

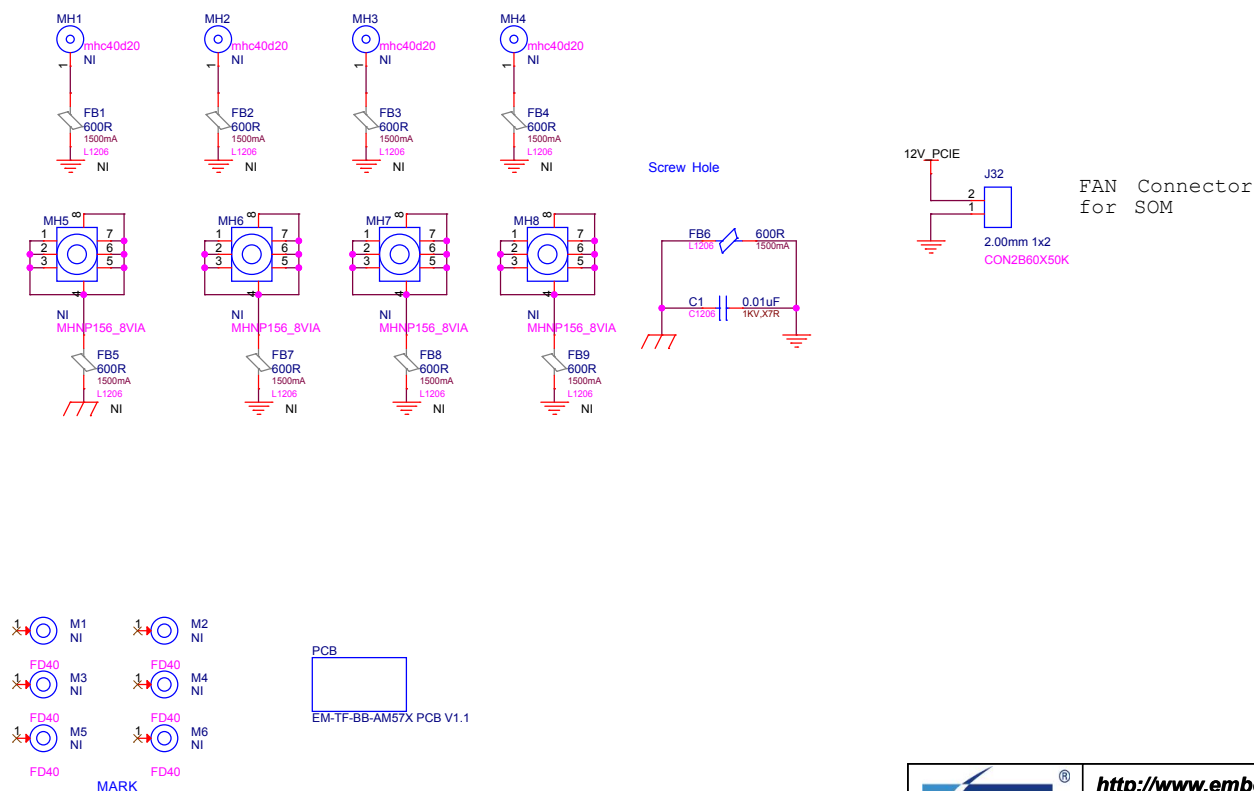
# EM-TF-BB-AM5728\_V1.1

## EM-TF-BB-AM5728

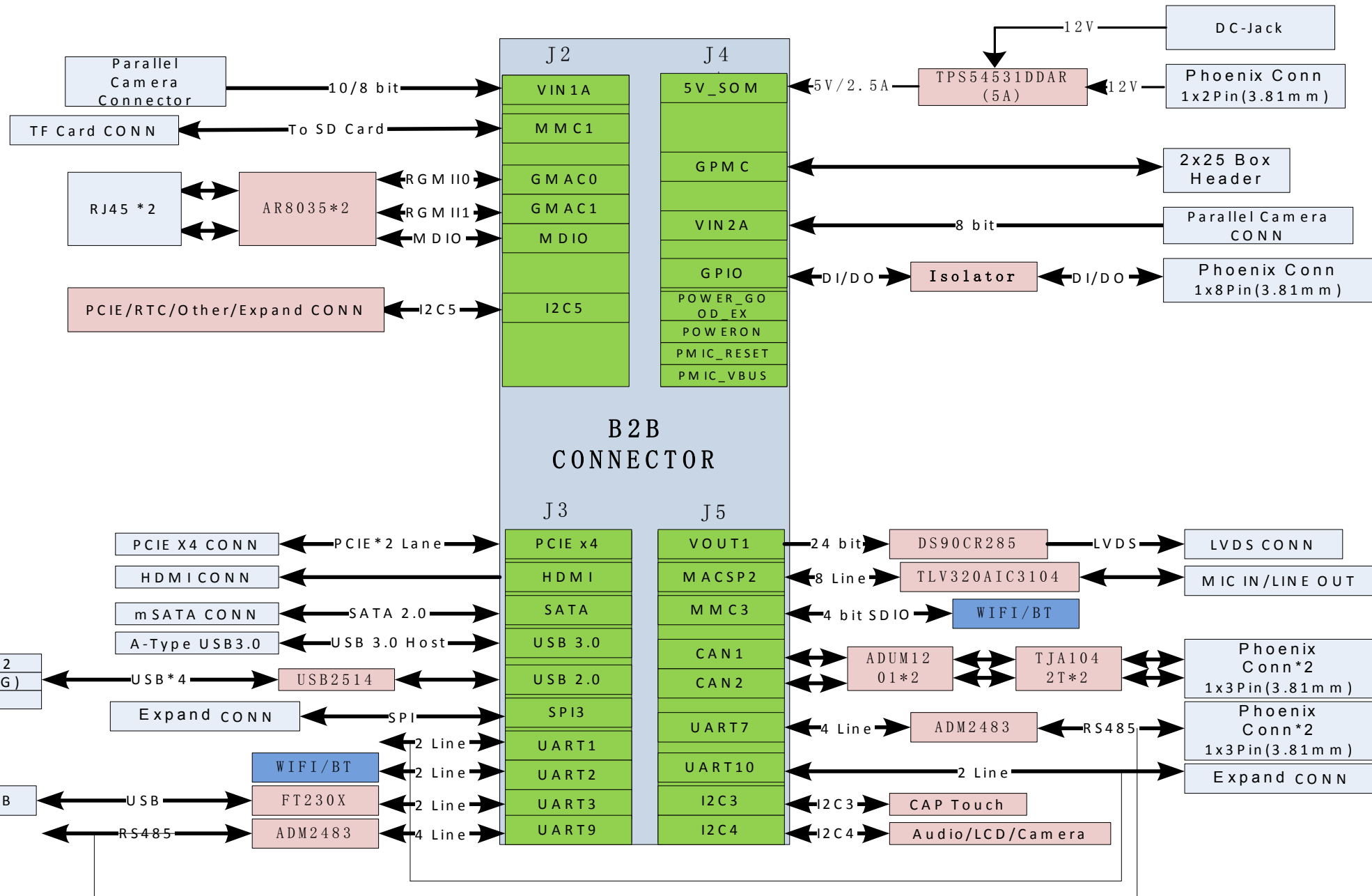
SHEET	SHEET NAME
01	INDEX
02	BLOCK DIAGRAM
03	POWER DIAGRAM
04	B2B CONN
05	POWER 5V
06	POWER 3.3V
07	PARALLEL CAMERA-0
08	PARALLEL CAMERA-1
09	MicroSD CARD/WIFI/BT Module
10	LCD Power
11	LCD
12	HDMI/mSATA
13	PCIE
14	USB
15	AUDIO
16	DI/DO
17	CAN/RS485
18	BUTTON/RTC/BEEP/LEDs/BOOTSEL
19	Mini PCIE
20	ETHERNET0
21	ETHERNET1
22	GPMC/UART TO USB/EXP CONN

## Revision History

DATE	REVISION	DESCRIPTION
24 October 2017	EM-TF-BB-AM5728_REV00	Initial Release
14 May 2018	EM-TF-BB-AM5728_V1.0	2nd Release
30 July 2018	EM-TF-BB-AM5728_V1.1	Change camera 1.5V input from 1.8V to 2.8V

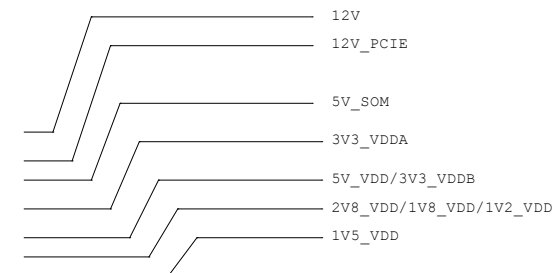
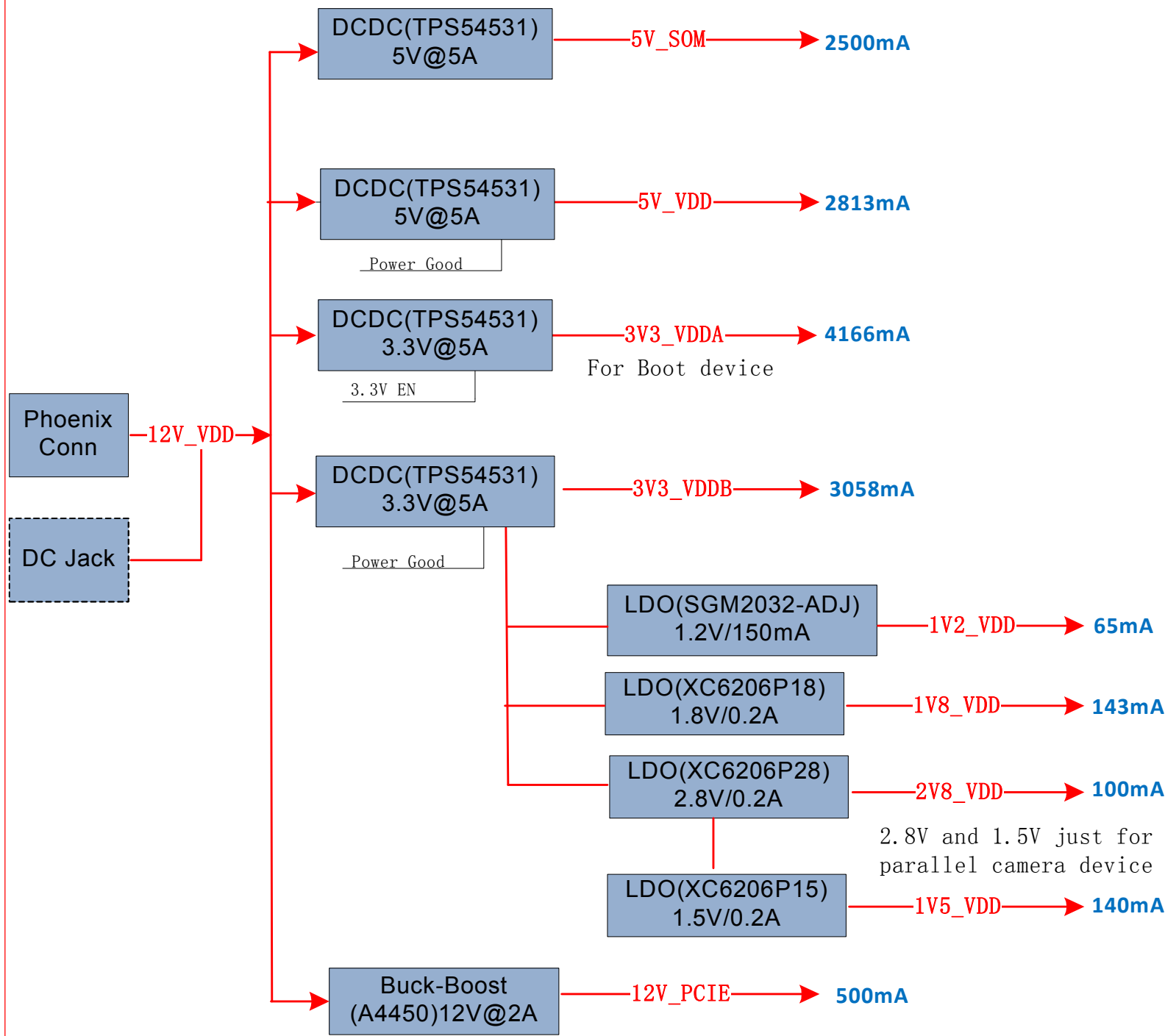


# EM-TF-BB-AM 5728\_V1.0



# EM-TF-BB-AM5728\_REV00

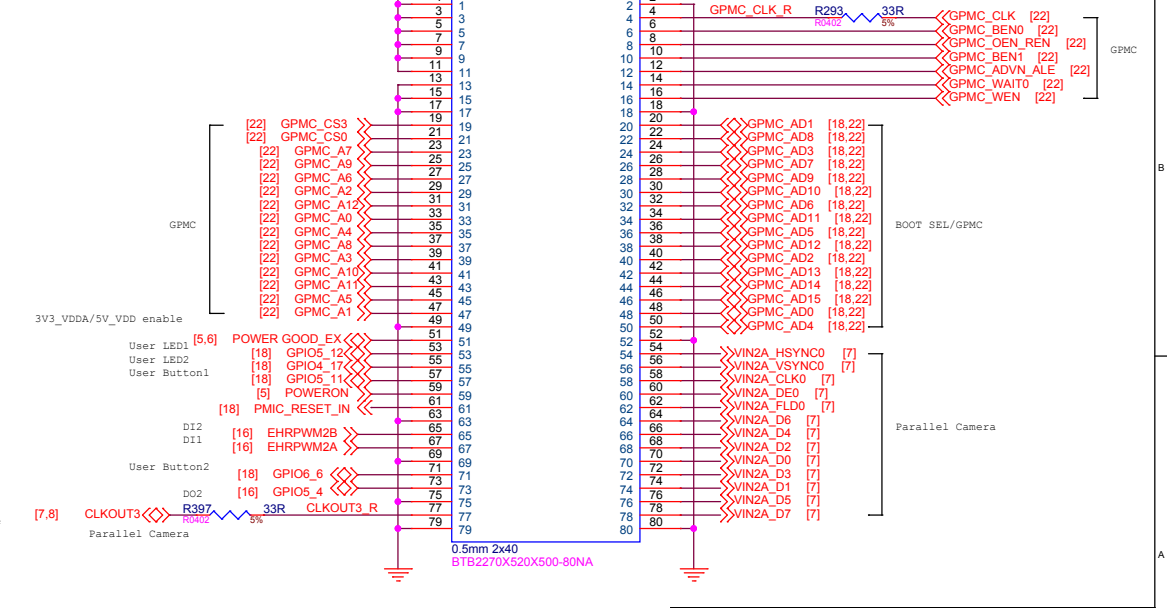
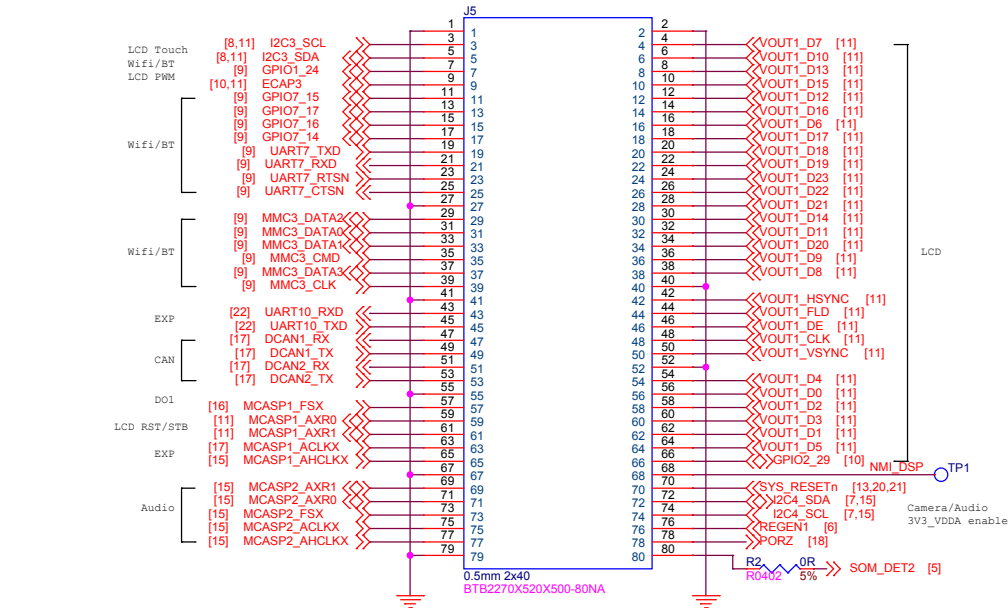
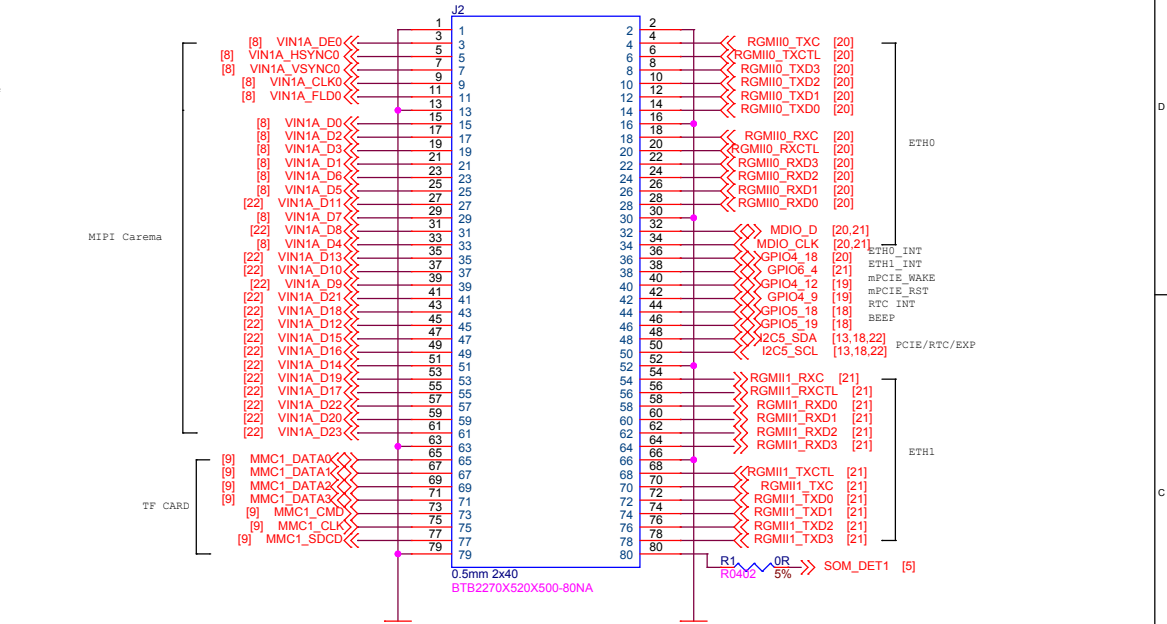
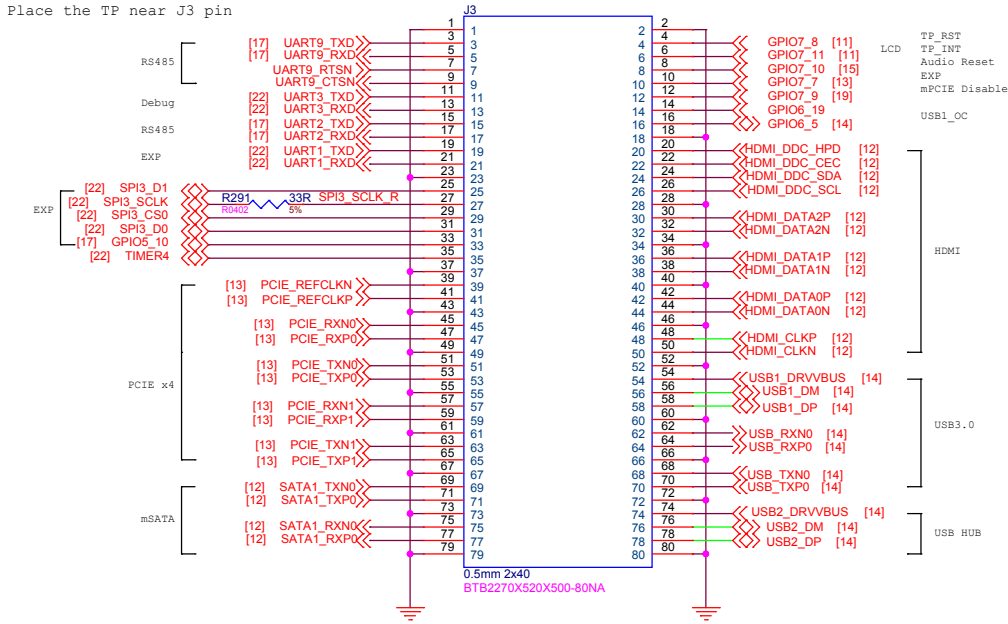
## Power Sequence



# B2B CONN

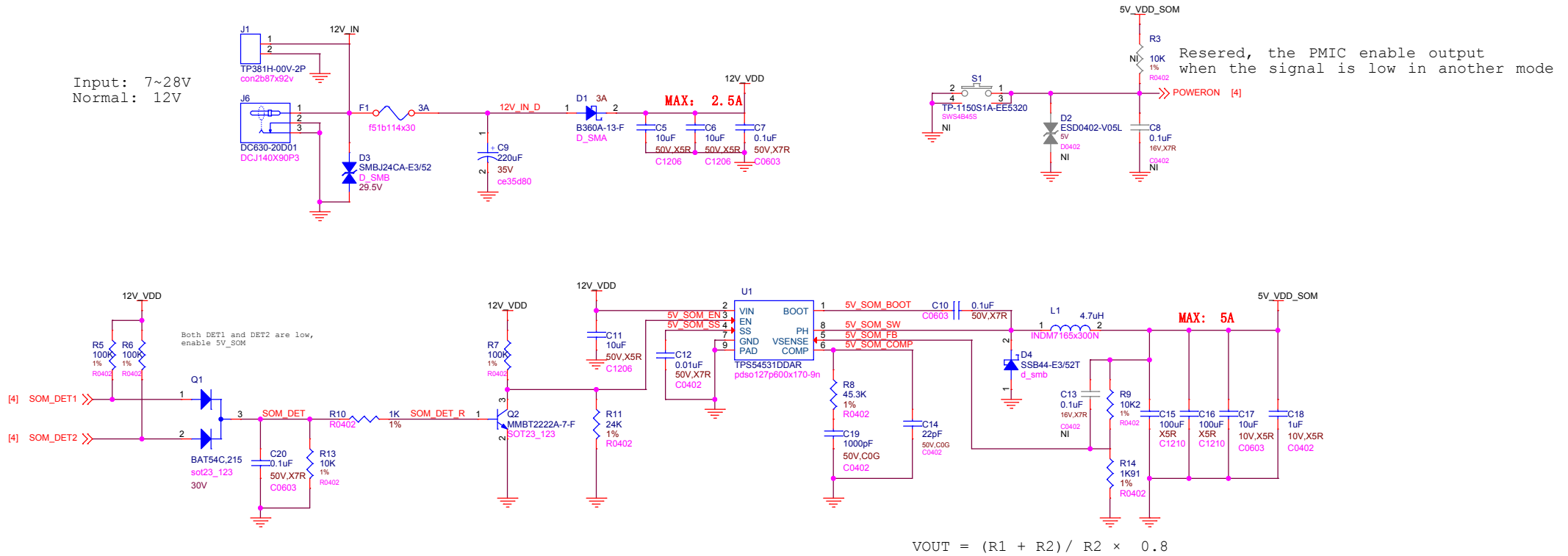
[4] UART9\_CTSN  
[4] UART9\_RTSN  
[4] GPIO6\_19

Place the TP near J3 pin

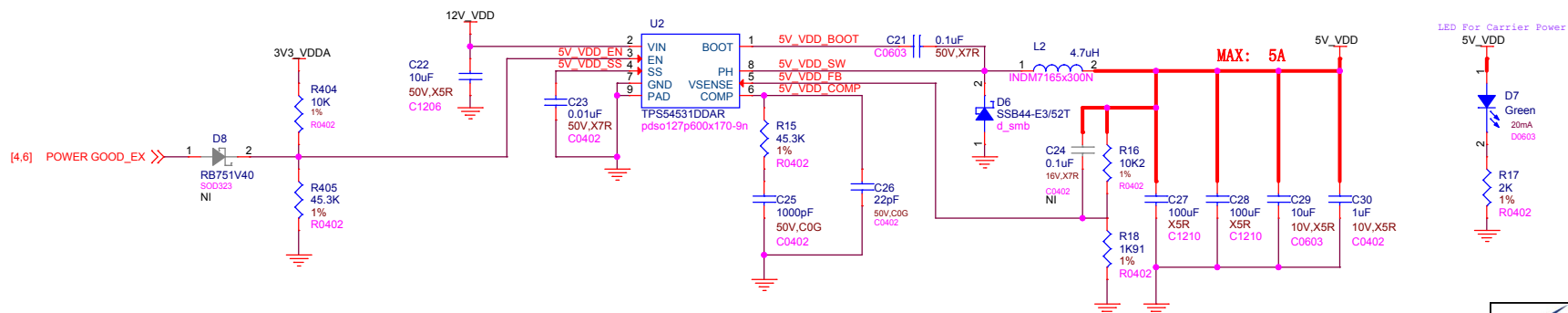


**POWER 5V**

Input: 7~28V  
Normal: 12V

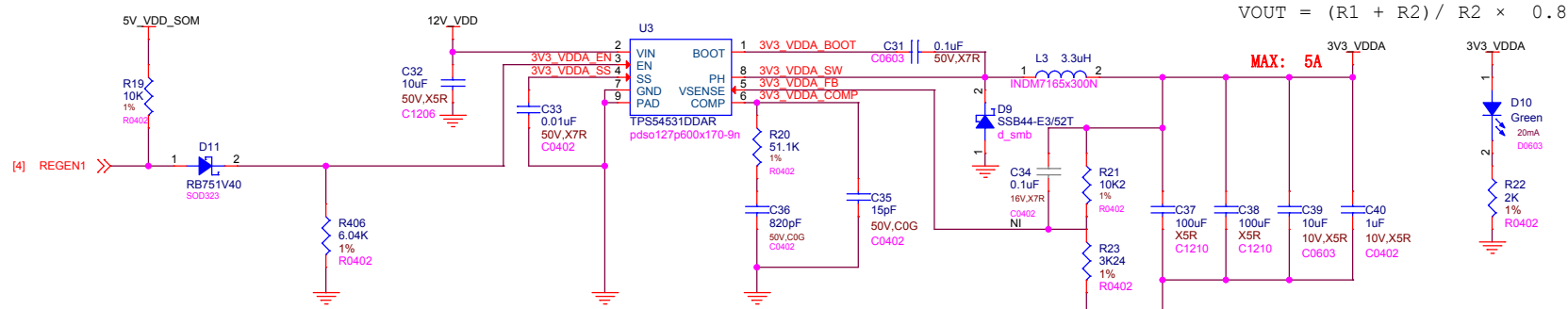


$$V_{OUT} = (R1 + R2) / R2 \times 0.8$$

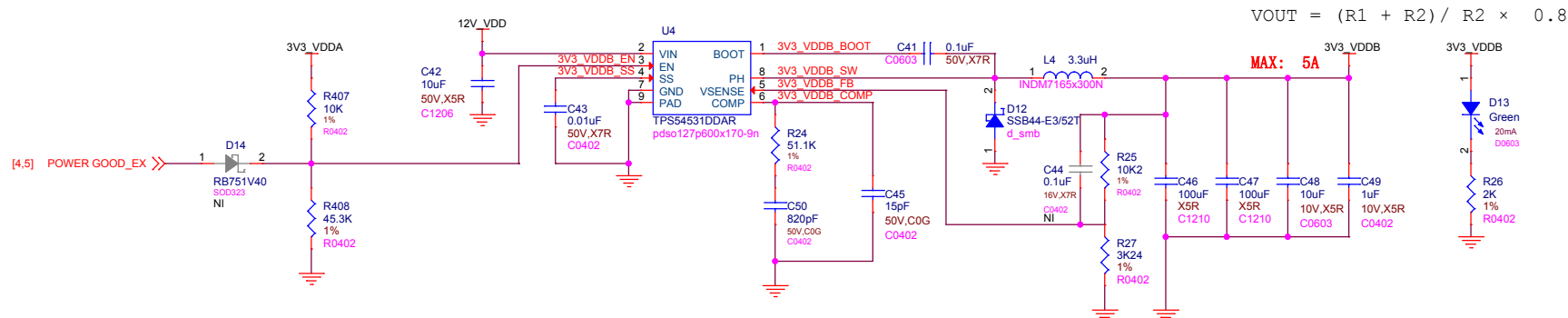


$$V_{OUT} = (R1 + R2) / R2 \times 0.8$$

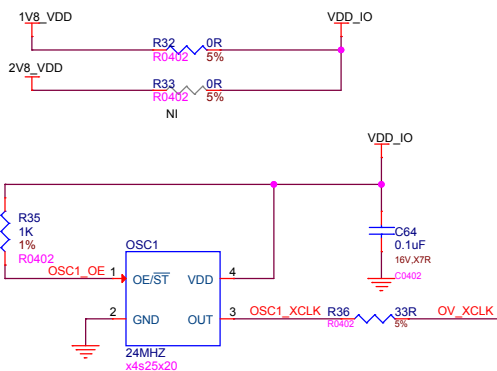
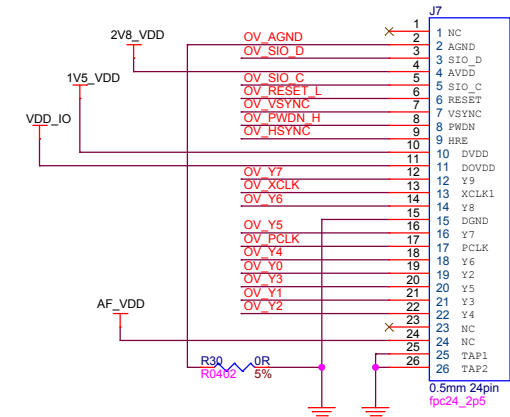
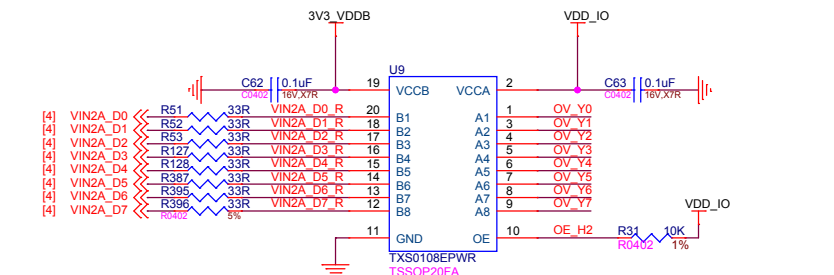
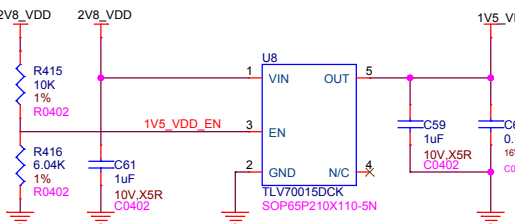
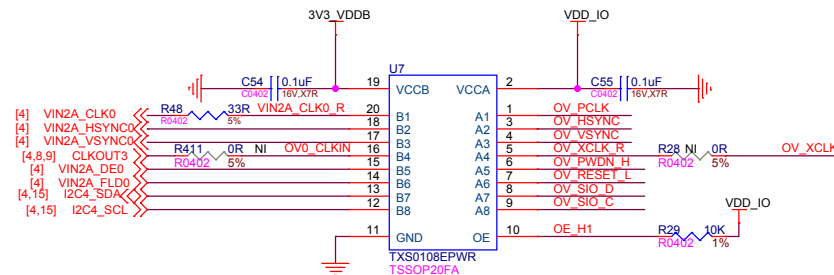
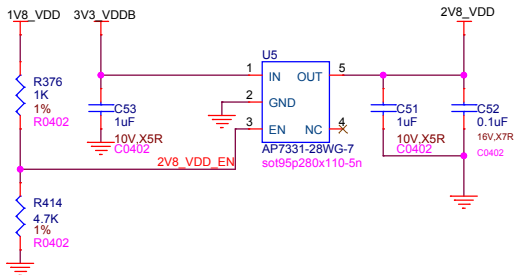
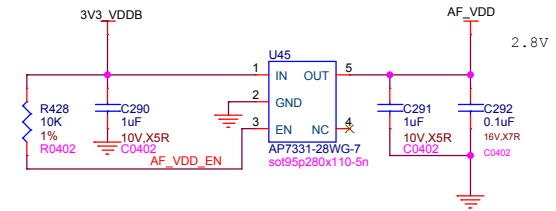
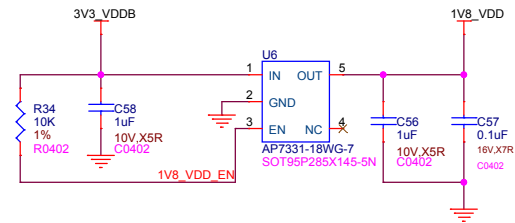
# POWER 3V3



For TF card/mSATA/miniPCIE/LAN



## Parallel Camera-0

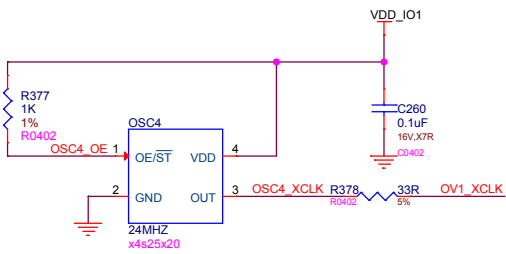
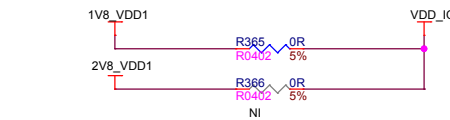
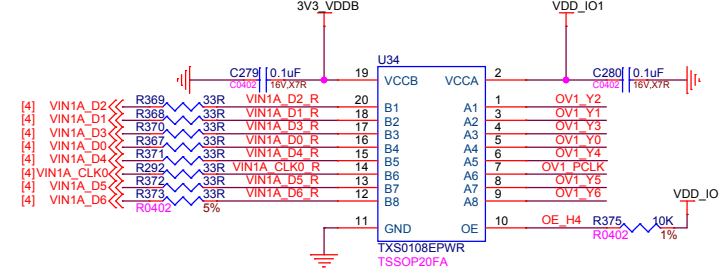
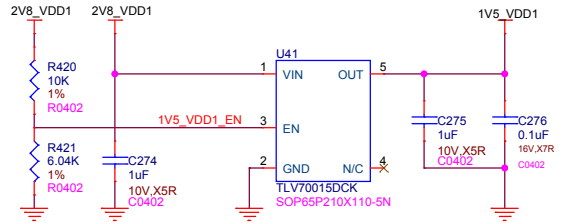
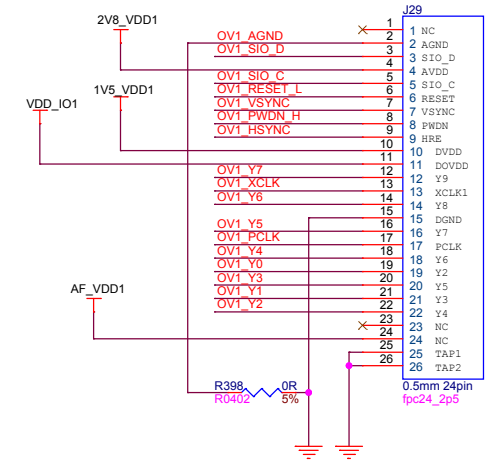
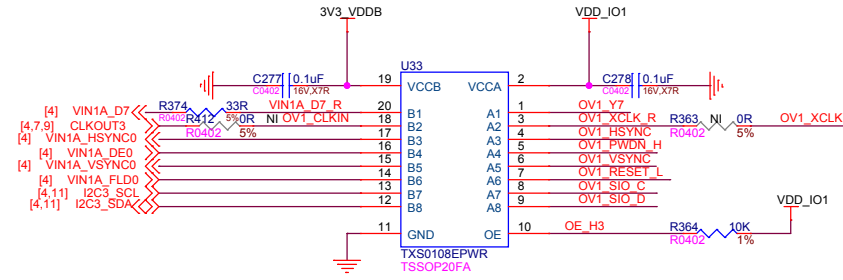
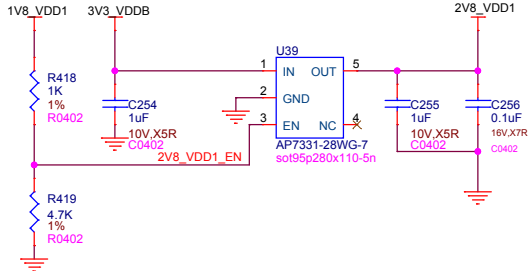
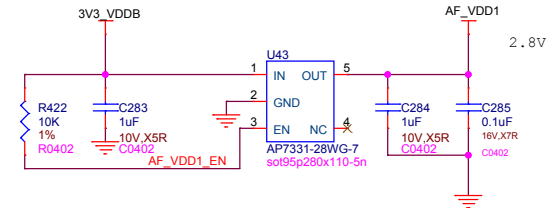
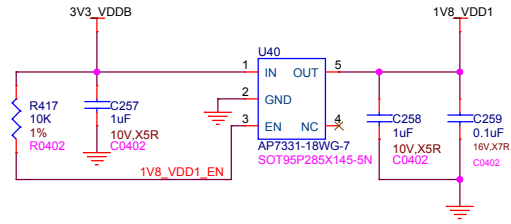


```

Connect to OV5640 camera module(500W)
AVDD:2.6 ~ 3.0V (2.8V Typ)
DVDD:1.425 ~1.575V(1.5V Typ)
DOVDD:1.71 ~ 3.0V(1.8V Typ )
XCLK:6~27Mhz
PCLK:Max is 96Mhz@15fps
      Typ is 48Mhz
Power requirements: active: 140 mA
                   standby: 20 μ A

```

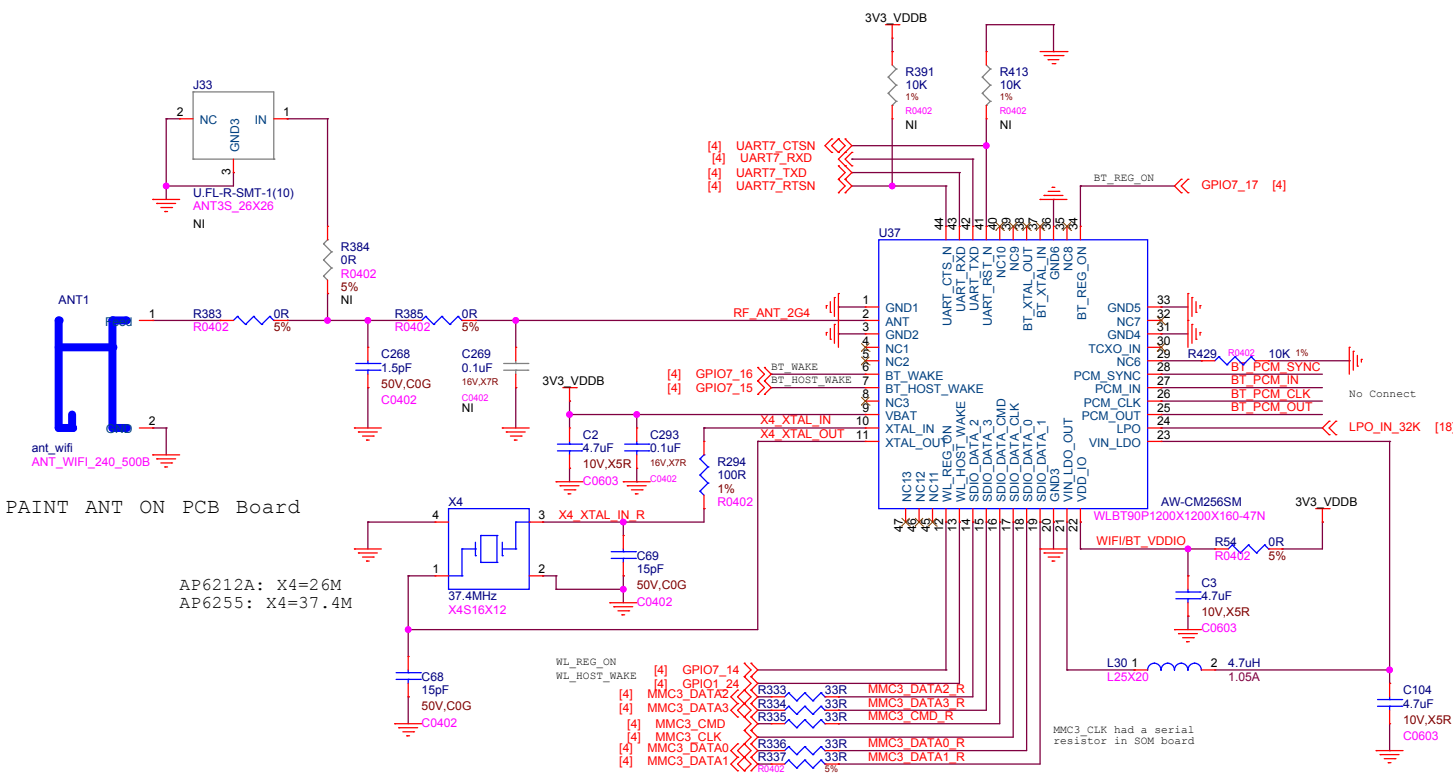
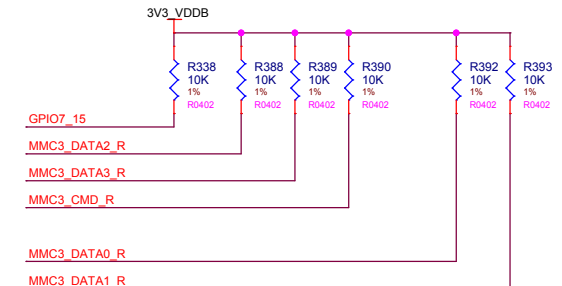
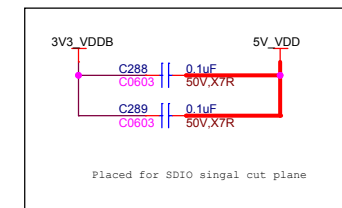
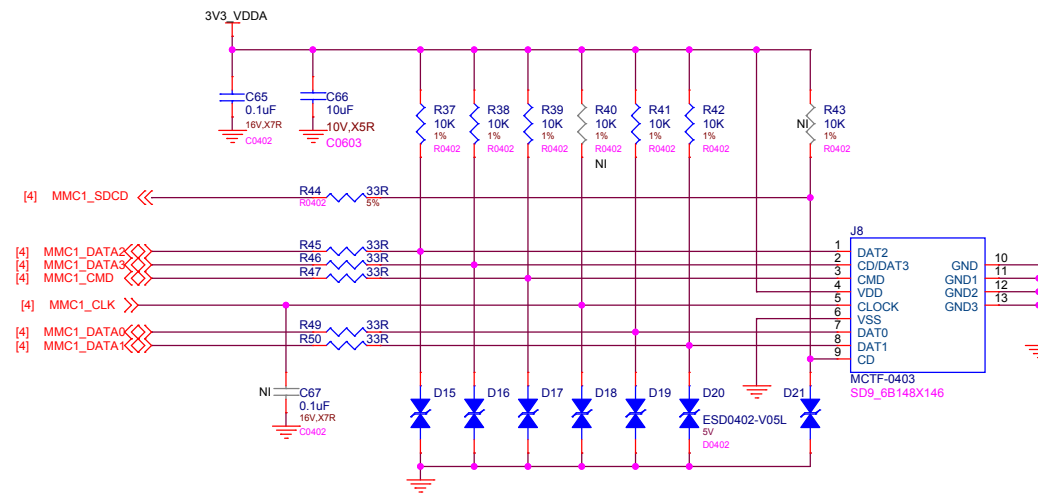
# Parallel Camera-1



Connect to OV5640 camera module(500W)  
 AVDD:2.6 ~ 3.0V (2.8V Typ)  
 DVDD:1.425 ~1.575V(1.5V Typ)  
 DOVDD:1.71 ~ 3.0V(1.8V Typ )  
 AF\_VDD: 2.8~3.3V  
 XCLK:6~27Mhz  
 PCLK:Max is 96Mhz@15fps  
 Typ is 48Mhz  
 Power requirements: active: 140 mA  
 standby: 20 μ A



## MicroSD CARD/WIFI/BT Module

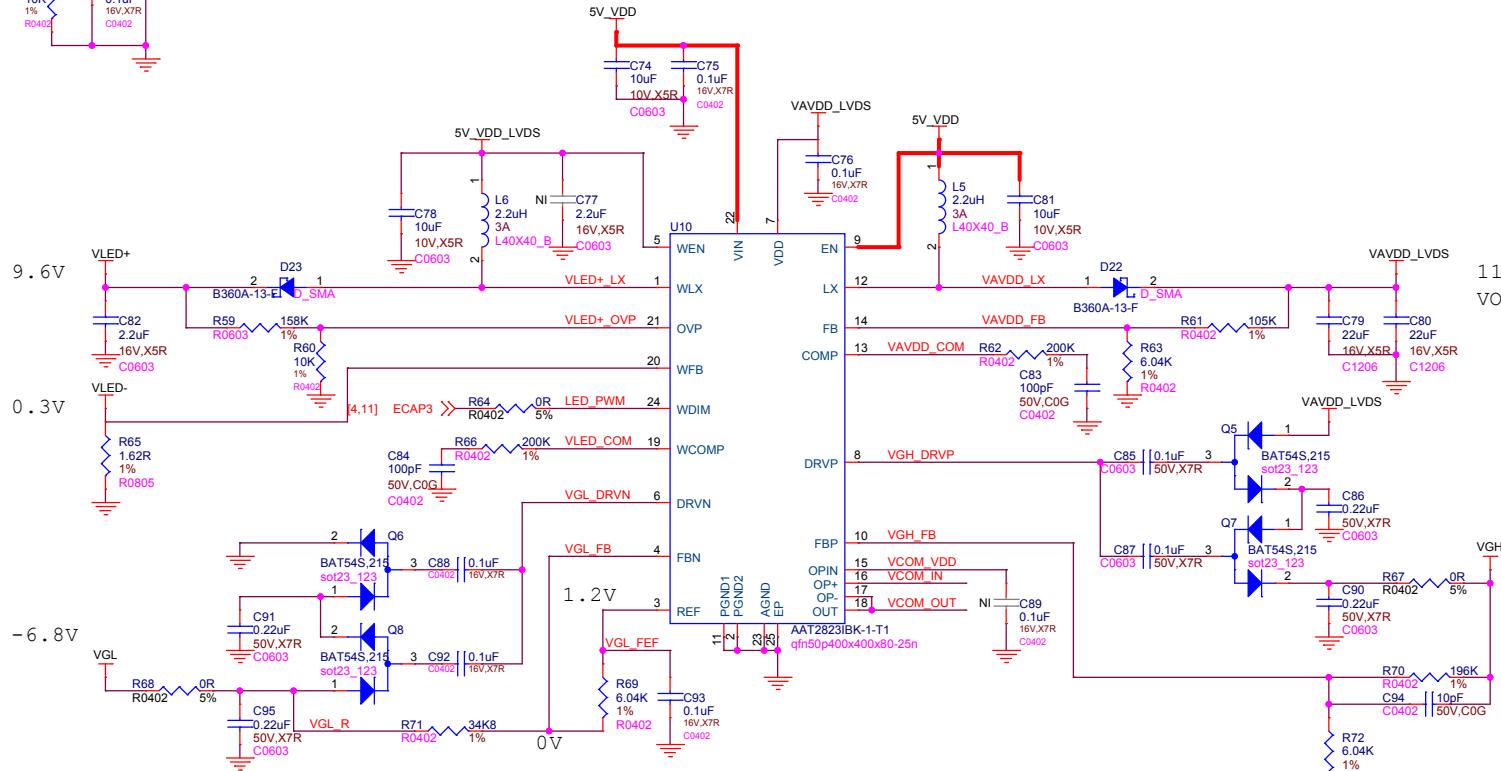
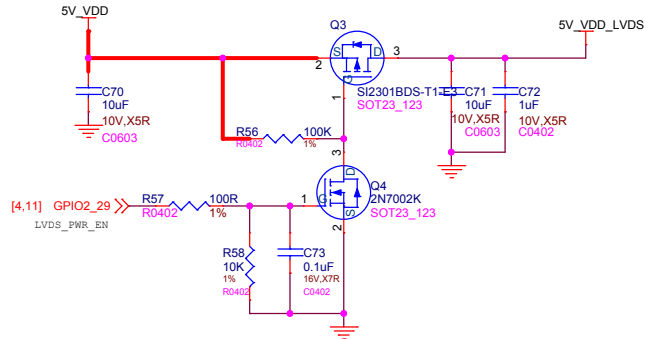


PAINT ANT ON PCB Board

AP6212A: X4=26M  
AP6255: X4=37.4M

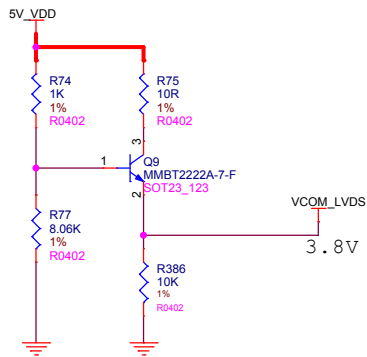
MMC3\_CLK had a serial resistor in SOM board

## LVDS POWER

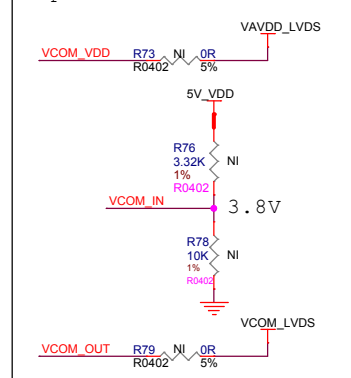


$$V_{OUT} = (R1 + R2) / R2 \times 0.6$$

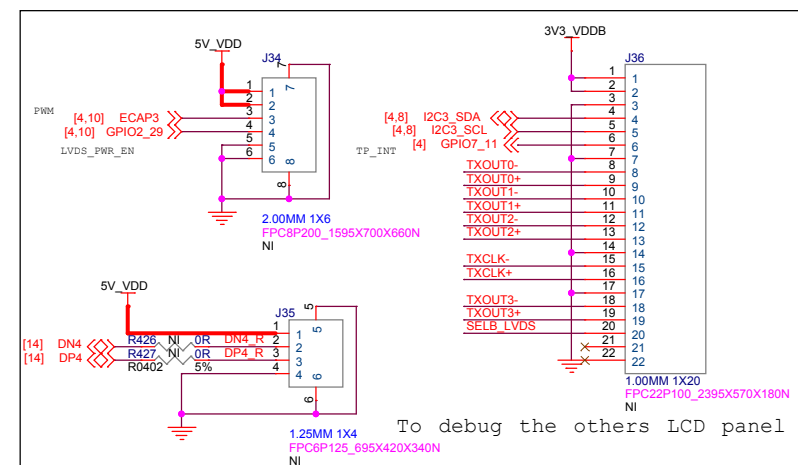
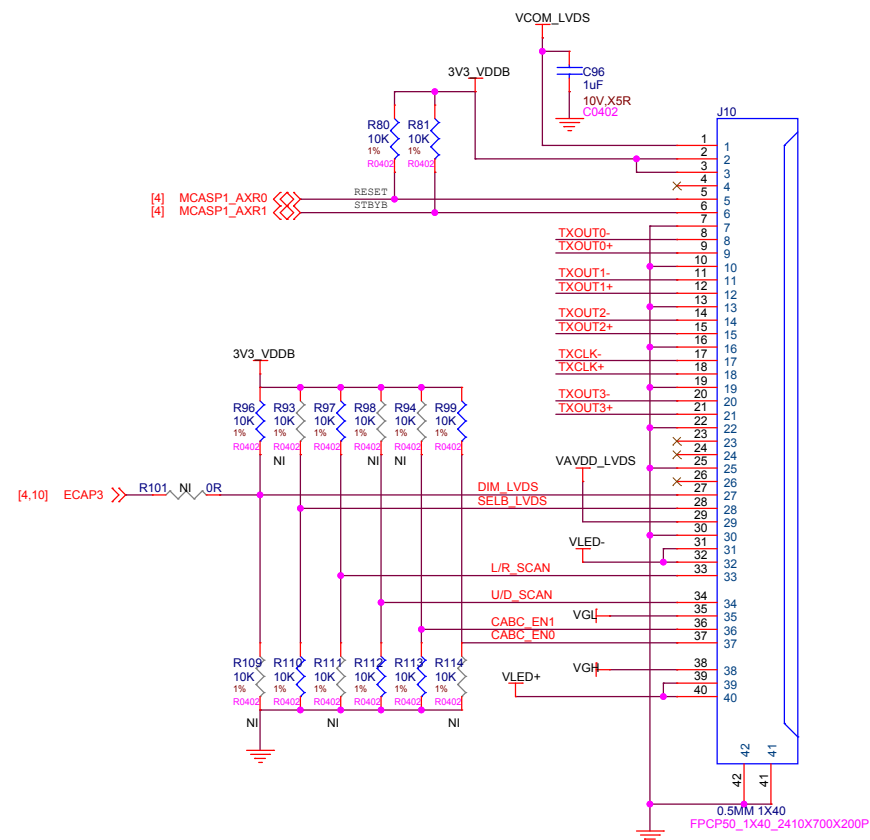
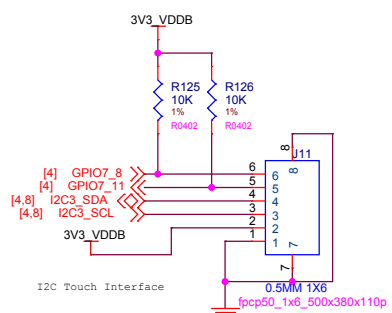
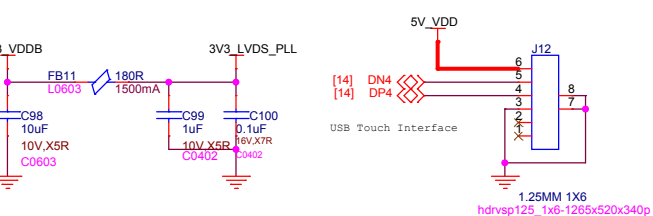
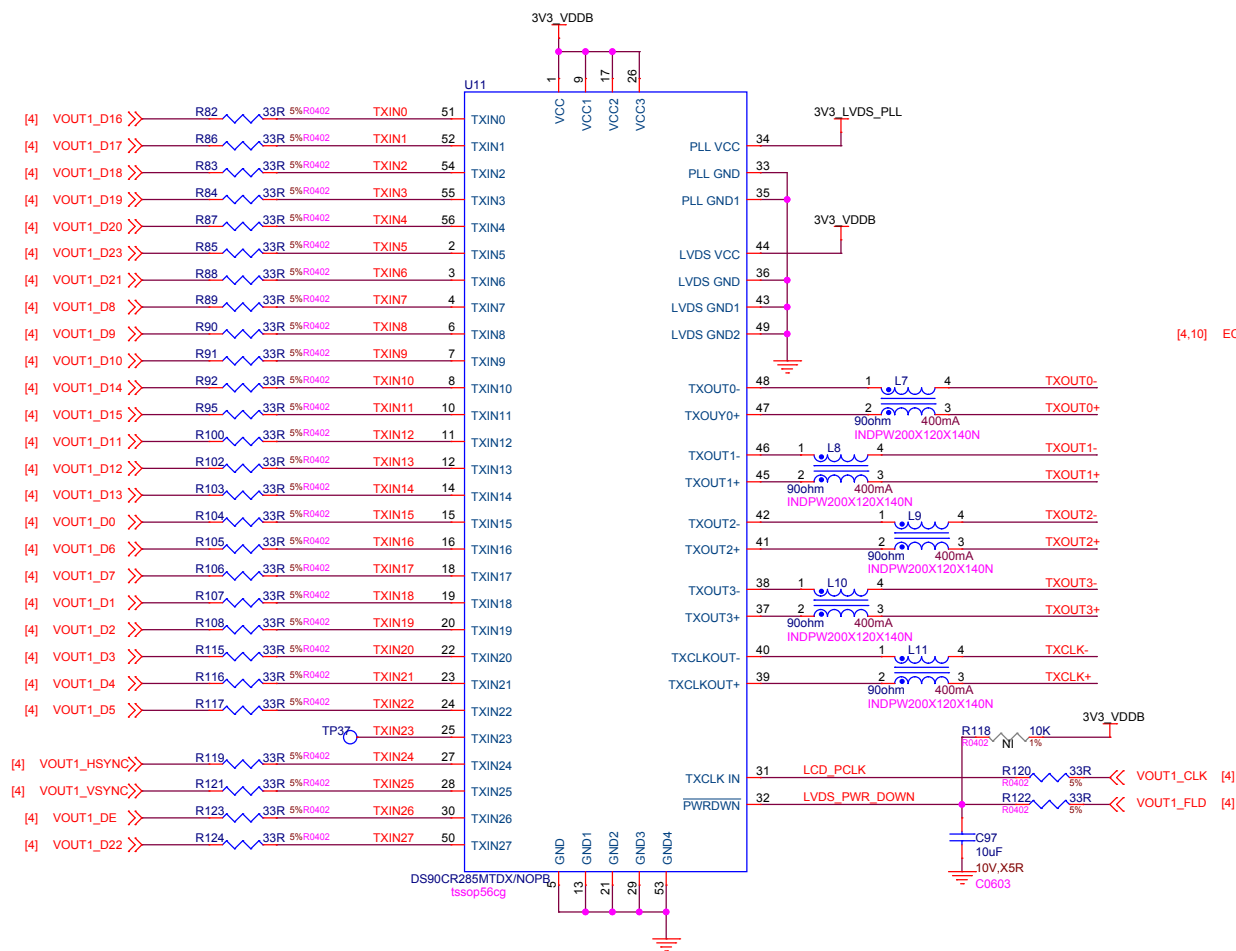
$$V_{OUT} = (R1 + R2) / R2 \times 0.6$$


$$V_{GL} = -(1.2/R_2) * R_1$$

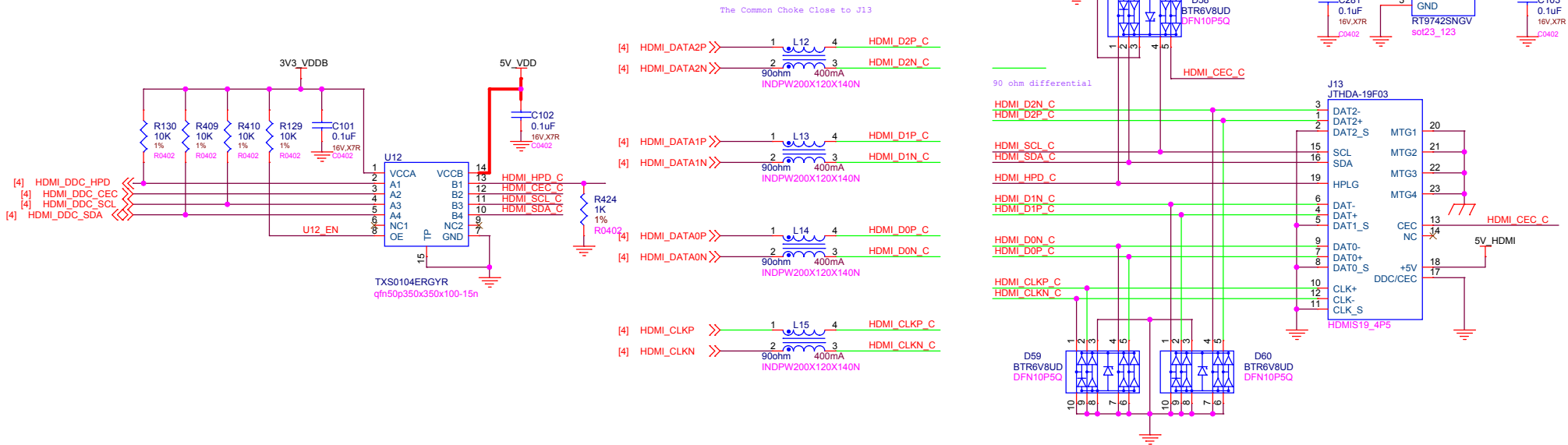
Compitable with AAT2822-1
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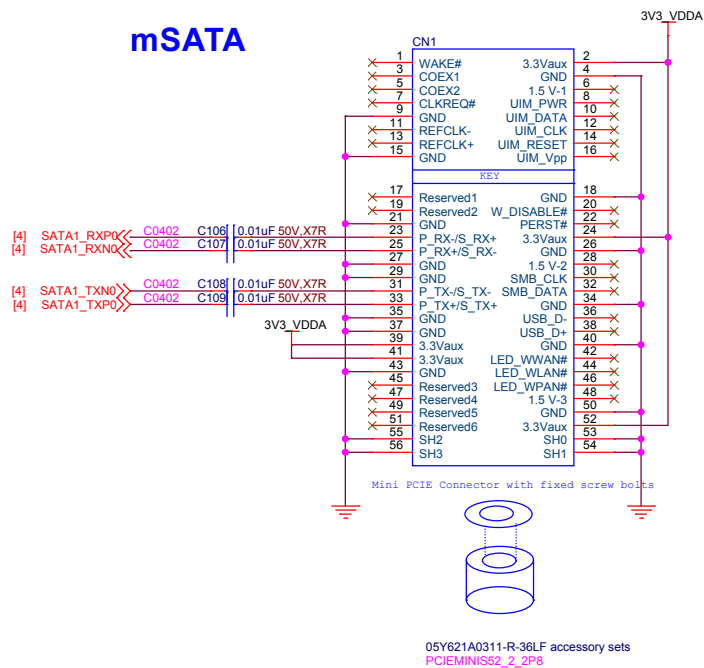
**LCD**



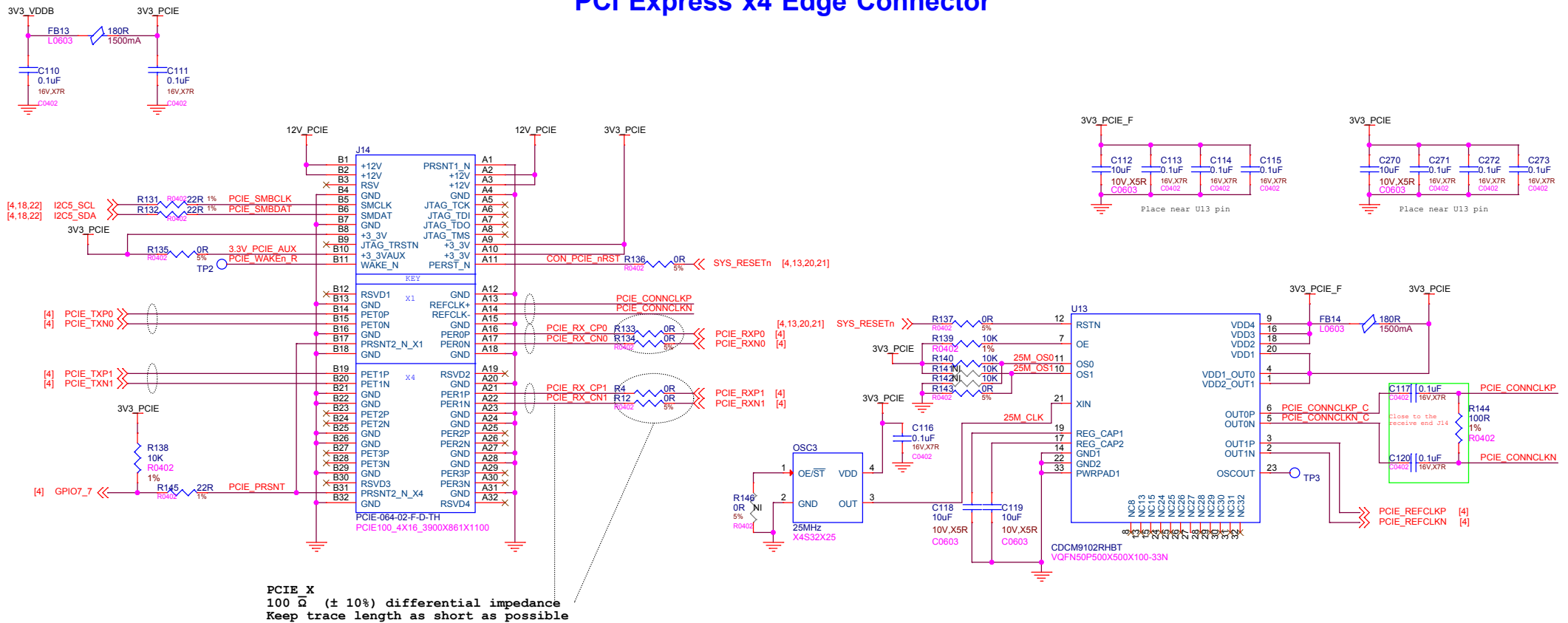
## HDMI



## mSATA

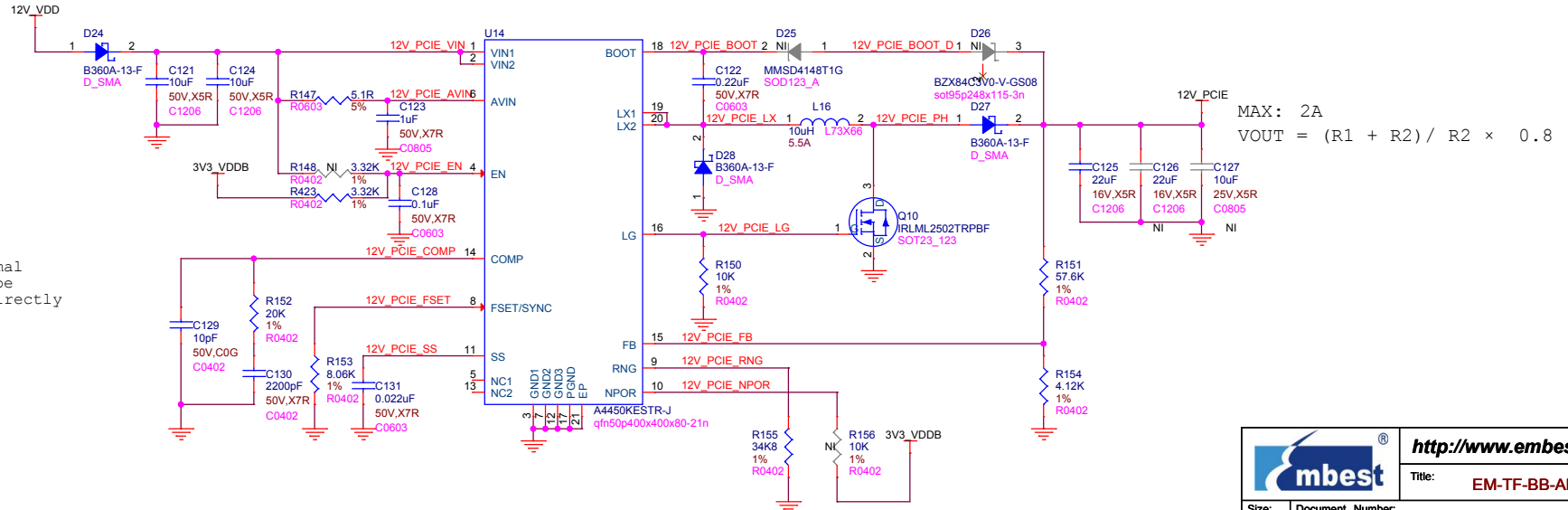


## PCI Express x4 Edge Connector



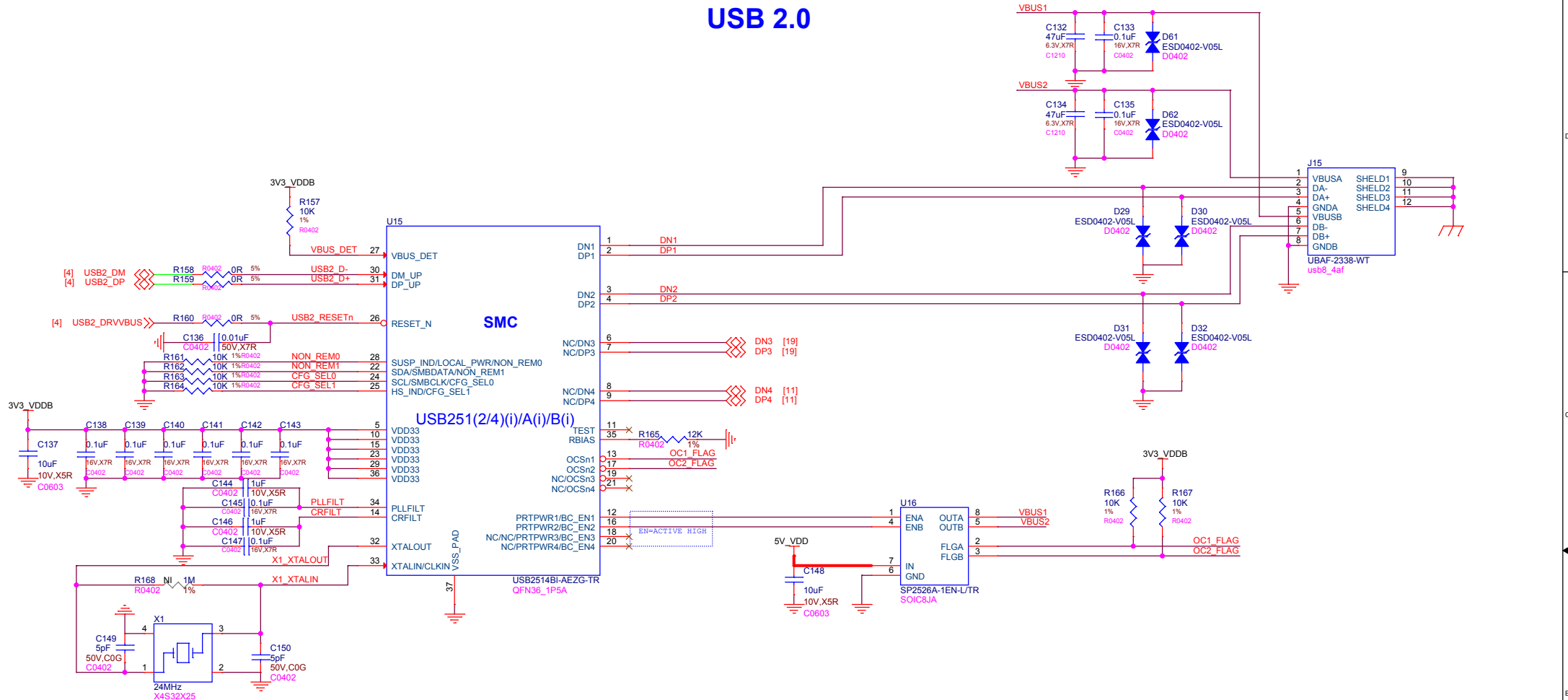
PCIE X  
100  $\Omega$  ( $\pm 10\%$ ) differential impedance  
Keep trace length as short as possible

Input: 7~28V

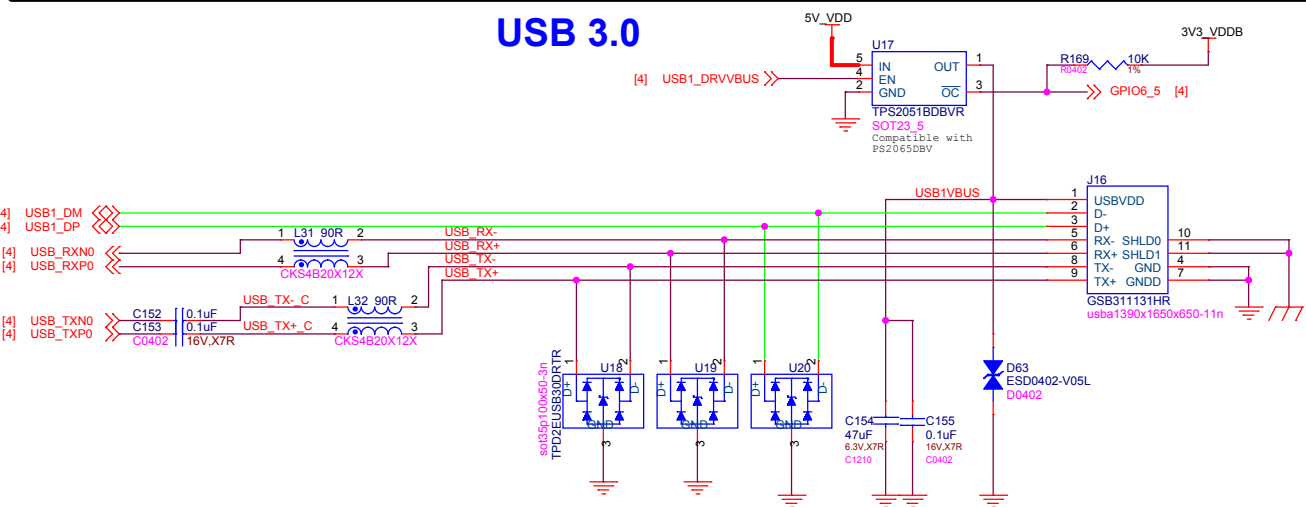

$$V_{OUT} = (R1 + R2) / R2 \times 0.8$$

When power supply input normal is 12V, the 12V\_PCIE could be sourced from power supply directly

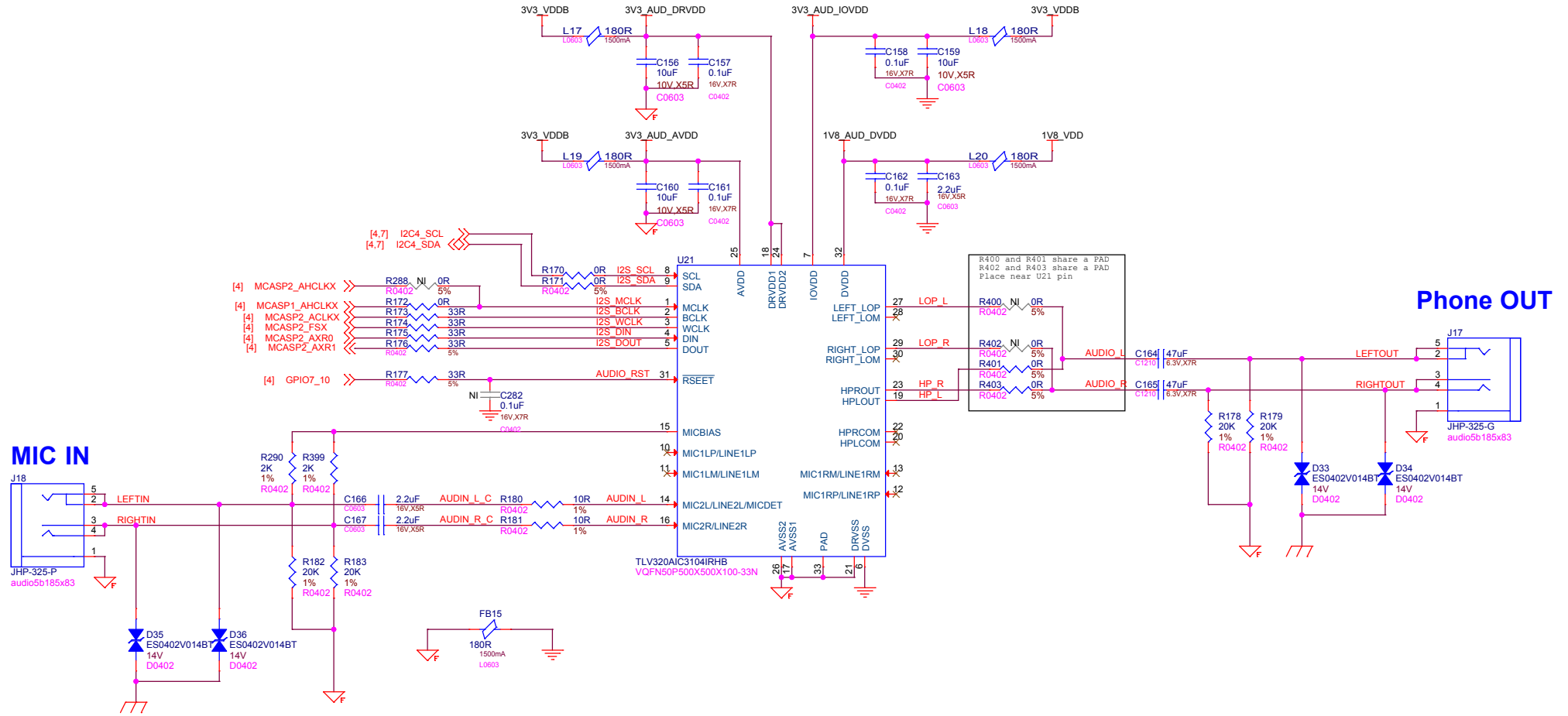
## USB 2.0



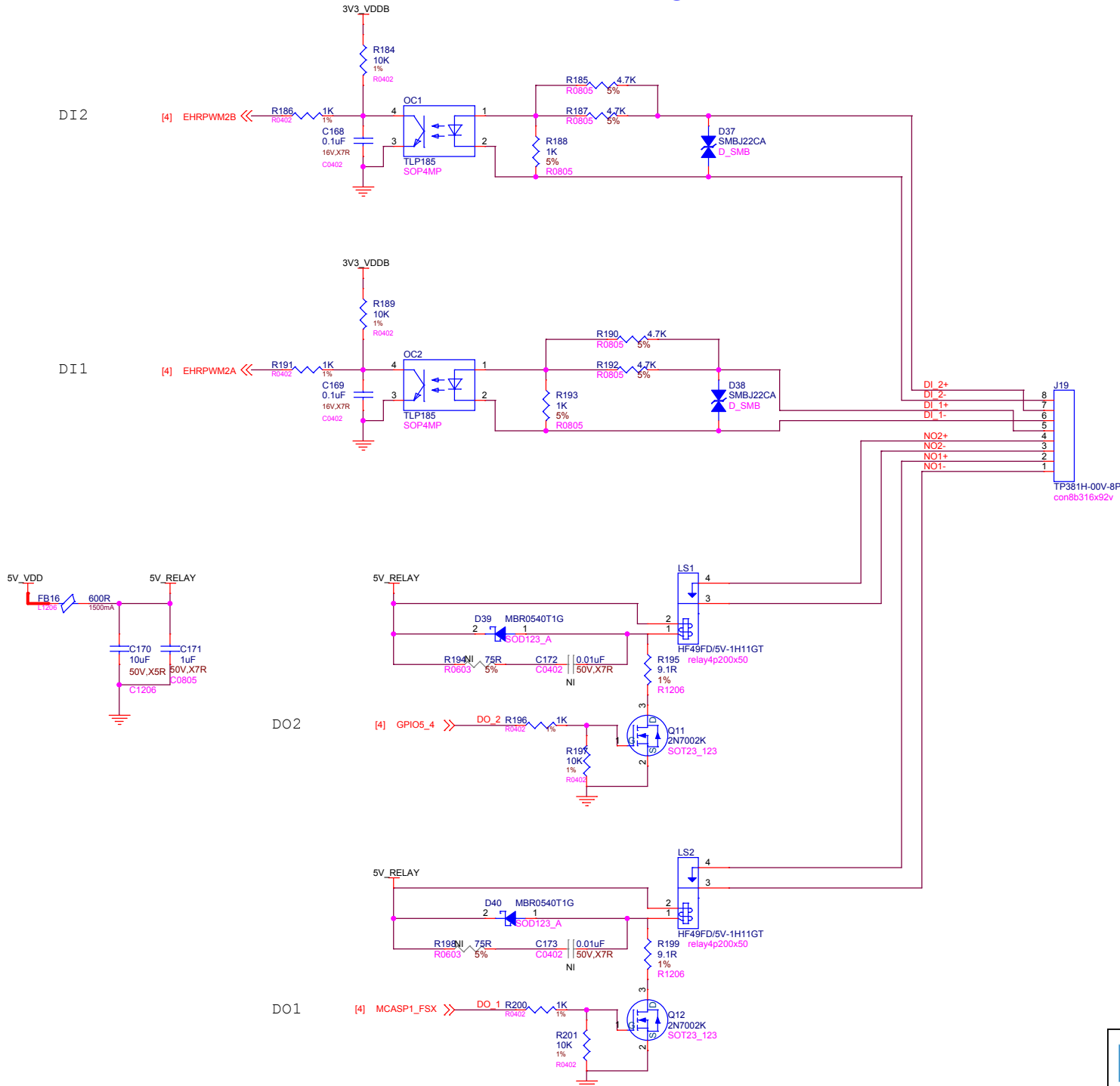
## USB 3.0



# AUDIO

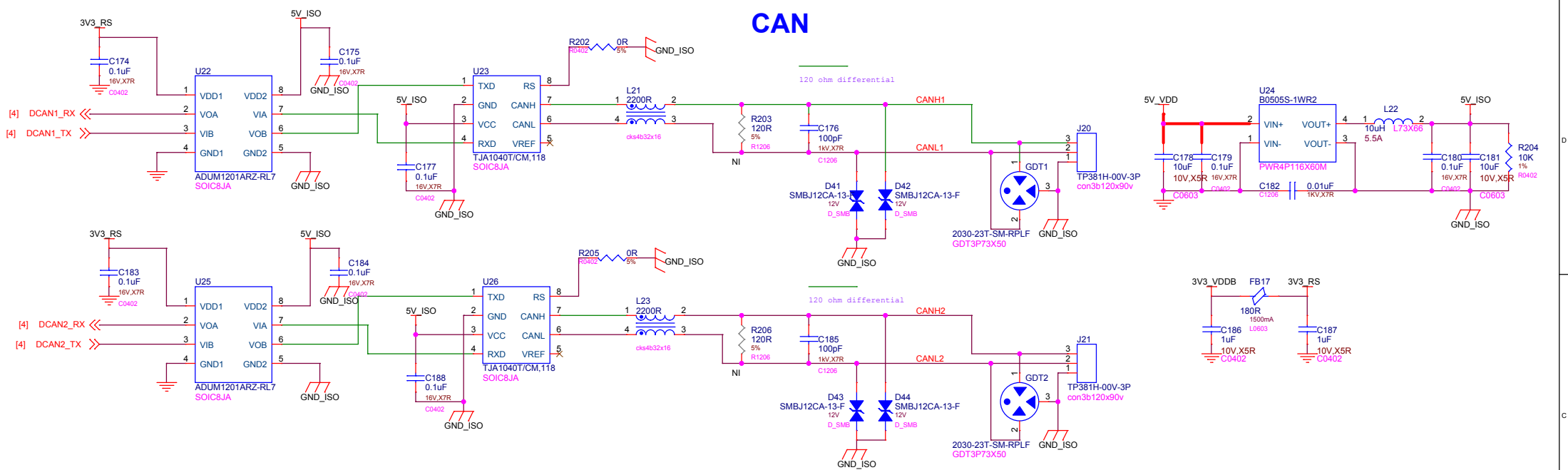


## DI/DO

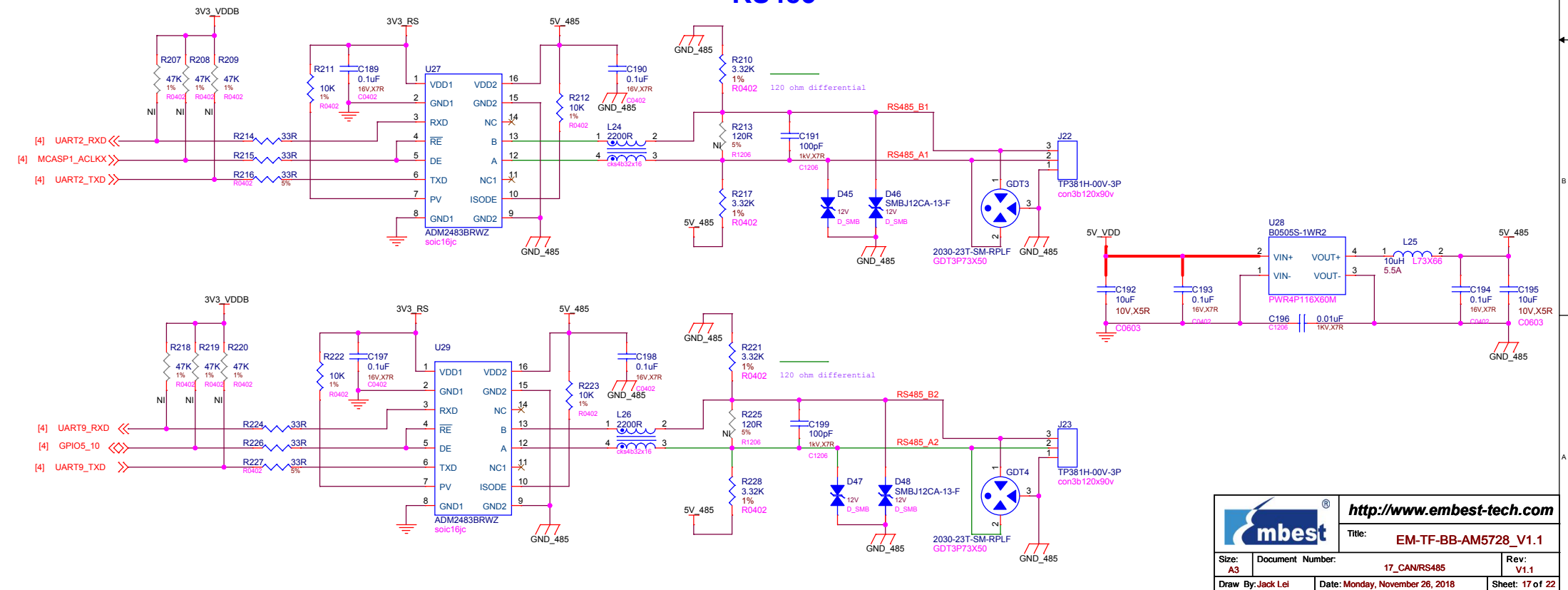




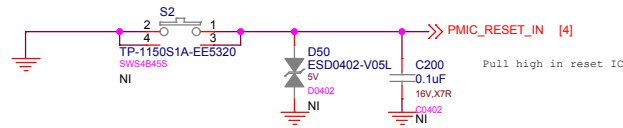
**CAN**



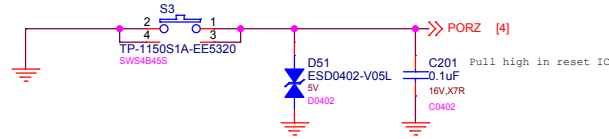
## RS485



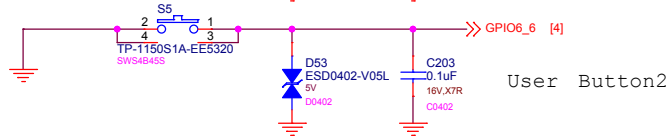
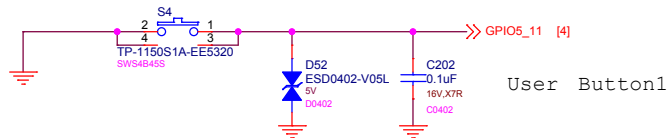
# BUTTON/RTC/BEEP/LEDs/BOOT SEL



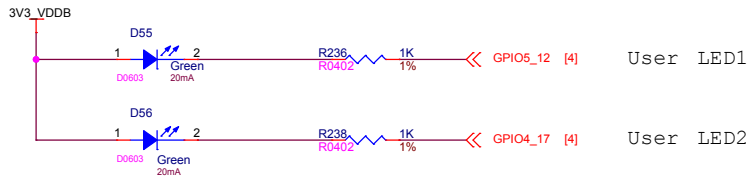
## Power on Reset



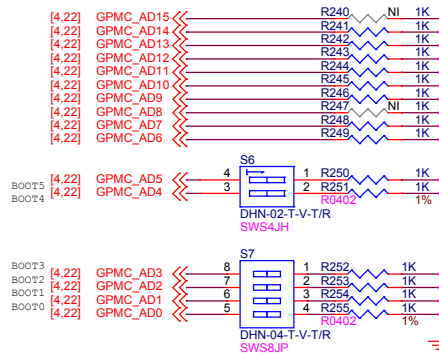
## User Button



## User LEDs

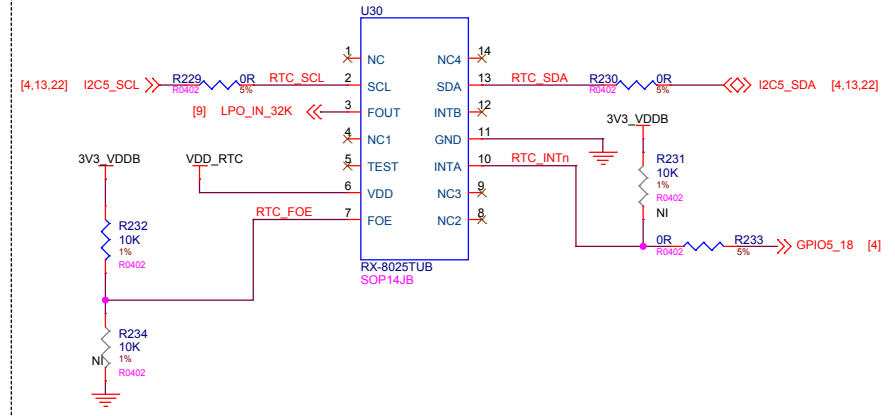


## Boot Sel

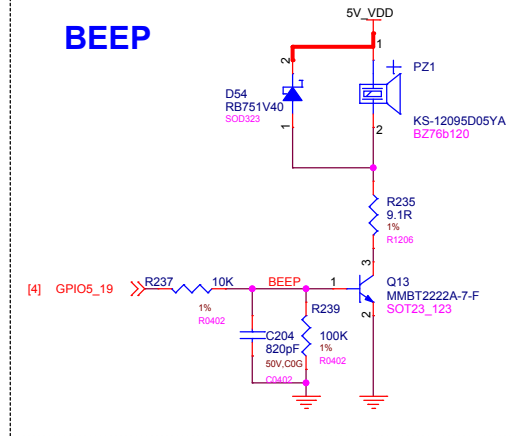


BOOT[5:0]	BOOT Device
10,0000	eMMC
10,0010	SD-CARD
10,0011	SATA
10,0100	USB/UART
10,0110	QSPI

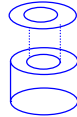
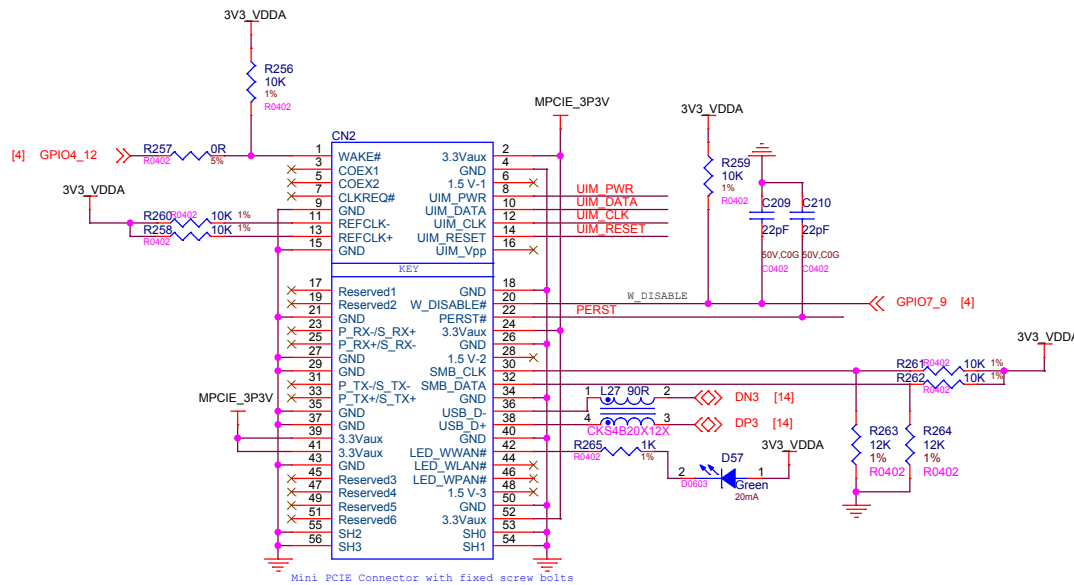
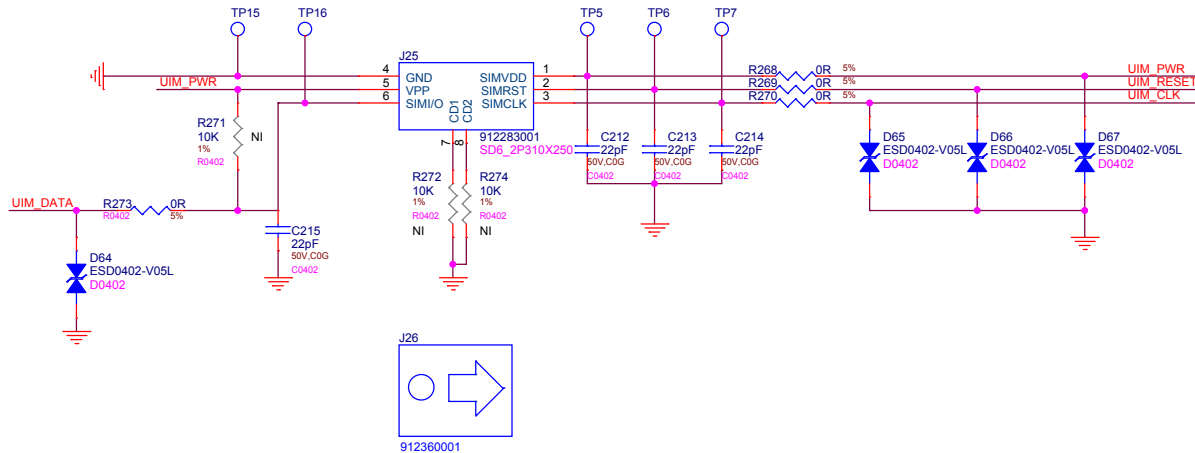
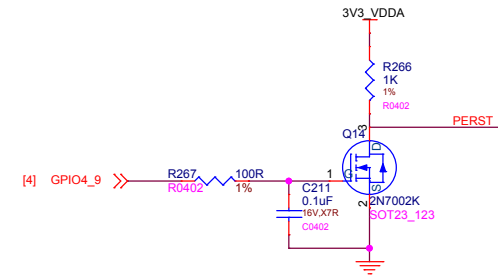
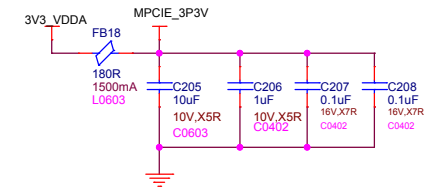
## RTC



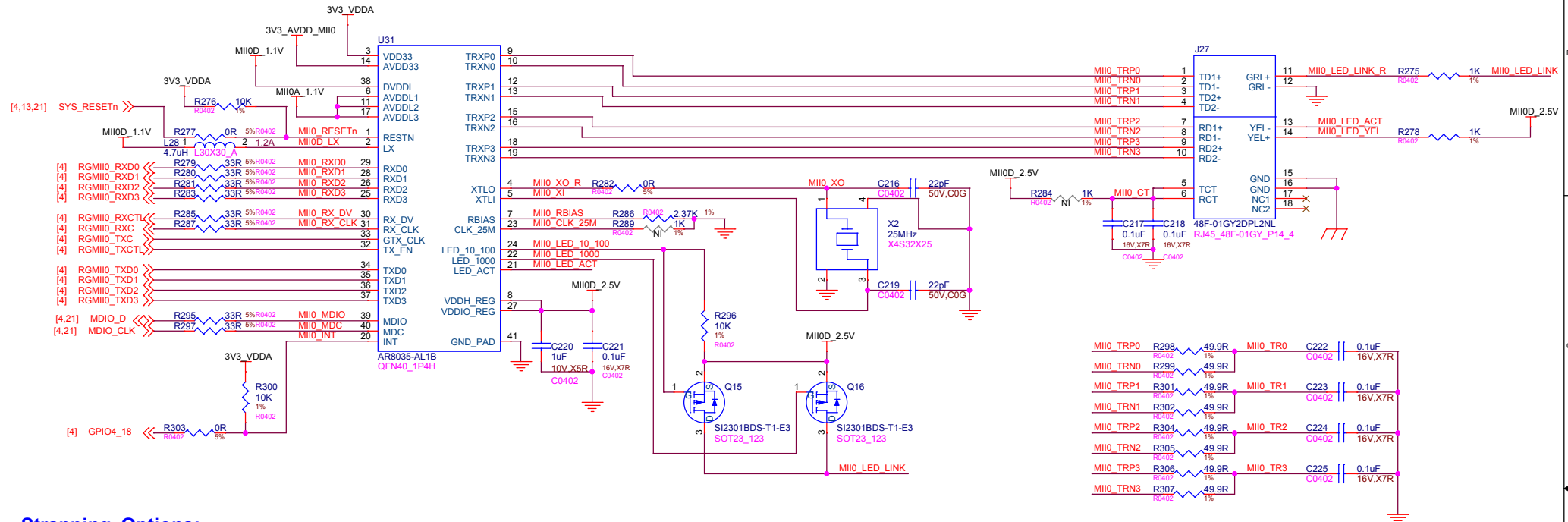
## BEEP



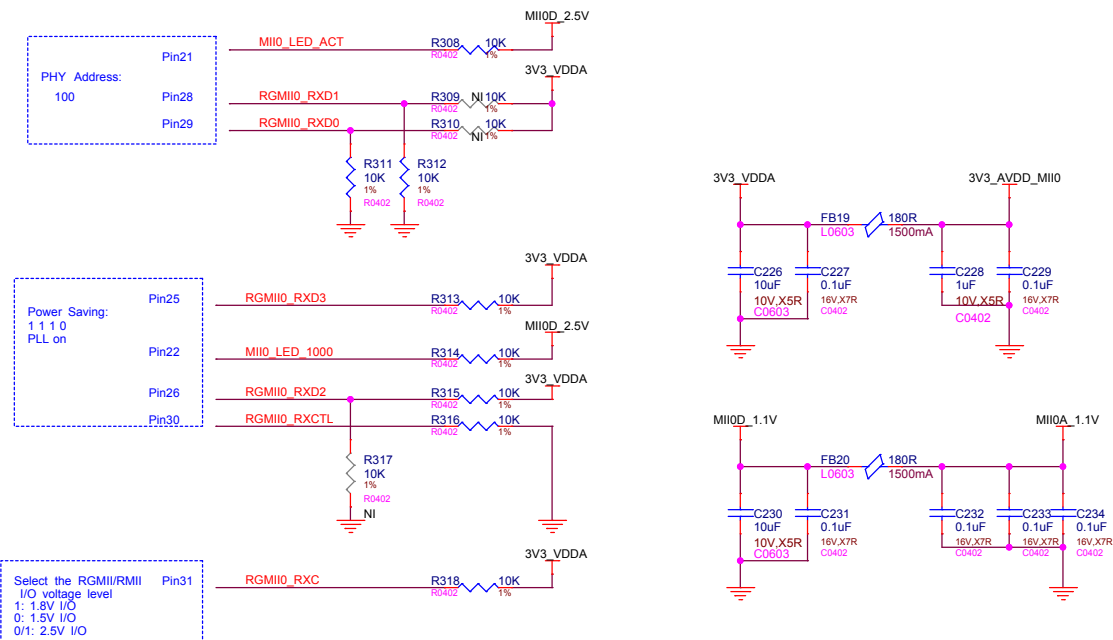
## Mini PCIE


05Y621A0311-R-36LF accessory sets  
PCIEMINIS52\_2\_2P8

# ETHERNET0

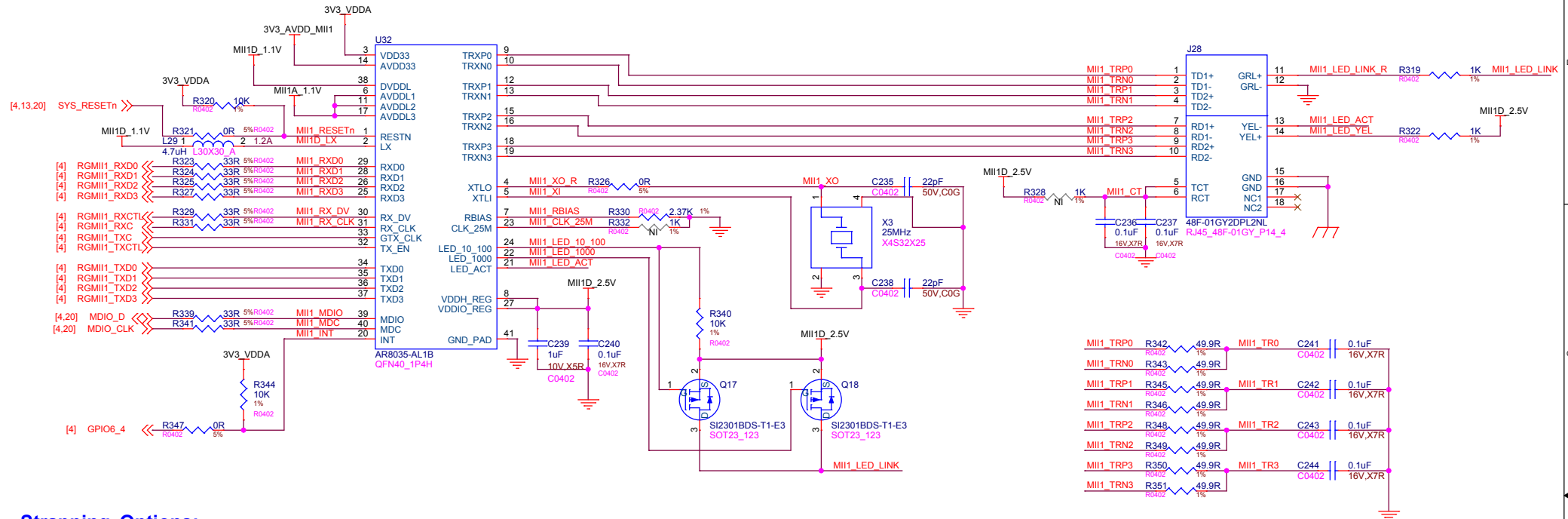


### Strapping Options:

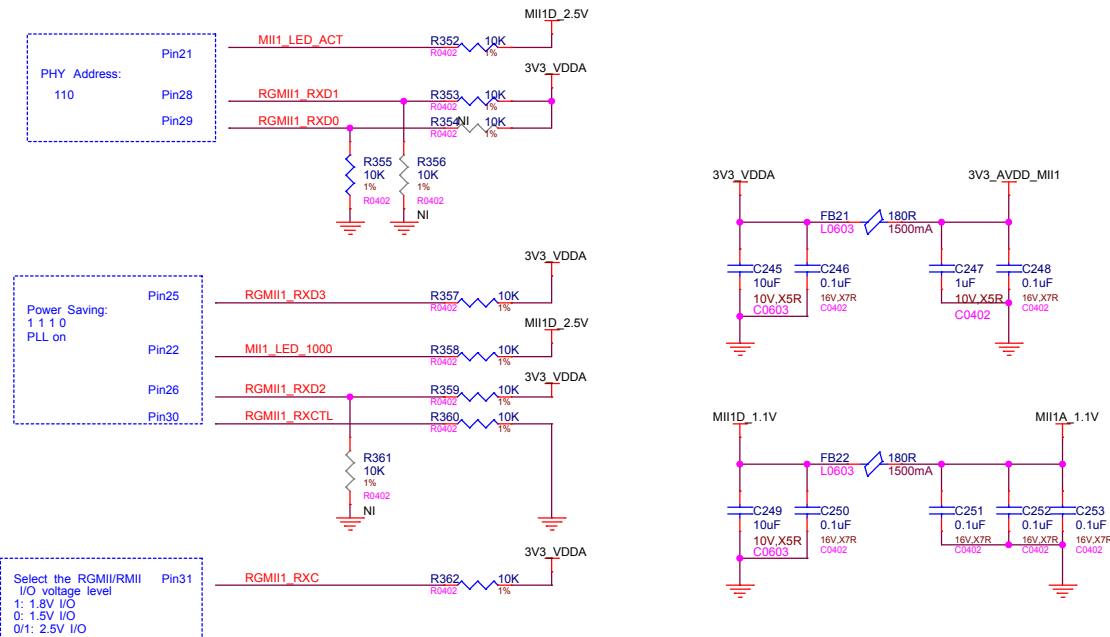


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		Title: <b>EM-TF-BB-AM5728_V1.1</b>	
Size: <b>A3</b>	Document Number:	<b>19_ETHERNETO</b>	
		Rev:	<b>V1.1</b>
Draw By: <b>Jack Lei</b>		Date: <b>Monday, November 26, 2018</b>	Sheet: <b>20 of 22</b>

## ETHERNET1



### Strapping Options:



# GPMC/UART to USB/EXP CONN

