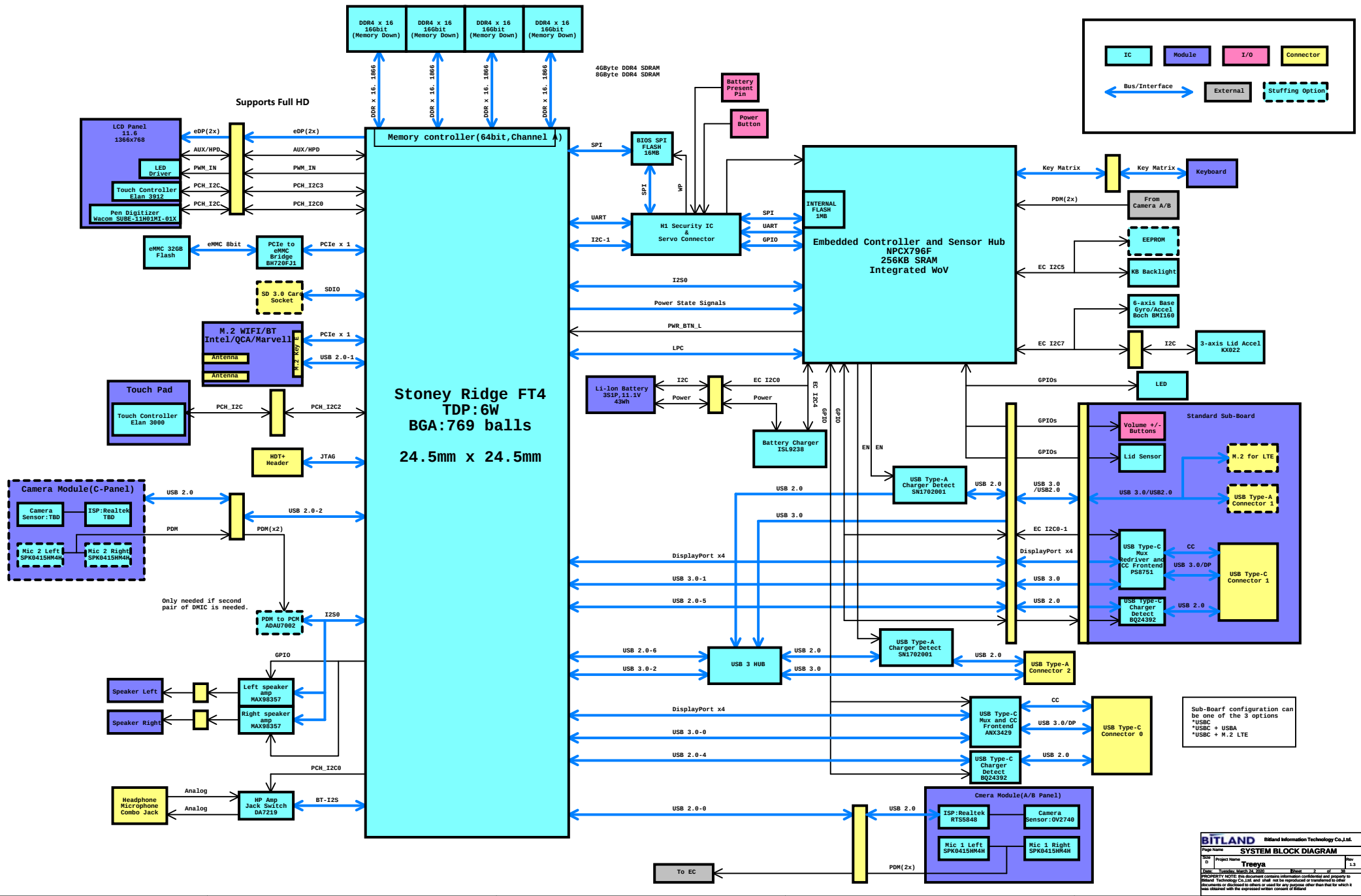


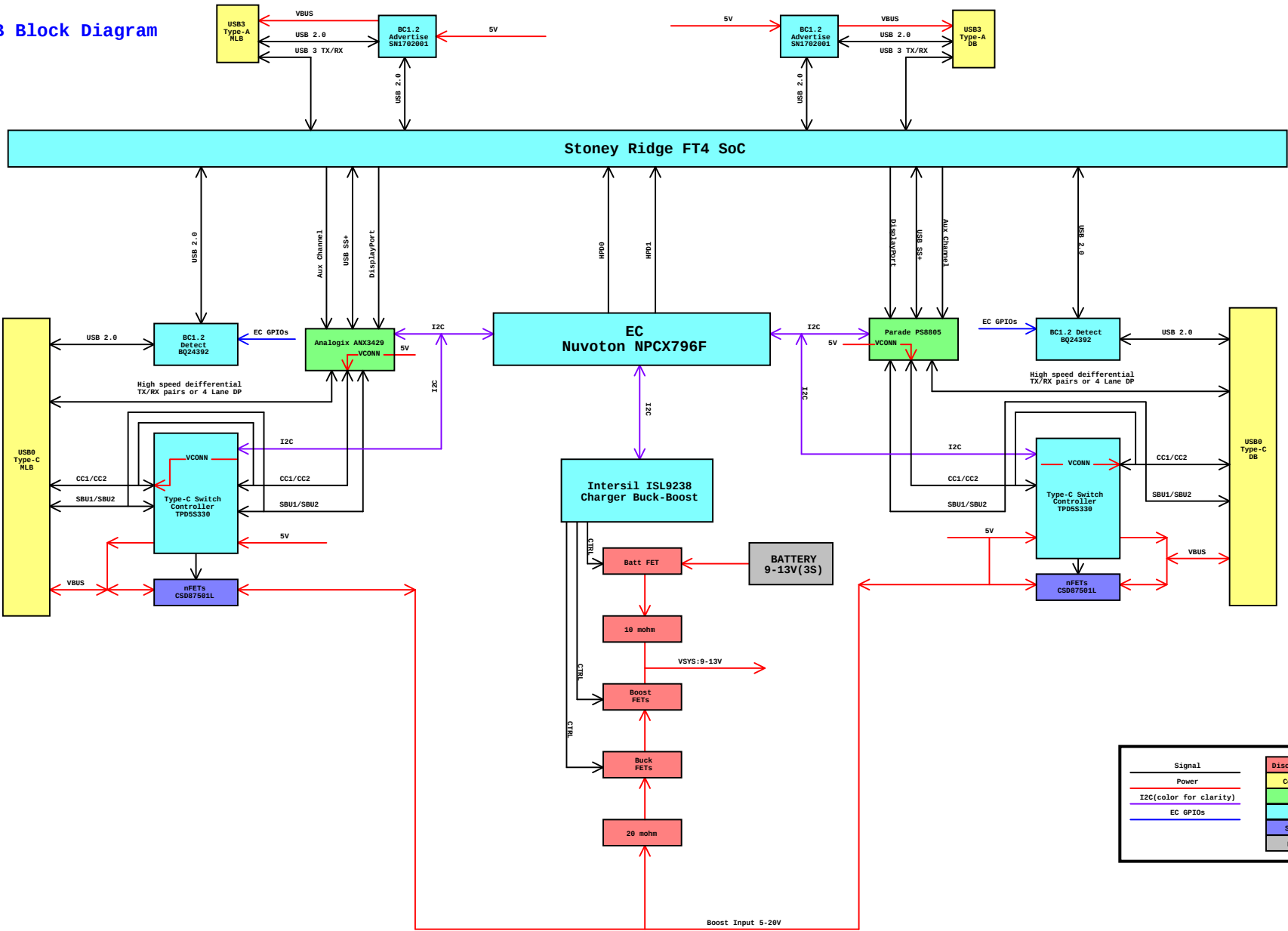
SCH: 650-01819-01-SCH
ASSY: 650-01819-01
PCB: 651-01819-01

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	USB MAP
7	FT4 MEMORY/PCIE
8	FT4 eDP/CLK/SVI2/JTAG/MISC
9	FT4 SATA/USB/SPI/XTAL
10	FT4 GEVENT/GPIO/SD/AZ
11	FT4 PWR
12	FT4 GND
13	DDR4 CH00/01
14	DDR4 CH00/11
15	H1, SPI ROM
16	SERVO DEBUG
17	eMMC/SD
18	AUDIO
19	BASE: KB, TP, NFC, FP, PEN
20	LID: eDP, CAM, TOUCH, SENSOR
21	SENSOR: GYRO, LID, LED
22	WIFI, BT
23	EC-NPCX7
24	USB C0
25	USB-A OPT1: 2x USB3.1
26	USB-A OPT2: 1x USB3.1
27	USB-A OPT3: 1x/2x USB2.0
28	POWER - BATTERY CHARGER
29	POWER - FT4 CORE
30	POWER - FT4 CORE SWITCHES

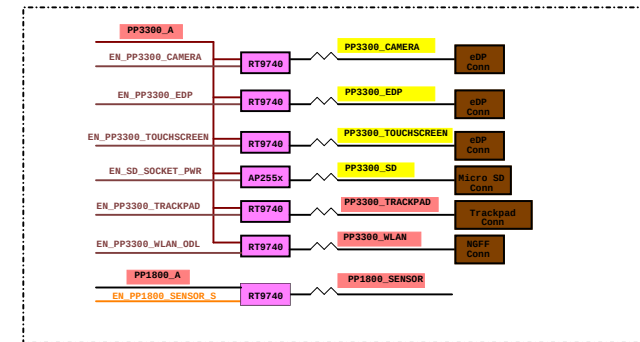
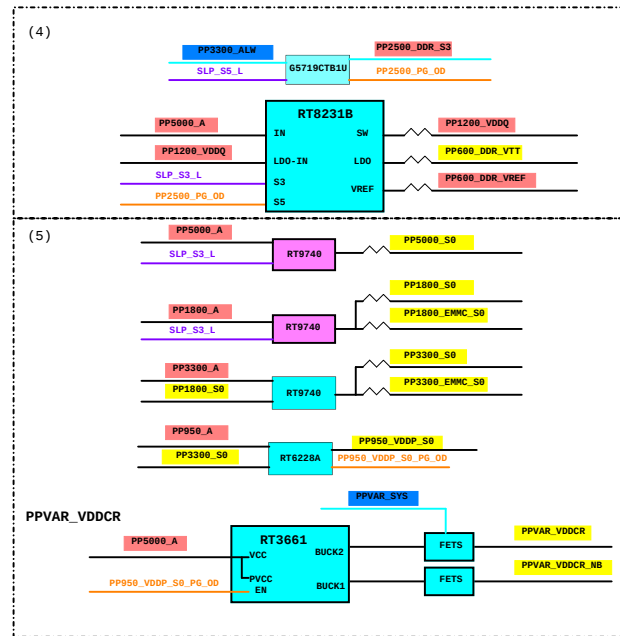
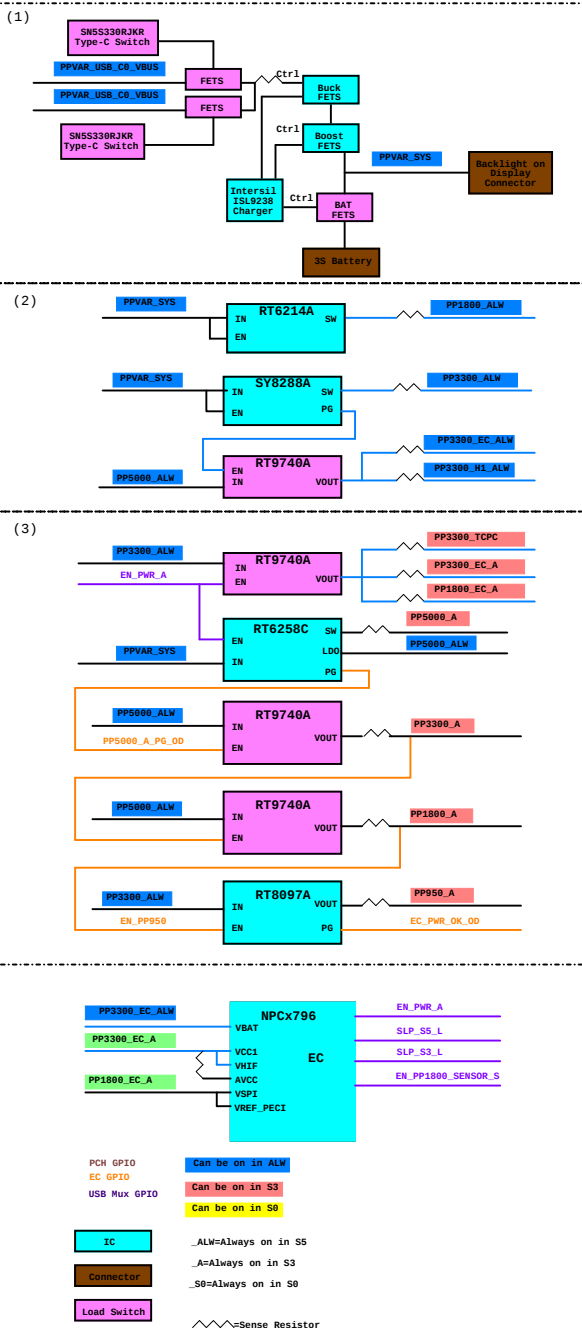
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Grunt USB Block Diagram

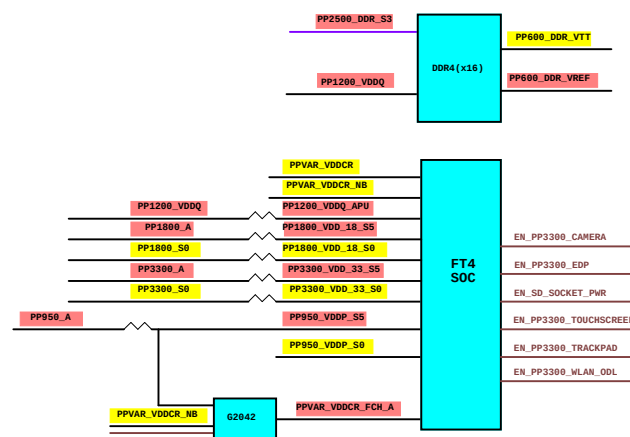


Grunt Power Tree



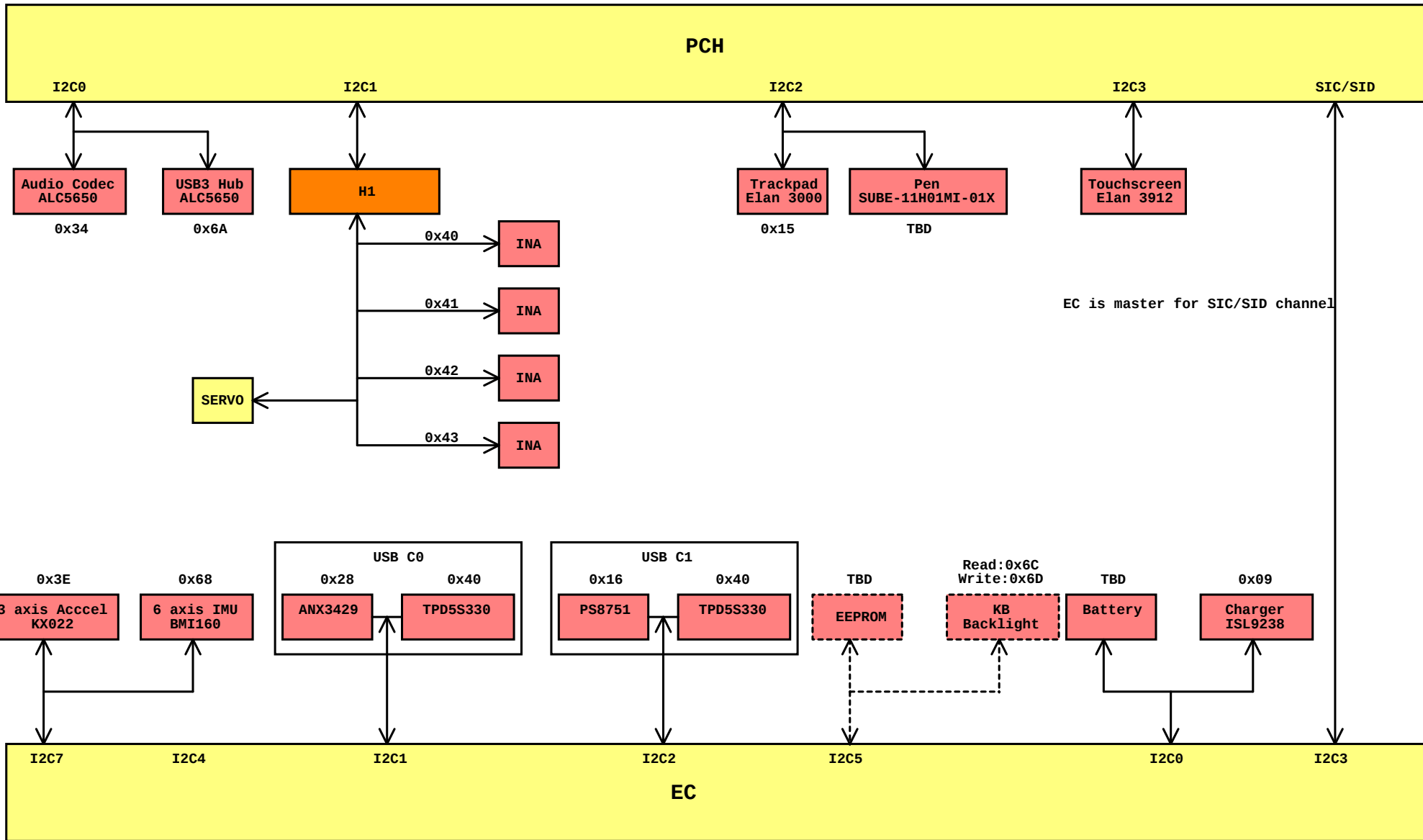
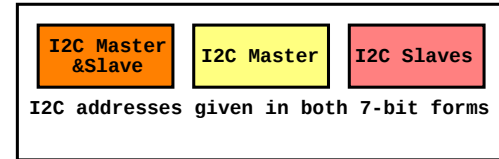
Treeya时序:

- 1.PPVAR_VBUS_IN
- 2.PPVAR_SYS
- 3.PP3300_ALW / PP1800_ALW /PP5000_ALW
- 4.PP3300_EC_ALW / PP3300_H1_ALW
- 5.EN_PWR_A
- 6.PP5000_A /PP3300_TCPC /PP3300_EC_A /PP1800_EC_A
- 7.PP3300_A
- 8.PP1800_A
- 9.PP950_A
- 10.SLP_S5_L
- 11.PP2500_DDR_S3
- 12.PP2500_PG_OD
- 13.PP1200_VDDQ
- 14.PP600_DDR_VREF
- 15.SLP_S3_L
- 16.PP600_DDR_VTT /PP5000_S0 /PP1800_S0
- 17.PP3300_S0
- 18.PP950_VDDP_S0
- 19.PP950_VDDP_S0_PG_OD
- 20.PPVAR_VDDCR / PPVAR_VDDCR_NB
- 21.PMIC_EC_PWROK_OD
- 22.APU_PWROK_OD
- 23.APU_PCIE_RST_L
- 24.APU_RST_L

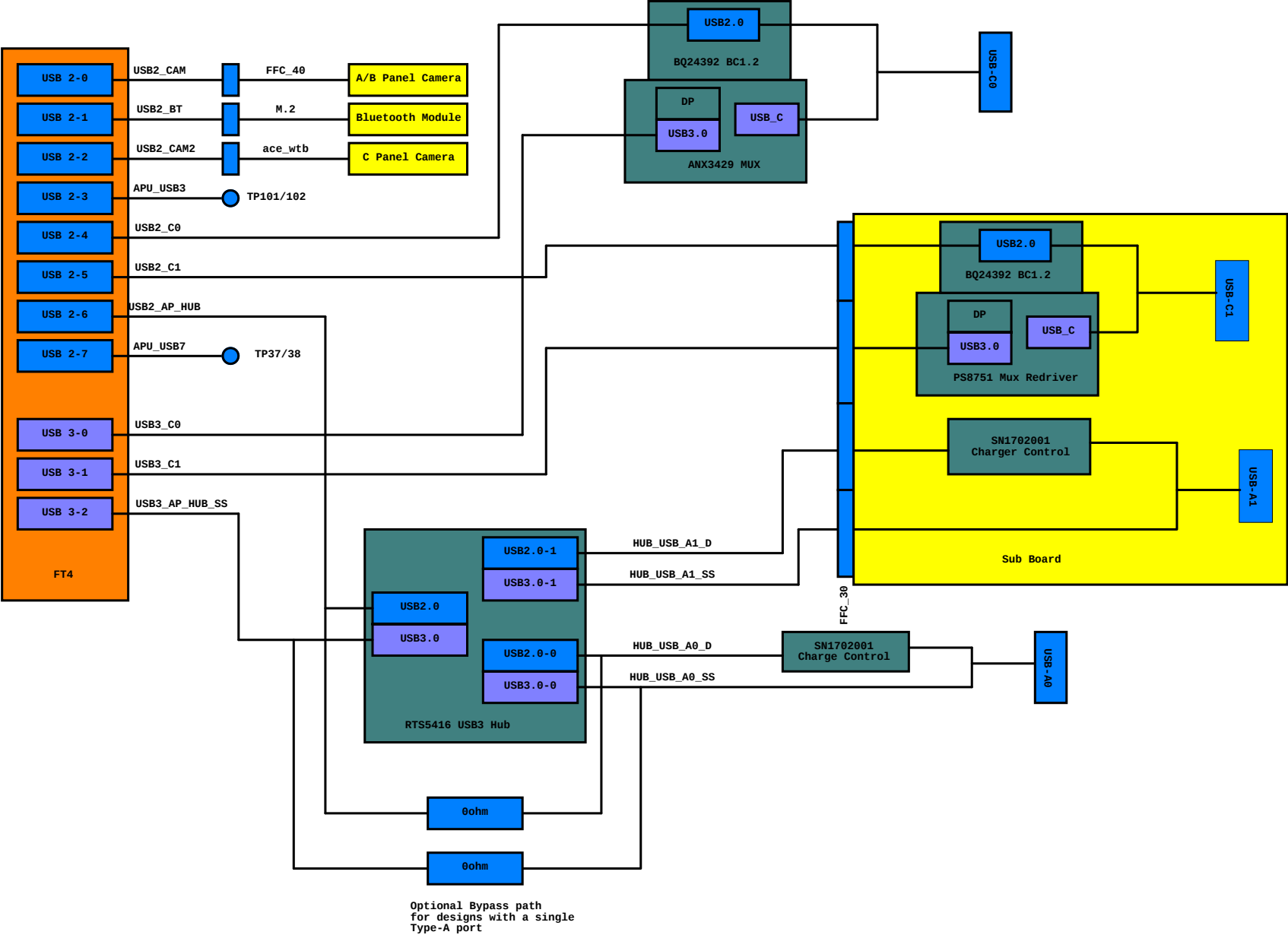


Grunt I2C Map

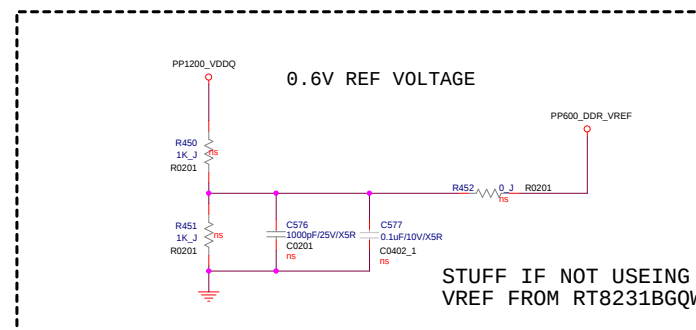
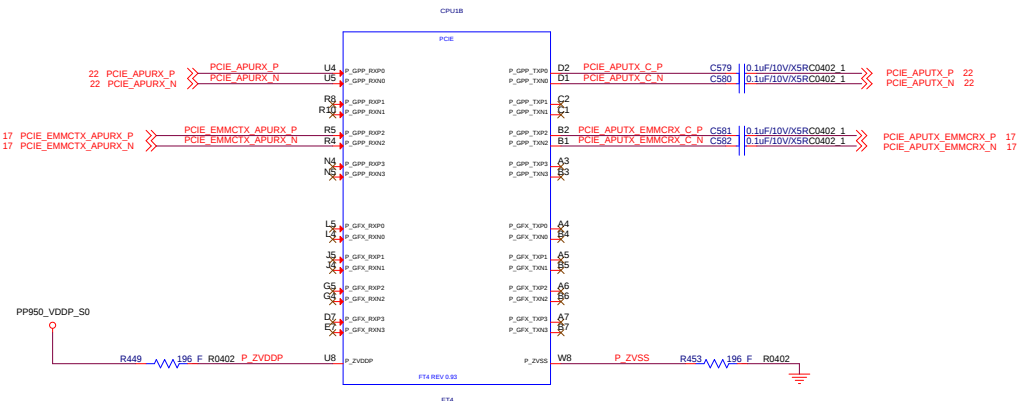
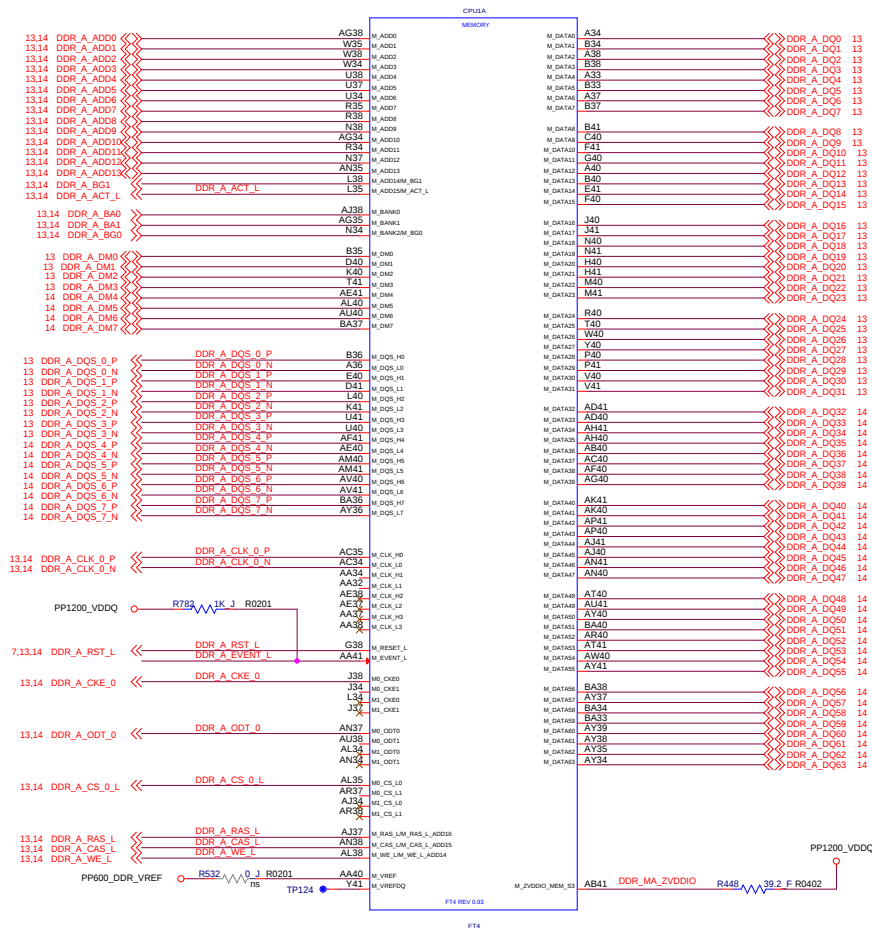
LEGEND

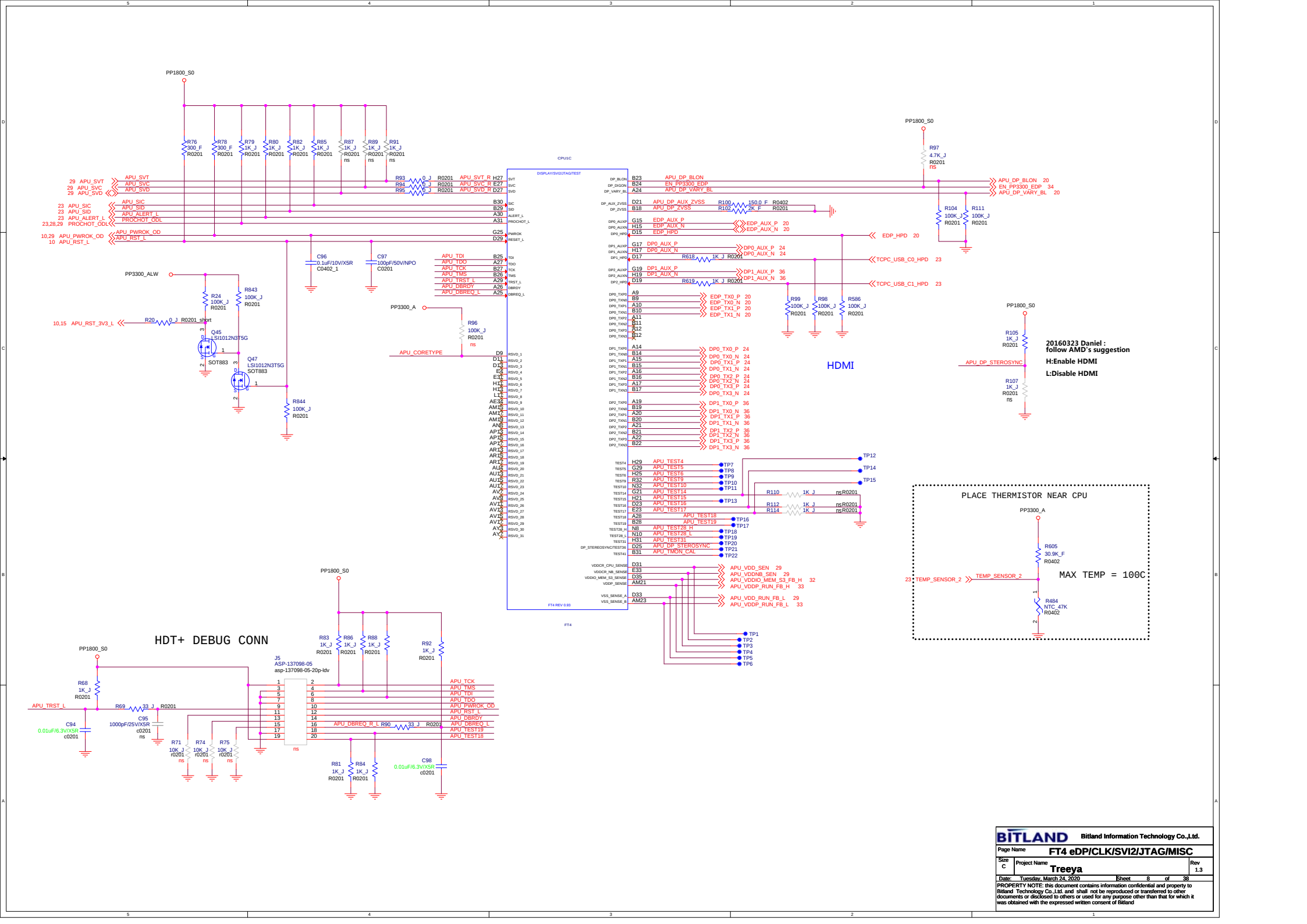


Grunt USB Map

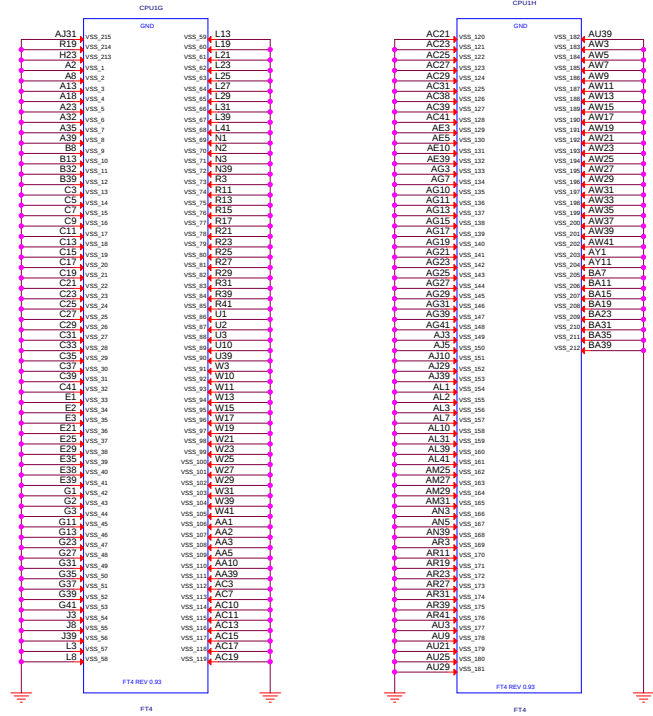


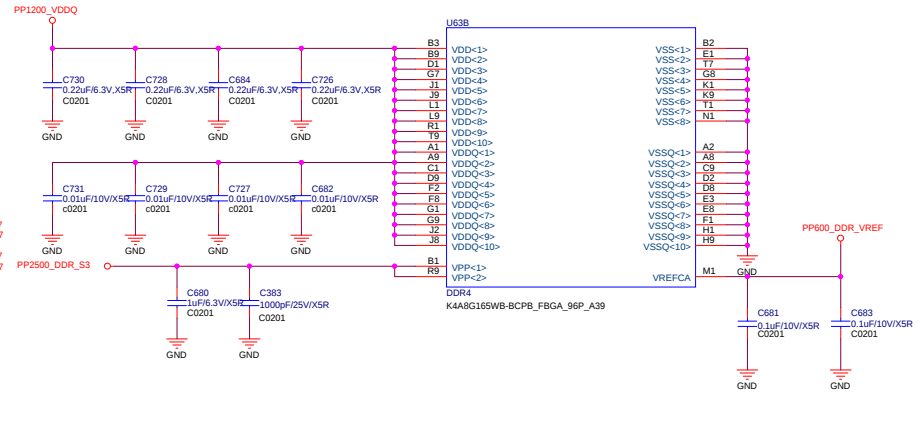
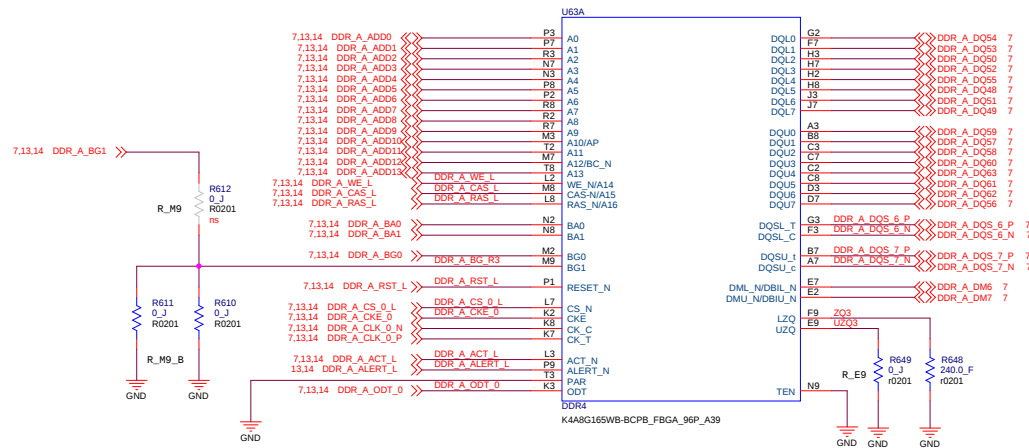
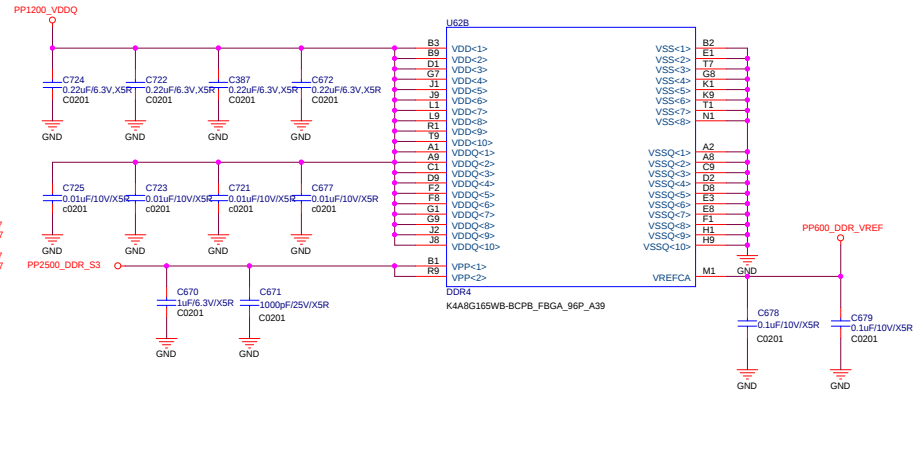
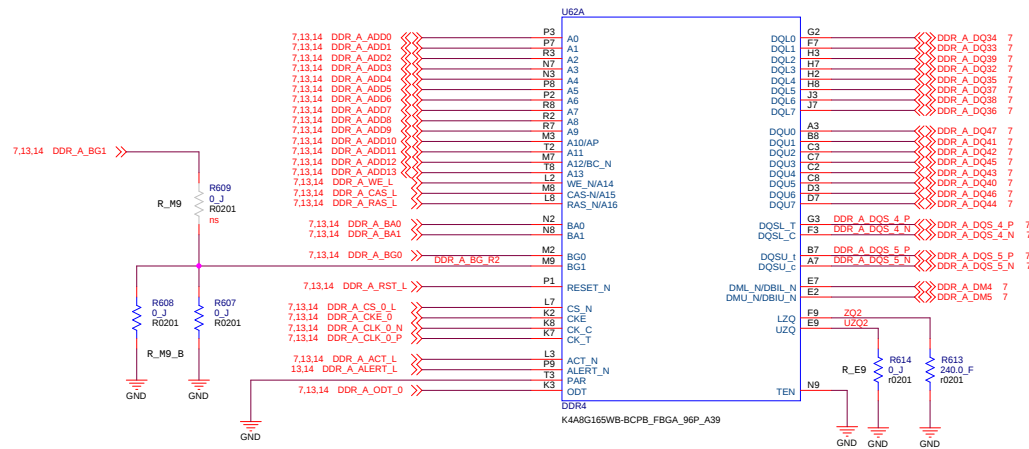
MAX FT4 SPEED: DDR4-1866









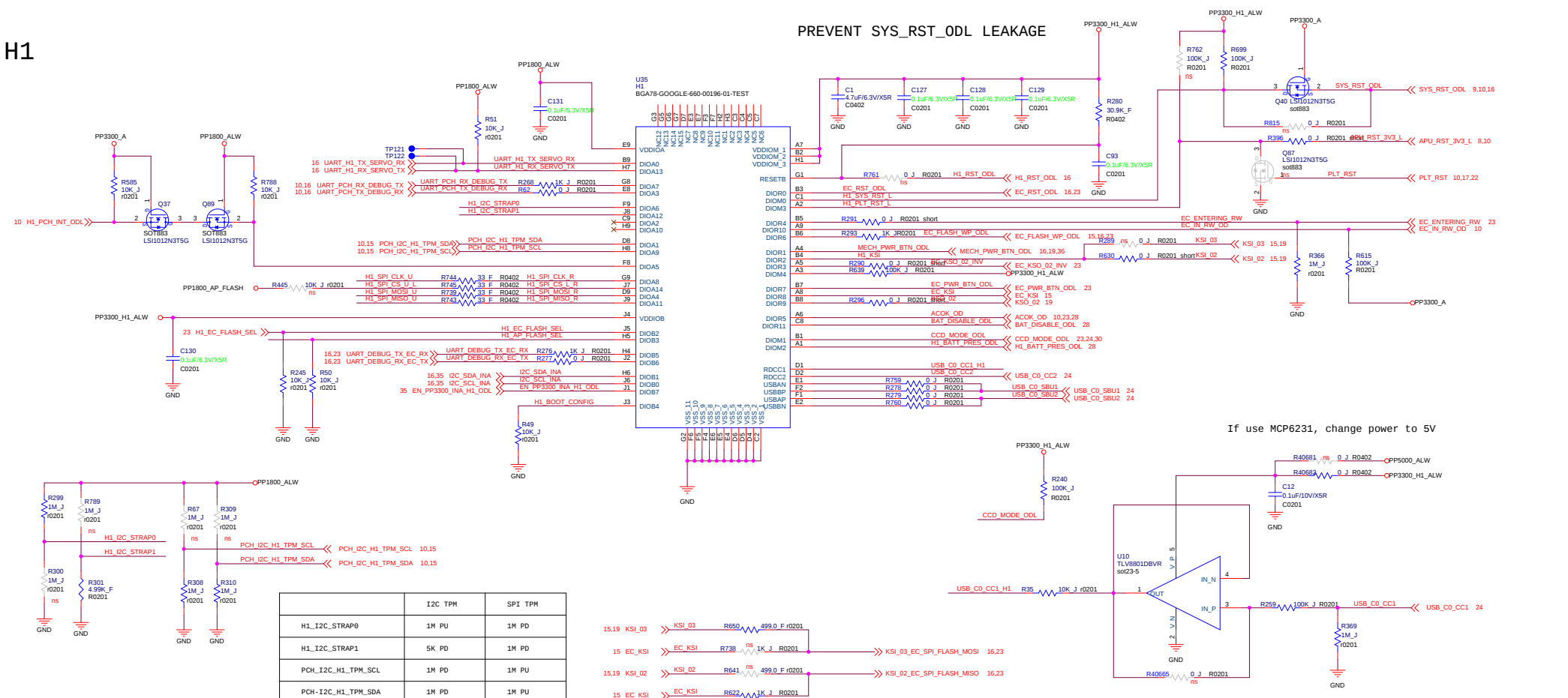


SDP = 4GB
DDP = 8GB

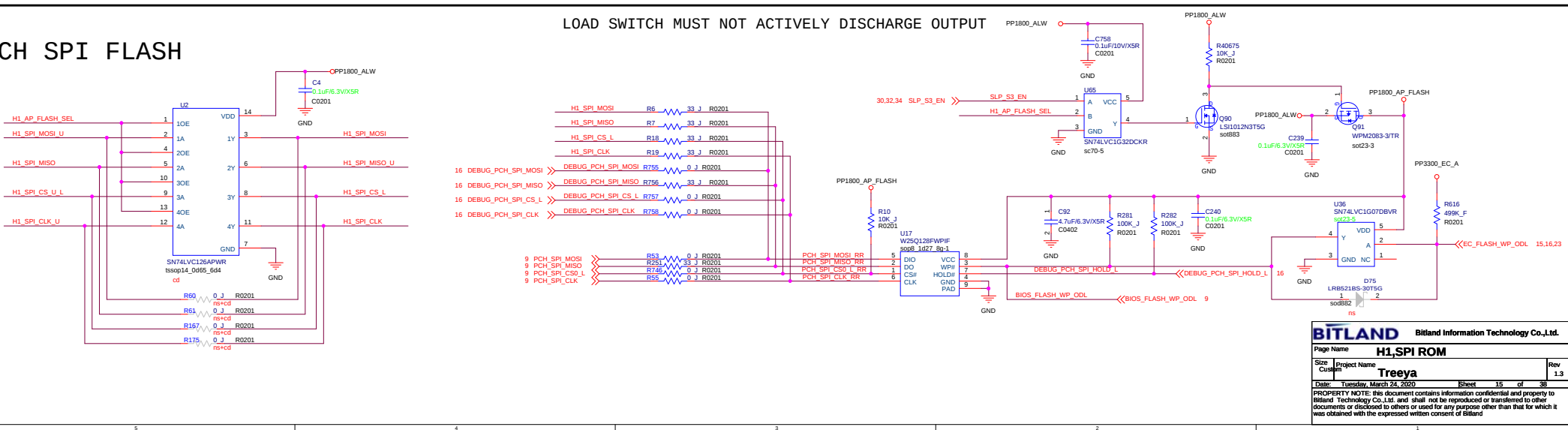
SDP VS. DDP DDR4 STUFF OPTIONS

		SDP	DDP
R_E9	R646, R647 R614, R649	0 OHM	240 OHM
R_M9	R692, R696 R699, R612	OPEN	0 OHM
R_M9_B	R329, R693 R697, R610 R691, R694 R698, R611	0 OHM	OPEN
R_B9	R421	OPEN	39 OHM

H1



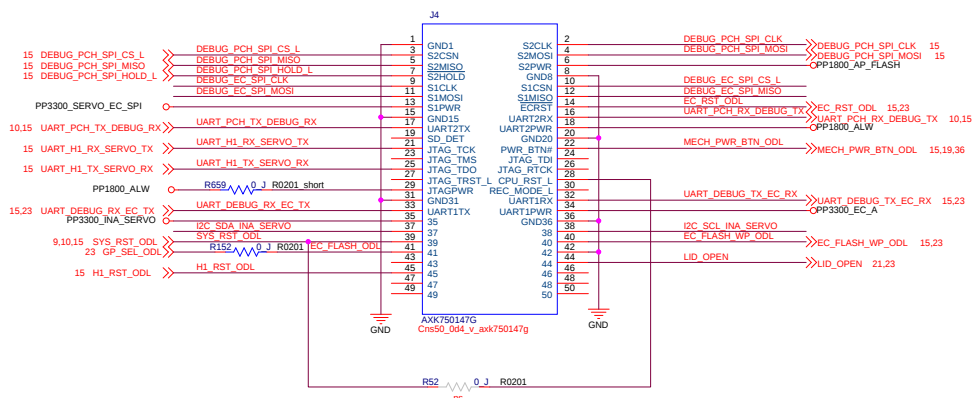
If use MCP6231, change power to 5V



KSI_04_EC_SPI_FLASH_CLK	KSI_04_EC_SPI_FLASH_CLK	R747	33_J	R0201	DEBUG_EC_SPI_CLK
KSI_03_EC_SPI_FLASH_MOSI	KSI_03_EC_SPI_FLASH_MOSI	R748	33_J	R0201	DEBUG_EC_SPI_MOSI
KSI_02_EC_SPI_FLASH_MISO	KSI_02_EC_SPI_FLASH_MISO	R749	33_J	R0201	DEBUG_EC_SPI_MISO
KSI_01_EC_SPI_FLASH_CS_L	KSI_01_EC_SPI_FLASH_CS_L	R750	23_J	R0201	DEBUG_EC_SPI_CS_L

IF THE PP3300_SERVO_EC_SPI RAIL IS PRESENT
WE APPLY A SMALL DRAIN CURRENT TO PP3300_ALW
TO HELP IT DRAIN IN CASE IT IS NOT CURRENTLY BEING
POWERED AND SHOULD OTHERWISE BE DISCHARGED.
THIS DRAIN RESISTOR MAY NEED TO CHANGE

MP_DNS HEADER

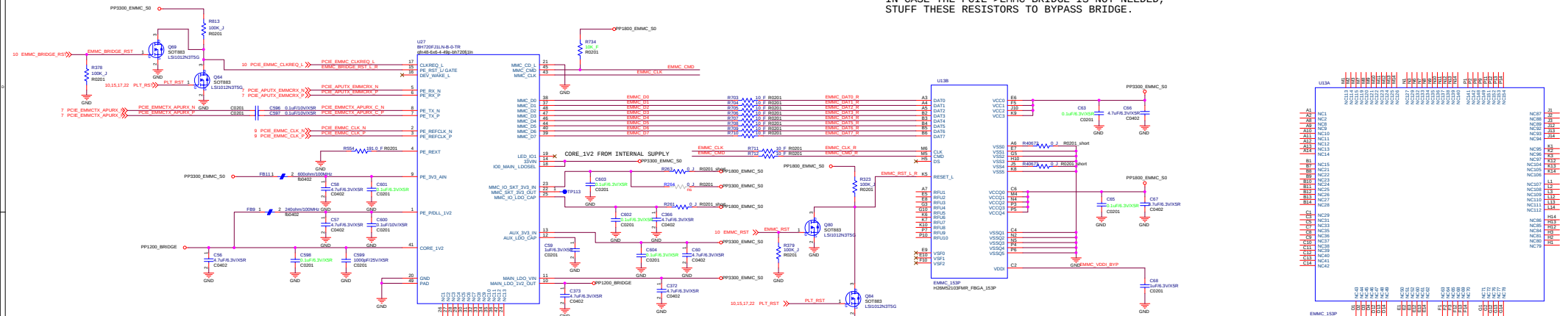


WIRE 0-OHM TO CONNECT SERVO WARM_RST
BUTTON TO WARM_RST ON PCB

32 GB EMMC STORAGE 150 uA SLEEP CURRENT

MAX BH720 OR FT4 EMMC SPEED: HS200

IN CASE THE PCIE->EMMC BRIDGE IS NOT NEEDED,
STUFF THESE RESISTORS TO BYPASS BRIDGE.

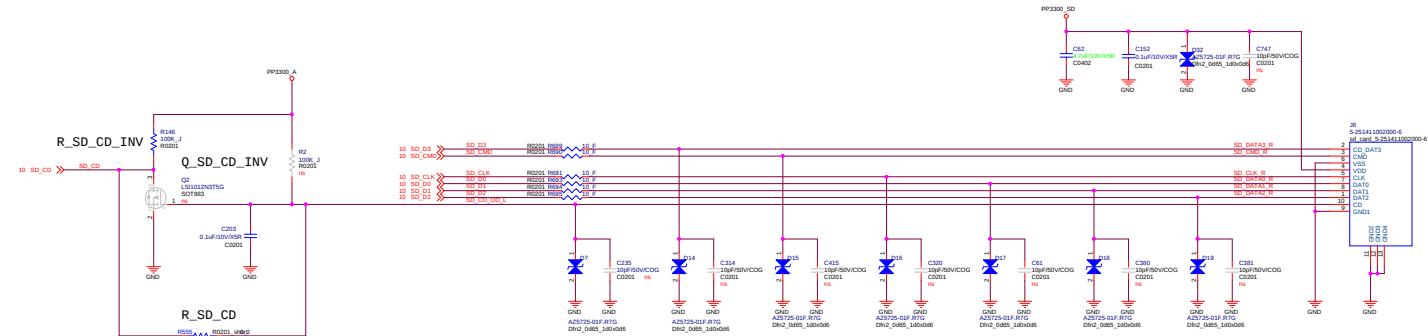


NOTE: WIRING MMC_IO_SKT_3V3_IN WITH 1.8V ALLOWS
THE BH720 TO INTERFACE WITH
1.8V LOGIC INSTEAD OF 3.3V.

ALTERNATE PART: SANDISK

*DS PIN NOT USED FOR HS200

MICRO SD CARD



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

GAIN_SLOT	GAIN (DB)
100K TO GND	15
GND	12*
FLOAT (NC)	9
VDD	6
100K TO VDD	3

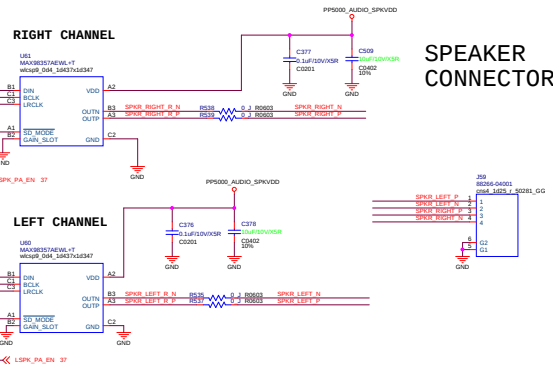
```

10.18  Q5  DATA_S
10.18.23  Q25  BCL_K
10.18.23.37  Q25  L8
    9  SPK_PA_EN  >>

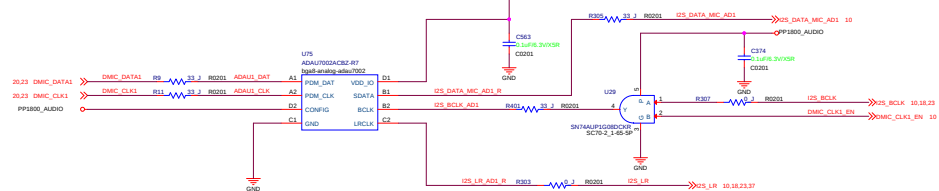
10.18  Q5  DATA_S
10.18.23  Q25  BCL_K
10.18.23.37  Q25  L8
    37  SPK_PA_EN  >>

```

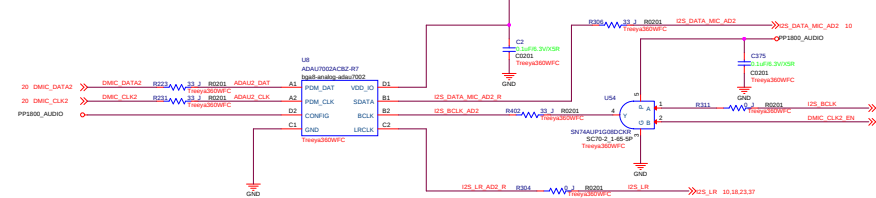
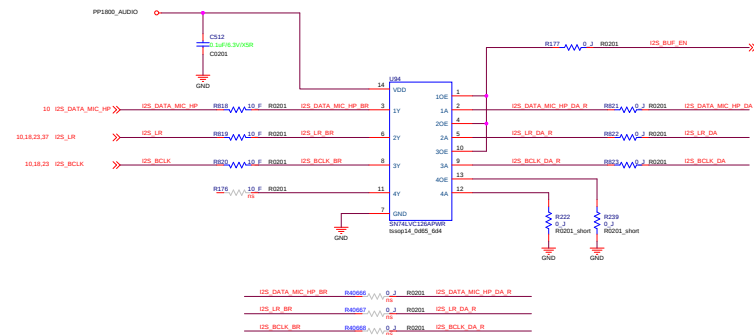
CONNECT SPKR_RIGHT_P,SPKR_RIGHT_N &
SPKR_LEFT_P,SPKR_LEFT_N AS CLOSE AS
POSSIBLE TO THE SPEAKER CONNECTOR



NOTE: EXTRA PDM TO I2S CONVERTER IN CASE EC'S WOV IS NOT AVAILABLE.



DNS IF SECOND CAMERA IS NOT NEEDED

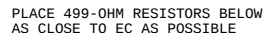
[illegible]

The schematic diagram illustrates the internal circuitry of the HP 85000A receiver. Key components and connections include:

- HP 85000A** (top center): The main receiver unit.
- HP 85000A** (bottom center): A second receiver unit, likely a duplicate or a different model.
- HP 85000A** (middle left): A third receiver unit, possibly a different model or a duplicate.
- HP 85000A** (middle right): A fourth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A fifth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A sixth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A seventh receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): An eighth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A ninth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A tenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): An eleventh receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A twelfth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A thirteenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A fourteenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A fifteenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A sixteenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A seventeenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): An eighteenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A nineteenth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A twentieth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A twenty-first receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A twenty-second receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A twenty-third receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A twenty-fourth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A twenty-fifth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A twenty-sixth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A twenty-seventh receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A twenty-eighth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A twenty-ninth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A thirtieth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A thirty-first receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A thirty-second receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A thirty-third receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A thirty-fourth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A thirty-fifth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A thirty-sixth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A thirty-seventh receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A thirty-eighth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A thirty-ninth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A fortieth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A forty-first receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A forty-second receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A forty-third receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A forty-fourth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A forty-fifth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A forty-sixth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A forty-seventh receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom left): A forty-eighth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom center): A forty-ninth receiver unit, possibly a different model or a duplicate.
- HP 85000A** (bottom right): A fiftieth receiver unit, possibly a different model or a duplicate.

DNS IF KEYBOARD BACKLIGHT IS NOT NEEDED

DNS IF PEN IS NOT NEEDED

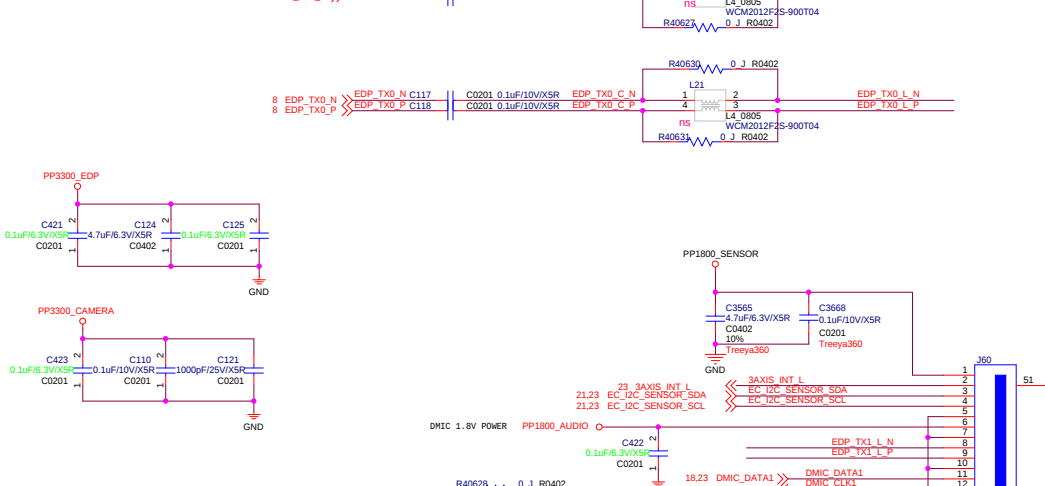
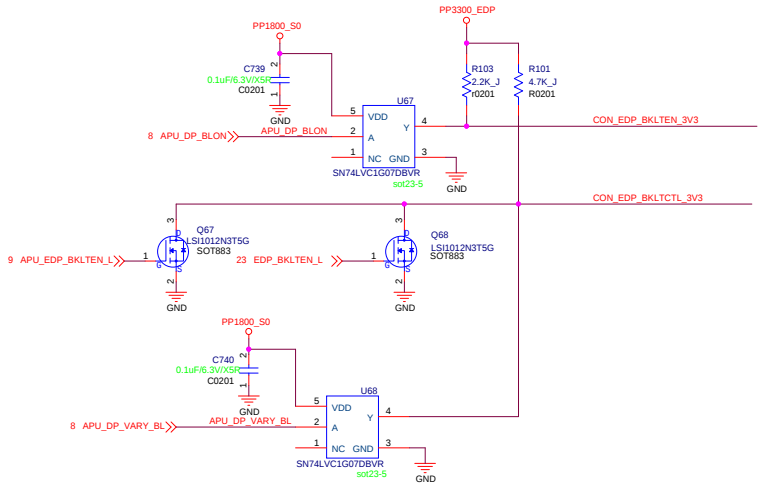


STUFF THESE FOR KEYBOARD LOCK BUTTON

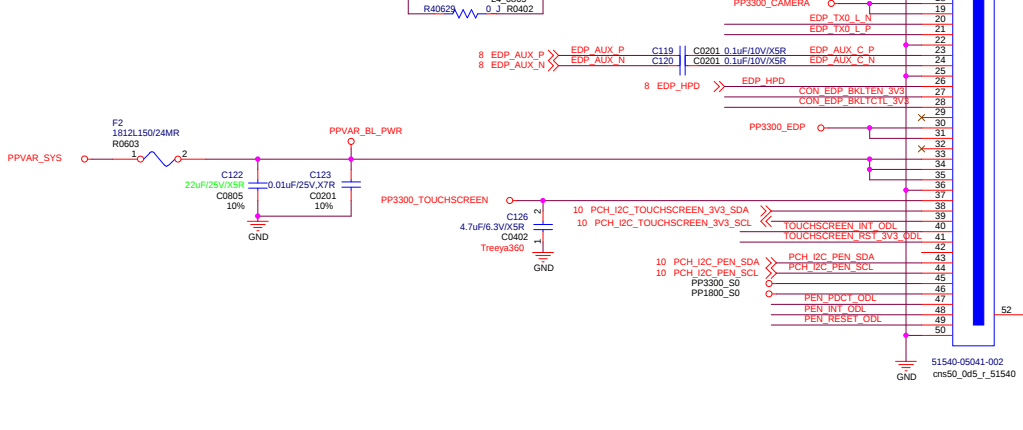
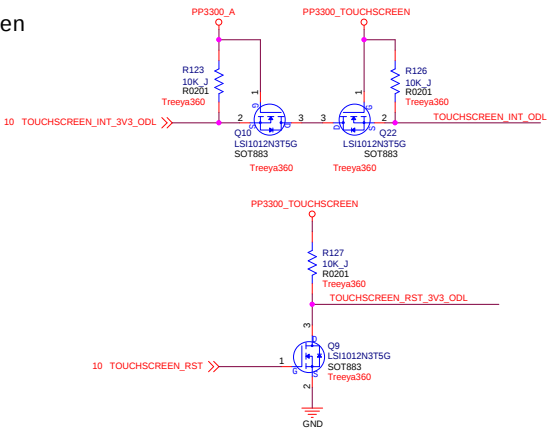
STUFF THESE FOR KEYBOARD POWER BUTTON



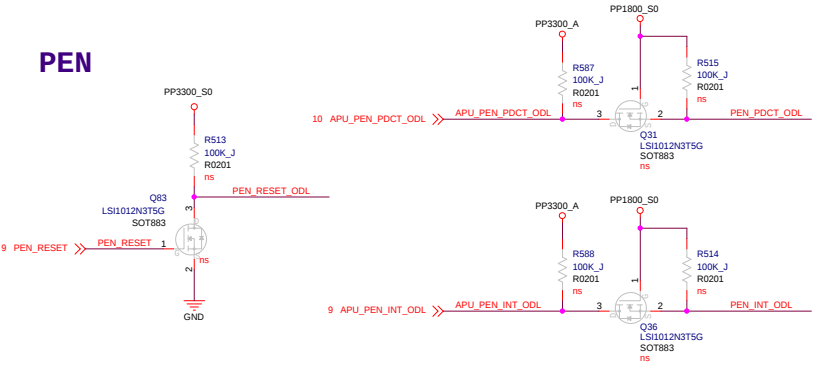
EDP+CAMERA CONNECTOR



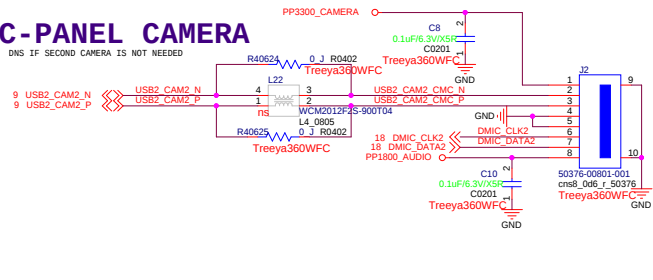
Touchscreen

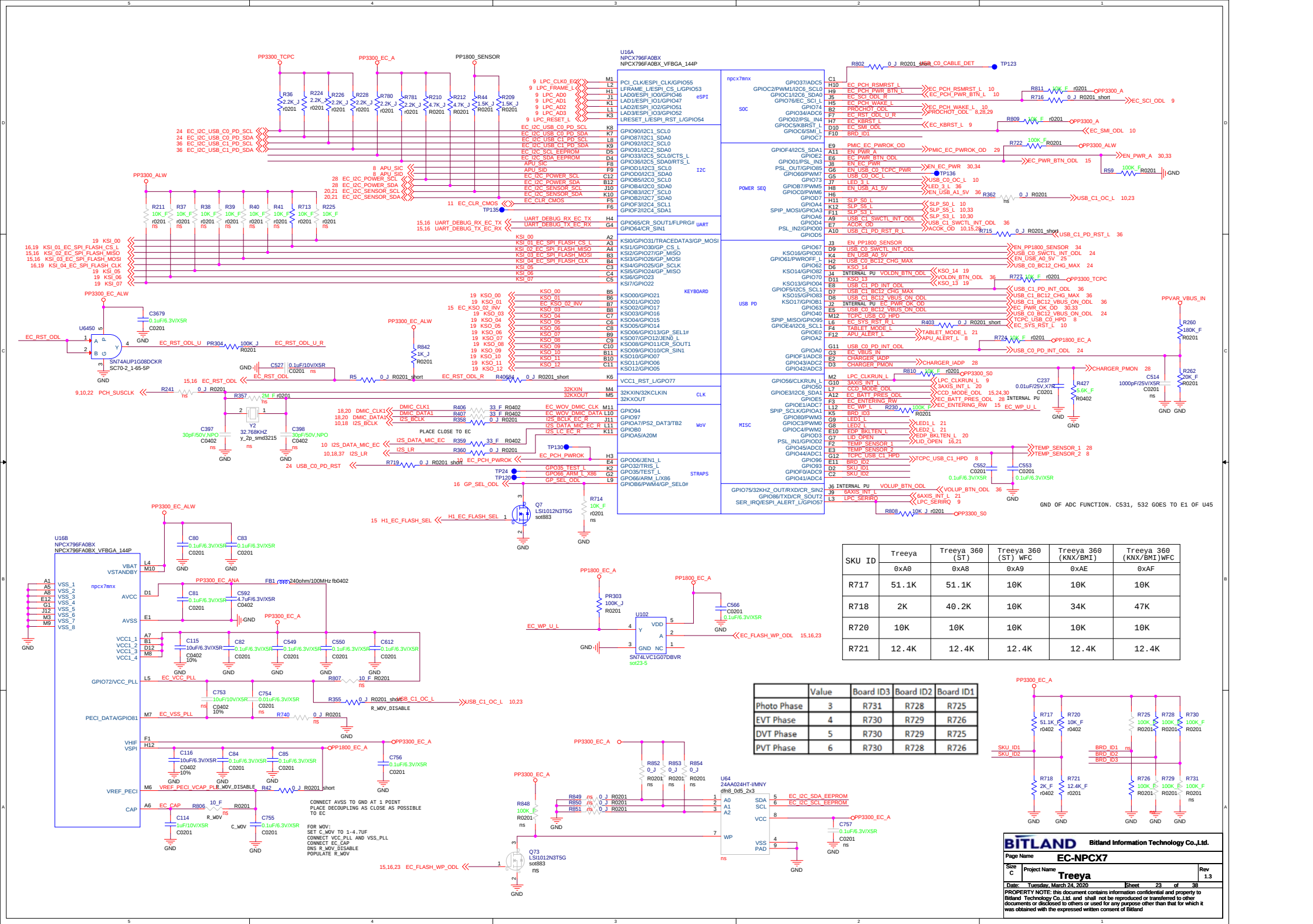


PEN

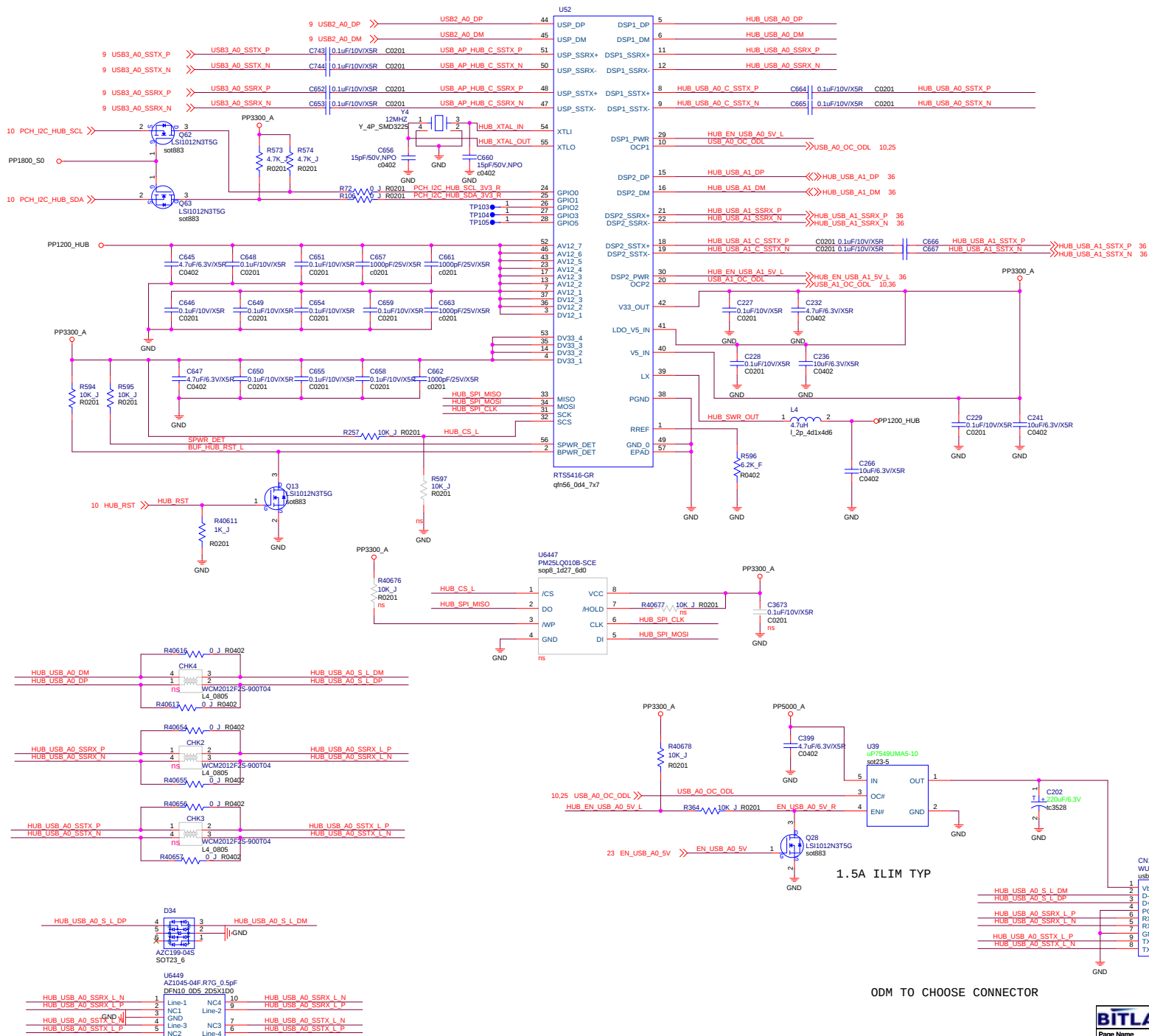


C-PANEL CAMERA





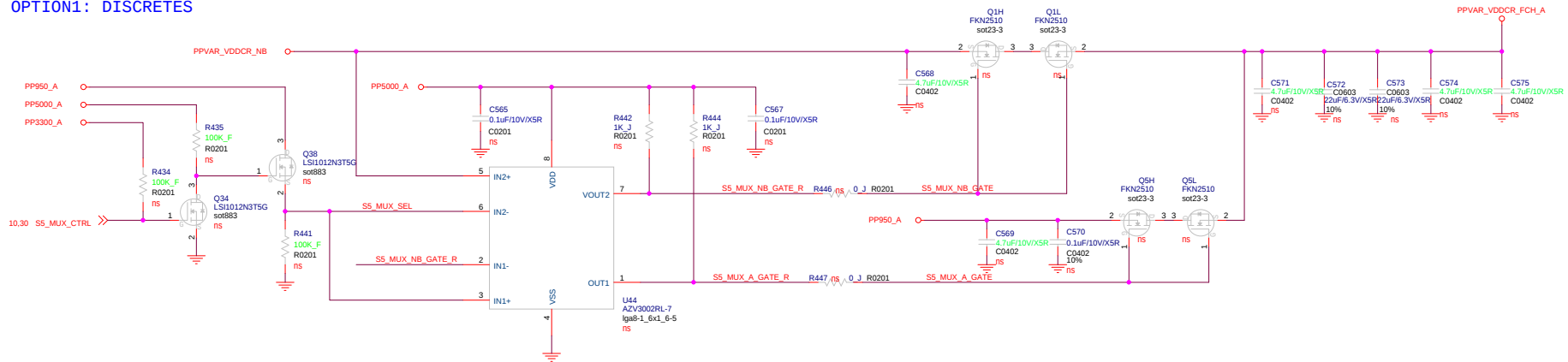
OPTION1 SCHEMATIC: TWO USB-3.1 TYPE-A PORTS



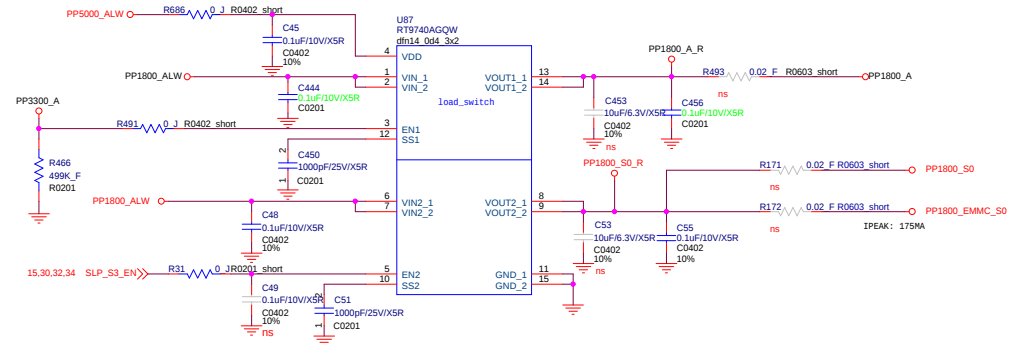
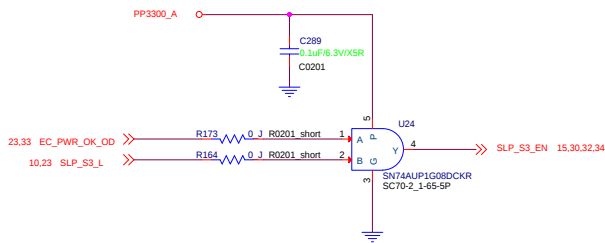
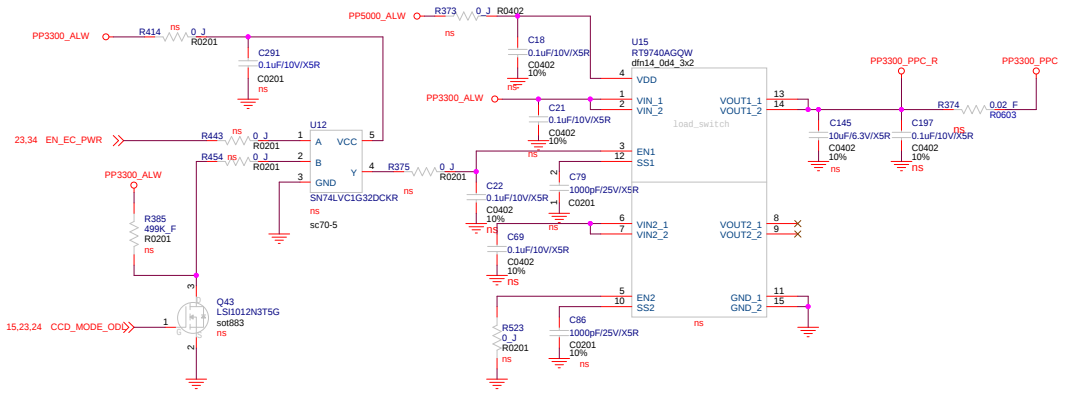
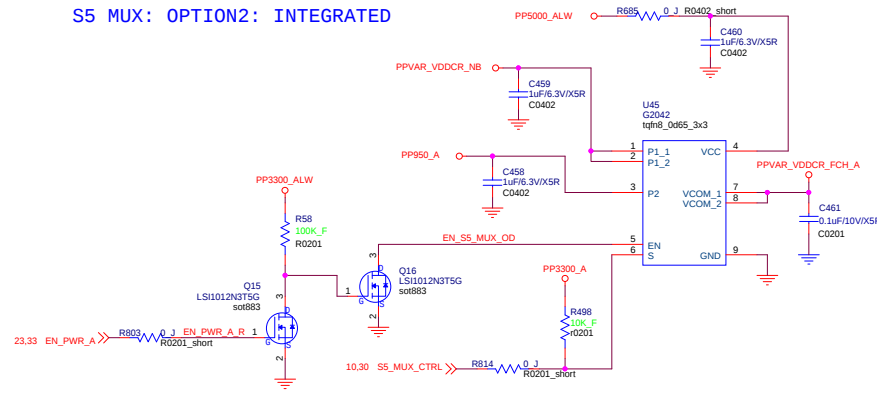
ODM TO CHOOSE CONNECTOR

OPTION3 SCHEMATIC: TWO USB-2 TYPE-A PORTS

S5 MUX: OPTION1: DISCRETES

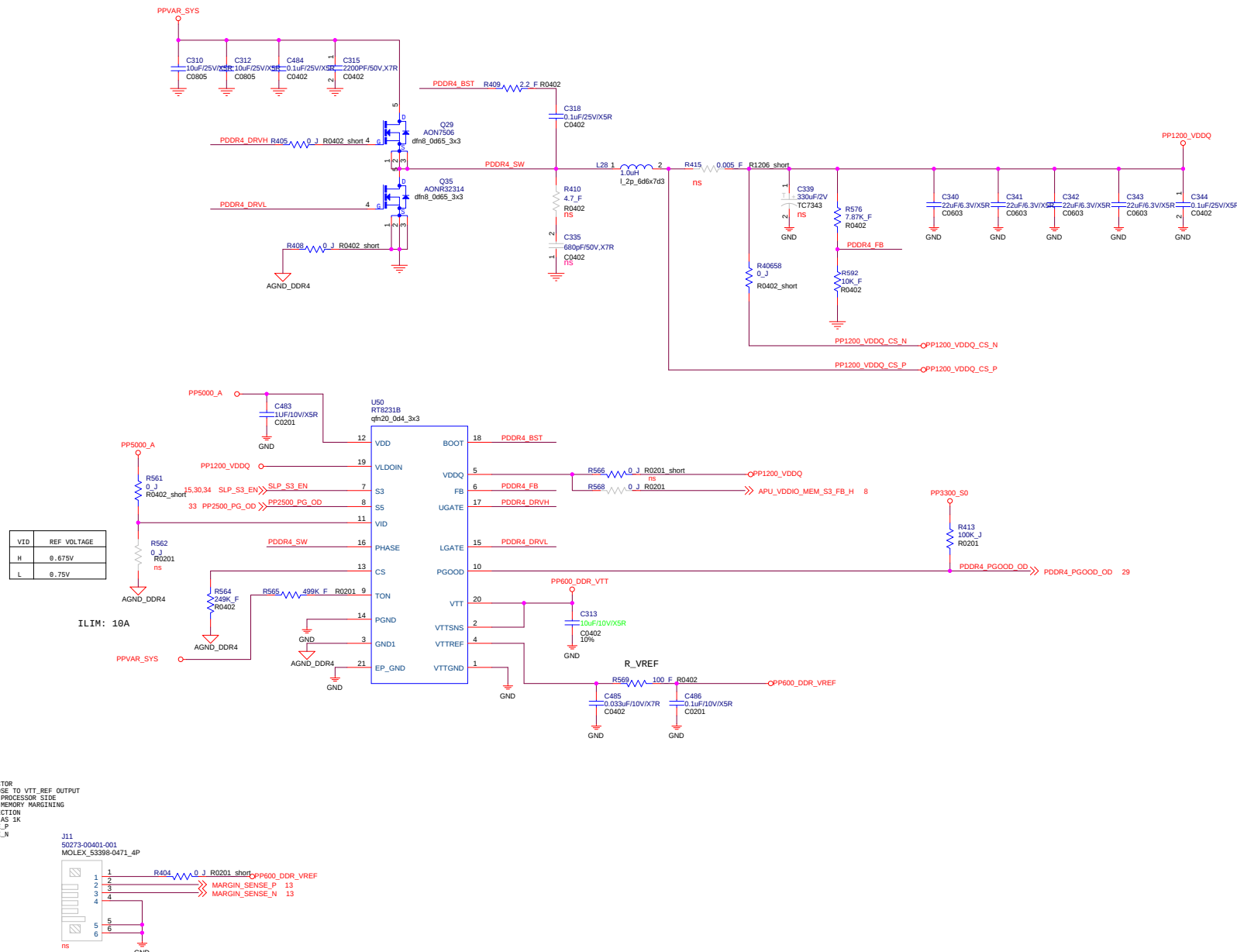


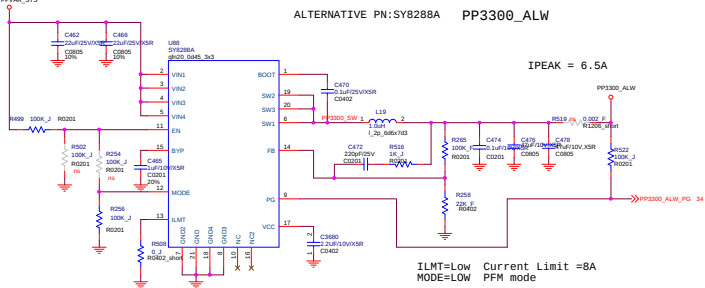
S5 MUX: OPTION2: INTEGRATED



OPTION1 SCHEMATIC: USING TPS51216(Remove)

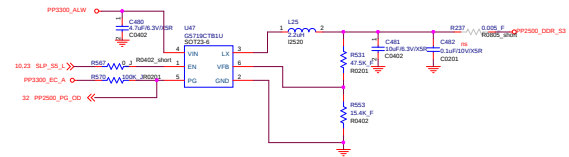
OPTION2 SCHEMATIC: USING RT8231B





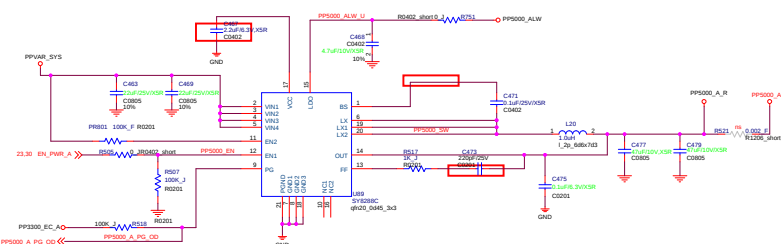
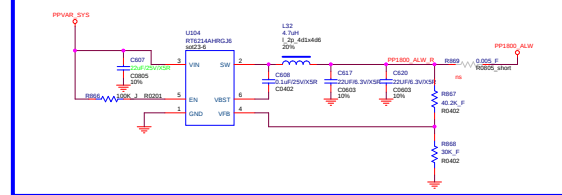
PP2500_DDR4_S3

VPP MUST RAMP AT THE SAME TIME OR EARLIER THAN VDDIO



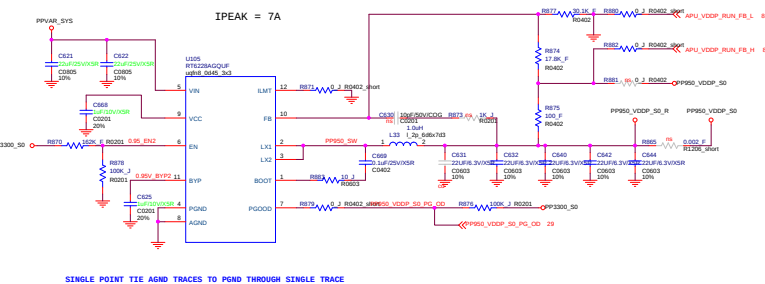
OPTINIO 2

PP1800_ALW

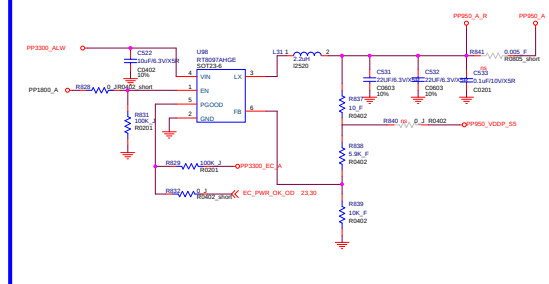


ROUTE APU_VDDP_RUN_FB_H/L DIFFERENTIALLY OPTINIO 2

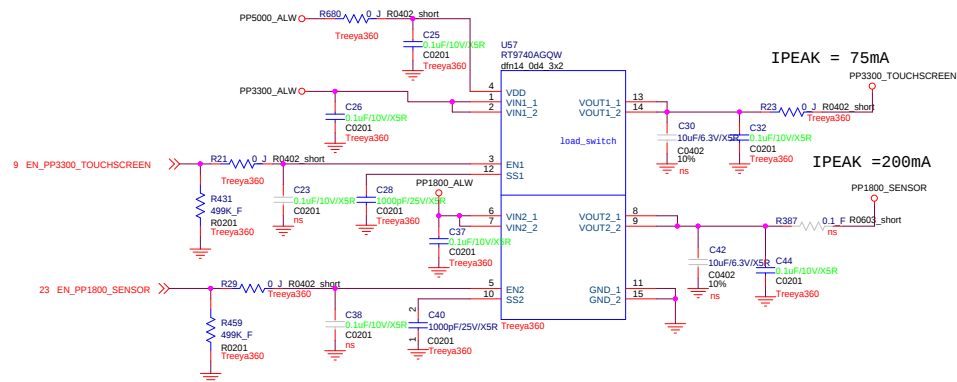
PP950_S0



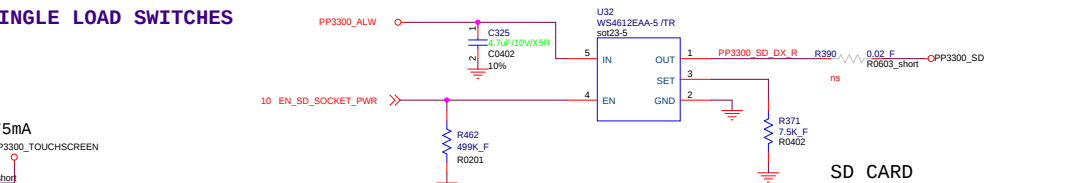
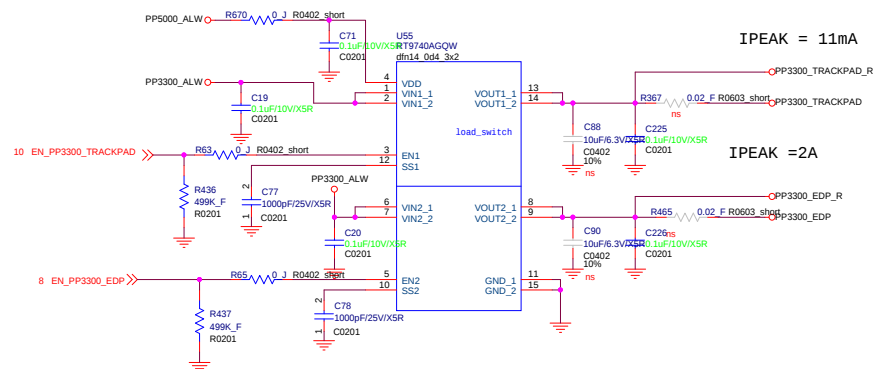
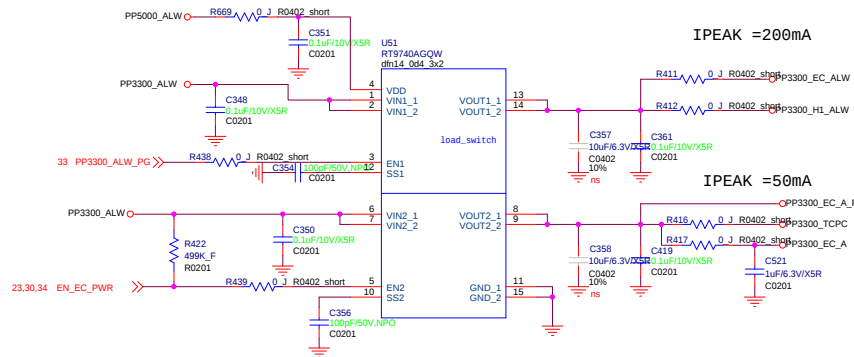
PP950_A



IF LESS EXPENSIVE, ALL DUAL LOAD SWITCHES ON THIS PAGE CAN BE REPLACED WITH SINGLE LOAD SWITCHES

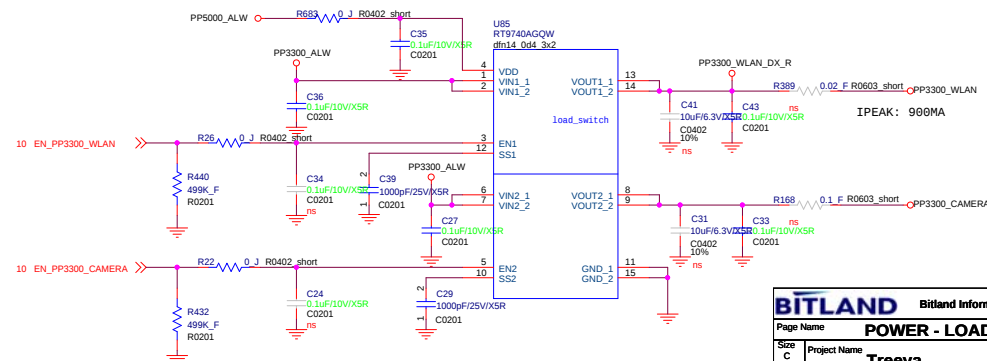
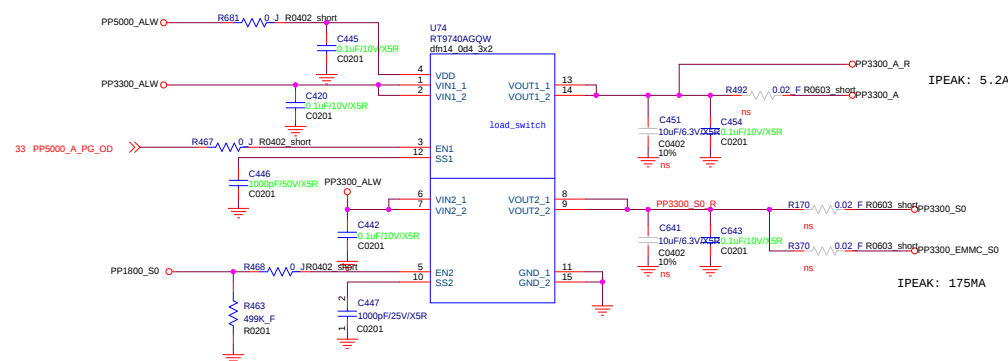
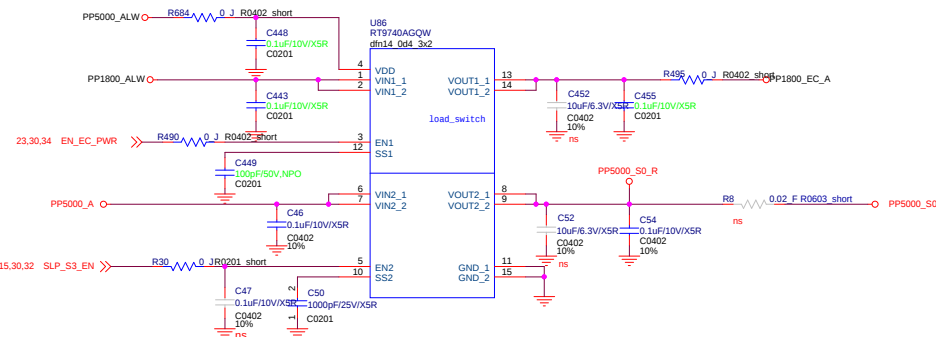


THIS LOAD SWITCH IS NEEDED TO CONTROL THE SLEW RATE FOR H1
THE SLEW NEEDS TO BE LESS THAN 500US. CURRENT SET TO 250US-ISH



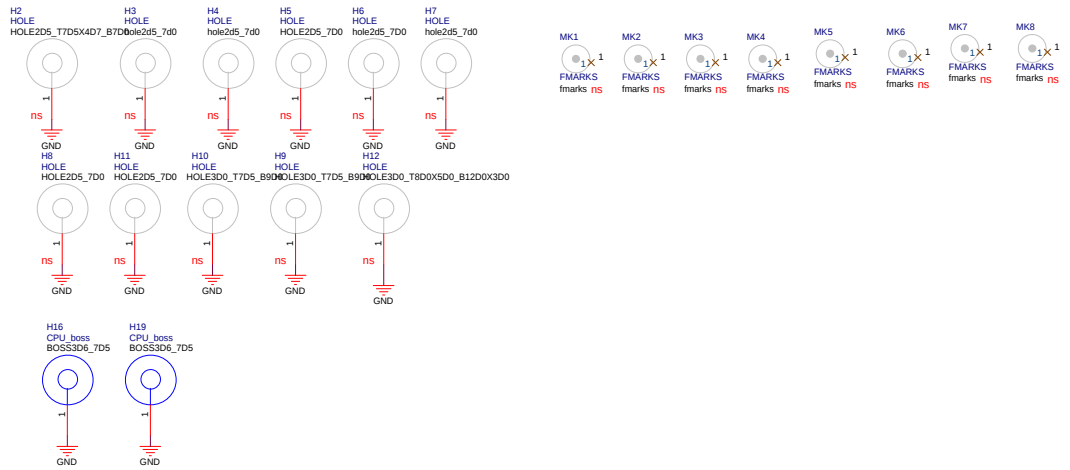
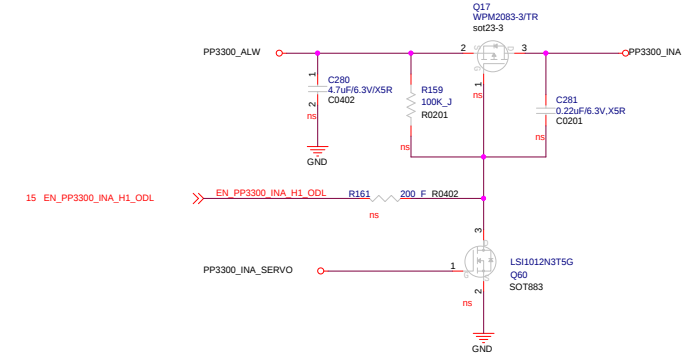
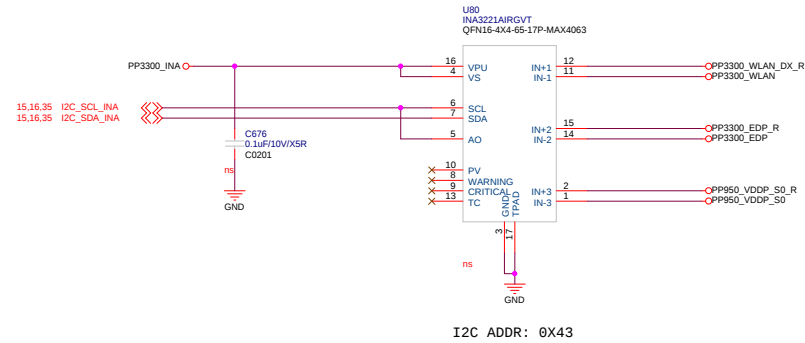
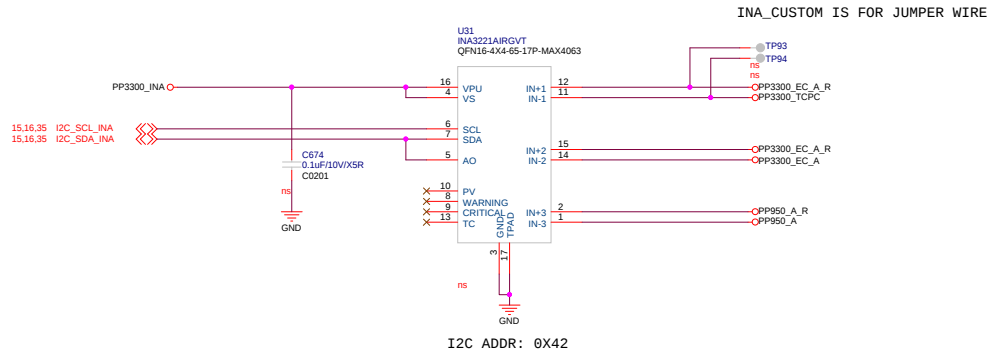
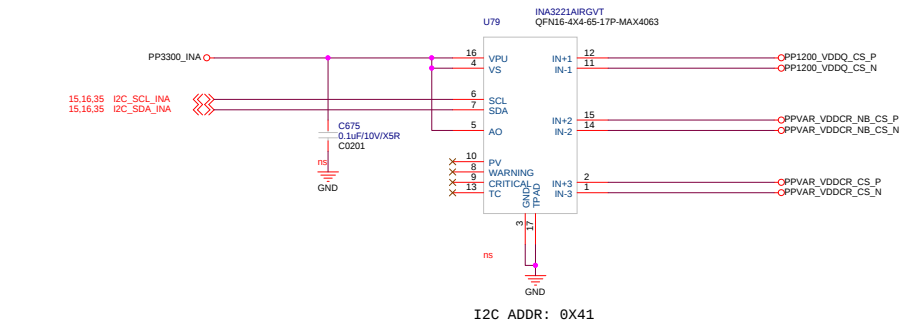
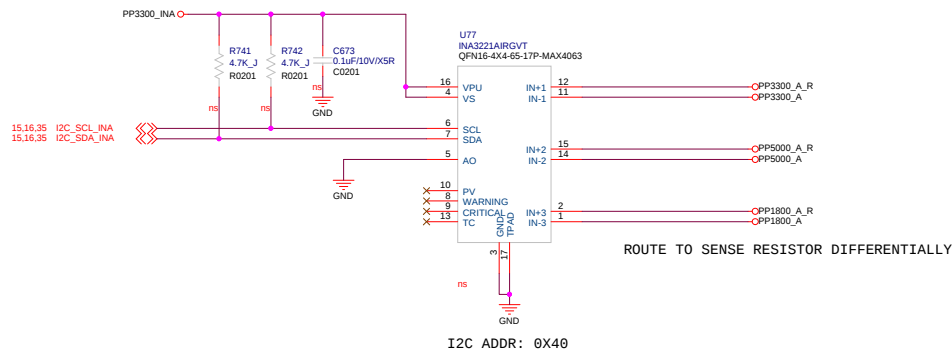
SD CARD
550mA
900mA LIMIT (SEE V4.1)
100 OHM DISCHARGE

See deviation table for change of AP255x to WS4612EAA-5 /TR

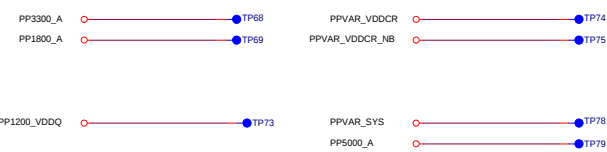


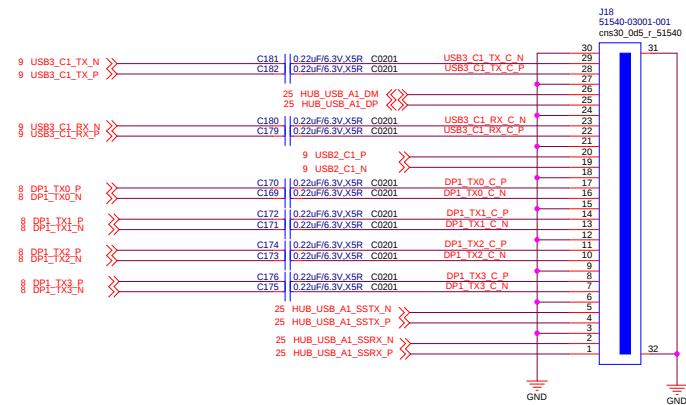
BITLAND		Bitland Information Technology Co., Ltd.	
Page Name		POWER - LOAD SWITCHES	
Size C	Project Name	Rev	
	Treeya	1.3	
Date:	Tuesday, March 24, 2020	Sheet	34 of 38

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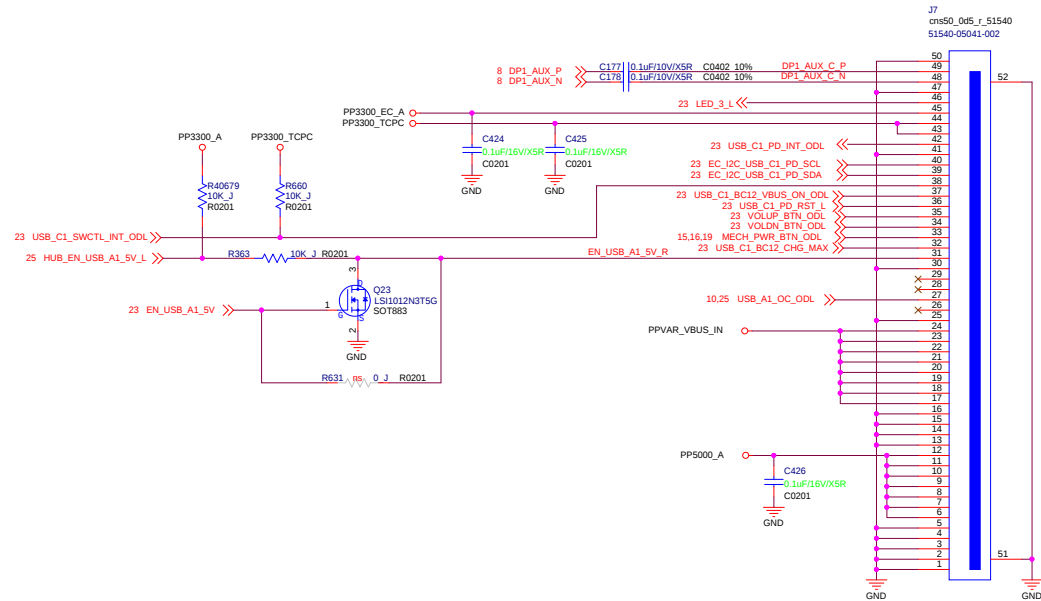


ENTIRE SHEET IS MP_DNS FOR MP
40MIL TESTPAD 70MIL TESTPAD





SELECT PER SEL SI TEAM



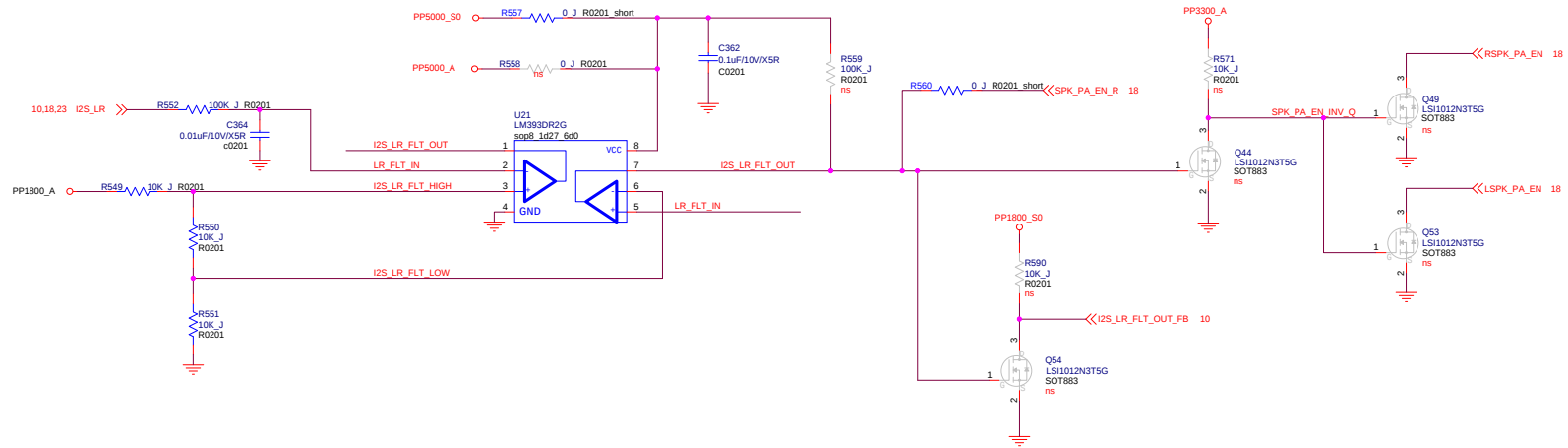
SELECT PER SEL SI TEAM
ODM TO ADJUST PINOUT/PIN COUNT

IF USING USB HUB
STUFF USB_A1_HUB
DNS USB_A1_NO_HUB

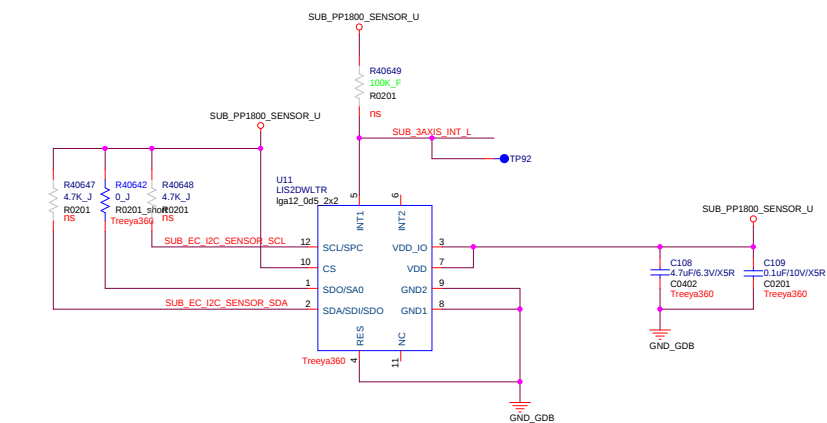
IF NOT USING USB HUB
DNS USB_A1_HUB
STUFF USB_A1_NO_HUB

IF A 3.3V COMPARATOR IS USED,CHANGE THESE RAILS TO PP3300_S0 AND PP3300_A

FETS PROVIDED AS ALTERNATIVE BACKUP METHOD OF DISSABLING THE SPK DRIVERS



ANY OPEN DRAIN COMPARATOR CAN BE USED CHOOSE WHATEVER COMPARATOR IS CHEAPEST

LID ACCEL-CORAL
(SUB BOARD)

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I2C MODE: ( SET BY NCS TIE TO VDDIO )
I2C ADDRESS: 0X3C (SDO_ADDR = GND), 0X3E (SDO_ADDR = VDDIO)
I2C MAX SPEED = 3.4MHZ
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NOTE: SEE WHITE PAPER ON ACCEL PLACEMENT FOR CONVERTIBLES

