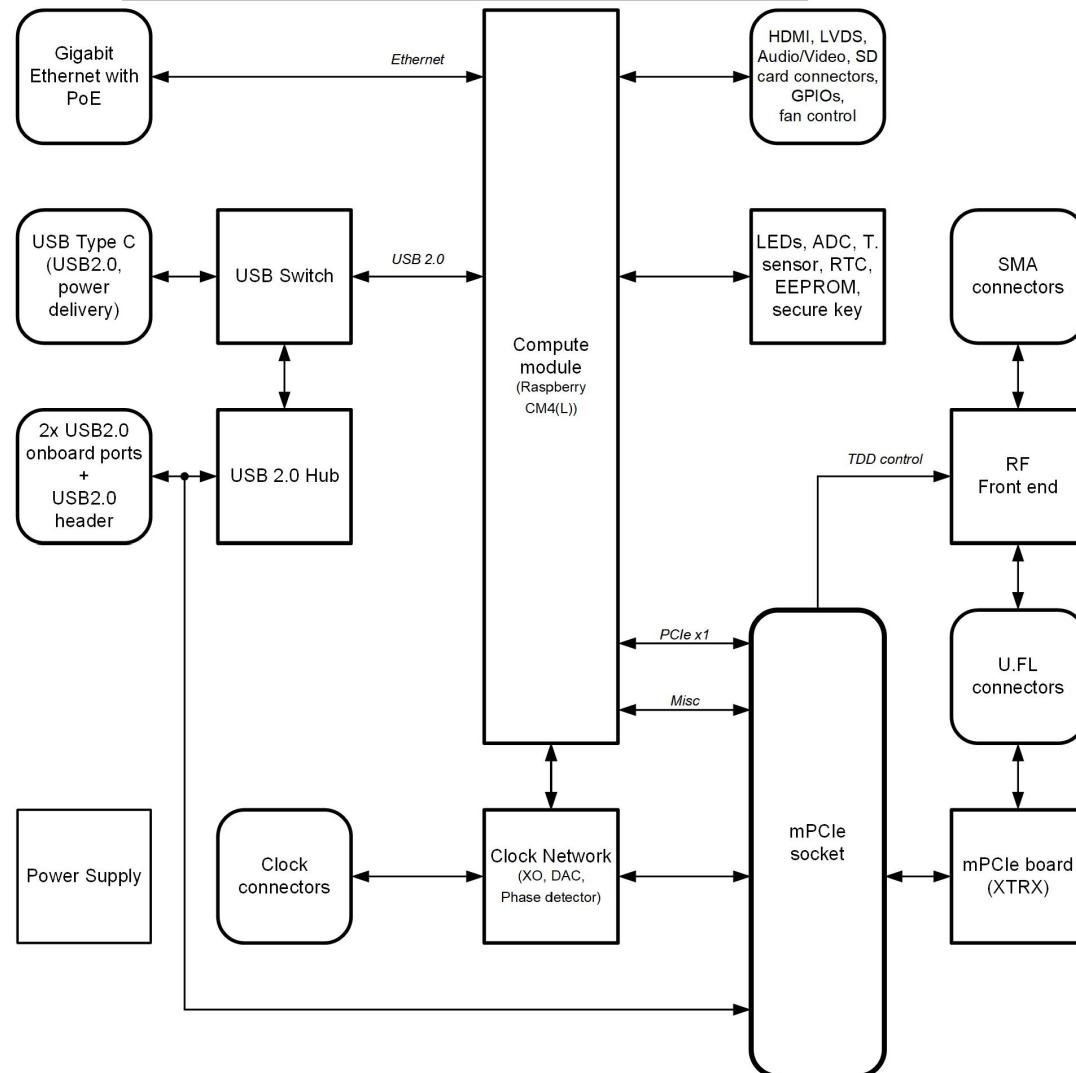


Block diagram



Project name: **LimeKEY-RPCM_Iv1.PrjPcb**

Title: **Block diagram**

Size: **A4** Revision: **v1.1**

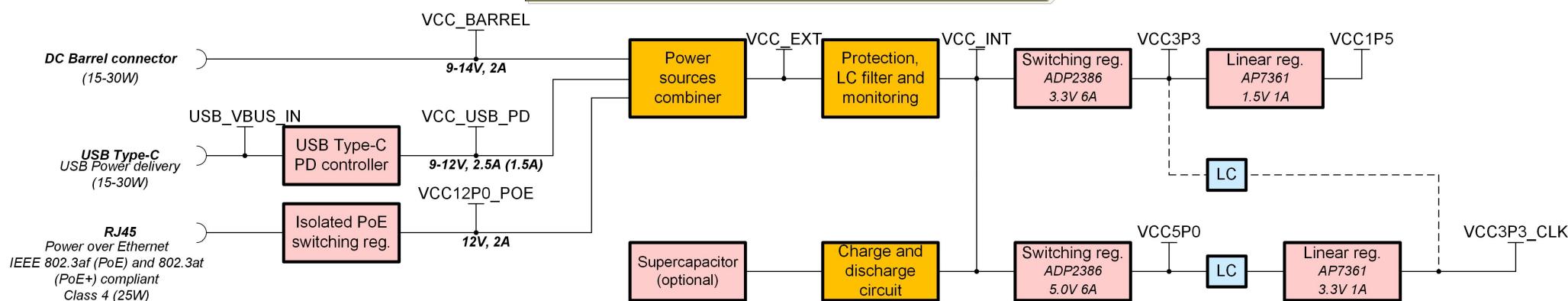
Date: **2023-03-10** Time: **11:14:22** Sheet **1** of **12**

File: **01_Block_diag.SchDoc**

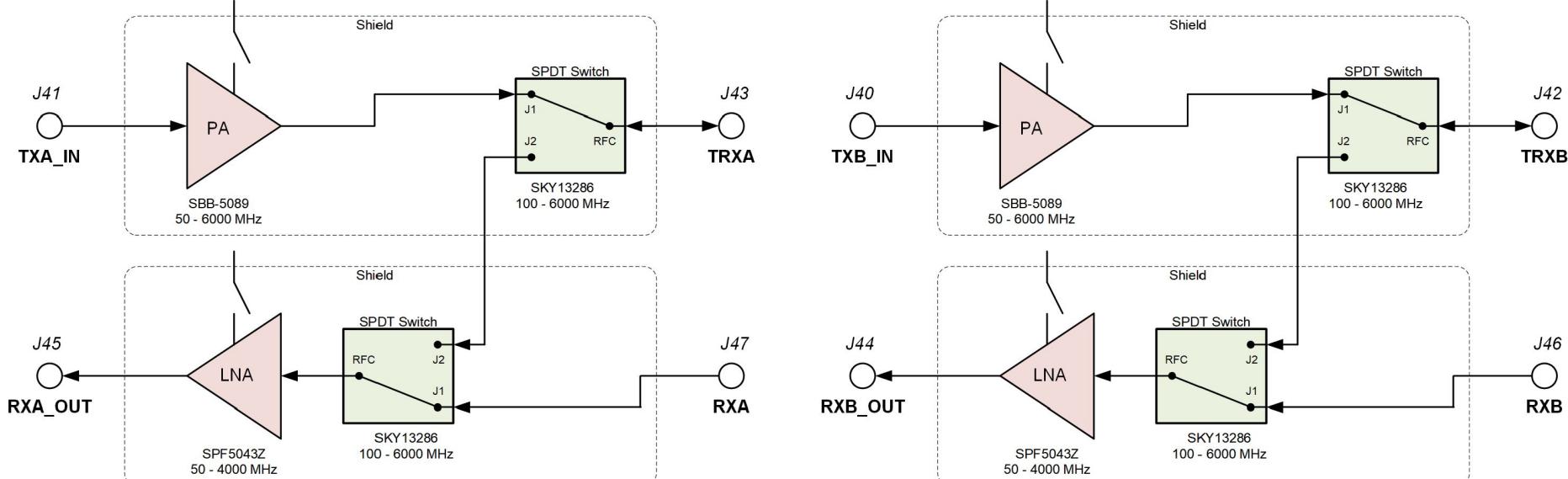
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Guildford GU2 7YG
Surrey
United Kingdom



Power diagram



USB



* All RF switches are controlled by the same signal RF_SW_TDD

Project name: **LimeKEY-RPCM_Iv1.PrjPcb**

Title: **Power diagram**

Size: **A4**

Revision: **v1.1**

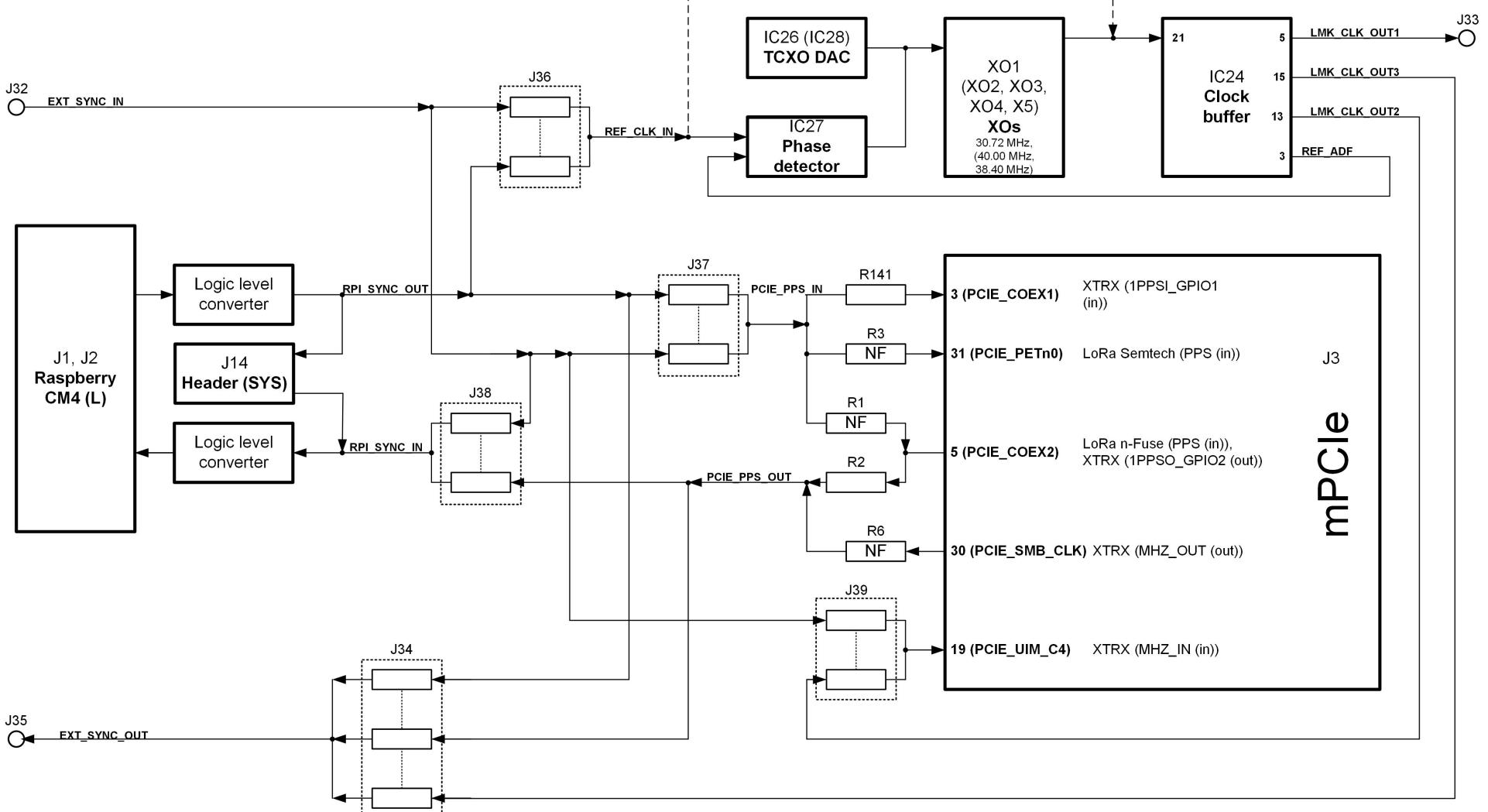
Date: **2023-03-10**

Time: **11:14:25**

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Surrey
United Kingdom



Clock diagram



Project name: **LimeKEY-RPCM_Iv1.PrbPcb**

Title: **Clock diagram**

Size: **A4**

Revision: **v1.1**

Date: **2023-03-10**

Time: **11:14:30**

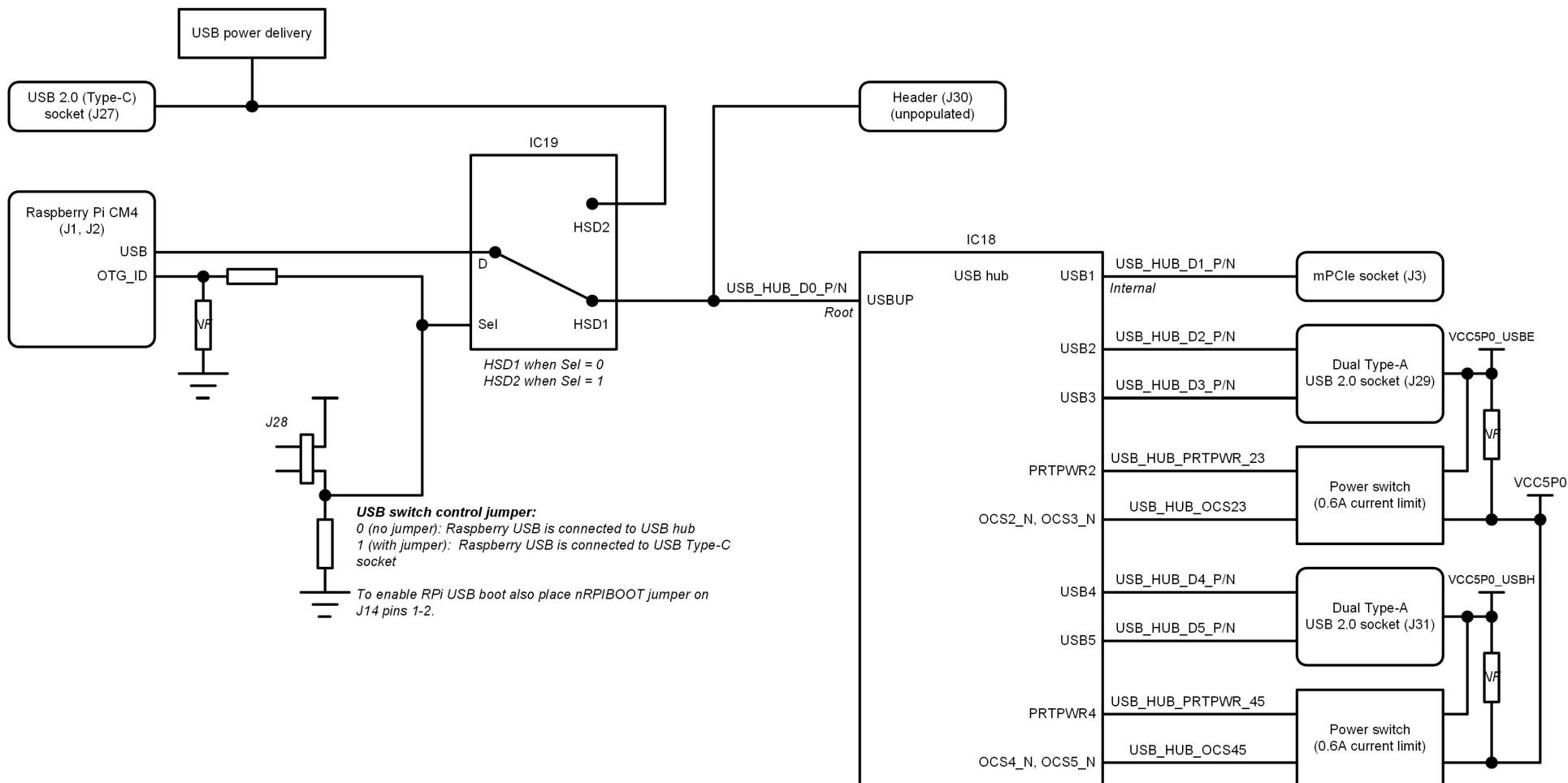
Sheet **3** of **12**

File: **03_Clock_diag.SchDoc**

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United Kingdom



USB diagram



Project name: **LimeKEY-RPCM_Iv1.PjrPcb**

Title: **RF diagram**

Size: **A4** Revision: **v1.1**

Date: **2023-03-10** Time: **11:14:36** Sheet **4** of **12**

File: **04_USB_diag.SchDoc**

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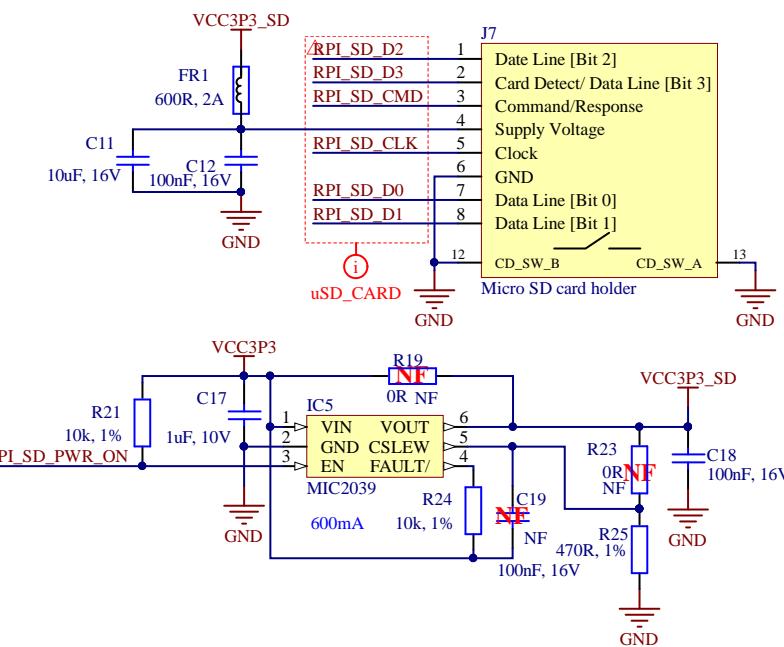


NF elements on sheet: R14, R15, R16, R19, R20, R22, R23, C19, J11, R28, J15, R35, R37, C32, J19
Number of NF elements on sheet: 15

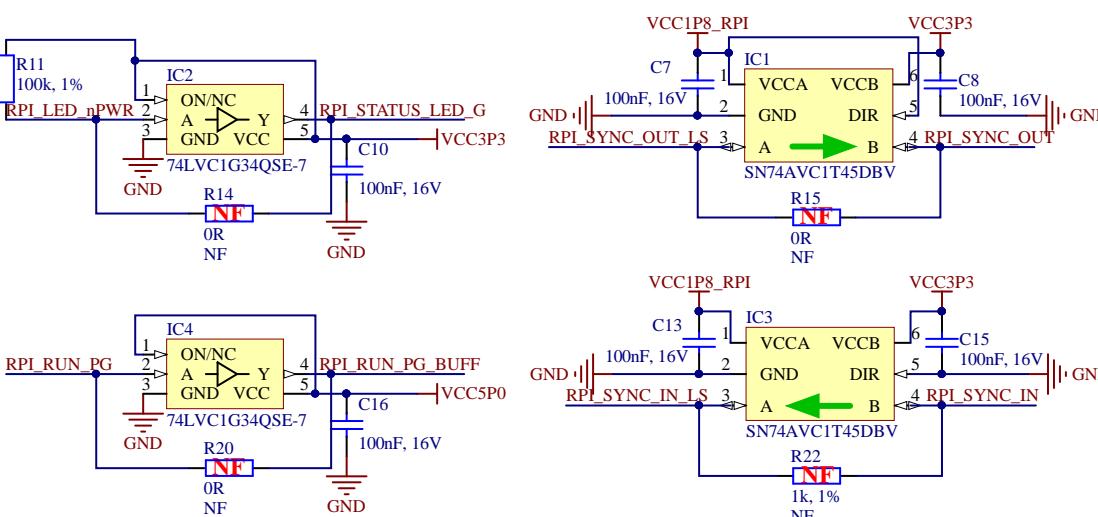
Misc 1

uSD card

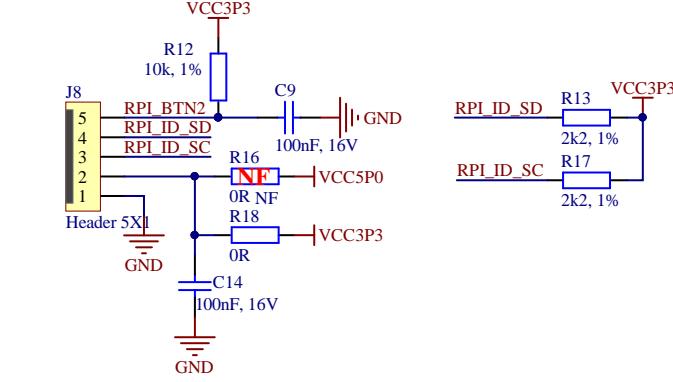
Only for CM4L with no on-board Flash (eMMC)



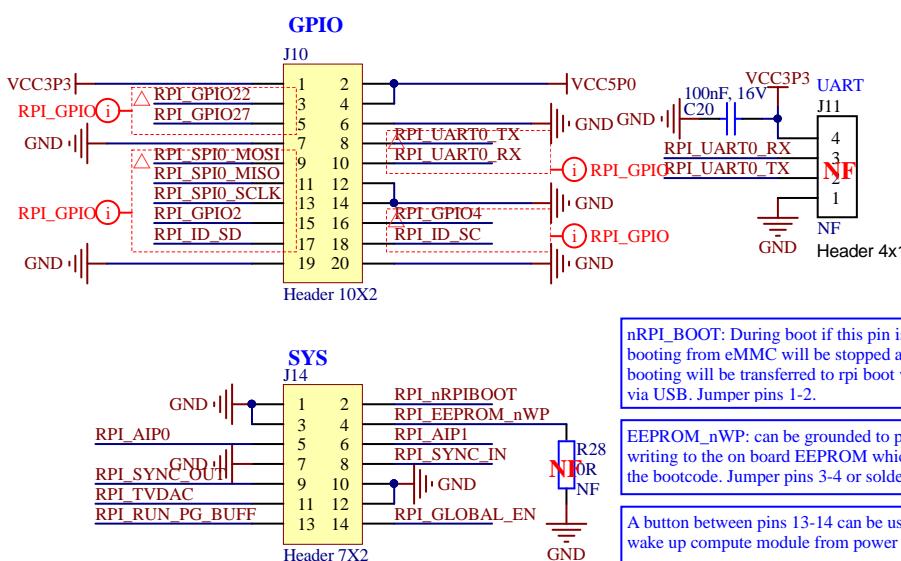
Buffers, level converters



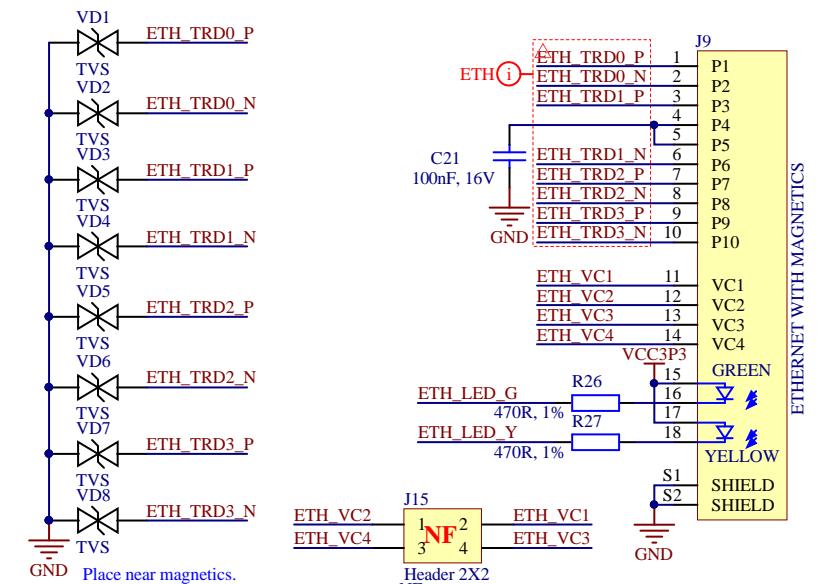
Front screen I2C + BTN



GPIO ans SYS headers



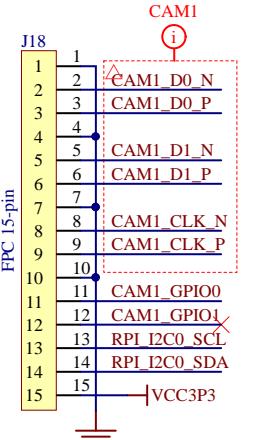
RJ45 (Ethernet) connector



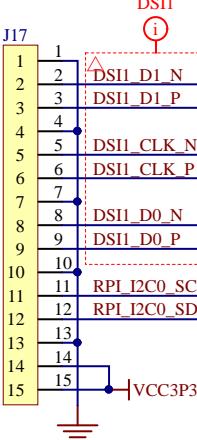
ETHERNET WITH MAGNETICS

LVDS (Camera + Display)

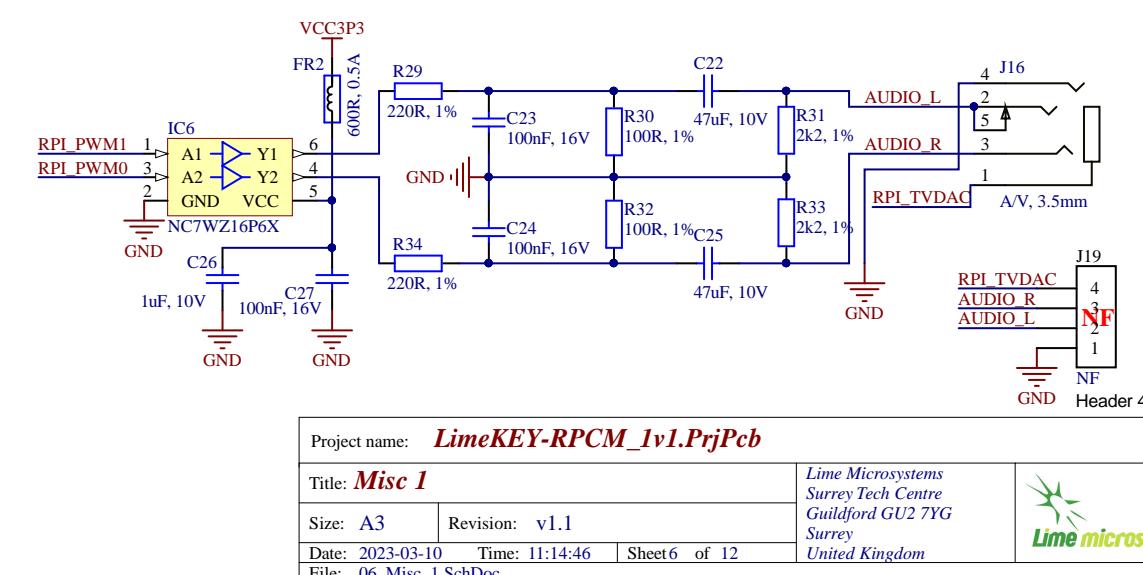
Camera 1



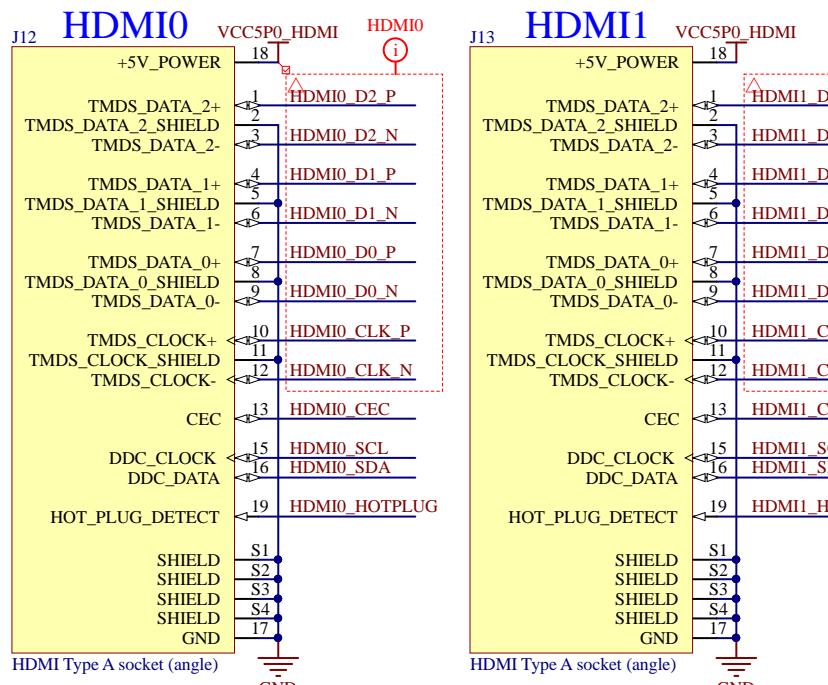
Display 1



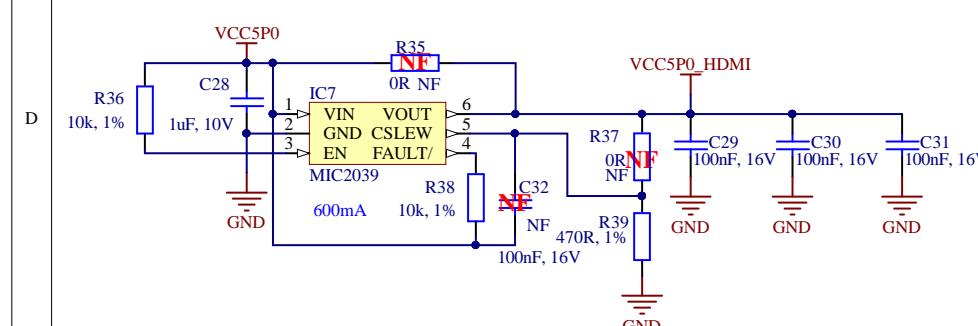
Analog audio + Composite video out



HDMI



PCB note: make each HDMI group differential traces length equal and impedance of 100Ω



Project name: LimeKEY-RPCM_1v1.PrcPcb

Title: Misc 1

Size: A3 Revision: v1.1

Date: 2023-03-10 Time: 11:14:46 Sheet 6 of 12

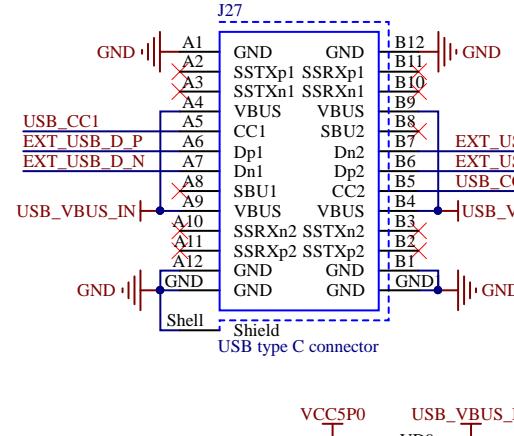
File: 06_Misc 1.SchDoc

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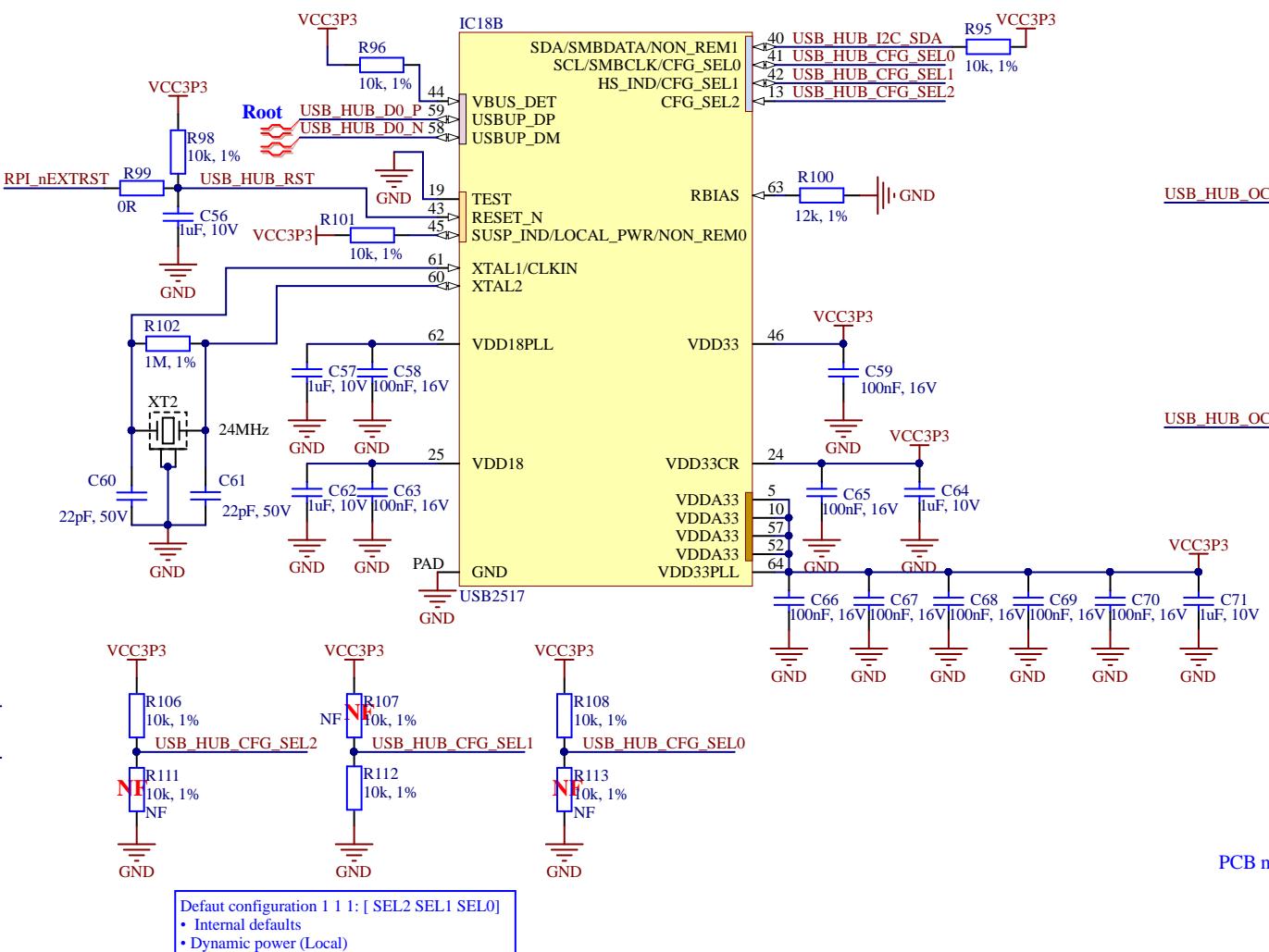
NF elements on sheet: VD9, R103, R104, R107, R109, R111, R113, JMP1, R116, R117, IC20, IC21, R120, R121, R123, C77, R126, R127, R129, C83, J30

Number of NF elements on sheet: 21

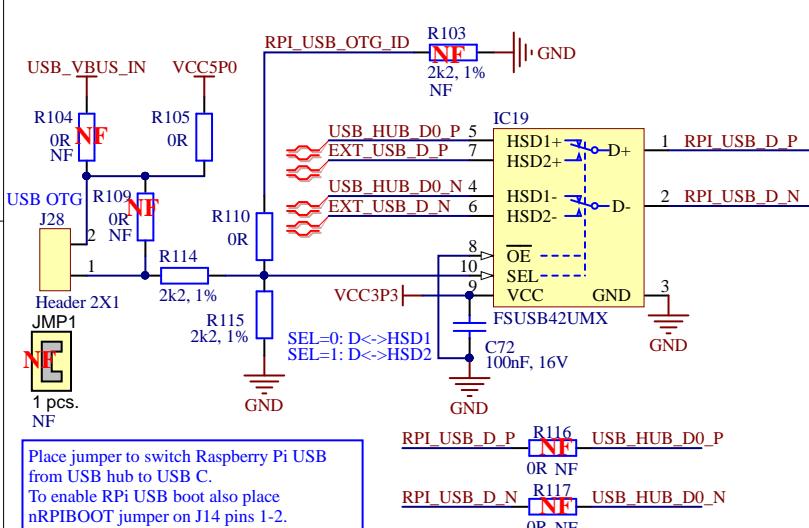
USB C socket



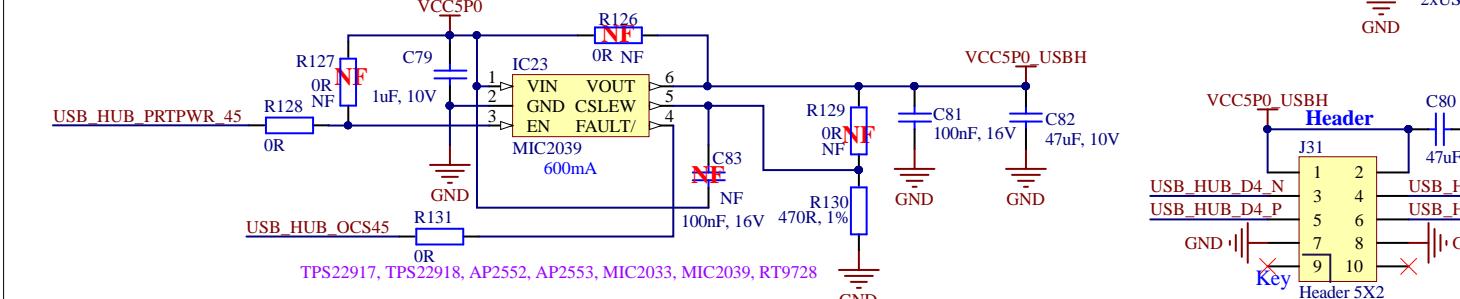
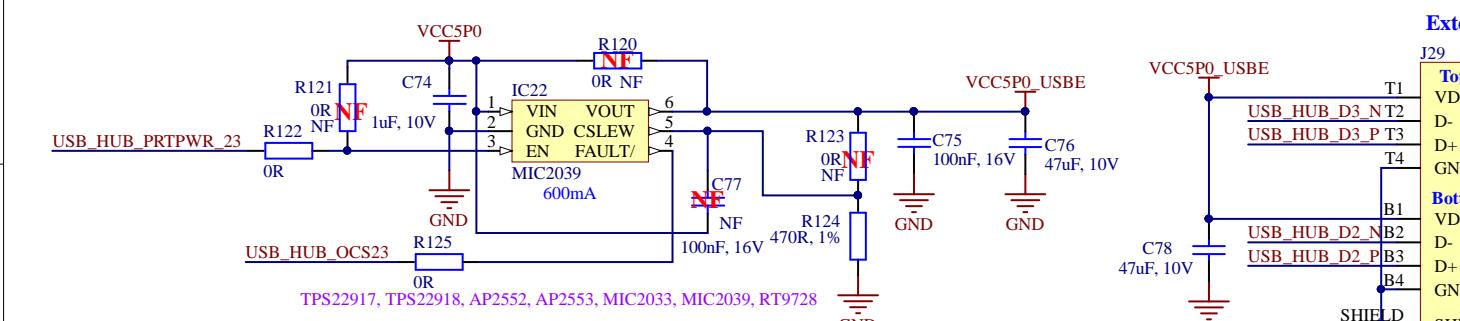
USB2.0 HUB



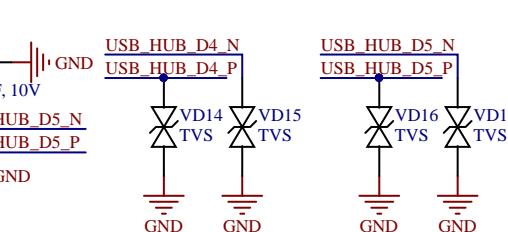
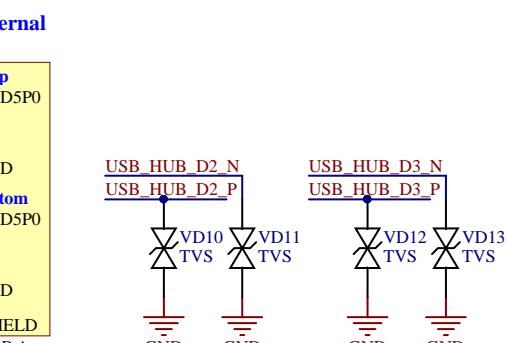
USB switch



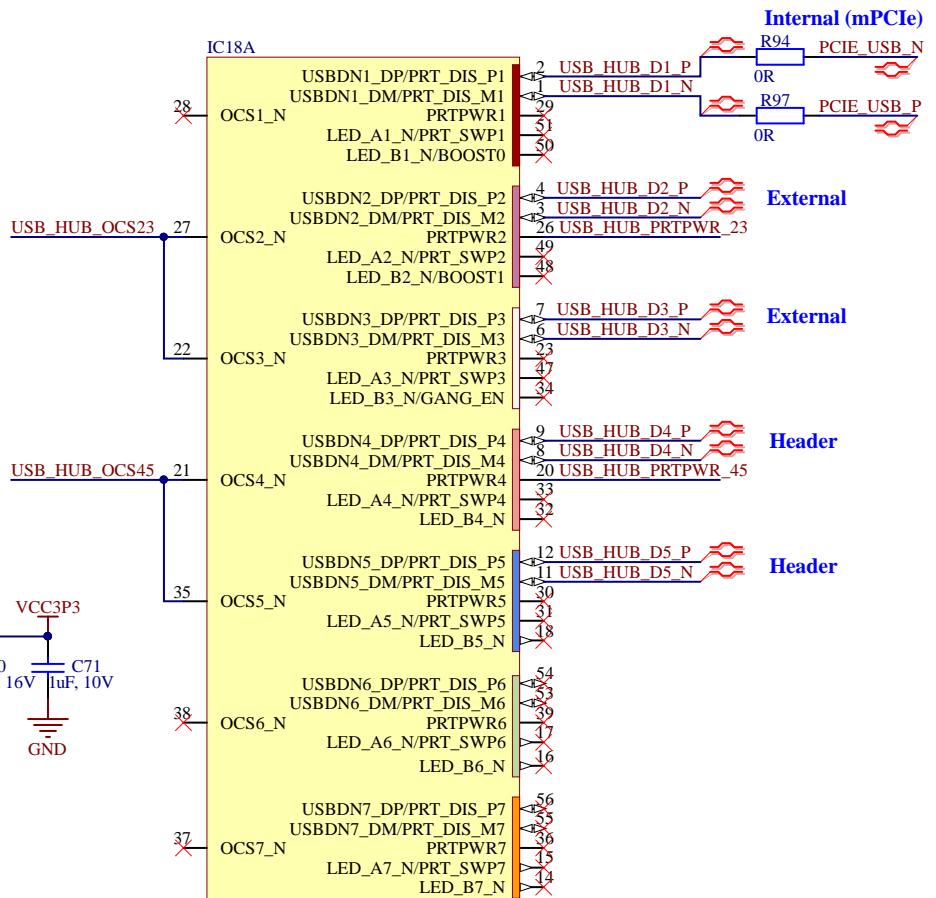
USB downstream



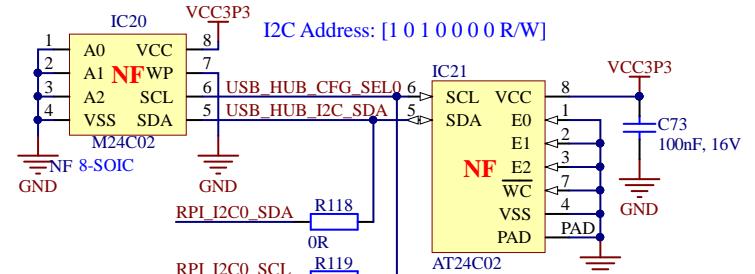
External



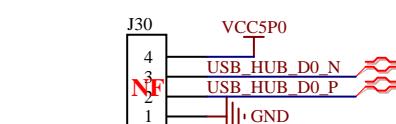
Internal (mPCIe)



PCB note: USB differential pair impedance is 90Ω



USB upstream



Project name: LimeKEY-RPCM_1v1.PrcPcb

Title: USB

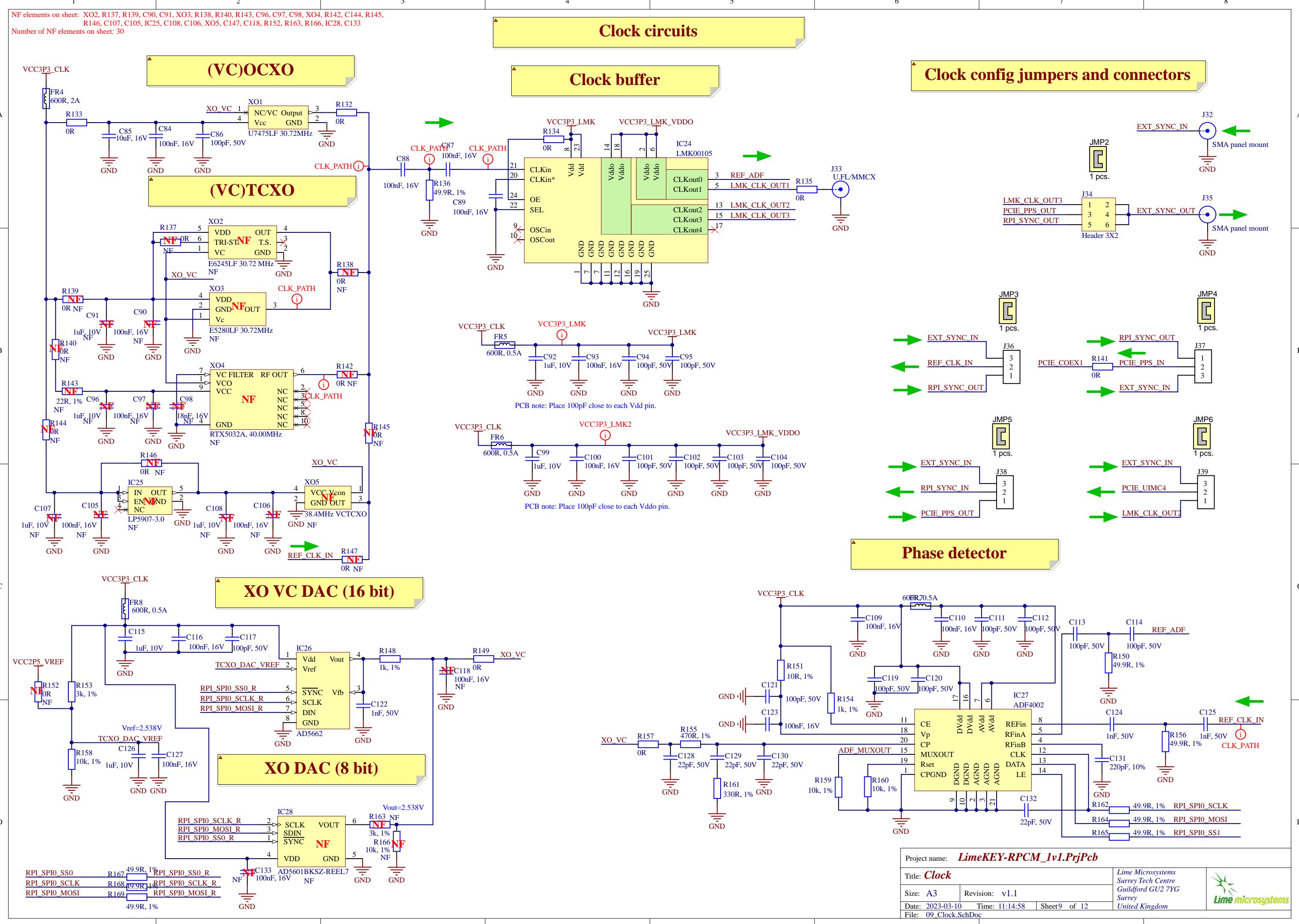
Size: A3

Revision: v1.1

Date: 2023-03-10 Time: 11:14:54 Sheet 8 of 12

File: 08_USB.SchDoc





NF elements on sheet: ESD1, ESD2, ESD3, ESD4, R176, R172, C182, C183, R179, R177, R173, C183, R182, R174, R170, C180, R180, R178, R175, R171, C181, R18

Number of NF elements on sheet: 22

RF front end

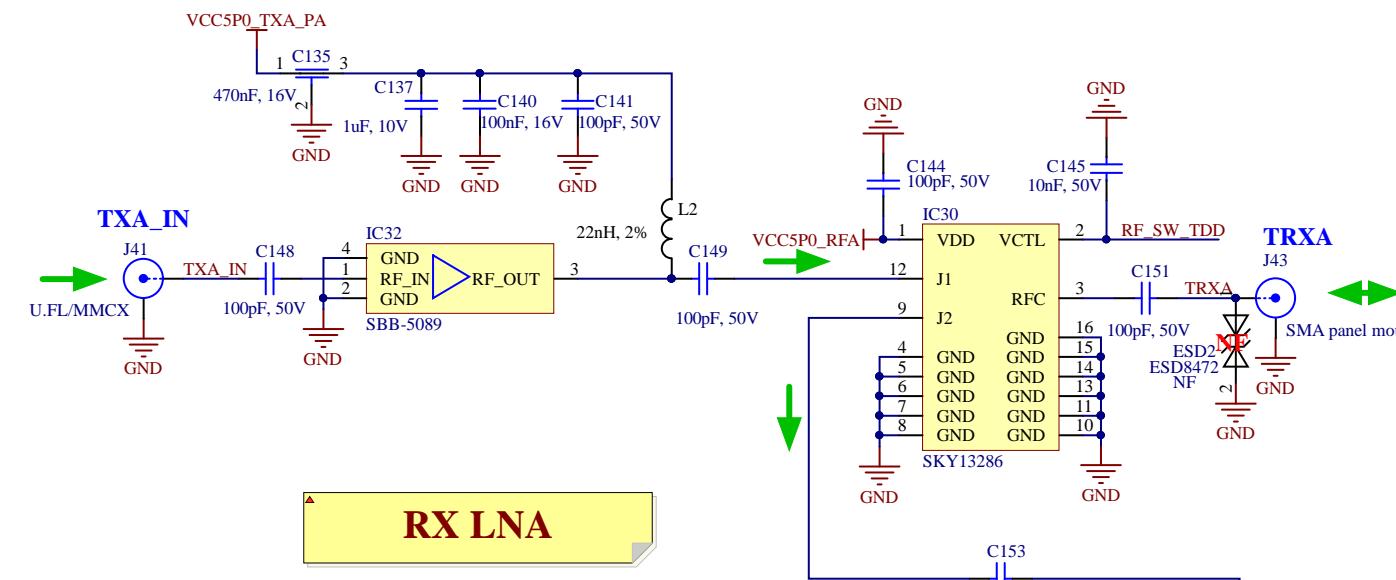
Channel A

All RF switches are controlled together

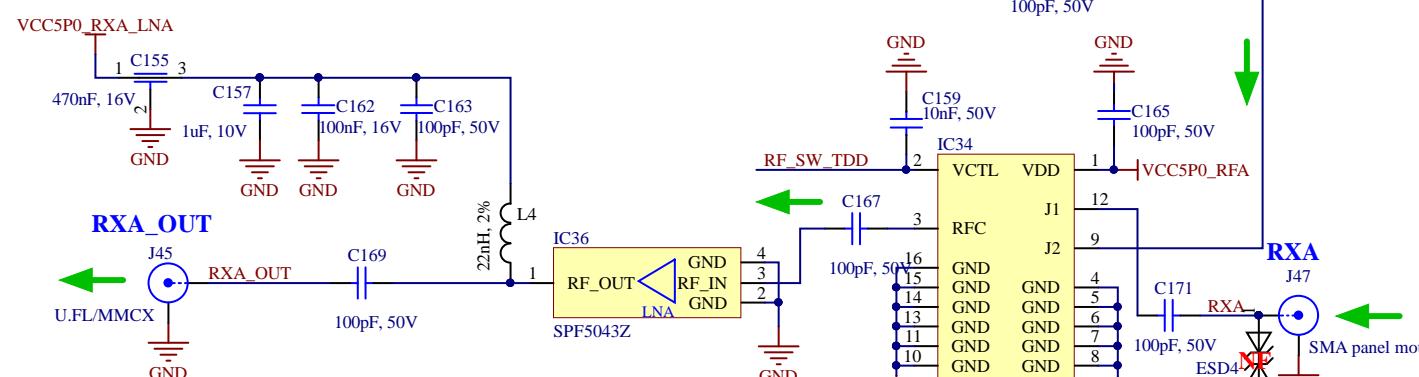
Channel B

TX PA

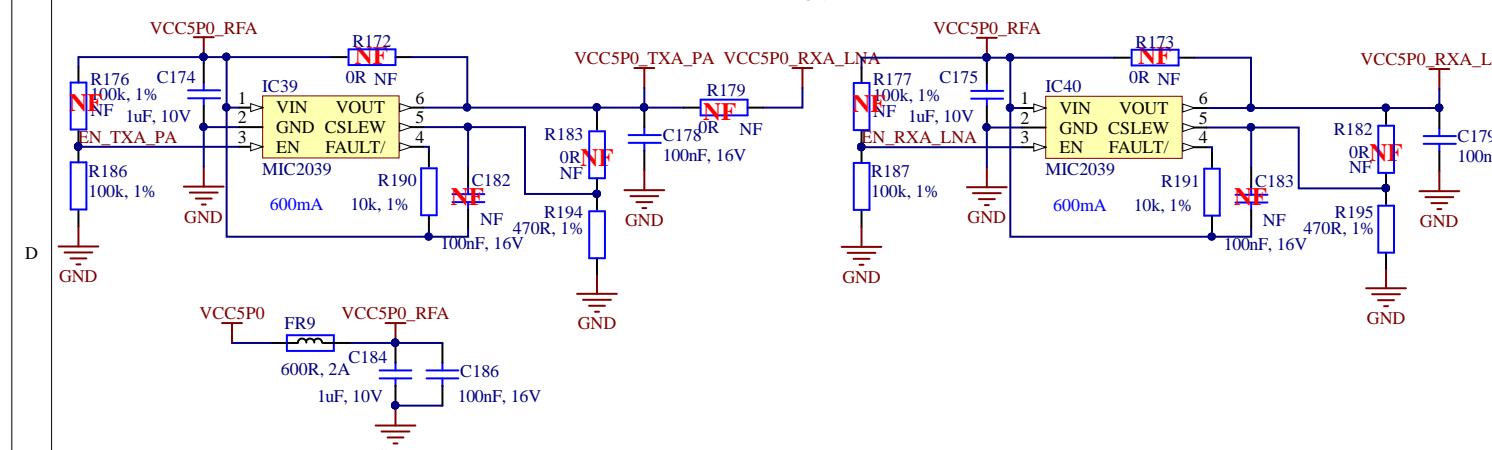
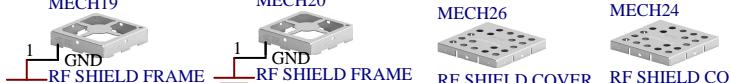
RF switches



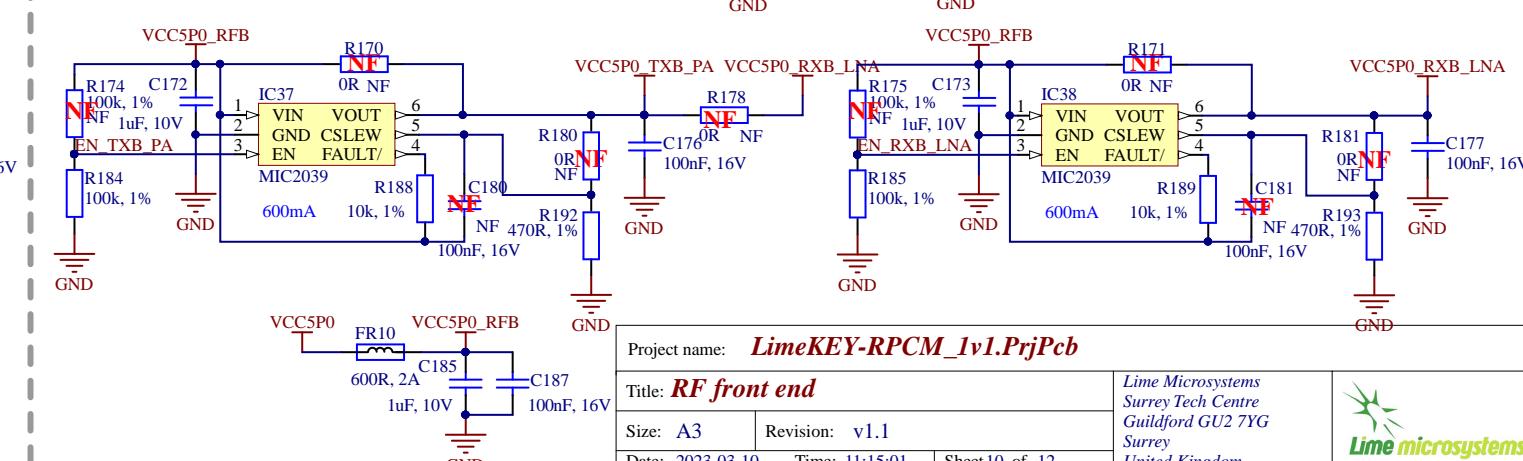
RX LNA



Power switches



Part 1



Project name: **LimeKEY-RPCM 1v1.PrjPcb**

Title: *RF front end*

Title: **Re** front end

Size: A3 Revision: v1.1 Date: 2022-02-10 Time: 11:15:01 Sheet: 10 of 12

Date: 2023-03-10 Time:
File: 10_RFFE.SchDoc

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United Kingdom*

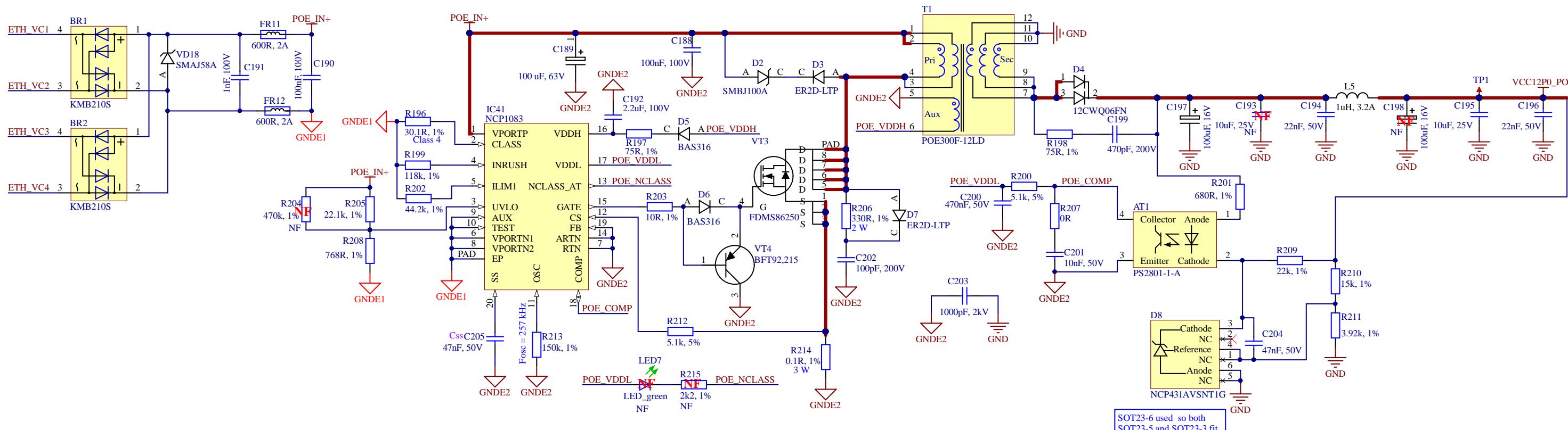


NF elements on sheet: R204, LED7, R215, C193, C198, R130, R131, LED8, R228, JMP7

Number of NF elements on sheet: 10

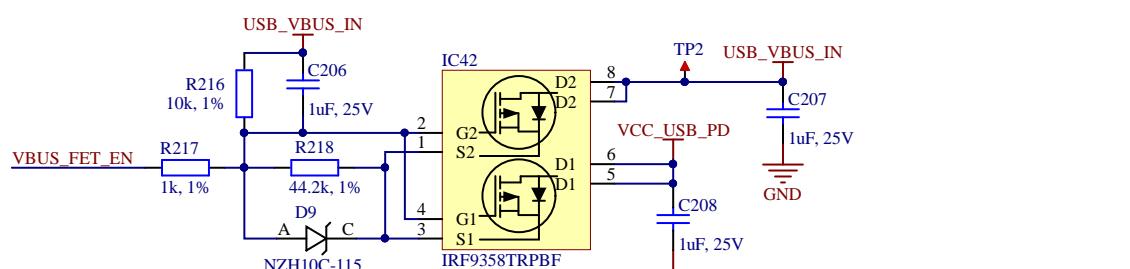
Power over Ethernet

802.3at (PoE+) compliant Class 4 (25W max)

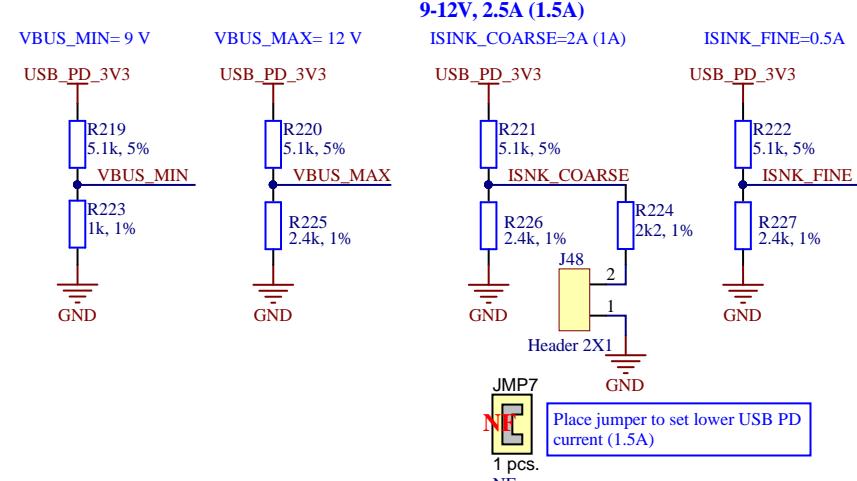
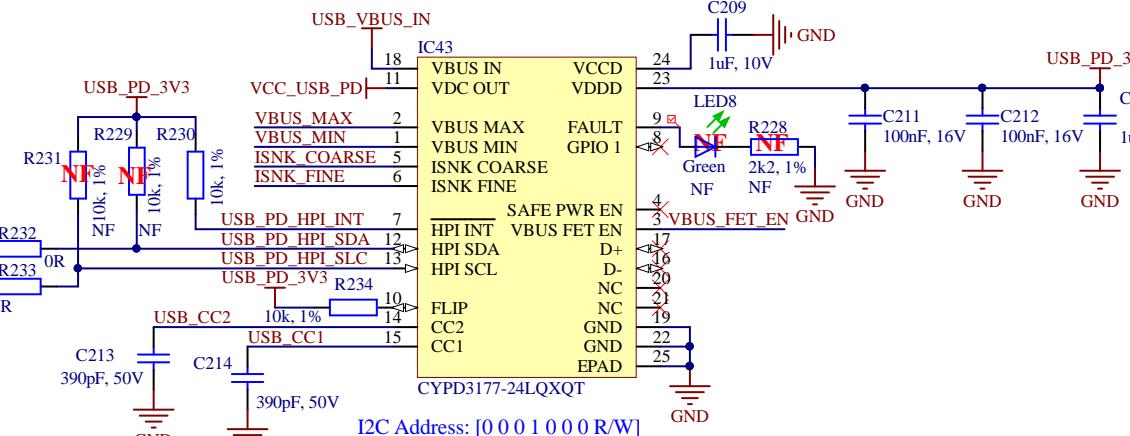


SOT23-6 used so both SOT23-5 and SOT23-3 fit.

USB Power delivery



Four resistor dividers that select VBUS Voltage and Current



Project name: LimeKEY-RPCM_1v1.PrcPcb

Title: PoE and USB PD

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Size: A3

Revision: v1.1

Date: 2023-03-10 Time: 11:15:05 Sheet 11 of 12

File: 11_PoE_USB_PD.SchDoc



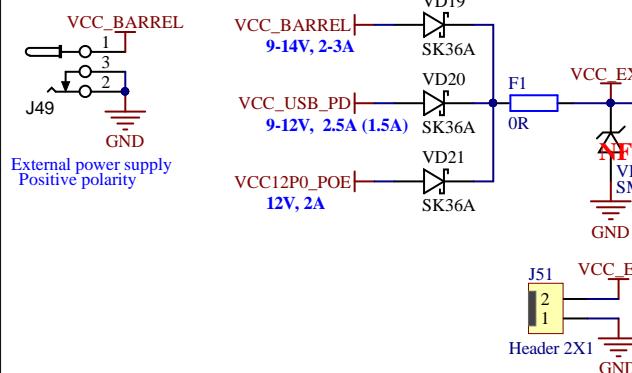
NF elements on sheet: VD22, FR13, R237, C219, R242, C230, C231, R244, J53, FR15, C239, R248, R249, R251, IC47, C236

Number of NF elements on sheet: 16

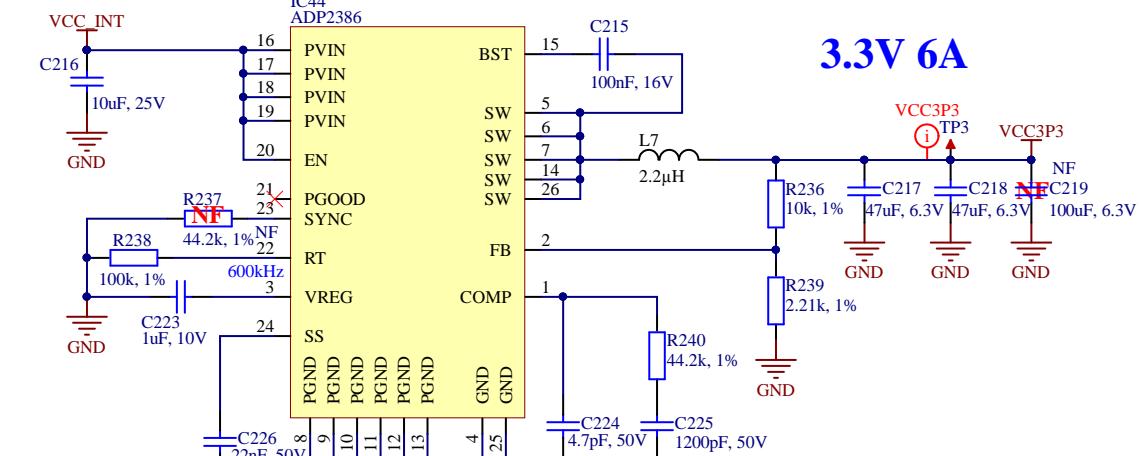
Total number of NF elements on all sheets: 145

Board power circuits

Power input

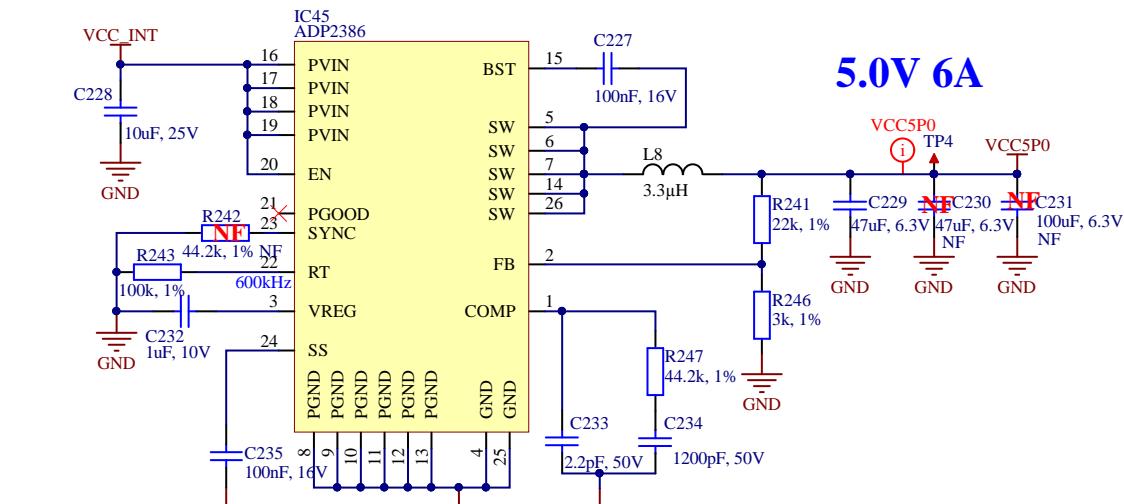
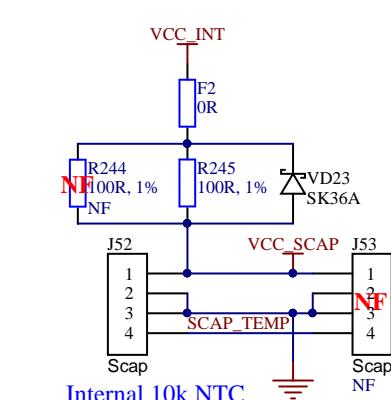


Switching regulators



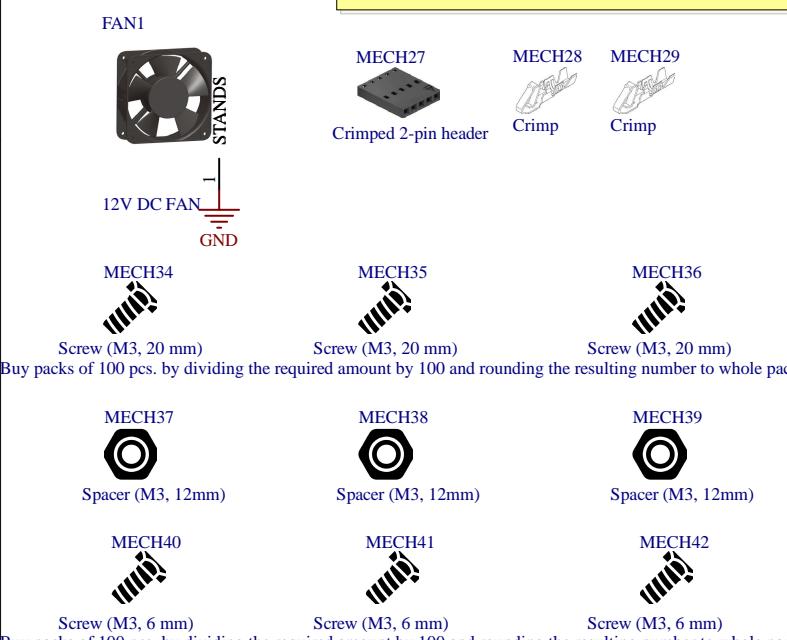
3.3V 6A

Supercapacitor

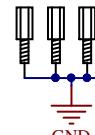


5.0V 6A

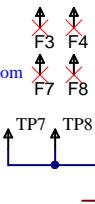
Misc



PCB standoffs



Fiducials

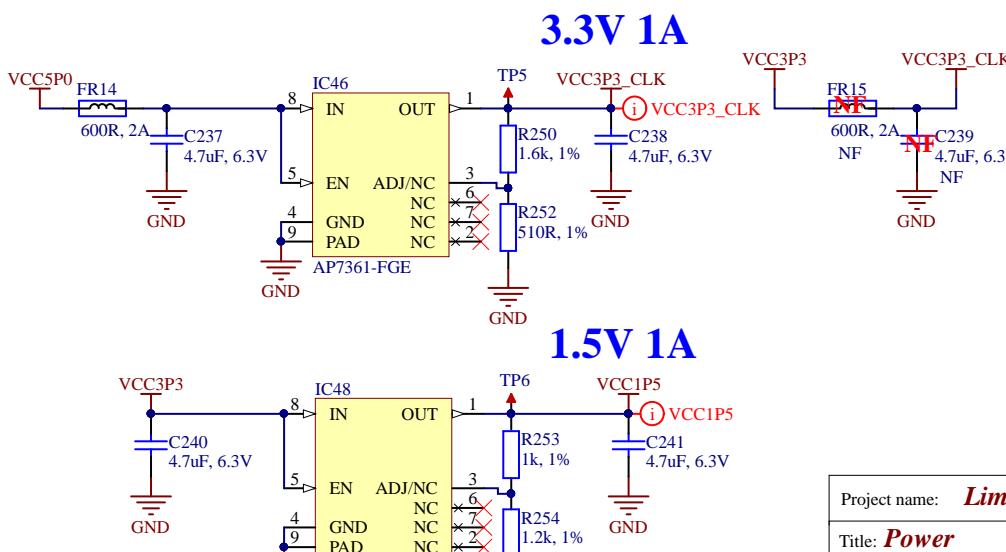


Top

Bottom

TP7 TP8 TP9 TP10

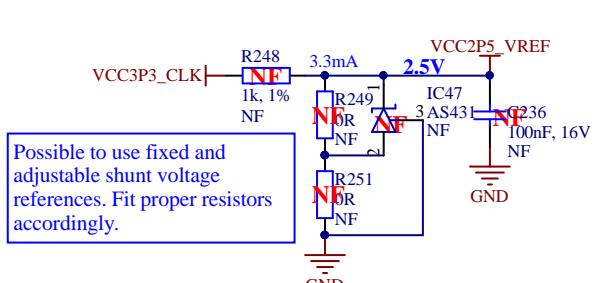
Linear regulators



3.3V 1A

1.5V 1A

Voltage reference (2.5V)



Possible to use fixed and adjustable shunt voltage references. Fit proper resistors accordingly.

Alternative reference source for XO DAC and ADC

Project name: LimeKEY-RPCM_1v1.PrcPcb

Title: Power

Size: A3

Revision: v1.1

Date: 2023-03-10 Time: 11:15:08 Sheet 12 of 12

File: 12_Power.SchDoc

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