

# HUMMINGBOARD2

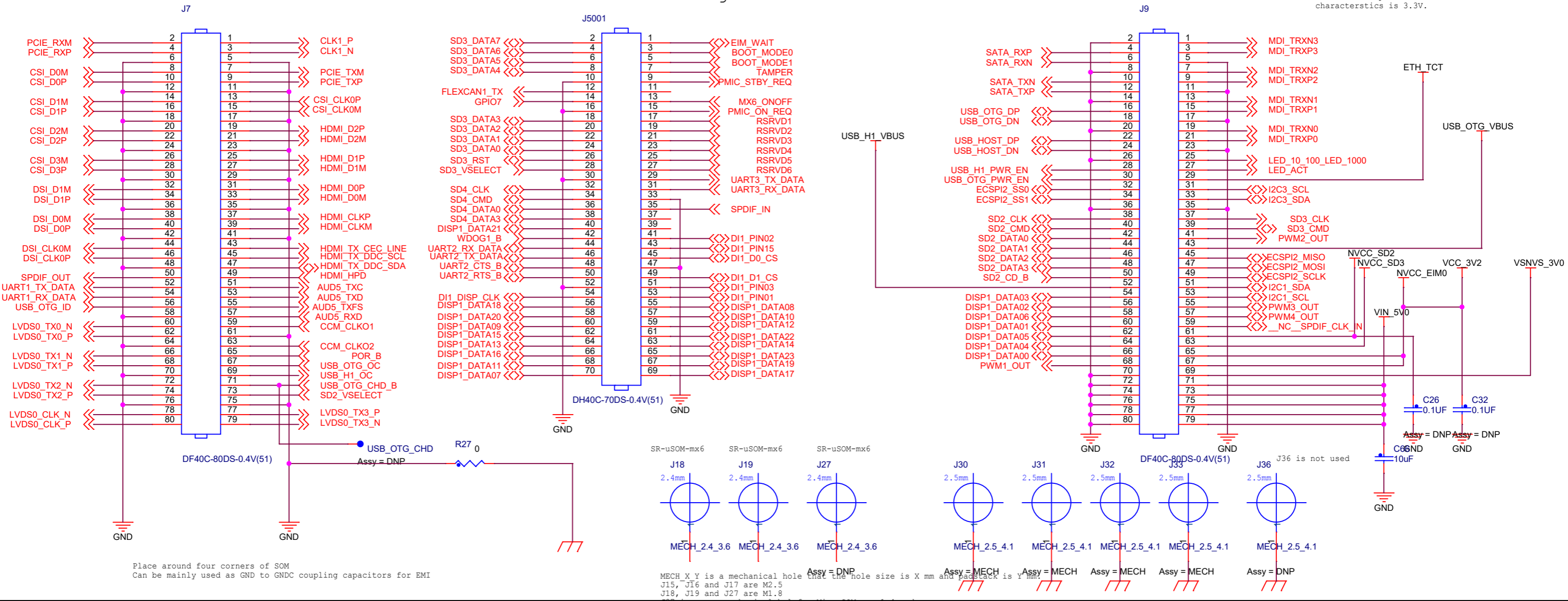
Rev 1.4

PAGE NO.	DESCRIPTION
01	TITLE SHEET
02	SOM CONNECTORS, SYSTEM POWER
03	SYSTEM, ETHERNET, UART
04	USB, HDMI
05	LVDS, MIPI, EMMC
06	PCIE, SATA, RTC, IR, SSD
07	AUDIO, MIKROBUS, ADC, CAN
08	USB 2.0 HUB



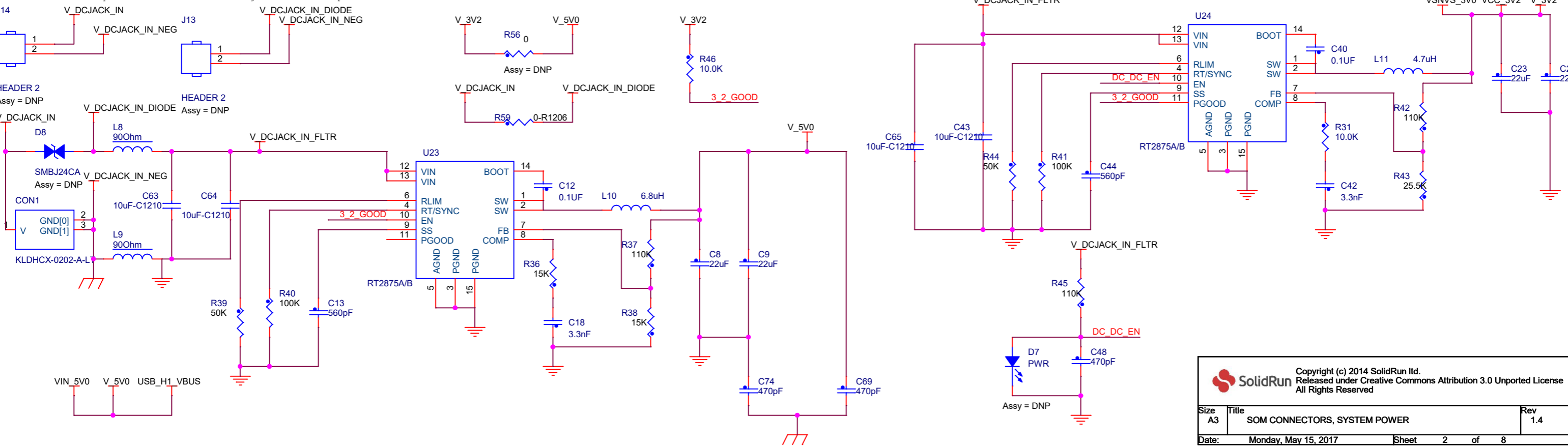
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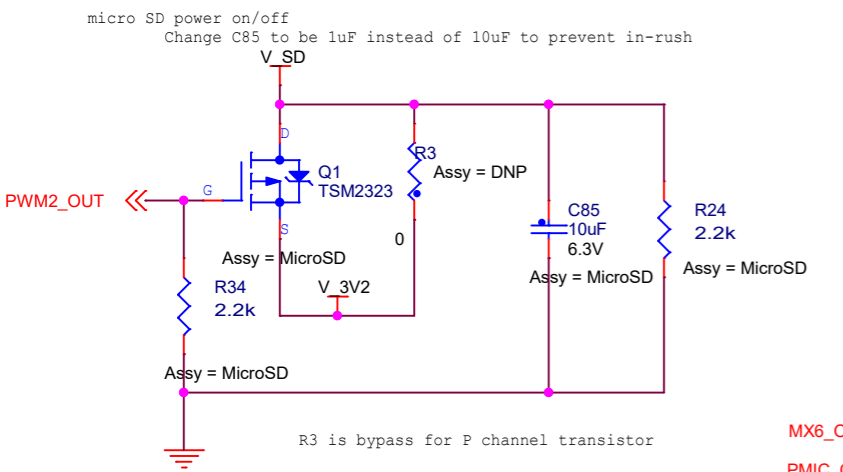
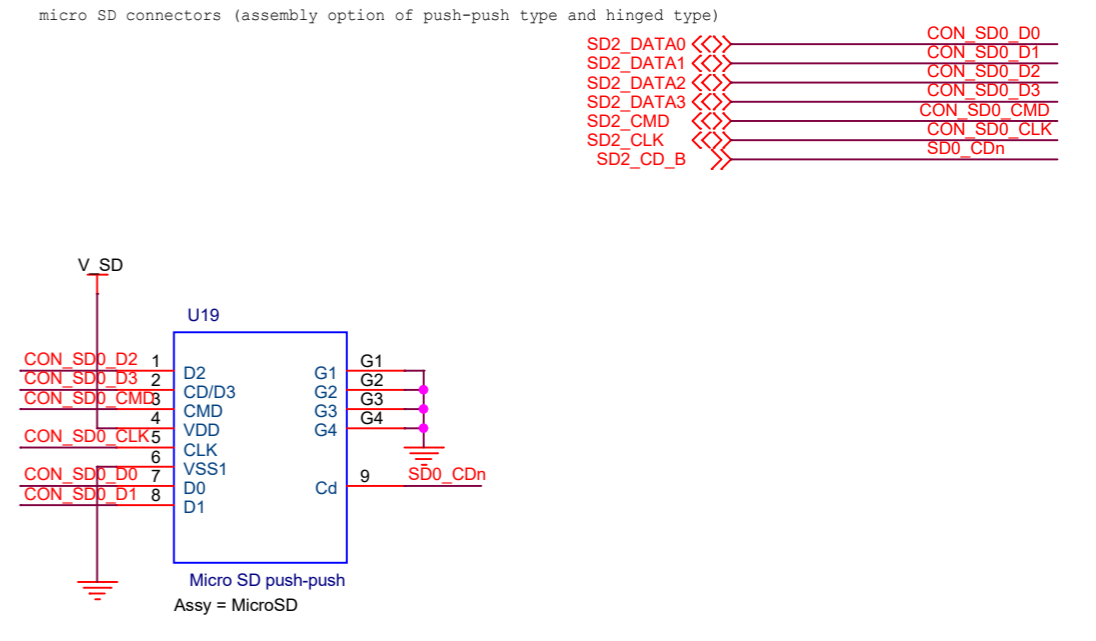
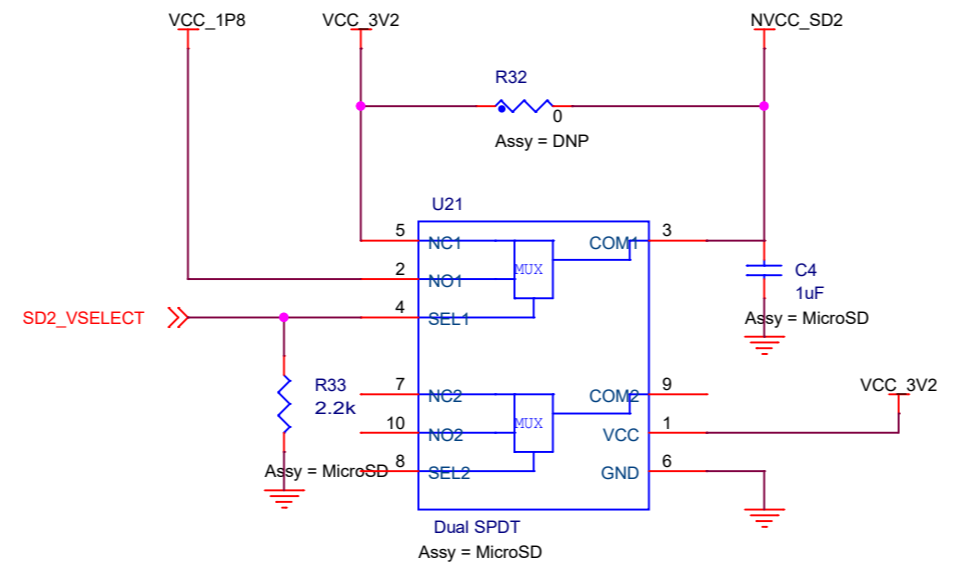
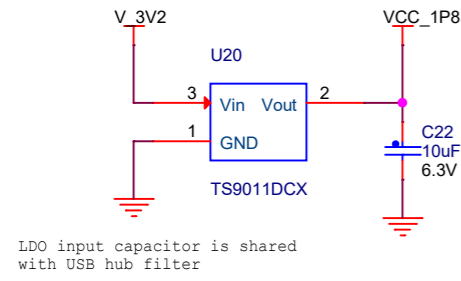


Place around four corners of SOM  
Can be mainly used as GND to GND coupling capacitors for EMI

MECH X Y is a mechanical hole that the hole size is X mm and pad back is Y mm.  
J15, J16 and J17 are M2.5  
J18, J19 and J27 are M1.8  
J27 is a new mechanical hole for MicroSOM rev 1.4 and newer



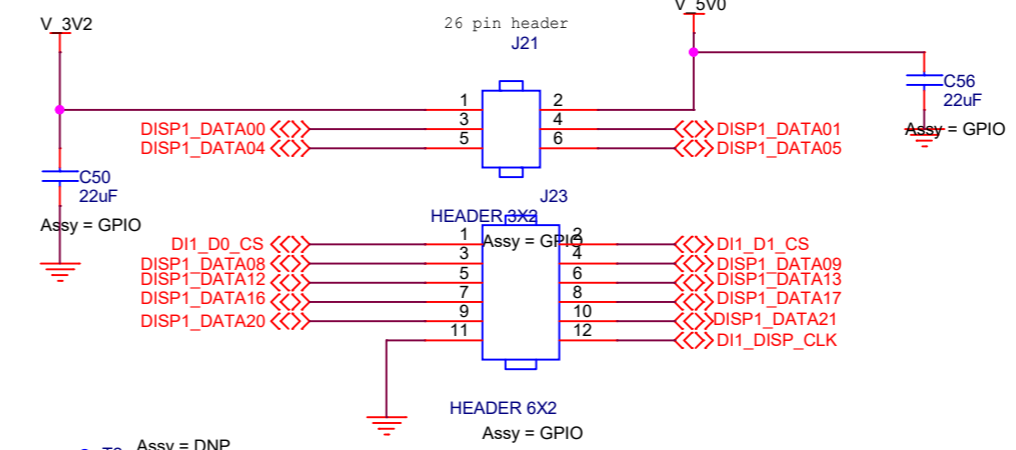
SDIO 3.3v / 1.8v switch circuitry



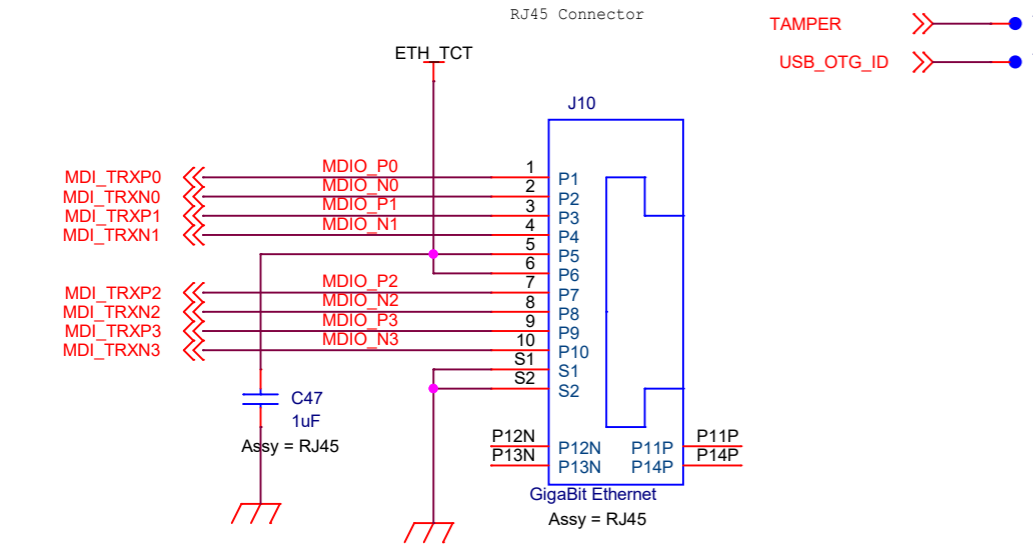
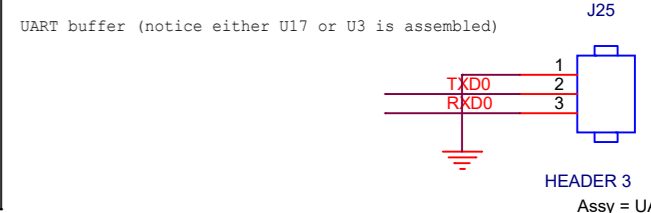
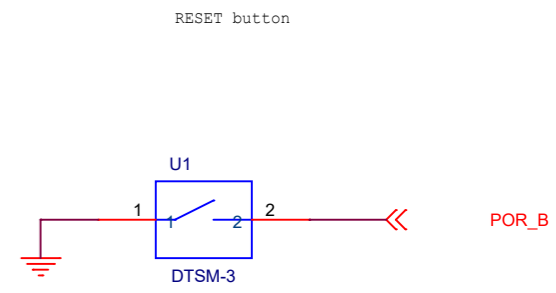
GPIO pin mapping -

Pin	GPIO
7	(1, 1)
11	(3, 9)
12	(3, 8)
13	(3, 7)
15	(3, 6)
16	(7, 2)
18	(7, 3)
22	(3, 3)

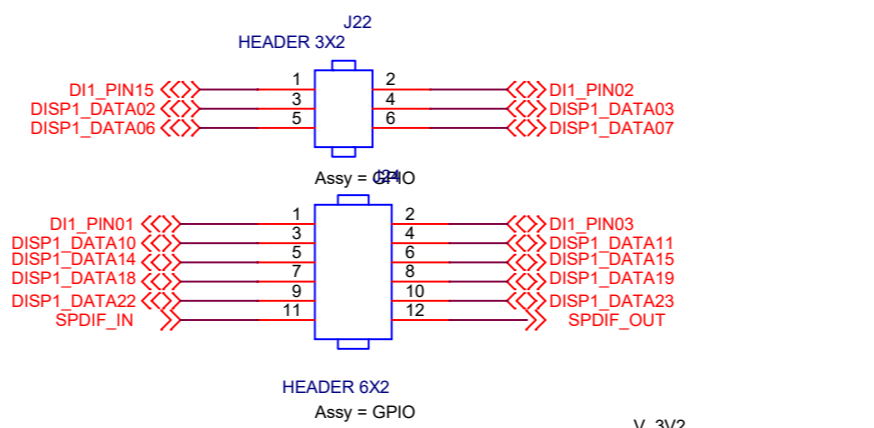
SPI and I2C can be also muxed to be GPIO



- MX6\_ONOFF >> T5 Assy = DNP
- PMIC\_ON\_REQ << T6 Assy = DNP
- PMIC\_STBY\_REQ << T7 Assy = DNP
- GPIO7 >> T2 Assy = DNP
- EIM\_WAIT << T3 Assy = DNP

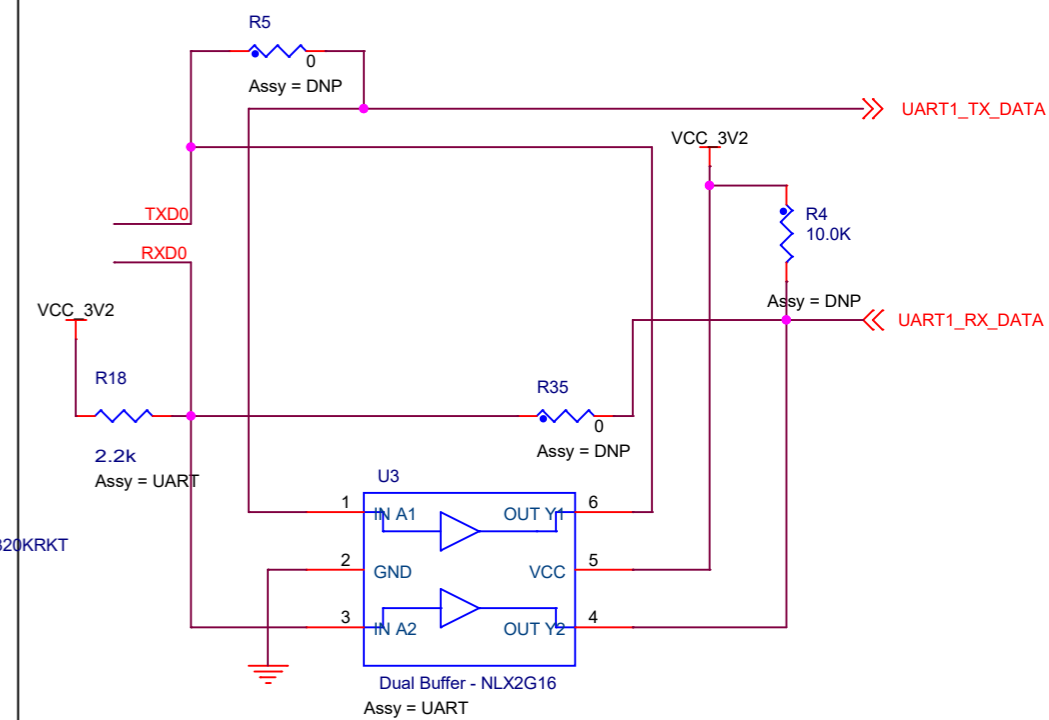
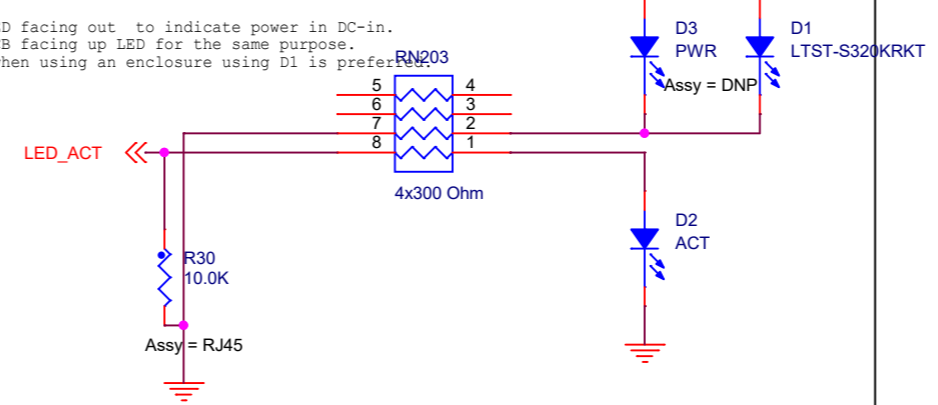


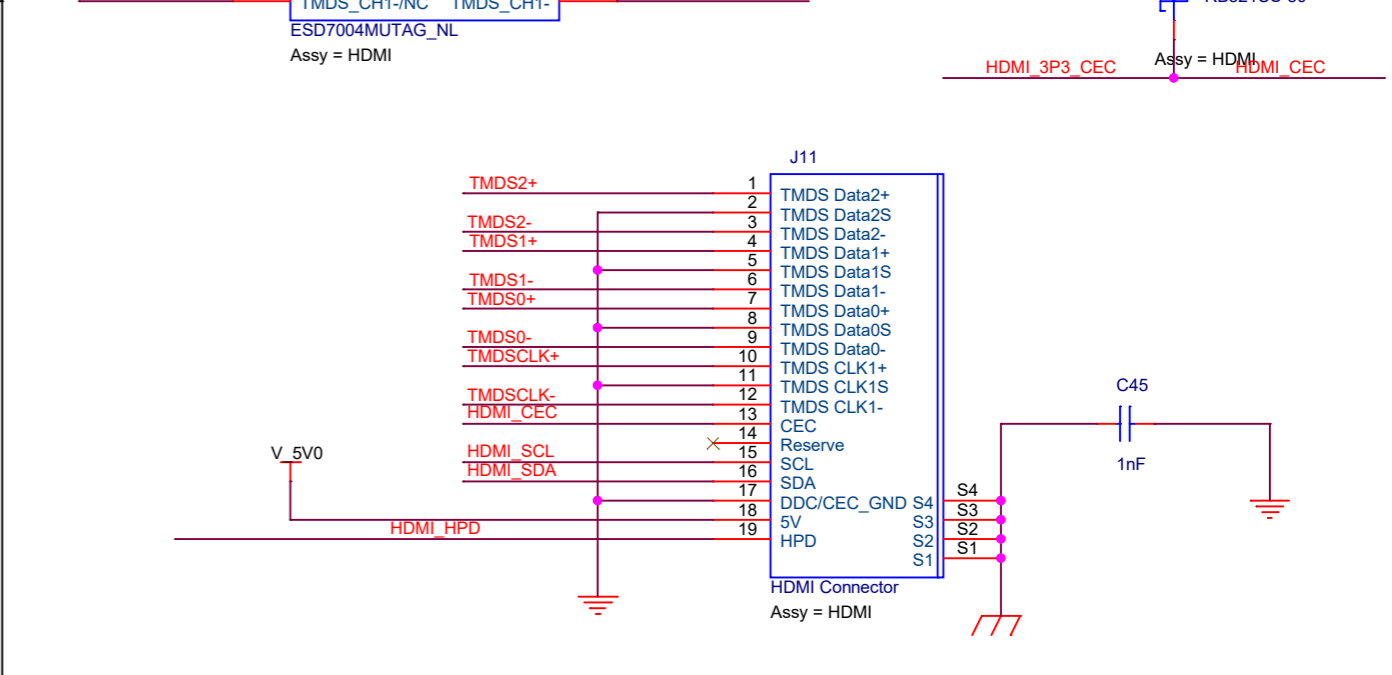
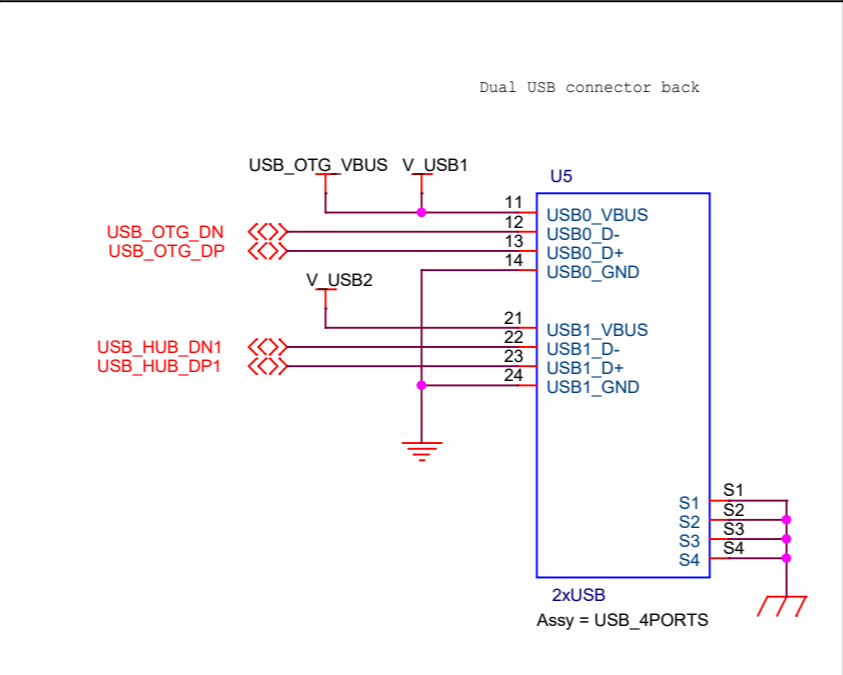
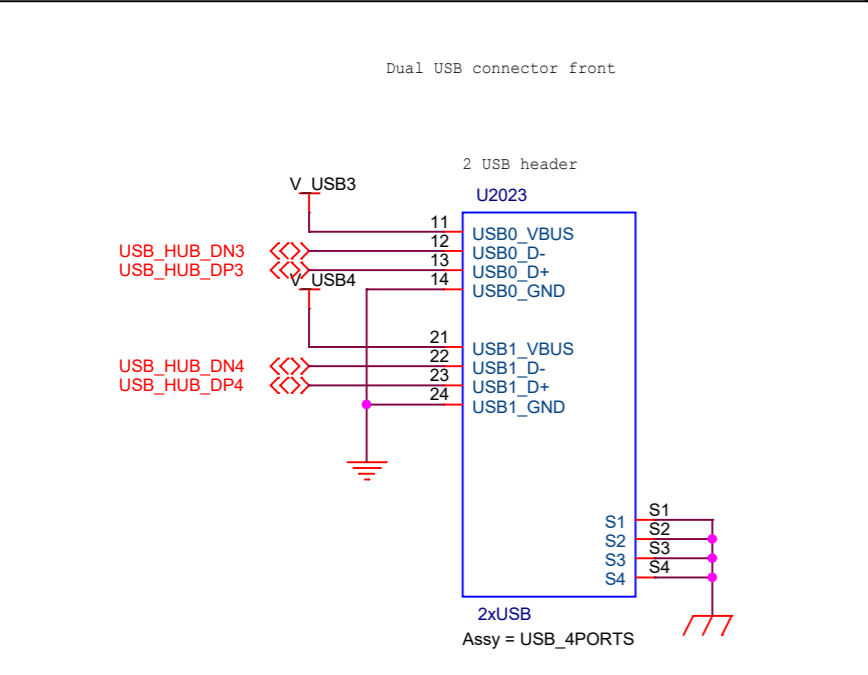
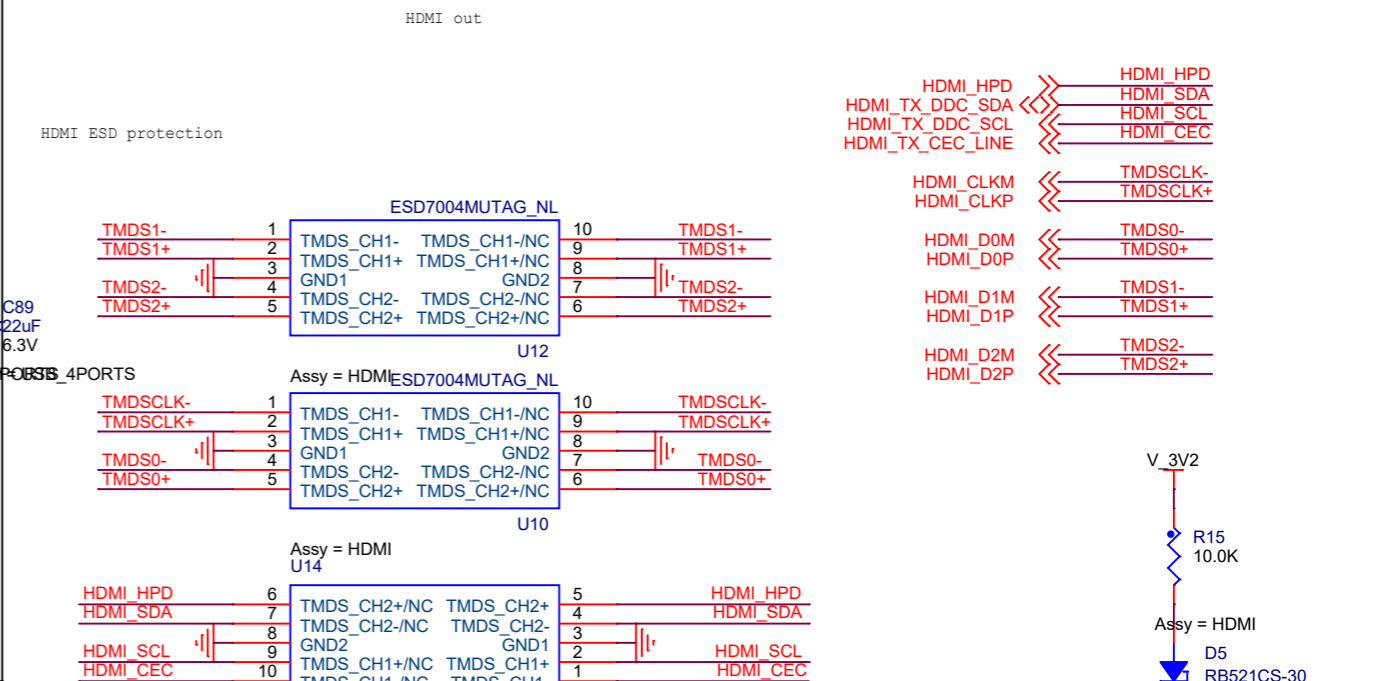
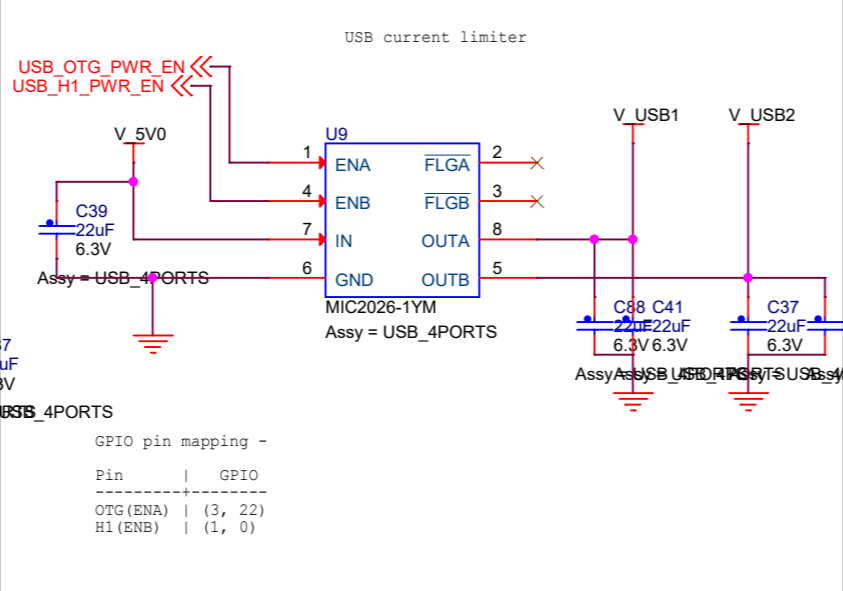
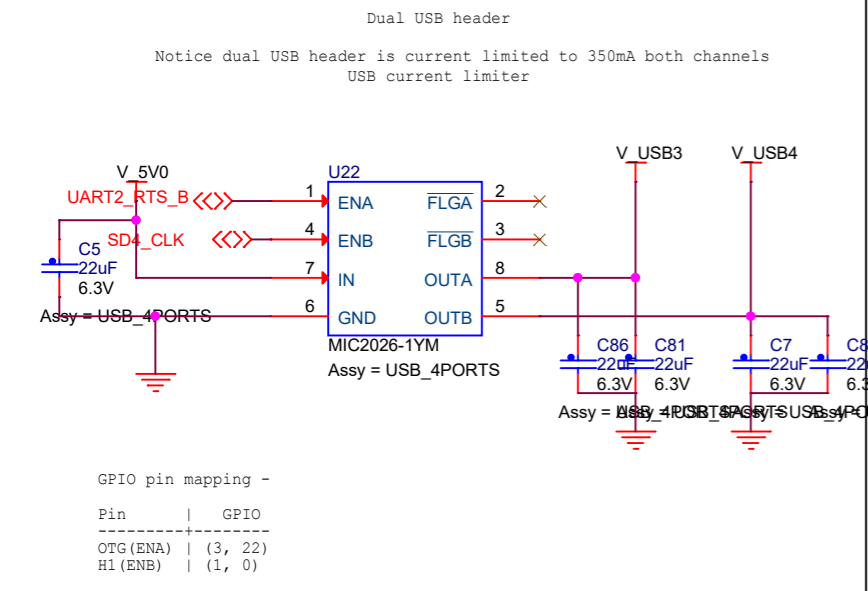
- TAMPER >> T8 Assy = DNP
- USB\_OTG\_ID >> T9 Assy = DNP



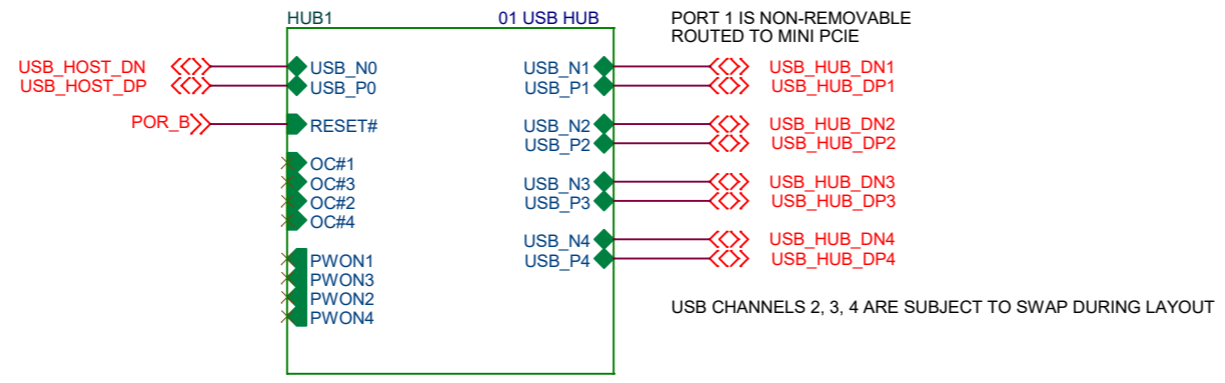
LEDs, Power and Ethernet ACT/Link

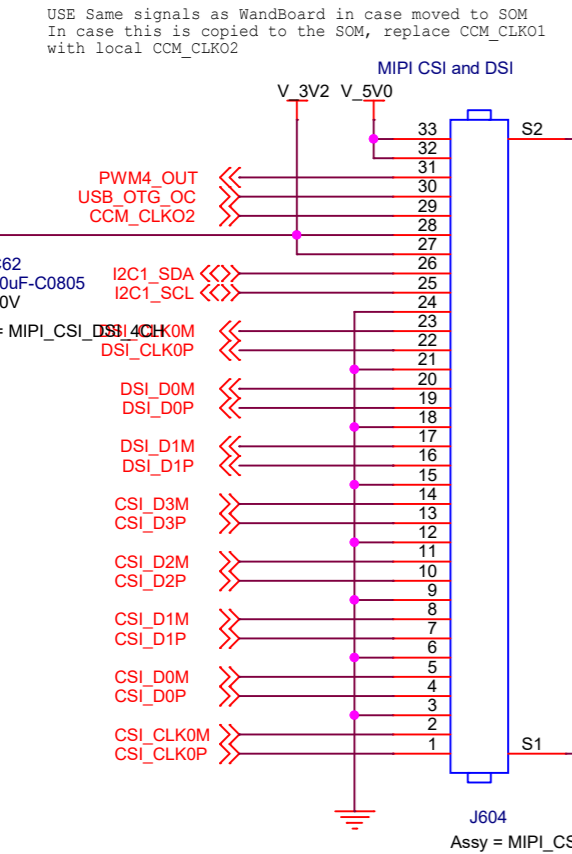
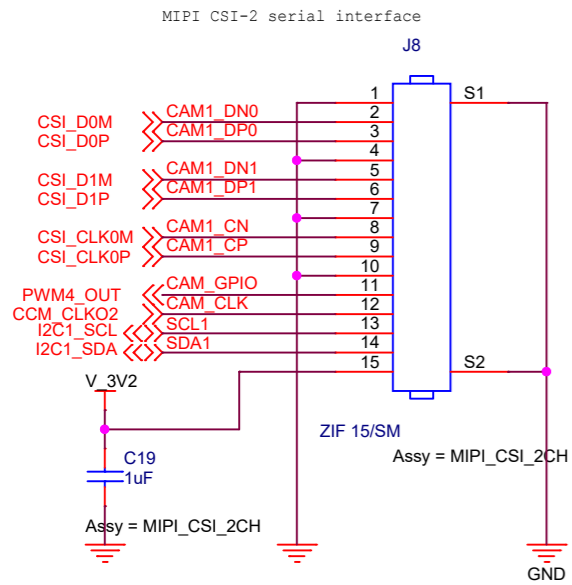
D1 is an LED facing out to indicate power in DC-in.  
D3 is on PCB facing up LED for the same purpose.  
Typically when using an enclosure using D1 is preferred.



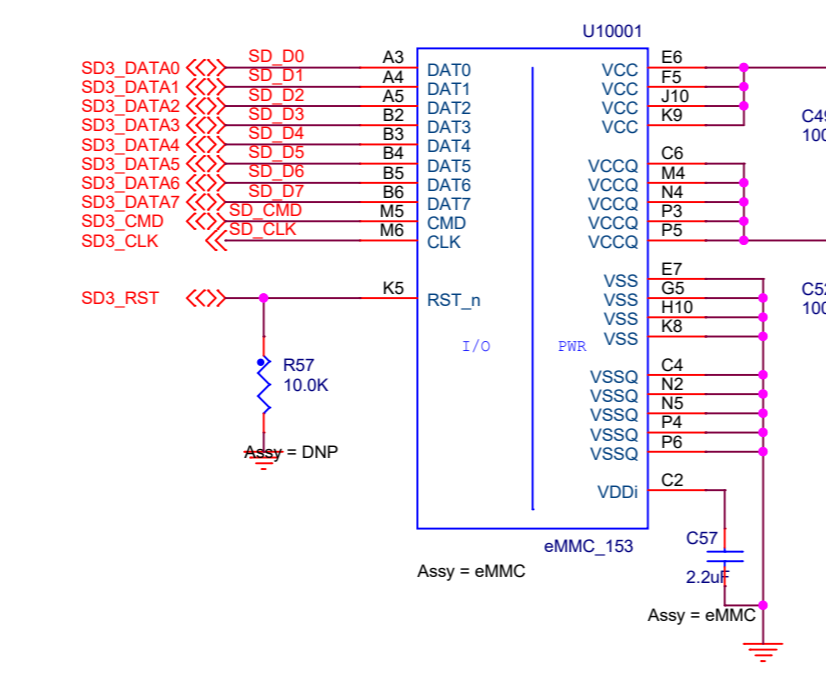
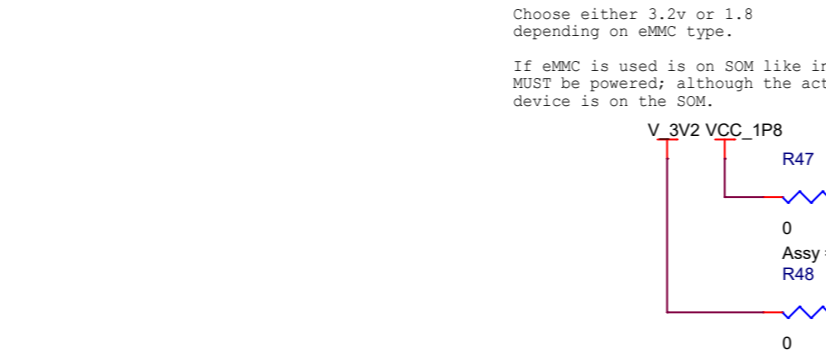
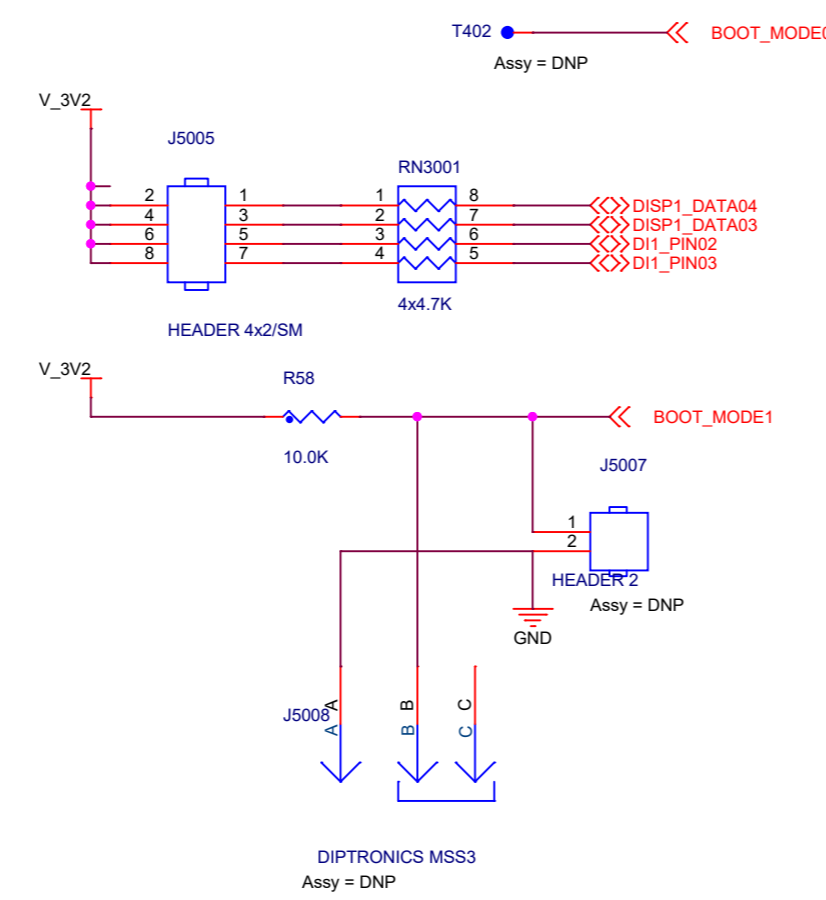


Notice that the USB HUB was implemented as a hierarchal design and the actual implementation is in the last page.





USE Same signals as WandBoard in case moved to SOM  
In case this is copied to the SOM, replace CCM\_CLK01  
with local CCM\_CLK02



Boot select. Note that previous rev 1.2 was buggy and this design with the DIP switch is the correct one.

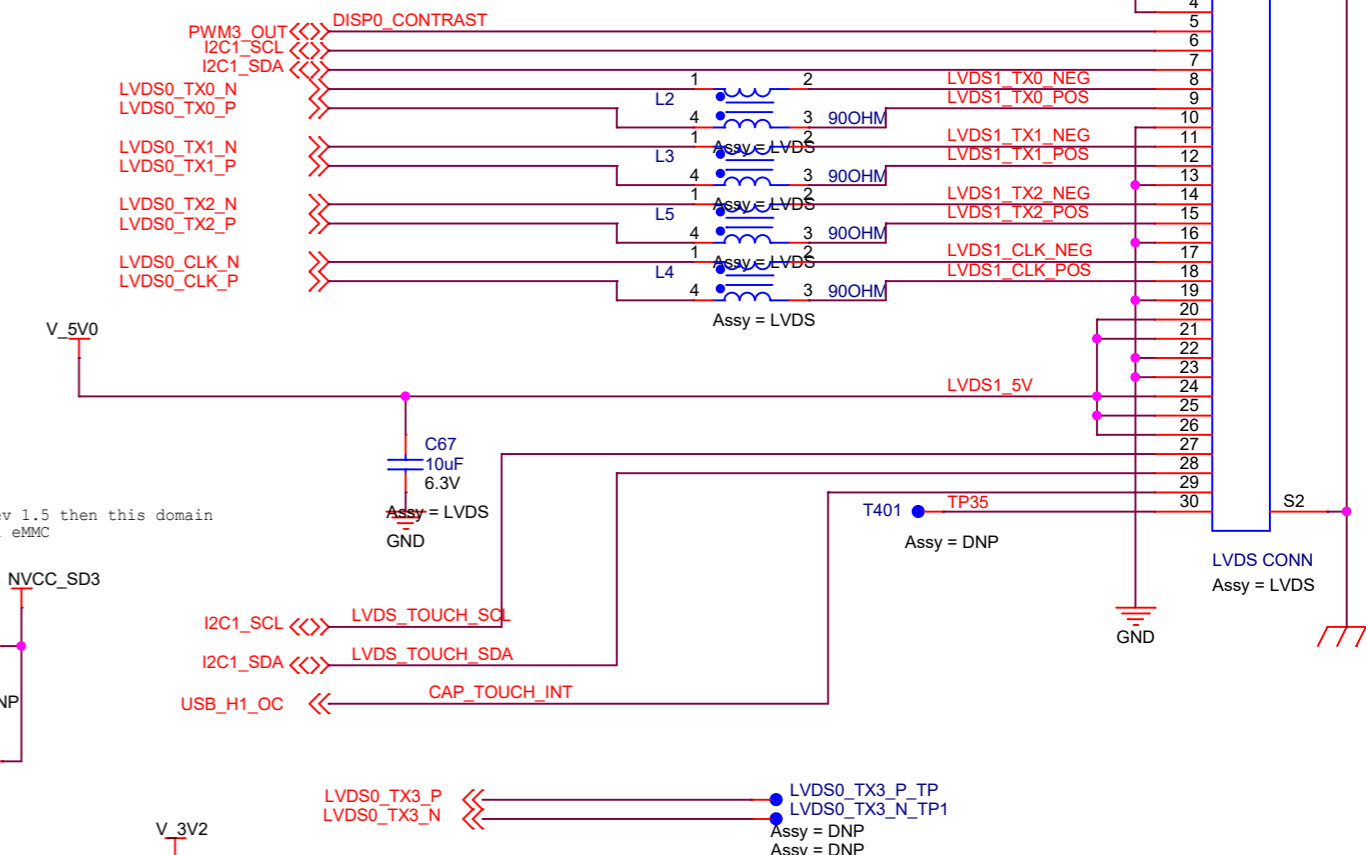
To select boot device the MicroSOM being used must have it's boot fuses unset.  
Pay special attention to the GPIO header if it's being pulled up since pulling part of the lines up will affect the boot source.

To select boot device, place jumpers on J5005 -  
1. MicroSD - 0110 - place jumpers on pins 3-4, 5-6  
2. eMMC - 1101 - place jumpers on pins 1-2, 3-4 and 7-8  
3. M.2 (SATA) - 1000 - place jumpers on pins 1-2

The explanation -  
DISP1\_DATA04 = EIM\_DA5 i.MX6 signal = BOOT\_CFG1[5]  
DISP1\_DATA03 = EIM\_DA6 i.MX6 signal = BOOT\_CFG1[6]  
D11\_PIN02 = EIM\_DA11 i.MX6 signal = BOOT\_CFG2[3]  
D11\_PIN03 = EIM\_DA12 = BOOT\_CFG2[4]

In reset the boot gpio bus is pulled down (after reset they are pulled high); so you need to pull up the required signals -  
eMMC on uSDHC3 - BOOT\_CFG1[5], BOOT\_CFG1[6], BOOT\_CFG2[4]  
SD - on uSDHC2 - BOOT\_CFG1[6], BOOT\_CFG2[3]  
SATA - BOOT\_CFG1[5]

J5008 is an example for using an external dip switch to force booting from USB OTG (manual field update for an example).  
J5007 can force the same thing but on the board.  
Notice that by default both are not assembled.  
The idea is having BOOT\_MODE[1:0] = 00; which is boot from eFuse; but since eFuse BT\_FUSE\_SEL is not set i.e. force booting from fuses is not set, the processor will fallback to the serial downloader (USB OTG boot).  
Refer to i.MX6 Boot eFuse Description table for more information.  
If you want to support boot from serial downloader without this trick then you need to float BOOT\_MODE1 and pull up BOOT\_MODE0; so BOOT\_MODE[1:0] becomes 01 which means boot from serial downloader.

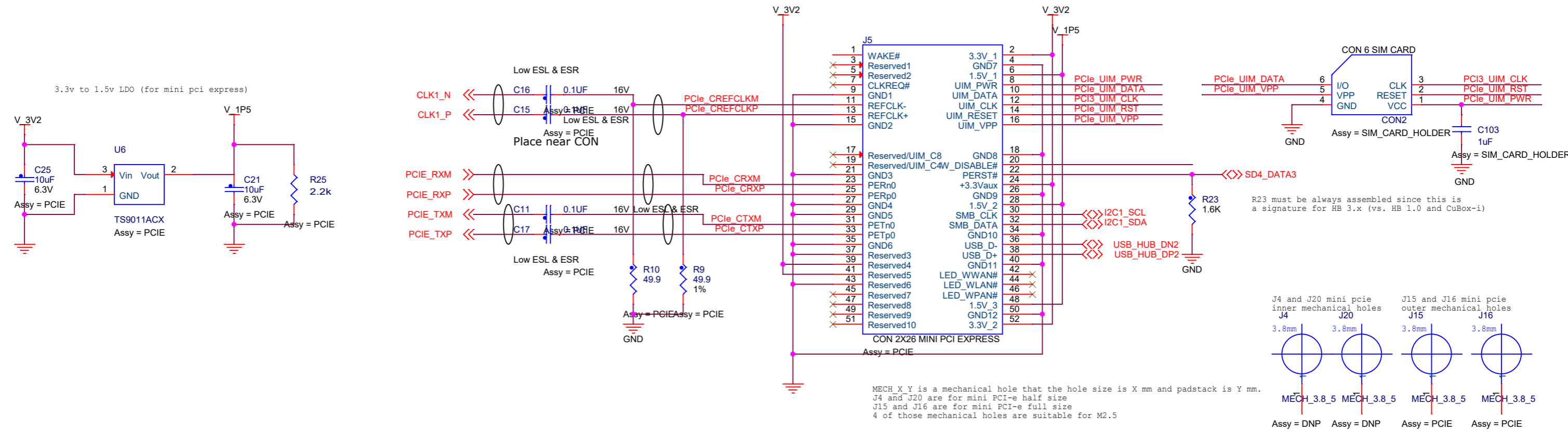


Choose either 3.2v or 1.8 depending on eMMC type.

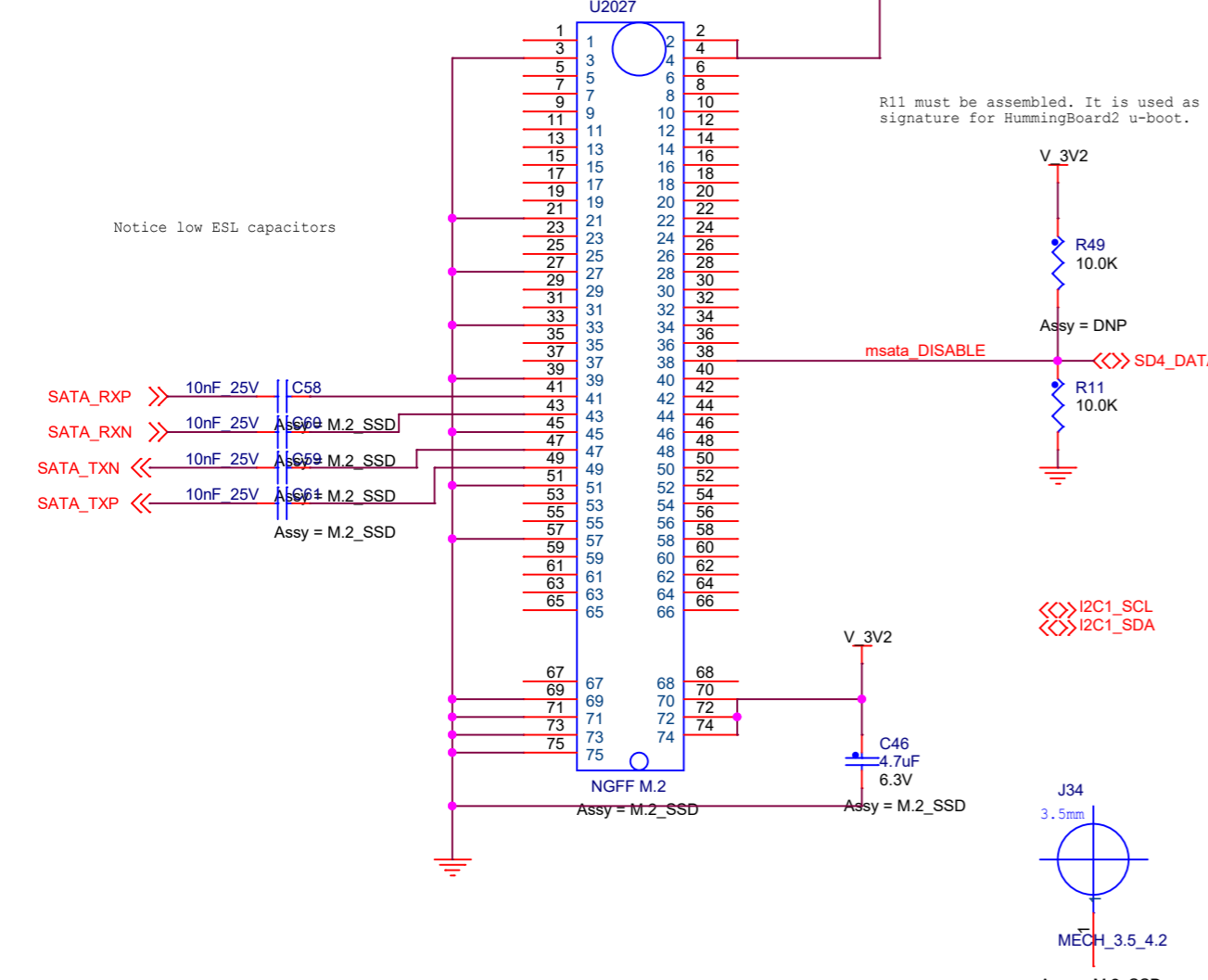
If eMMC is used is on SOM like in rev 1.5 then this domain MUST be powered; although the actual eMMC device is on the SOM.

Since there isn't a standard LVDS out connector, this design uses the Freescale Sabre SD LVDS display.

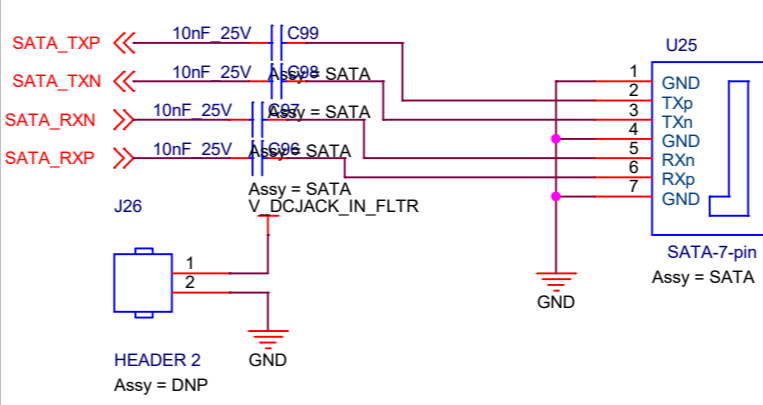
PCI express with optional sim card



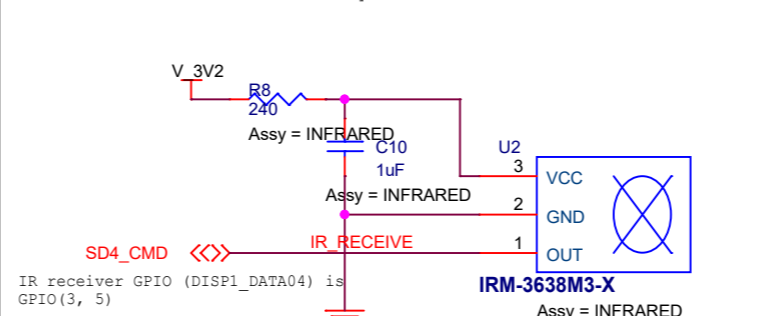
M.2 SSD connector  
Can be used with i.MX6 dual / quad SoCs.  
Notice that this M.2 SSD overlaps with SATA 7 pin to the right.  
So either this or the above features can be assembled and used



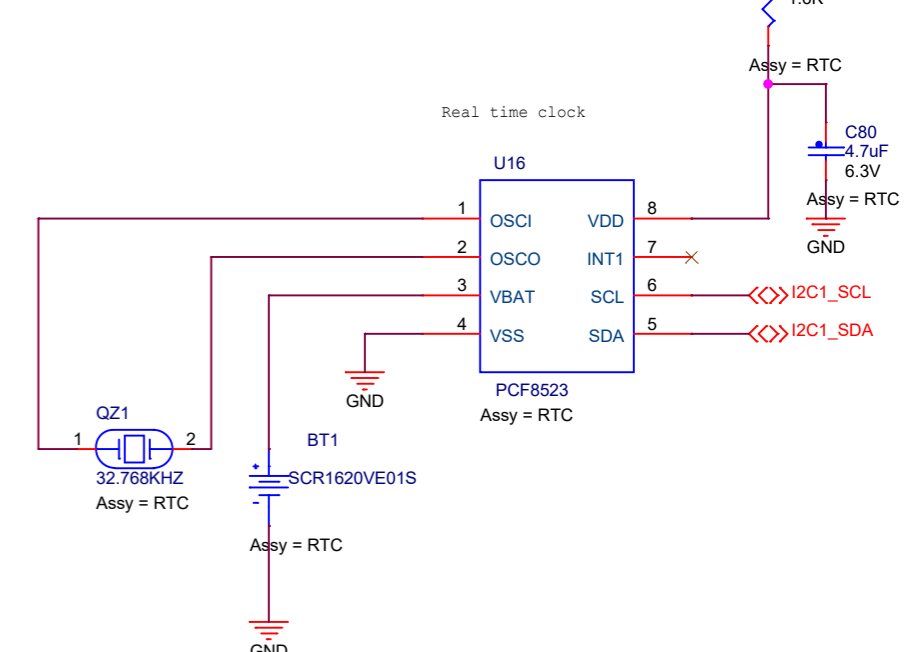
SATA connector with power  
Notes -  
1. This feature overlaps with M.2 SSD on the left. So either this or M.2 can be assembled and used.  
2. Notice J26 is adjacent to U10002 pins 15 and 16. U10002 pins 15,16 and J26 can assemble together a 100 mil SATA HDD 12v and 5V power cable connector when V\_DCJACK\_IN\_FLTR is set as 12V, i.e. the user uses a 12V power supply.

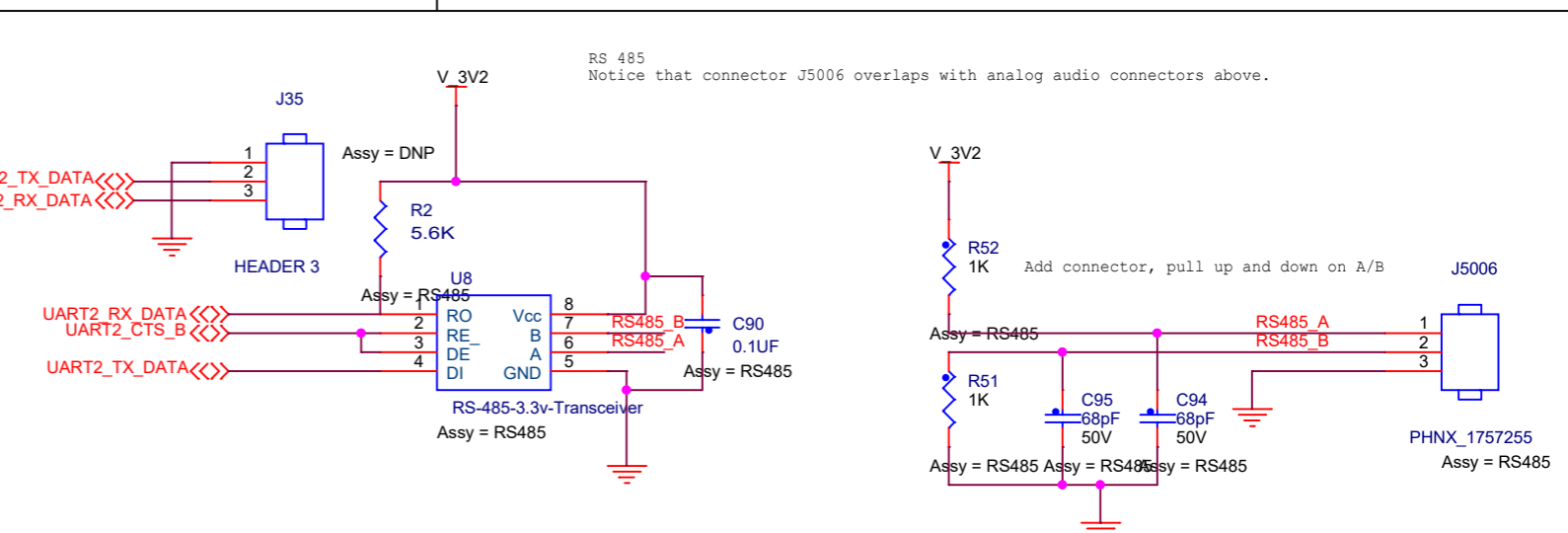
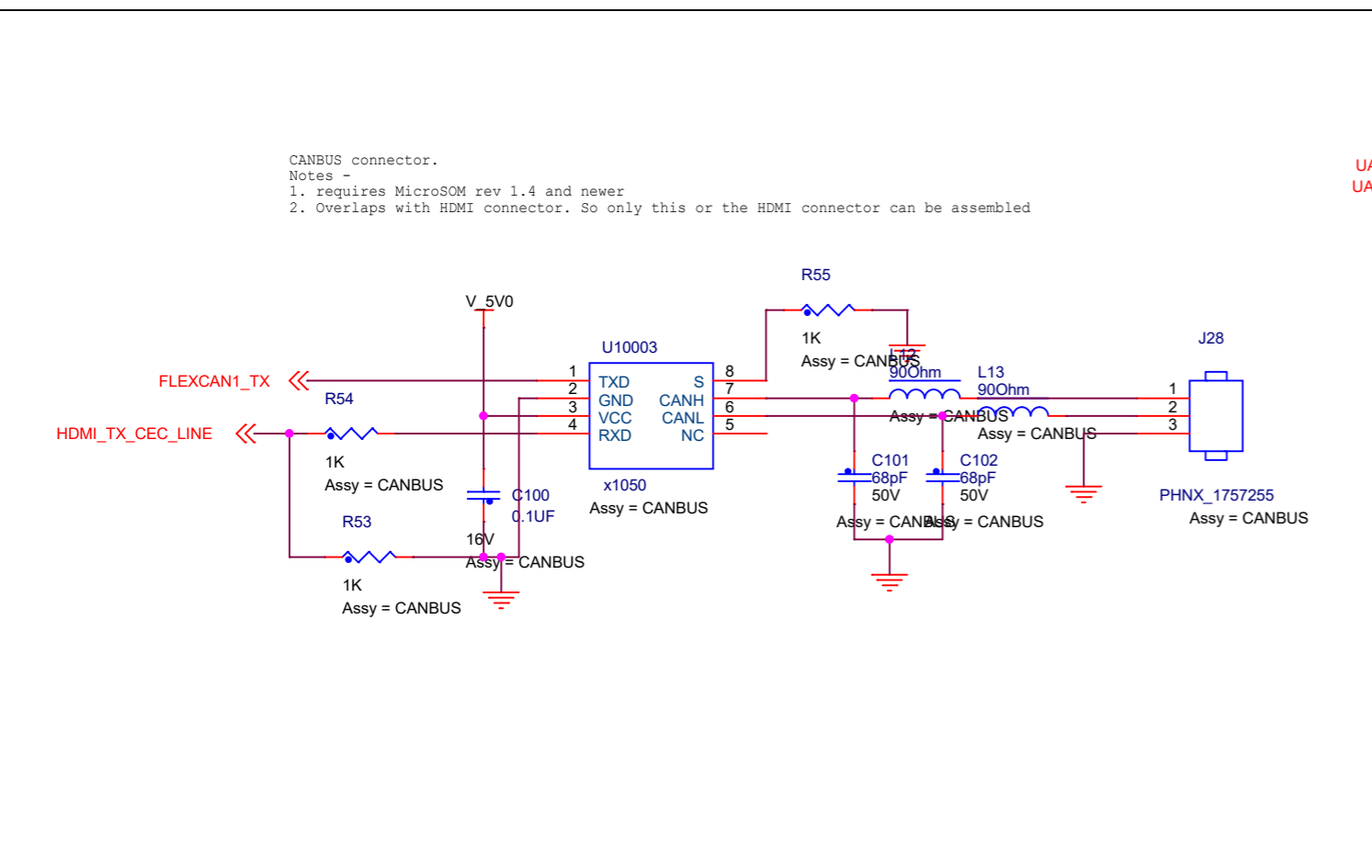
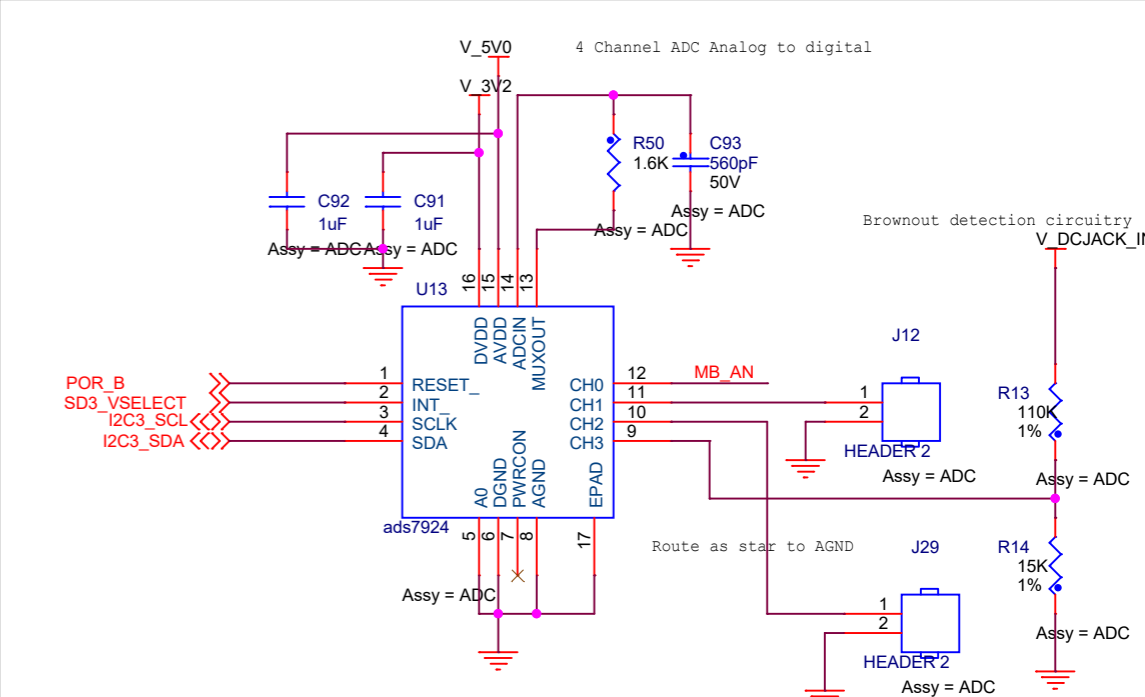
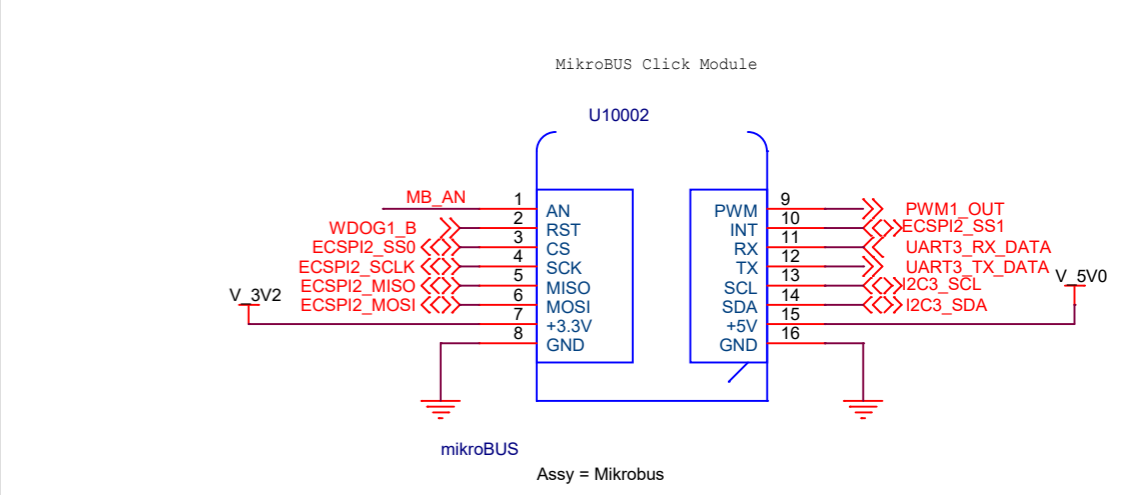
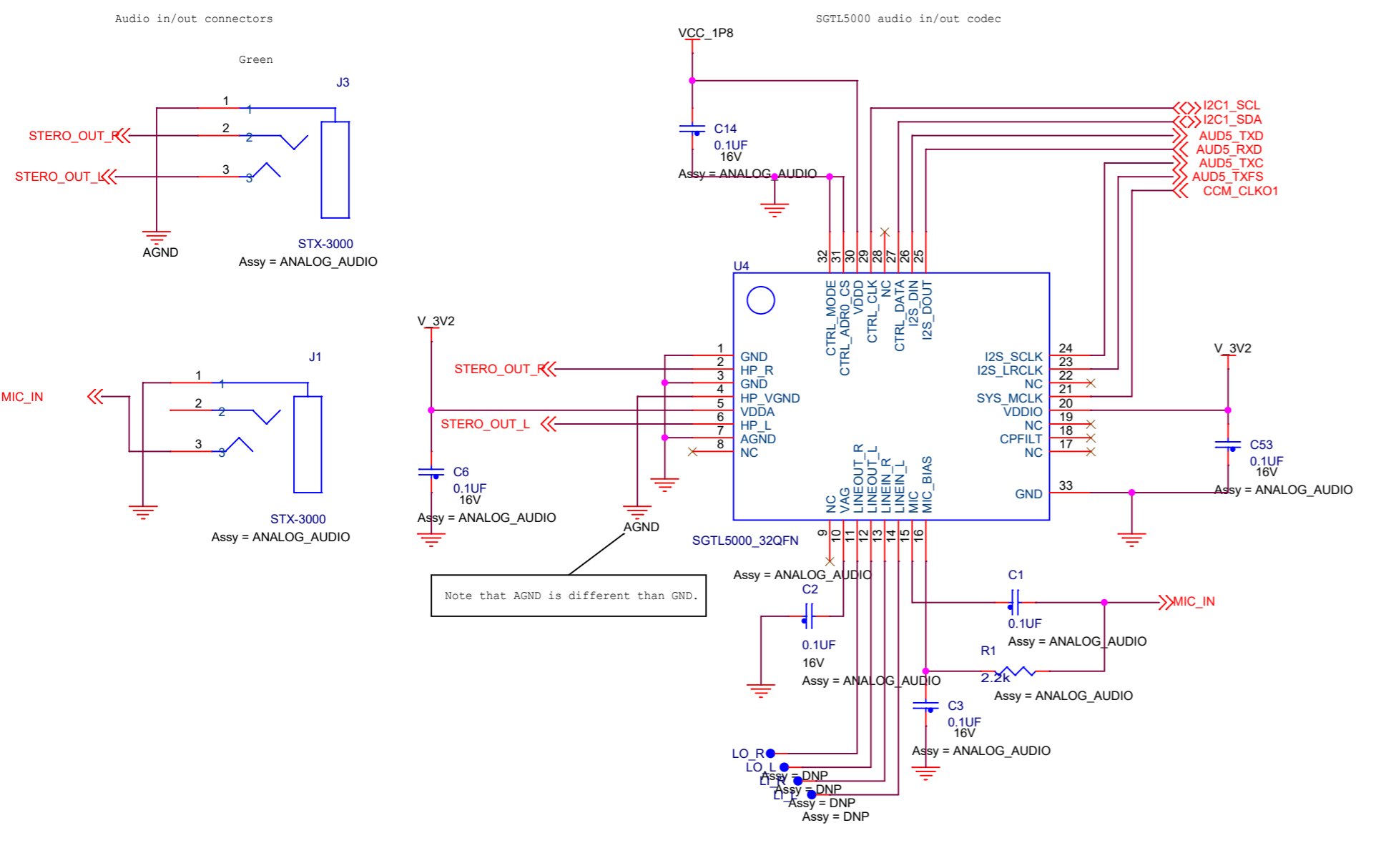


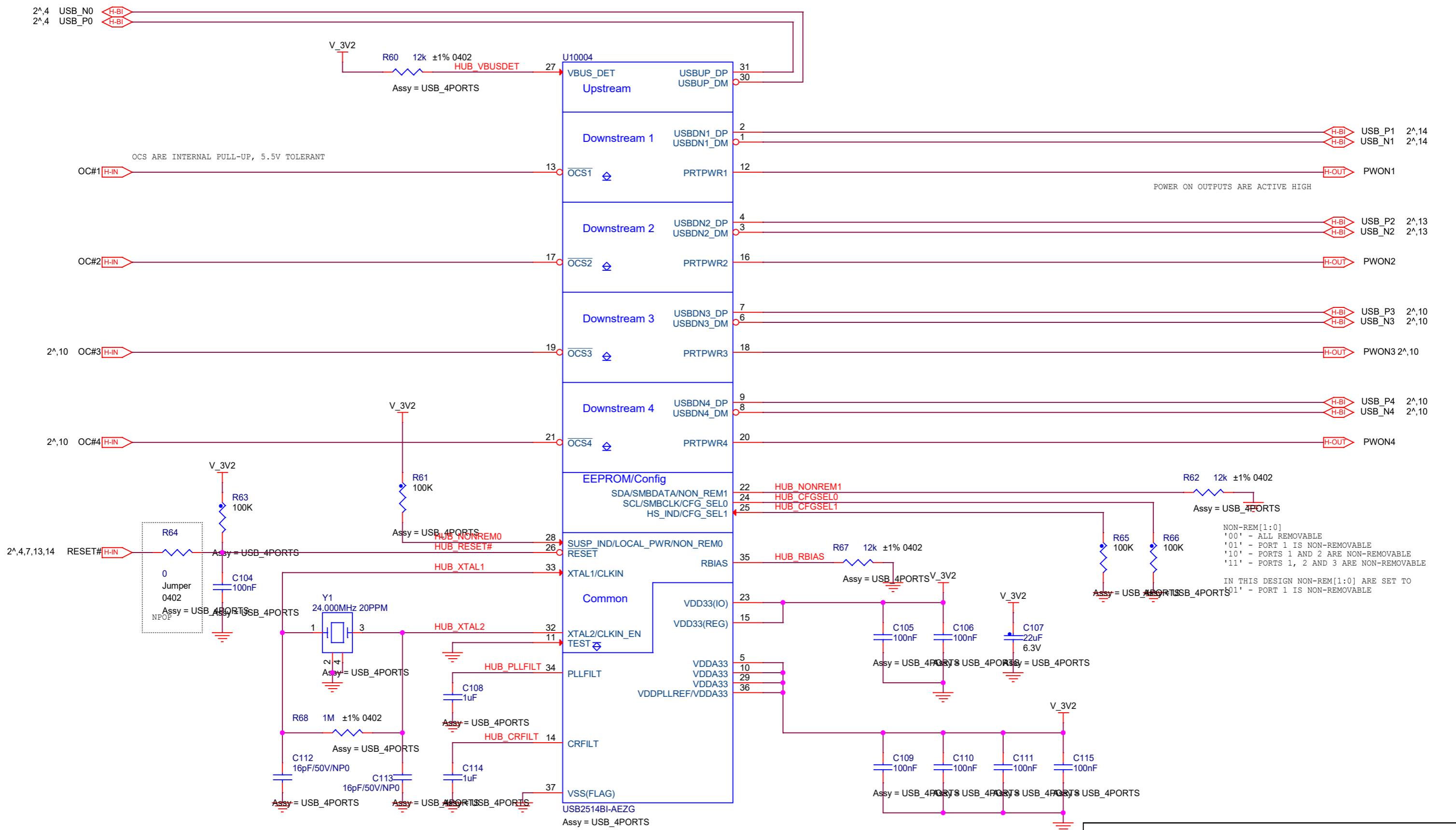
Infra red receiver  
240 ohm resistor required to minimize noises on DC in




R28 and C80 RC circuit here is required to avoid sudden drop of V\_3V2 on PCF8523 (inserting and removing cards). Since PCF8523 samples the voltage every 1ms, such a drop might not be detected in time causing lost of date/time track (i.e. no switchover to battery)








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Size B	Title USB 2.0 HUB	Rev 1.4
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