

SHEET NO.	SHEET NAME
1	TABLE OF CONTENTS
2	SYSTEM BLOCK DIAGRAM
3	USB TYPE-C BLOCK DIAGRAM
4	POWER TREE
5	I2C MAP
6	FT4 MEMORY/PCIE
7	FT4 eDP/CLK/SVI2/JTAG/MISC
8	FT4 SATA/USB/SPI/XTAL
9	FT4 GEVENT/GPIO/SD/AZ
10	FT4 PWR
11	FT4 PPVAR DECOUPLING/GND
12	DDR4 CH00/01
13	DDR4 CH00/11
14	SPI ROM, H1
15	SERVO DEBUG
16	eMMC/SD
17	AUDIO
18	BASE: KB, TP, NFC, FP, PEN
19	LID: eDP, CAM, TOUCH, SENSOR
20	SENSOR: GYRO, LID, LED
21	WIFI
22	EC-NPCX7
23	USB C0
24	USB A CONNECTORS
25	USB3 HUB
26	POWER - BATTERY CHARGER
27	POWER - FT4 CORE
28	POWER - FT4 CORE SWITCHES
29	POWER - DDR4
30	POWER - 1.8V, 3.3V, 5V

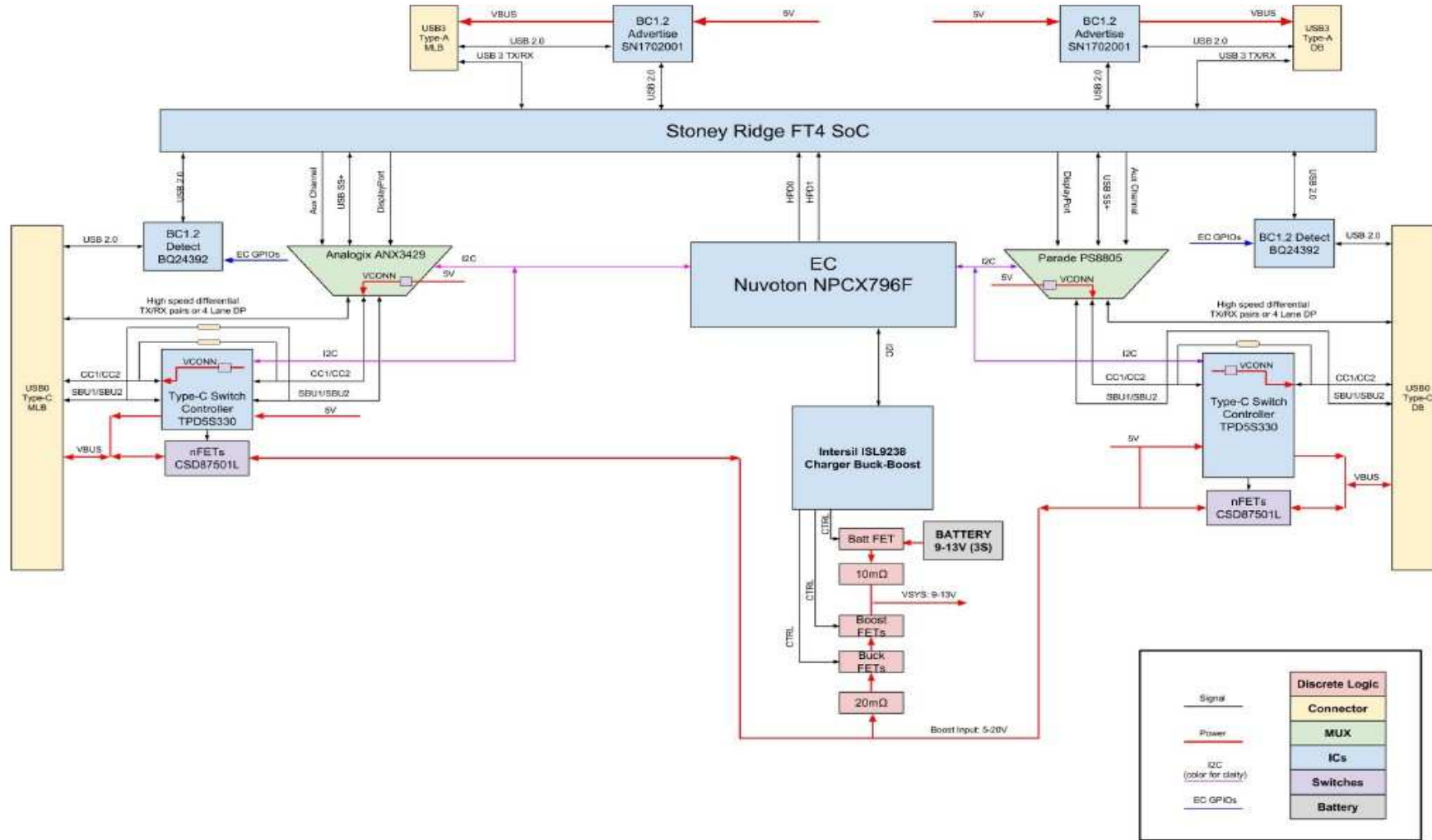
[illegible]

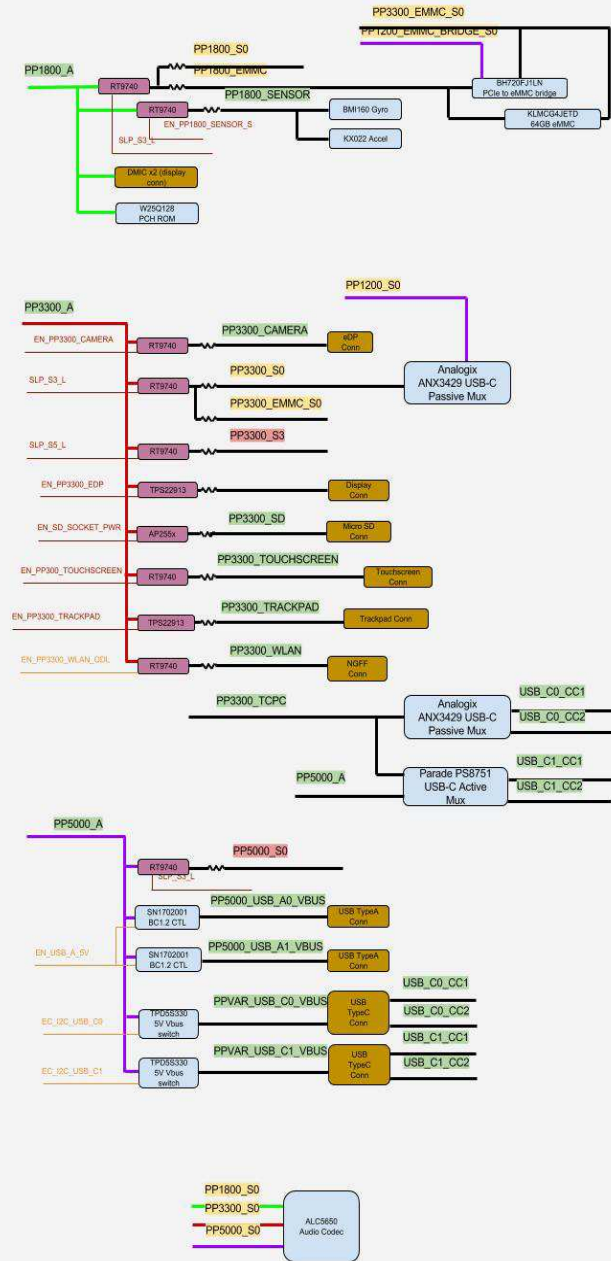
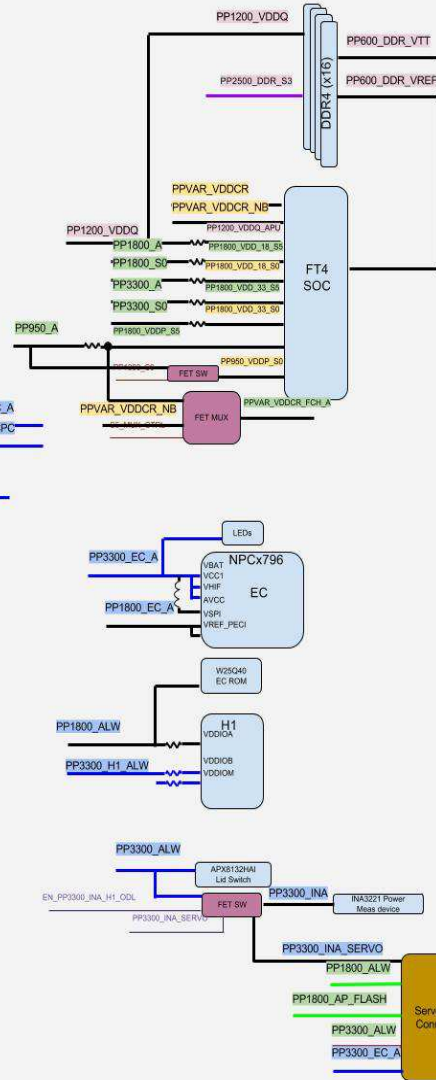
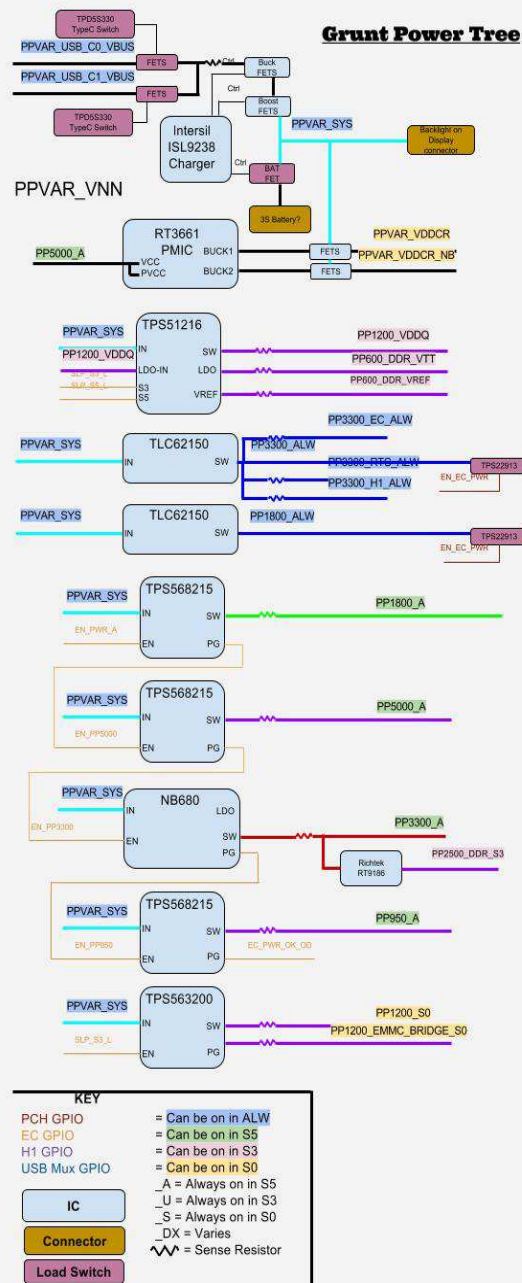
Size	Document Number	Rev
	<b>TABLE OF CONTENTS</b>	2A
Date:	Wednesday, November 14, 2018	Sheet 1 of 35



# Grunt USB Block Diagram

Accurate: 2017/10/11





# Grunt I2C Map

2017-10-12

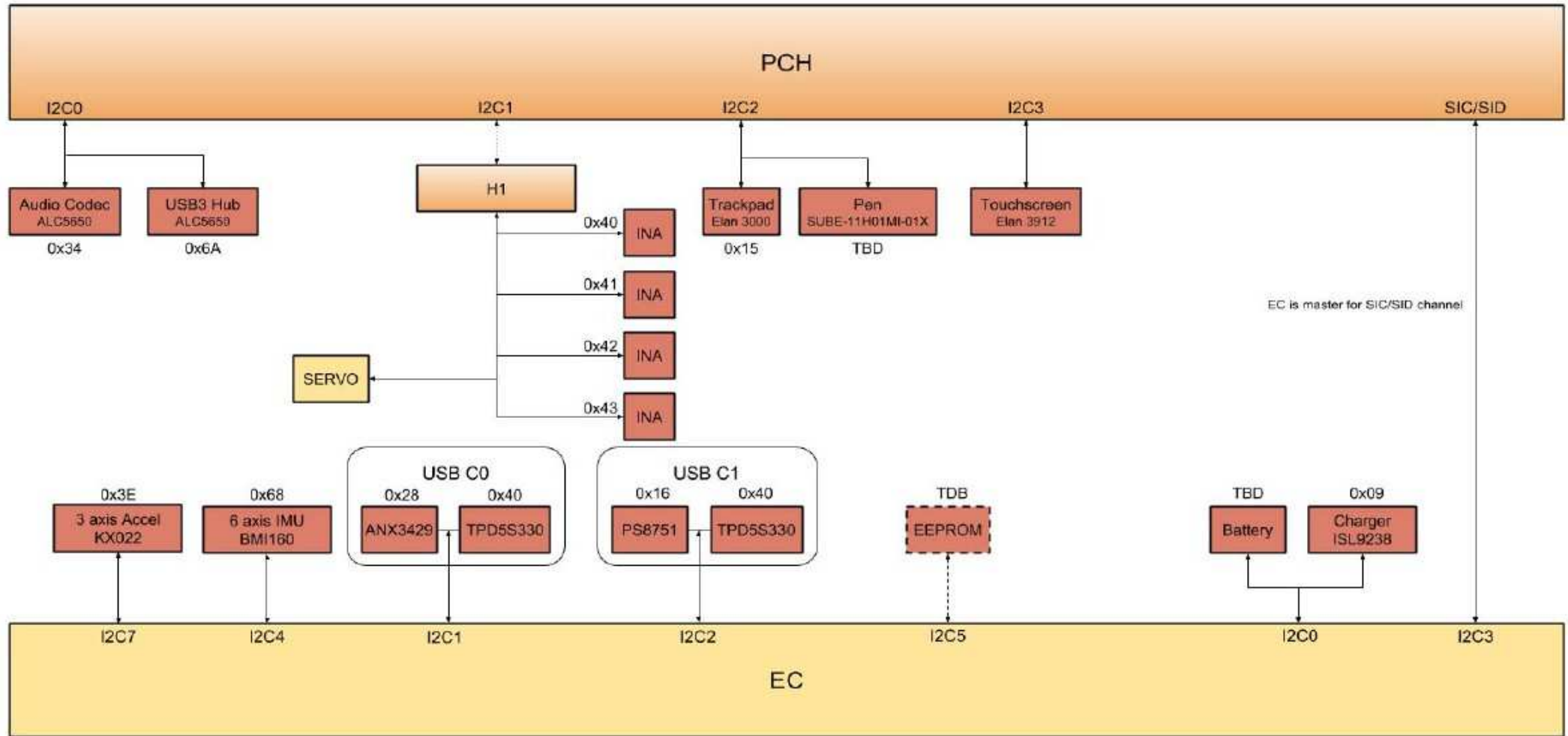
## LEGEND

I2C Master & Slave

I2C Master

I2C Slaves

I2C addresses given in 7-bit form

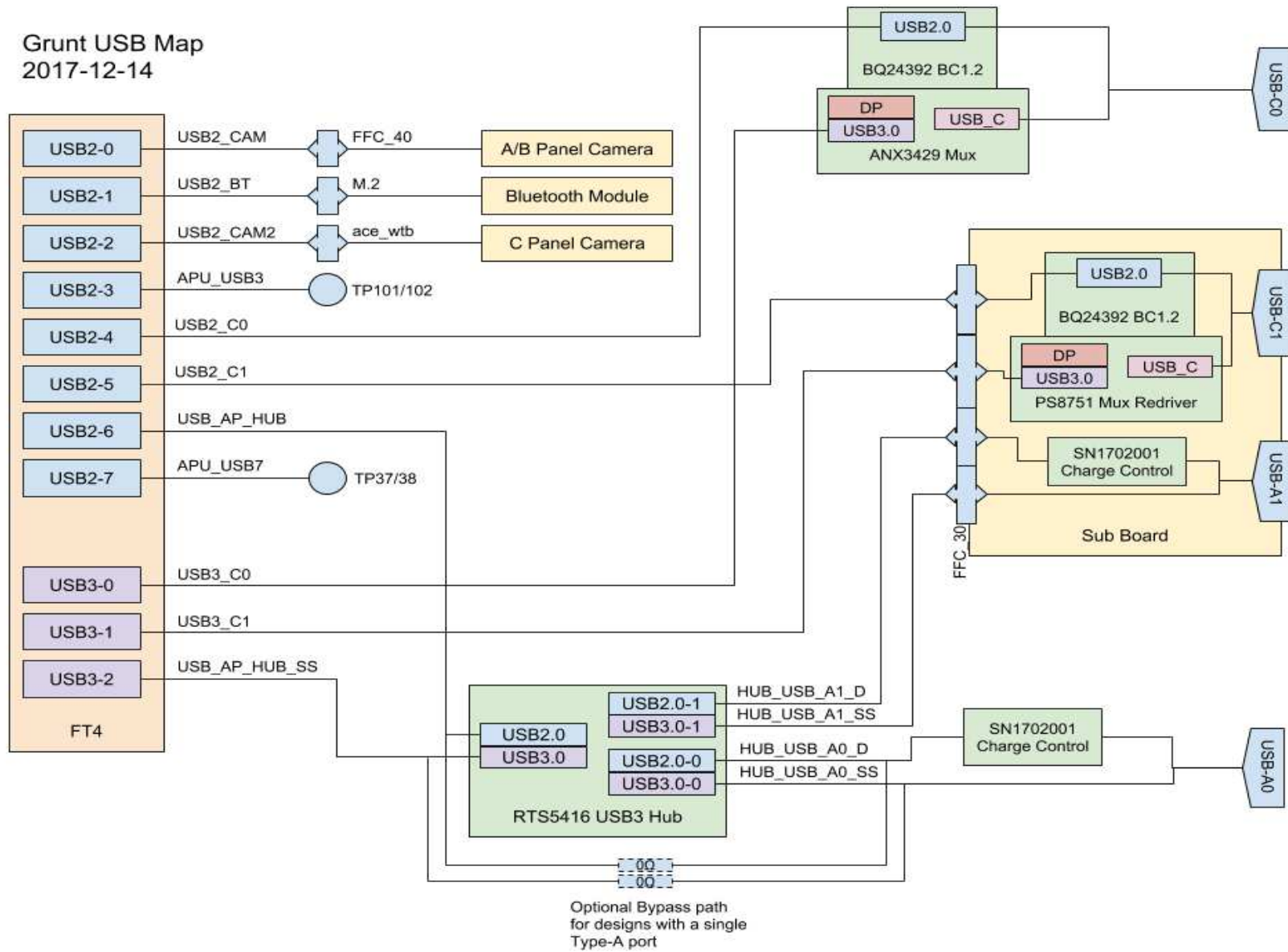


Quanta Computer Inc.

PROJECT : GRUNT

Size	Document Number	Rev
	I2C MAP	2A
Date:	Wednesday, November 14, 2018	Sheet 5 of 35

# Grunt USB Map 2017-12-14



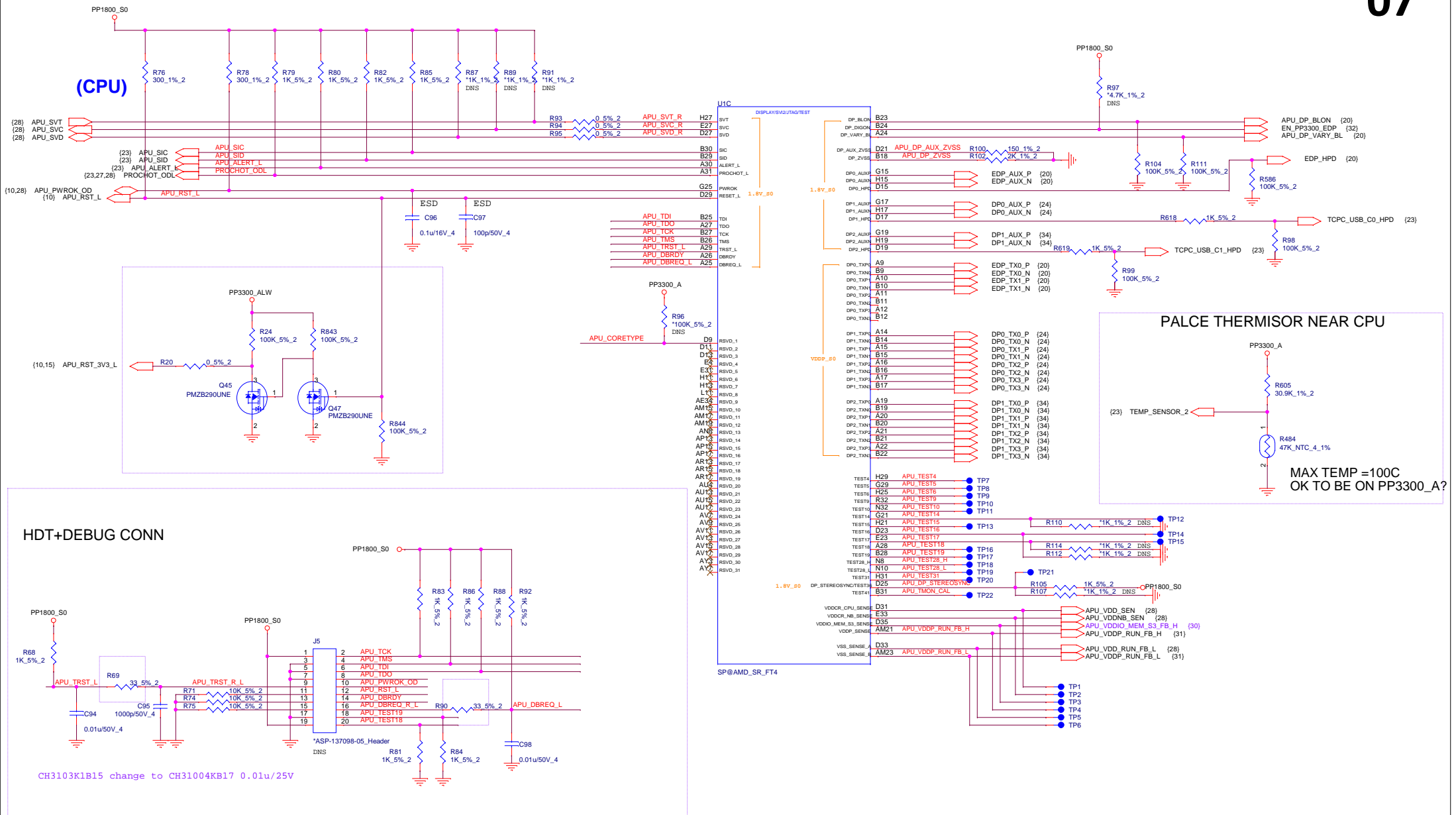
**Quanta Computer Inc.**

**PROJECT : GRUNT**

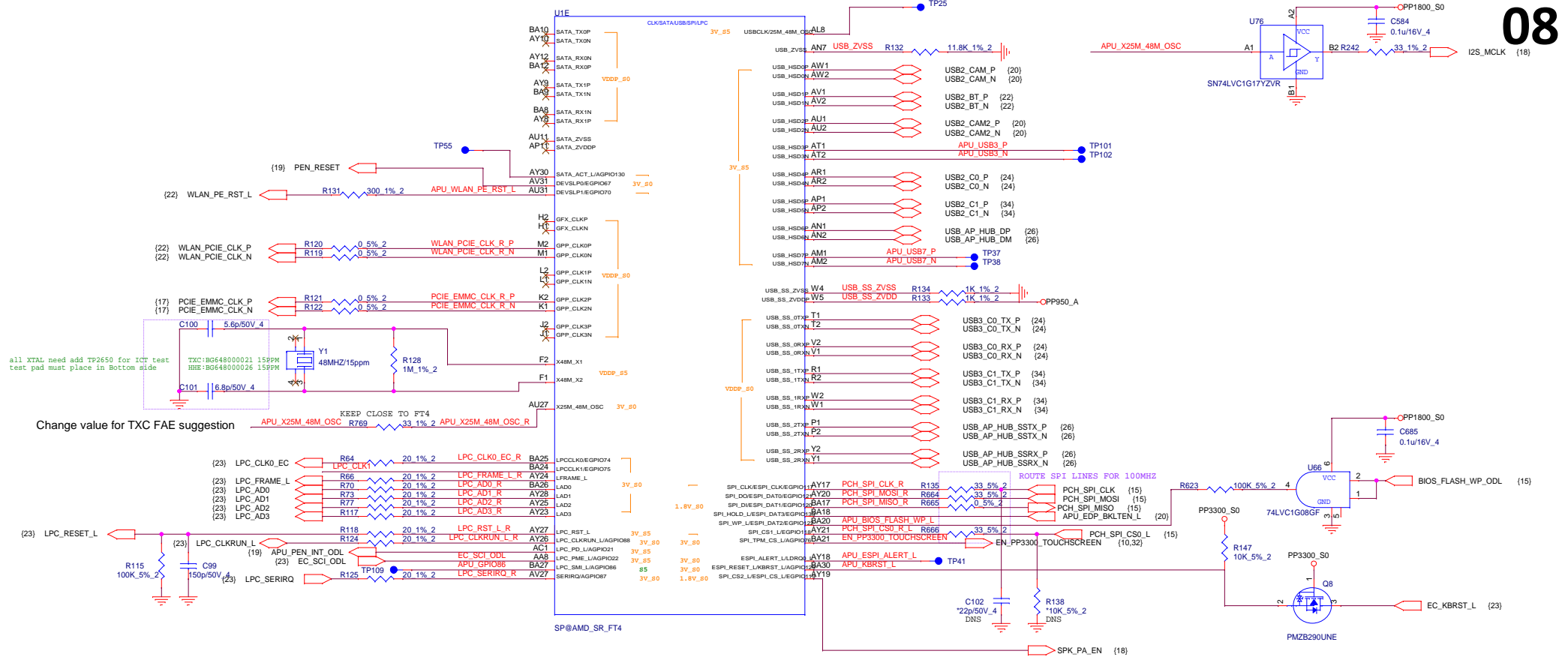
Size	Document Number	Rev
	<b>USB MAP</b>	2A
Date:	Wednesday, November 14, 2018	Sheet 6 of 35



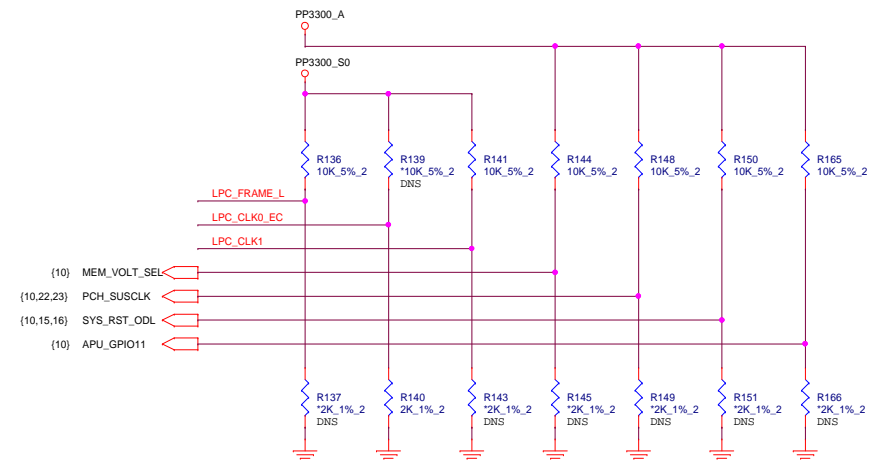


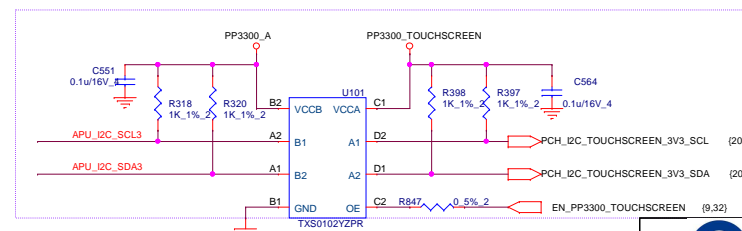


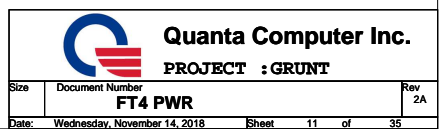


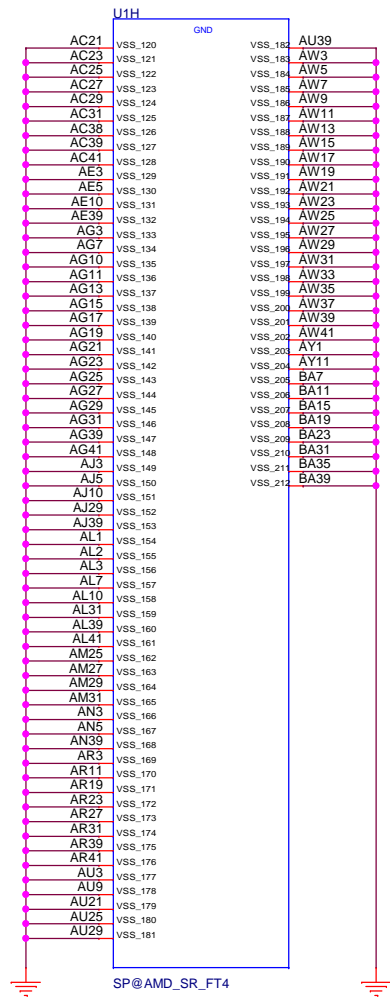
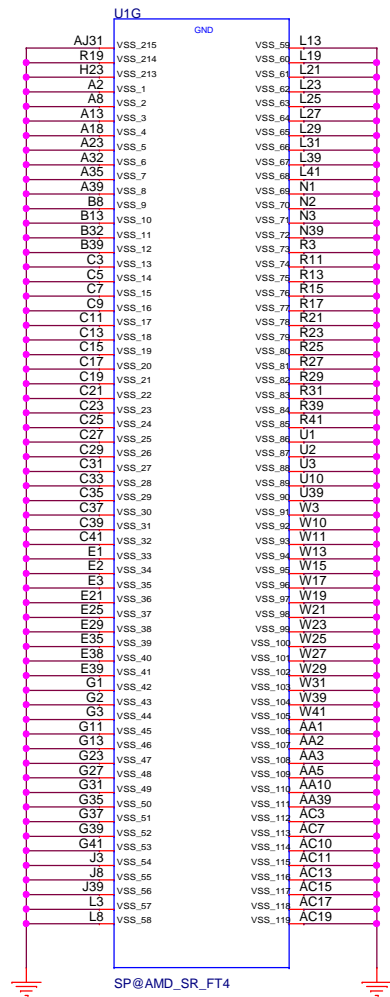


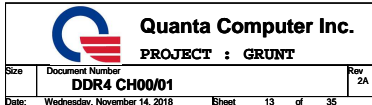
	LPC_FRAME#	LPC_CLK0	LPC_CLK1	MEM_VOLT_SEL/ ASPT03	SUSCLK/ RTOCLK <INT FU>	SYS_RST/ SYS_RESET <INT FU>	ACPI011/ BLINK <INT FU>	GEVENT2	<INT FU>
FU	SPI ROM (DEFAULT)	BOOT FAIL TIMER ENABLED	CLKGEN ENABLED (DEFAULT)	ENHANCED RESET LOGIC	COIN BATT ON BOARD (DEFAULT)	NORMAL RESET MODE (DEFAULT)	LDT_RST#/PG OUTPUT TO APU (DEFAULT)	1.8V SPI ROM (DEFAULT)	ENHANCED RESET
PD	LPC ROM	BOOT FAIL TIMER DISABLED (DEFAULT)	CLKGEN DISABLED	TRADITIONAL RESET LOGIC	COIN BATT NOT ON BOARD	SHORT RESET MODE	OUTPUT TO PADS	3.3V SPI ROM	TRADITIONAL RESET (DEFAULT)



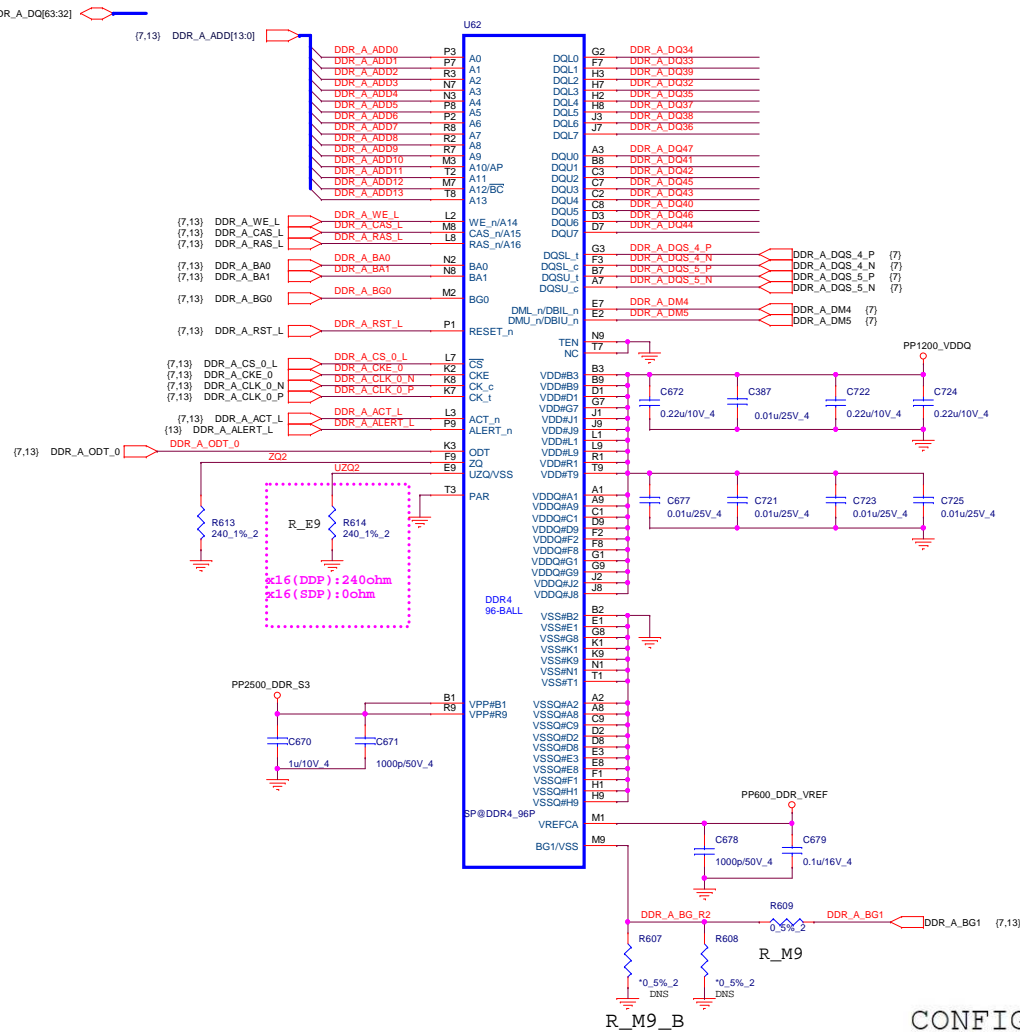








## On board memory(OBM)

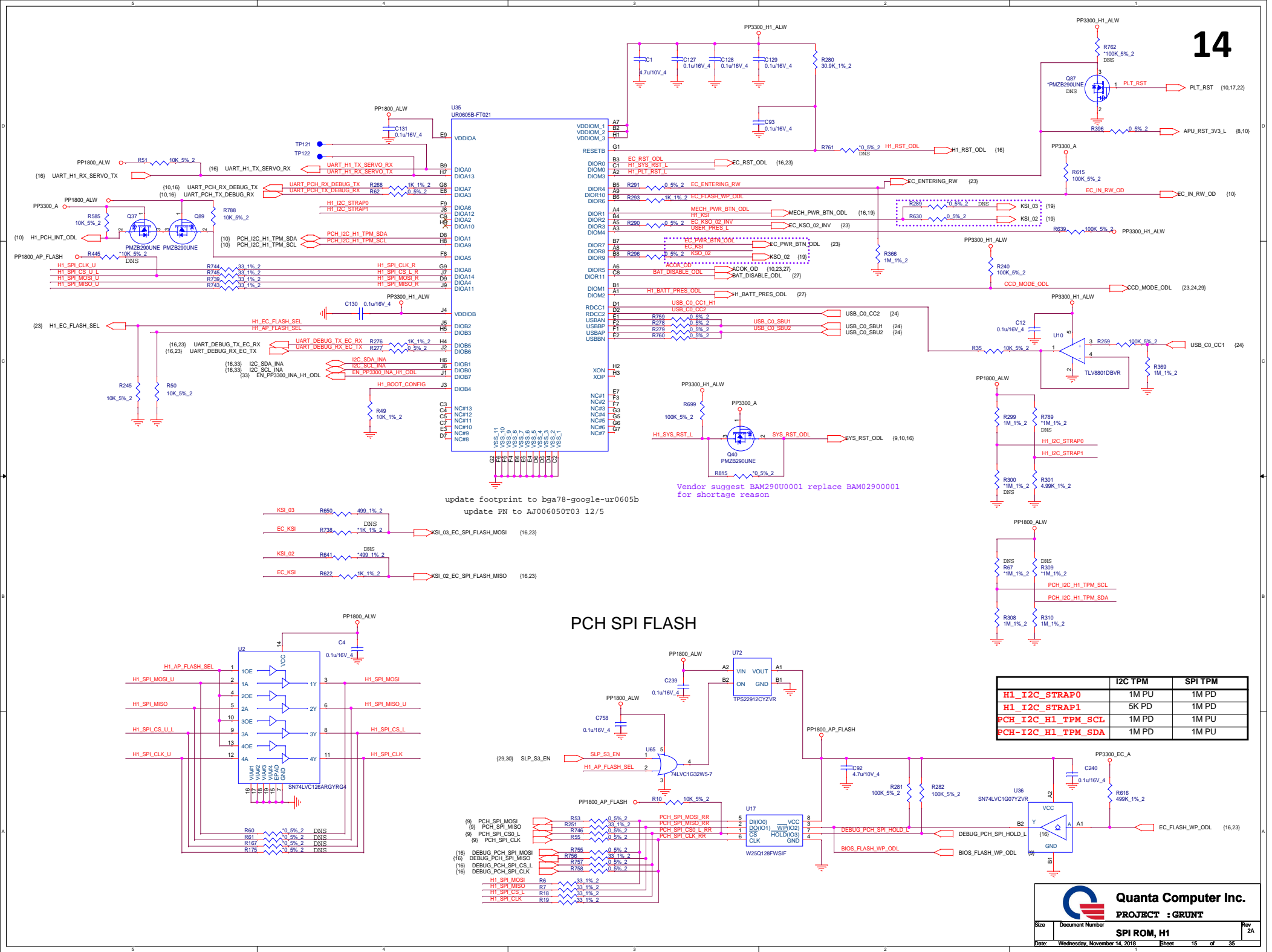


## CONFIG\_STRAP OPTIONS

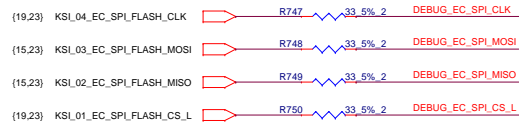
CONFIG_STRAP	4	3	2	1	DDR4 IC	DDR4 P/N
0	0	0	0	0	HYNIX 8GBIT	H5AN8G6NAFR-UHC
0	0	0	0	1	HYNIX 16GBIT DDP	H5ANAG6NAMR-UHC
0	0	0	1	0	MICRON 8GBIT	MT40A512M16JY-083E
0	0	0	1	1	MICRON 16GBIT DDP	MT40A1G16KNR-075E
0	0	1	0	0	SAMSUNG 8GBIT	K4A8G165WB-BCRC
0	0	1	0	1	SAMSUNG 16GBIT DDP	K4AAG165WB-MCRC
0	0	1	1	0		
0	0	1	1	1		
0	1	0	0	0		
0	1	0	0	1		
0	1	0	1	0		
0	1	0	1	1		
0	1	1	0	0		
0	1	1	0	1		
0	1	1	1	0		
0	1	1	1	1		

R\_M9\_B



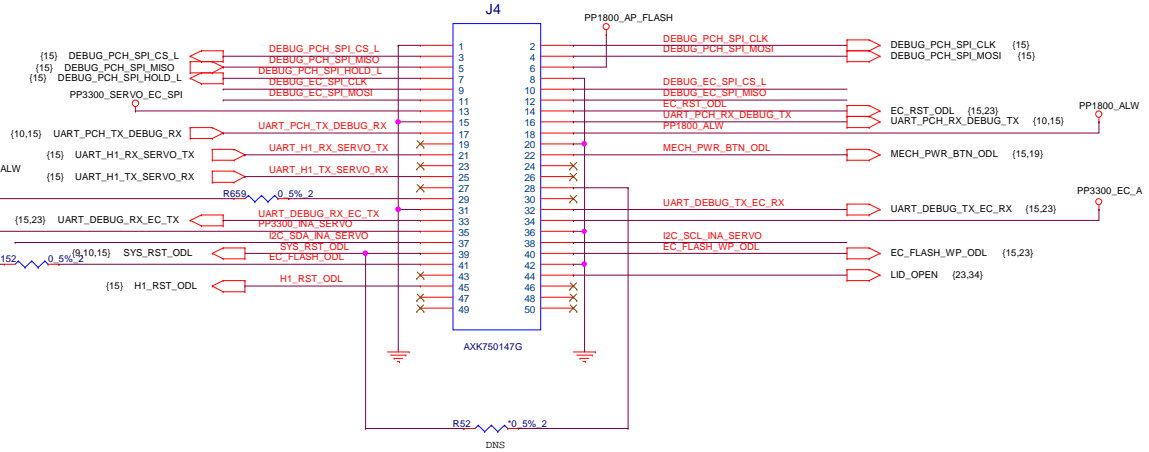


## SPI SERIES RESISTORS

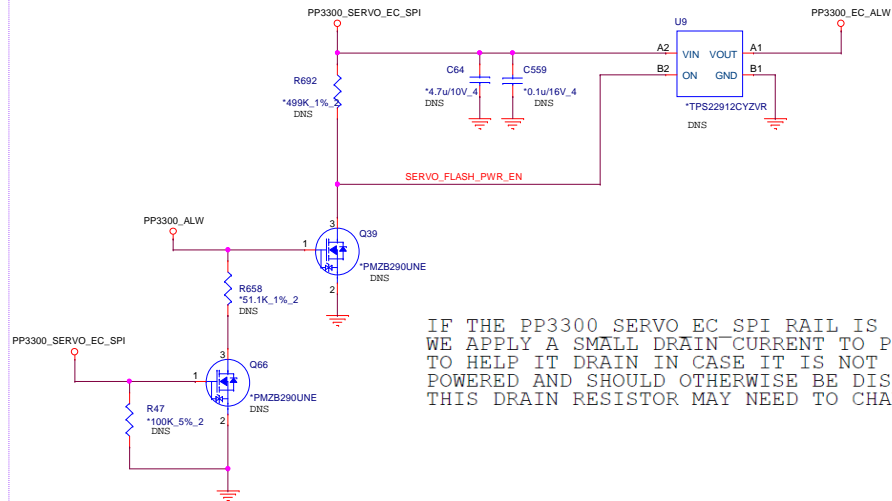


## SERVO HEADER

Place EC, PCH SPI FLASH, and SERVO as close as possible  
MP\_DNS



WIRE 0-OHM TO CONNECT SERVO WARM\_RST  
BUTTON TO WARM\_RST ON PCB

EC POWER FOR FLASHING  
THIS SECTION IS MP\_DNS

# 32 GB EMMC STORAGE

16

MAX BH720 OR FT4 EMMC SPEED: HS200

check PN

\*DS PIN NOT USED FOR HS200

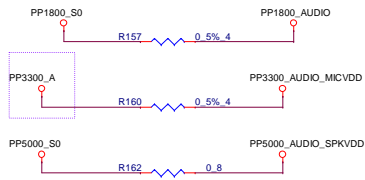
A1	NC#A1	NC#H0	H2
A2	NC#A2	NC#H1	H3
A3	NC#A3	NC#H2	H4
A4	NC#A4	NC#H3	H5
A5	NC#A5	NC#H4	H6
A6	NC#A6	NC#H5	H7
A7	NC#A7	NC#H6	H8
A8	NC#A8	NC#H7	H9
A9	NC#A9	NC#H8	H10
A10	NC#A10	NC#H9	H11
A11	NC#A11	NC#H10	H12
A12	NC#A12	NC#H11	H13
A13	NC#A13	NC#H12	H14
A14	NC#A14	NC#H13	H15
B1	NC#B1	NC#H14	H16
B2	NC#B2	NC#H15	H17
B3	NC#B3	NC#H16	H18
B4	NC#B4	NC#H17	H19
B5	NC#B5	NC#H18	H20
B6	NC#B6	NC#H19	H21
B7	NC#B7	NC#H20	H22
B8	NC#B8	NC#H21	H23
B9	NC#B9	NC#H22	H24
B10	NC#B10	NC#H23	H25
B11	NC#B11	NC#H24	H26
B12	NC#B12	NC#H25	H27
B13	NC#B13	NC#H26	H28
B14	NC#B14	NC#H27	H29
C1	NC#C1	NC#H28	H30
C2	NC#C2	NC#H29	H31
C3	NC#C3	NC#H30	H32
C4	NC#C4	NC#H31	H33
C5	NC#C5	NC#H32	H34
C6	NC#C6	NC#H33	H35
C7	NC#C7	NC#H34	H36
C8	NC#C8	NC#H35	H37
C9	NC#C9	NC#H36	H38
C10	NC#C10	NC#H37	H39
C11	NC#C11	NC#H38	H40
C12	NC#C12	NC#H39	H41
C13	NC#C13	NC#H40	H42
C14	NC#C14	NC#H41	H43
C15	NC#C15	NC#H42	H44
D1	NC#D1	NC#H43	H45
D2	NC#D2	NC#H44	H46
D3	NC#D3	NC#H45	H47
D4	NC#D4	NC#H46	H48
D5	NC#D5	NC#H47	H49
D6	NC#D6	NC#H48	H50
D7	NC#D7	NC#H49	H51
D8	NC#D8	NC#H50	H52
D9	NC#D9	NC#H51	H53
D10	NC#D10	NC#H52	H54
D11	NC#D11	NC#H53	H55
D12	NC#D12	NC#H54	H56
D13	NC#D13	NC#H55	H57
D14	NC#D14	NC#H56	H58
D15	NC#D15	NC#H57	H59
D16	NC#D16	NC#H58	H60
D17	NC#D17	NC#H59	H61
D18	NC#D18	NC#H60	H62
D19	NC#D19	NC#H61	H63
D20	NC#D20	NC#H62	H64
D21	NC#D21	NC#H63	H65
D22	NC#D22	NC#H64	H66
D23	NC#D23	NC#H65	H67
D24	NC#D24	NC#H66	H68
D25	NC#D25	NC#H67	H69
D26	NC#D26	NC#H68	H70
D27	NC#D27	NC#H69	H71
D28	NC#D28	NC#H70	H72
D29	NC#D29	NC#H71	H73
D30	NC#D30	NC#H72	H74
D31	NC#D31	NC#H73	H75
D32	NC#D32	NC#H74	H76
D33	NC#D33	NC#H75	H77
D34	NC#D34	NC#H76	H78
D35	NC#D35	NC#H77	H79
D36	NC#D36	NC#H78	H80
D37	NC#D37	NC#H79	H81
D38	NC#D38	NC#H80	H82
D39	NC#D39	NC#H81	H83
D40	NC#D40	NC#H82	H84
D41	NC#D41	NC#H83	H85
D42	NC#D42	NC#H84	H86
D43	NC#D43	NC#H85	H87
D44	NC#D44	NC#H86	H88
D45	NC#D45	NC#H87	H89
D46	NC#D46	NC#H88	H90
D47	NC#D47	NC#H89	H91
D48	NC#D48	NC#H90	H92
D49	NC#D49	NC#H91	H93
D50	NC#D50	NC#H92	H94
D51	NC#D51	NC#H93	H95
D52	NC#D52	NC#H94	H96
D53	NC#D53	NC#H95	H97
D54	NC#D54	NC#H96	H98
D55	NC#D55	NC#H97	H99
D56	NC#D56	NC#H98	H100
D57	NC#D57	NC#H99	H101
D58	NC#D58	NC#H100	H102
D59	NC#D59	NC#H101	H103
D60	NC#D60	NC#H102	H104
D61	NC#D61	NC#H103	H105
D62	NC#D62	NC#H104	H106
D63	NC#D63	NC#H105	H107
D64	NC#D64	NC#H106	H108
D65	NC#D65	NC#H107	H109
D66	NC#D66	NC#H108	H110
D67	NC#D67	NC#H109	H111
D68	NC#D68	NC#H110	H112
D69	NC#D69	NC#H111	H113
D70	NC#D70	NC#H112	H114
D71	NC#D71	NC#H113	H115
D72	NC#D72	NC#H114	H116
D73	NC#D73	NC#H115	H117
D74	NC#D74	NC#H116	H118
D75	NC#D75	NC#H117	H119
D76	NC#D76	NC#H118	H120
D77	NC#D77	NC#H119	H121
D78	NC#D78	NC#H120	H122
D79	NC#D79	NC#H121	H123
D80	NC#D80	NC#H122	H124
D81	NC#D81	NC#H123	H125
D82	NC#D82	NC#H124	H126
D83	NC#D83	NC#H125	H127
D84	NC#D84	NC#H126	H128
D85	NC#D85	NC#H127	H129
D86	NC#D86	NC#H128	H130
D87	NC#D87	NC#H129	H131
D88	NC#D88	NC#H130	H132
D89	NC#D89	NC#H131	H133
D90	NC#D90	NC#H132	H134
D91	NC#D91	NC#H133	H135
D92	NC#D92	NC#H134	H136
D93	NC#D93	NC#H135	H137
D94	NC#D94	NC#H136	H138
D95	NC#D95	NC#H137	H139
D96	NC#D96	NC#H138	H140
D97	NC#D97	NC#H139	H141
D98	NC#D98	NC#H140	H142
D99	NC#D99	NC#H141	H143
D100	NC#D100	NC#H142	H144

## MICRO SD CARD

Main DFHS10FR215  
2nd DFHS10FR236

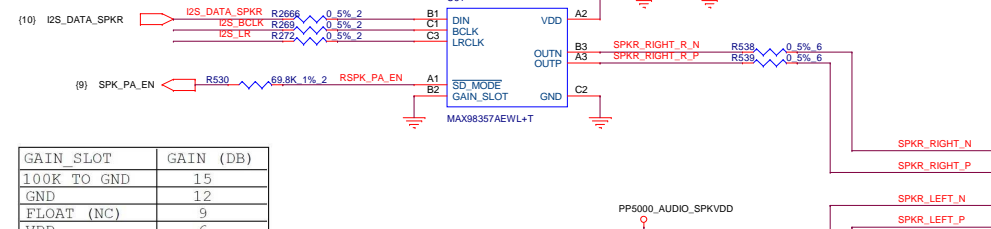
STUFF IN FUNCTION  
OF WHETHER THE SD CONNECTOR HAS THE CD  
SIGNAL ACTIVE HIGH OR ACTIVE LOW

FT4 EXPECT AN ACTIVE LOW SIGNAL ON CONNECTION  
TO INVERT SD\_CD: DNS R\_SD\_CD  
TO PRESERVE SD\_CD: DNS R\_SD\_CD\_INV AND DNS Q\_SD\_CD\_INV

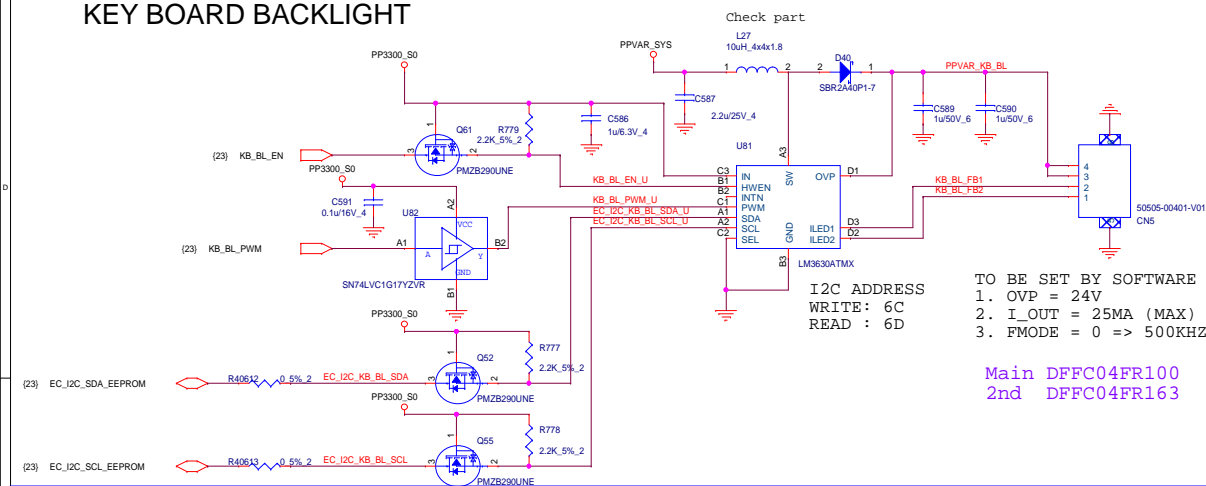


LAYOUT NOTES  
SPKR\_RIGHT\_P, SPKR\_RIGHT\_N & SPKR\_LEFT\_P, SPKR\_LEFT\_N SHOULD BE CONNECTED AS CLOSE TO THE SPEAKER CONNECTOR AS POSSIBLE

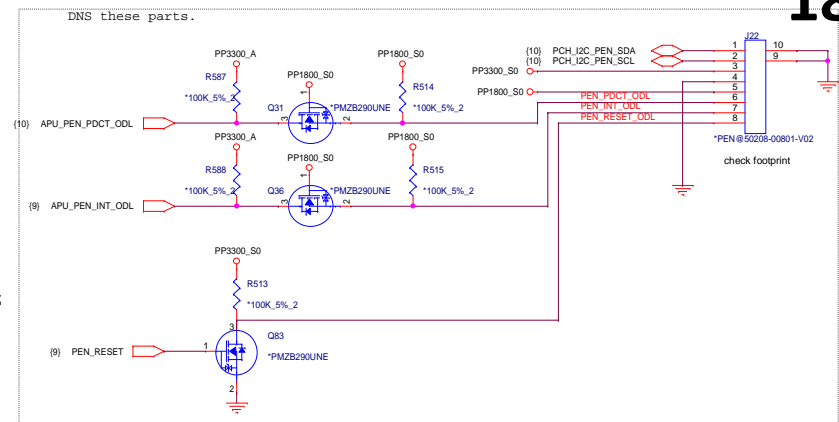
### RIGHT CHANNEL



## KEY BOARD BACKLIGHT

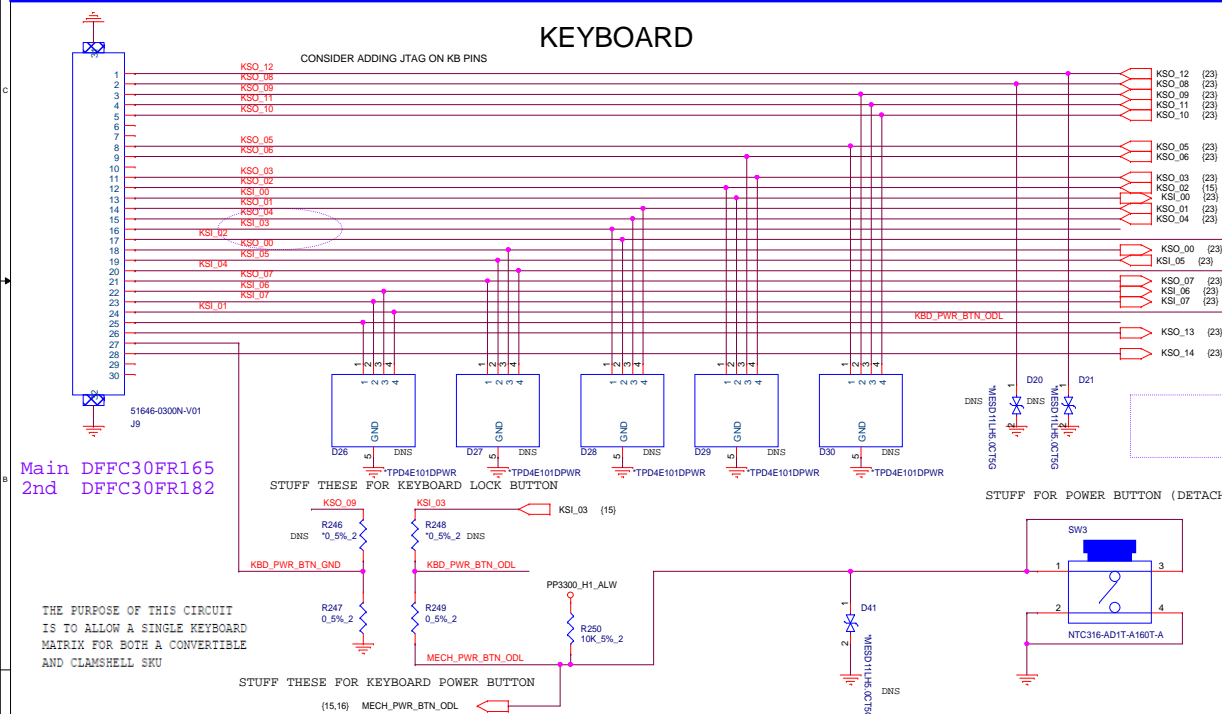


## PEN CONNECTOR



18

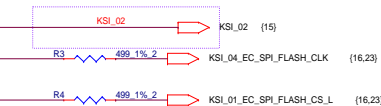
## KEYBOARD



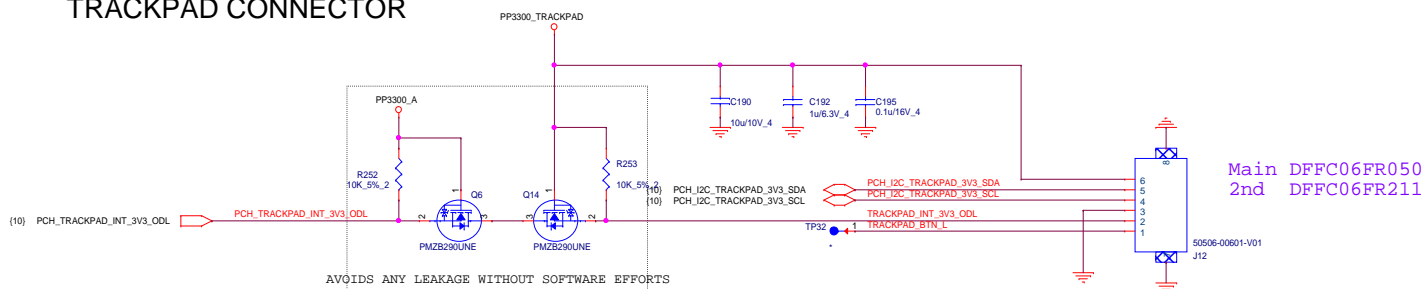
## VOLUME BUTTONS

[Move to Subboard](#)

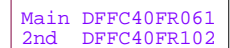
PLACE 499-OHM RESISTORS BELOW  
AS CLOSE TO EC AS POSSIBLE



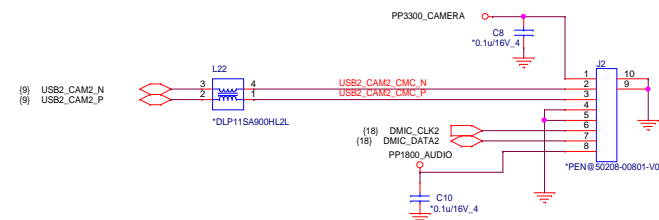
## TRACKPAD CONNECTOR



Main DFFC06FR050  
2nd DFFC06FR211

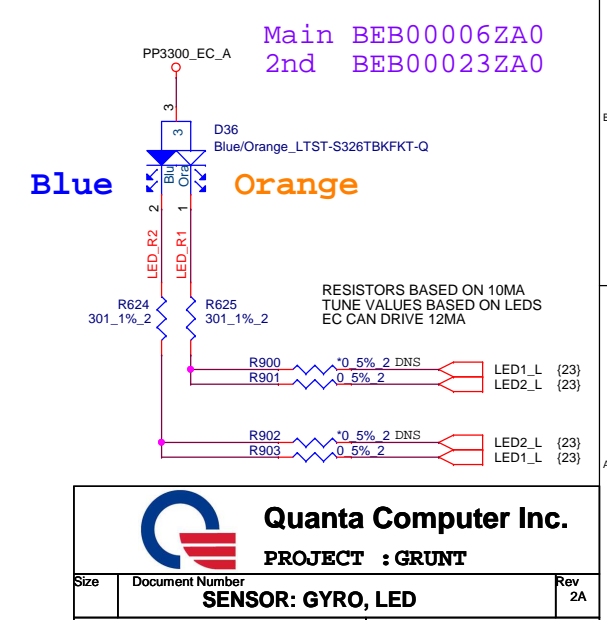


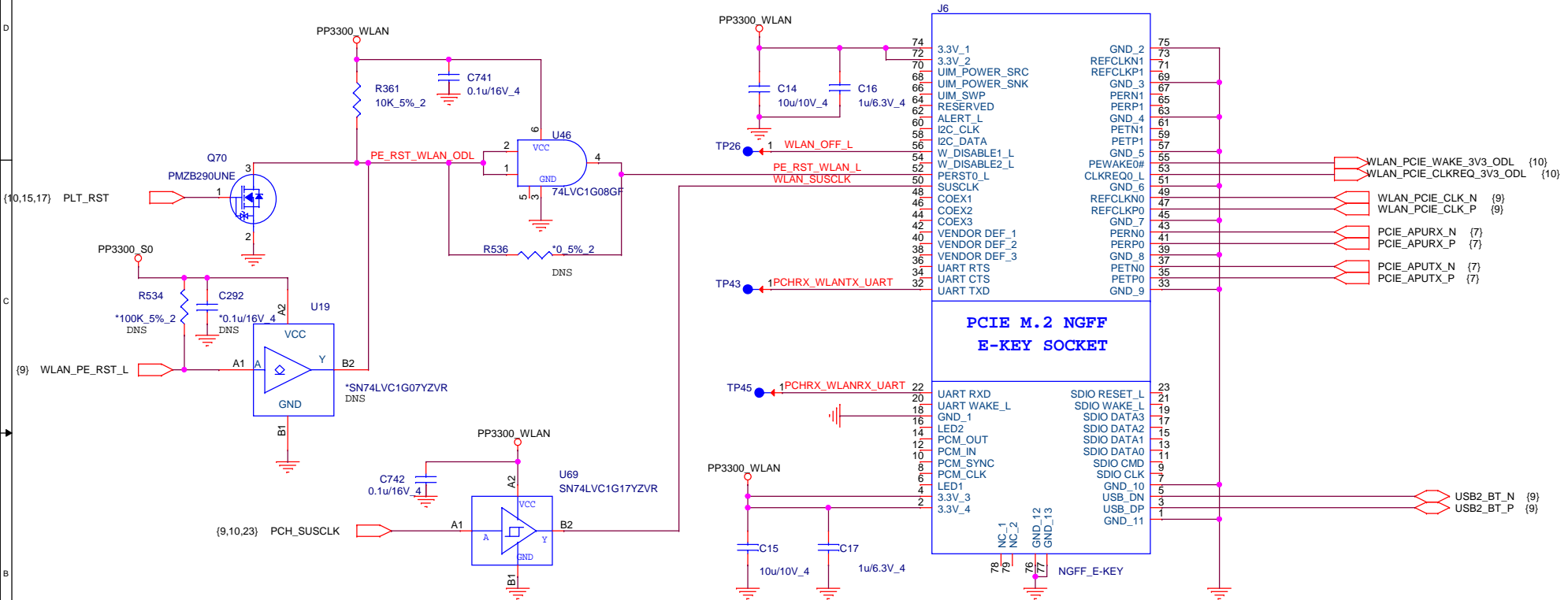
**C-PANEL CAMERA**  
DNS these parts.





## CHARGE/BATTERY LED





Main DFHS75FR108  
2nd DFHS75FR270

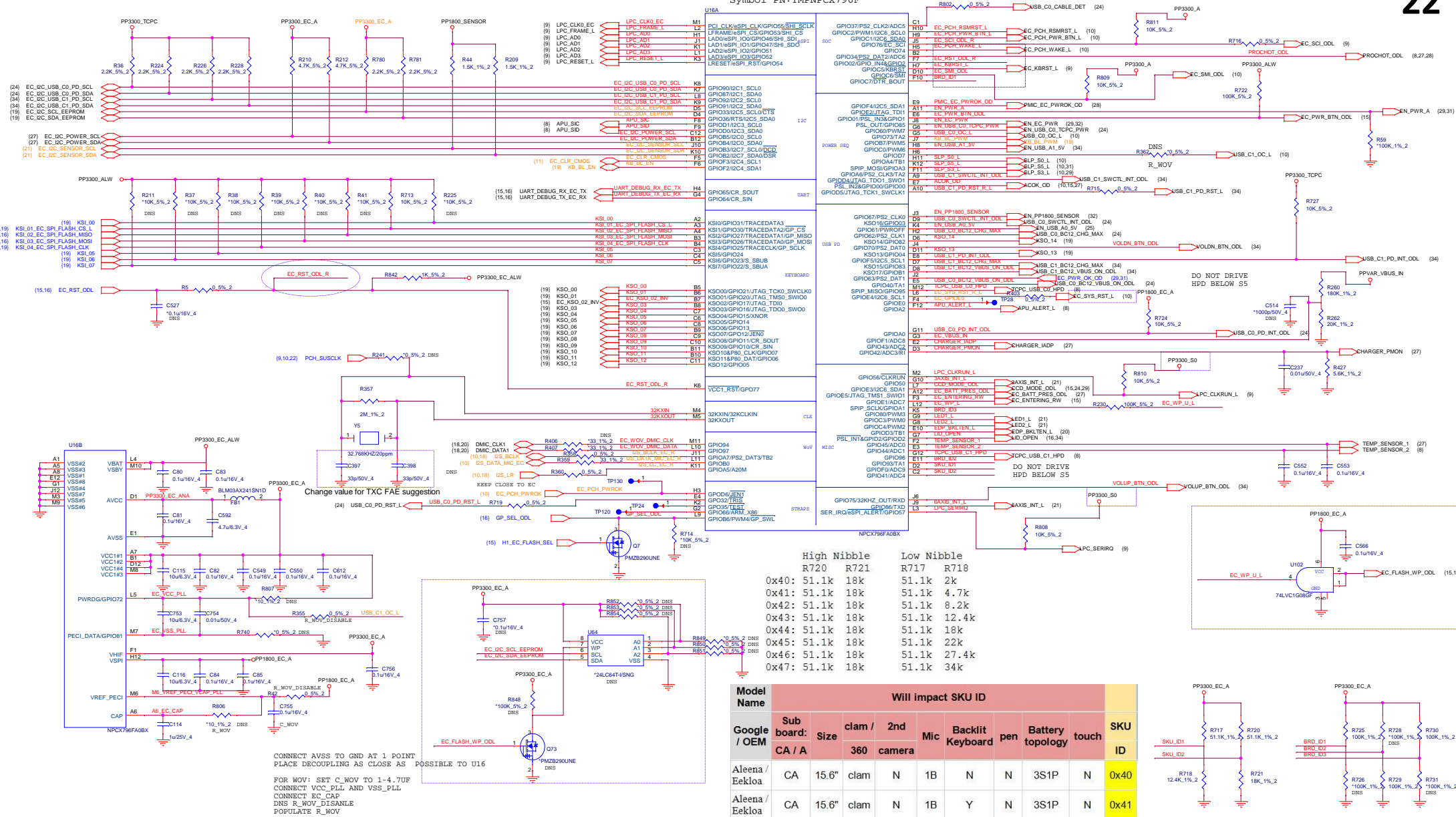


Quanta Computer Inc.

PROJECT : GRUNT

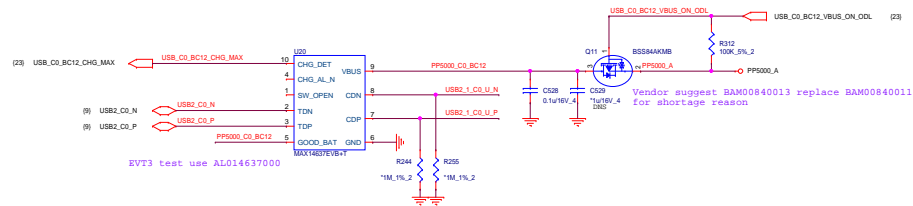
Size	Document Number	Rev
	WIFI	2A
Date:	Wednesday, November 14, 2018	Sheet 22 of 35

DVT use NPCX796FA0BX  
Symbol PN:TMNPXC796F

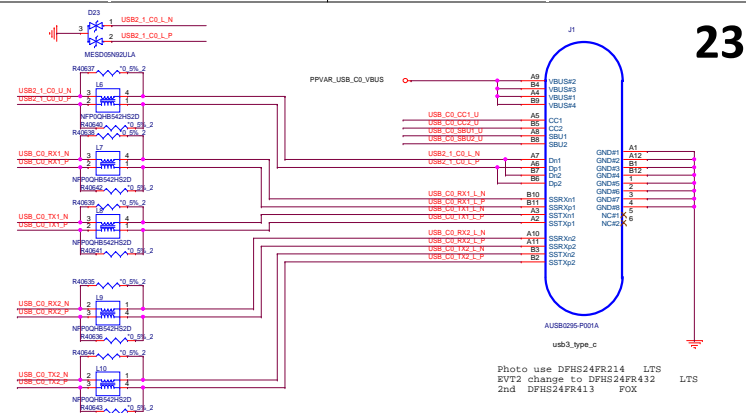
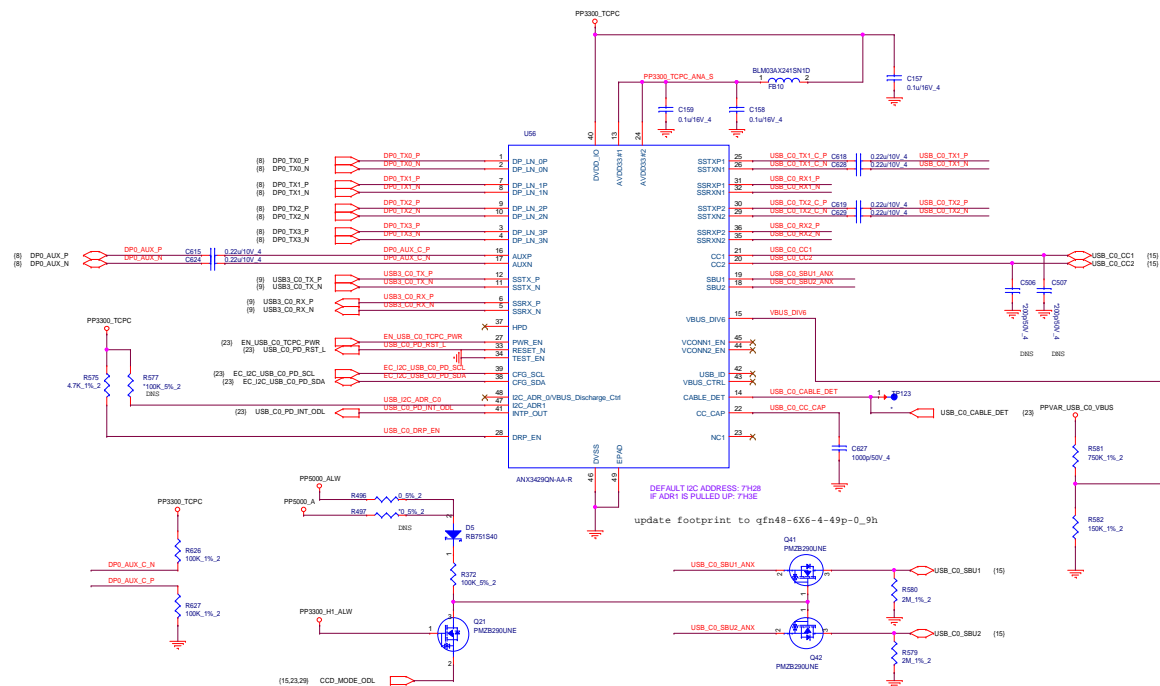


Model Name	Will impact SKU ID							SKU ID
	Sub board: CA / A	Size	clam / 2nd	Mic	Backlit Keyboard	pen	Battery topology	
Aleena / Eekloa	CA	15.6"	clam	N	N	N	3S1P	0x40
Aleena / Eekloa	CA	15.6"	clam	N	Y	N	3S1P	0x41
Aleena / Eekloa	CA	15.6"	clam	N	N	N	3S1P	0x42
Aleena / Eekloa	CA	15.6"	clam	N	Y	N	3S1P	0x43

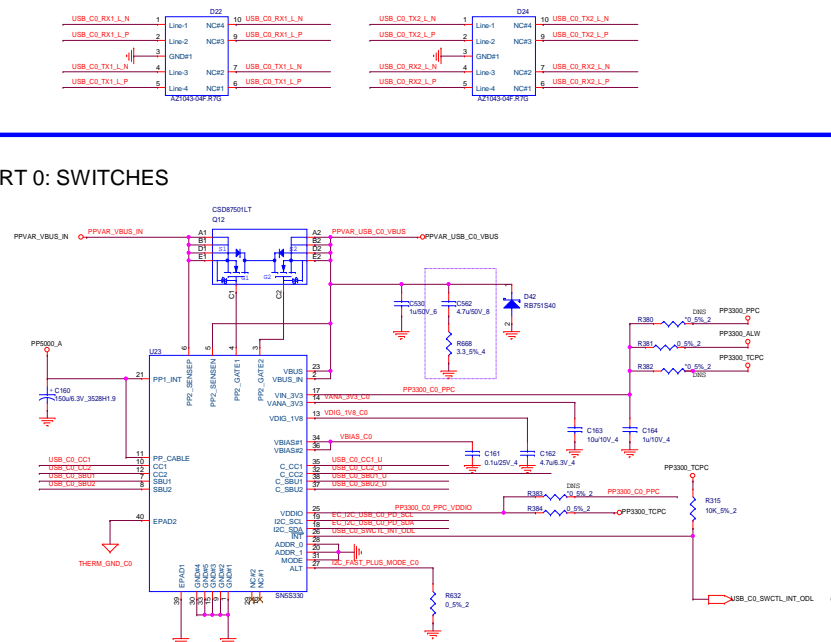
## PORT 0: BC1.2

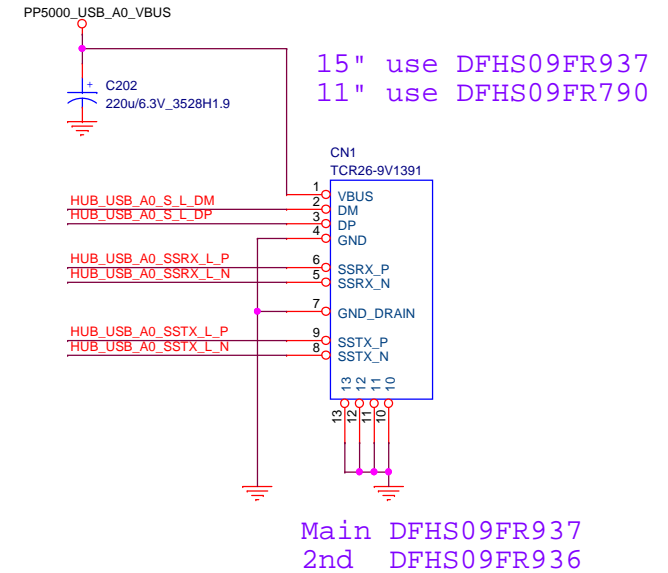
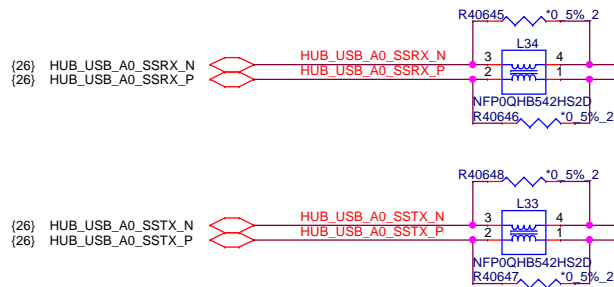
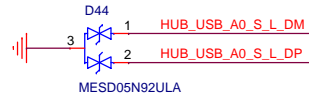
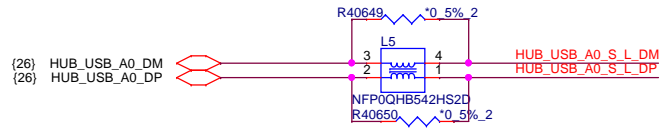
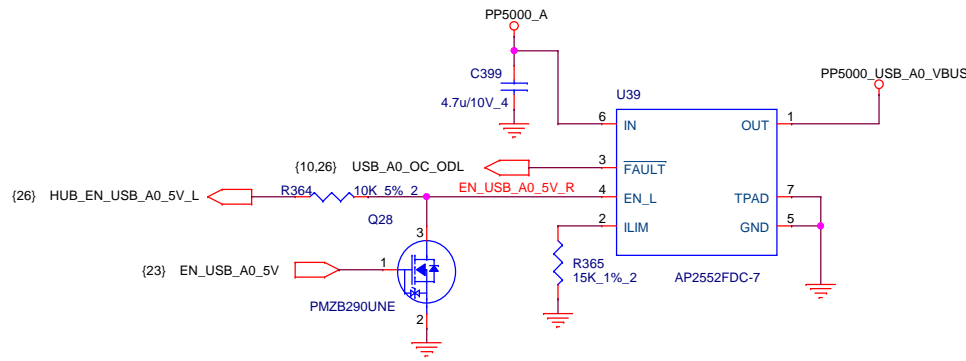


## PORT 0: TCPC



## PORT 0: SWITCHES





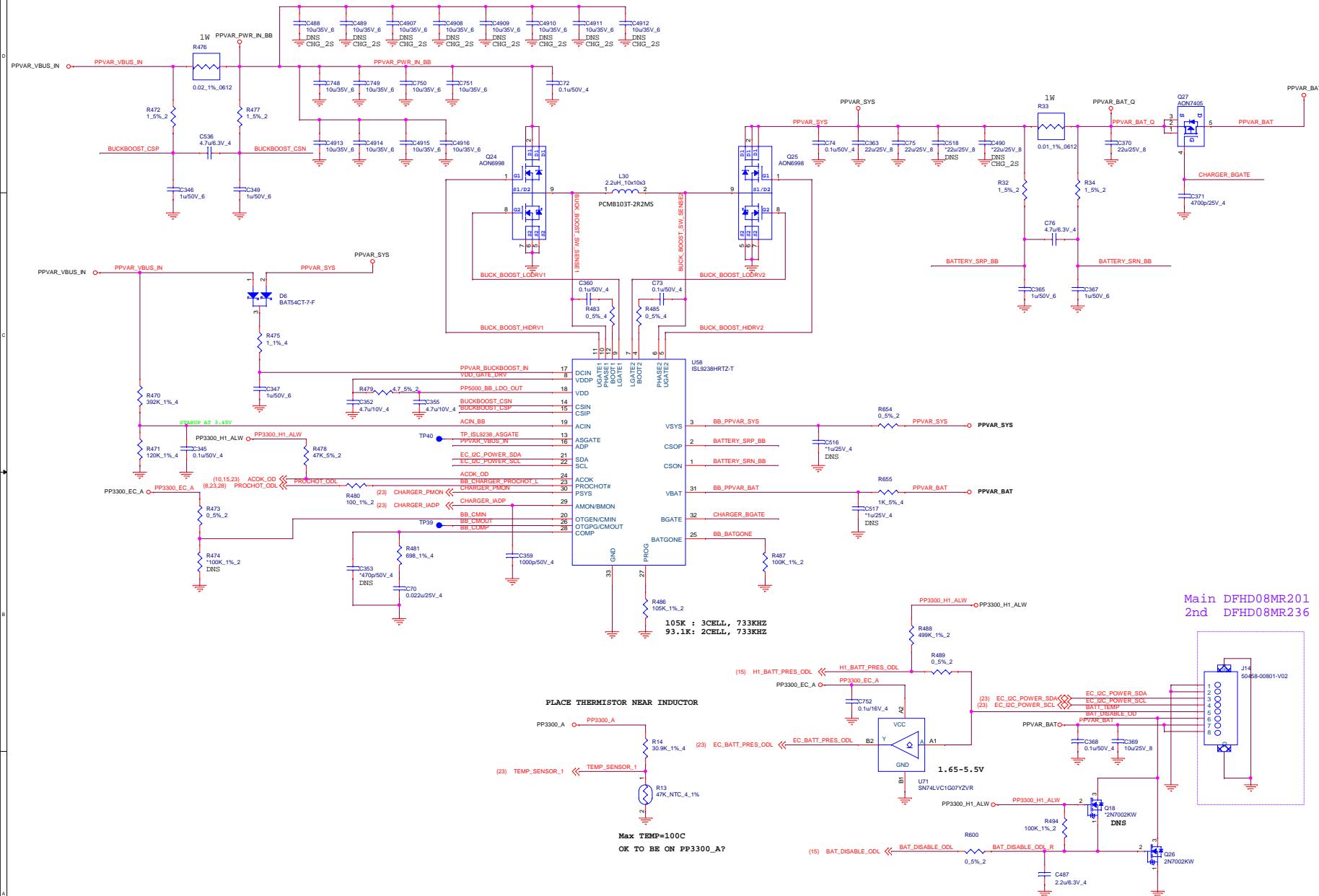
## USB HUB

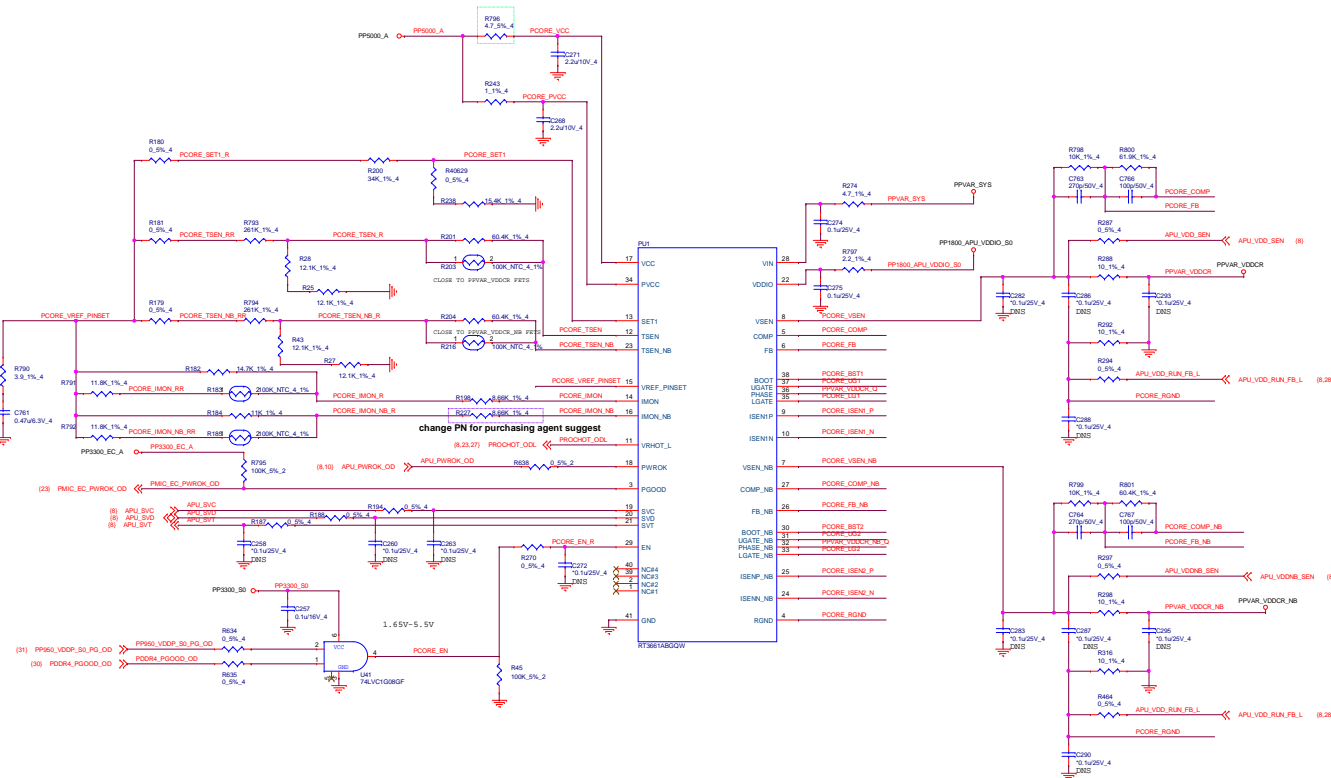
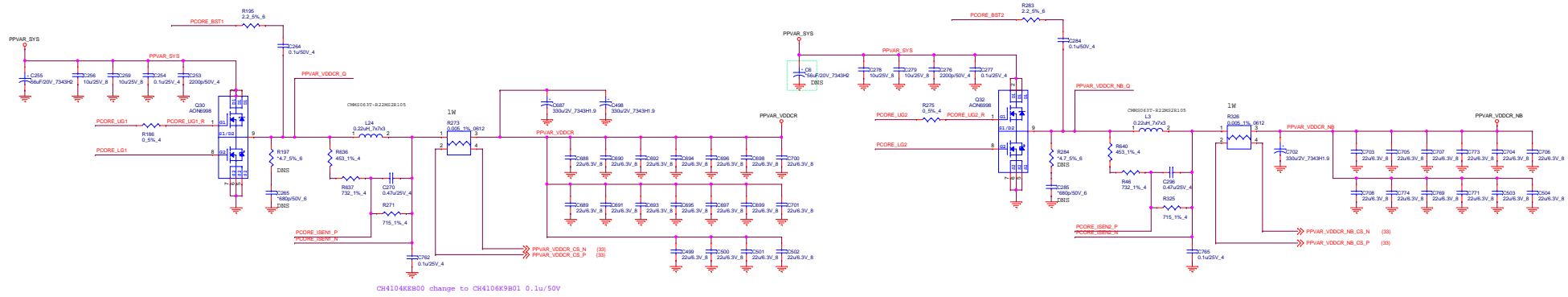


## USB HUB

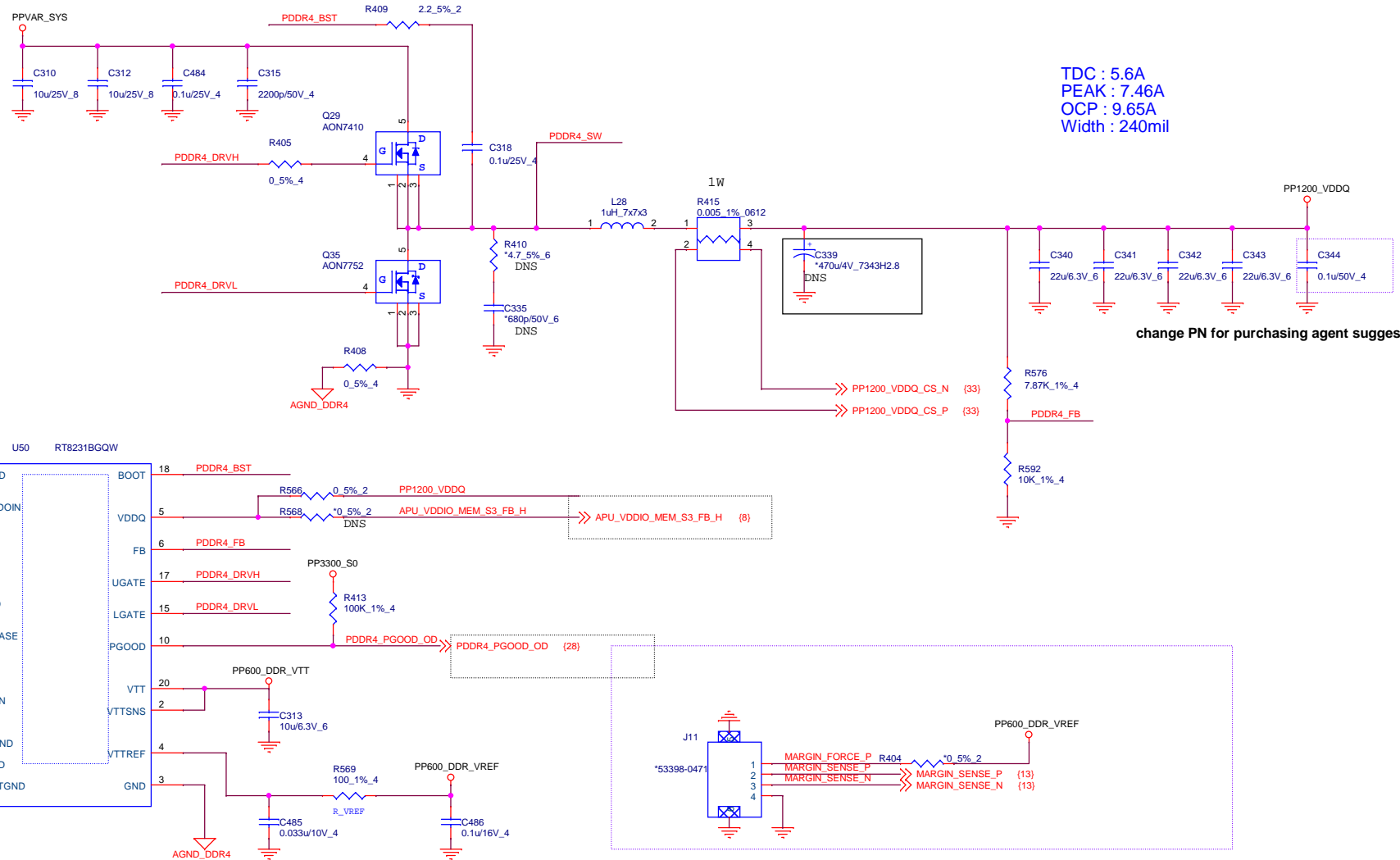


# INTERSIL BUCK - BOOST CHARGER










TDC : 5.6A  
PEAK : 7.46A  
OCP : 9.65A  
Width : 240mil

change PN for purchasing agent suggest

VID	REF VOLTAGE
HIGH	0.675V
LOW	0.75V



**Quanta Computer Inc.**  
**PROJECT :**

Size

Document Number

Rev

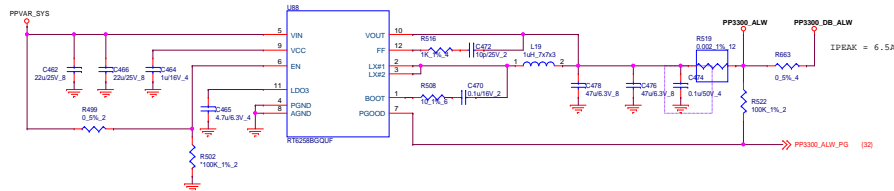
POWER - DDR4

2A

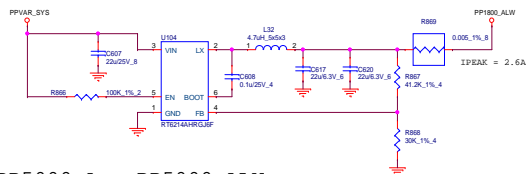
Date: Wednesday, November 14, 2018

Sheet 30 of 35

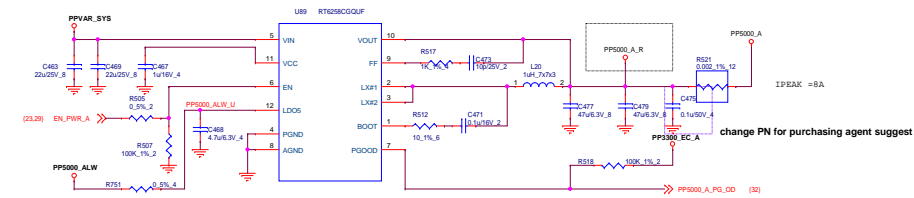
## PP3300\_ALW



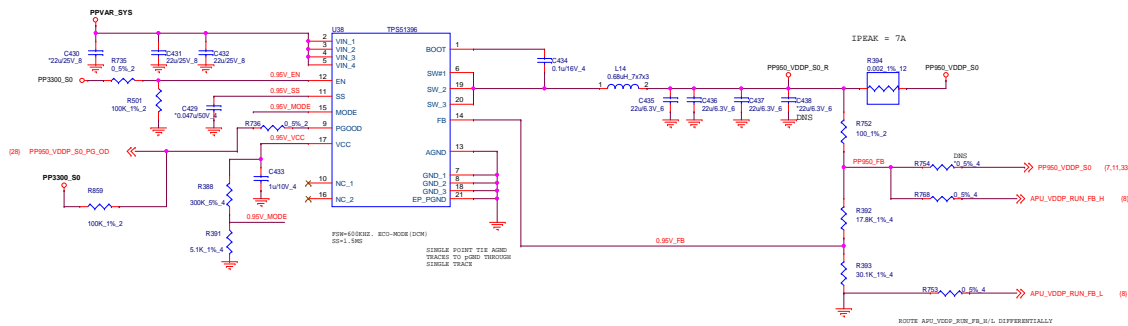
## PP1800\_ALW



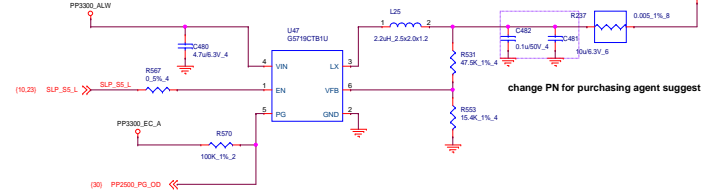
PP5000\_A + PP5000\_ALW



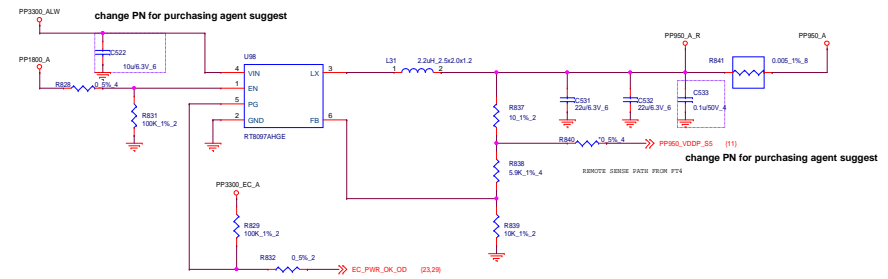
PP950\_S0



## PP2500\_DDR4\_S3

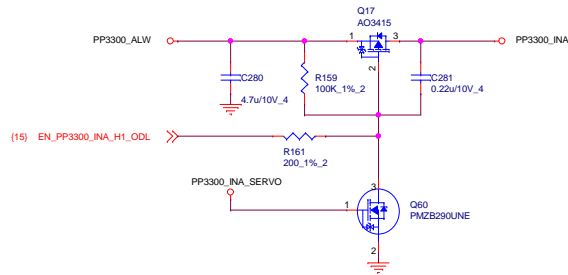
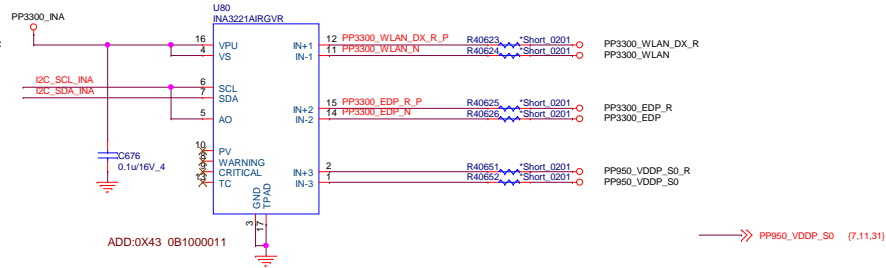
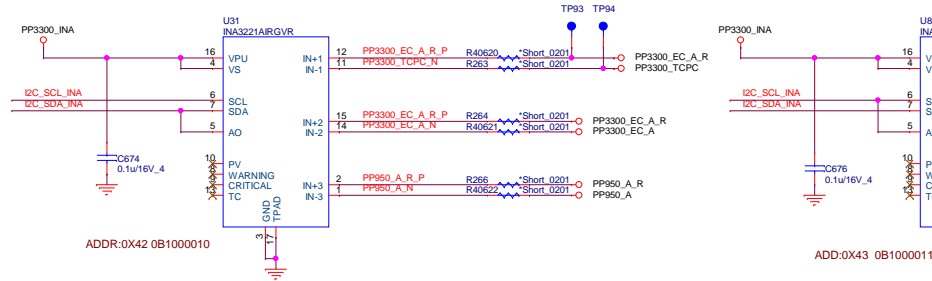
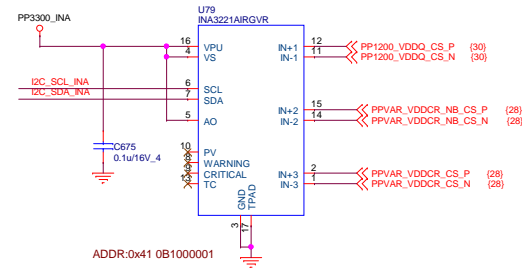
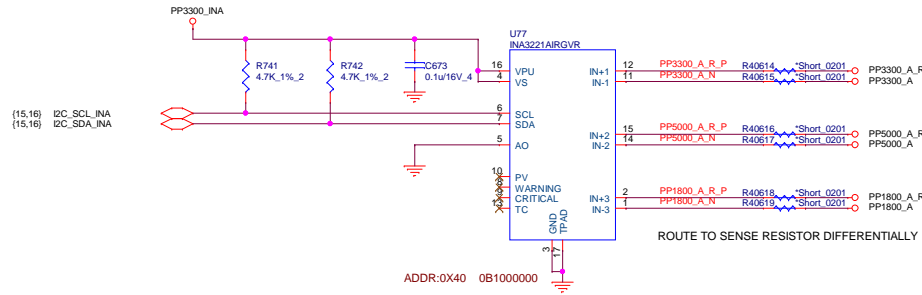


## PP950\_A

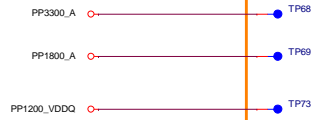








40MIL TESTPAD  
(BACKSIDE)



70MIL TESTPAD  
(BACKSIDE)





