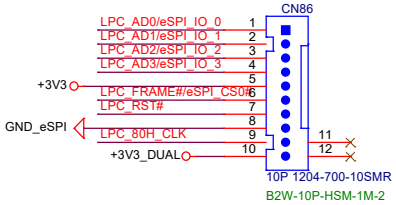


eSPI Connector

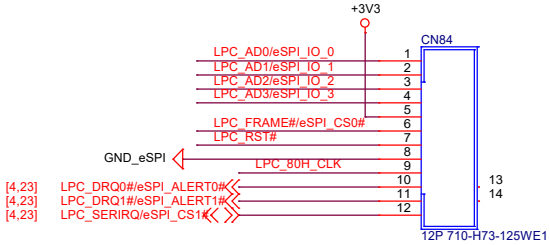


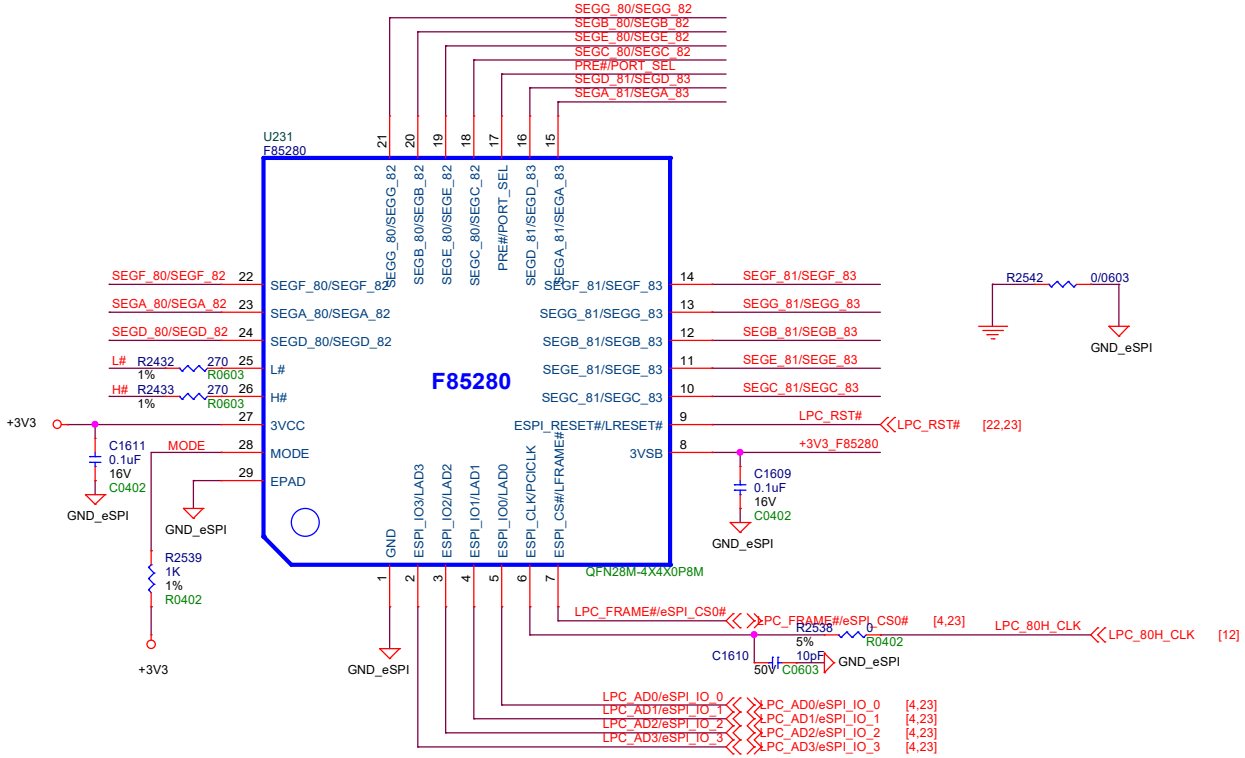
JP6 Selection

JP6	Function
1-2	LPC
2-3 (Default)	eSPI

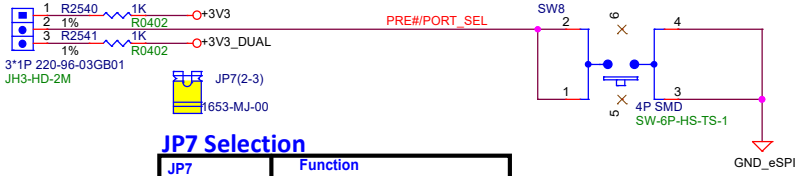


LPC Connector





Port Selection



JP7 Selection

JP7	Function
1-2	82/83 Port
2-3 (Default)	80/81 Port

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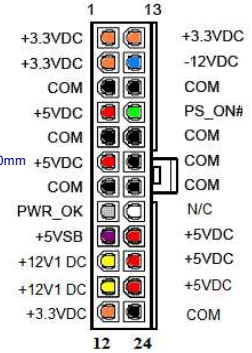
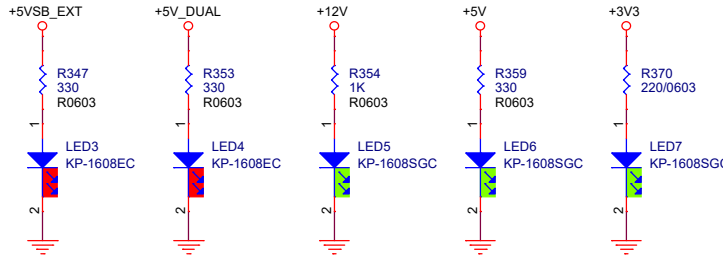
Title: F85280 LPC+eSPI 80H		
Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*	Sheet: 27 of 32	

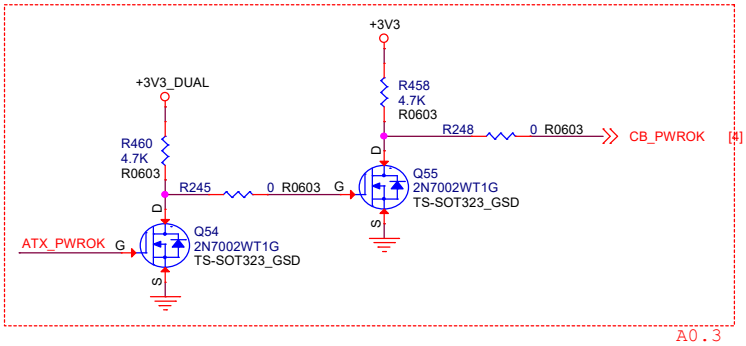
1-3 , 2-4 : For ATX supply controlled (Default)
3-5 , 4-6 : For ATX supply in AT mode

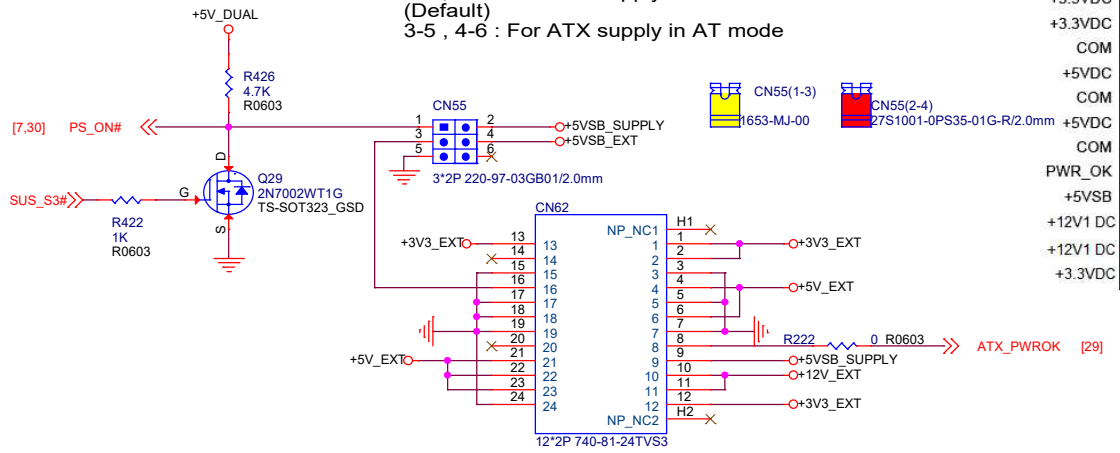
POWER CONNECTOR

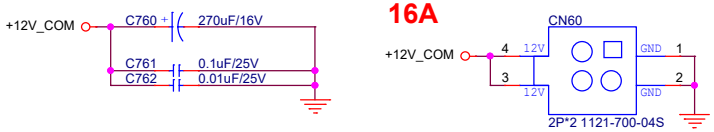


POWER LED

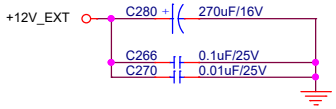


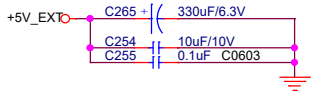


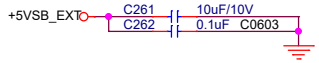


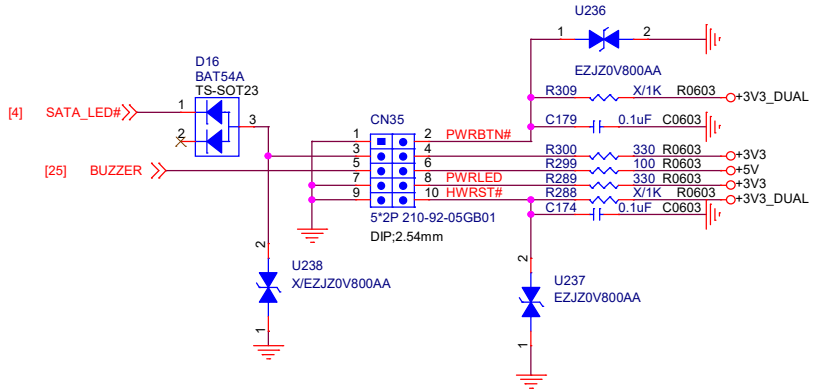


16A

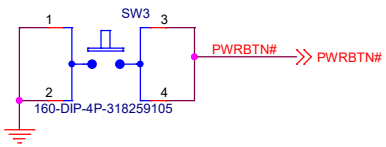




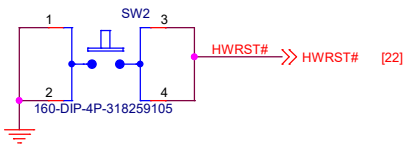


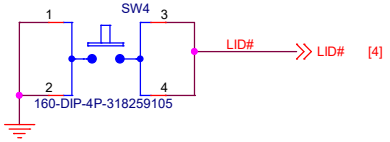


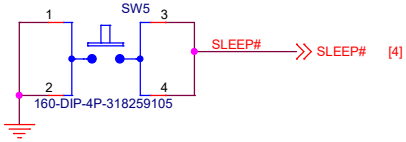
POWER BUTTON



RESET BUTTON







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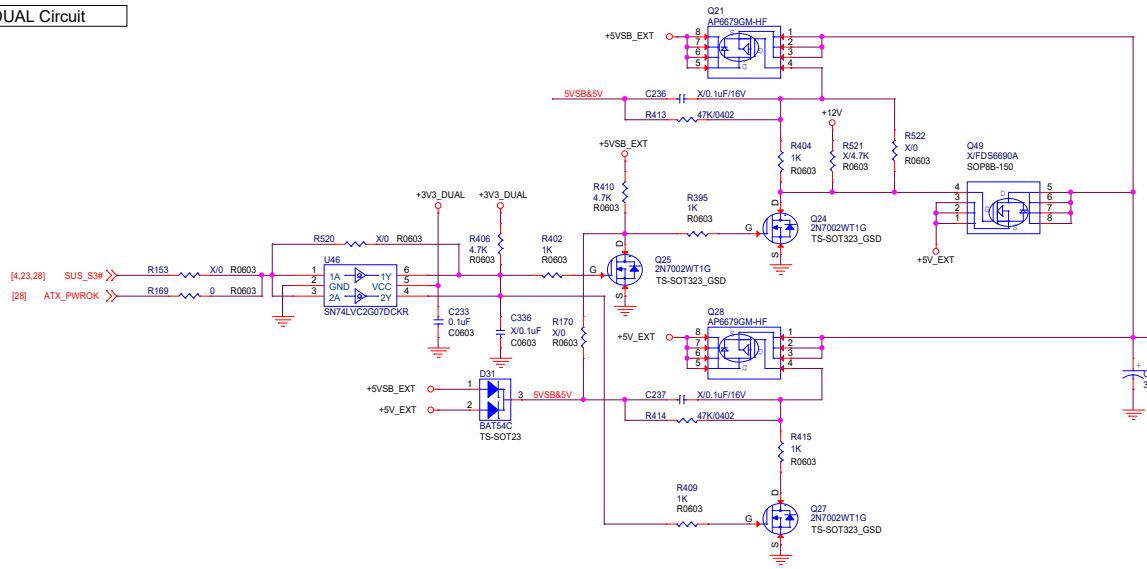
Title: **ATX Power + Front Panel**

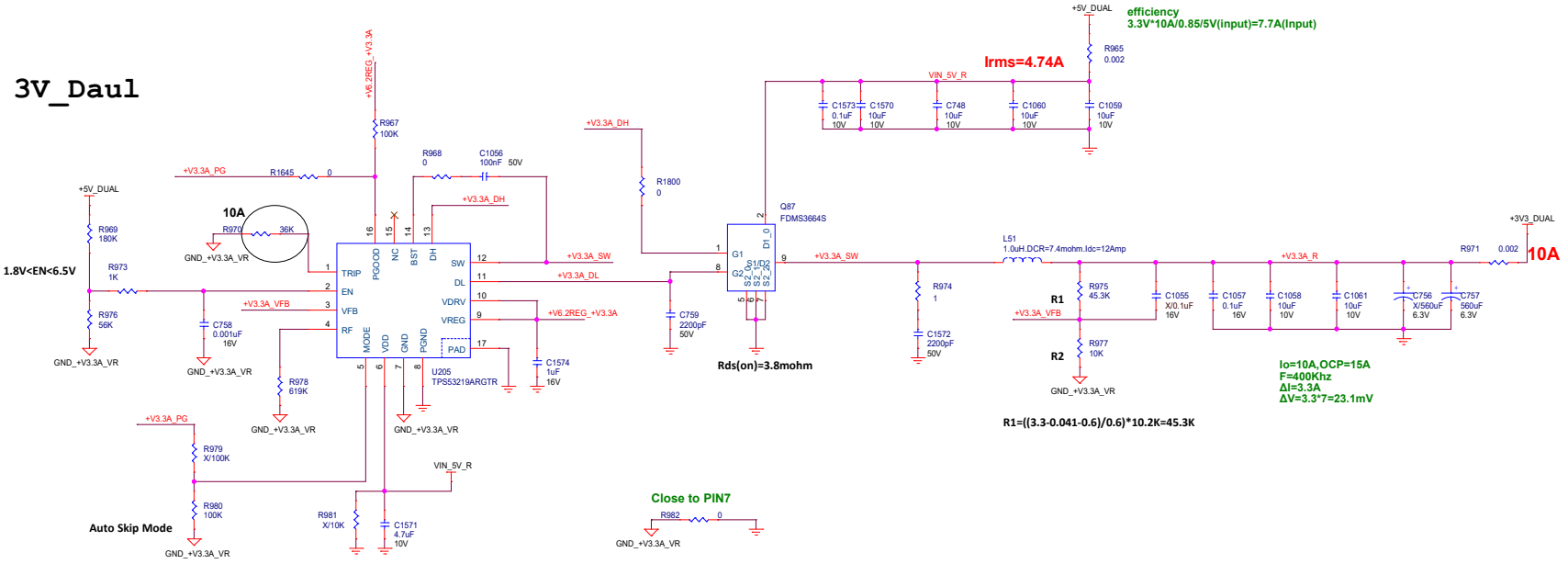
Size	Document Number	Rev:
B	ECB-920A	A1.1_0_0

Date: *Thursday, May 14, 2020* Sheet: **28** of **32**

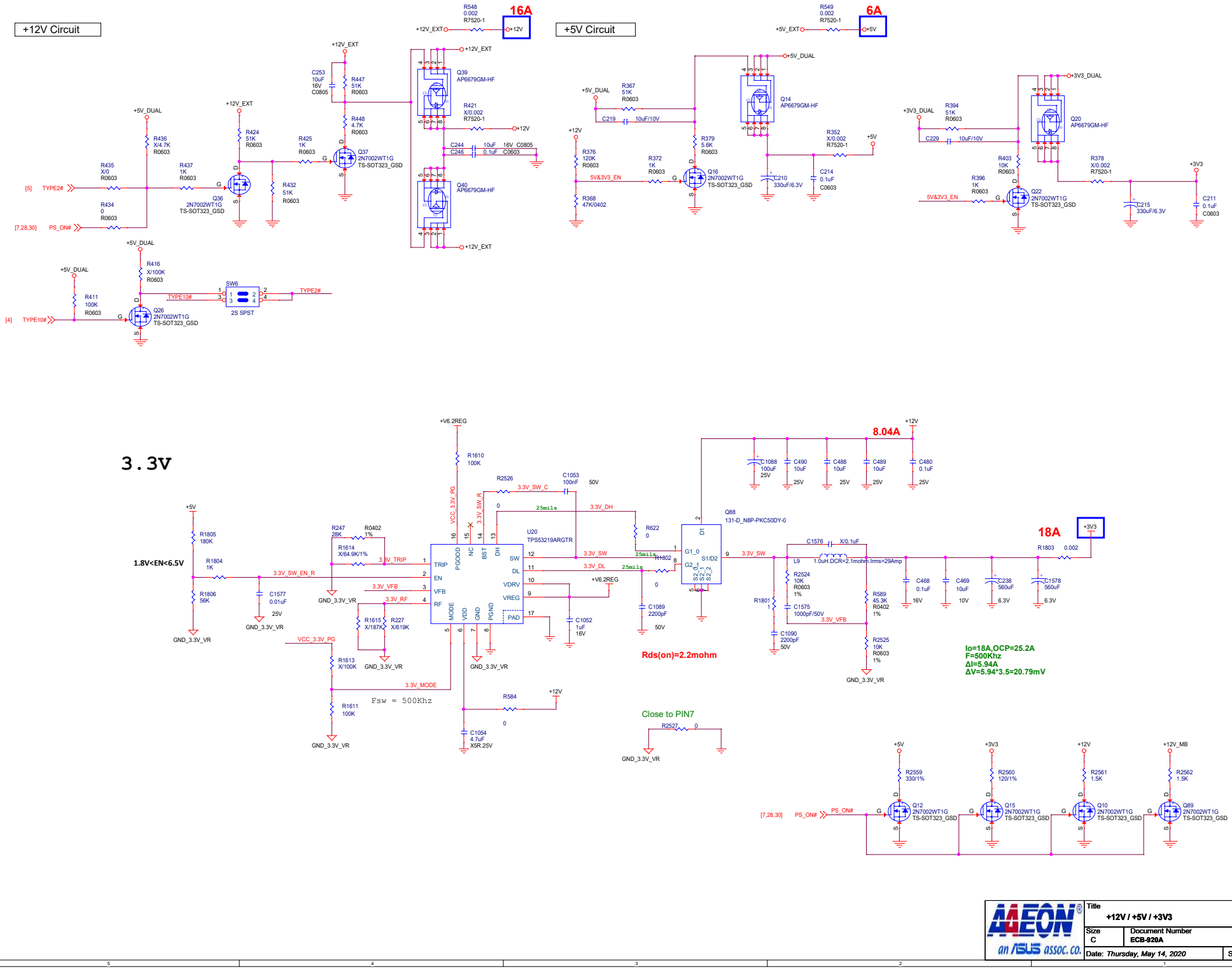
+5V_DUAL Circuit



3V_Daul



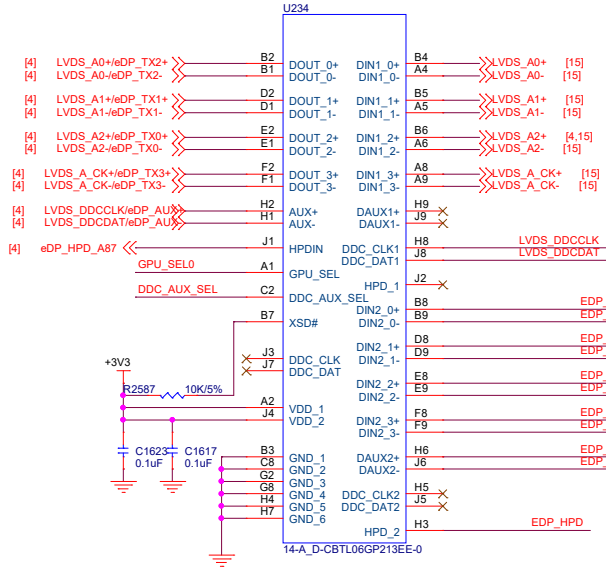
AAEON an ASUS assoc. co.	Title: +5V_DUAL / +3V3_DUAL		
	Size: C	Document Number: ECB-920A	Rev: A1.1_0_0
	Date: Thursday, May 14, 2020	Sheet: 29 of 32	

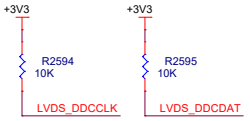


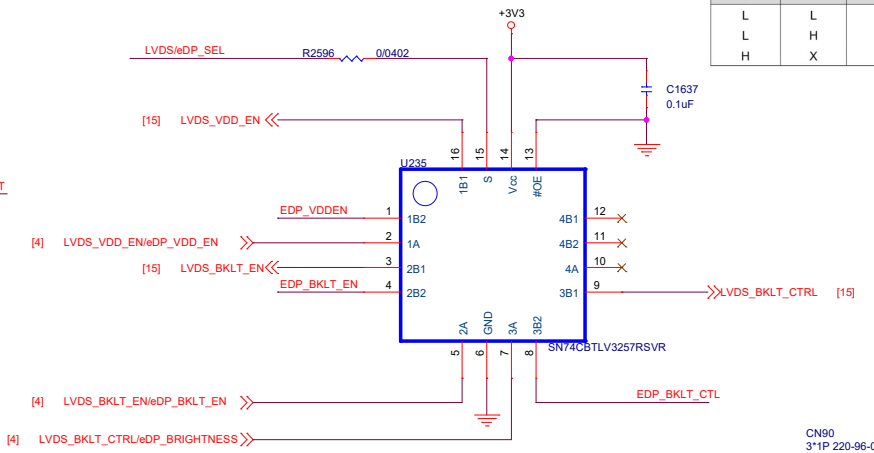
AAEON an ASUS assoc. co.

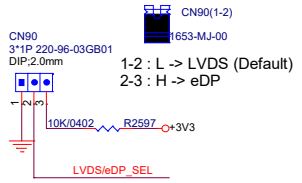
Title: +12V / +5V / +3V3		
Size: C	Document Number: ECB-920A	Rev: A1.1_0_0
Date: Thursday, May 14, 2020		Sheet: 30 of 32

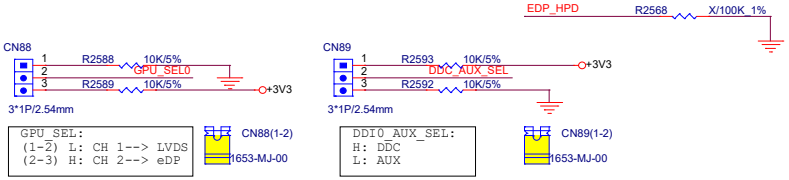
INPUTS		FUNCTION
$\overline{OE}$	S	
L	L	A port = B1 port
L	H	A port = B2 port
H	X	Disconnect

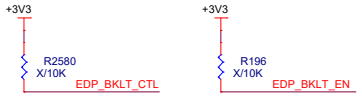


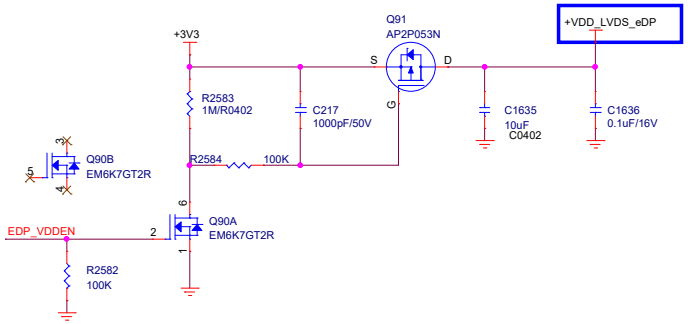


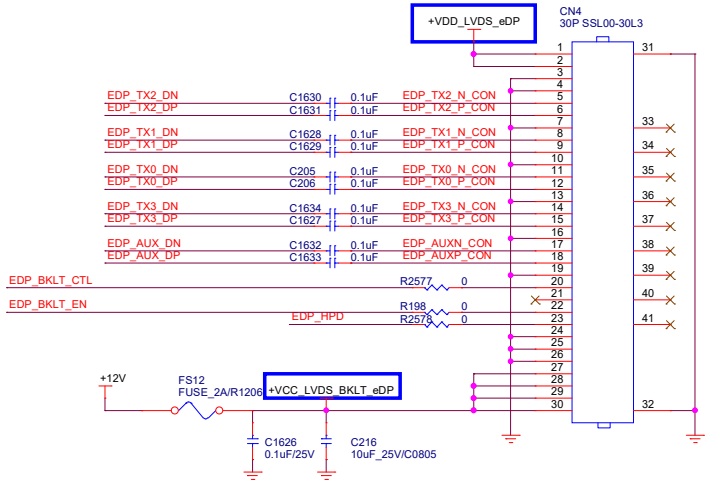












AAEON an ASUS assoc. co.

Title: eDP+eDP/LVDS Switch		
Size: Custom	Document Number: ECB-920A	Rev: A1.1_0_0
Date: *Thursday, May 14, 2020*	Sheet: 31 of 32	

Change History

Item	Date	Revision	Description	Page	Design By	Approve By
1	2012/12/03	A0.1	First Release.	1 ~ 28	Ronald Lin	Richard Wu
2	2013/03/25	A0.2	1.Add U59,C312,R559,CN67 for USB 2.0 Switch.	4	Ronald Lin	Richard Wu
			1.Add U60,C314,C313,C315,R317,R316,R312,R310,R517,R331,R519,R518,R224,R223,R330,CN22 for SATA Switch.	7		
			1.Codec Power change from +5V to +5V_DUAL.	8		
			1.Add Q50,R561. 2.Change Q47 to AP2305GN.	10		
			1.Change DP Port AC CAP from 0 ohm to 0.1uF.	14		
			1.Change SIO Slot pin define and add SUS_S3#,SUS_S5 signal.	17		
			1.ADD R557,R558.	18		
3	2013/07/23	A0.3	1.Chang U25 from ICS9DB108BFLF to 9DB833AFLF. 2.Add Q57,R532.	10	Ronald Lin	Richard Wu
			1.Remove C324,C325,C334,C335. 2.Add R562,R563,R564,R565.	14		
			1.Change R44,R220,R221,R225 from 1K to 100K. 2.Add R50,R179,R182,R183,R184,R185,R186,R187,R188,R200,R201,R204,R205,R206,R207,R208	3		
			1.Add Q54,Q55,R460,R245,R458,R248.	20		
			1.Reserve R277,R515.	8		
			1.Change DDI1 connector to DP connector.	13		
			1.Add U68,U69,C193,C273,C274,C276,R430,R431.	15		
			1.Change DDI0 connector to DP connector. 2.Add R210.	24		
			1.Modify smart FAN circuit.	19		
			1.Add R575.	12		
3	2013/10/25	A1.0	1.Change R150 connect to B31 of CN19.	9	Ronald Lin	Richard Wu

Item	Date	Revision	Description	Page	Design By	Approve By
1	2020/02/12	A1.1_0_0	Add U211, U212, U213 AUX/DDC switch for DP retimer	5	JeffChang	
2	2020/02/12	A1.1_0_0	Add U229, U230 USB3.1 GEN2 redriver	6	JeffChang	
3	2020/02/13	A1.1_0_0	change CN6 RJ45USB to USB3.1 GEN2	7	JeffChang	
4	2020/02/13	A1.1_0_0	change CN26 USB port to USB3.1 GEN2	8	JeffChang	
5	2020/02/13	A1.1_0_0	CN78 change to quad port	9	JeffChang	
6	2020/02/13	A1.1_0_0	upgrade U25 Clock Buffer to GEN4 speed	12	JeffChang	
7	2020/02/13	A1.1_0_0	PCIex1*4 change to PCIex4	14	JeffChang	
8	2020/02/13	A1.1_0_0	Add CN85 LVDS_A3+ & eDP HPD jumper	15	JeffChang	
9	2020/02/13	A1.1_0_0	Add R613 for CRT Always On function disable	16	JeffChang	
10	2020/02/13	A1.1_0_0	Add R613 for CRT Always On function disable	17~19	JeffChang	
11	2020/02/13	A1.1_0_0	Add U75, U76 DP HPD buffer	20	JeffChang	
12	2020/02/13	A1.1_0_0	CN13 Add KB_RST# & A20GATE	23	JeffChang	
13	2020/02/13	A1.1_0_0	Add CN79, CN80 for COM Port TX/RX aways short	24	JeffChang	
14	2020/02/13	A1.1_0_0	Debug Code change to LPC/eSPI interface	27	JeffChang	
15	2020/03/24	A1.1_0_0	Add eDP & eDP/LVDS switch	31	JeffChang	

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Title: History

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

Date: *Thursday, May 14, 2020* Sheet: 32 of 32