

# iMX6 Rex Development Baseboard

## Variant: Prototype

12/3/2013  
V1I1

RELEASED 02-DEC-2013

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### DESIGN CONSIDERATIONS

DESIGN NOTE:  
Example text for informational design notes.

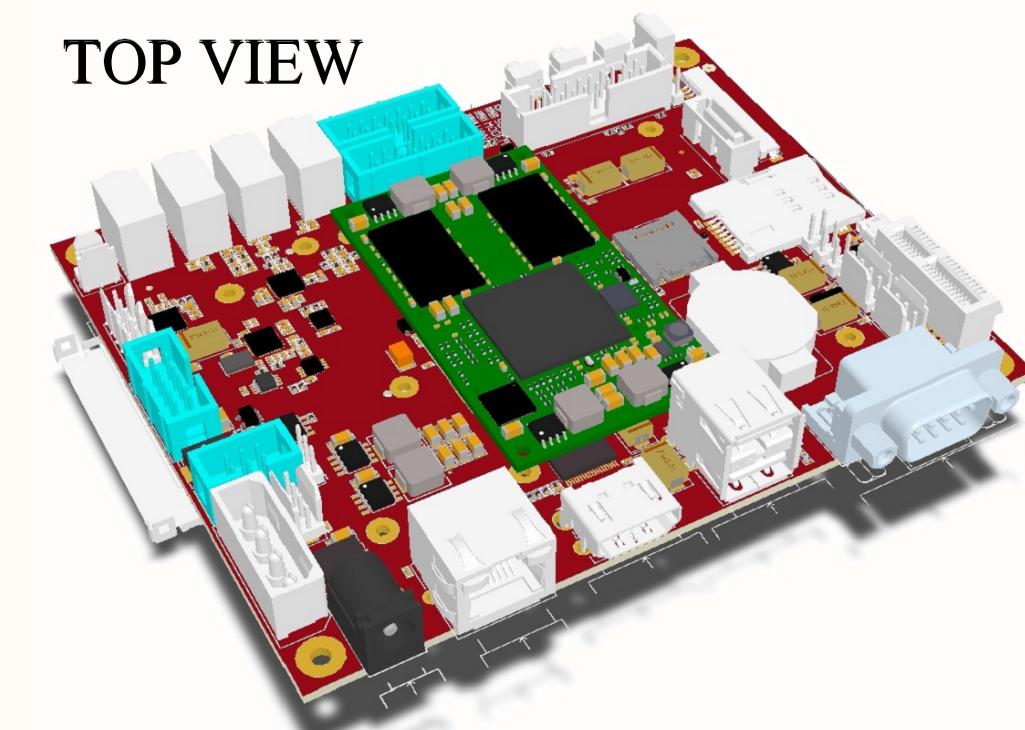
DESIGN NOTE:  
Example text for cautionary design notes.

DESIGN NOTE:  
Example text for debug notes.

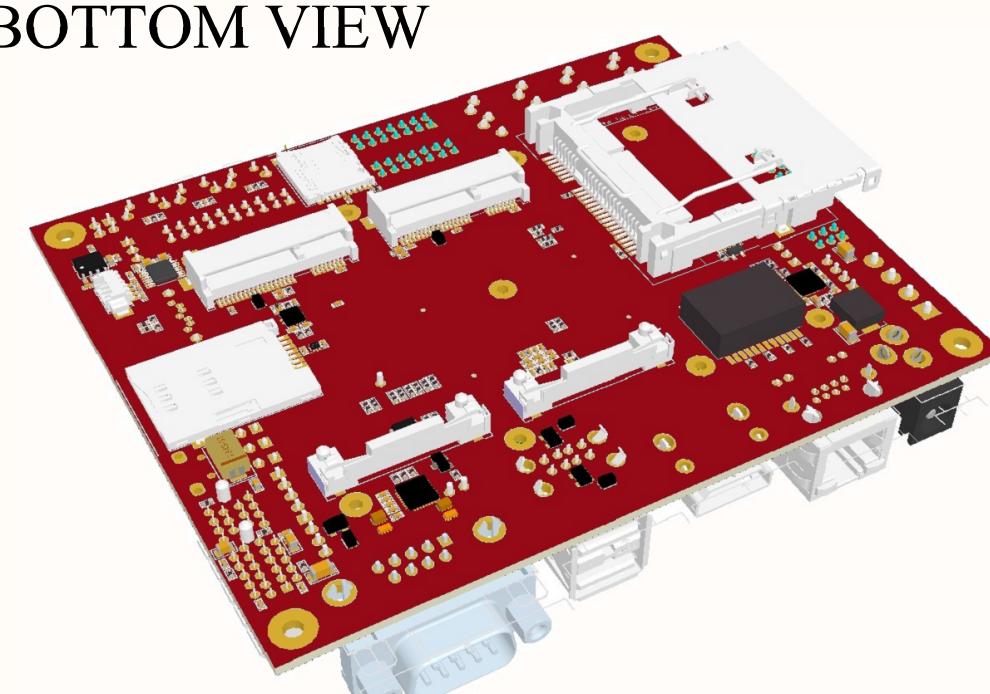
DESIGN NOTE:  
Example text for critical design notes.

LAYOUT NOTE:  
Example text for critical layout guidelines.

TOP VIEW



BOTTOM VIEW

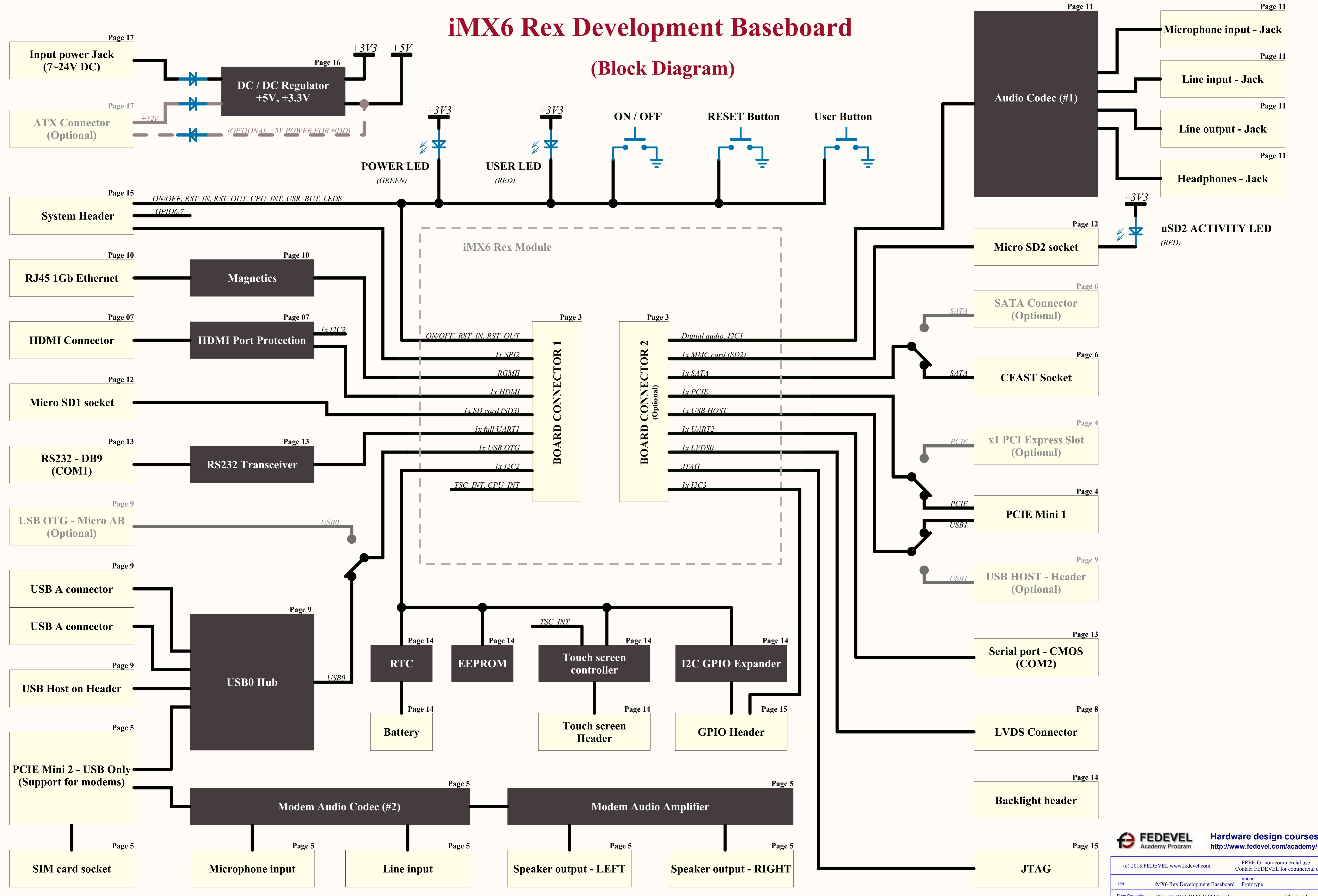


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# iMX6 Rex Development Baseboard

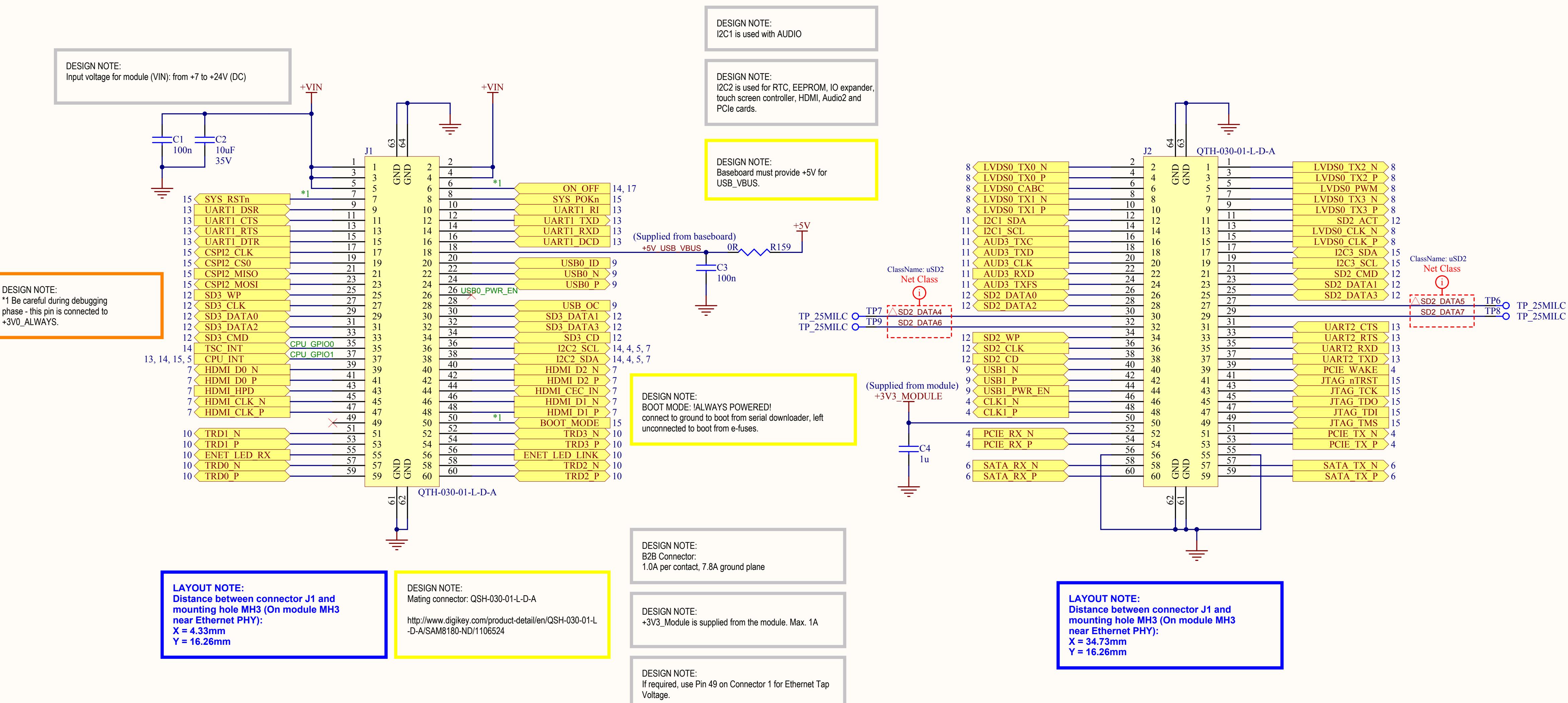
## (Block Diagram)



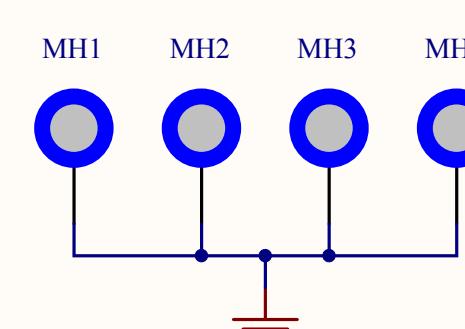
<http://www.iMX6Rex.com>

# CONNECTORS

A

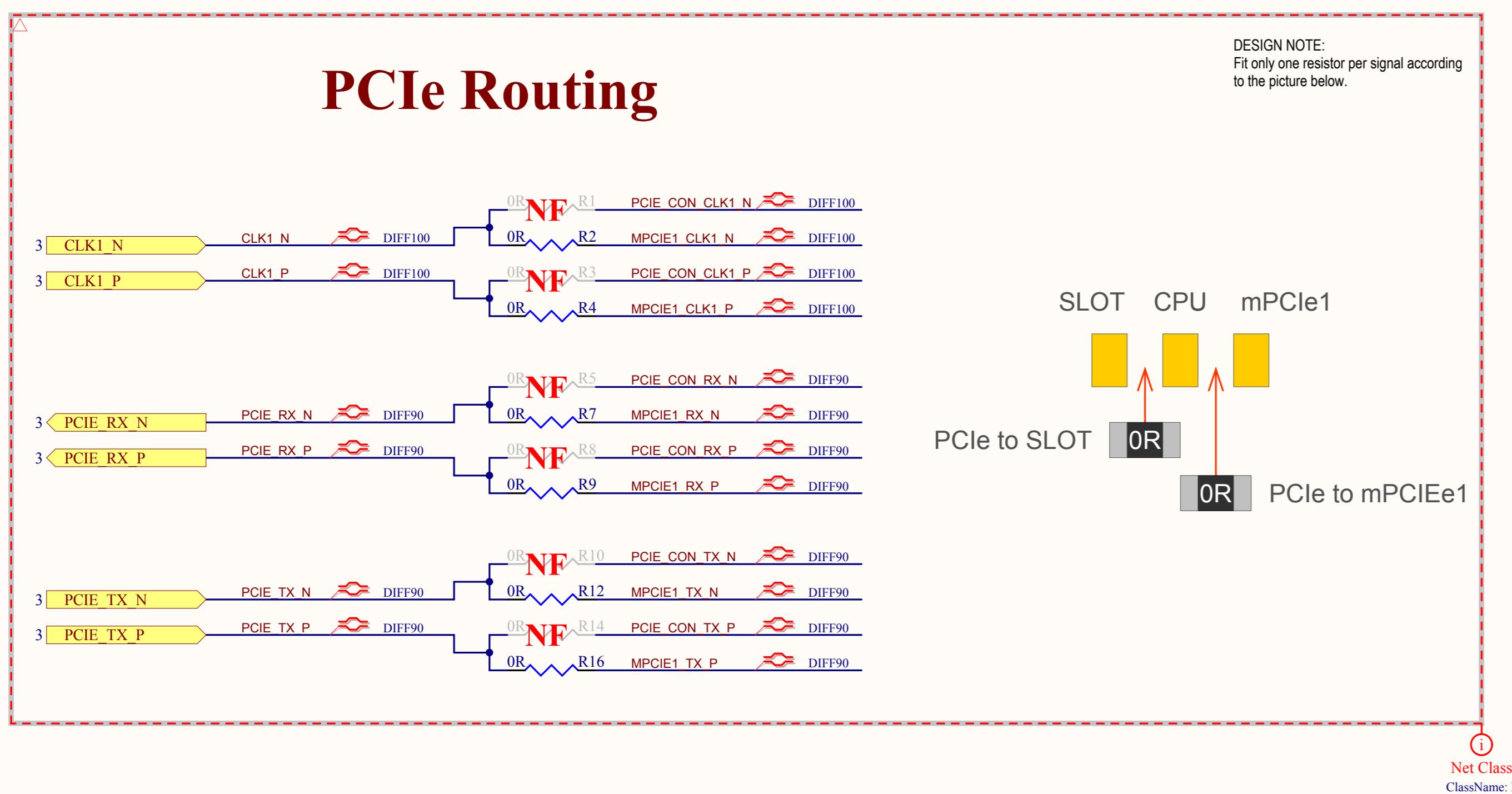


## Module Mounting Holes

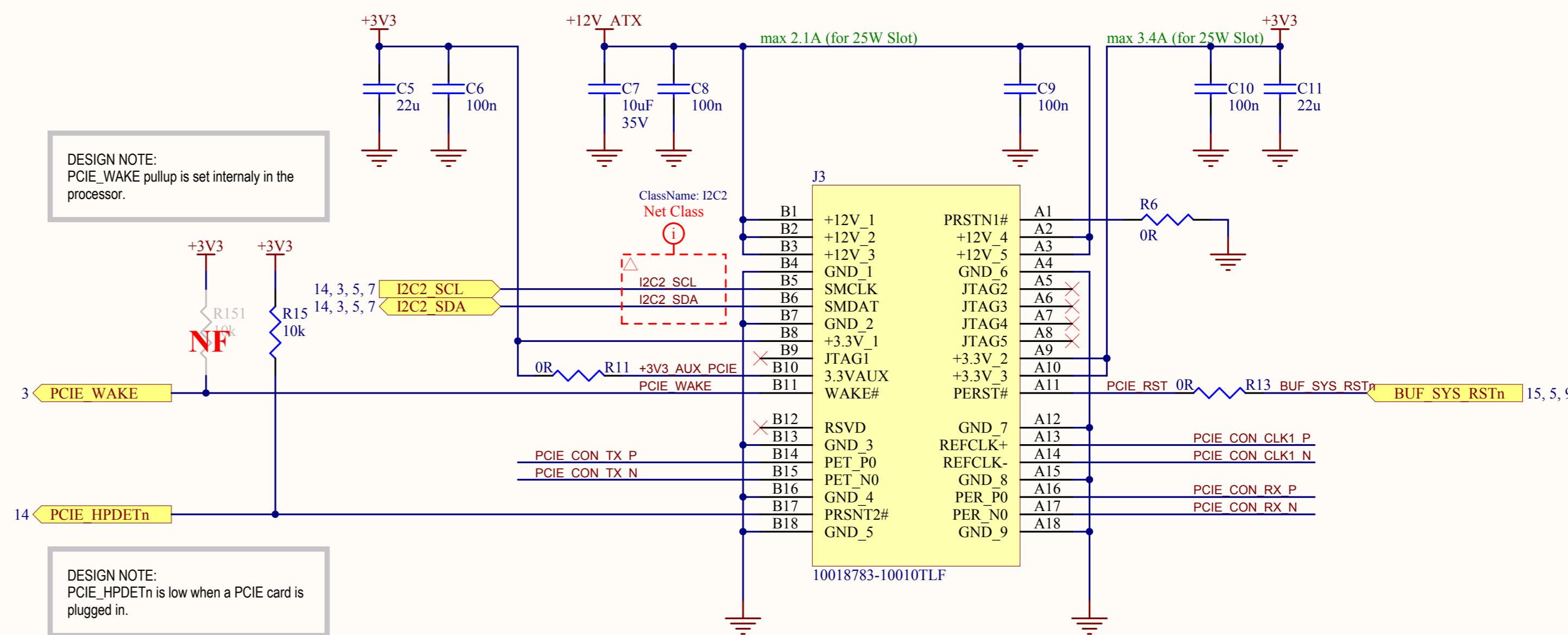


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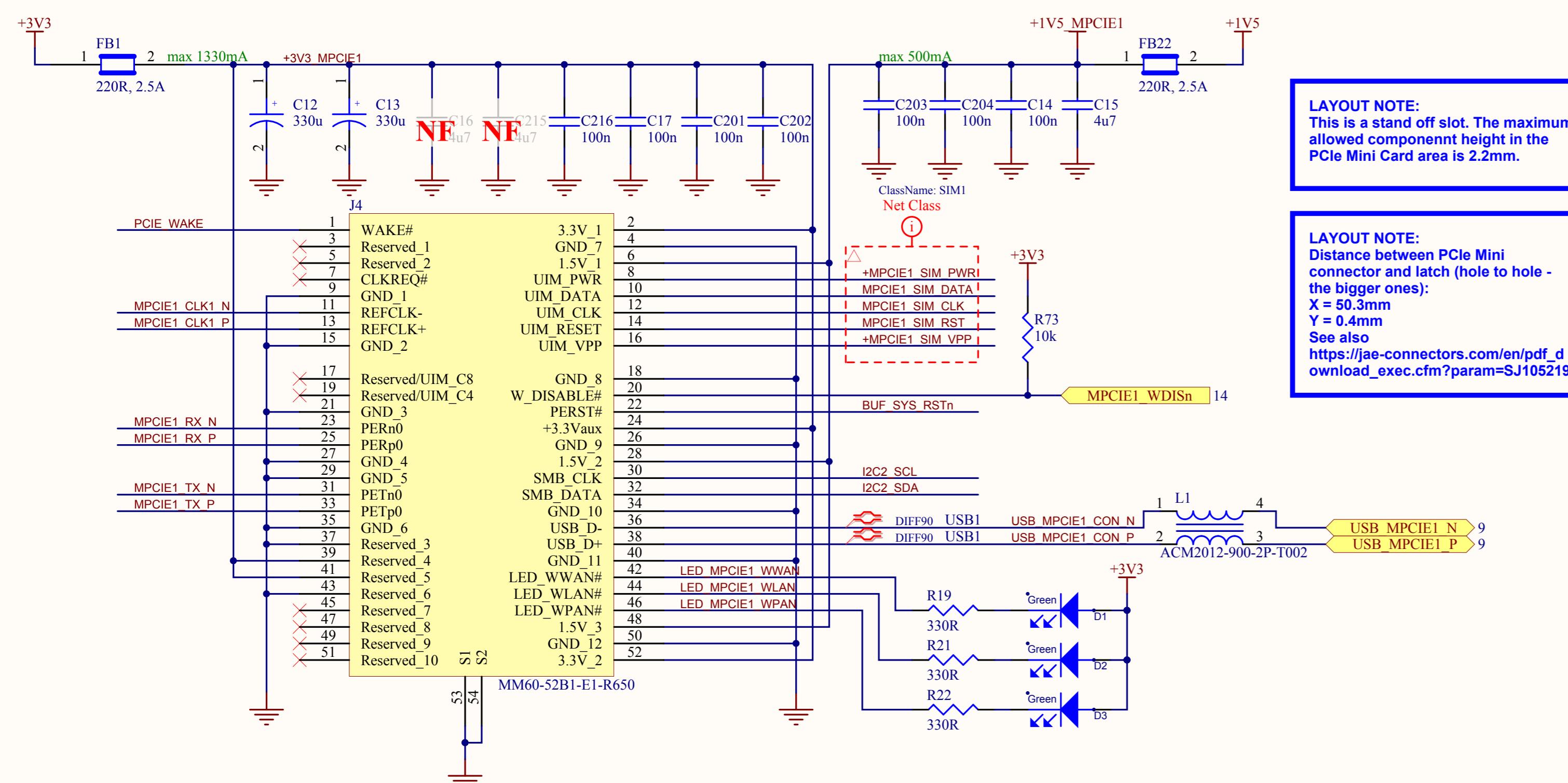
# PCIE MINI 1, PCIE



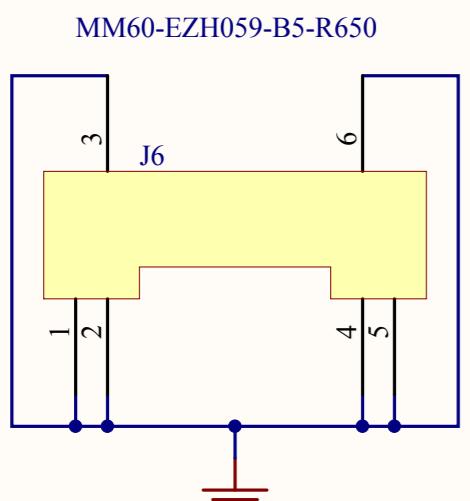
## PCI Express Slot (Optional)



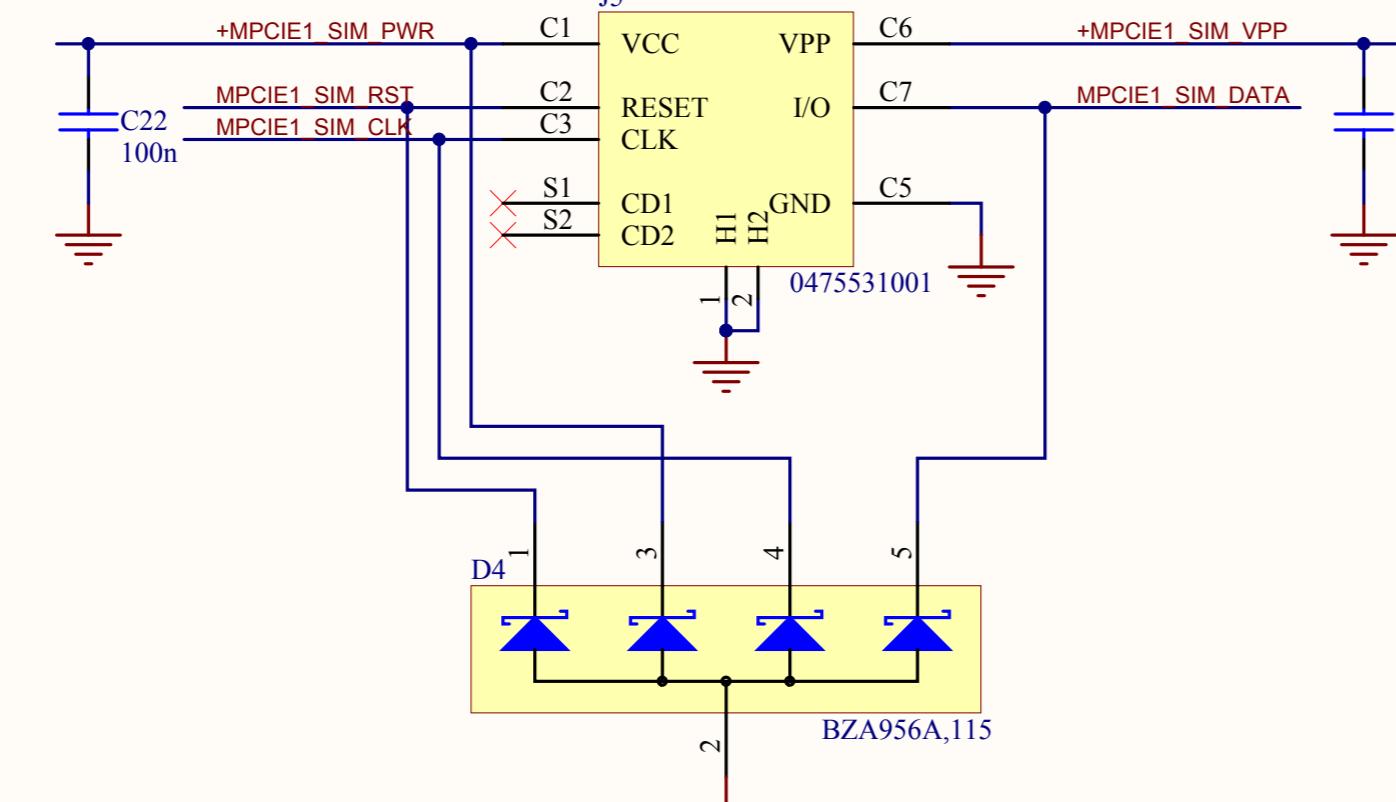
## PCIe Mini 1



## Card Latch for PCIe Mini 1



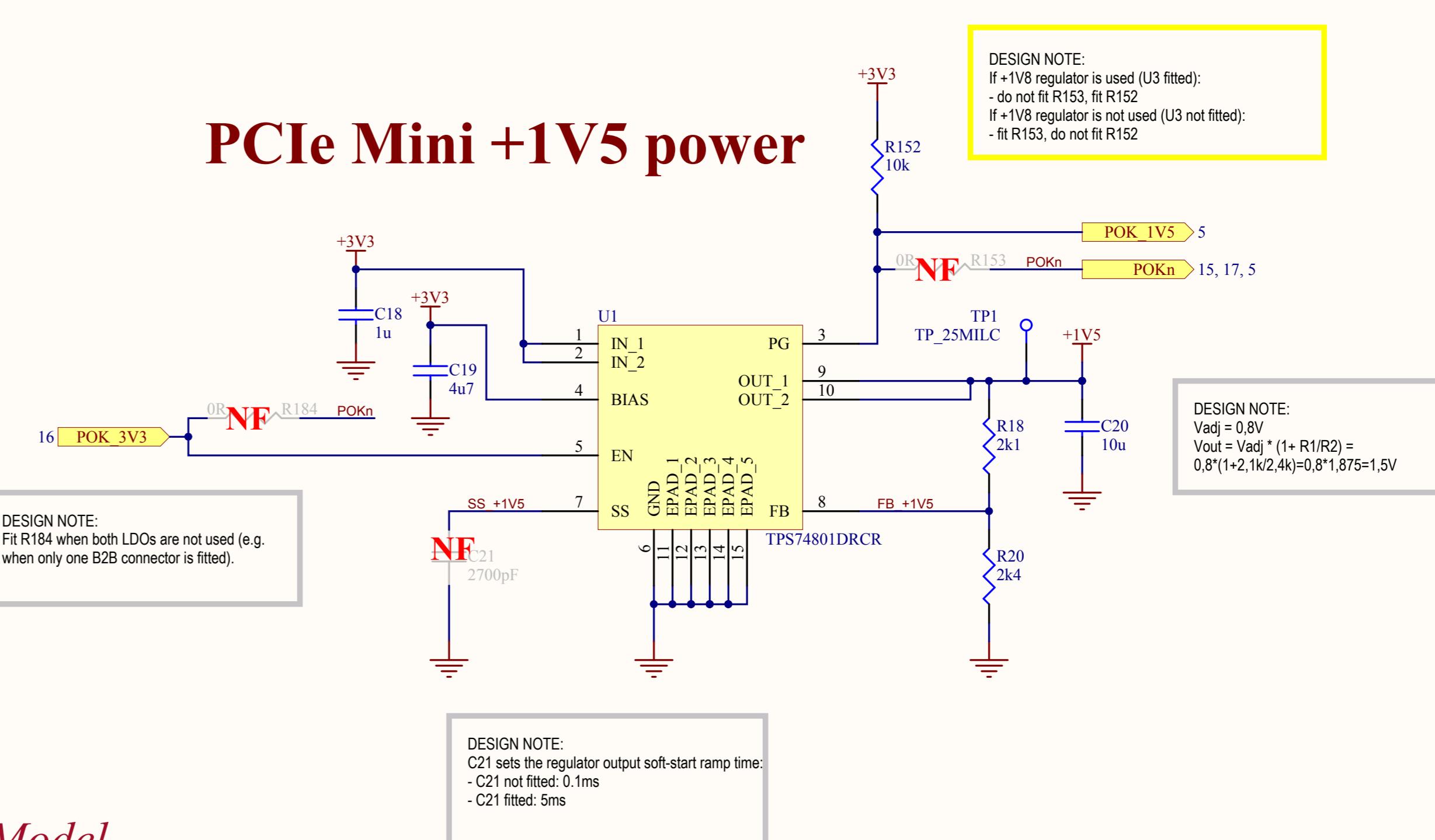
## SIM card for PCIe Mini 1



## PCIe Mini 1 Card for 3D Model

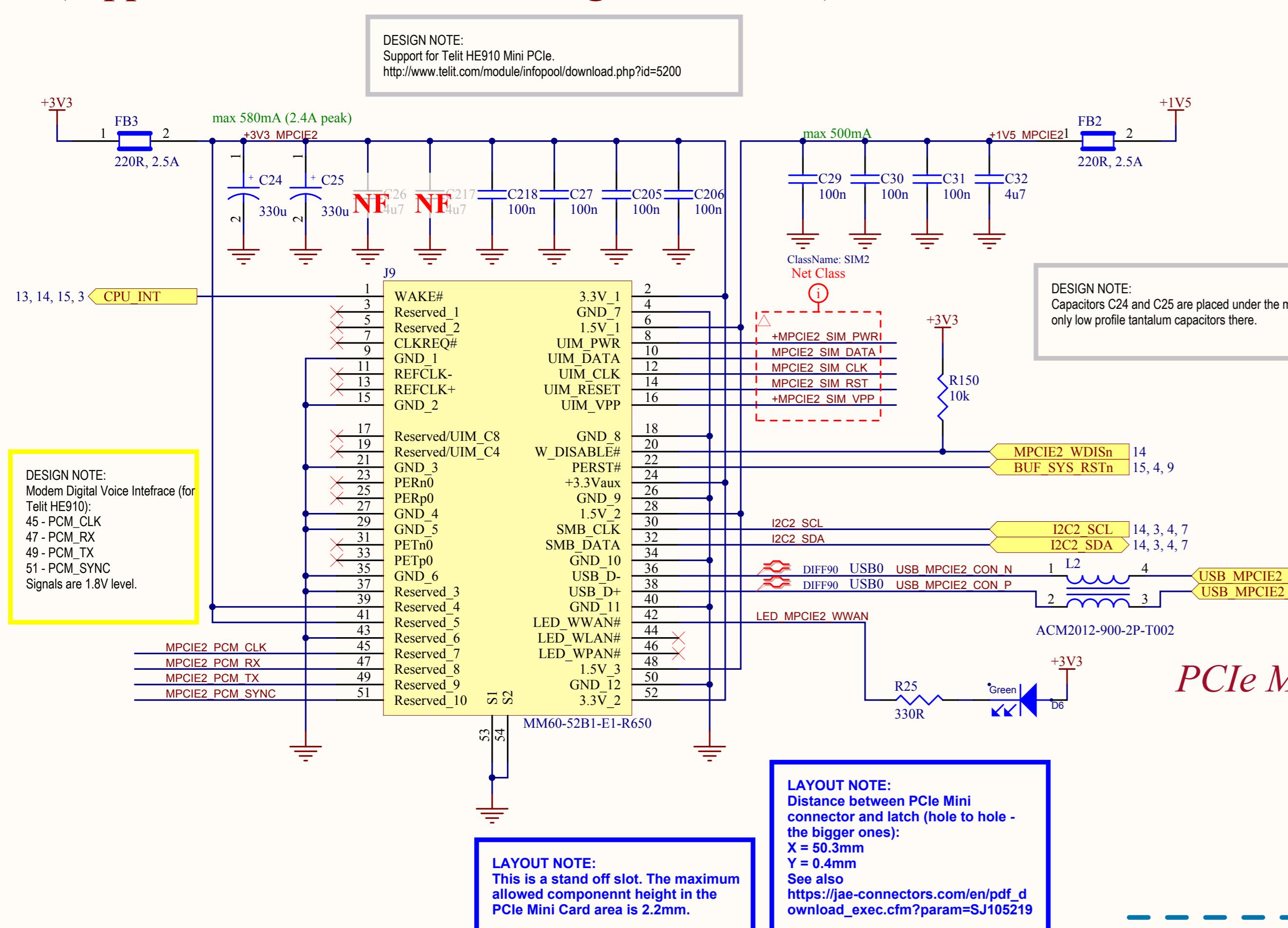


## PCIe Mini +1V5 power

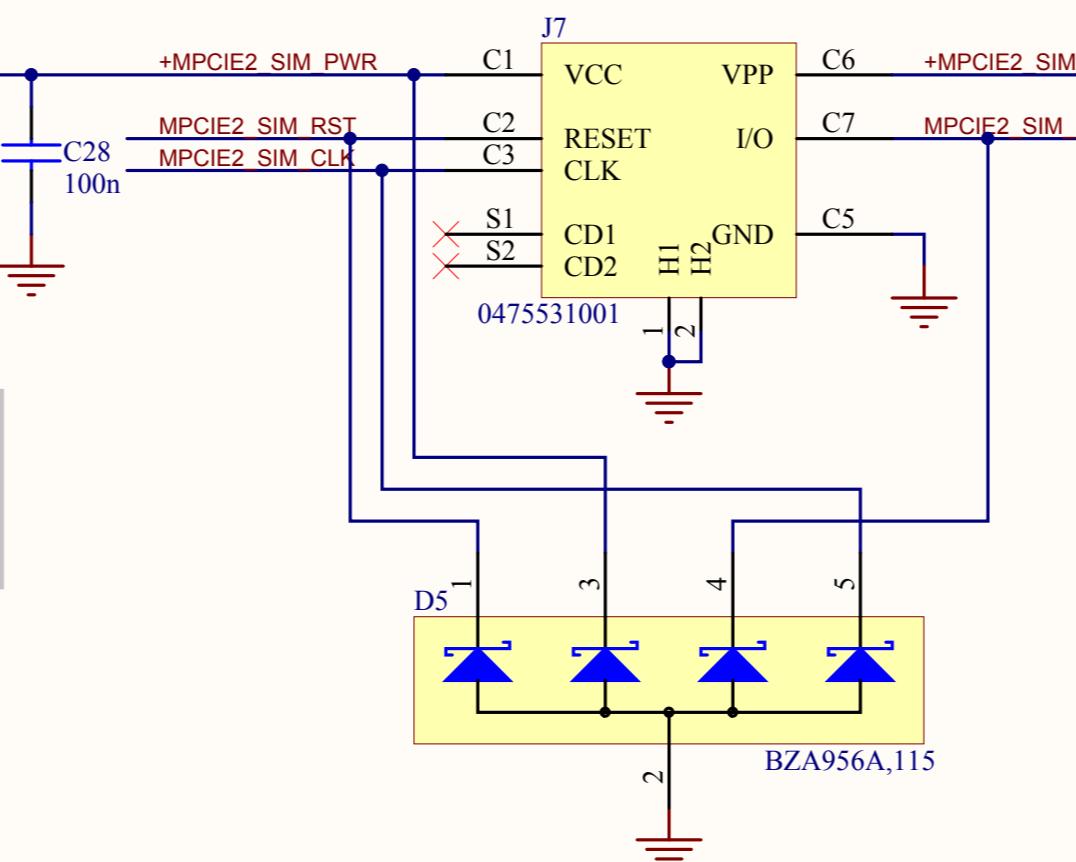


# PCIE MINI 2, AUDIO2

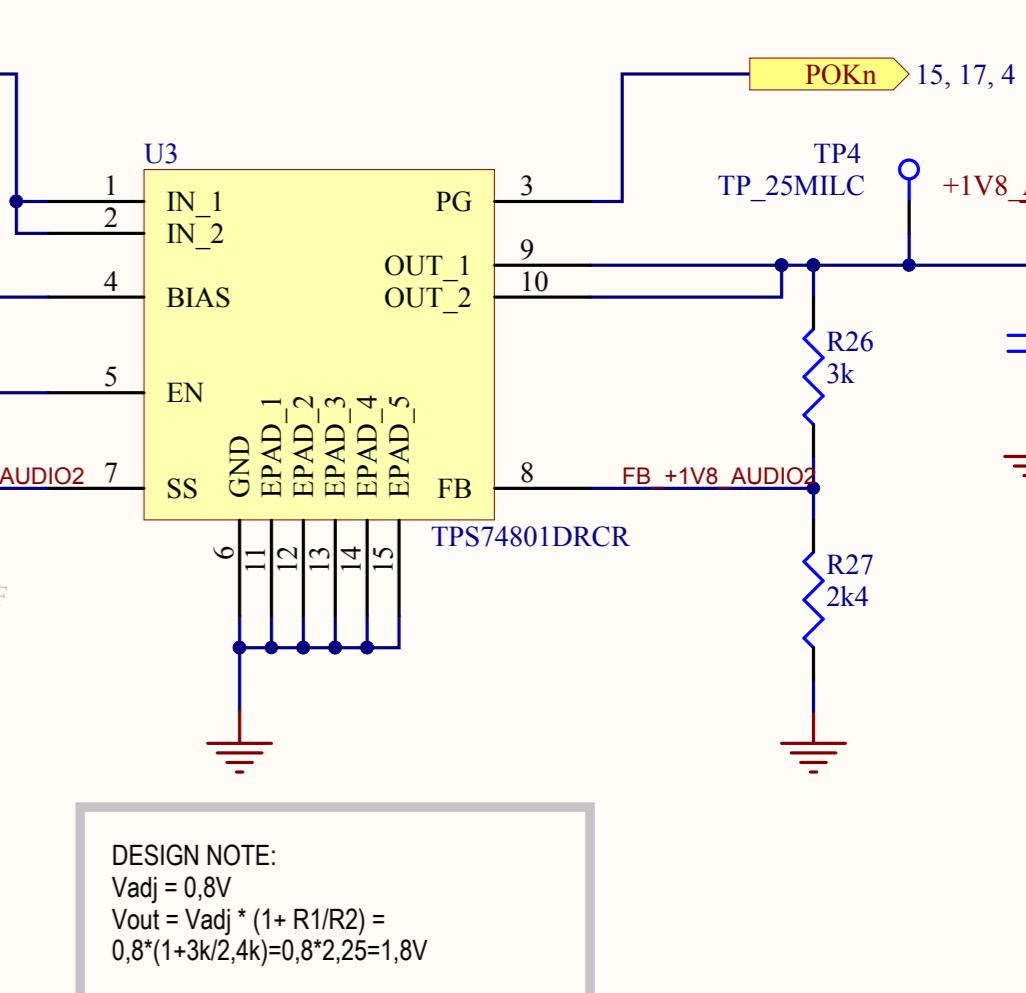
**PCIe Mini 2 - USB only**  
(support for wireless modems e.g GSM, 3G, ...)



## SIM card for PCIe Mini 2

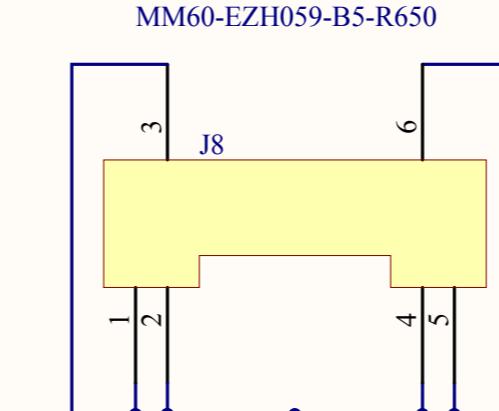


## Audio2 +1V8 power



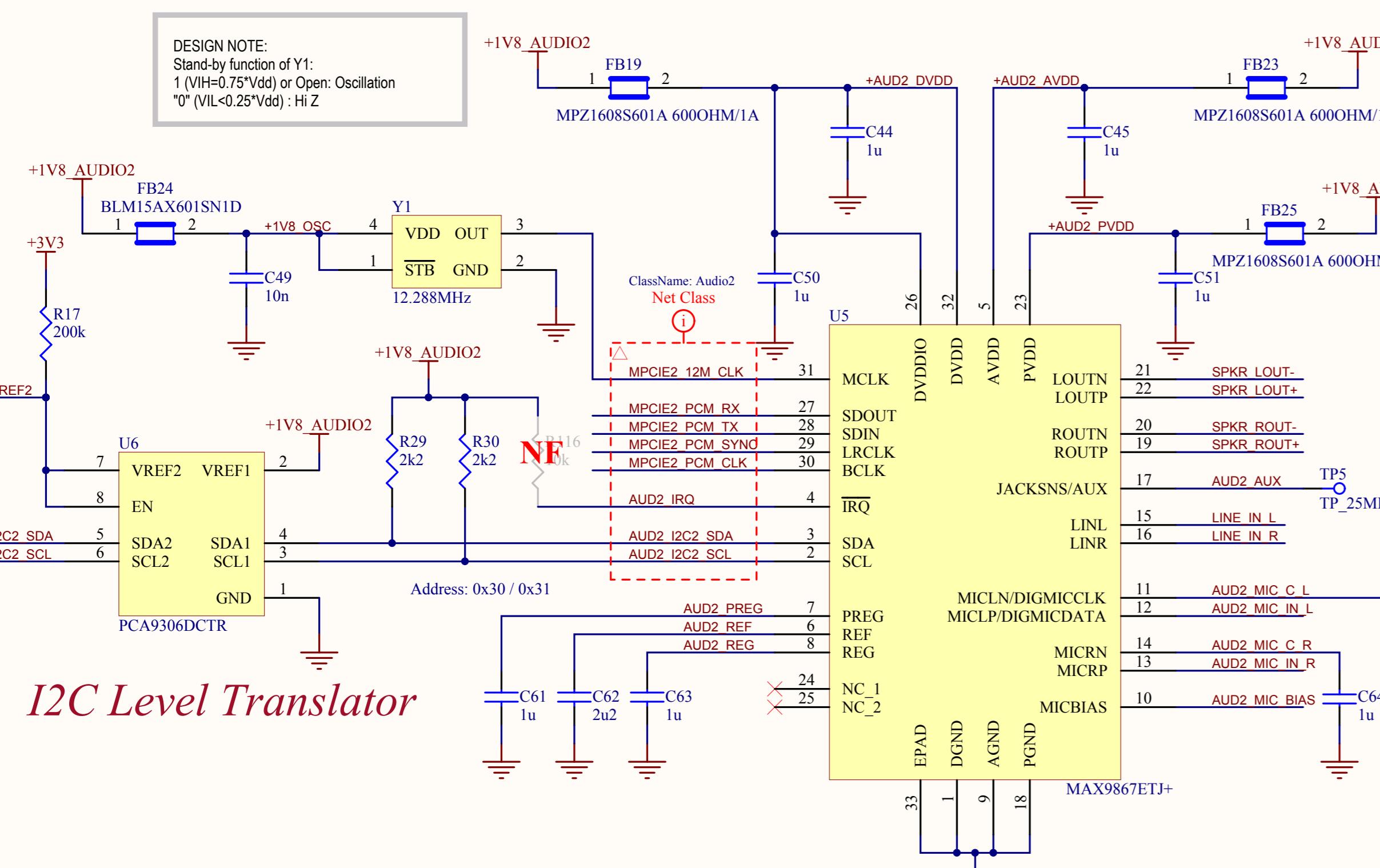
## Card Latch for PCIe Mini 2

### PCIe Mini 2 Card for 3D Model

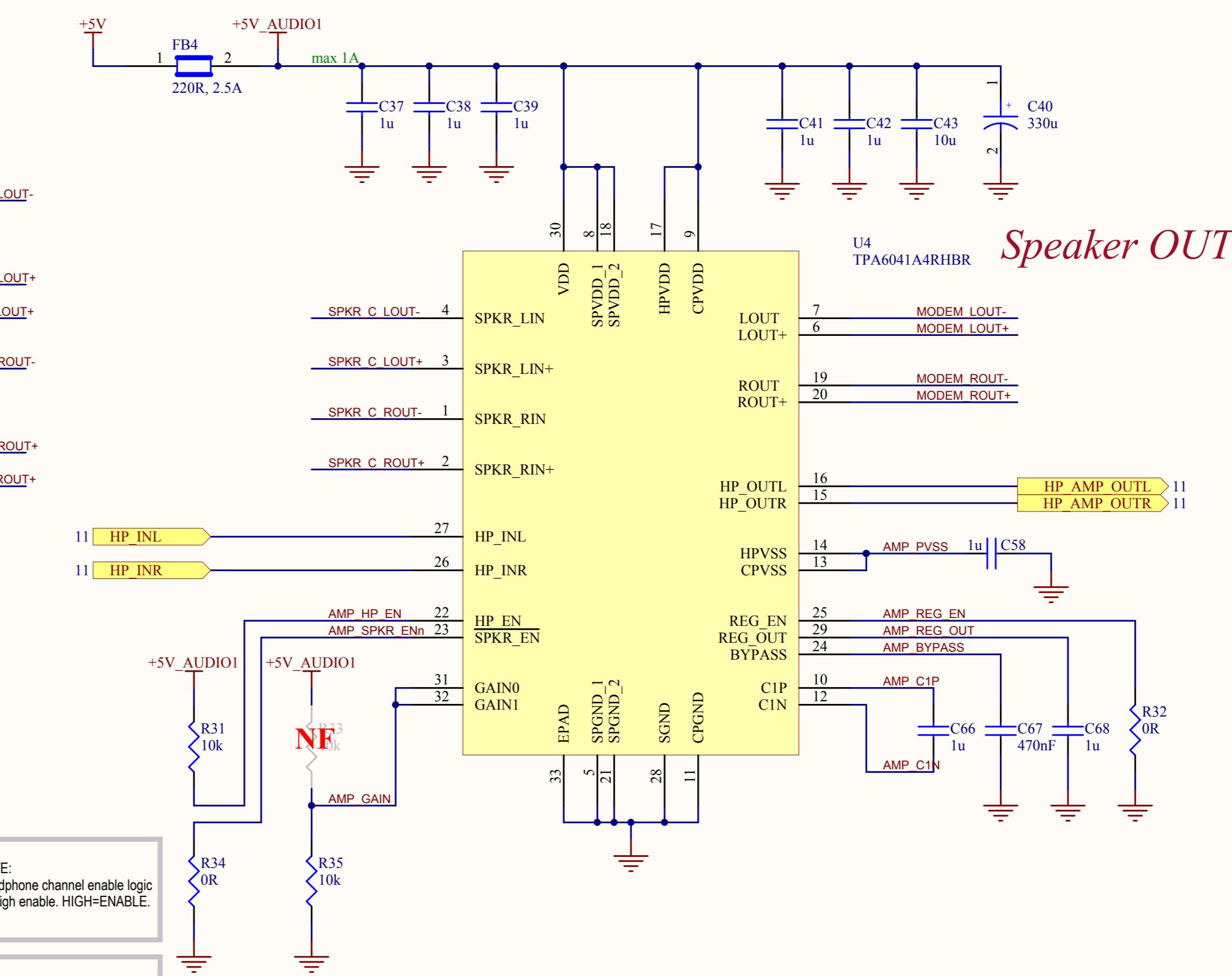


## Audio 2

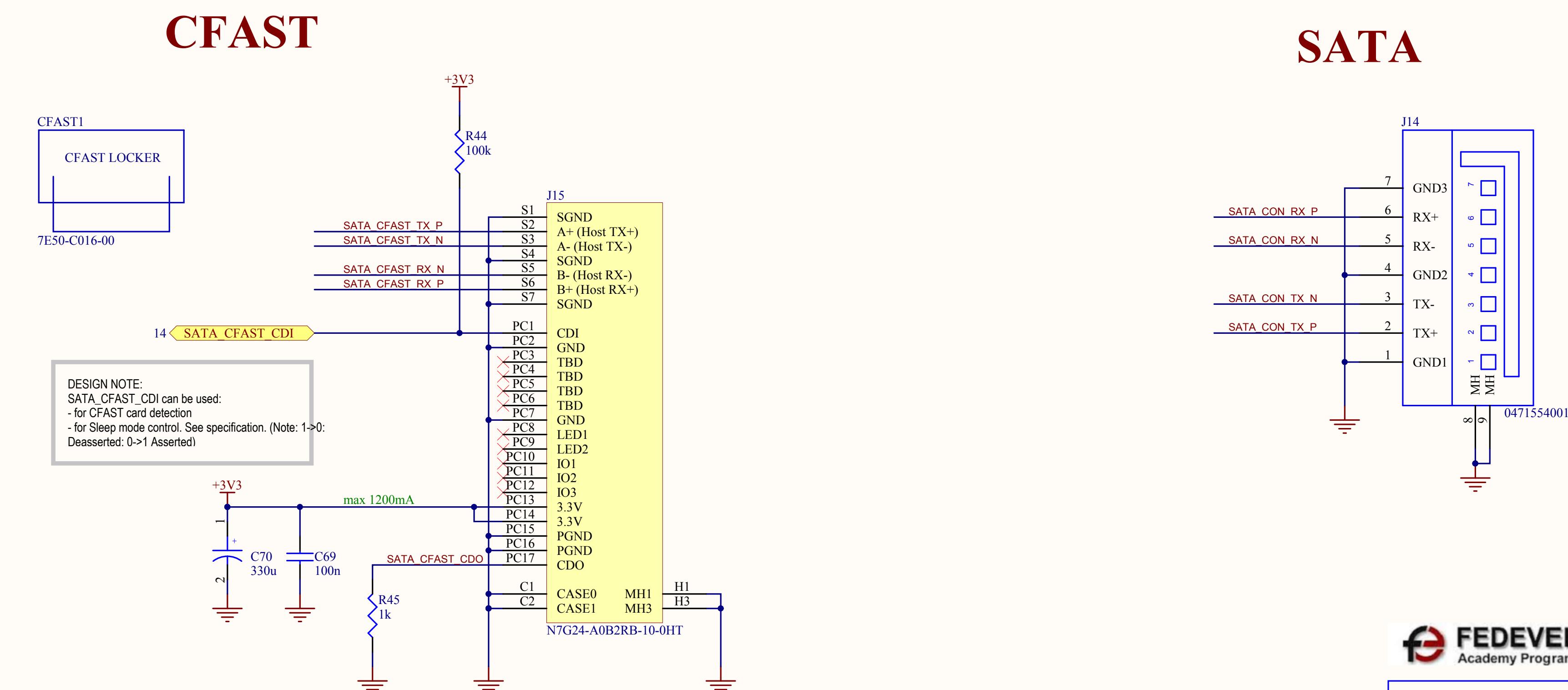
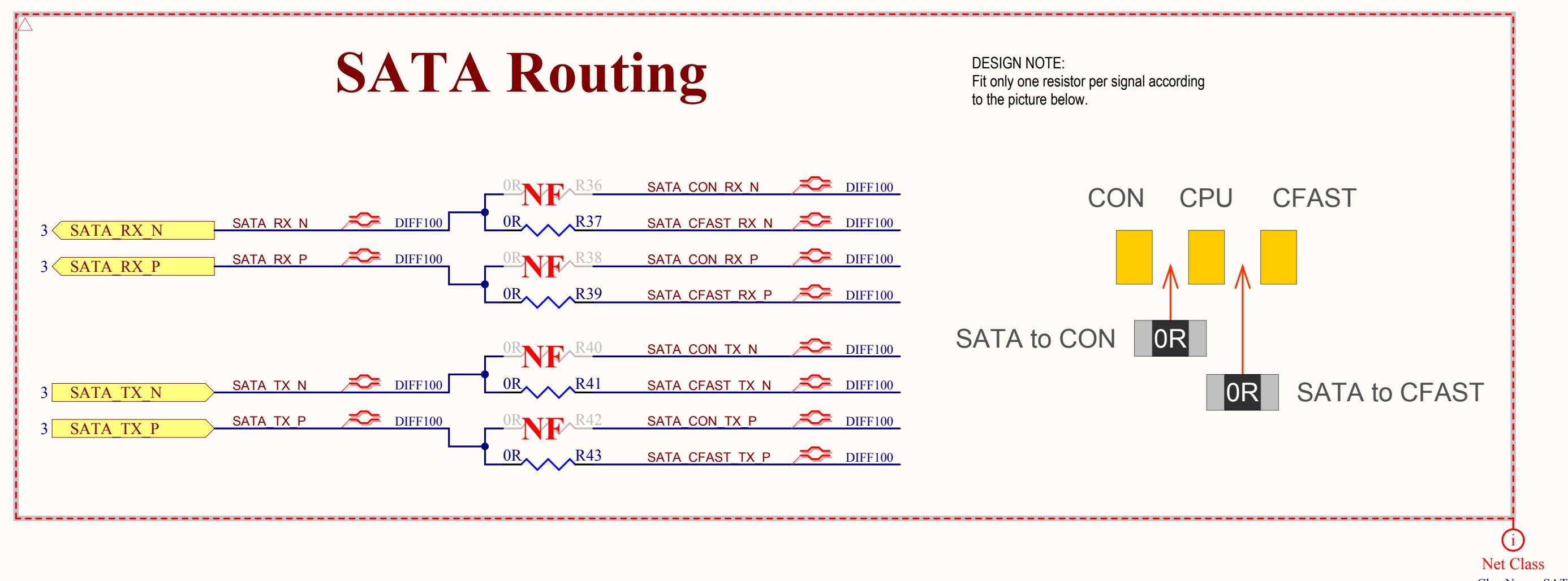
(support for wireless modem voice output / input)



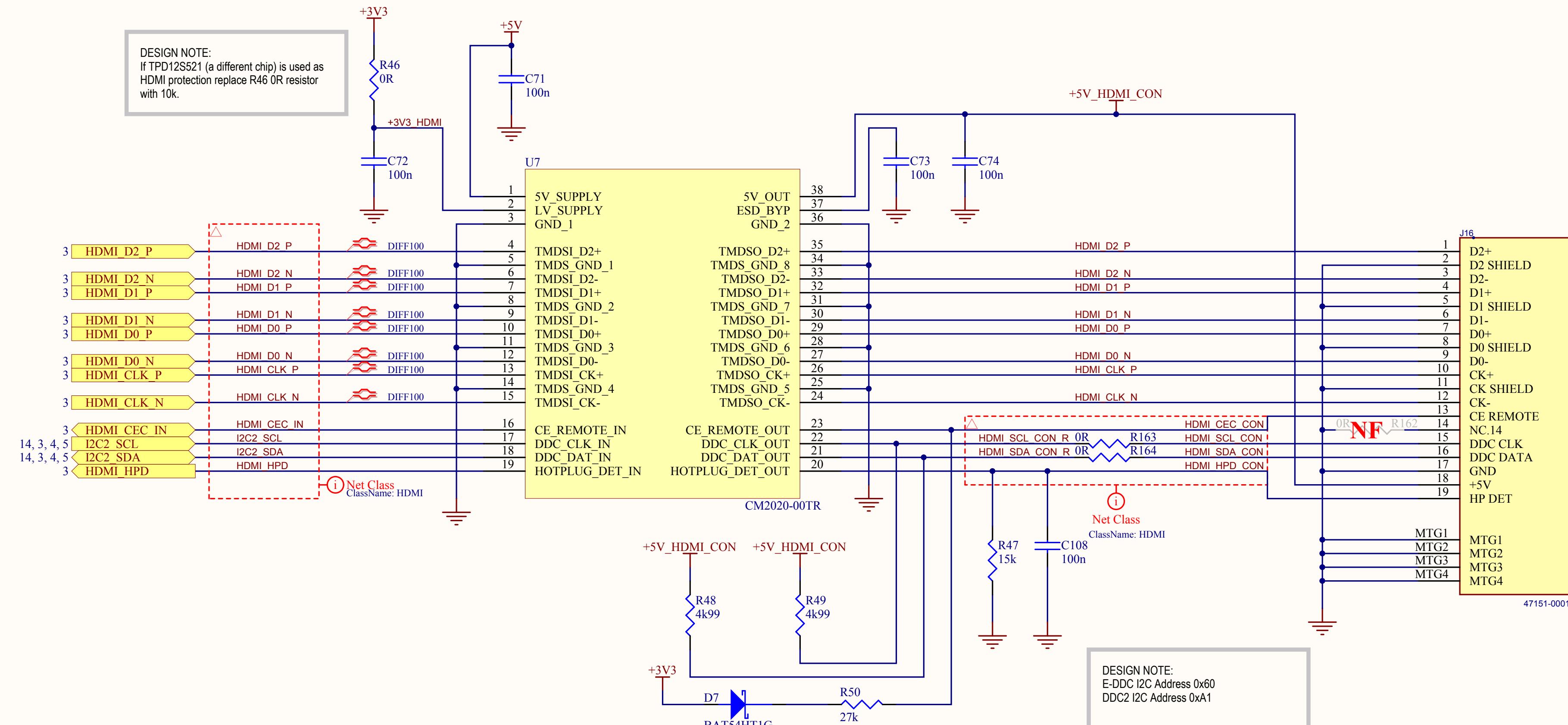
## Audio Amplifier



# SATA, CFAST

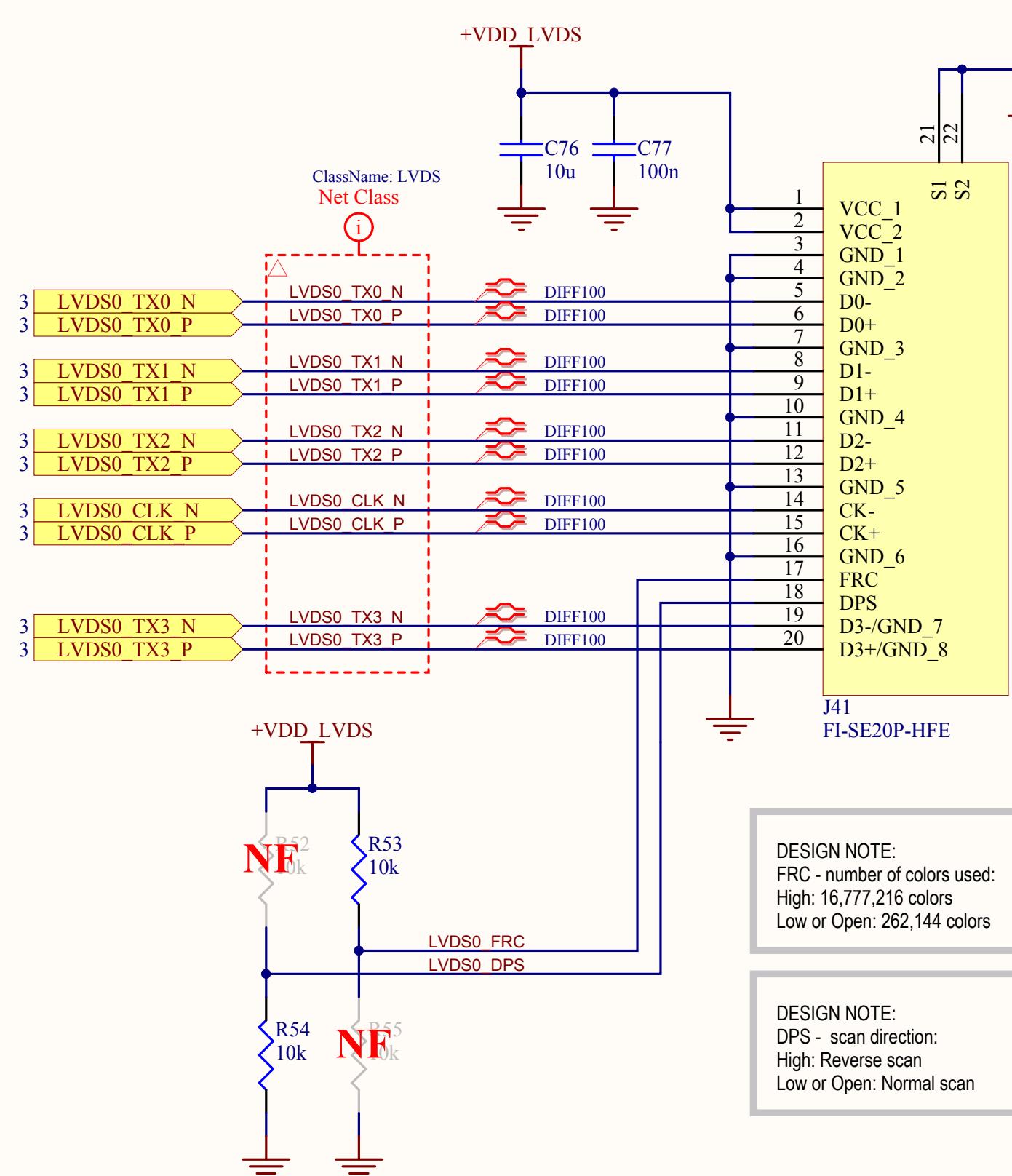


# HDMI

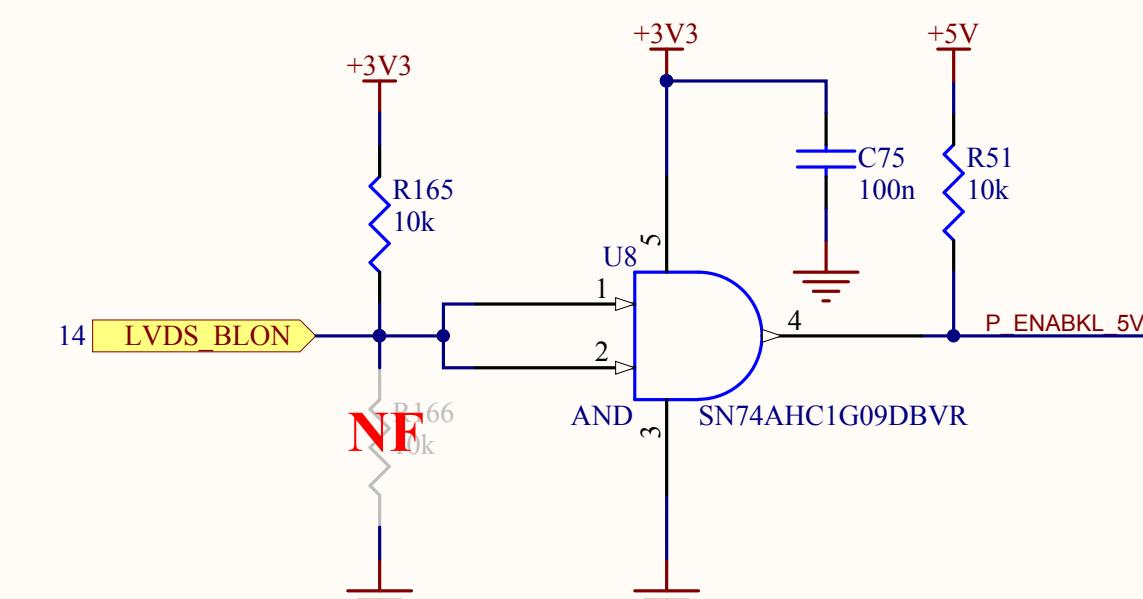


# LVDS

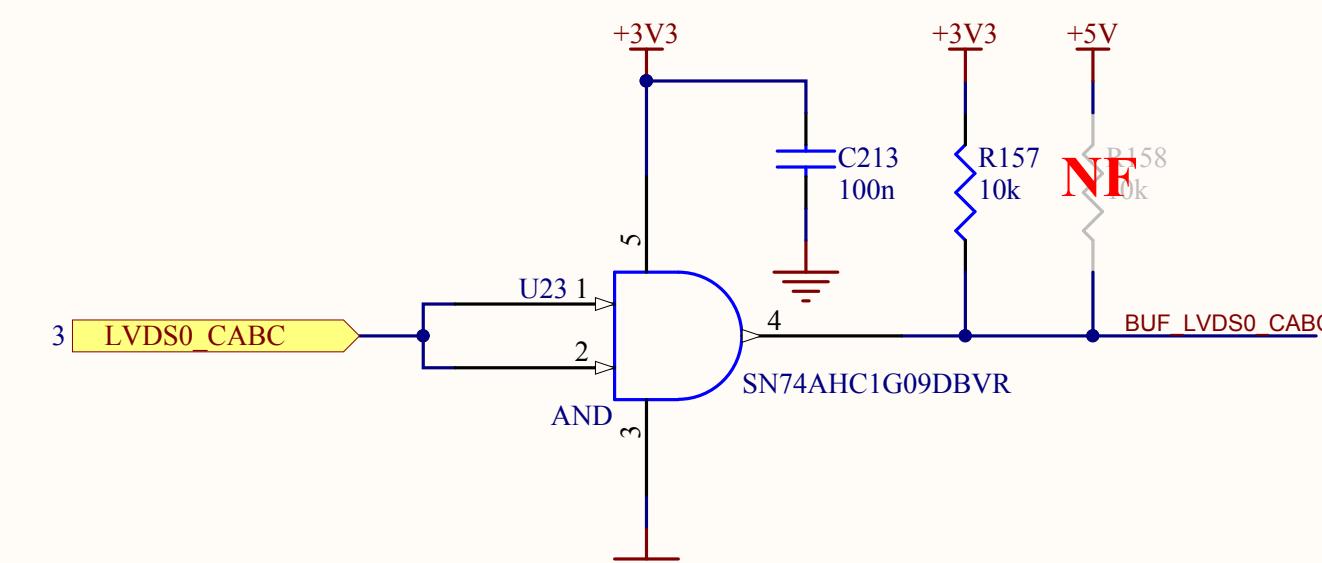
## LVDS Connector



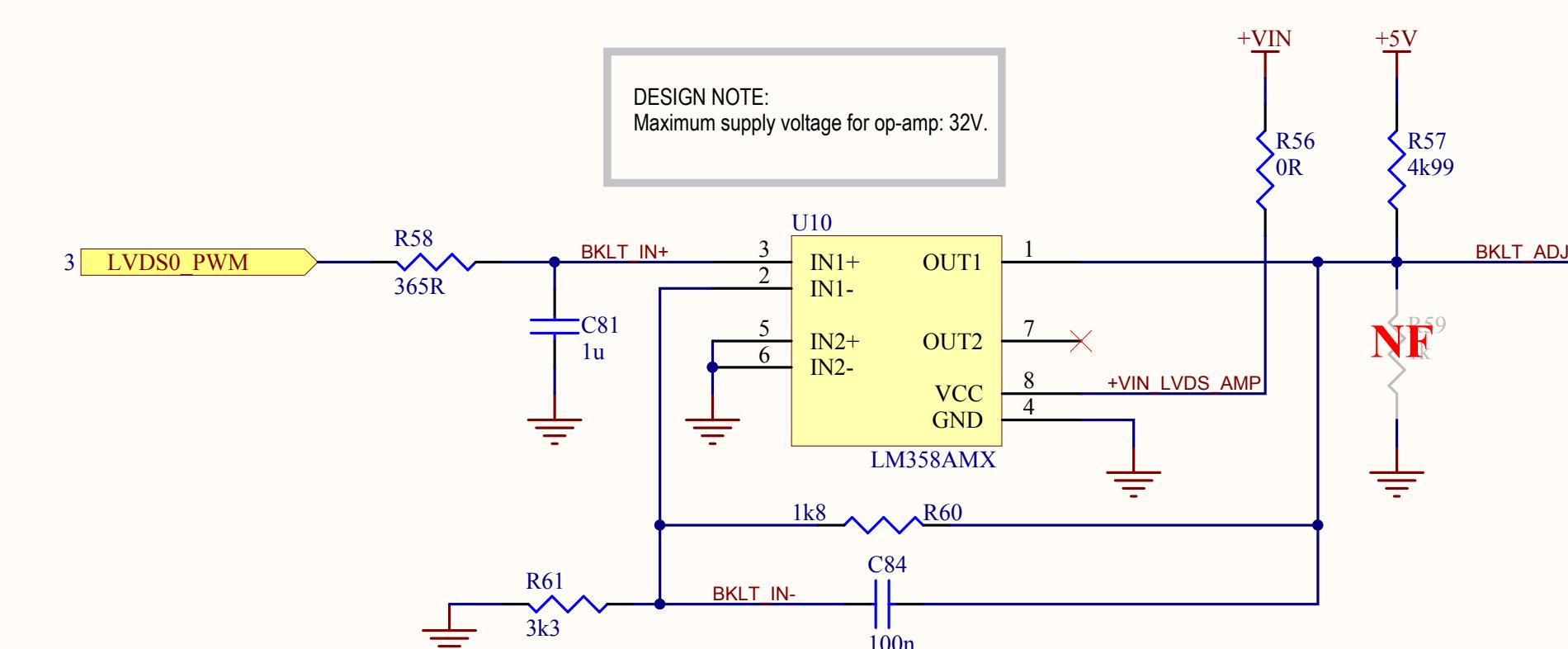
## Display enable



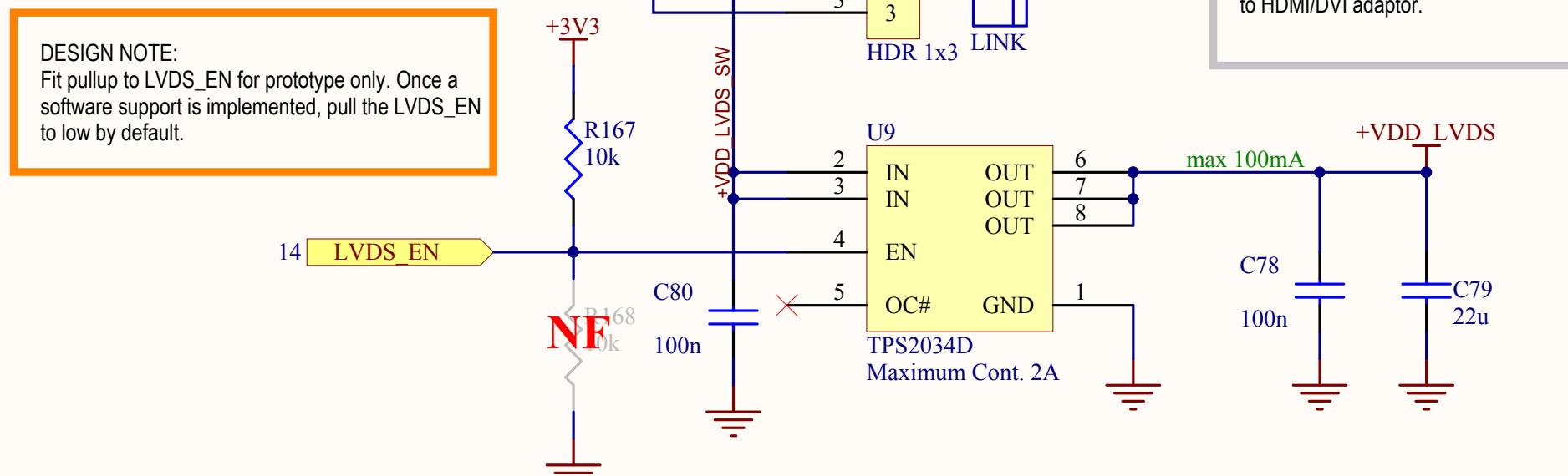
## LVDS0 CABC buffer



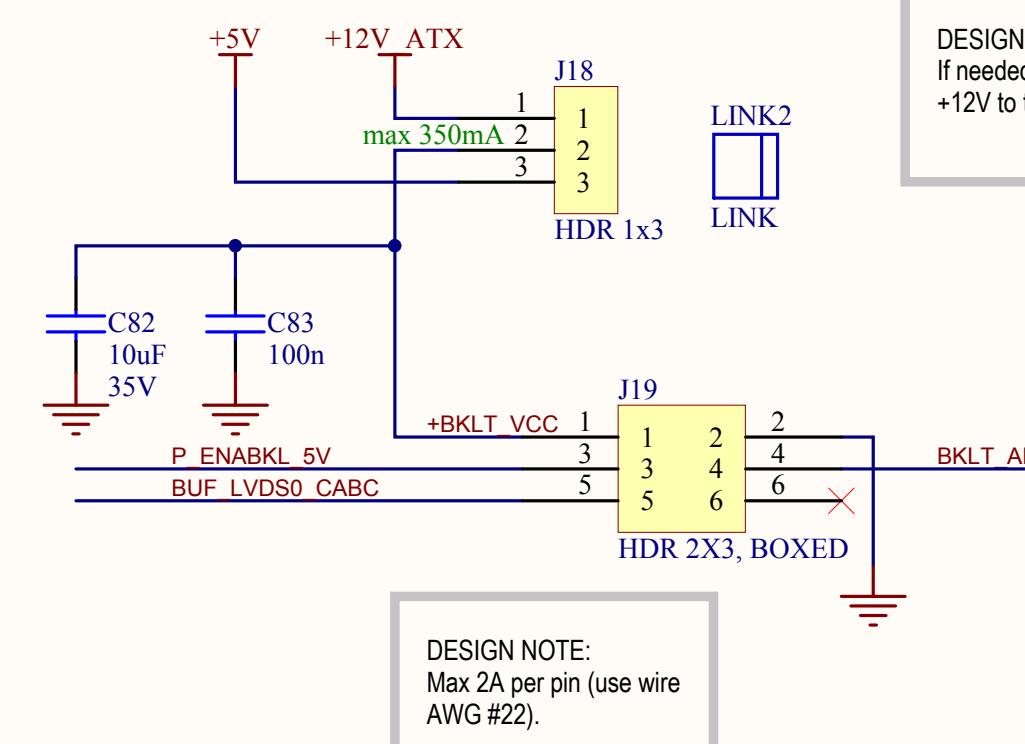
## Backlight adjustment



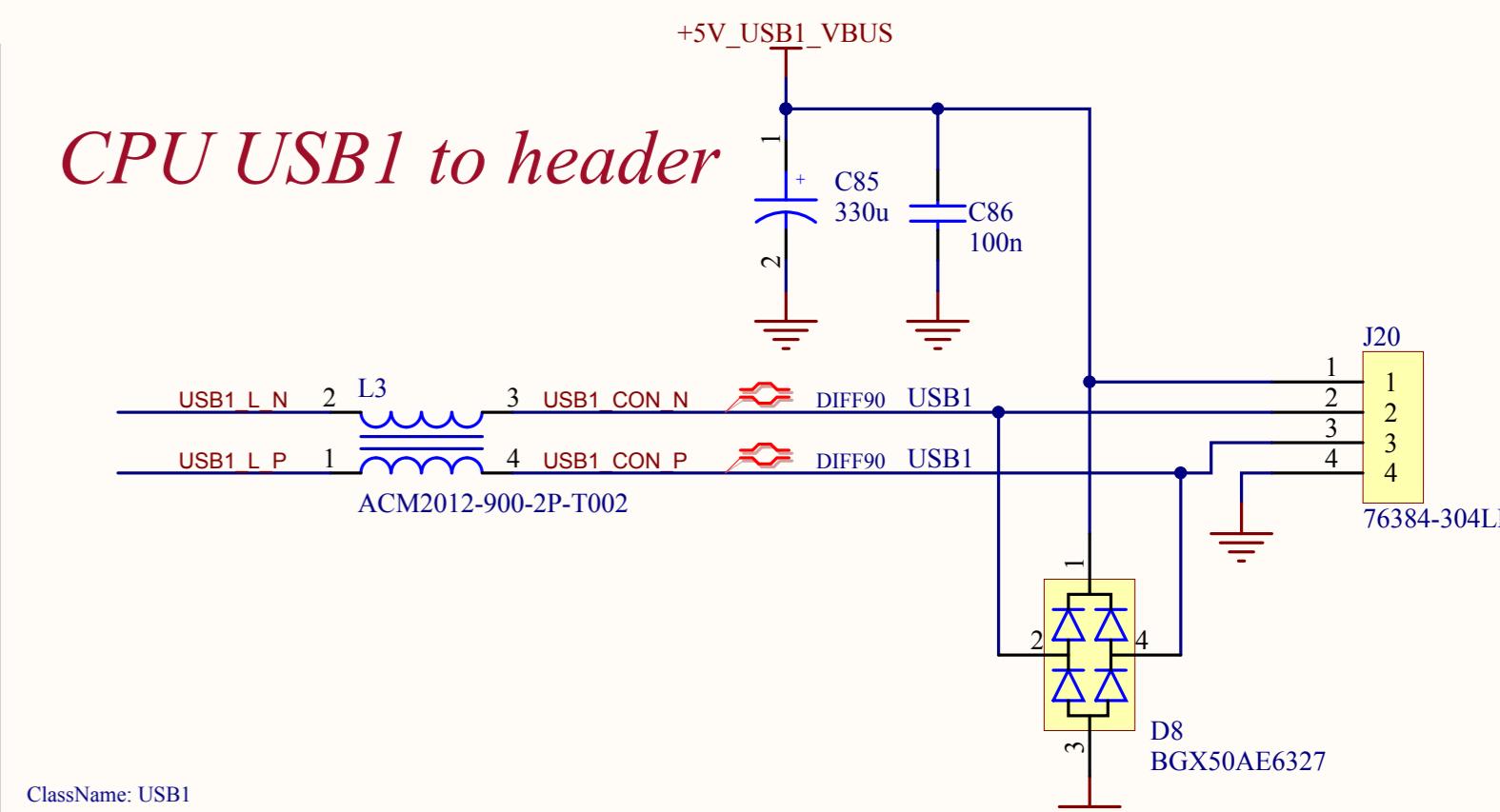
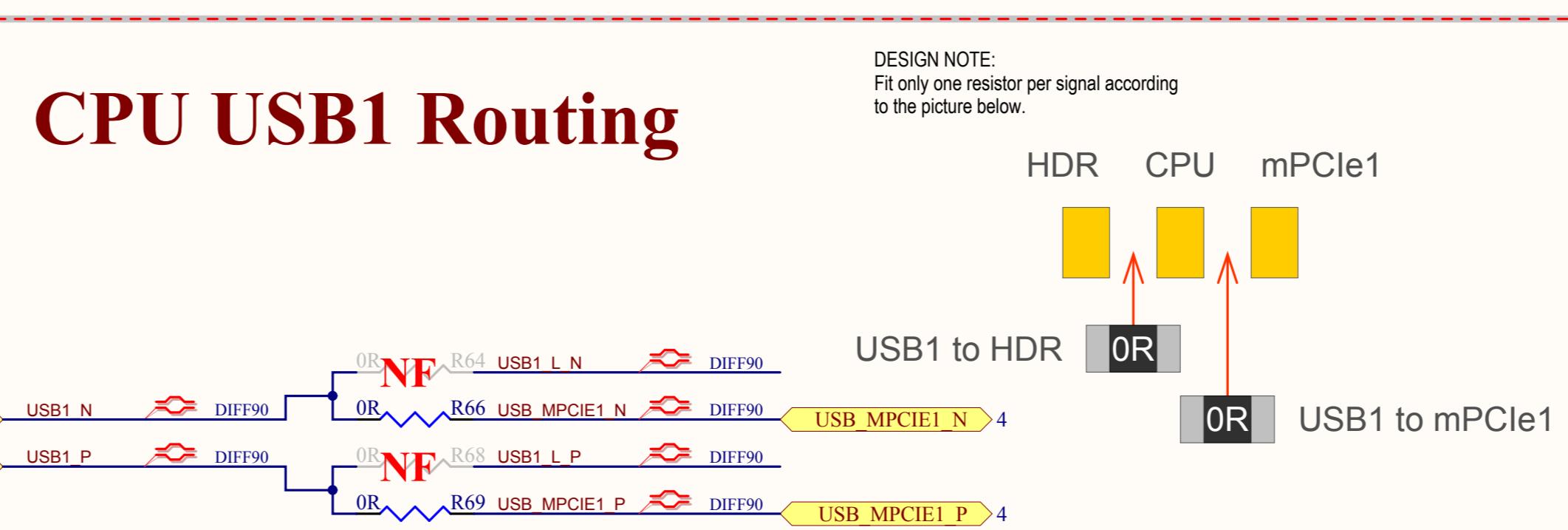
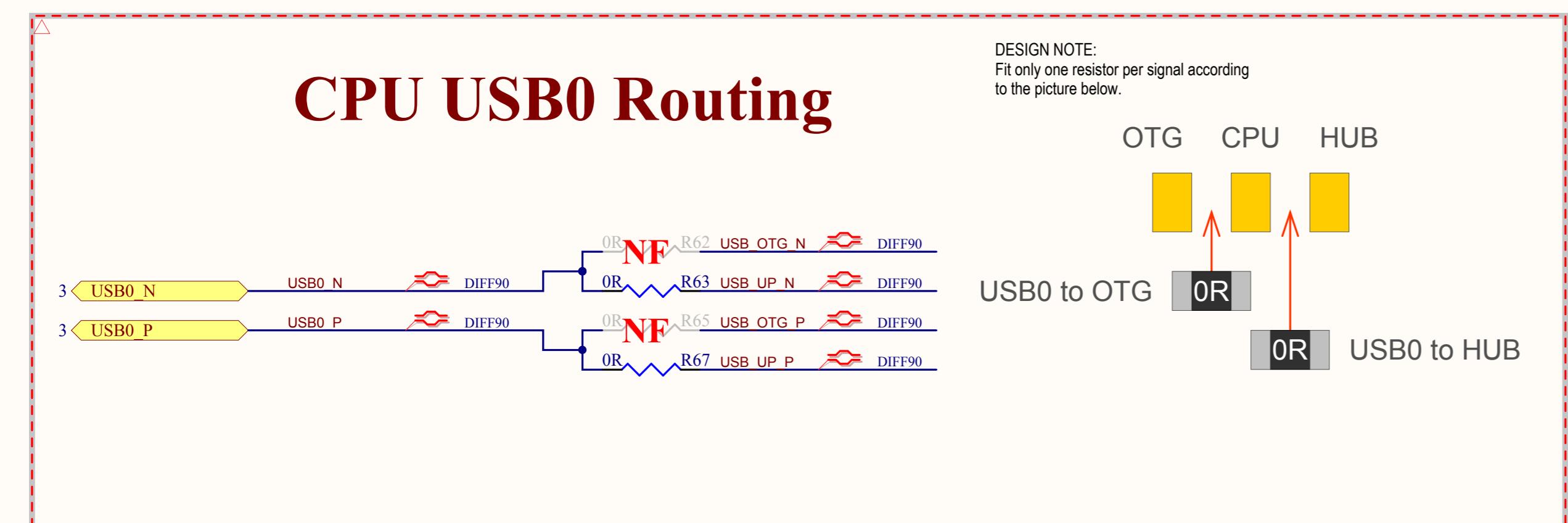
## LVDS Switch



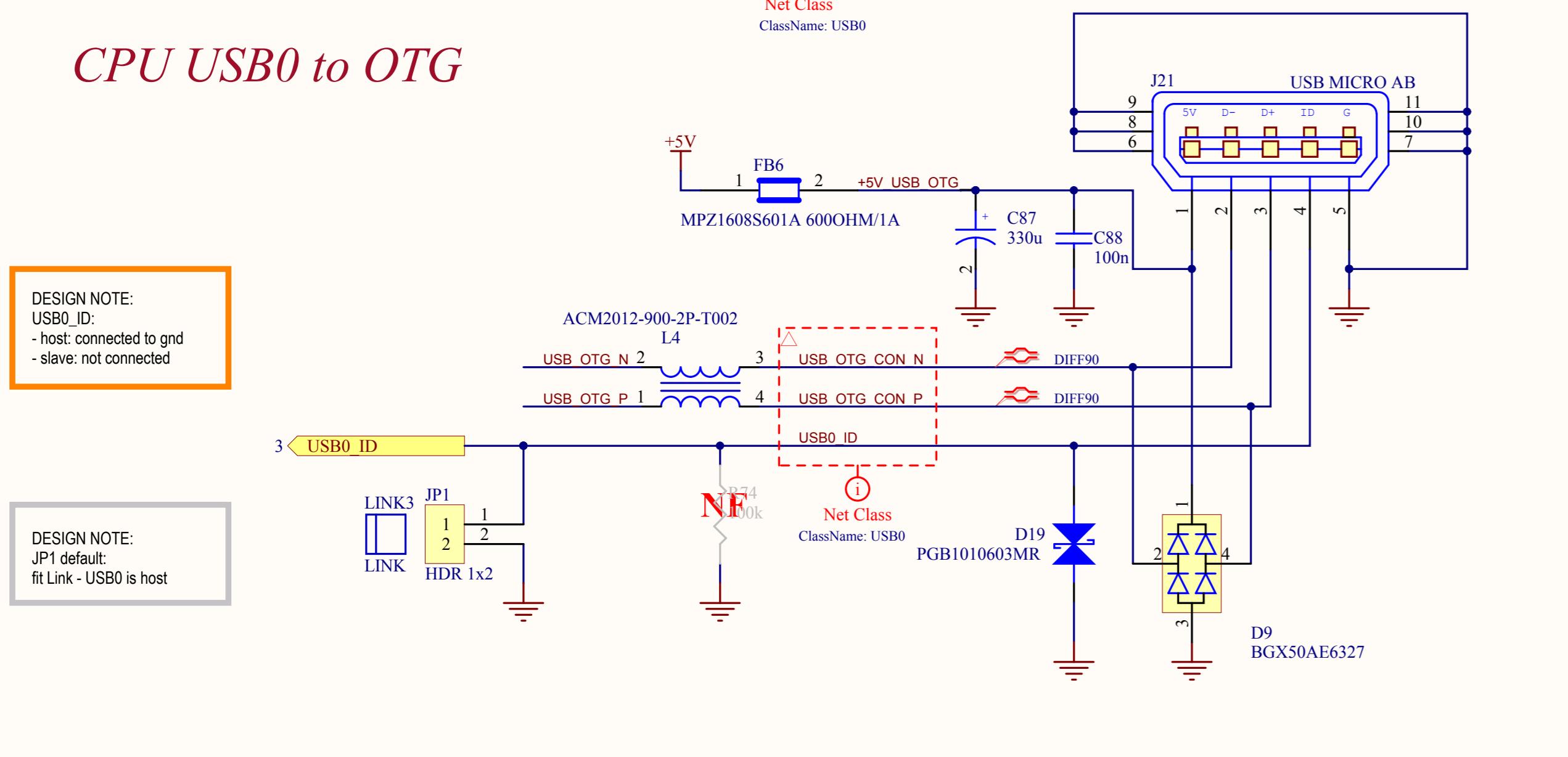
## Backlight connector



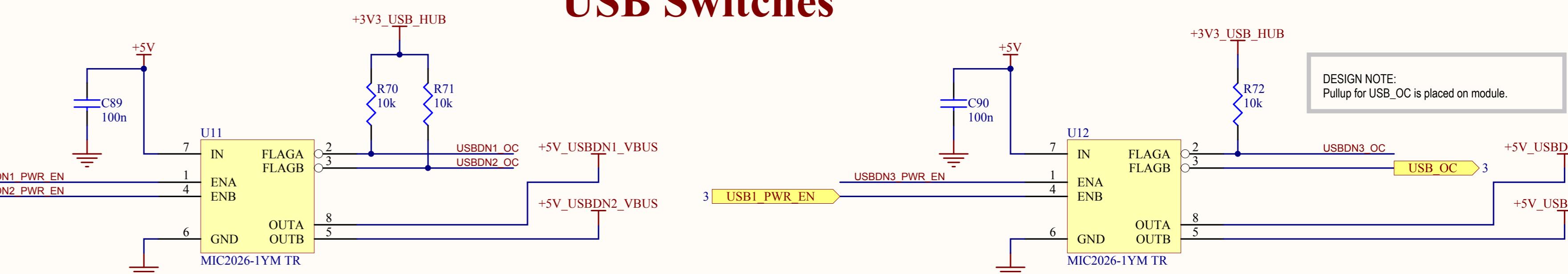
# USB



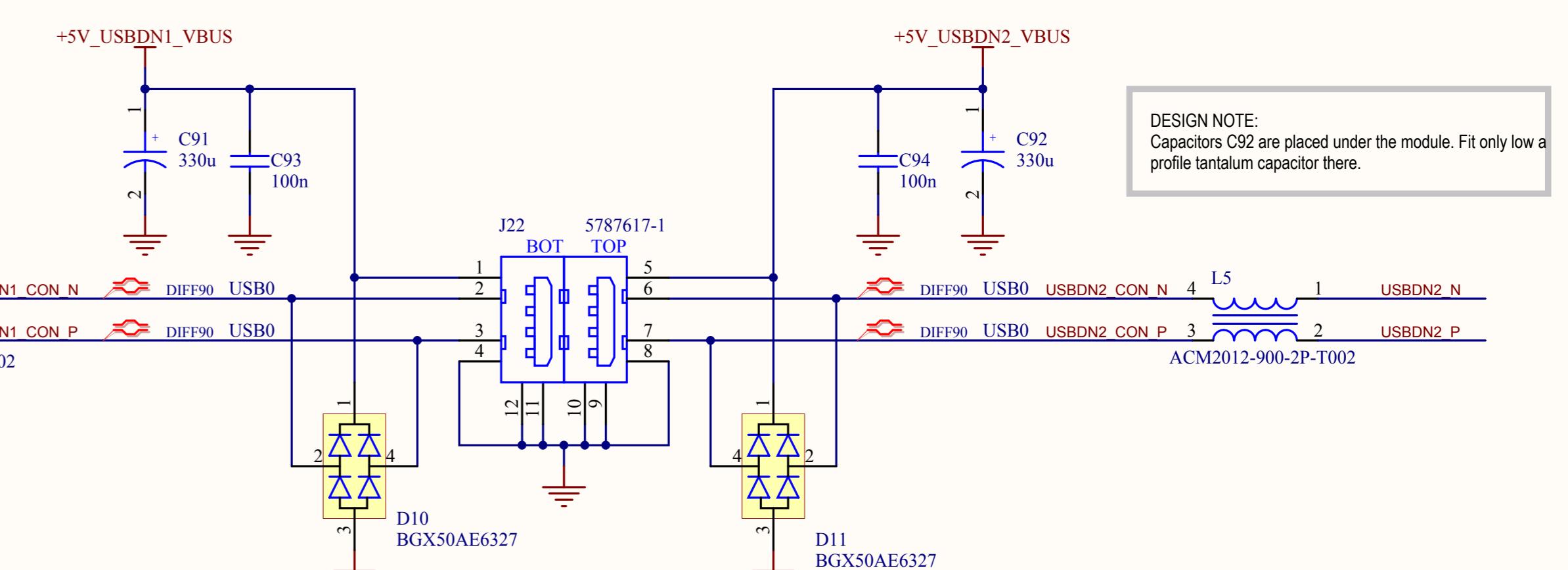
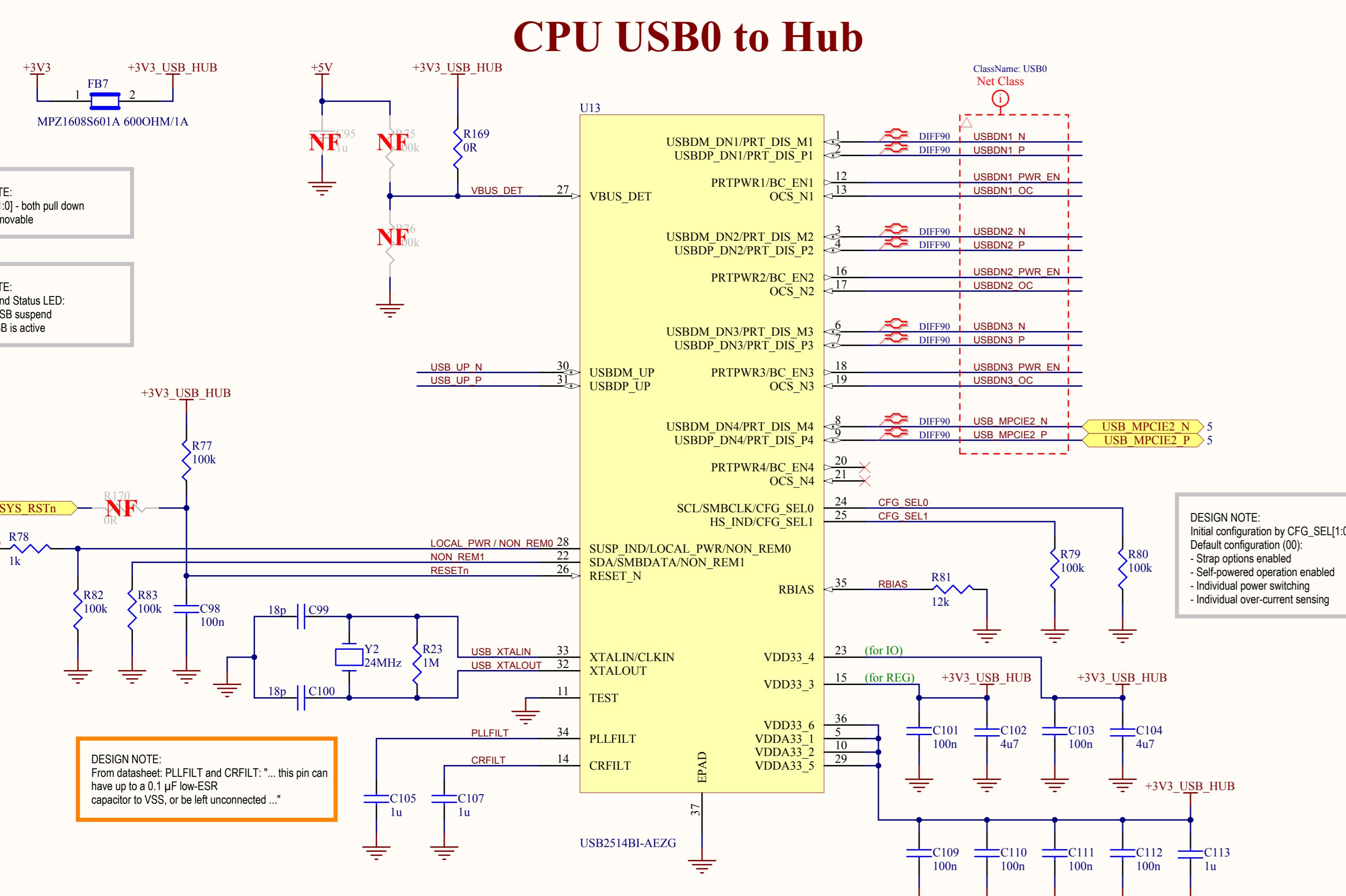
## CPU USB0 to OTG



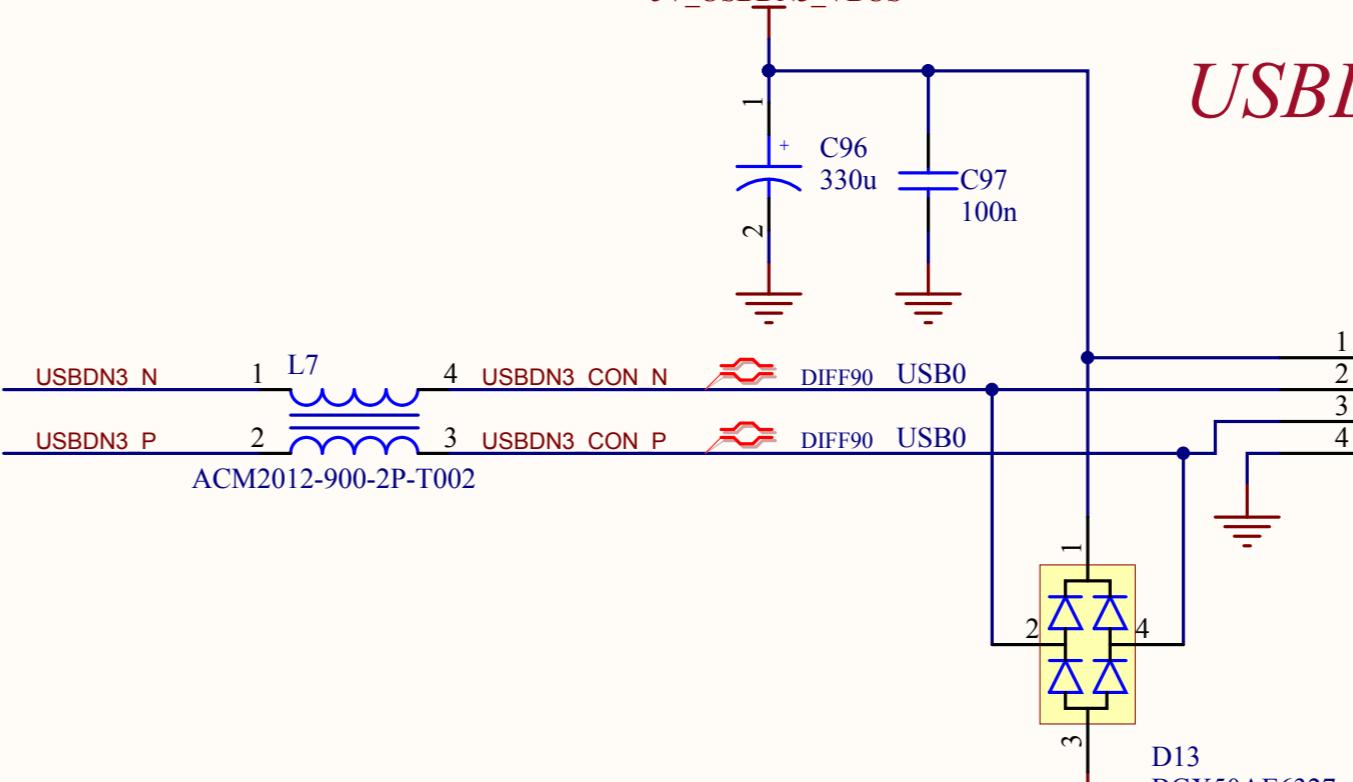
## USB Switches



## USBDN1 & USBDN2 from HUB

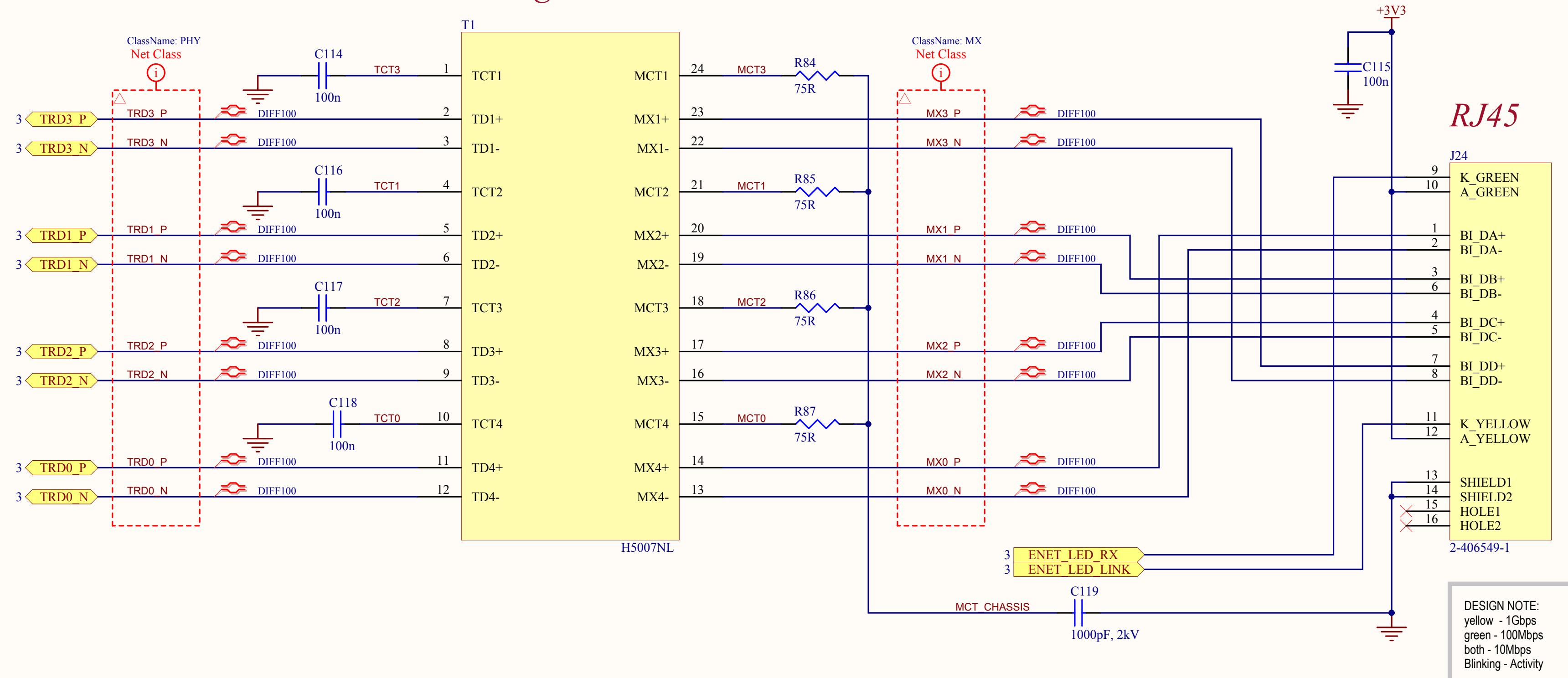


## USBDN3 from HUB



# ETHERNET

## Magnetics



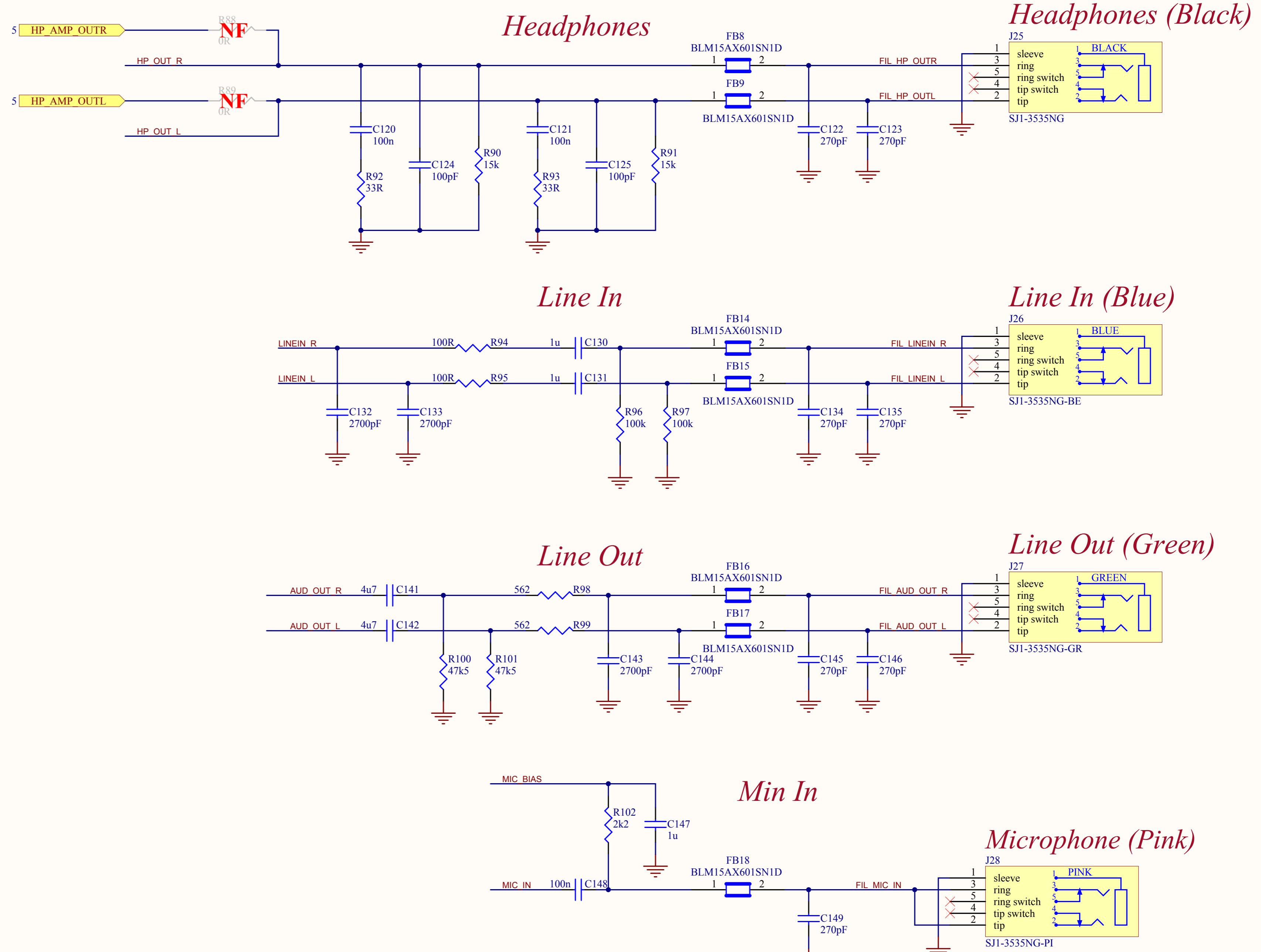
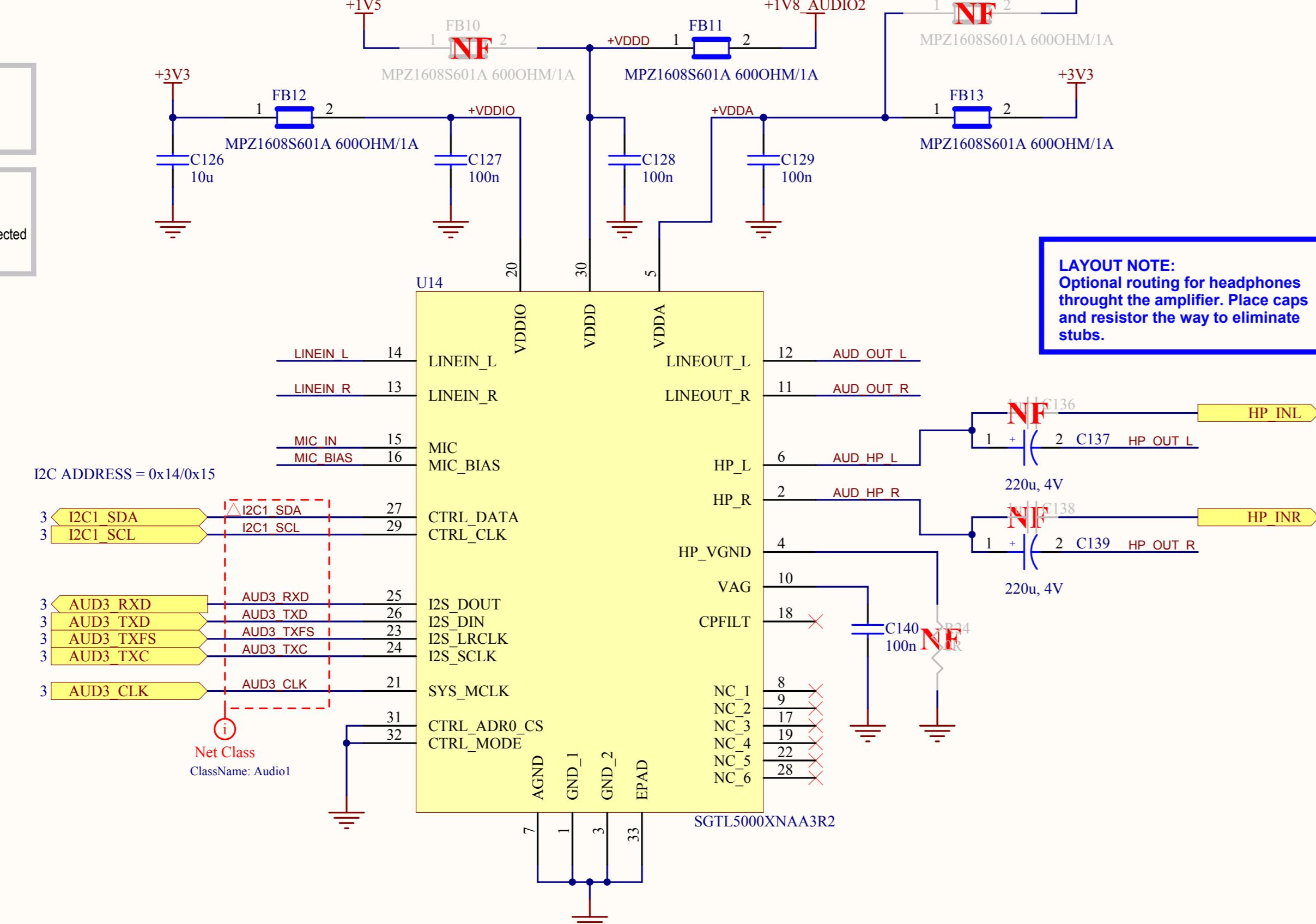
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# AUDIO1

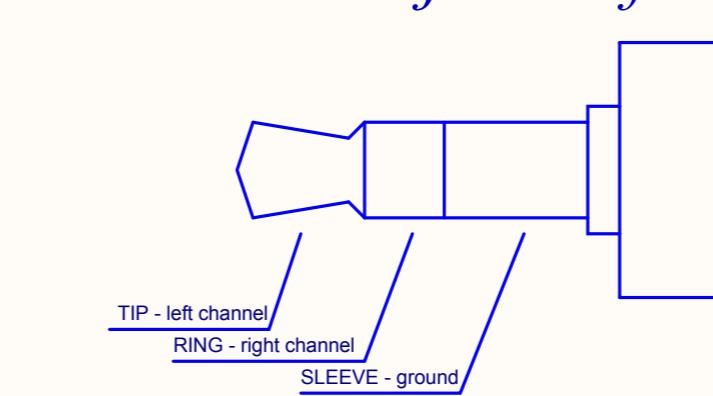
## AUDIO CODEC (System audio connected to CPU)

**DESIGN NOTE:**  
External VDDD is required.

**DESIGN NOTE:**  
If either VDDIO or VDDA is above  
3V, the CPFLT pin must not be connected  
to capacitor.

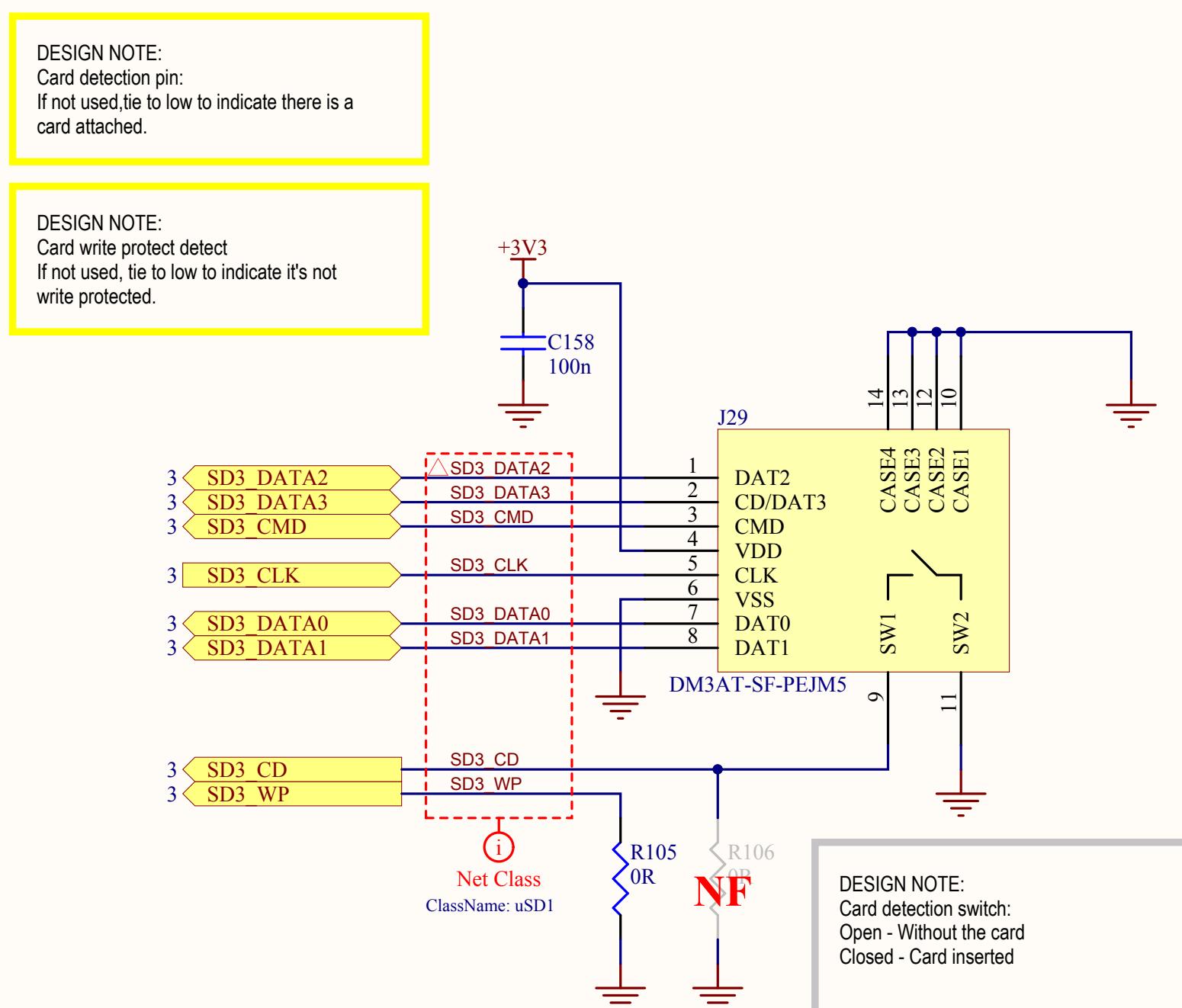


### 3.5mm jack reference

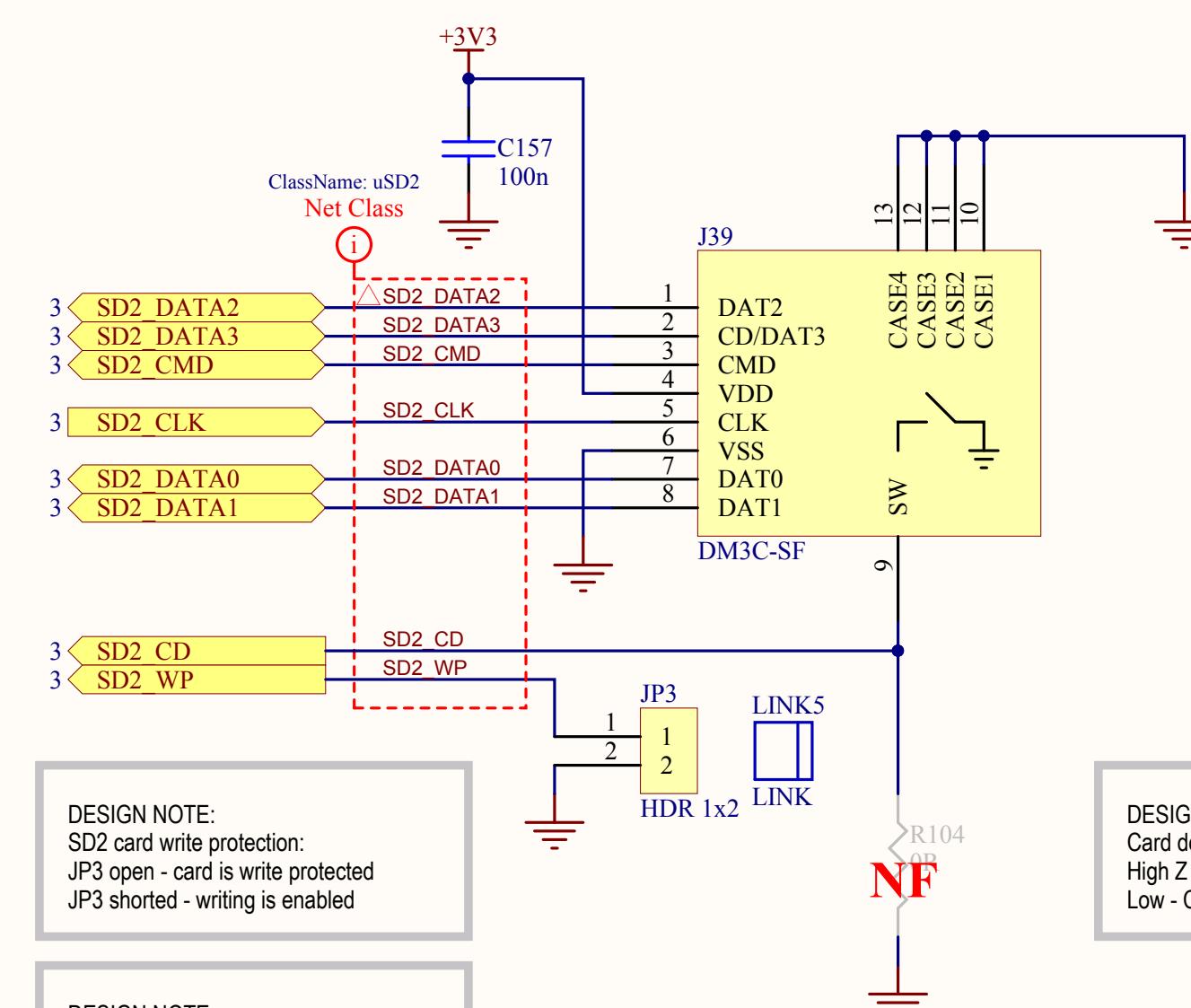


# SD CARDS

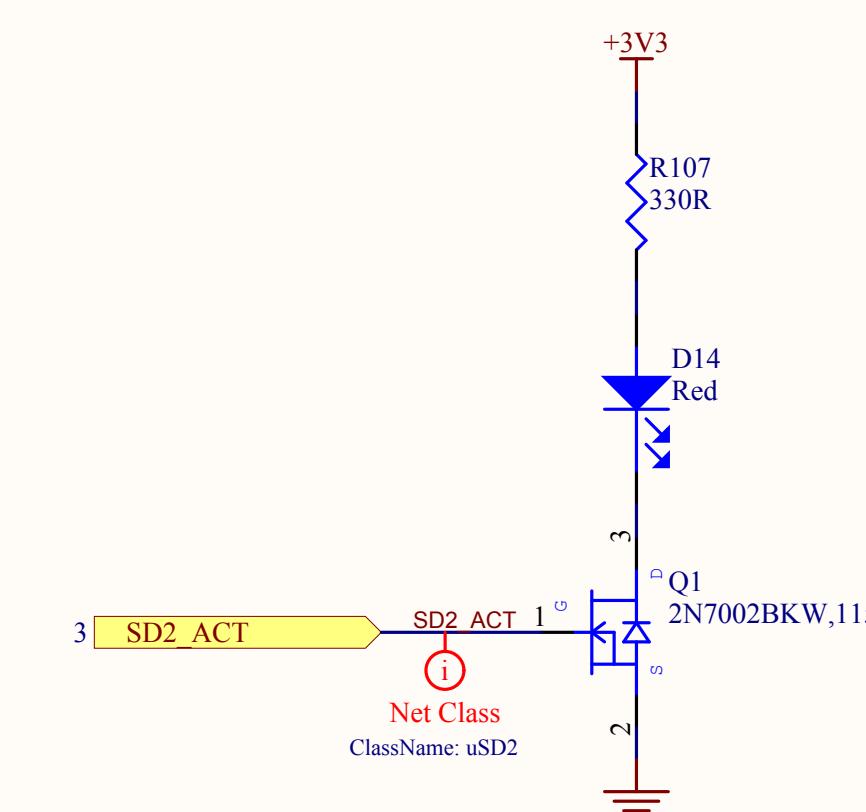
## Micro SD1



## Micro SD2 (intended to use for OS storage)



## *uSD2 Activity LED*



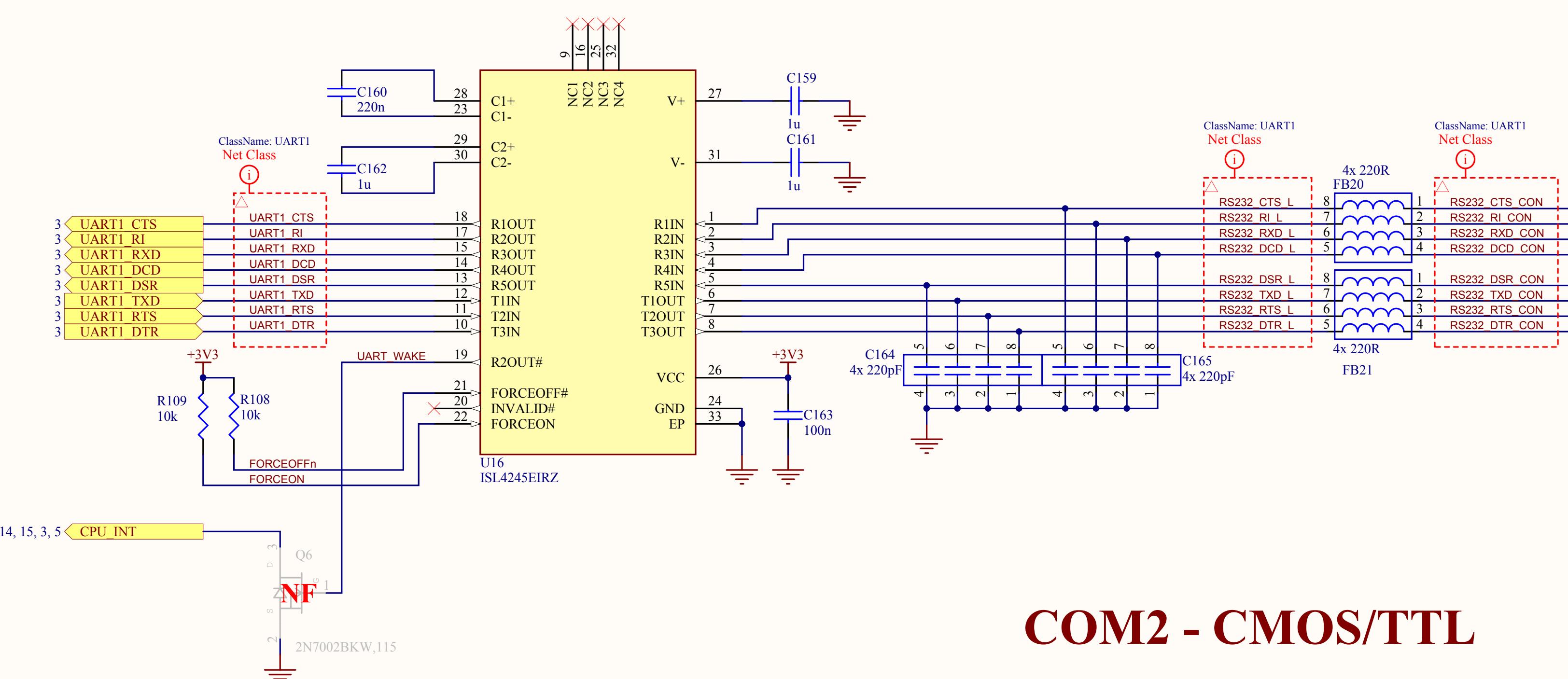
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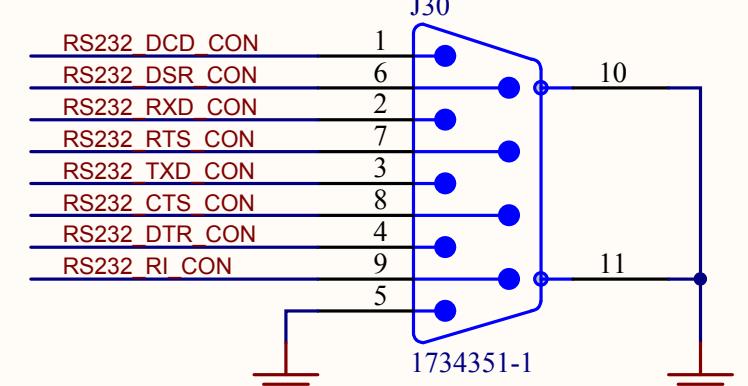
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# UARTS

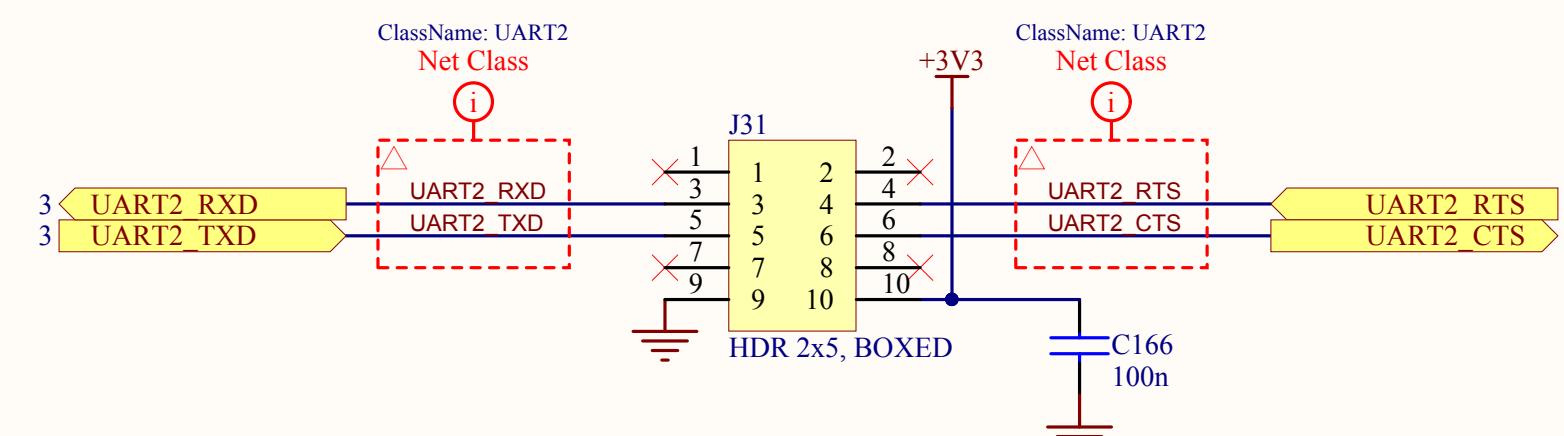
## RS232 Transceiver



## COM1 - RS232



## COM2 - CMOS/TTL

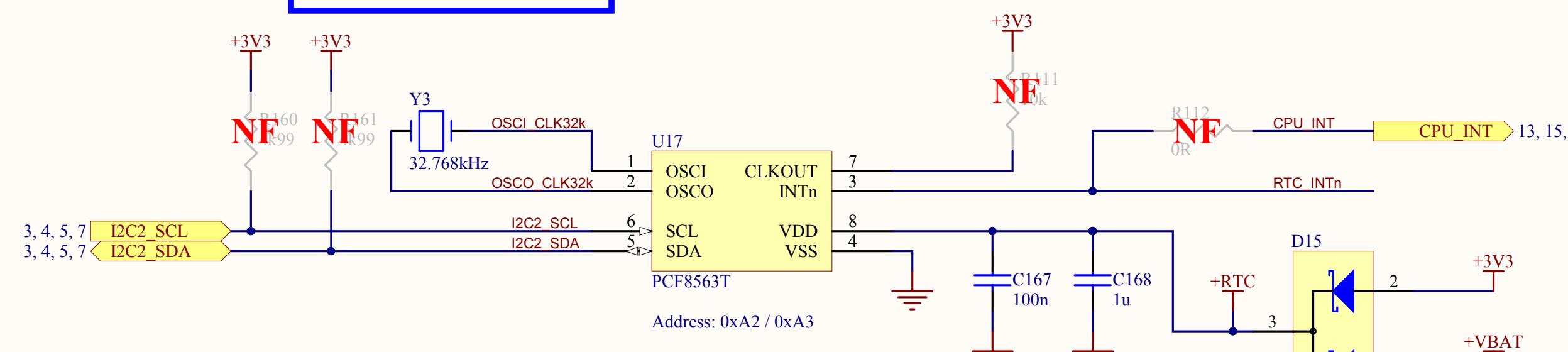


# RTC, EEPROM, GPIO, TOUCH SCREEN

**DESIGN NOTE:**  
Fit optional pullups to I<sub>2</sub>C2 when there is a need for lower pullup value.

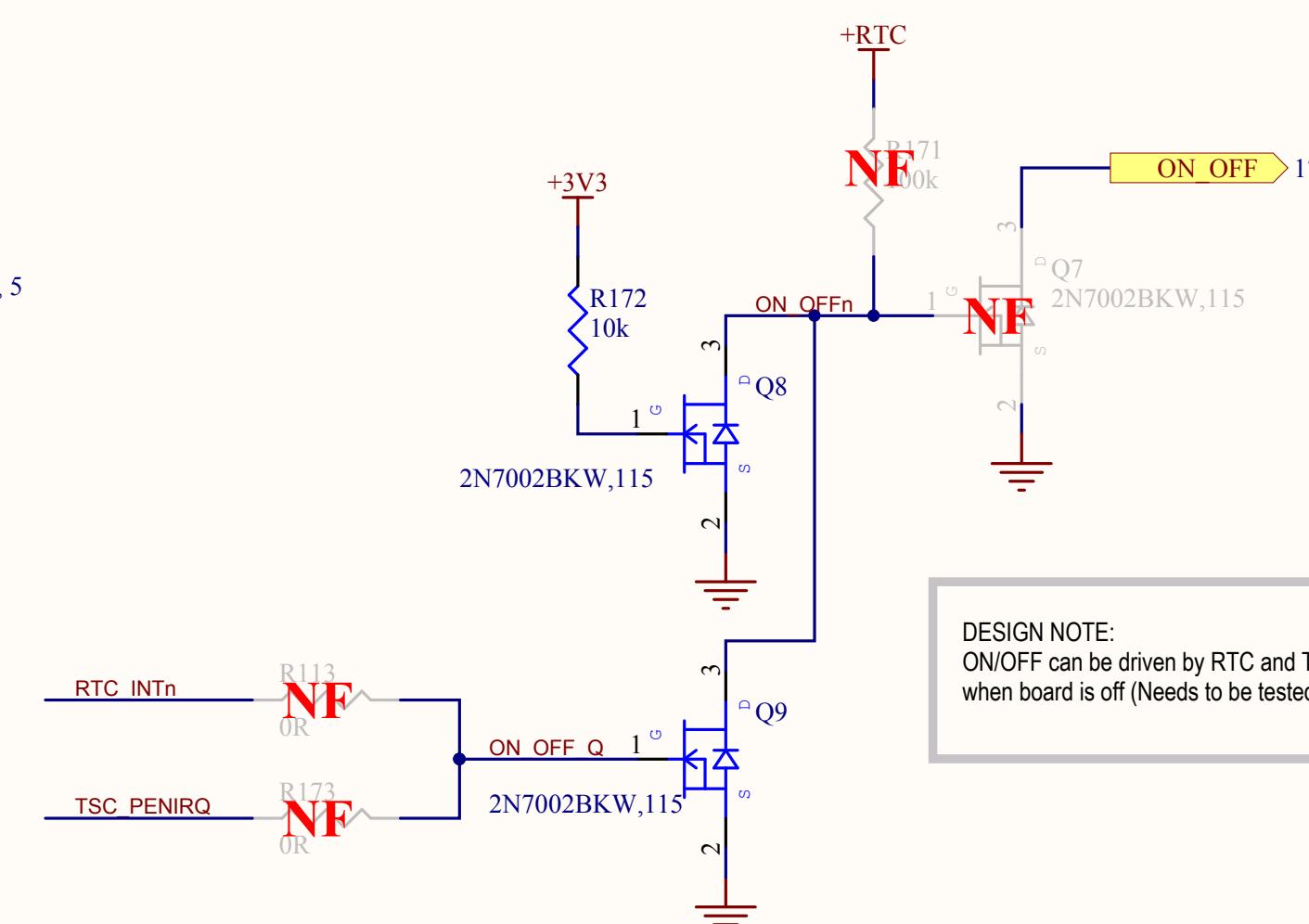
**LAYOUT NOTE:**  
Place optional pullup resistor to the end of I<sub>2</sub>C lines.

## RTC Clock



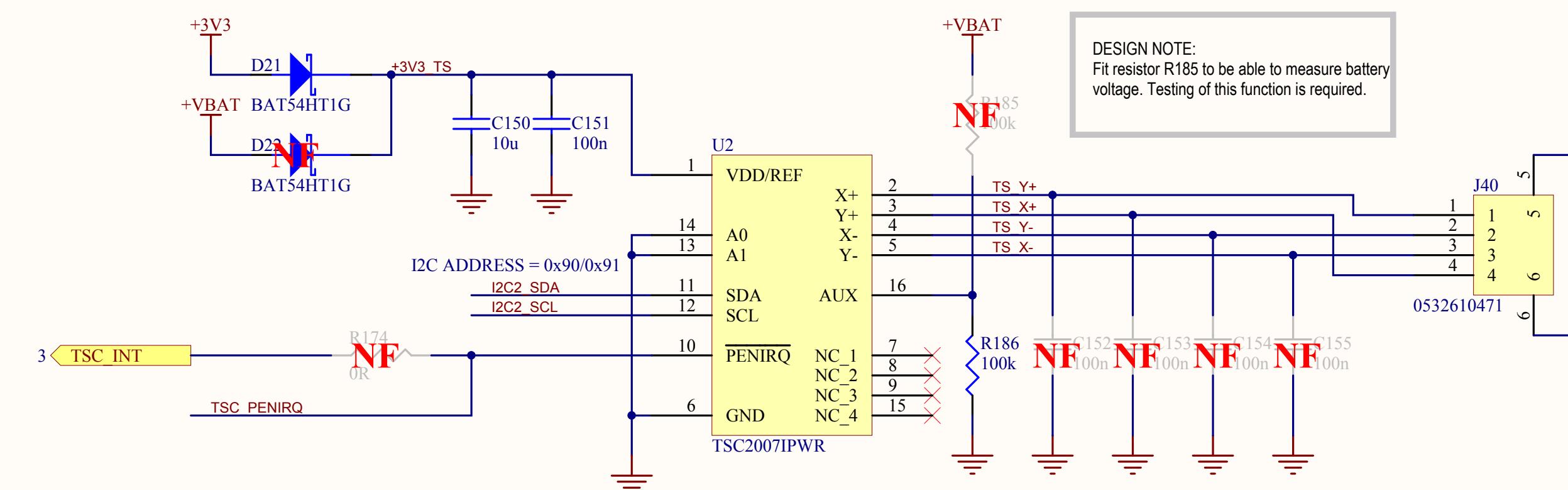
**DESIGN NOTE:**  
When Alarm event occurs, INT goes low and has to be cleared by application. Possibly use Timer to generate a pulse.

## RTC & Touch screen ON/OFF support



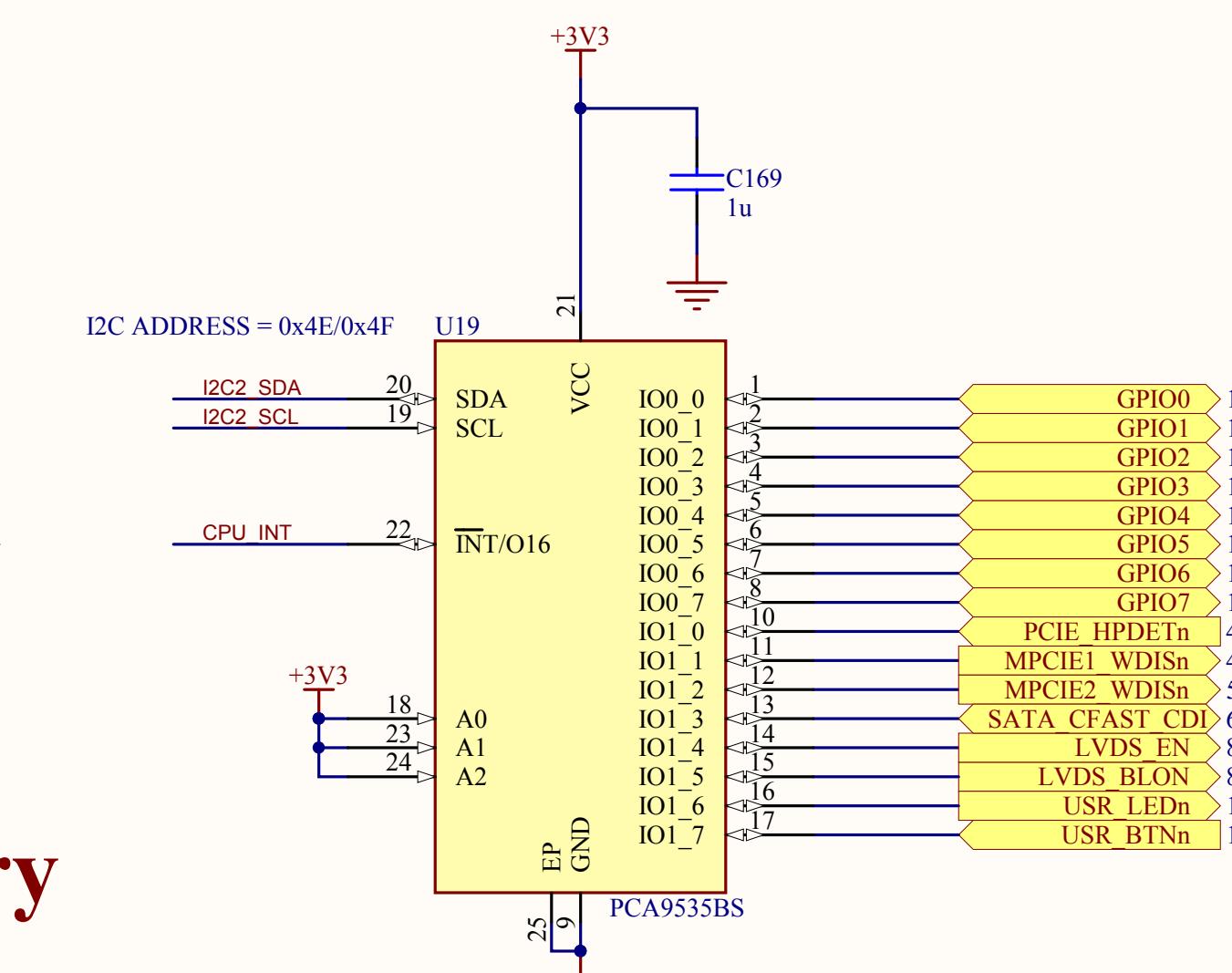
**DESIGN NOTE:**  
ON/OFF can be driven by RTC and TSC only when board is off (Needs to be tested).

## Touch screen controller

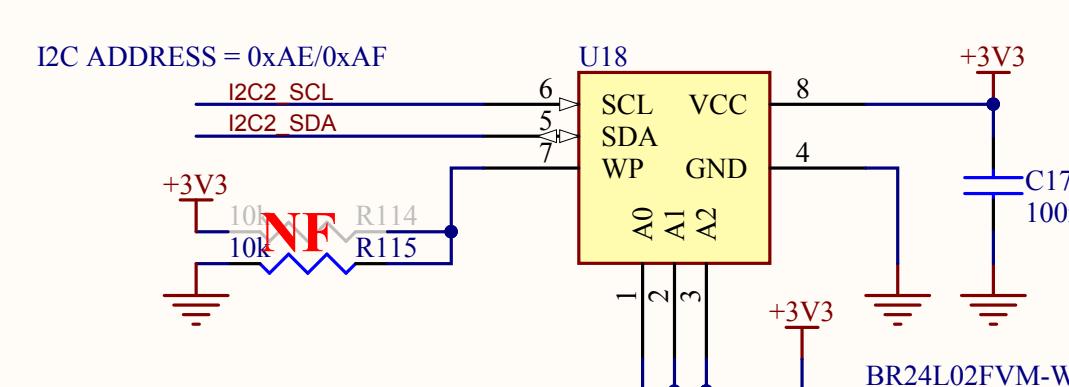


**DESIGN NOTE:**  
Fit resistor R185 to be able to measure battery voltage. Testing of this function is required.

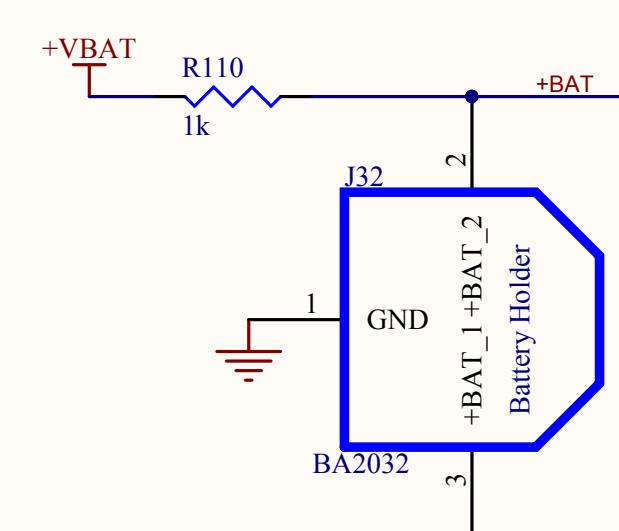
## I<sub>2</sub>C GPIO Expander



## EEPROM



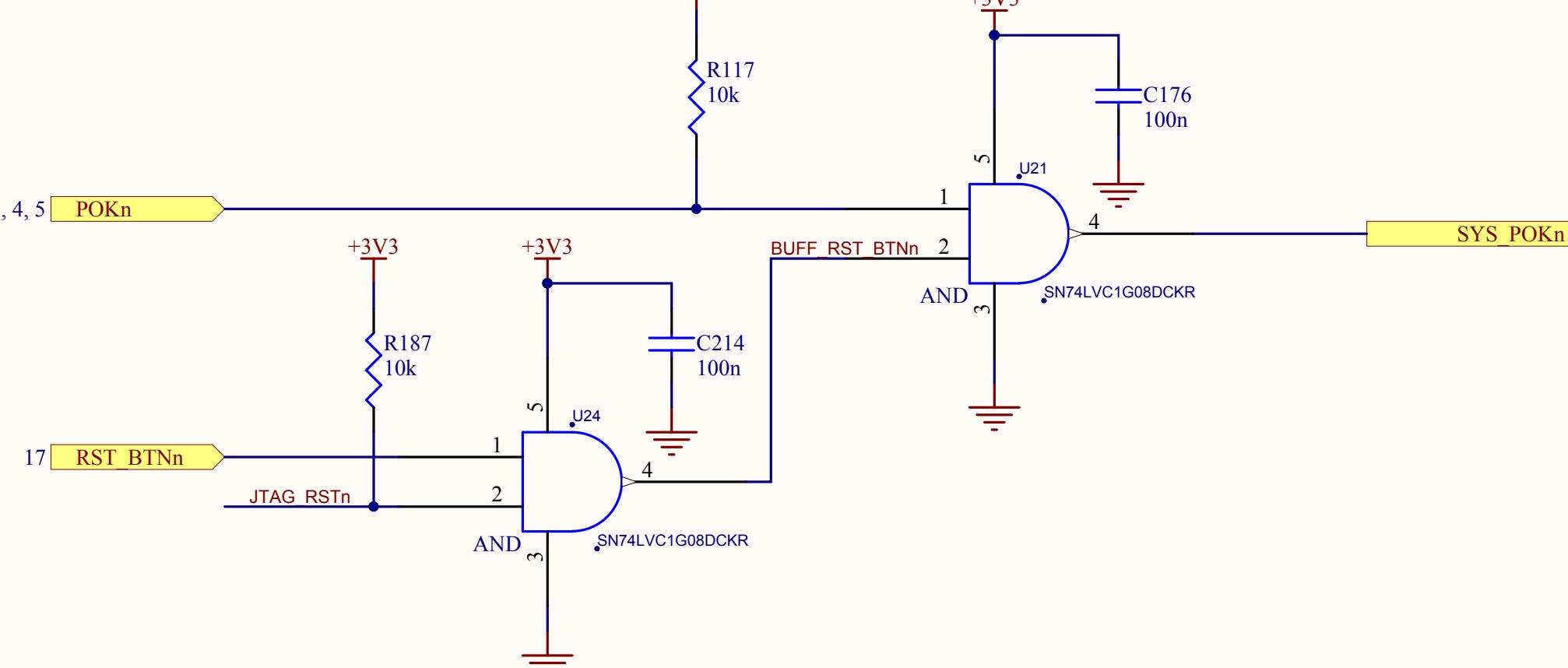
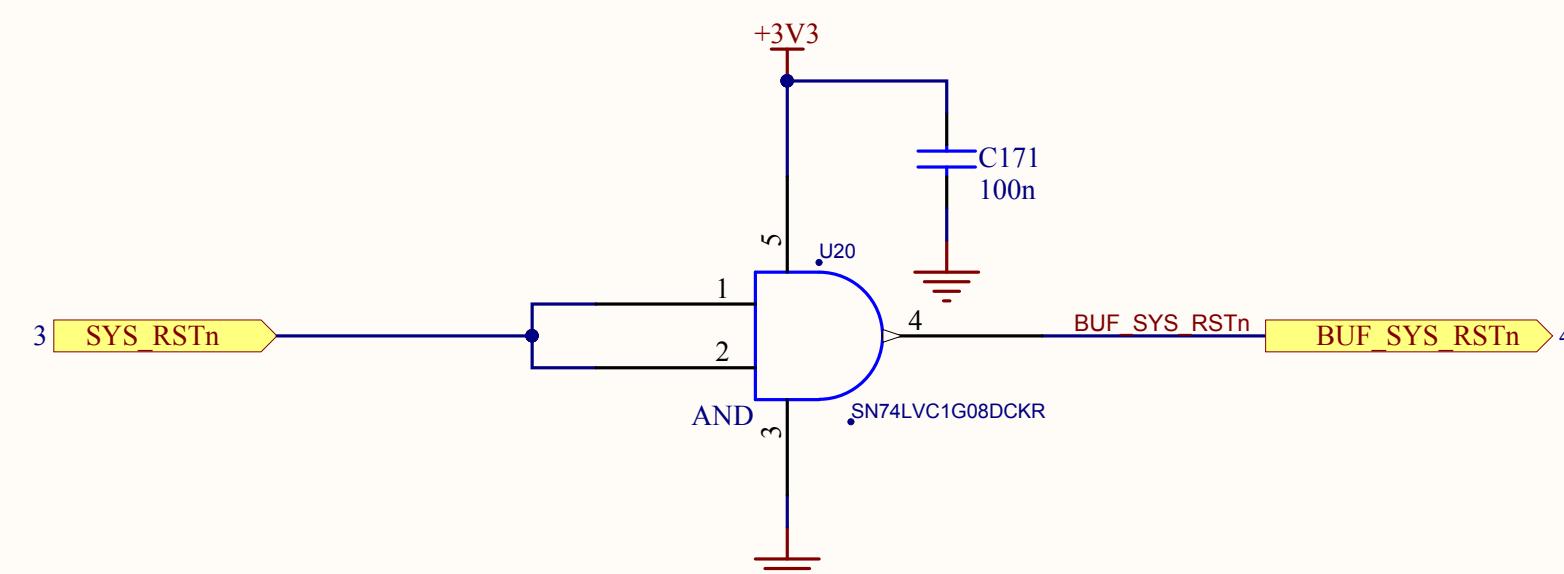
## RTC Battery



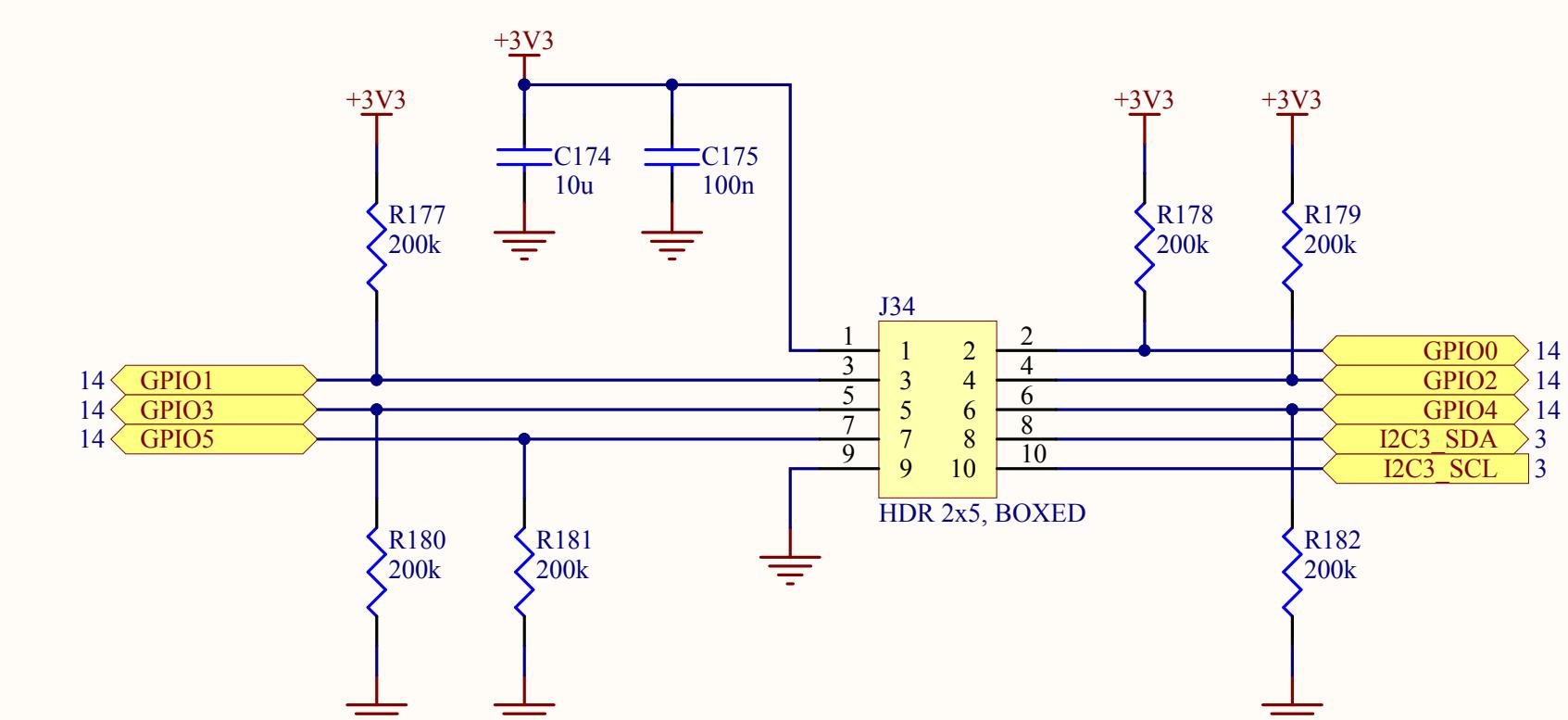
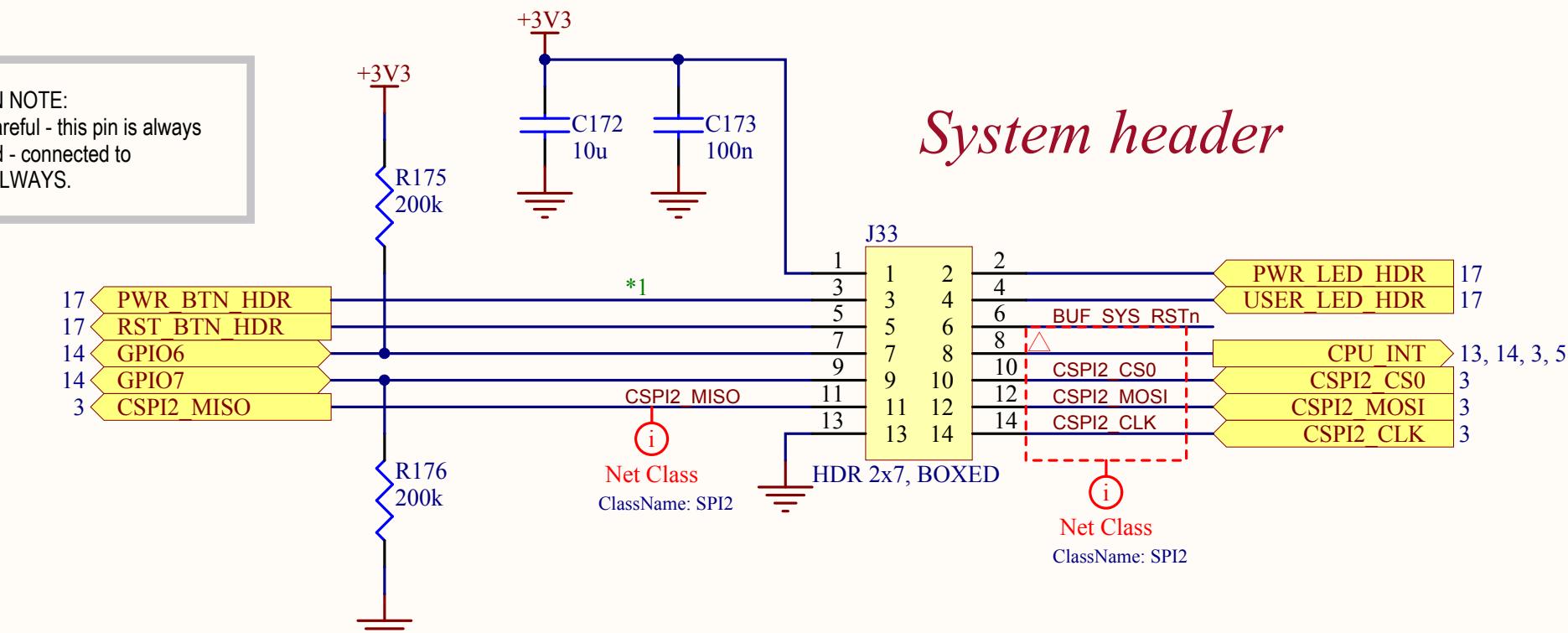
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# MISC, JTAG, HEADERS

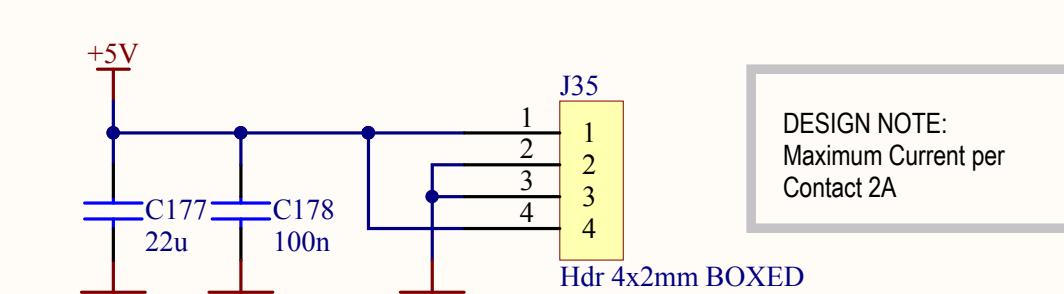
## Reset buffers



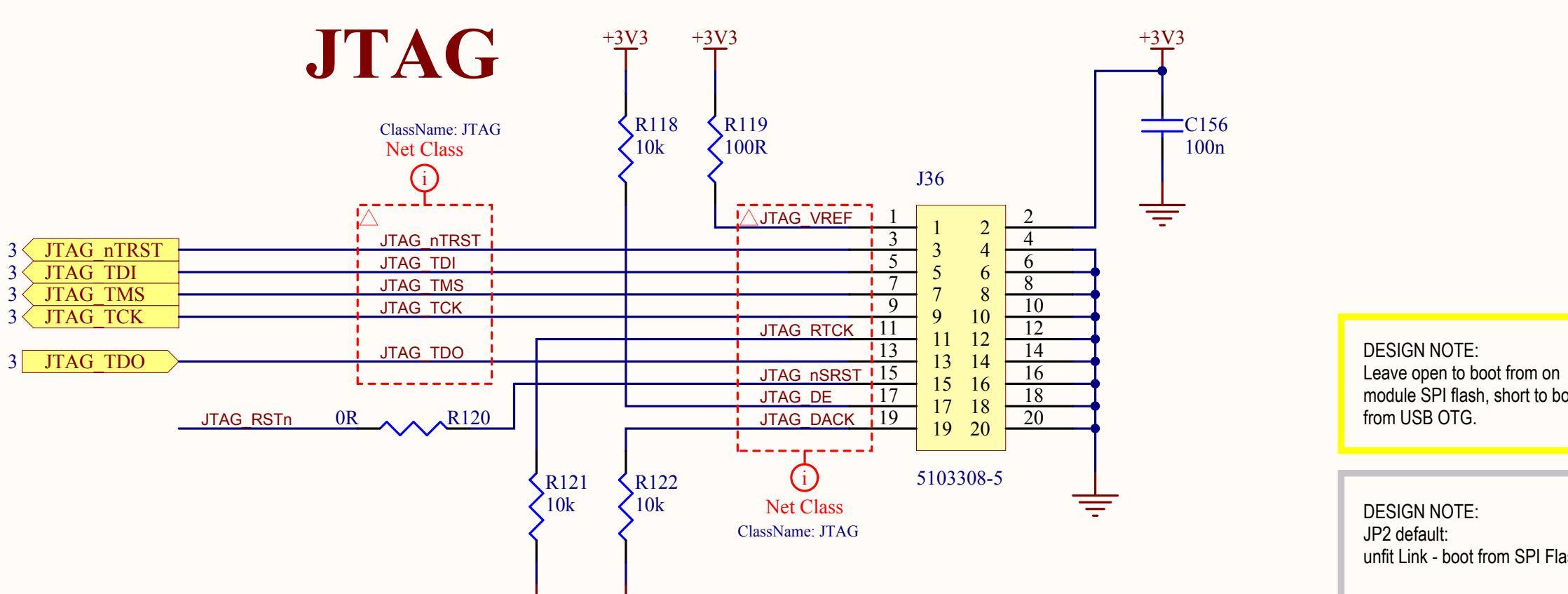
## Headers



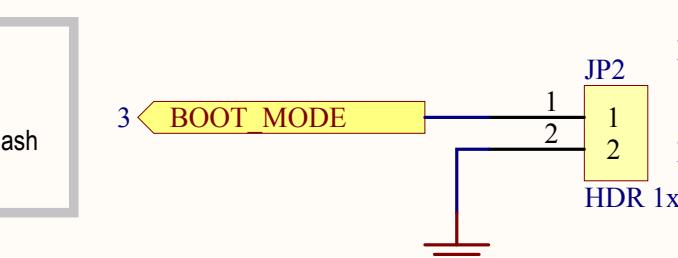
+5V Out  
(For General Use eg. HDD power)



## JTAG



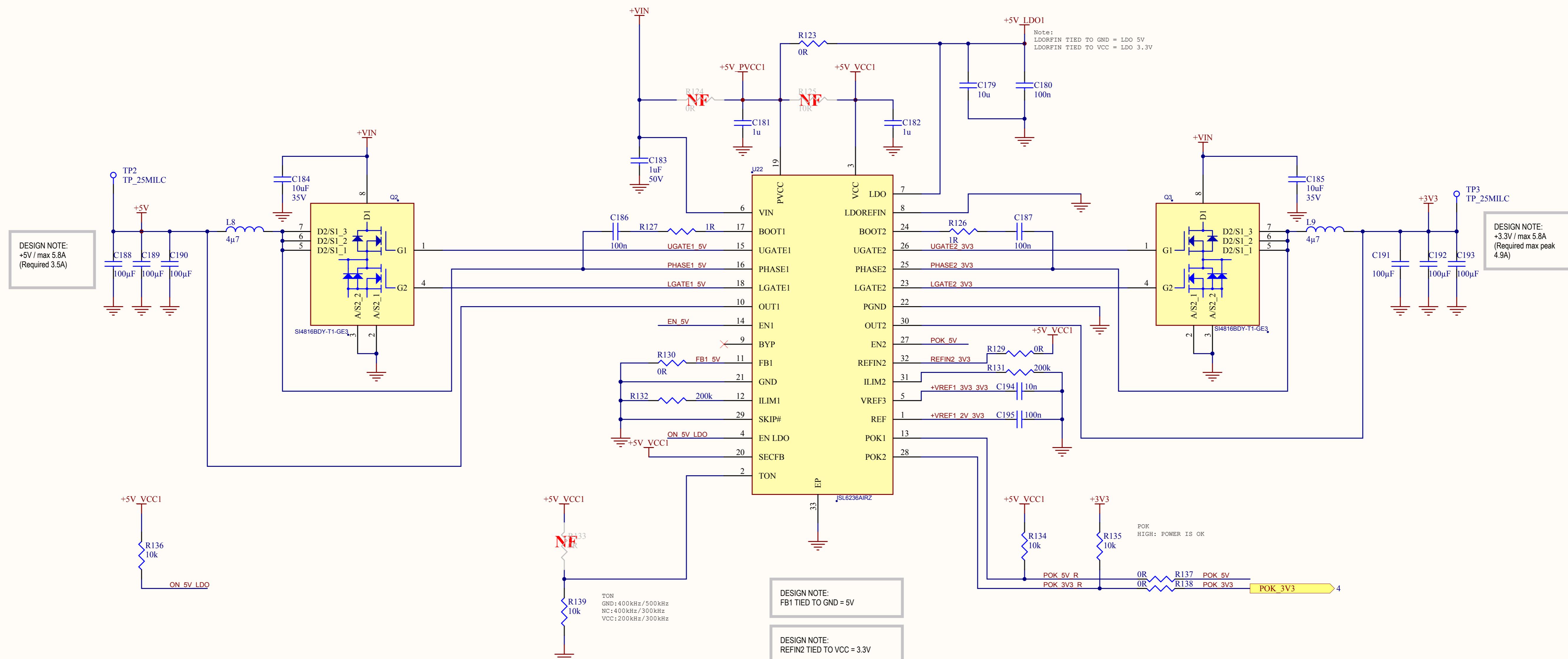
## Boot mode selection



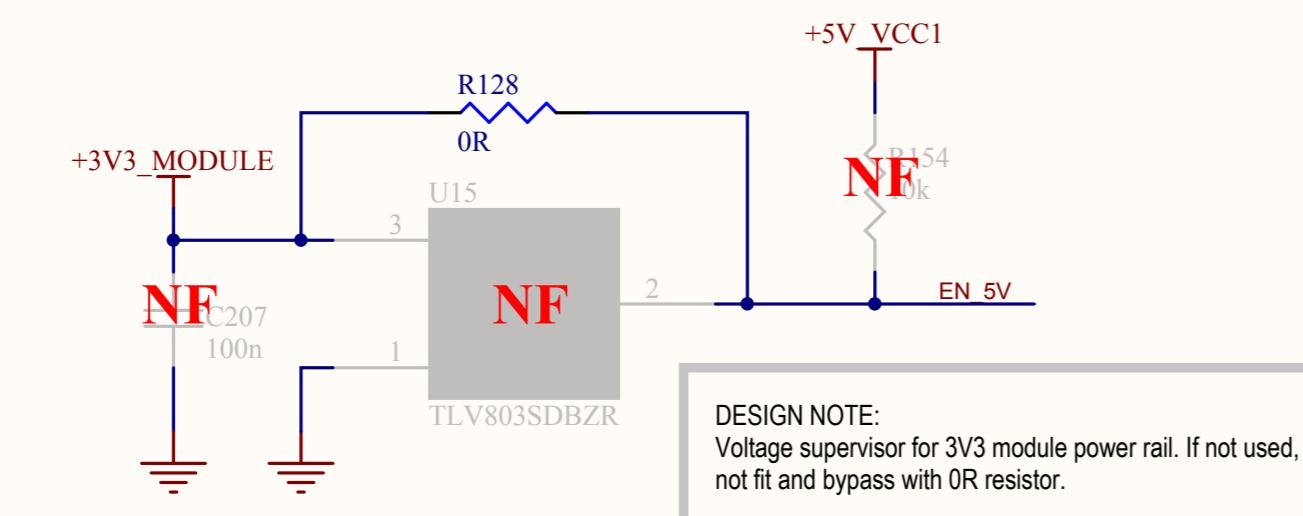
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# POWERS +5V, +3V3



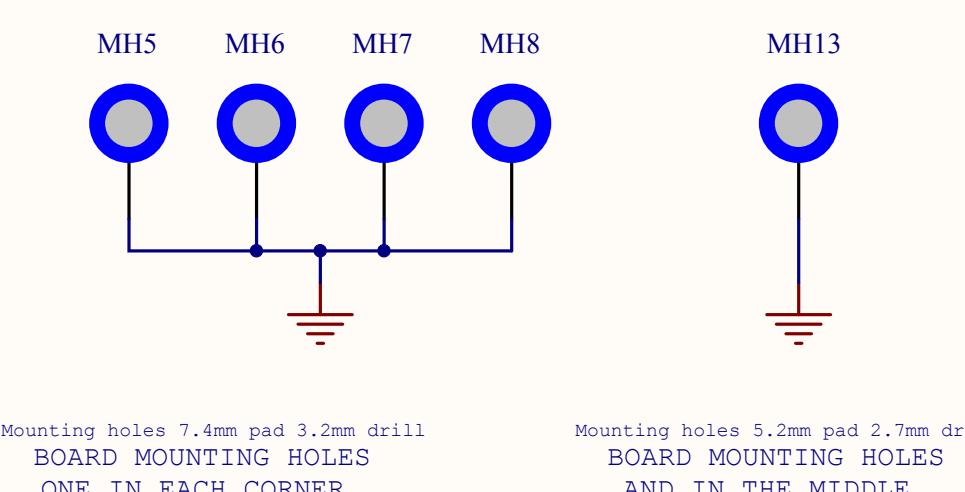
**+3V3\_MODULE** voltage monitor



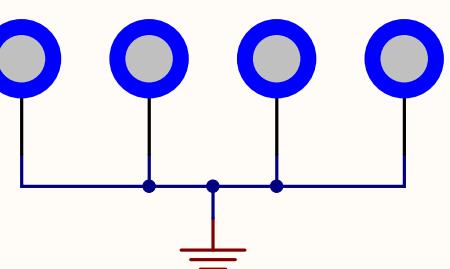
# PWR IN, LEDS, BUTTONS, MECH

## Mechanical

### Mounting holes



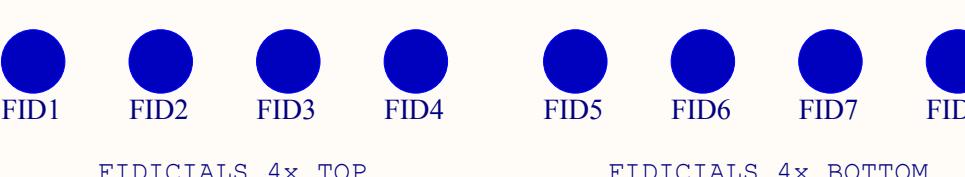
### Heatsink mounting holes



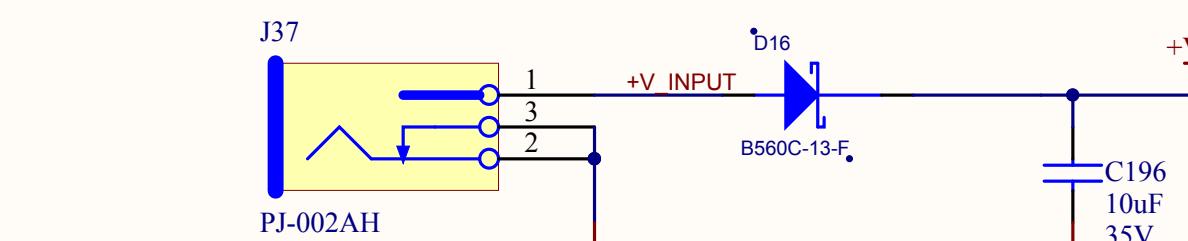
### Gnd testpoint



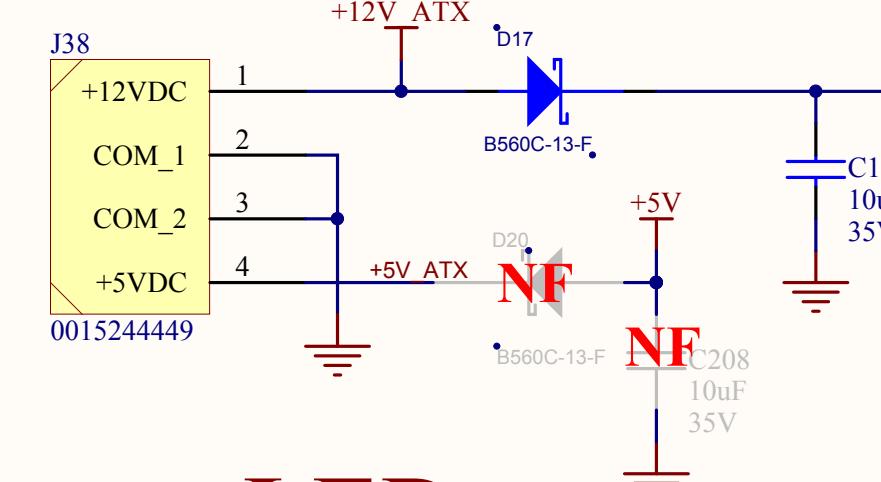
### Fiducials



## Power Input



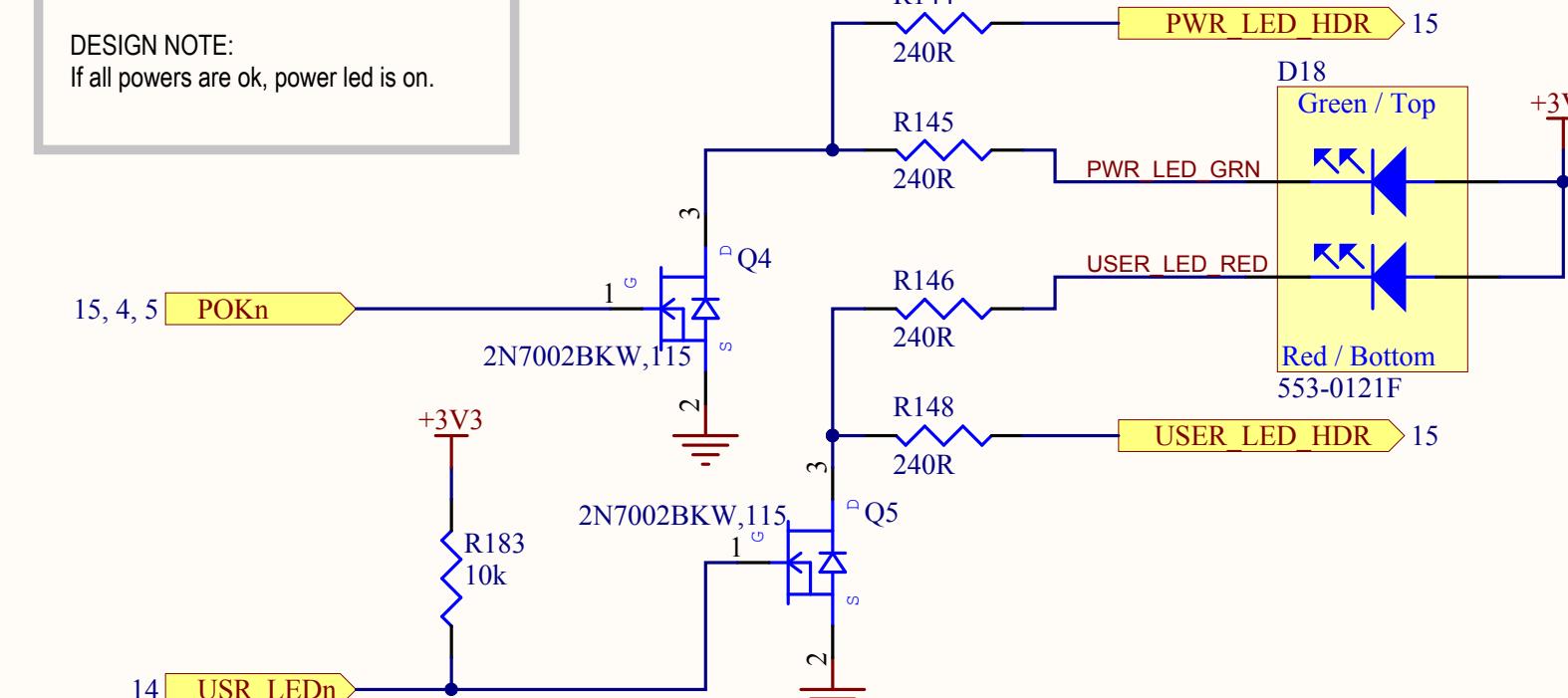
### ATX power connector (Optional)



## LEDs

### Power & Use LEDs

DESIGN NOTE:  
If all powers are ok, power led is on.



DESIGN NOTE:  
For automotive application use ATX connector. You can for example place all the required protections on a separate board (e.g. load dump protection) and then connect this baseboard.

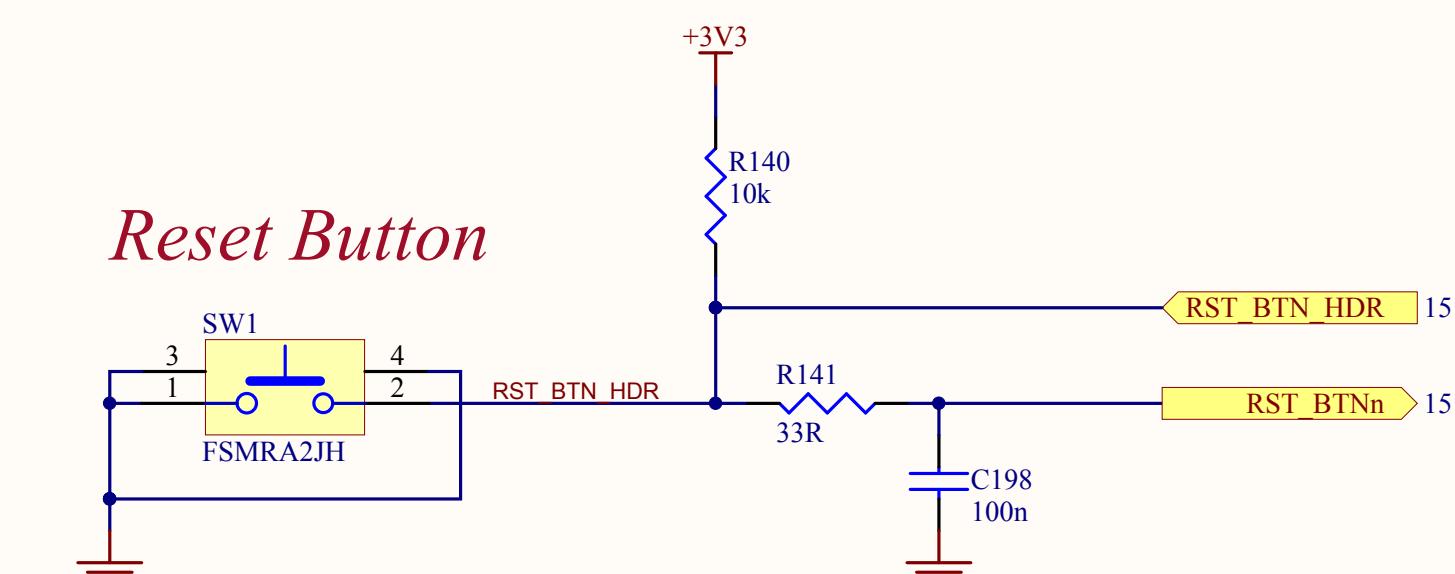
DESIGN NOTE:  
If ATX connector is used for supplying baseboard with power, fit D17 and C197. If it is used as power output, then fit D20 and C197. Do not fit both diodes at once!

DESIGN NOTE:  
If +12V is required by PCIe Card or LVDS Backlight inverter, use ATX connector to power the baseboard.

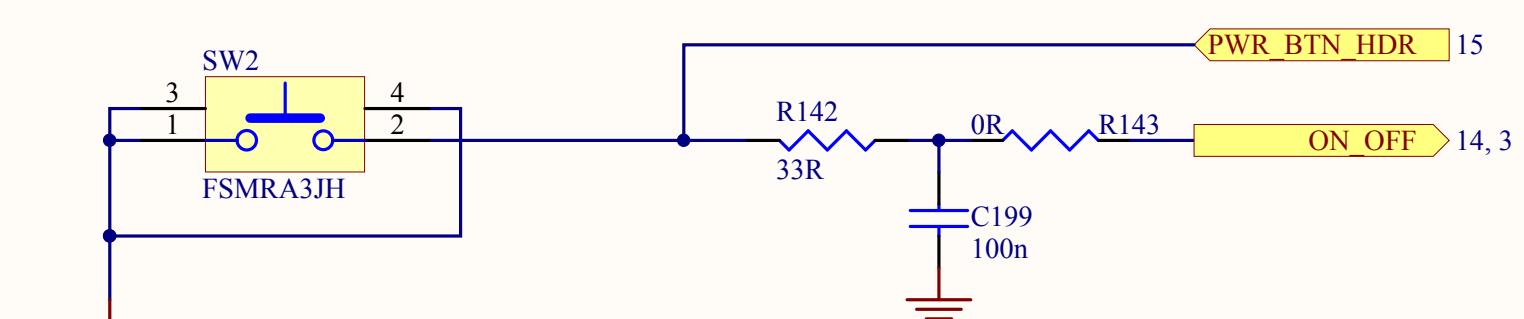
DESIGN NOTE:  
Optional: A 2.5" hard drive can be supplied from this connector (requires only +5V power). Use standard SATA power cable and fit the correct ATX connector on the Baseboard.

## Buttons

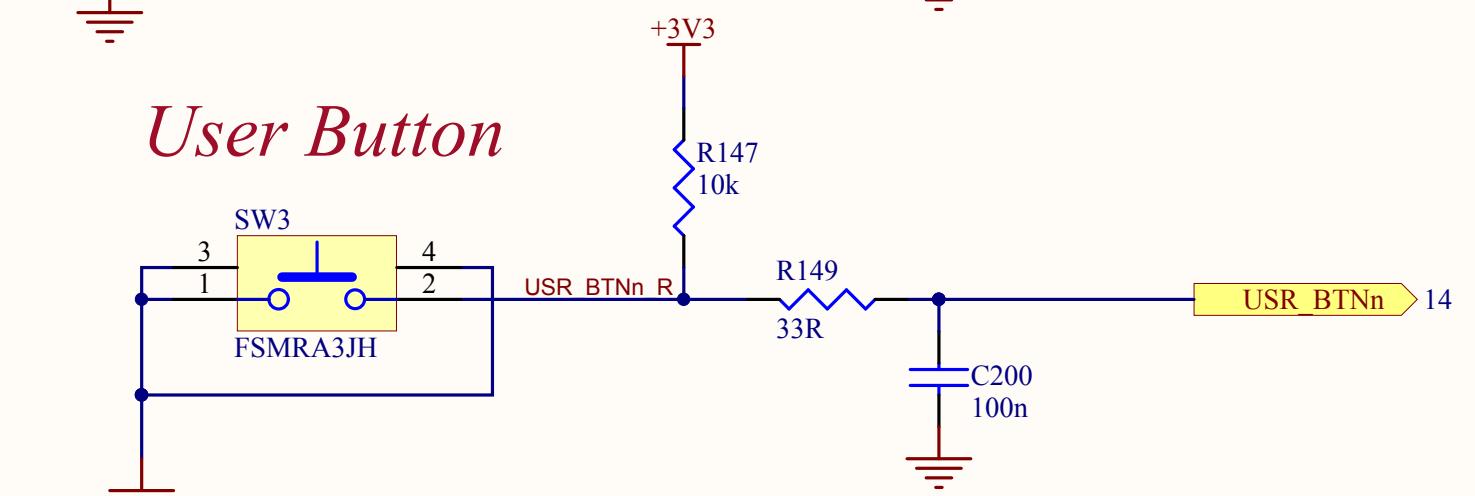
### Reset Button



### Power Button

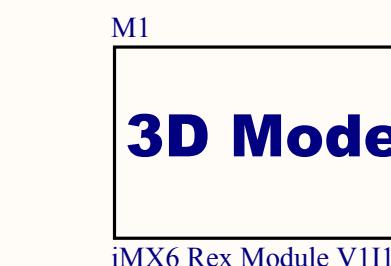
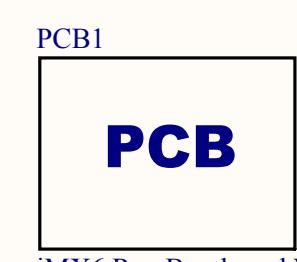


### User Button



## PCB

## iMX6 Rex Module 3D Model

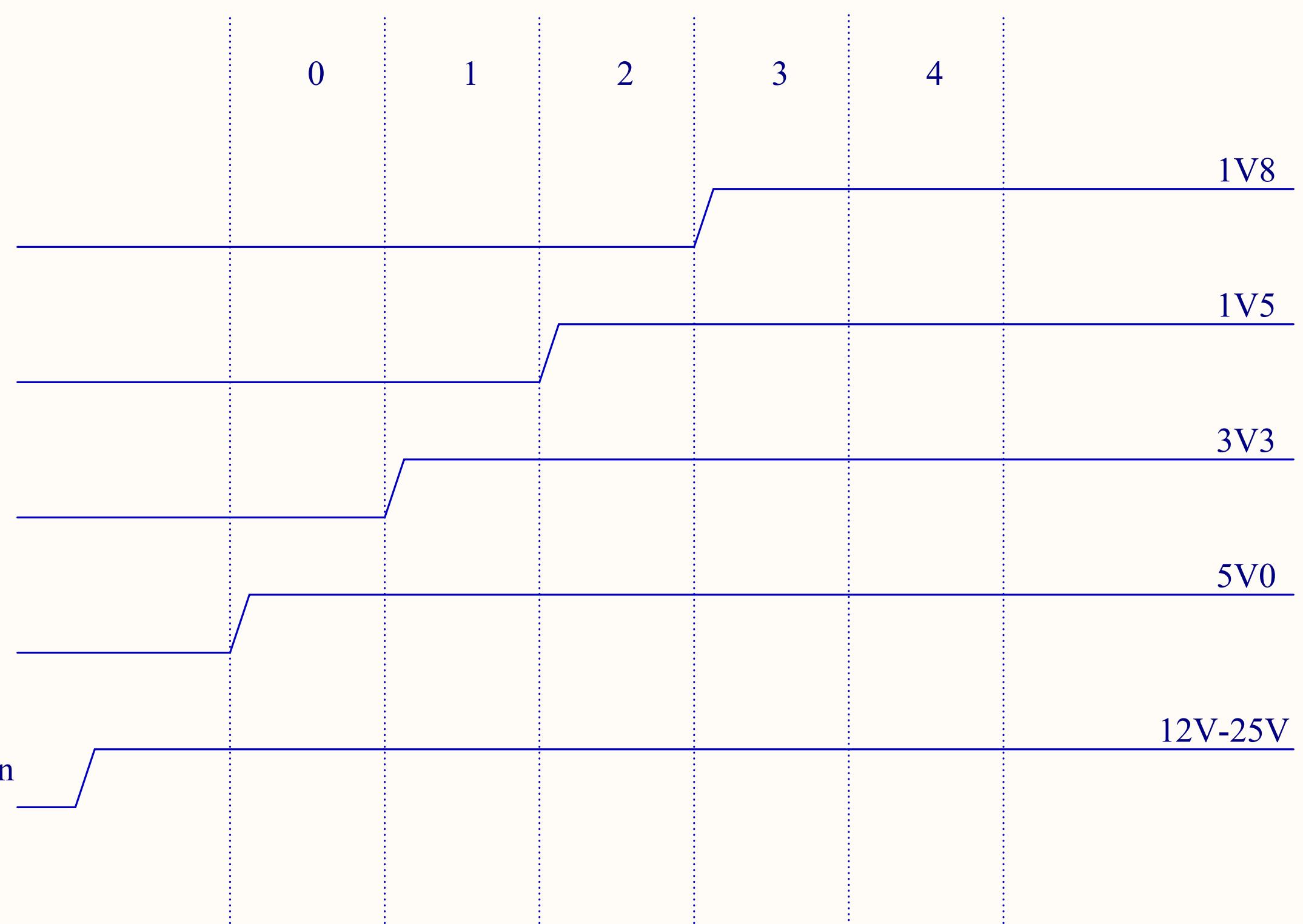


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Title:	iMX6 Rex Development Baseboard
Variant:	Prototype
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# DOC, POWER SEQUENCING

CONTROLED BY	NAME	USED BY
<i>POK_1V5</i>	+1V8_AUDIO2	audio
<i>POK_3V3</i>	+1V5	mini PCIe 1, audio
<i>POK_5V</i>	+3V3	peripherals
<i>+3V3_MODULE</i>	+5V	USB hub, USB con, backlight
	+VIN	switching power supplies, PCIe con



## I2C USAGE AND ADDRESS TABLE

NAME	PERIPHERAL	ADDRESS
<i>I2C1</i>	Audio	0x14 / 0x15
<i>I2C2</i>	Audio 2	0x30 / 0x31
	EEPROM	0xAE / 0xAF
	GPIO Expander	0x4E / 0x4F
	HDMI	0x60 , 0xA1
	Mini PCIe / PCIe	
	RTC Clock	0xA2 / 0xA3
	Touchscreen	0x90 / 0x91
<i>I2C3</i>	For general use (On header)	

# REVISION HISTORY

A A

B B

C C

D D



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[01] - COVER PAGE.SchDoc  
[01] - COVER PAGE.SchDoc

[02] - BLOCK DIAGRAM.SchDoc  
[02] - BLOCK DIAGRAM.SchDoc

[03] - CONNECTORS.SchDoc  
[03] - CONNECTORS.SchDoc

[04] - PCIE MINI 1, PCIE.SchDoc  
[04] - PCIE MINI 1, PCIE.SchDoc

[05] - PCIE MINI 2, AUDIO2.SchDoc  
[05] - PCIE MINI 2, AUDIO2.SchDoc

[06] - SATA, CFAST.SchDoc  
[06] - SATA, CFAST.SchDoc

[07] - HDMI.SchDoc  
[07] - HDMI.SchDoc

[08] - LVDS.SchDoc  
[08] - LVDS.SchDoc

## TEMPLATE NOTES

### Set Project Parameters

- 1) Go to Project -> Project Options -> Parameters
- 2) Set Company, Project and VersionRevision

### Mark Not Fitted Components as NF

### Net Class Example



### Differential signal example

TITLE Examples (You can change the color to reflect your company color)

## PAGE TITLE

*Peripheral / Group of component title*

*Smaller Title*

### Schematic Status Explanation

**DRAFT** - Very early stage of schematic, ignore details.

**PRELIMINARY** - Close to final schematic.

**CHECKED** - There should not be any mistakes. Tell the engineer if you find one.

**RELEASED** - A board with this schematic has been sent to production.

[09] - USB.SchDoc  
[09] - USB.SchDoc

[10] - ETHERNET.SchDoc  
[10] - ETHERNET.SchDoc

[11] - AUDIO1.SchDoc  
[11] - AUDIO1.SchDoc

[12] - SD.SchDoc  
[12] - SD.SchDoc

[13] - UARTS.SchDoc  
[13] - UARTS.SchDoc

[14] - RTC, EEPROM, GPIO, TOUCH SCREEN.SchDoc  
[14] - RTC, EEPROM, GPIO, TOUCH SCREEN.SchDoc

[15] - MISC, JTAG, HEADERS.SchDoc  
[15] - MISC, JTAG, HEADERS.SchDoc

[16] - POWERS 5V, 3V3.SchDoc  
[16] - POWERS 5V, 3V3.SchDoc

[17] - PWR IN, LEDS, BUTTONS, MECH.SchDoc  
[17] - PWR IN, LEDS, BUTTONS, MECH.SchDoc

[18] - DOC, POWER SEQUENCING.SchDoc  
[18] - DOC, POWER SEQUENCING.SchDoc

[19] - REVISION HISTORY.SchDoc  
[19] - REVISION HISTORY.SchDoc



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