

iMX6 Rex Development Baseboard

Variant: Prototype

2. 12. 2013
V1I1

RELEASED 02-DEC-2013

Page	Index	Page	Index	Page	Index	Page	Index
1	COVER PAGE	11	AUDIO1	21	31
2	BLOCK DIAGRAM	12	SD CARDS	22	32
3	CONNECTORS	13	UARTS	23	33
4	PCIE MINI 1, PCIE	14	RTC, EEPROM, GPIO, TOUCHSC.	24	34
5	PCIE MINI 2, AUDIO2	15	MISC, JTAG, HEADERS	25	35
6	SATA, CFAST	16	POWERS 5V, 3V3	26	36
7	HDMI	17	PWR IN, LEDS, BUTTONS, MECH	27	37
8	LVDS	18	DOC, POWER SEQUENCING	28	38
9	USB	19	REVISION HISTORY	29	39
10	ETHERNET	20	30	40

DESIGN CONSIDERATIONS

DESIGN NOTE:
Example text for informational design notes .

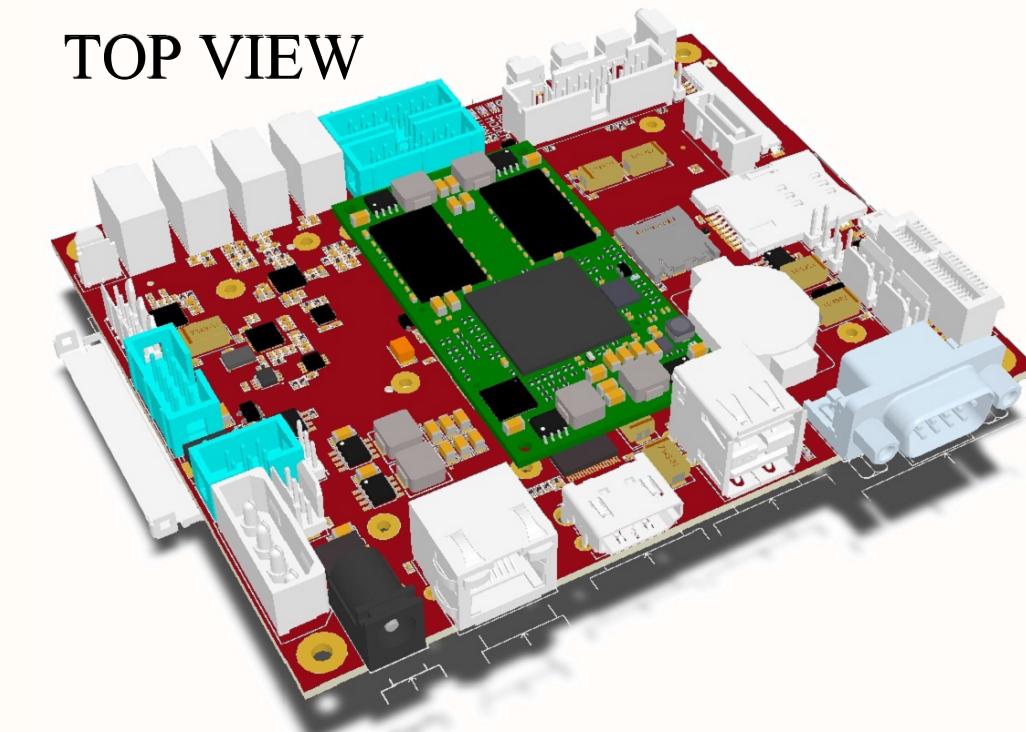
DESIGN NOTE:
Example text for cautionary design notes .

DESIGN NOTE:
Example text for debug notes.

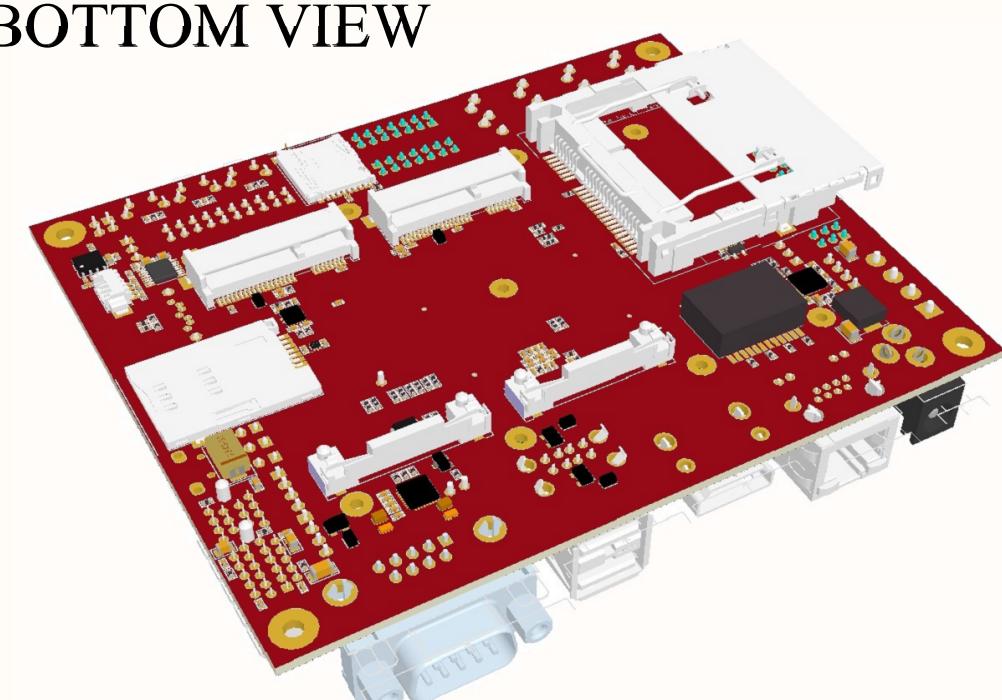
DESIGN NOTE:
Example text for critical design notes.

LAYOUT NOTE:
Example text for critical layout guidelines.

TOP VIEW



BOTTOM VIEW

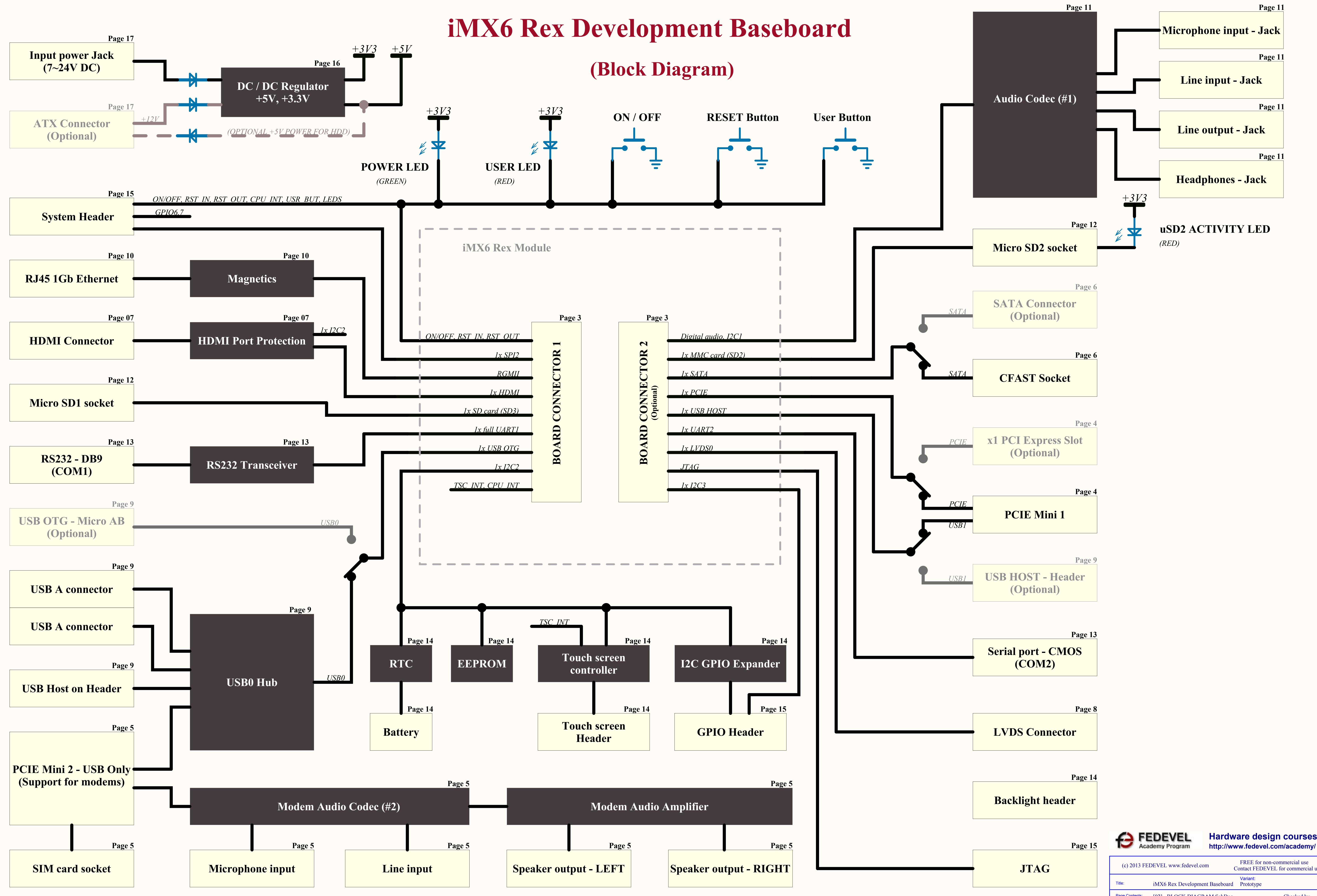


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Variant:	Prototype
Page Contents:	[01] - COVER PAGE.SchDoc
Checked by:	
Size:	DWG NO
Revision:	VIII
Date:	2. 12. 2013
Sheet 1 of 20	

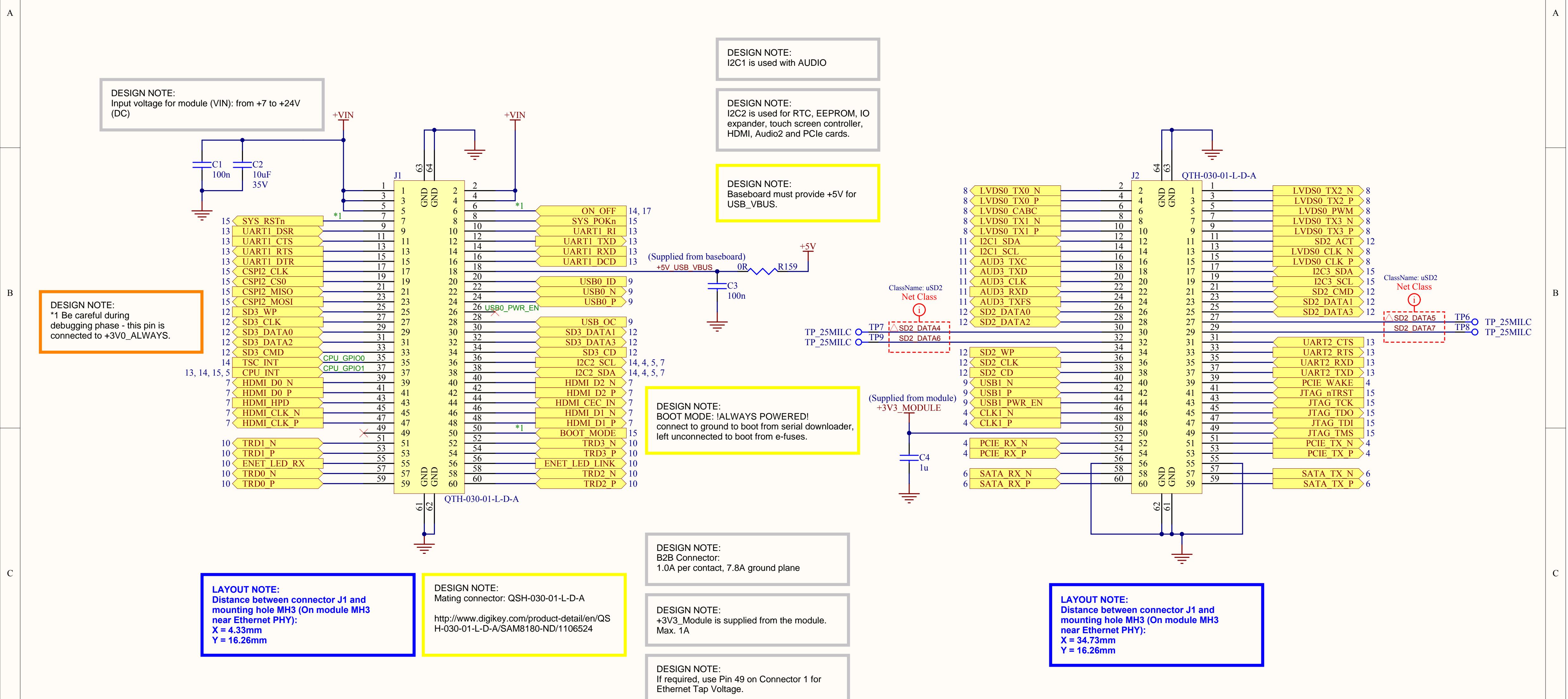
iMX6 Rex Development Baseboard

(Block Diagram)

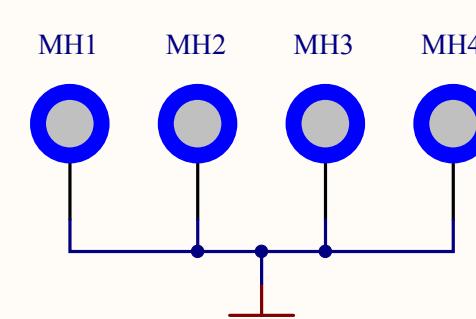


<http://www.iMX6Rex.com>

CONNECTORS

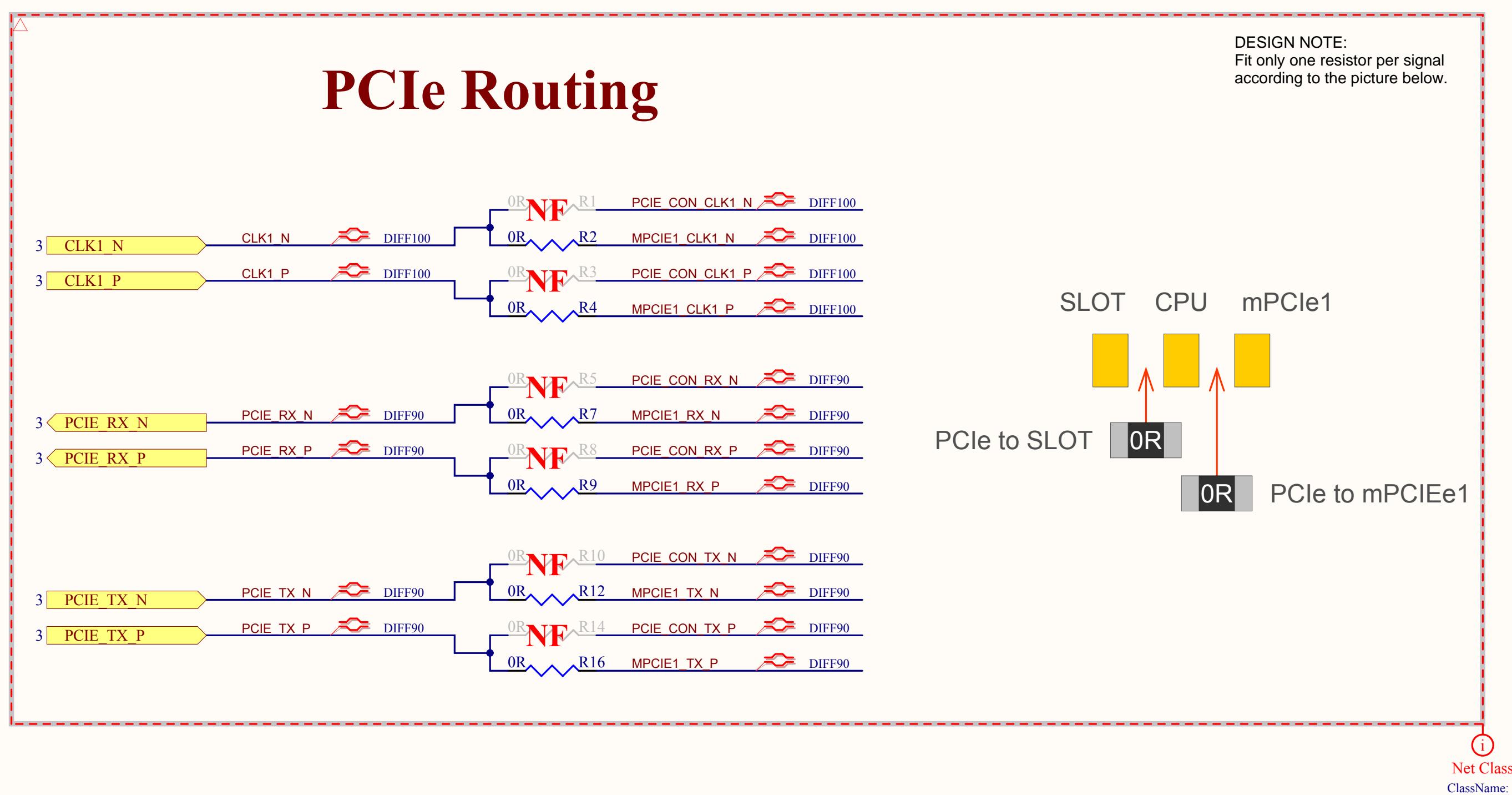


Module Mounting Holes

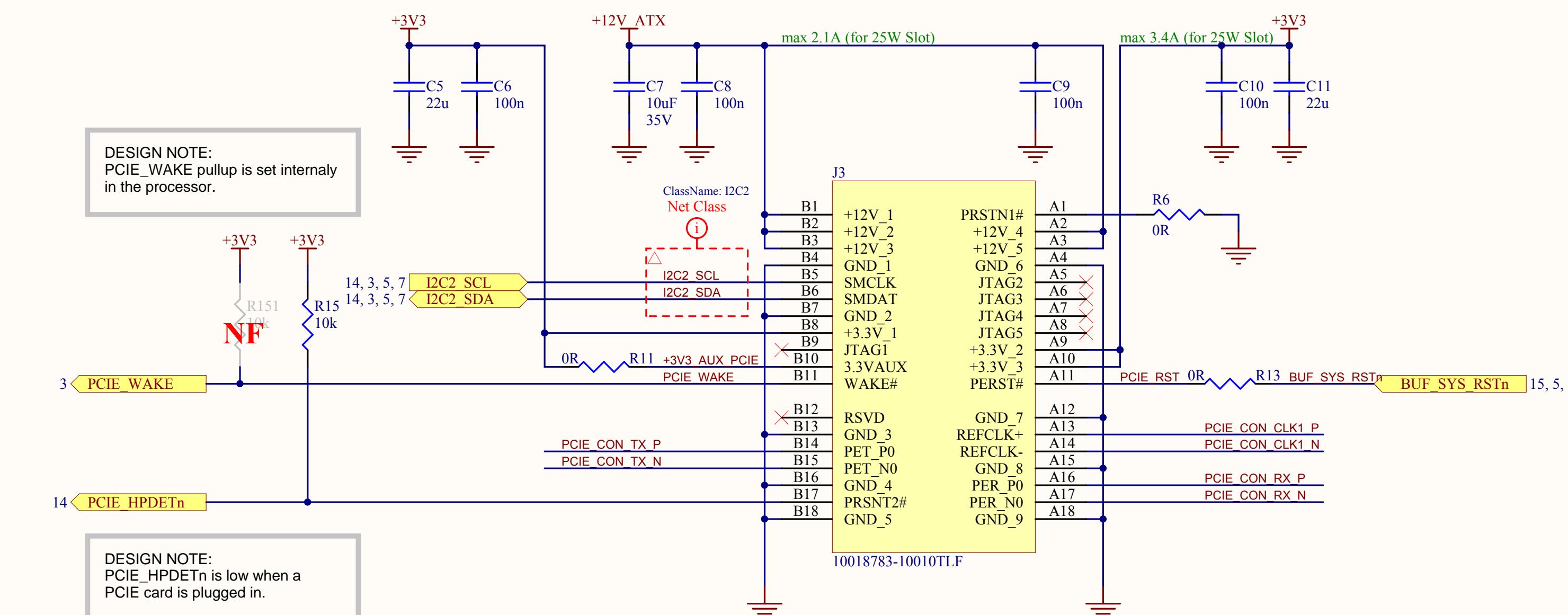


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Variant:	Prototype
Page Contents:	[03] - CONNECTORS.SchDoc
Checked by:	
Size:	DWG NO
Revision:	VIII
Date:	2. 12. 2013
Sheet	3 of 19

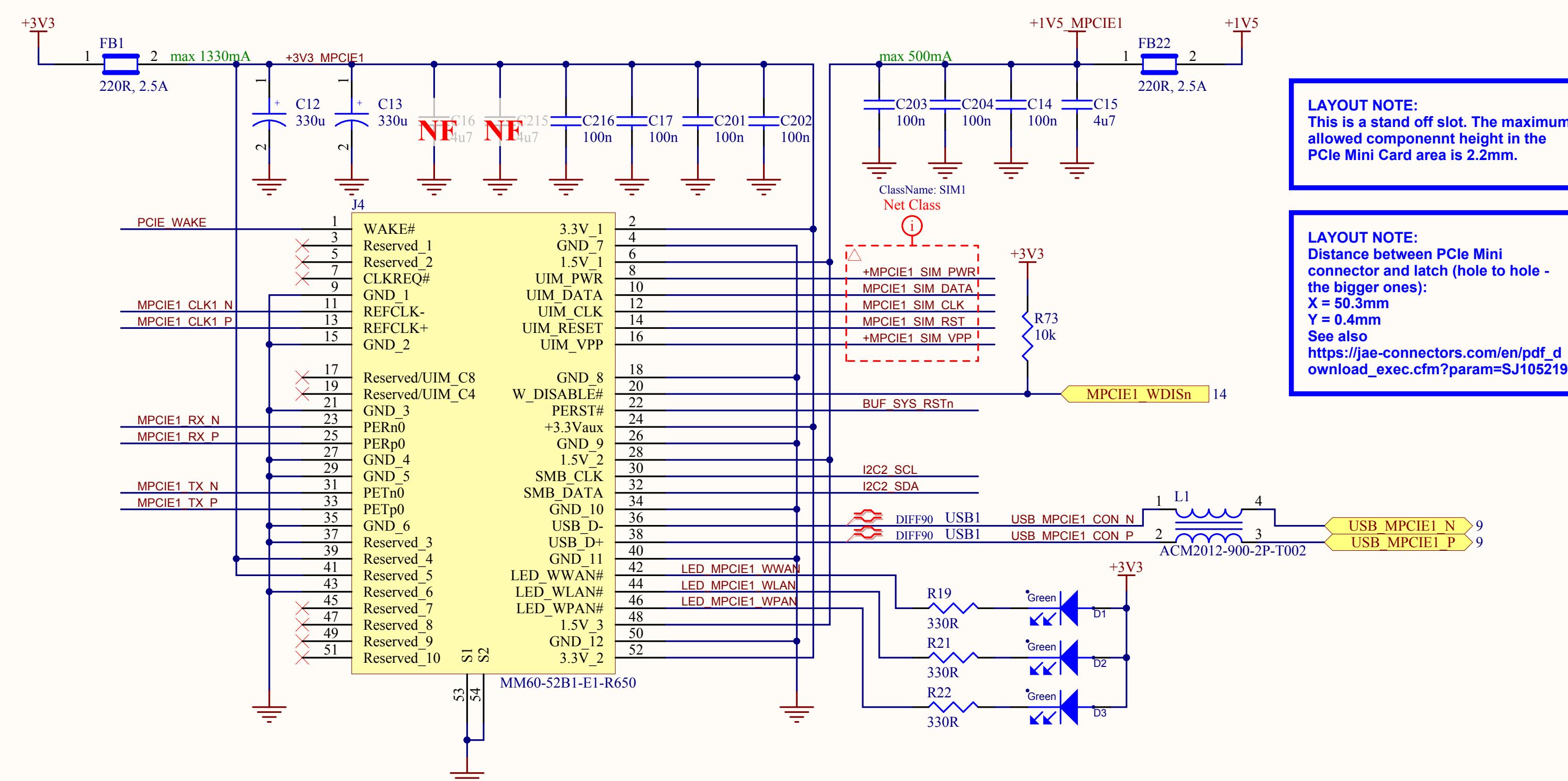
PCIE MINI 1, PCIE



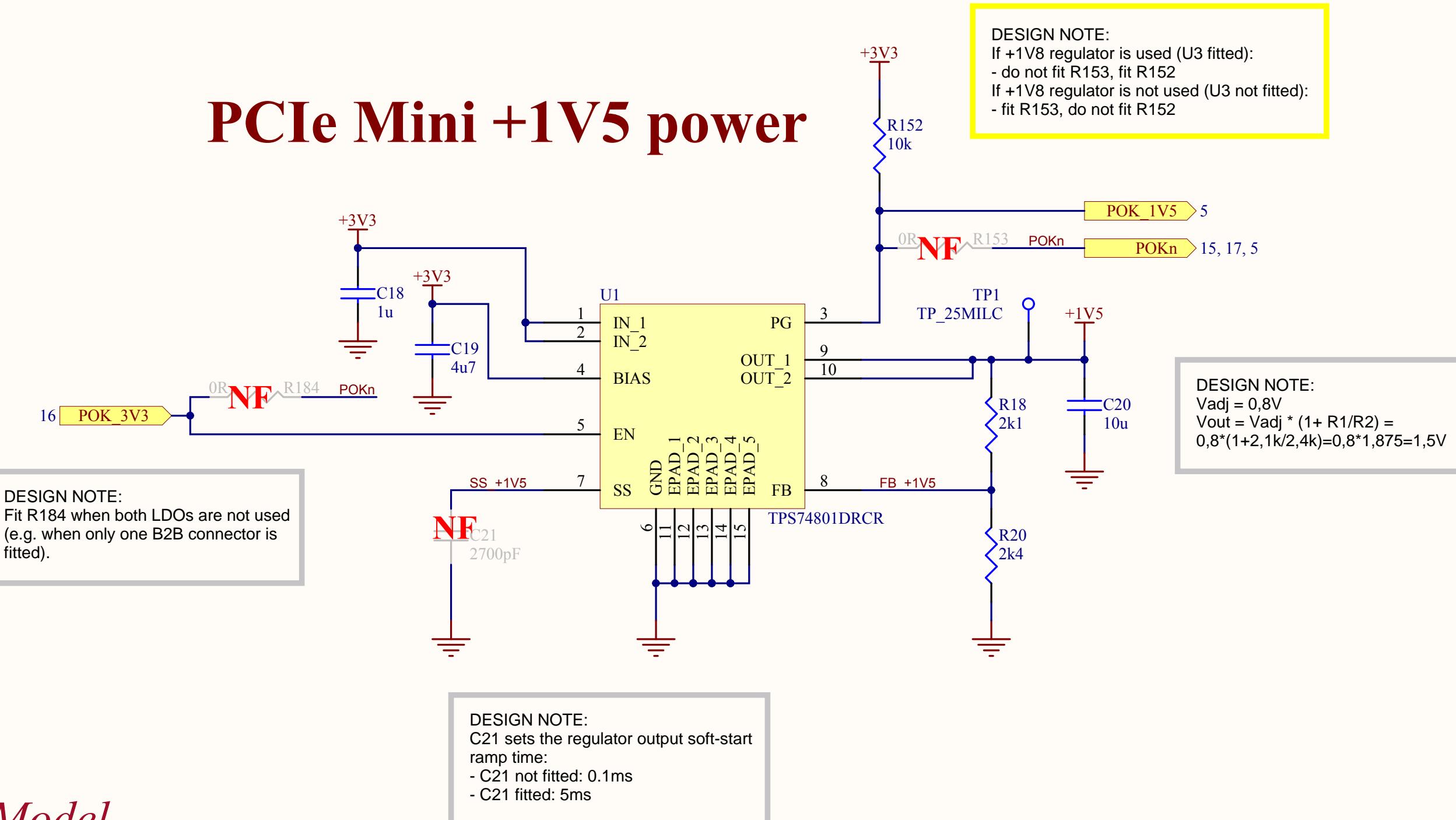
PCI Express Slot (Optional)



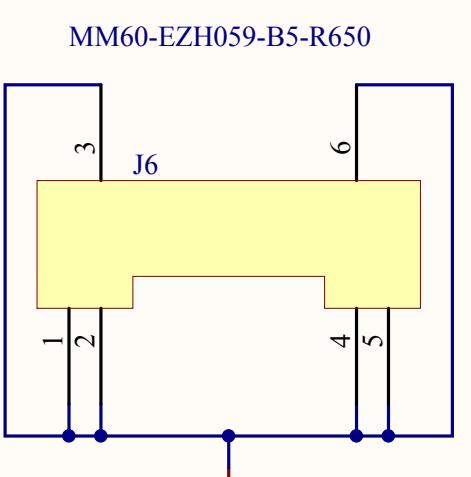
PCIe Mini 1



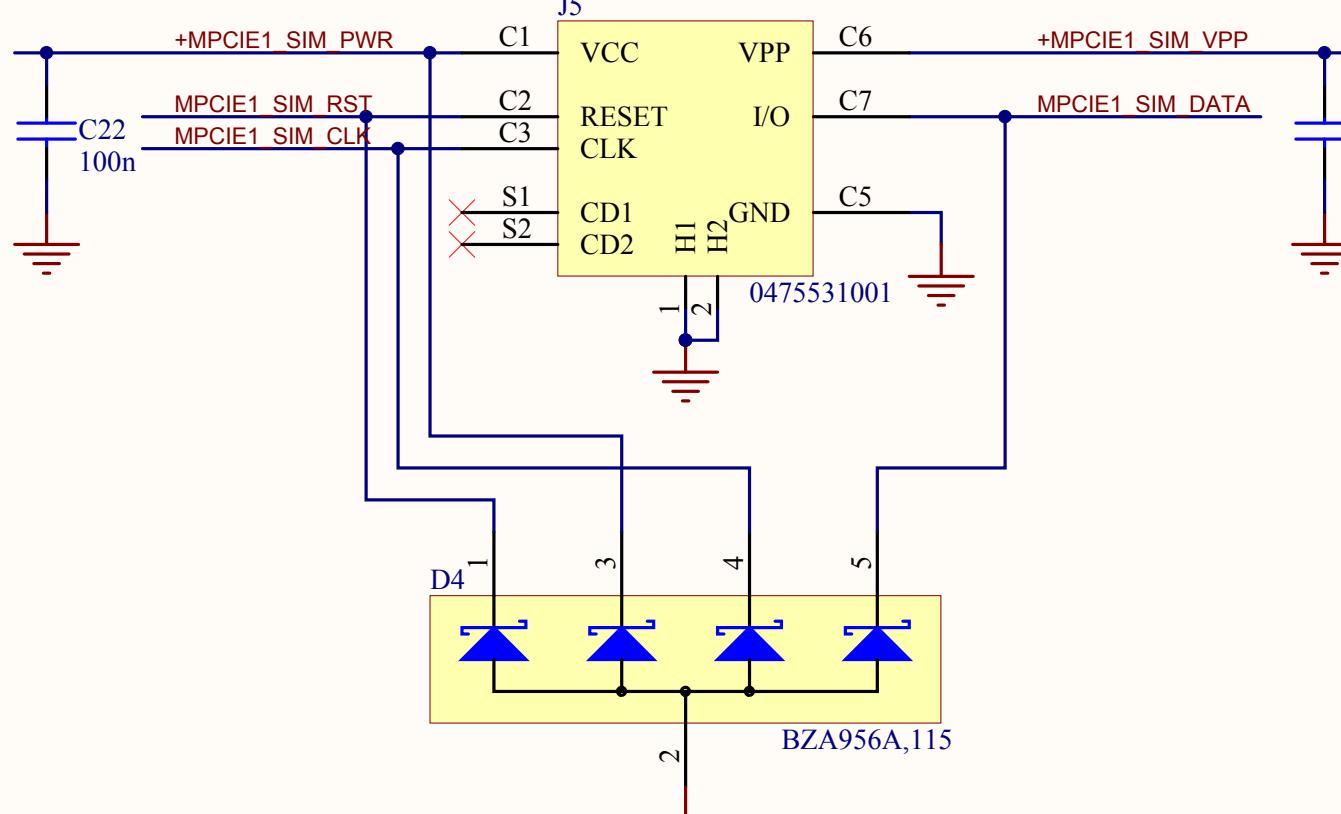
PCIe Mini +1V5 power



Card Latch for PCIe Mini 1



SIM card for PCIe Mini 1

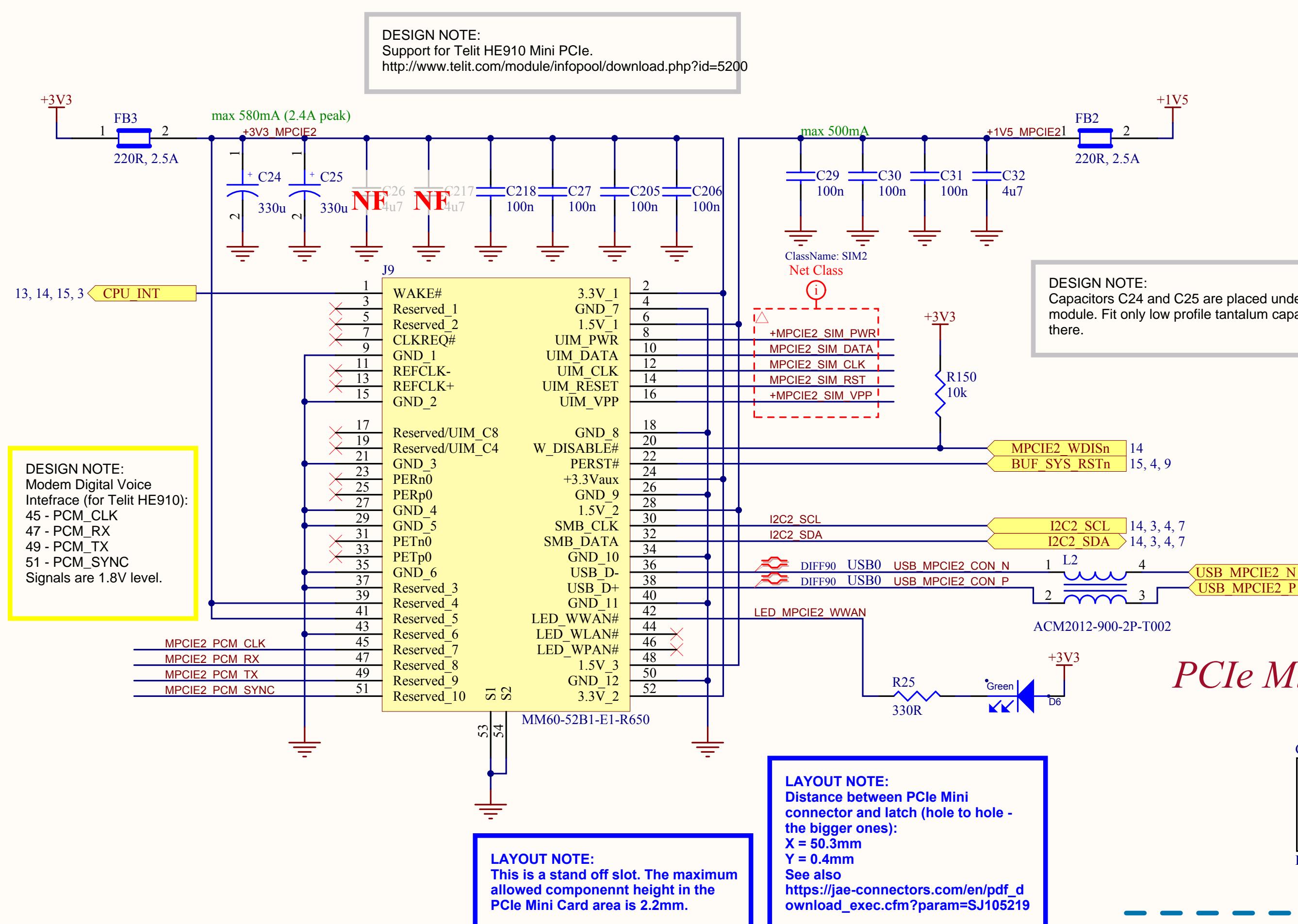


PCIe Mini 1 Card for 3D Model

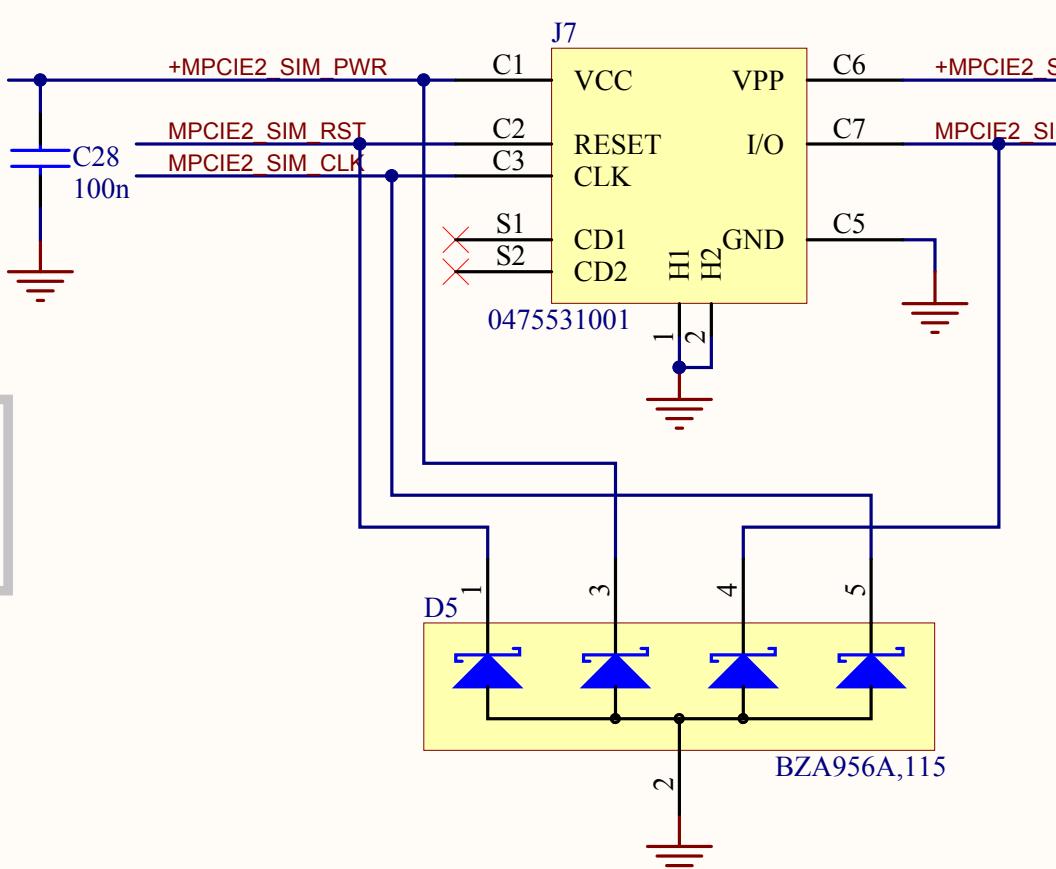


PCIE MINI 2, AUDIO2

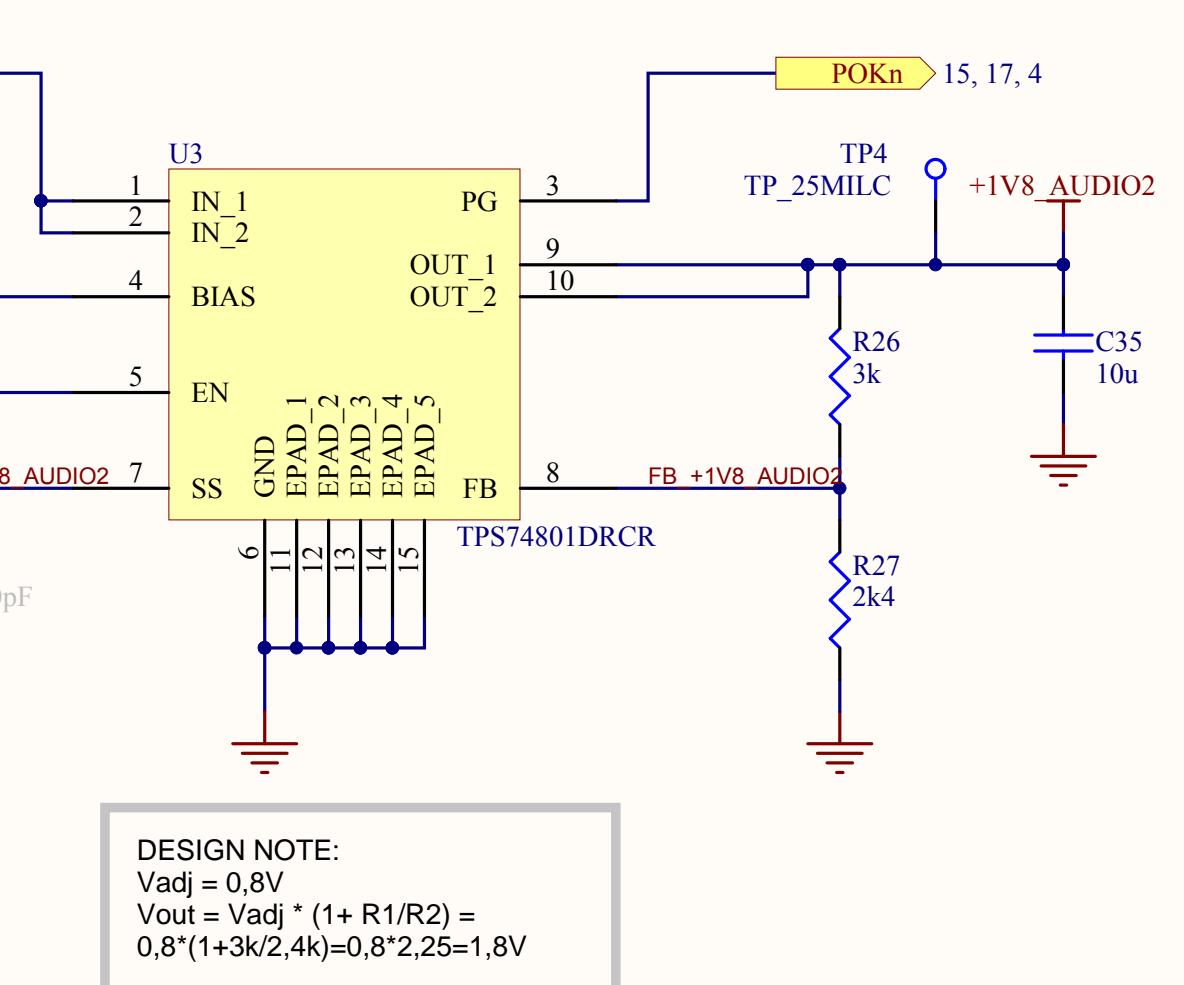
PCIe Mini 2 - USB only
(support for wireless modems e.g GSM, 3G, ...)



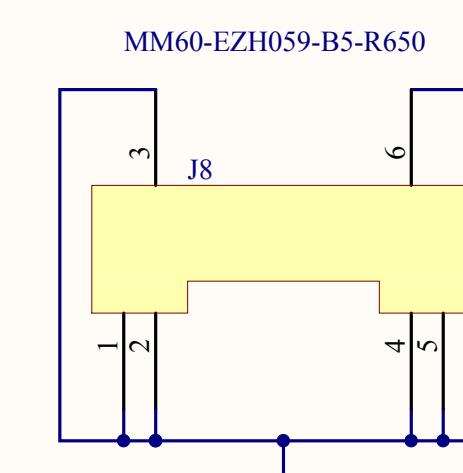
SIM card for PCIe Mini 2



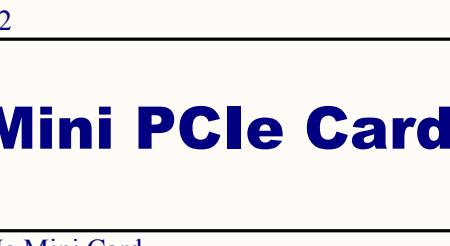
Audio2 +1V8 power



Card Latch for PCIe Mini 2

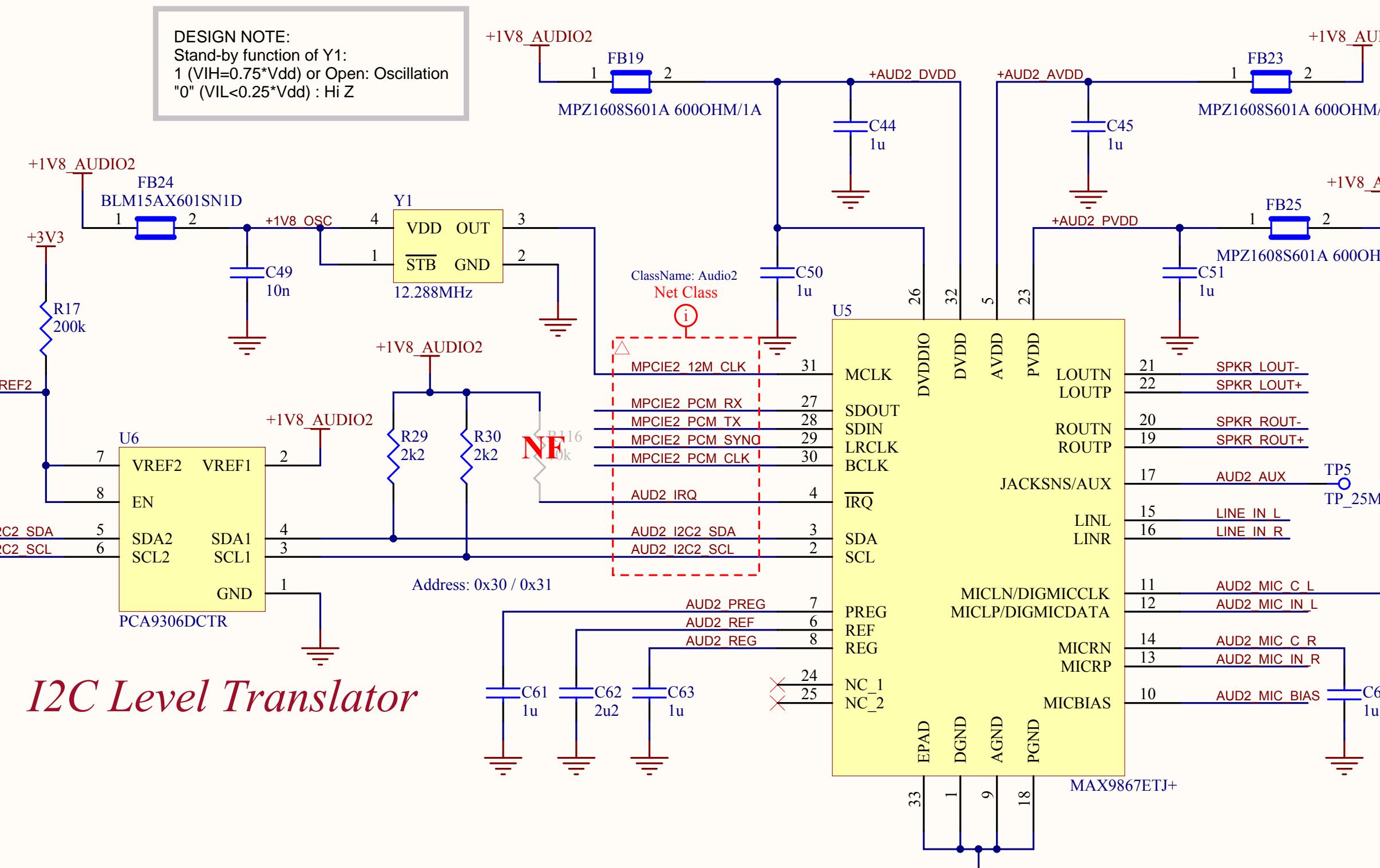


PCIe Mini 2 Card for 3D Model

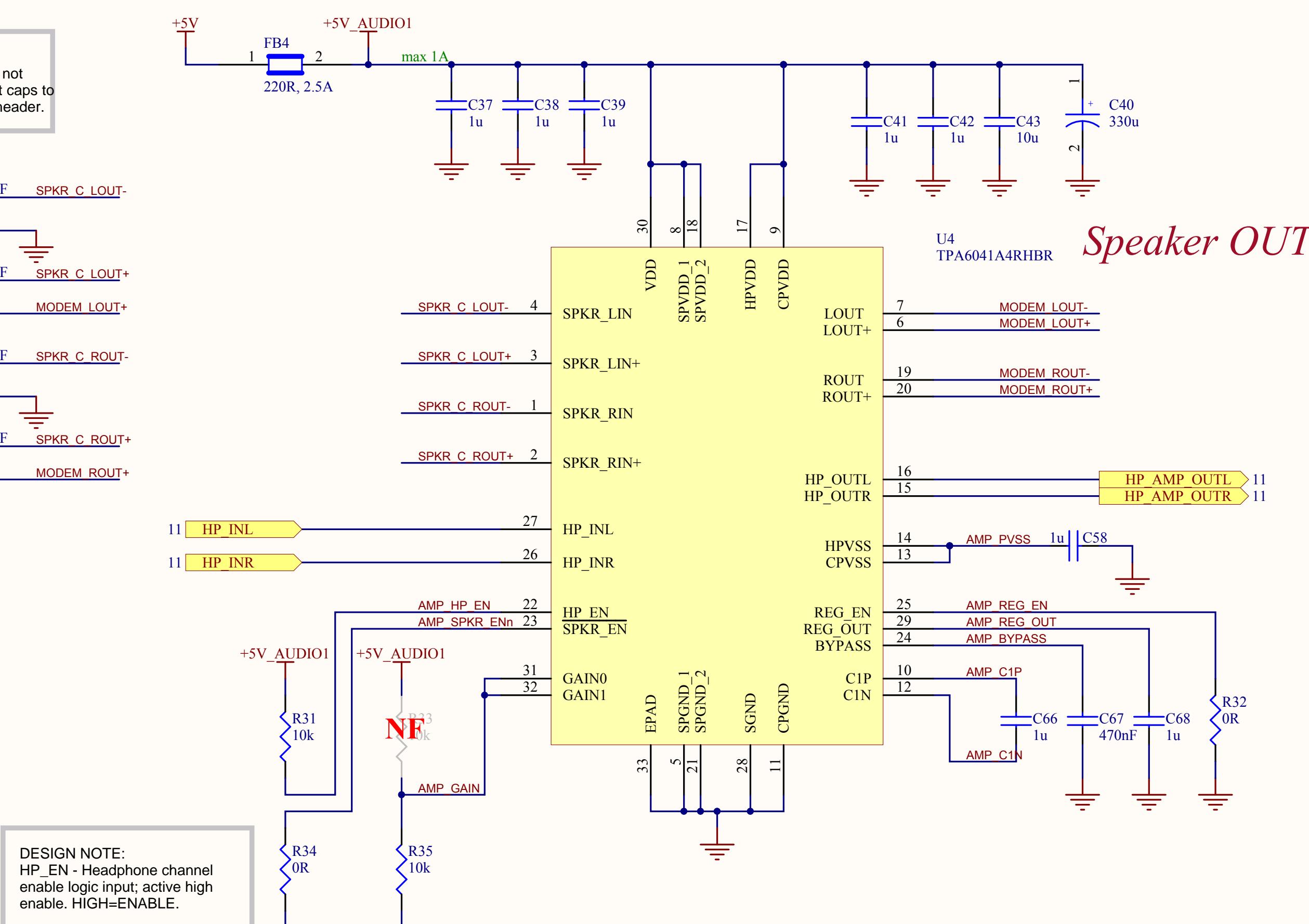


Audio 2

(support for wireless modem voice output / input)



Audio Amplifier

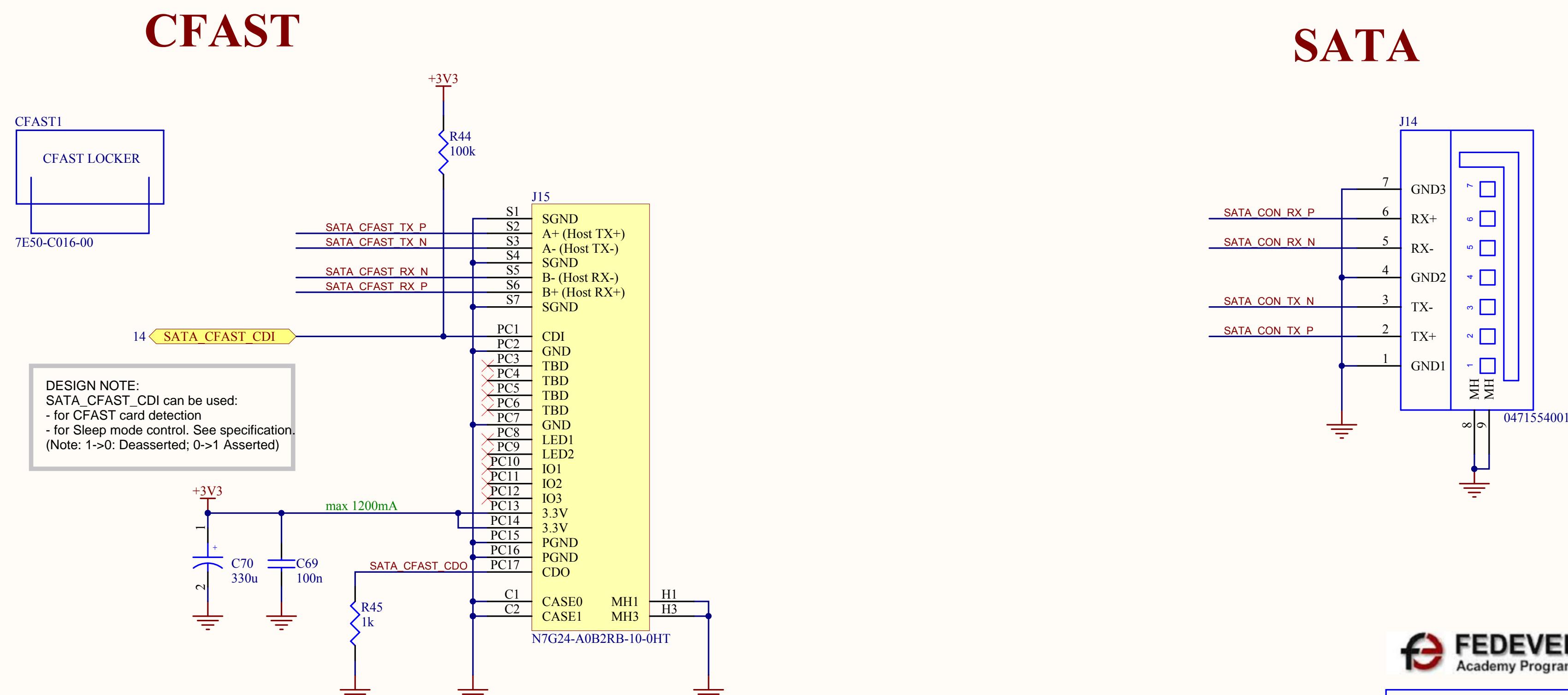
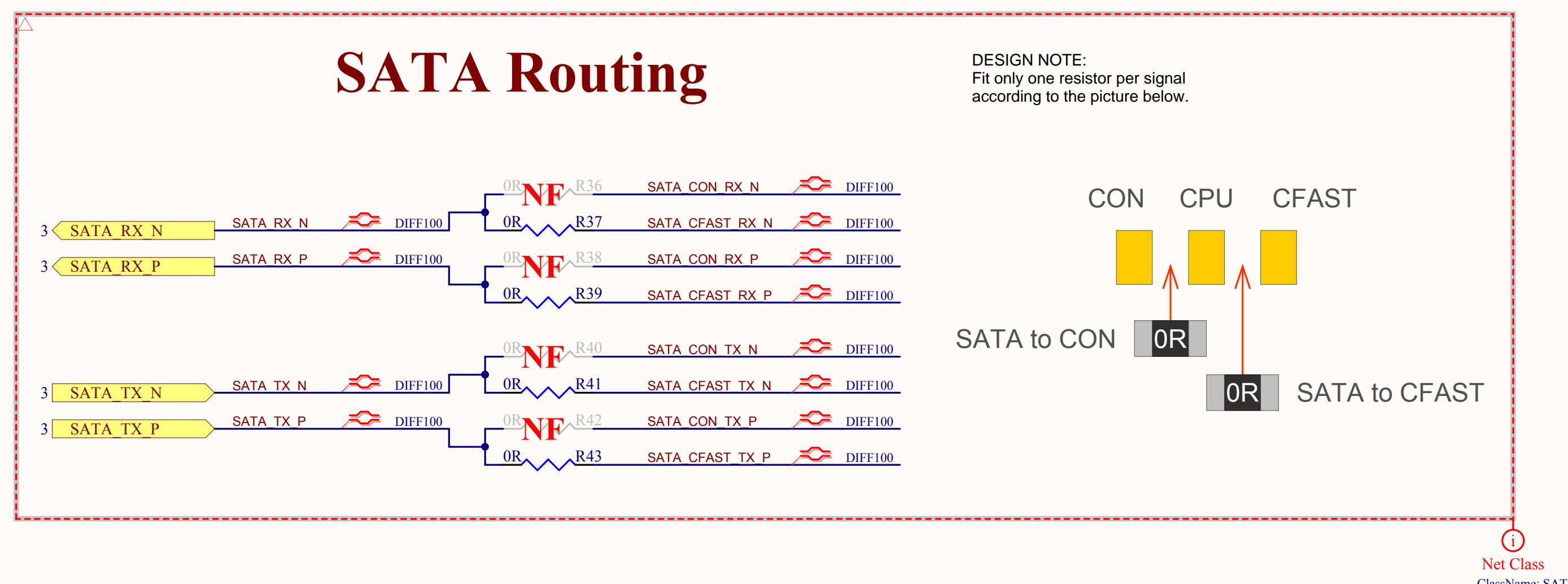


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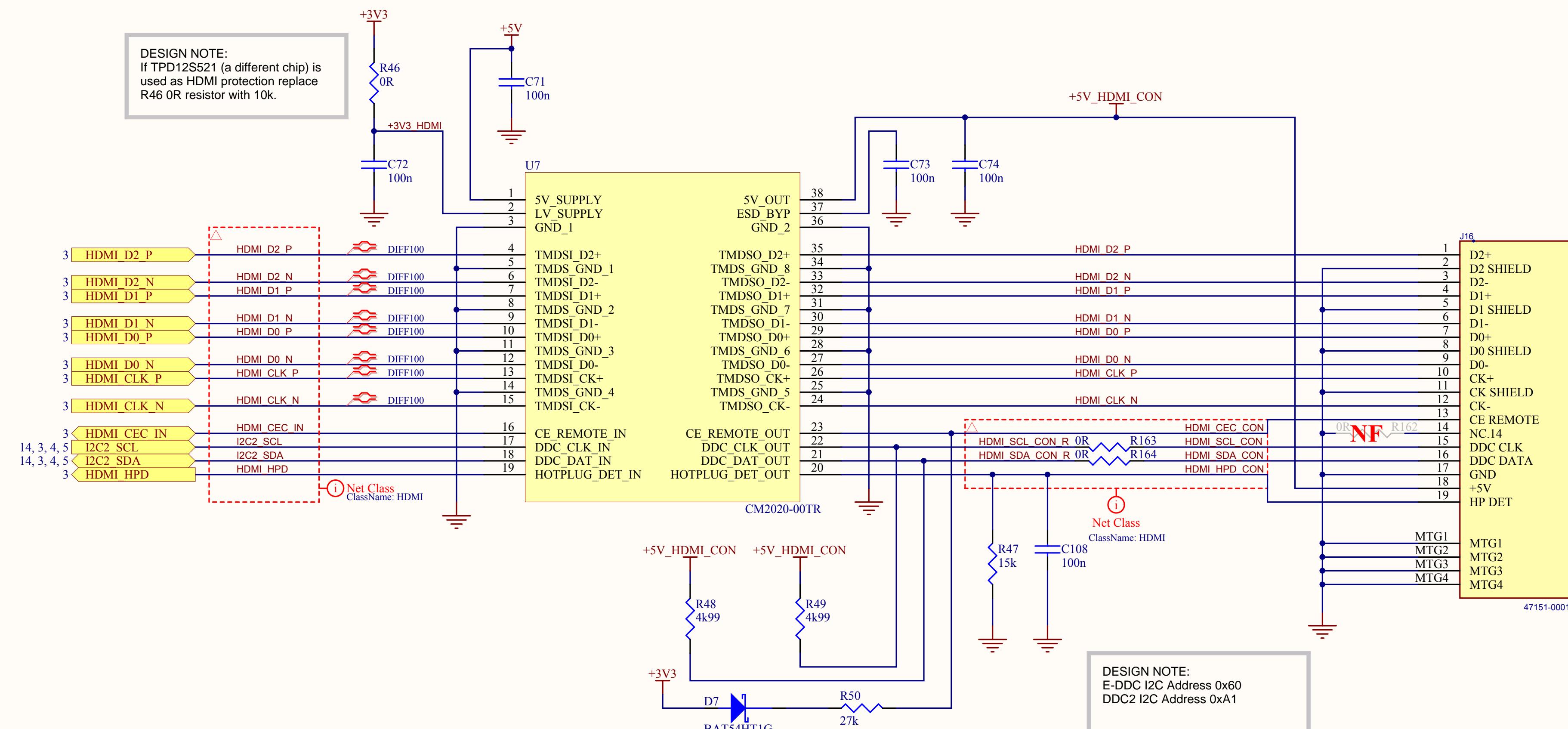
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Page Contents:	[05] - PCIE MINI 2, AUDIO2.SchDoc	Checked by:	
Size:	DWG NO	Revision:	V11
Date:	2. 12. 2013	Sheet:	5 of 20

SATA, CFAST

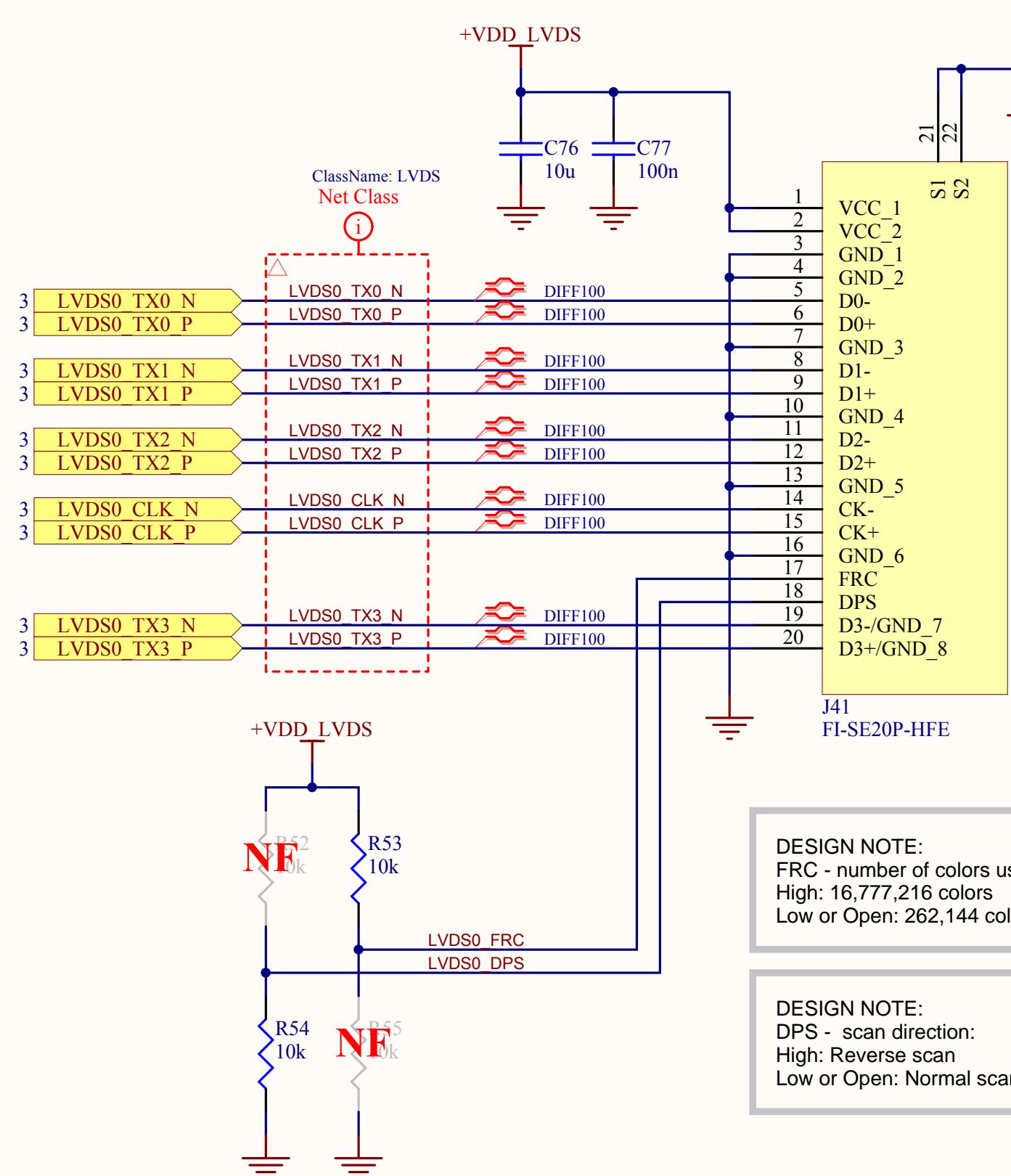


HDMI

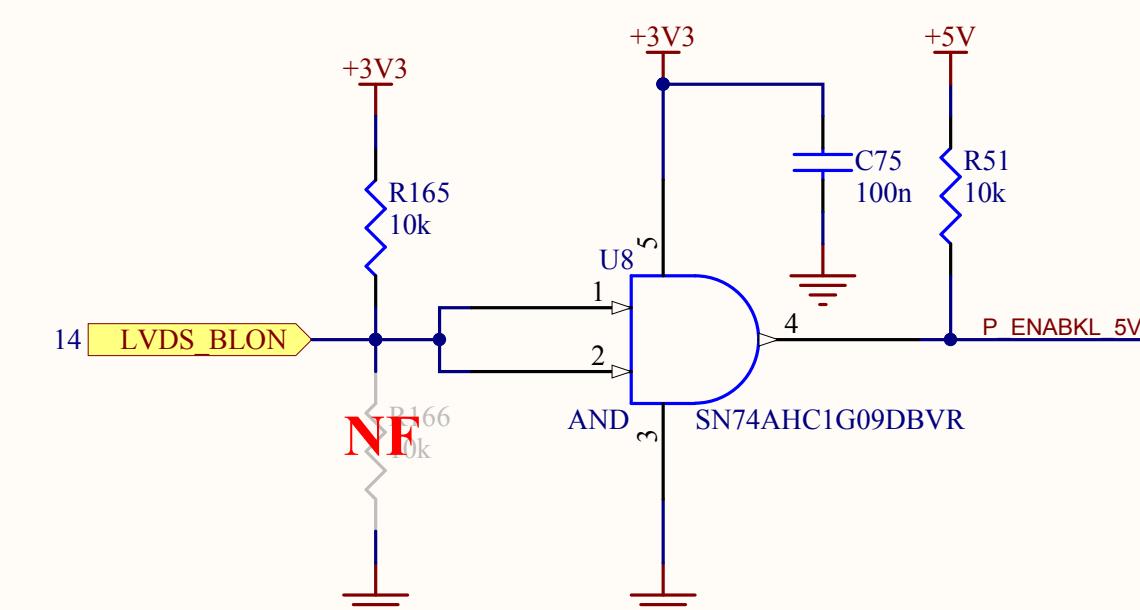


LVDS

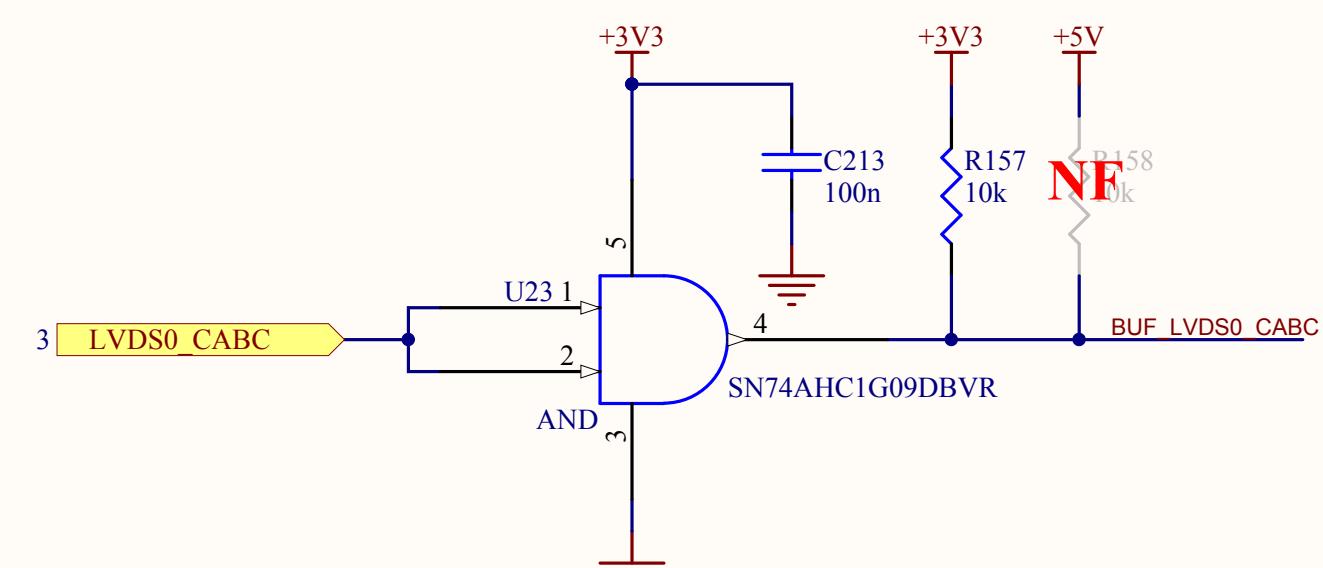
LVDS Connector



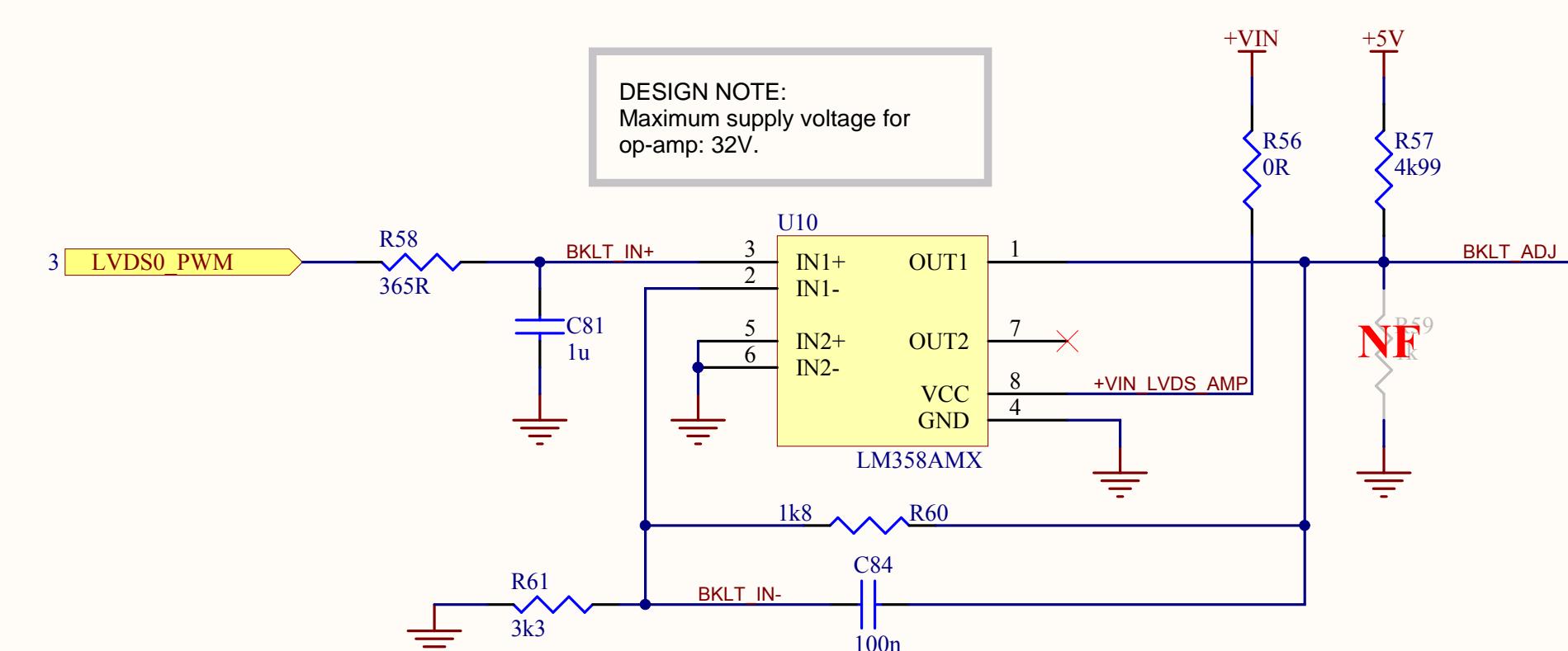
Display enable



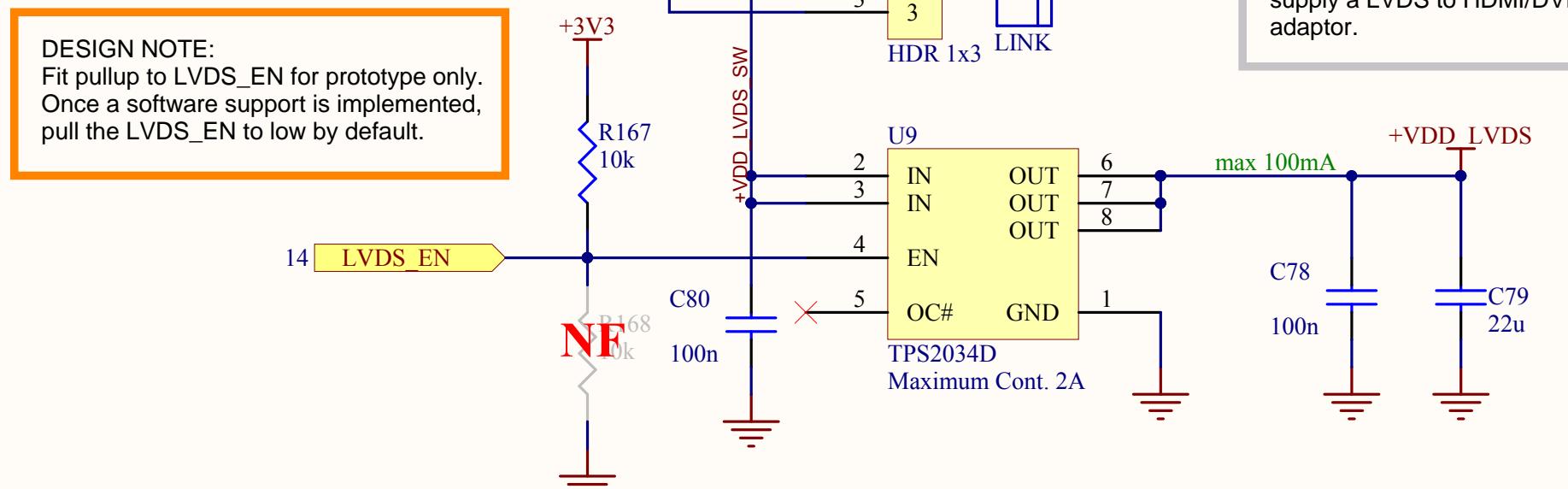
LVDS0 CABC buffer



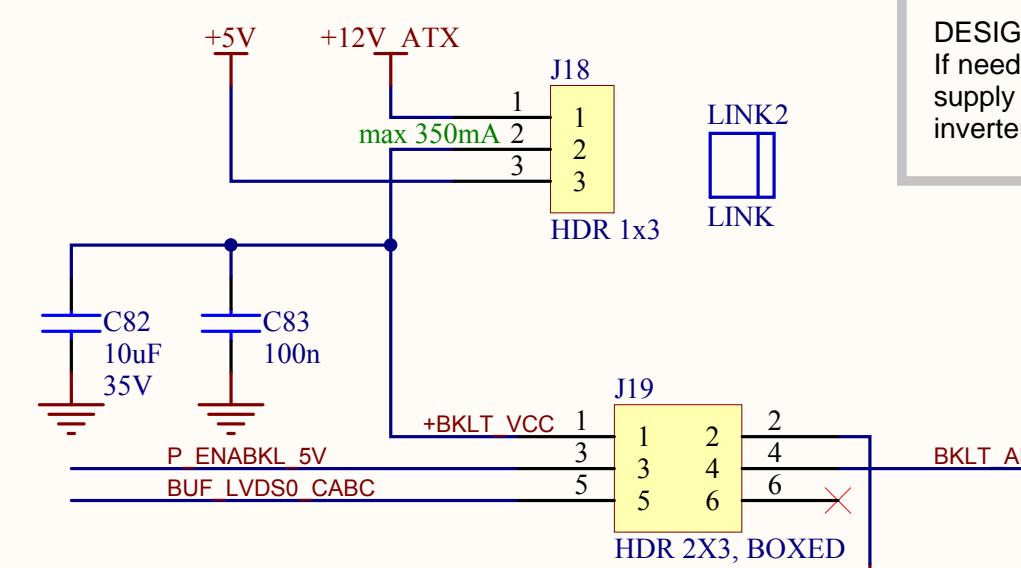
Backlight adjustment



LVDS Switch



Backlight connector

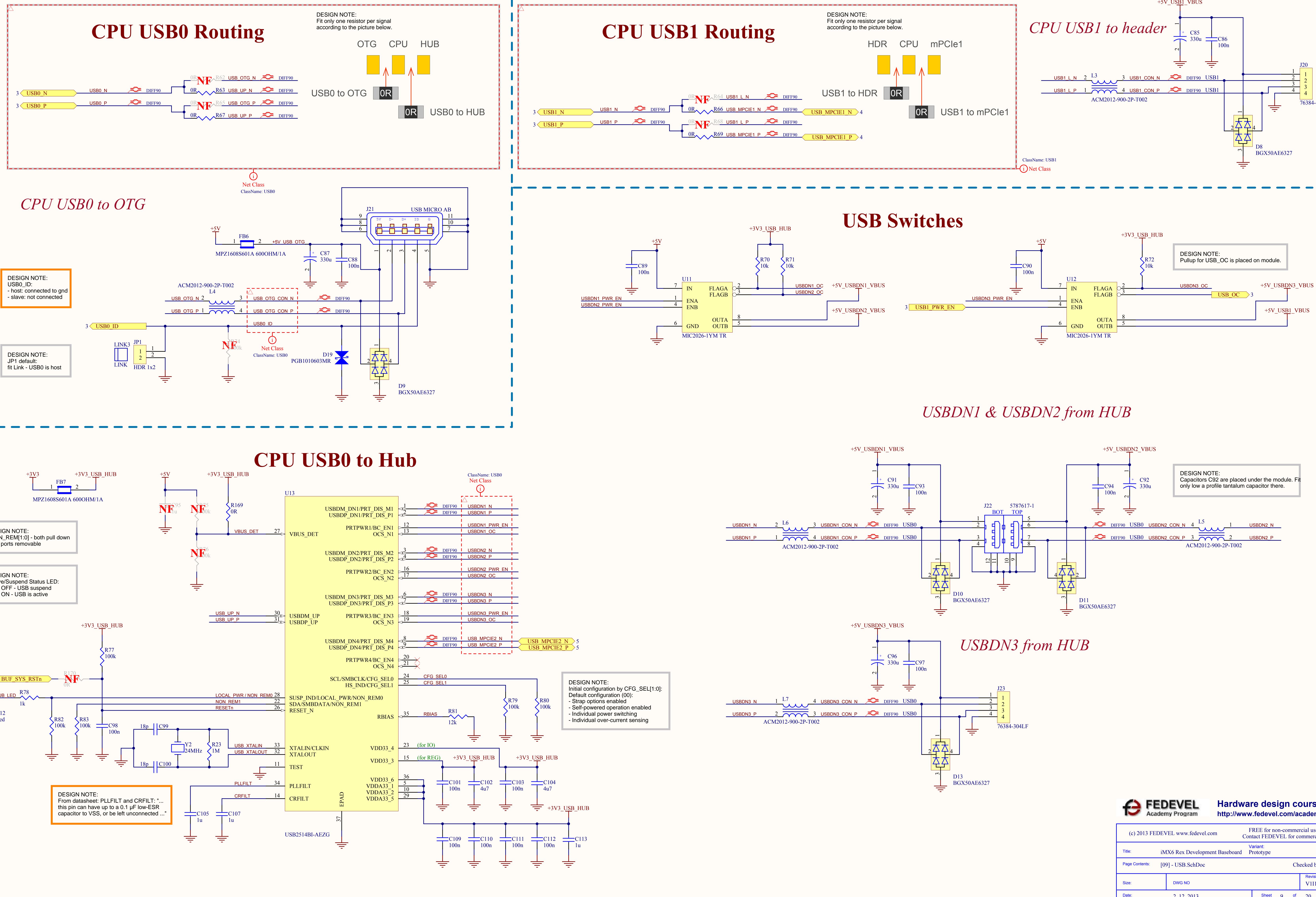


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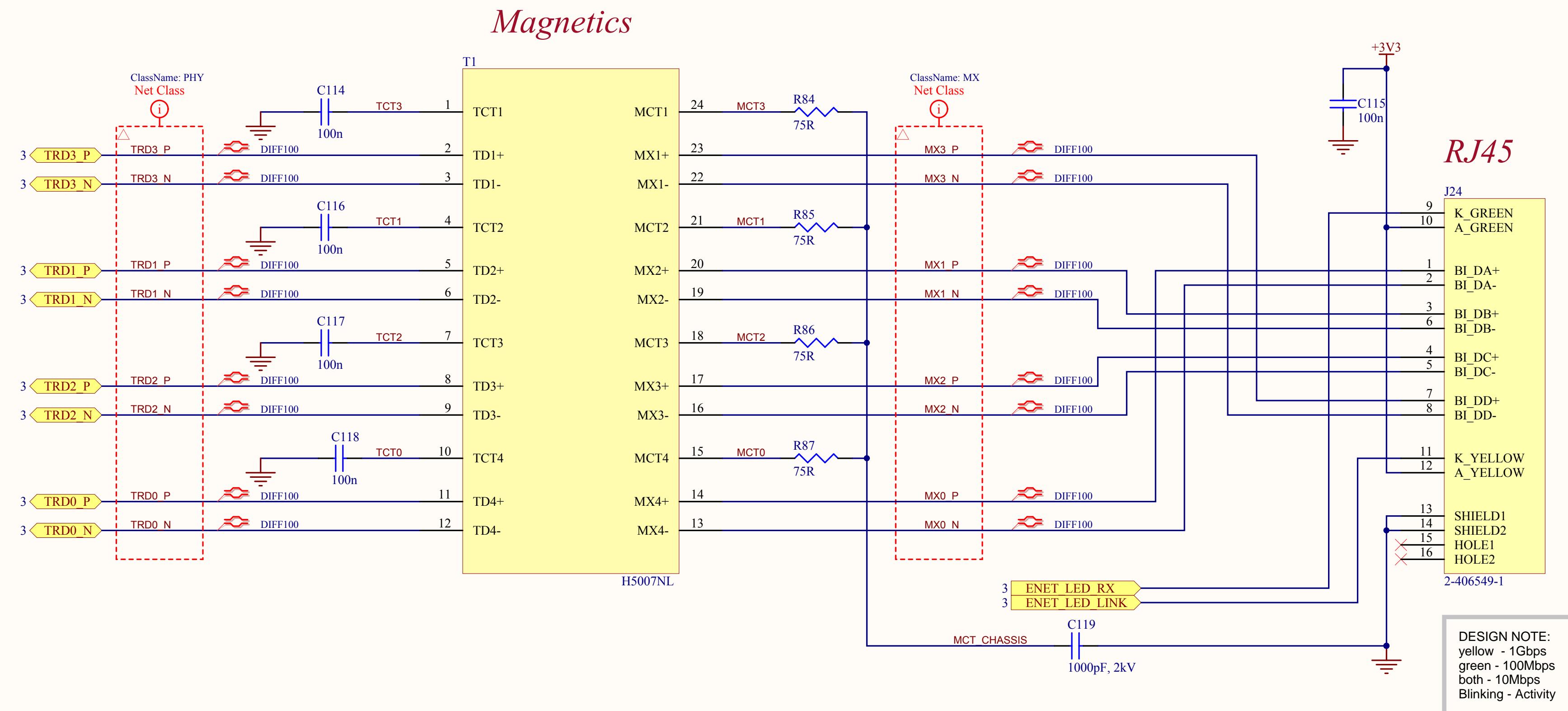
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Page Contents: [08] - LVDS.SchDoc	Checked by
Size: DWG NO	Revision: VIII
Date: 2. 12. 2013	Sheet 8 of 20

USB



ETHERNET

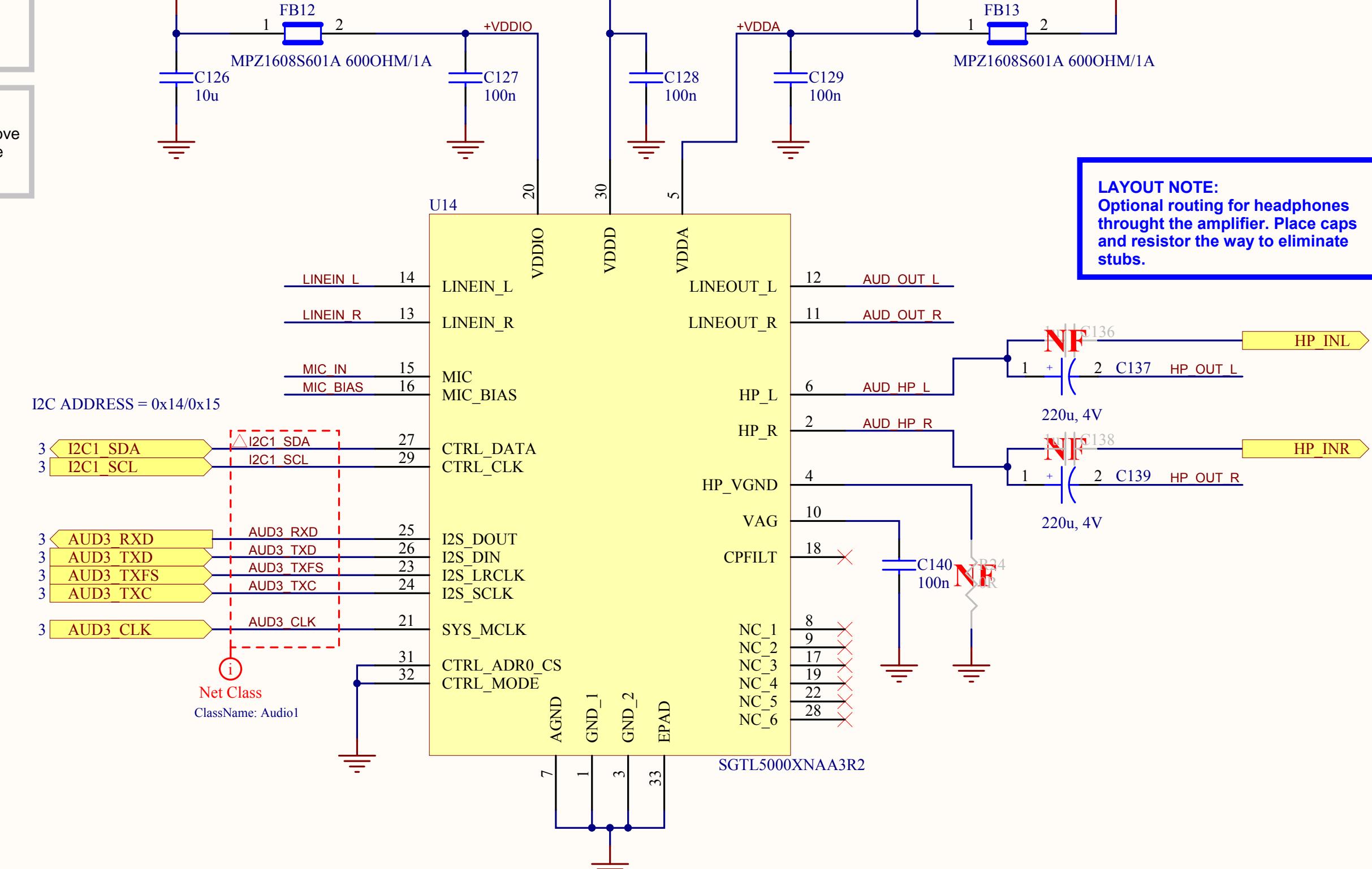


AUDIO1

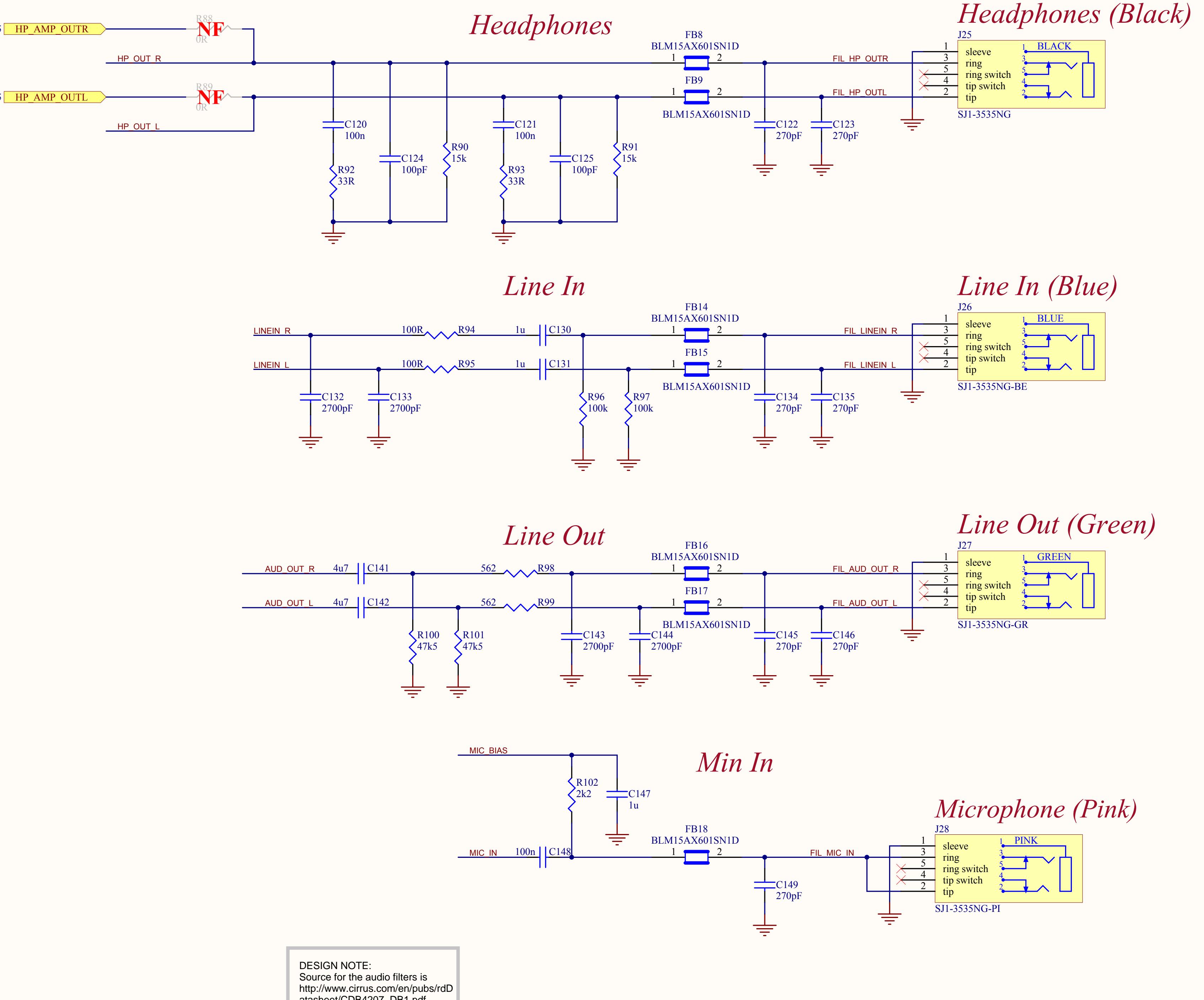
AUDIO CODEC (System audio connected to CPU)

DESIGN NOTE:
External VDDIO is required.

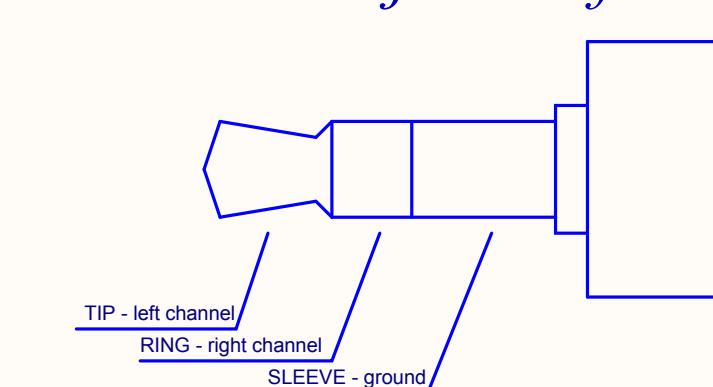
DESIGN NOTE:
If either VDDIO or VDDA is above 3V, the CPFILT pin must not be connected to capacitor.



LAYOUT NOTE:
Optional routing for headphones through the amplifier. Place caps and resistor the way to eliminate stubs.

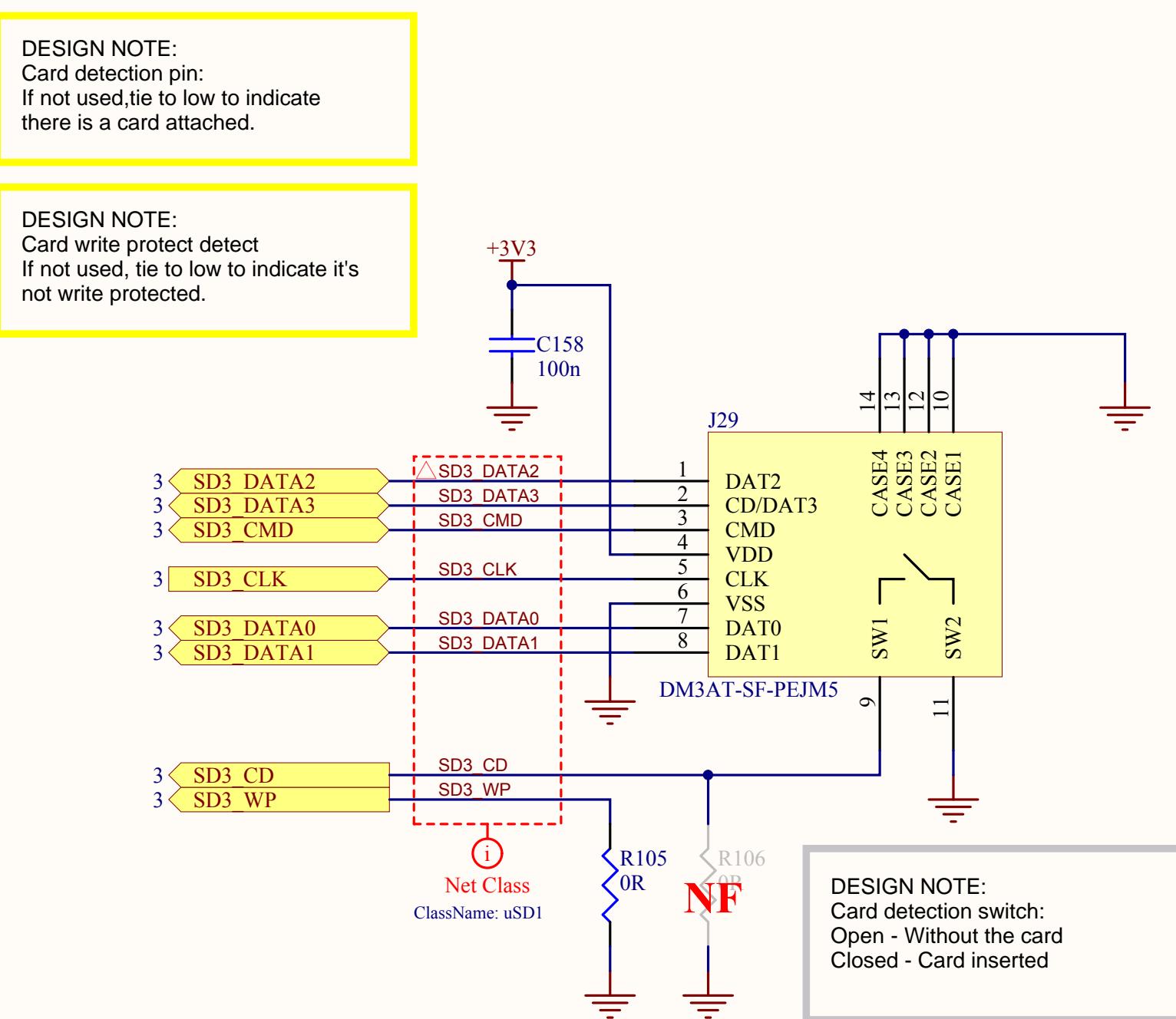


3.5mm jack reference

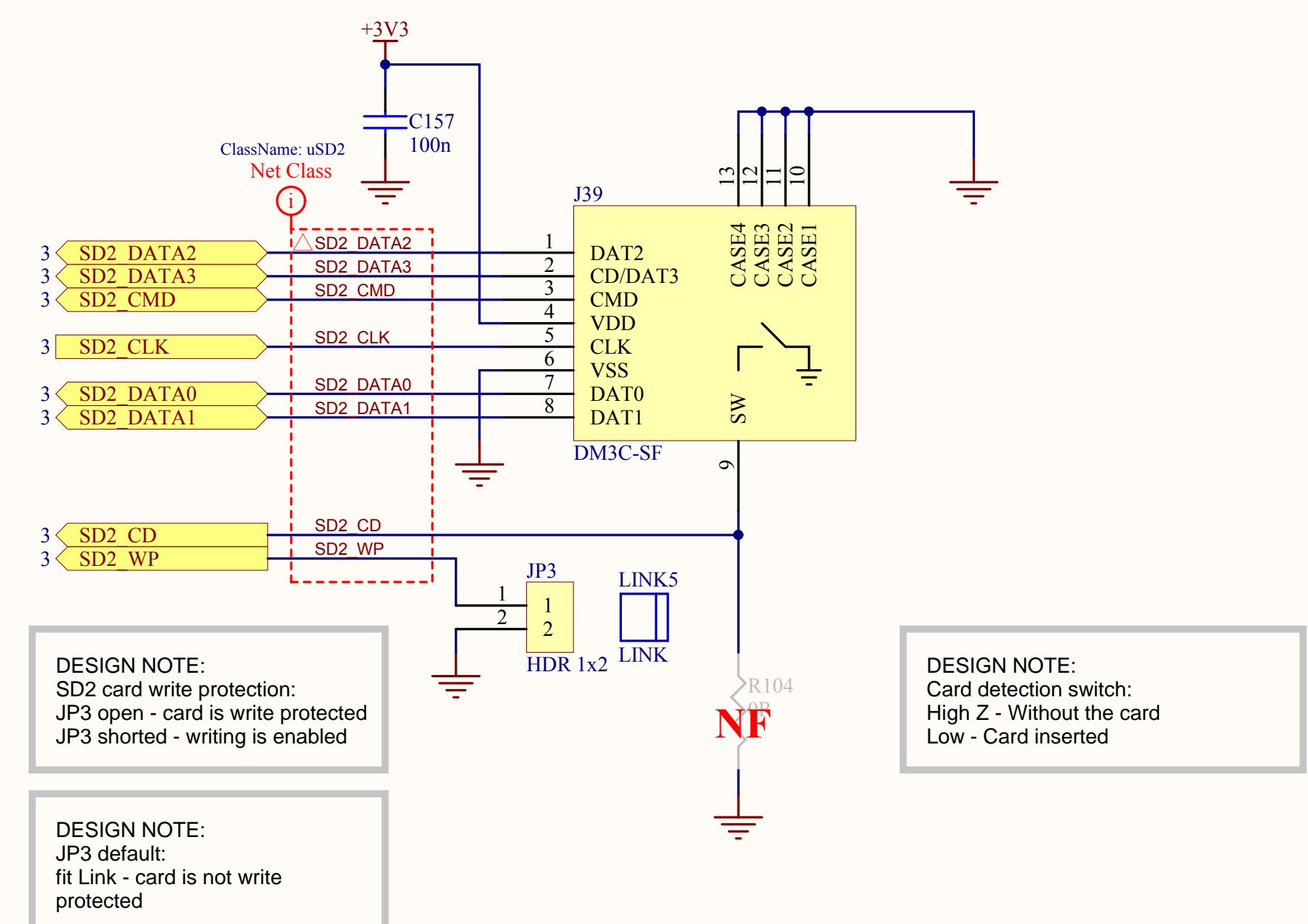


SD CARDS

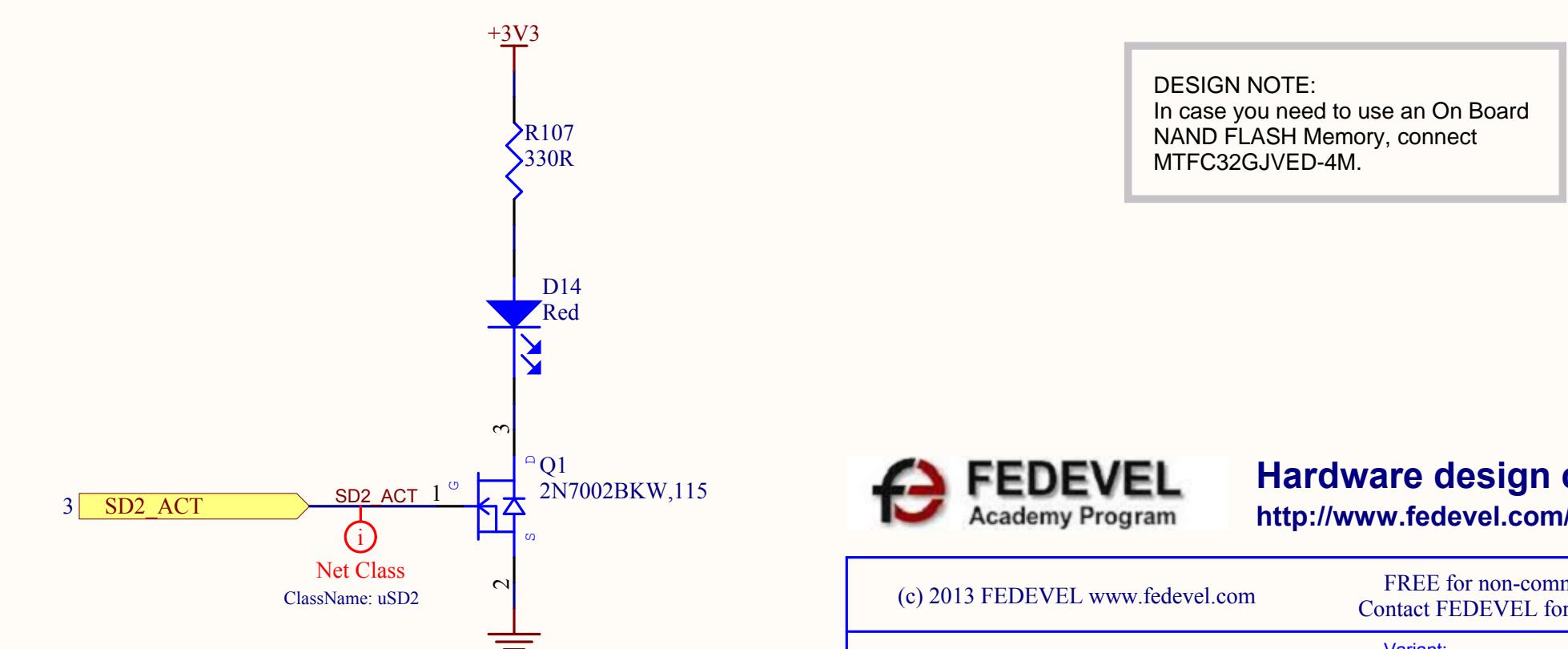
Micro SD1



Micro SD2 (intended to use for OS storage)



uSD2 Activity LED



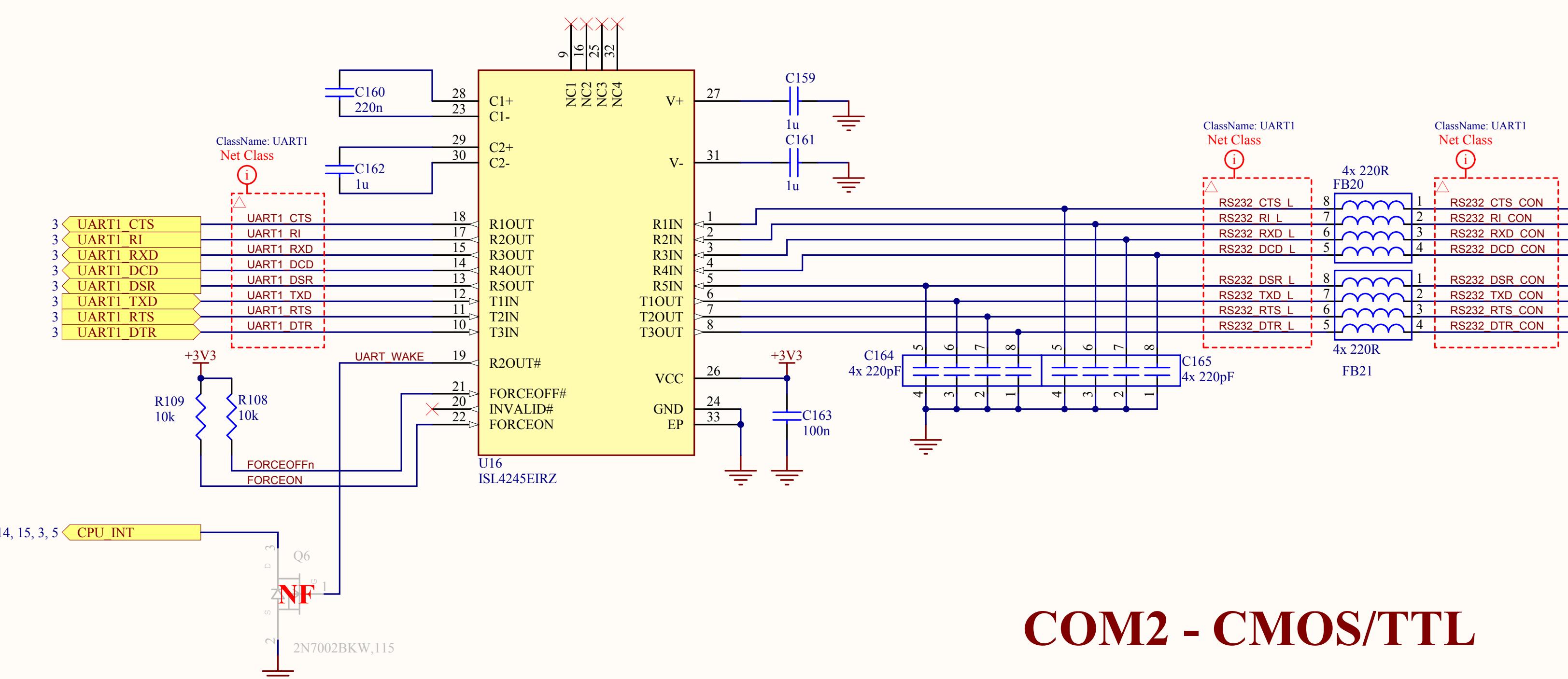
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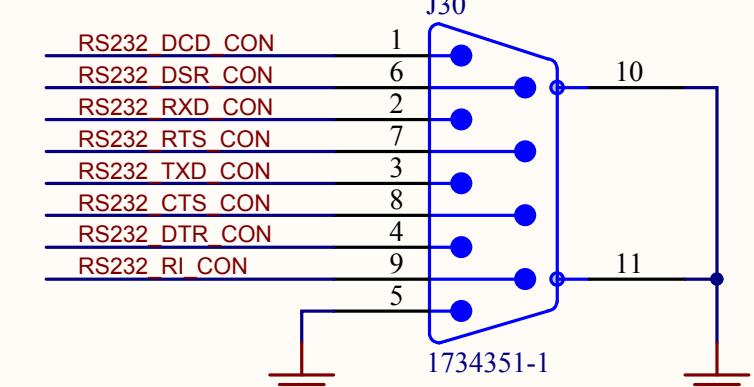
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Page Contents:	[12] - SD.SchDoc	Checked by
Size:	DWG NO	Revision: VIII
Date:	2. 12. 2013	Sheet 12 of 20

UARTS

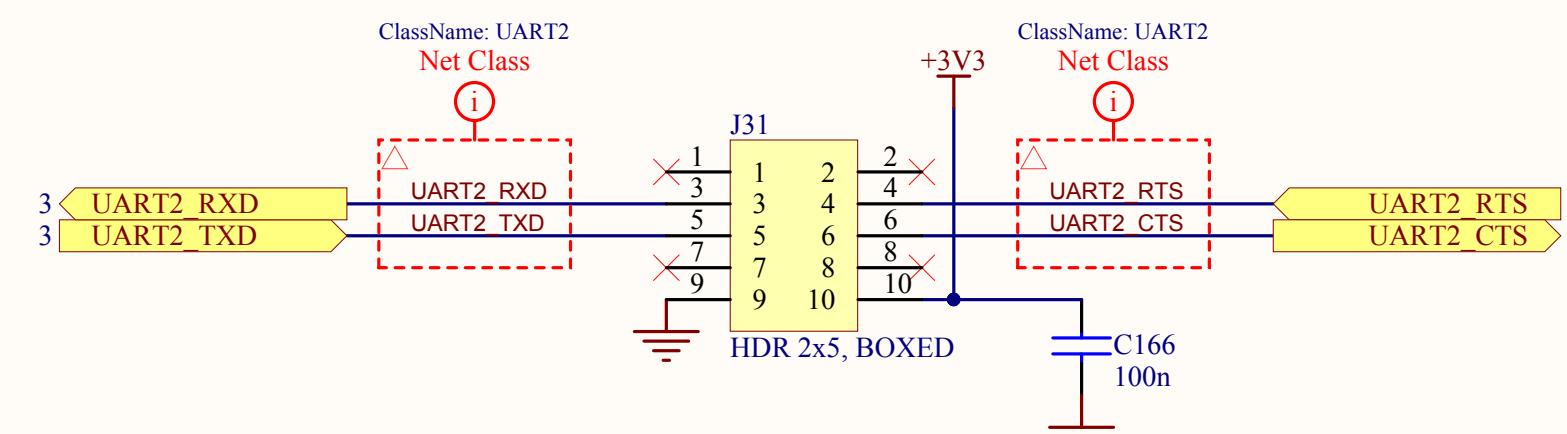
RS232 Transceiver



COM1 - RS232



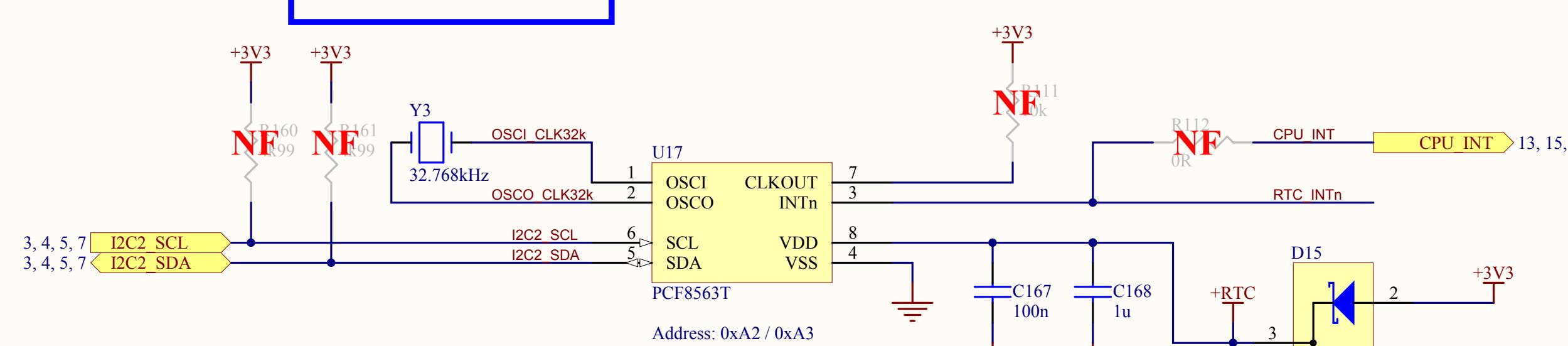
COM2 - CMOS/TTL



RTC, EEPROM, GPIO, TOUCH SCREEN

DESIGN NOTE:
Fit optional pullups for I₂C2 when there is a need for lower pullup value.

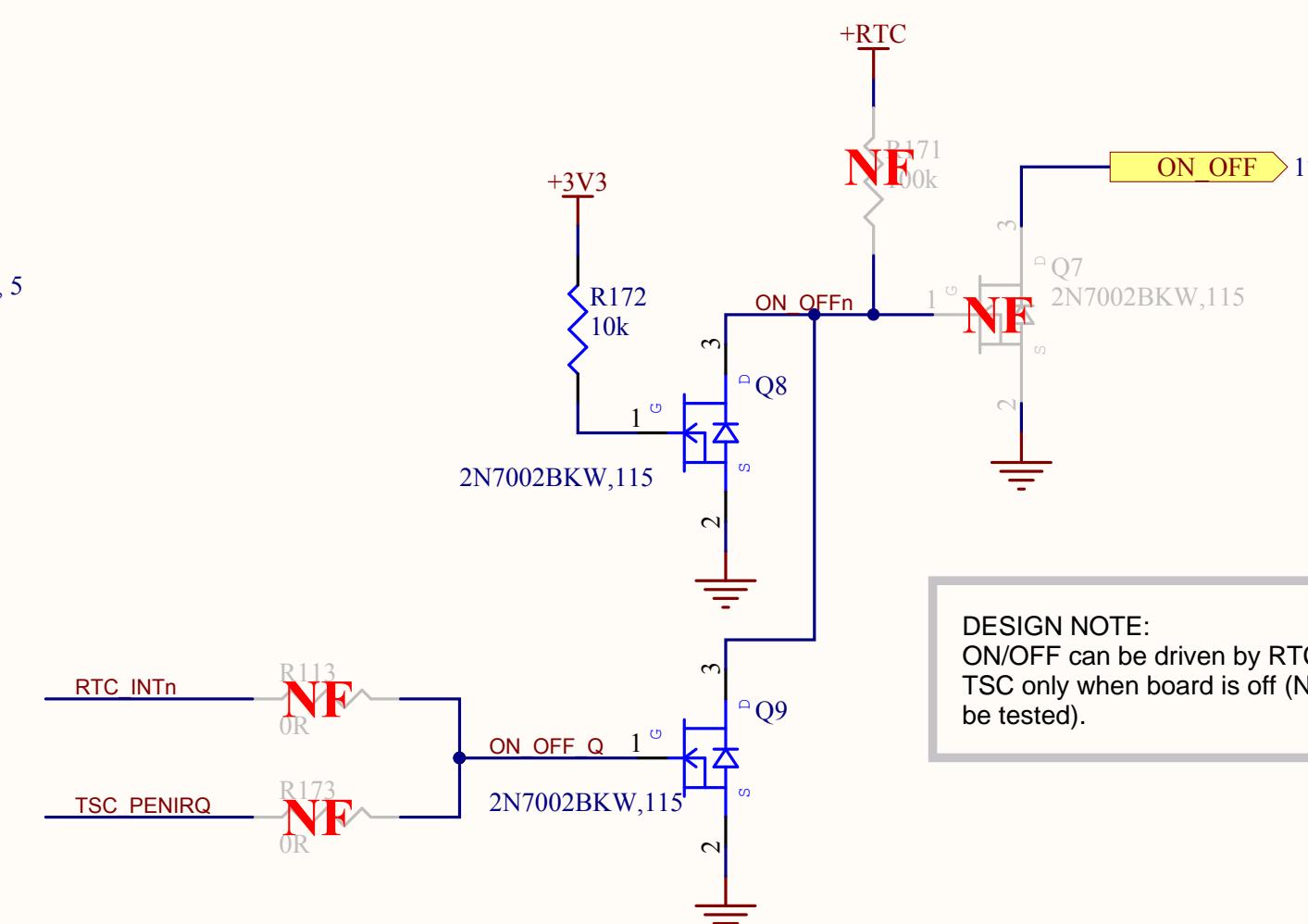
LAYOUT NOTE:
Place optional pullup resistor to the end of I₂C lines.



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

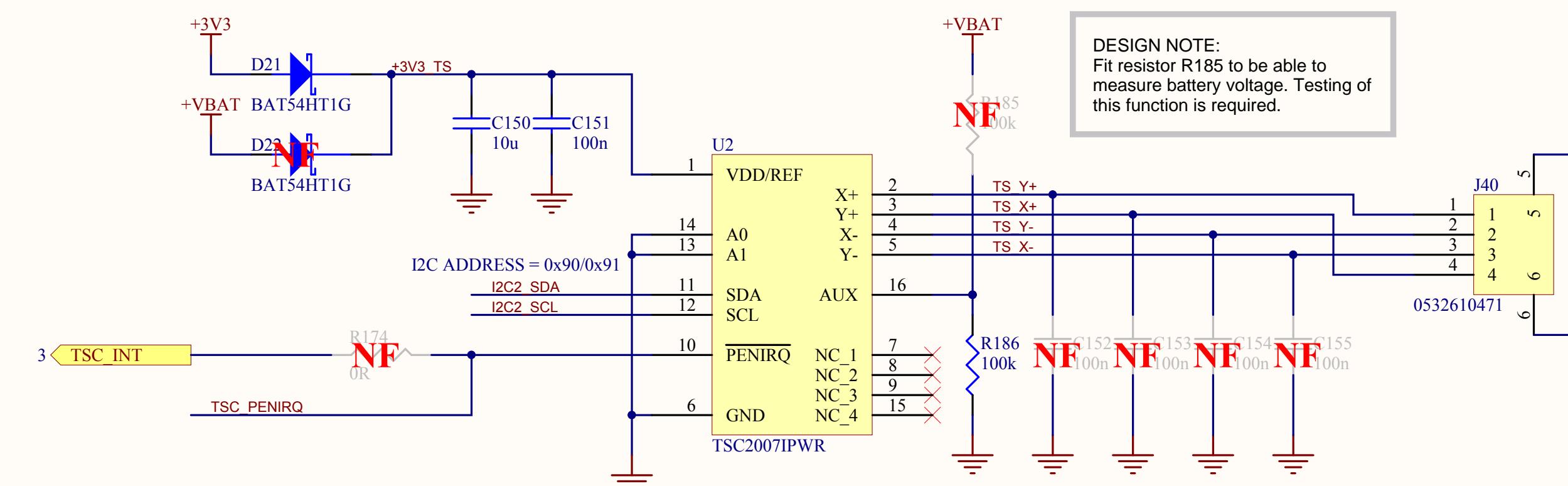
RTC Clock

RTC & Touch screen ON/OFF support



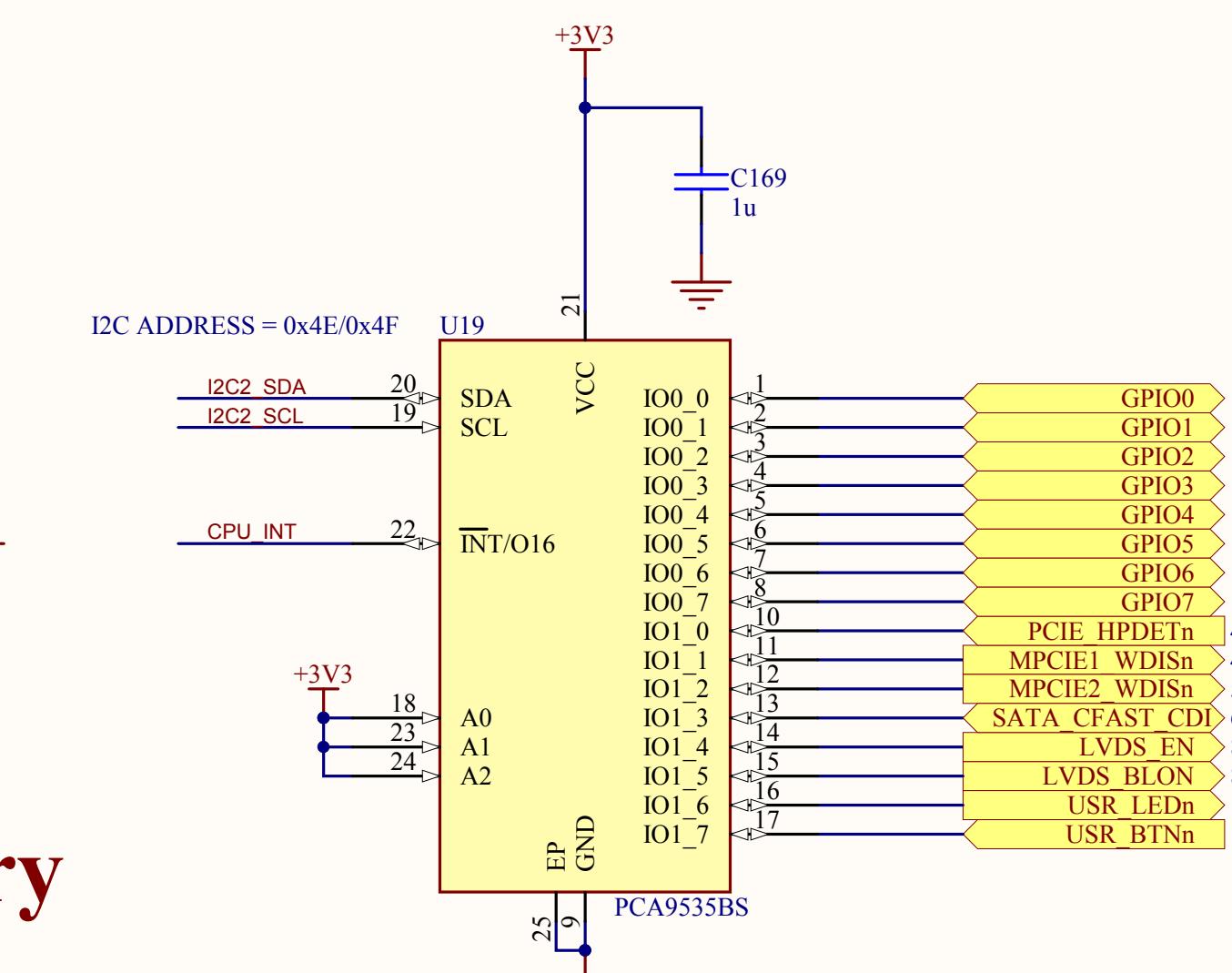
DESIGN NOTE:
ON/OFF can be driven by RTC and TSC only when board is off (Needs to be tested).

Touch screen controller

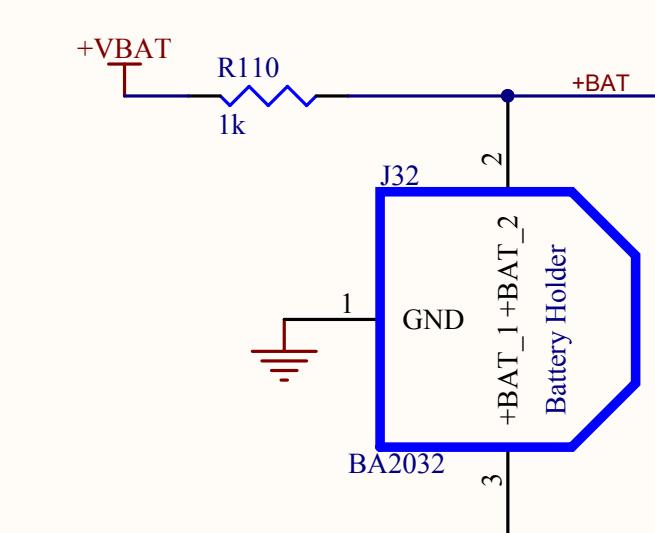
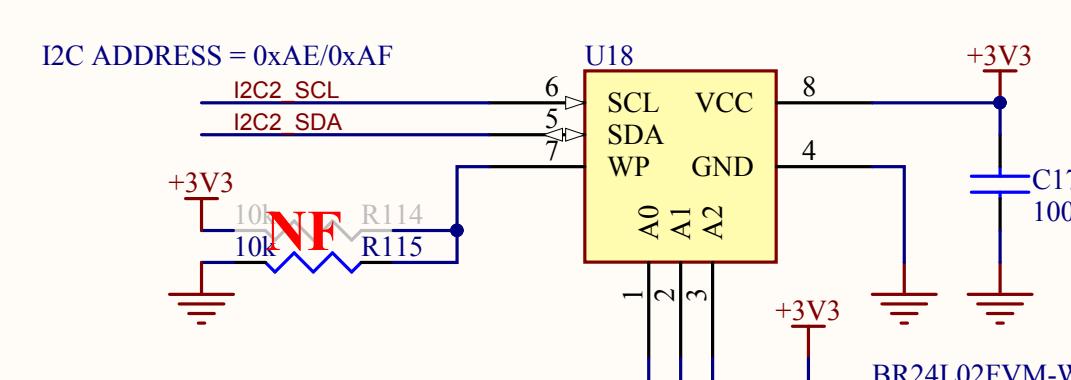


DESIGN NOTE:
Fit resistor R185 to be able to measure battery voltage. Testing of this function is required.

I2C GPIO Expander



EEPROM



RTC Battery

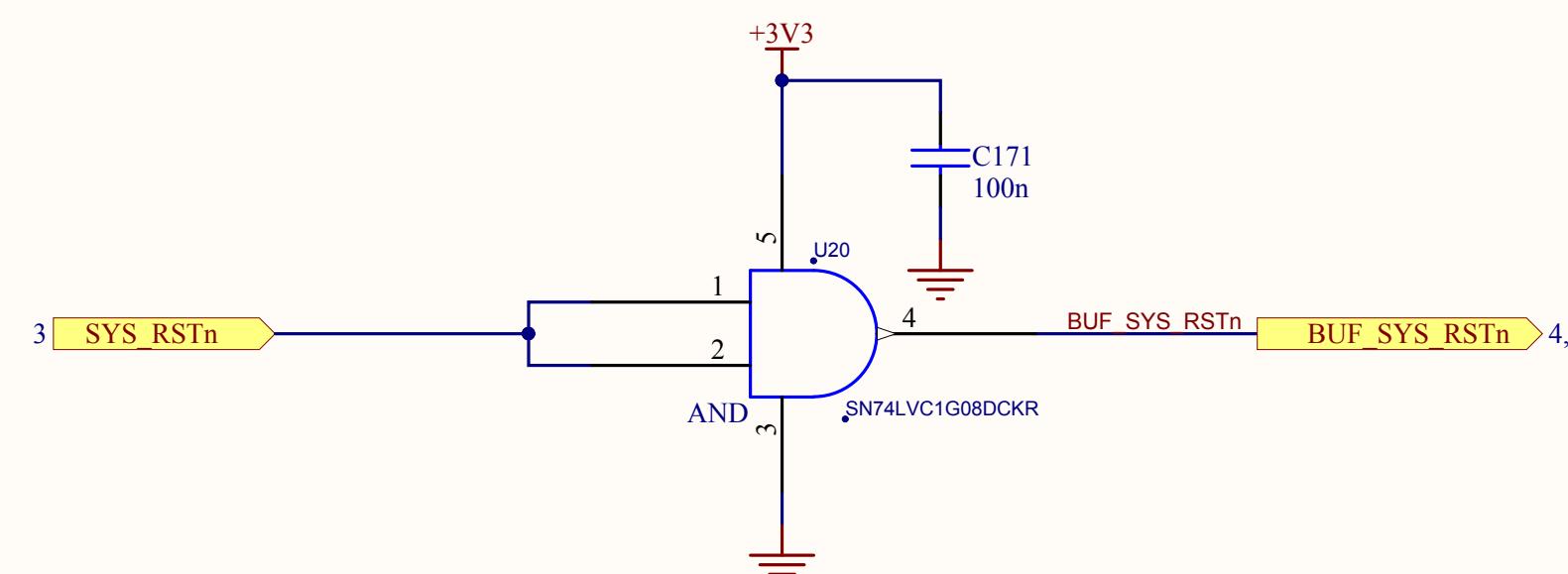
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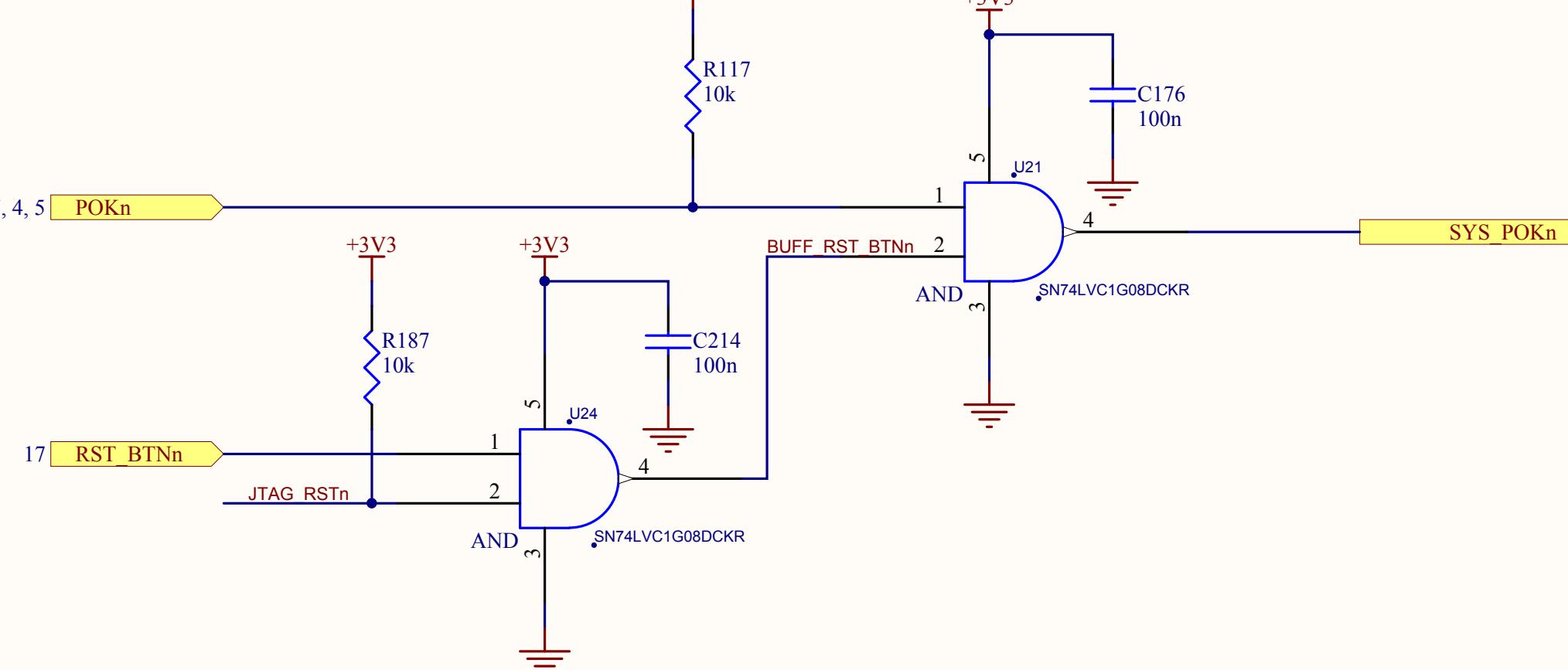
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Variant:	Prototype
Page Contents:	[14] - RTC, EEPROM, GPIO, TOUCH SCREEN.SchDoc
Size:	DWG NO
Revision:	VIII
Date:	2. 12. 2013
Sheet	14 of 20

MISC, JTAG, HEADERS

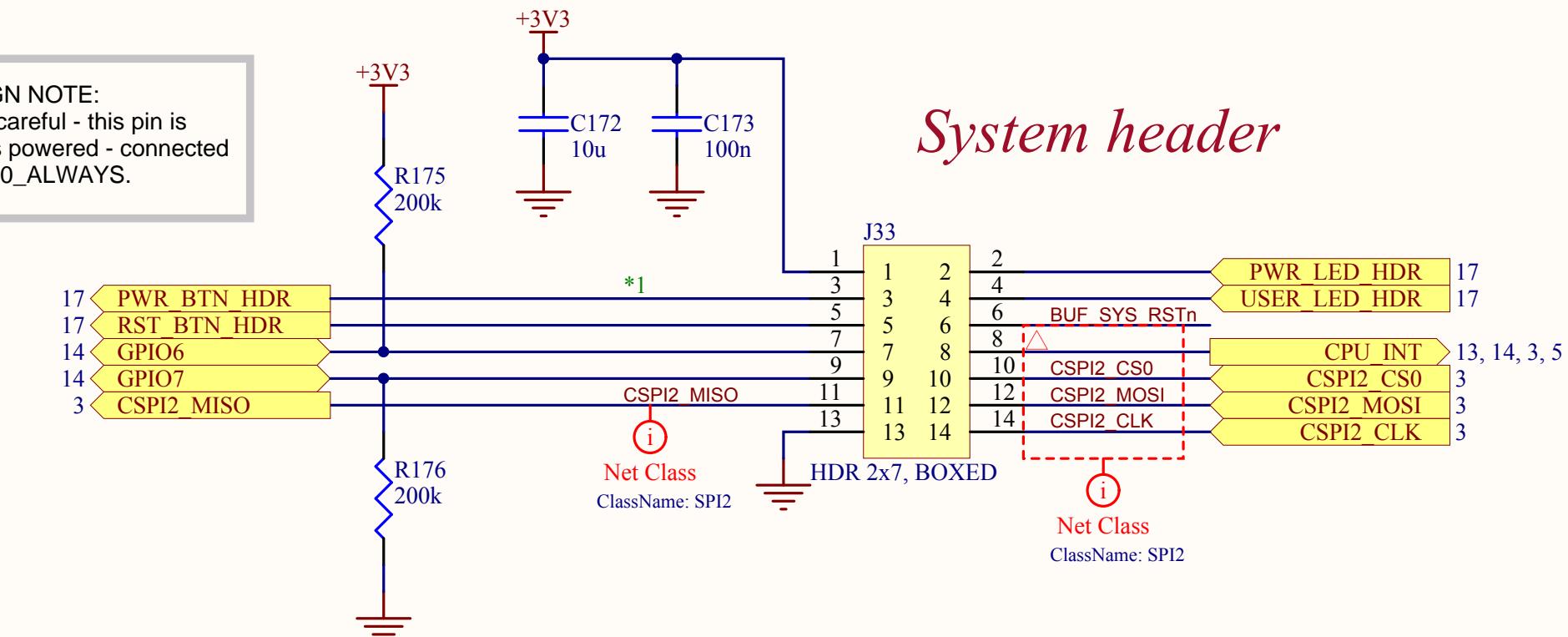
Reset buffers



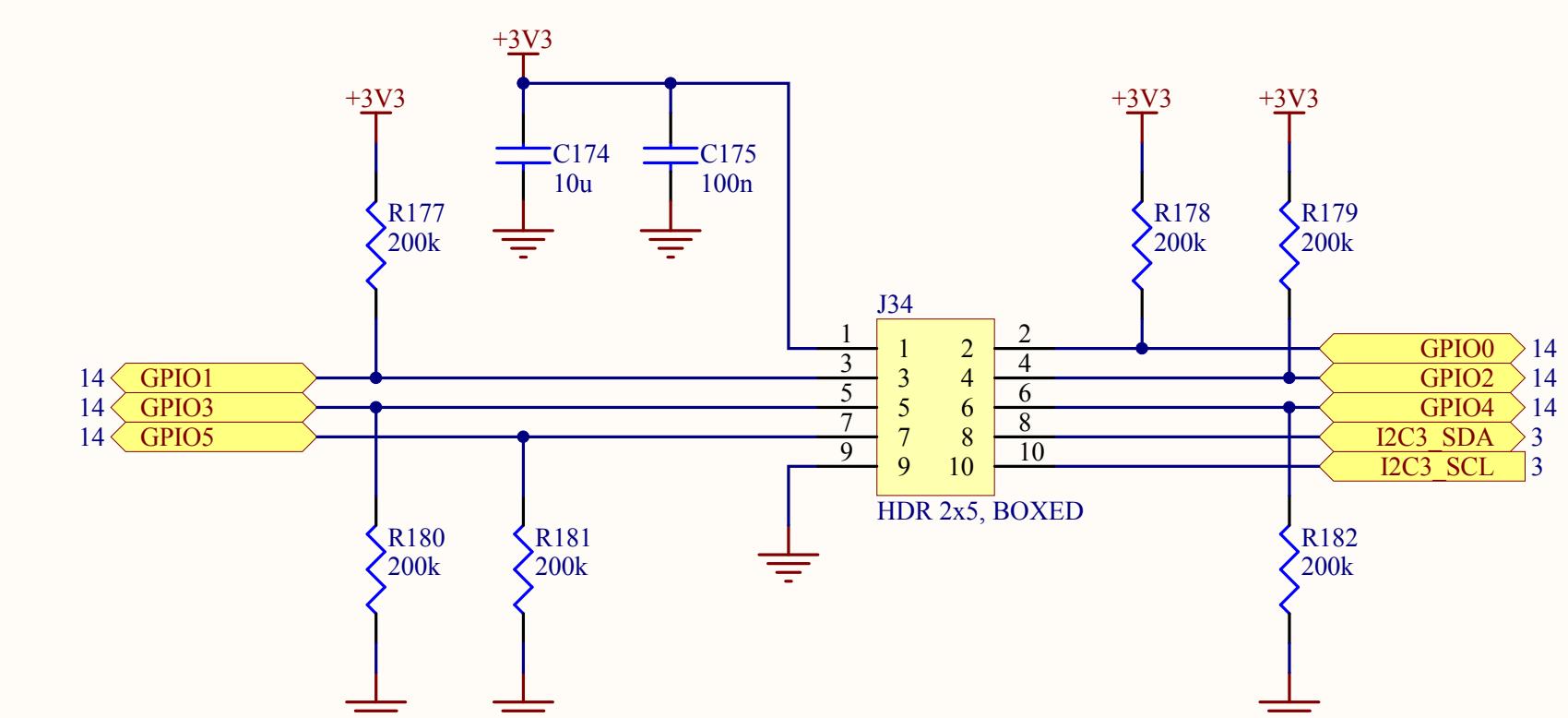
DESIGN NOTE:
*1 Be careful - this pin is always powered - connected to +3V0_ALWAYS.



Headers

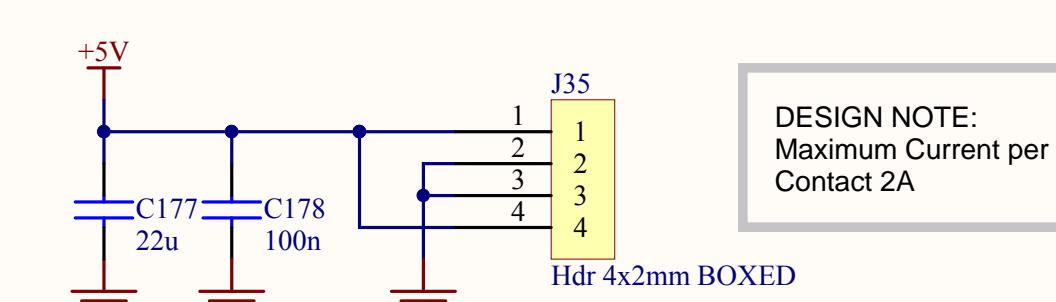


System header

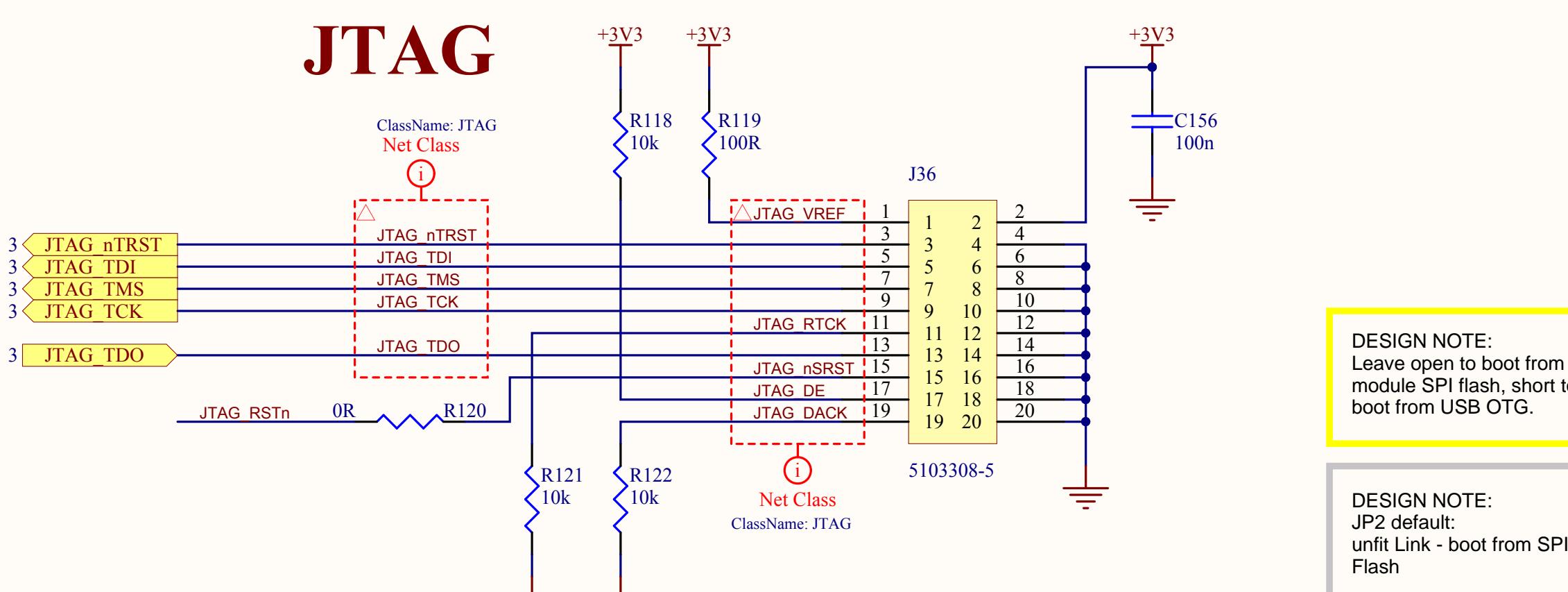


GPIO header

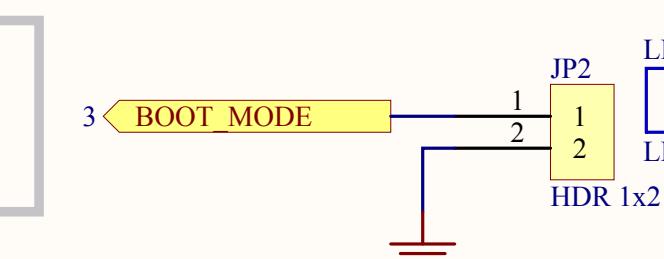
+5V Out
(For General Use eg. HDD power)



JTAG



Boot mode selection

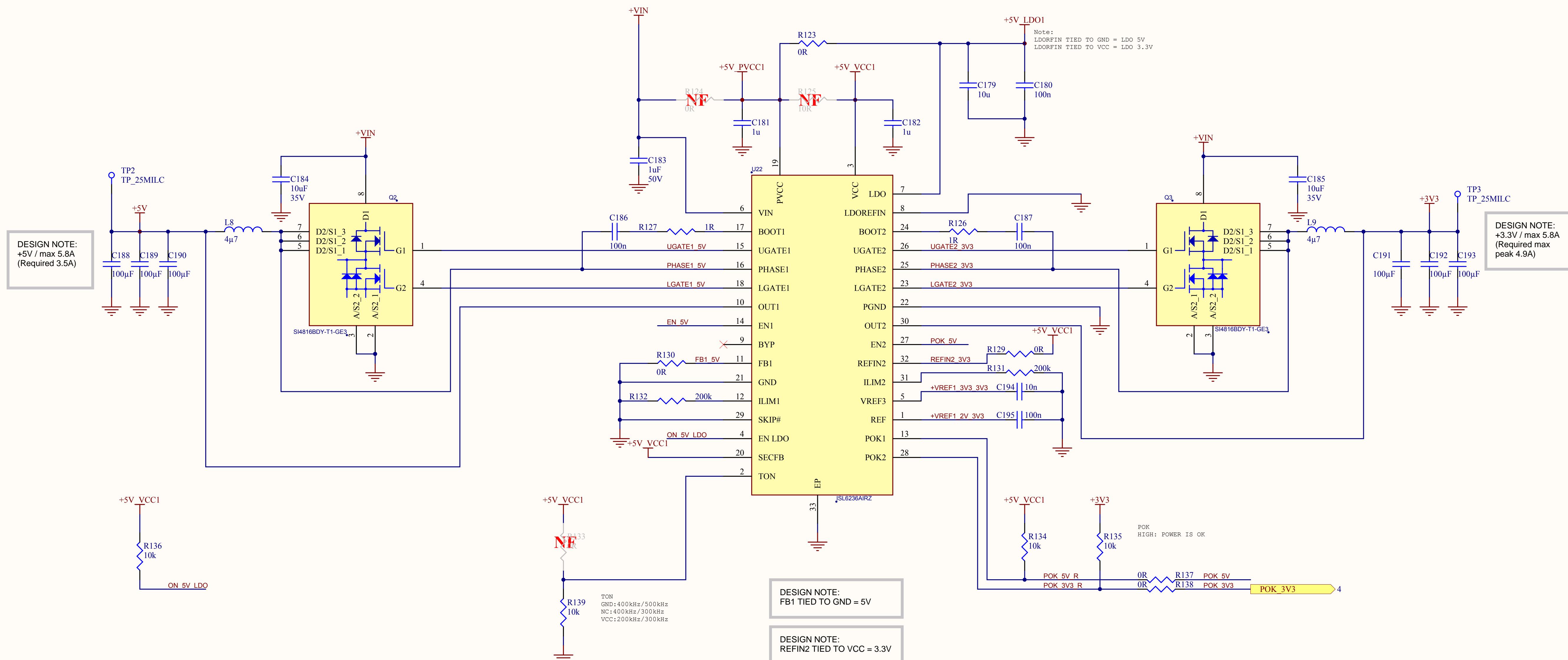


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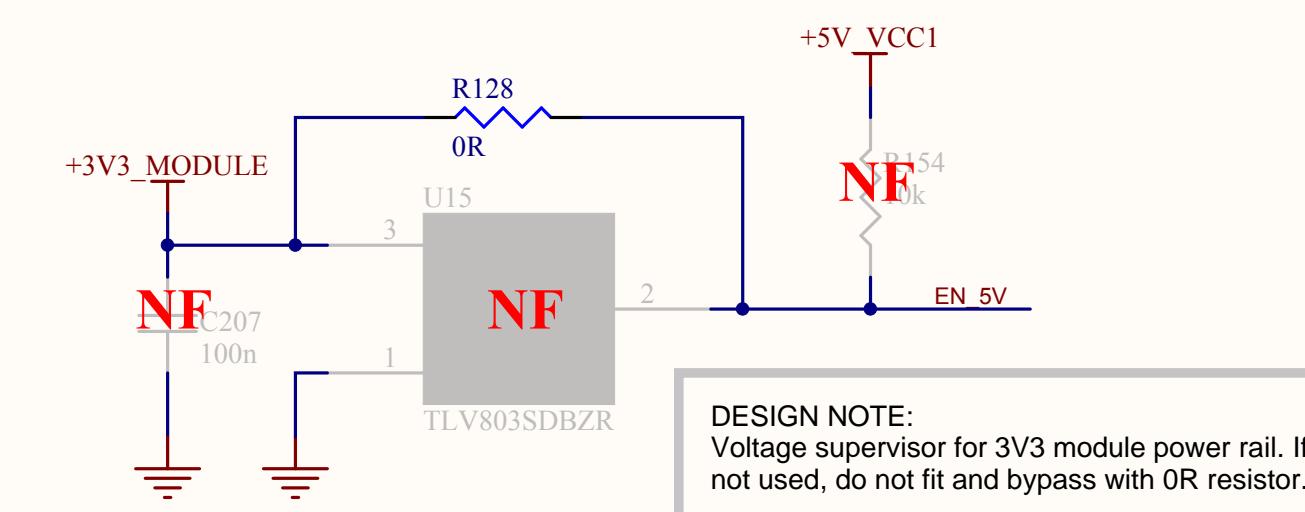
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Page Contents:	[15] - MISC, JTAG, HEADERS.SchDoc	Checked by
Size:	DWG NO	Revision: VIII
Date:	2. 12. 2013	Sheet 15 of 20

POWERS +5V, +3V3



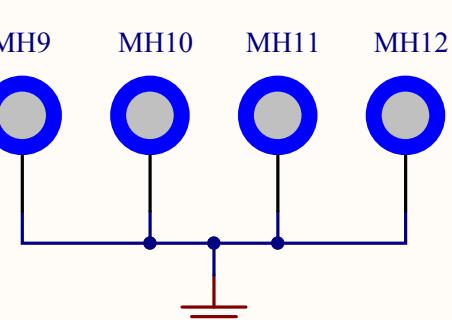
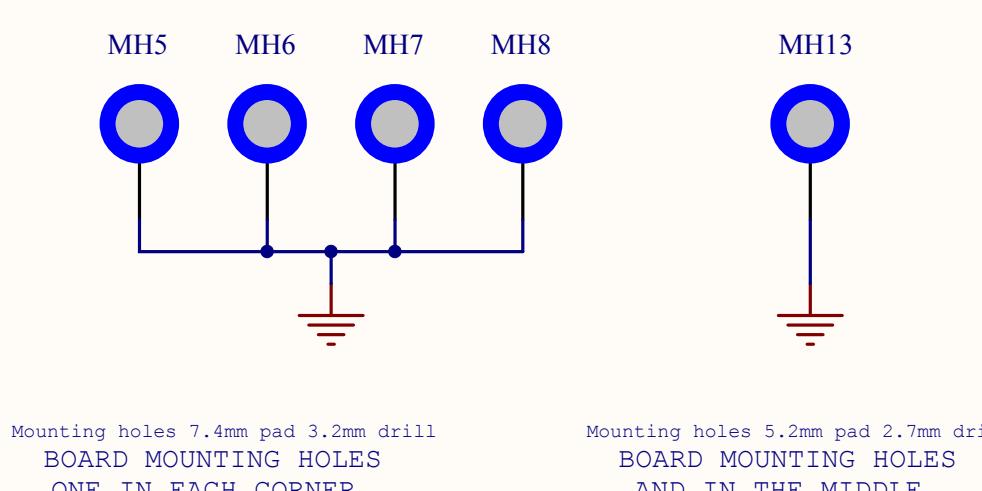
+3V3 MODULE voltage monitor



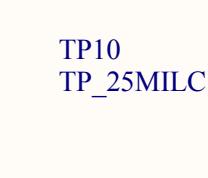
PWR IN, LEDS, BUTTONS, MECH

Mechanical

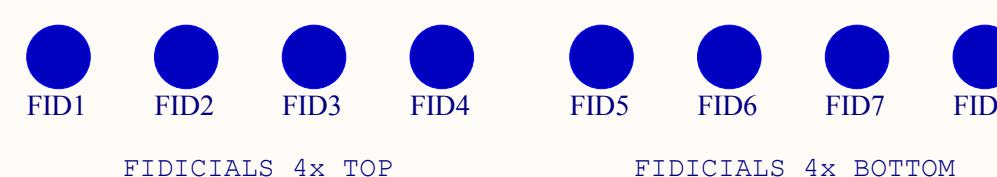
Mounting holes



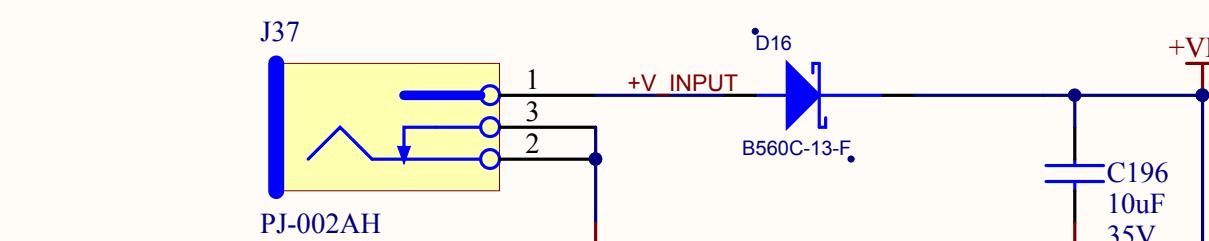
Gnd testpoint



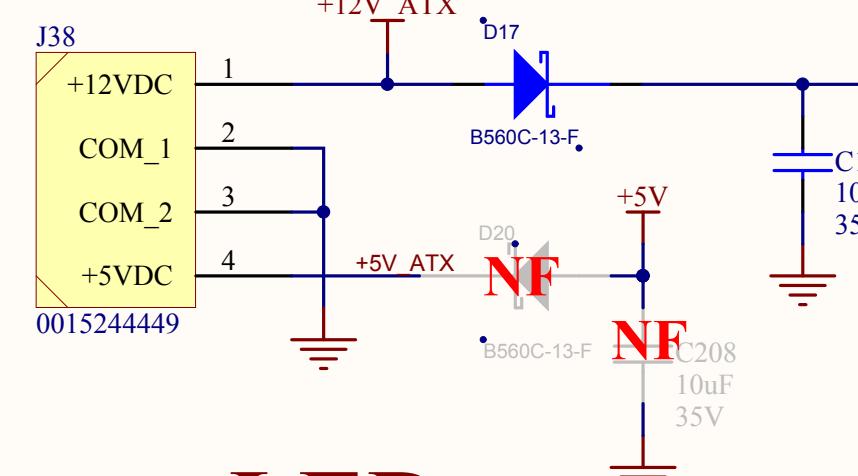
Fiducials



Power Input



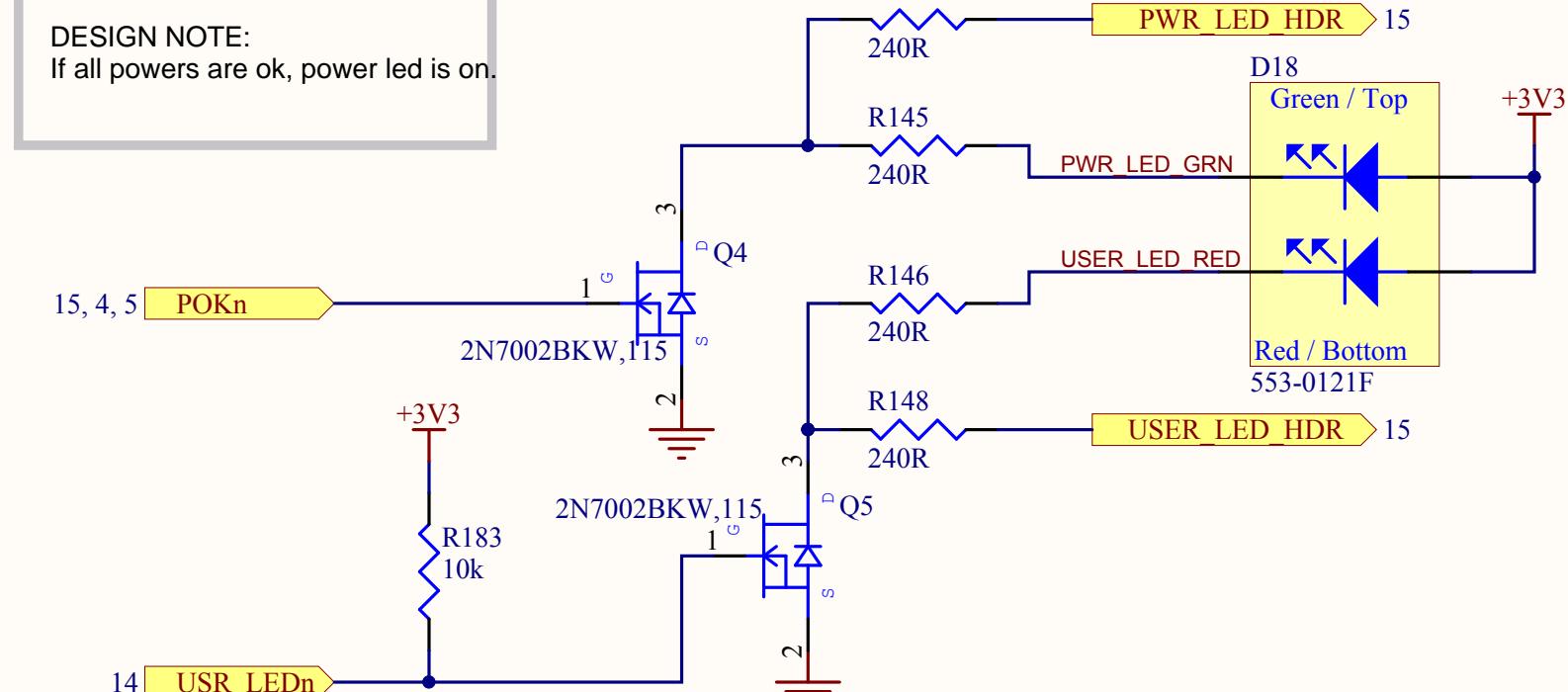
ATX power connector (Optional)



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.

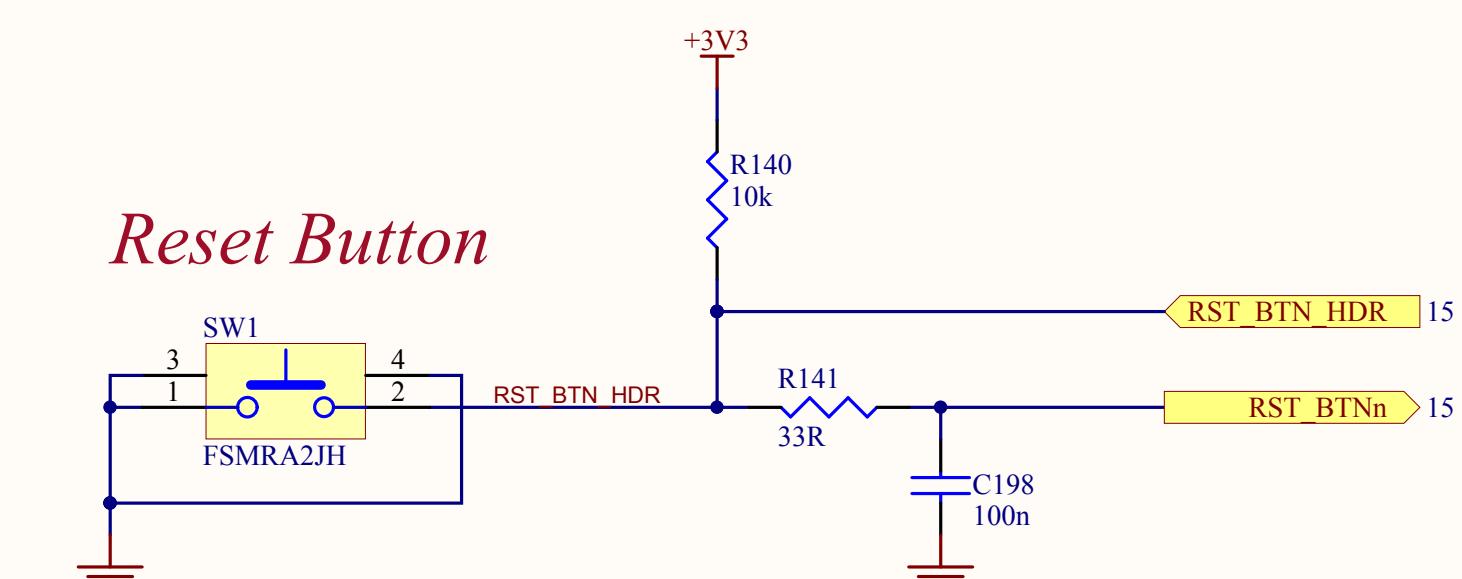
DESIGN NOTE:
If ATX connector is used for supplying baseboard with power, fit D17 and C197. If is used as power output then fit D20 and C197. Do not fit both diodes at once!

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

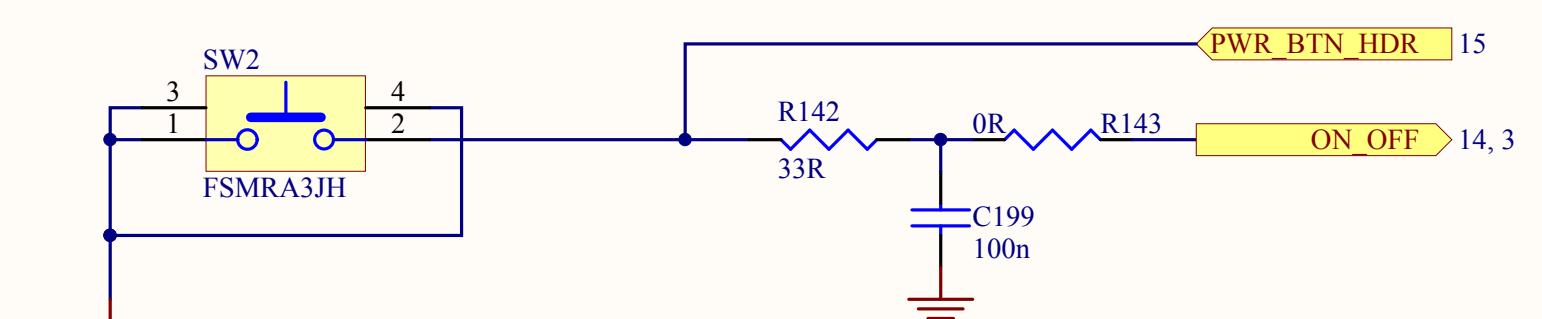
DESIGN NOTE:
Optional: A 2.5" hard drive can be supplied from this connector (requires only +5V power). Use standard SATA power cable and fit the correct ATX connector on the Baseboard.

Buttons

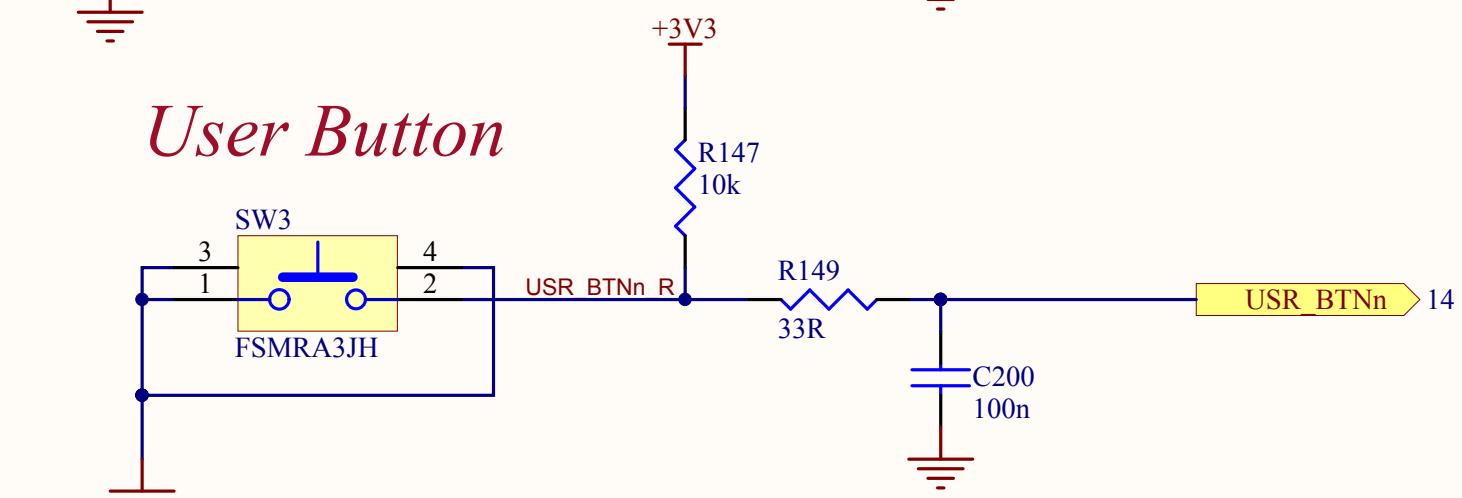
Reset Button



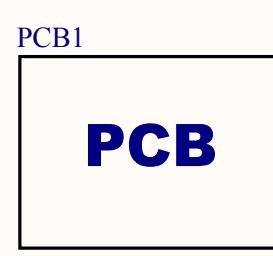
Power Button



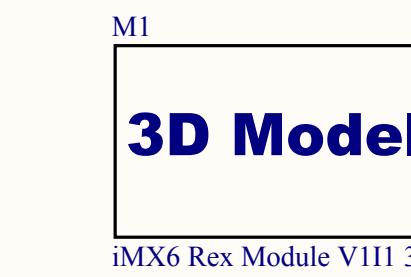
User Button



PCB



iMX6 Rex Module 3D Model

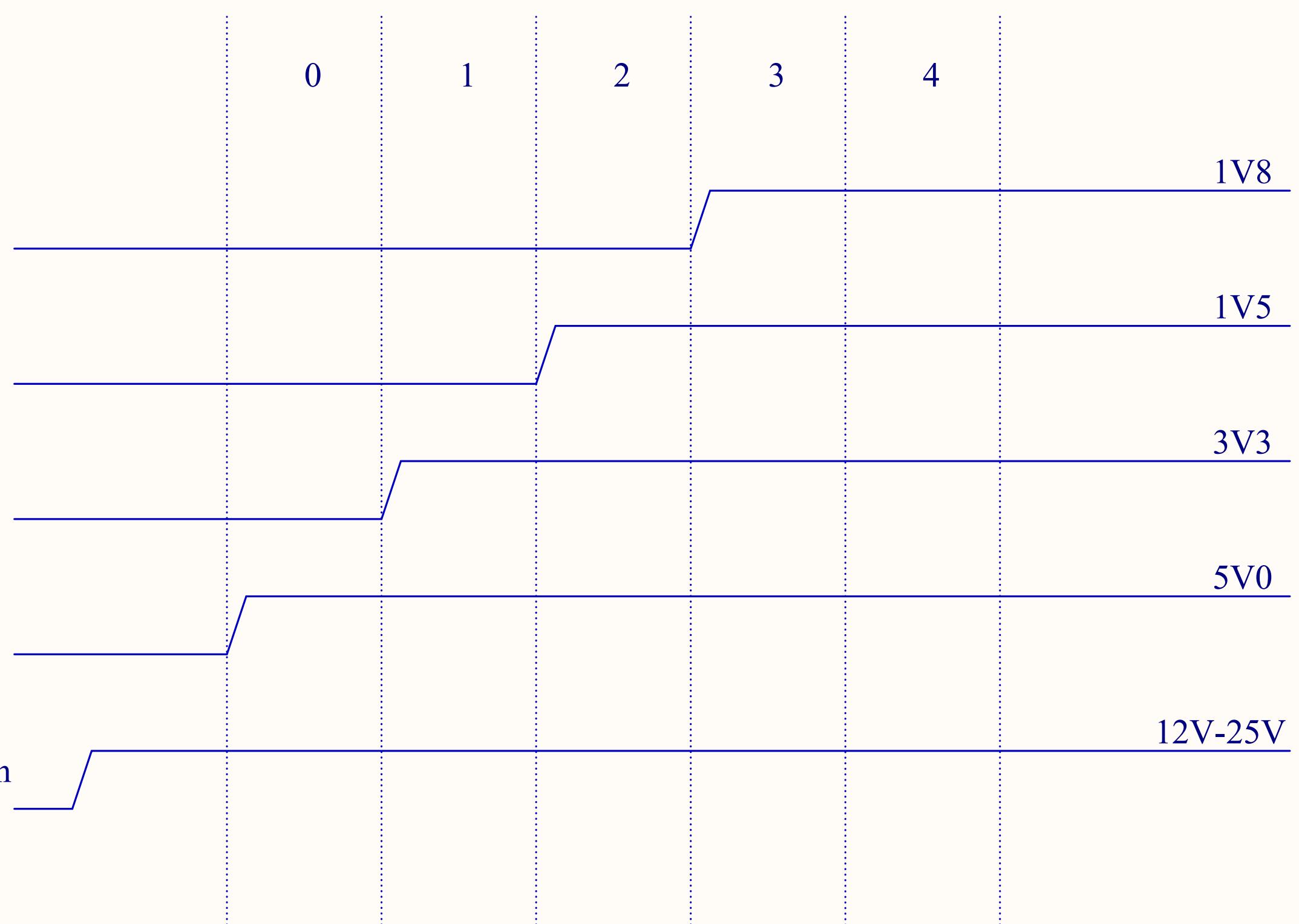


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Variant:	Prototype
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Checked by:	
Size:	DWG NO
Revision:	VIII
Date:	2. 12. 2013
Sheet	17 of 20

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)	



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Title:	iMX6 Rex Development Baseboard	Variant: Prototype
Page Contents:	[18] - DOC, POWER SEQUENCING.SchDoc	Checked by
Size:	DWG NO	Revision: VIII
Date:	2. 12. 2013	Sheet 18 of 20

REVISION HISTORY



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Variant: Title: iMX6 Rex Development Baseboard		Prototype
Page Contents: [19] - REVISION HISTORY.SchDoc		Checked by
Size:	DWG NO	Revision: VIII
Date:	2. 12. 2013	Sheet 19 of 20

[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

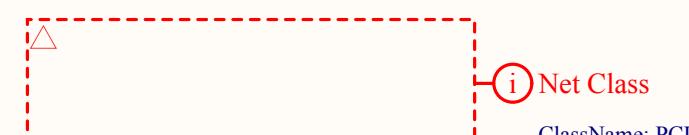
TEMPLATE NOTES

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

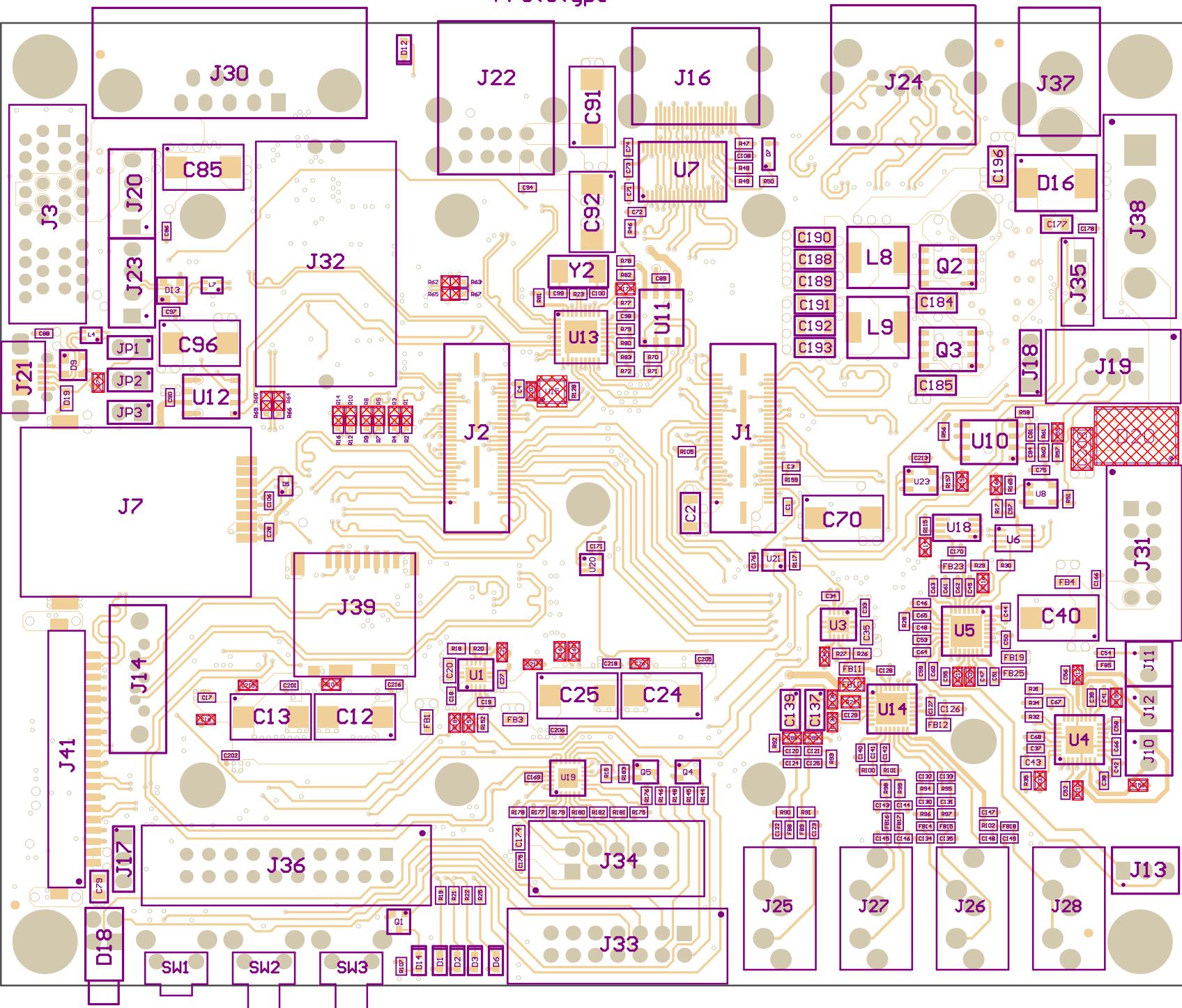


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Page Contents:	iMX6 Rex Development Baseboard V111 Project.SchDoc Checked by
Size:	DWG NO
Date:	2. 12. 2013
Variant:	Prototype
Revision:	V111
Sheet	20 of 20

Assembly TOP of iMX6 Rex Development Baseboard V1I1

Prototype



Assembly BOTTOM of iMX6 Rex Development Baseboard V1II

Prototype

