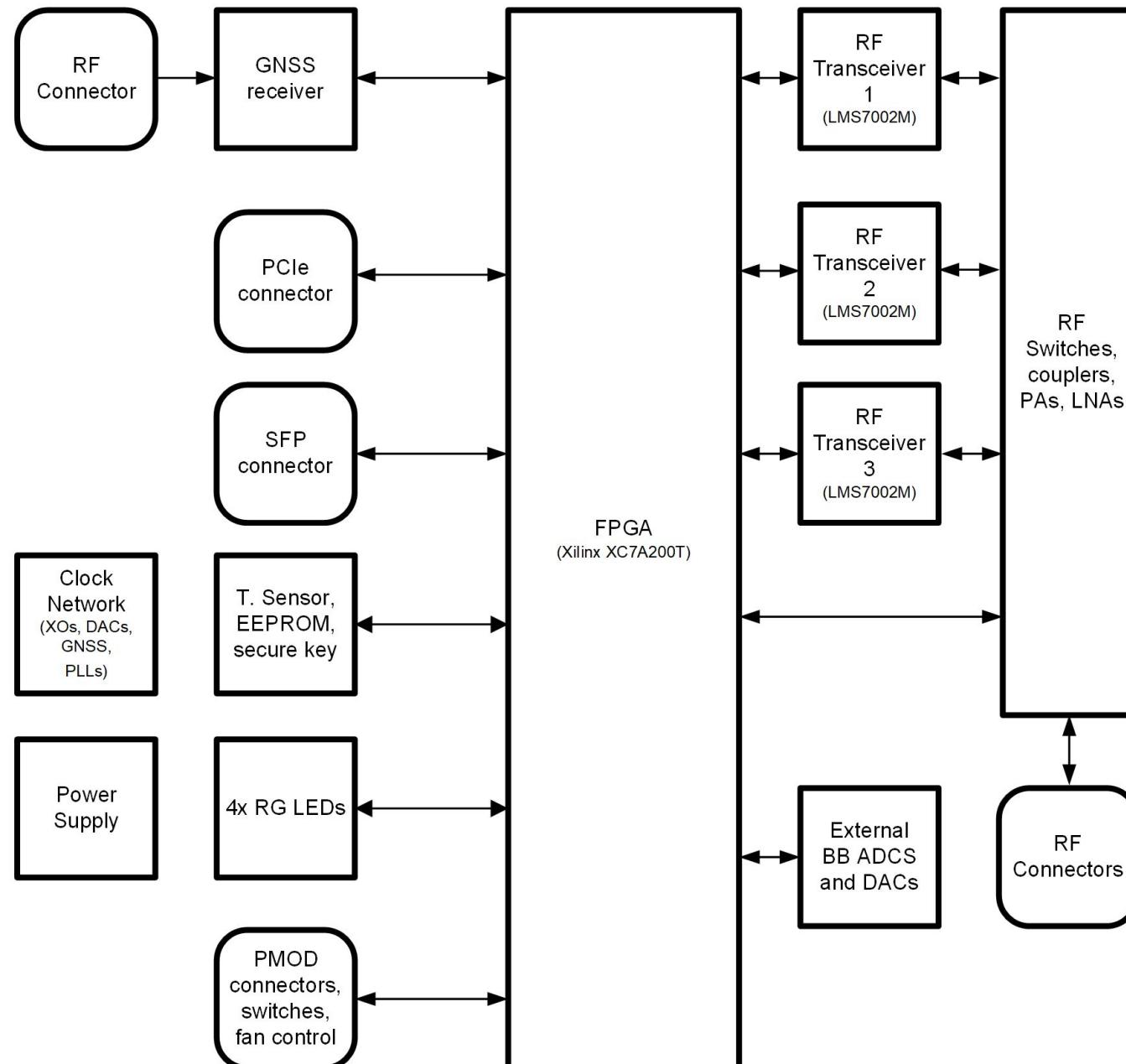
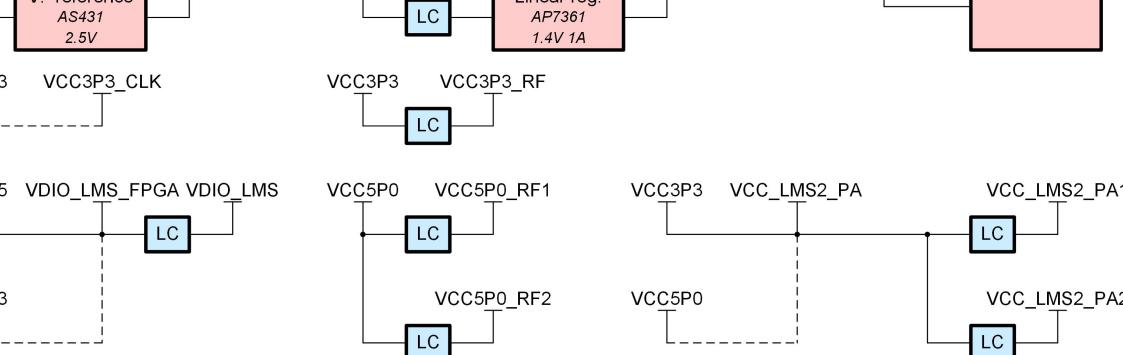
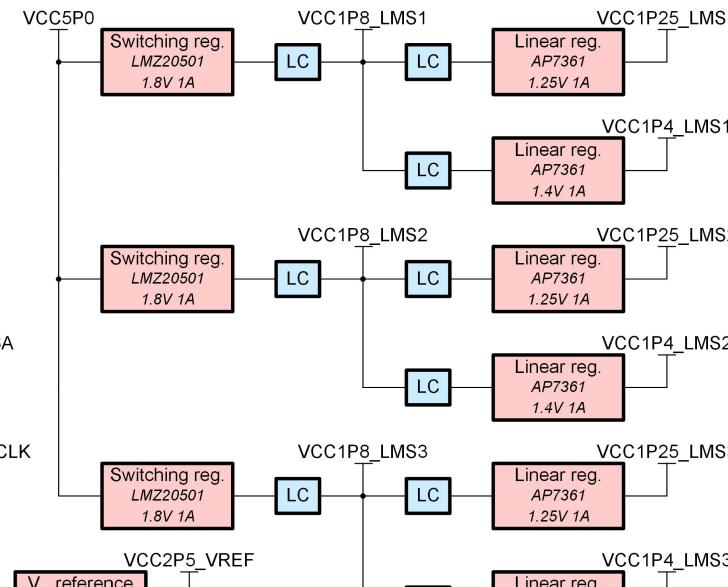
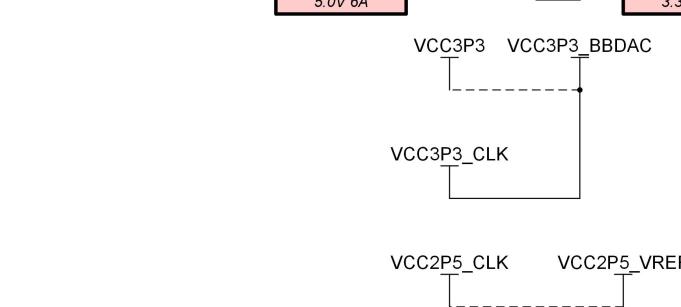
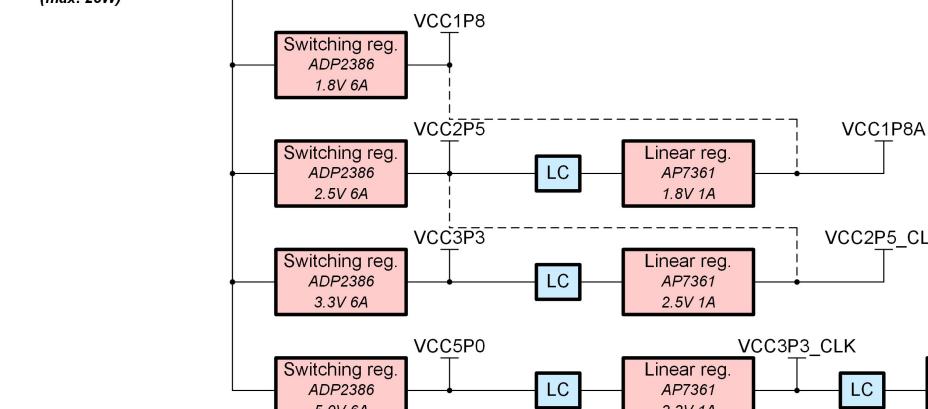
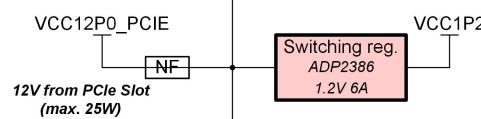
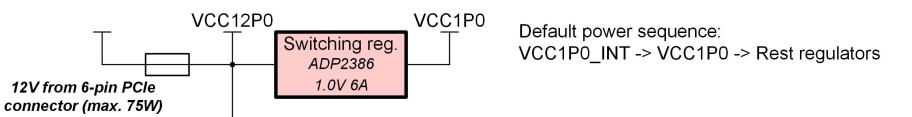


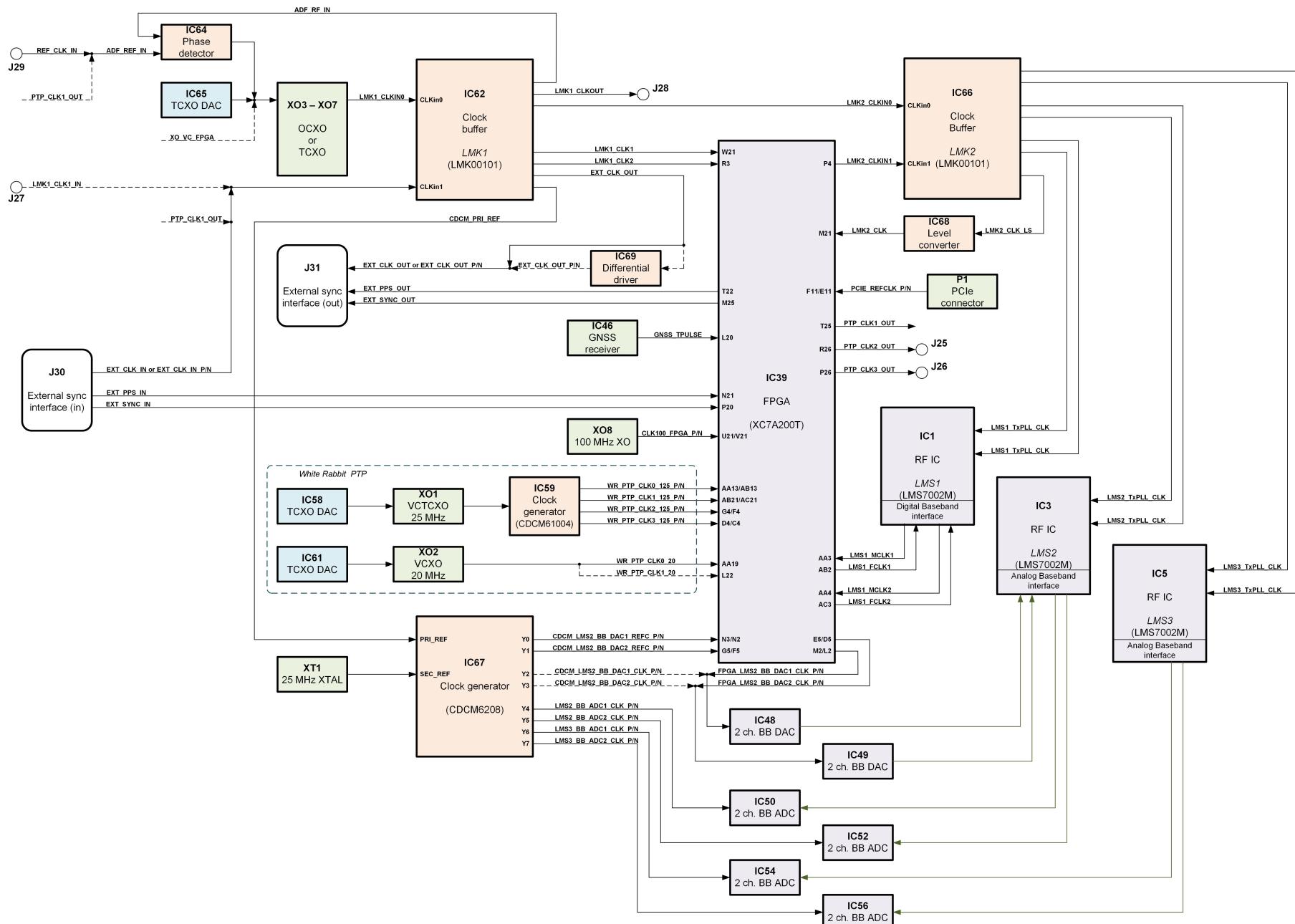
Block diagram



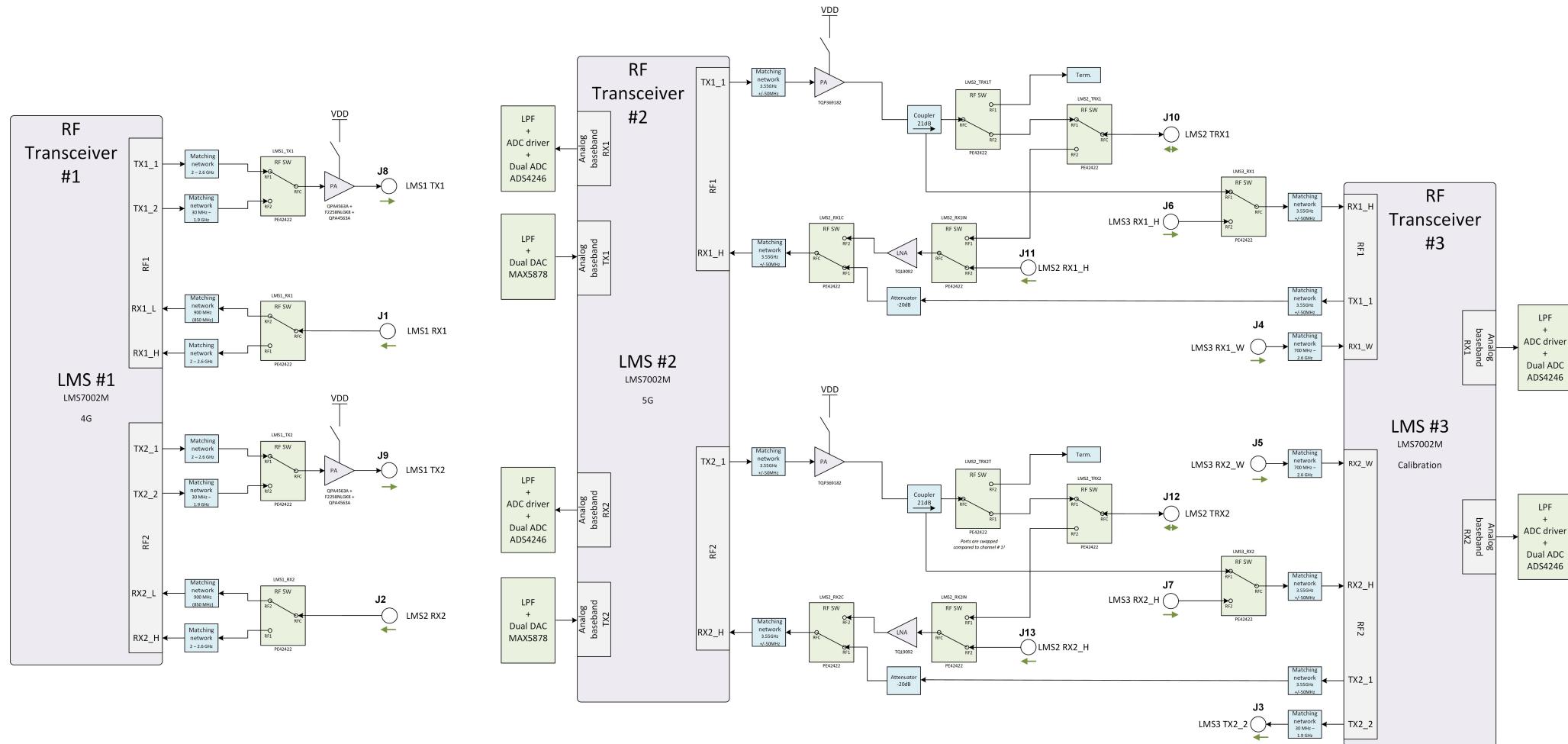
Power diagram



Clock diagram



RF diagram

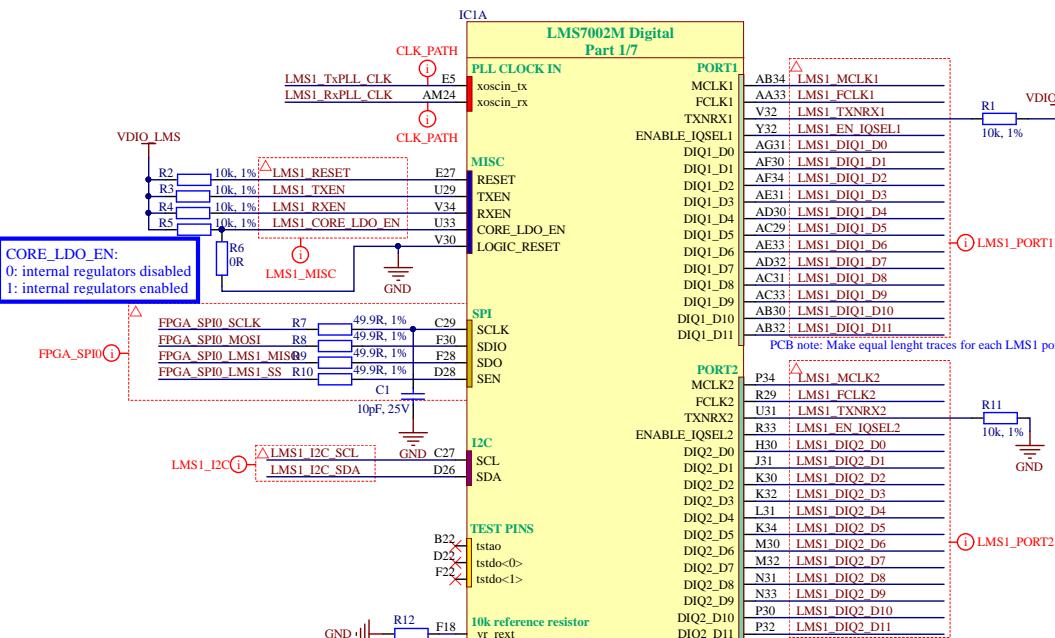


NF elements on sheet: MECH15, MECH16, MECH17, MECH18
Number of NF elements on sheet: 4

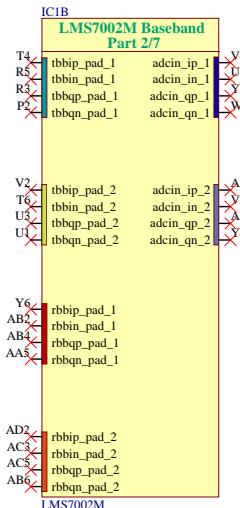
LMS7002M misc

LMS1_ (4G)

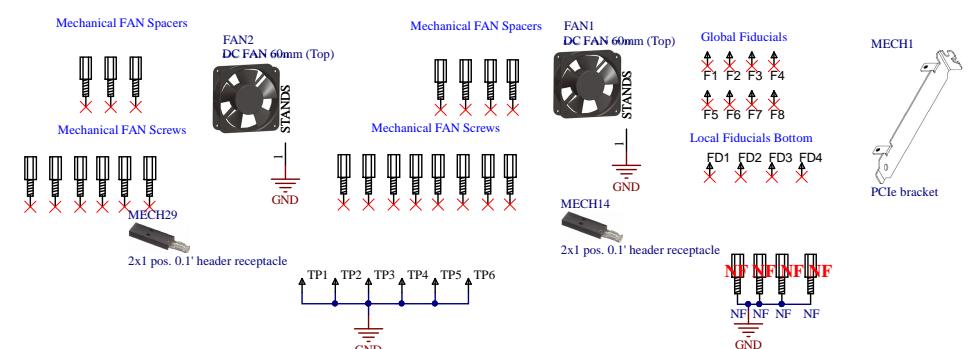
Digital interfaces



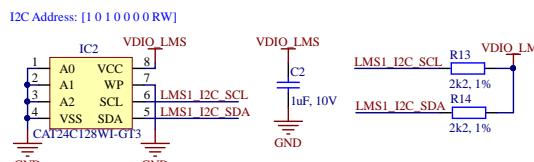
Baseband external IO



Mechanical



LMS1 EEPROM

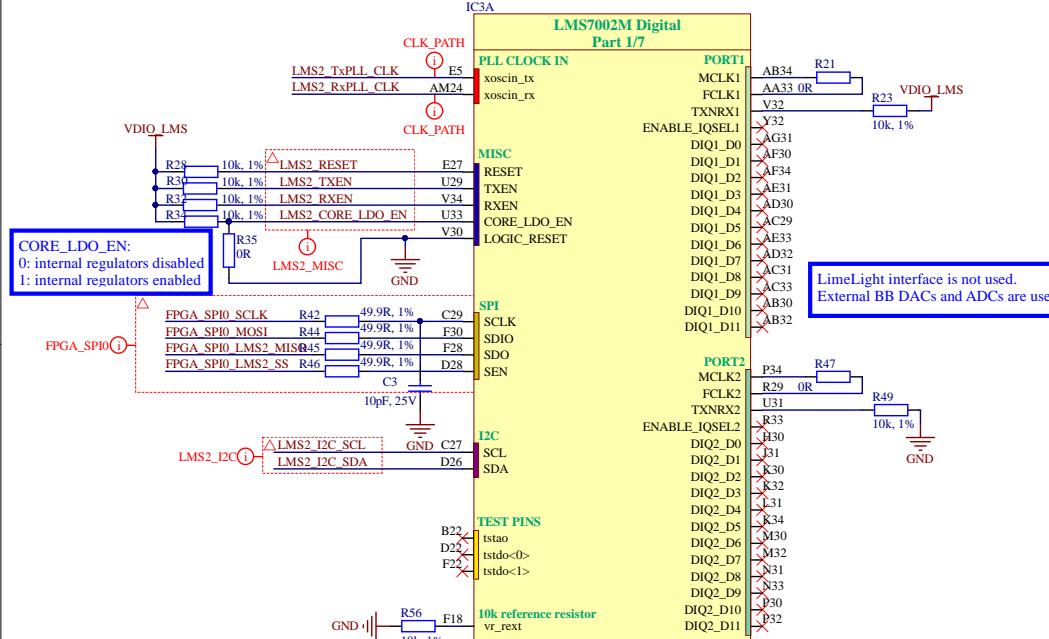


NF elements on sheet: -
Number of NF elements on sheet: 0

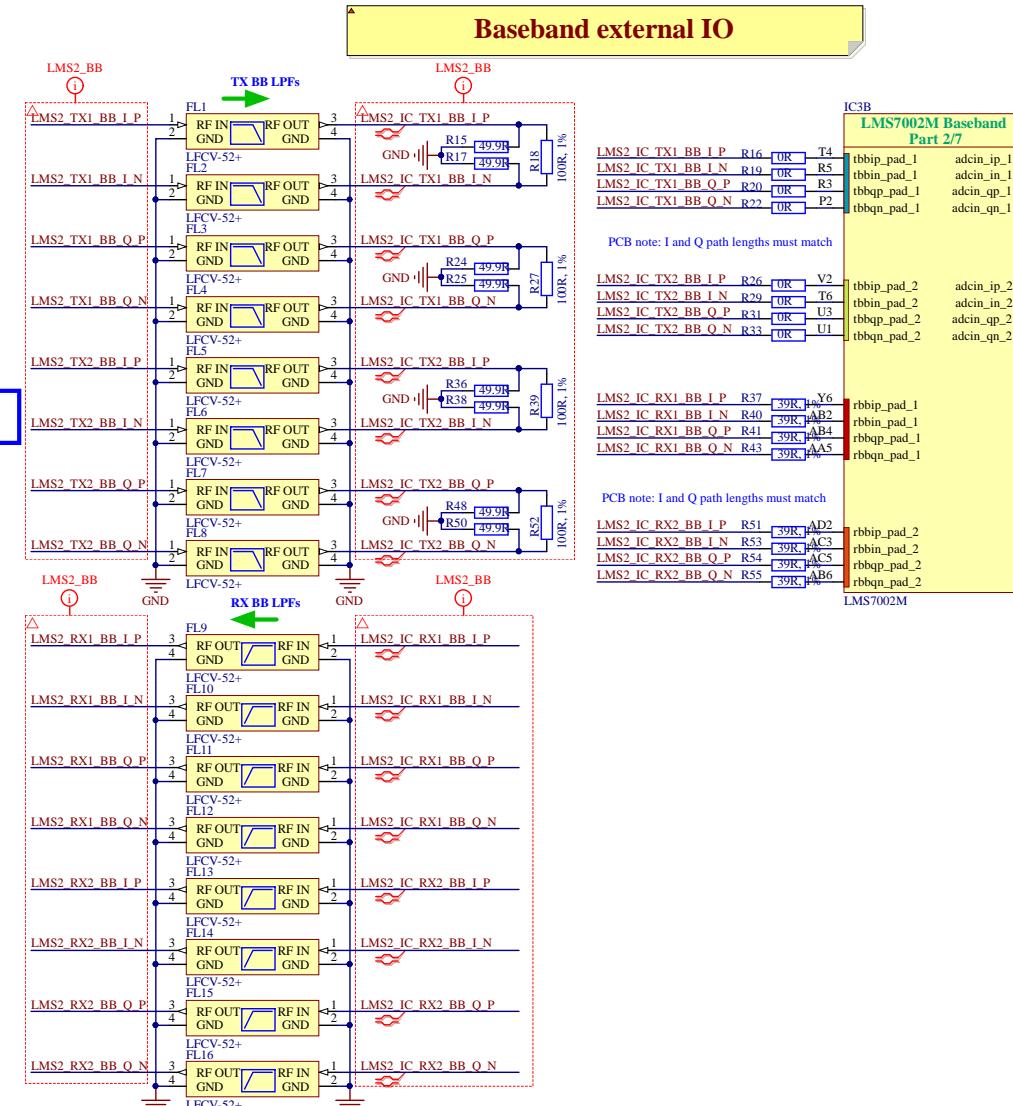
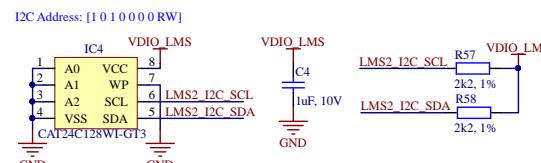
LMS7002M misc

LMS2_ (5G)

Digital interfaces



LMS2 EEPROM



Project name: LimeSDR-X3_Iv2.PrjPcb	
Title: LMS7002M misc (LMS2)	
Version: 1.2	Variant: [No Variations]
Date: 2025-03-14	Time: 15:04:33
File: 06_LMS2_Misc.SchDoc	Sheet 6 of 31
	Size: A3

Lime Microsystems Survey Tech Centre Guildford GU2 7JG Surrey United Kingdom

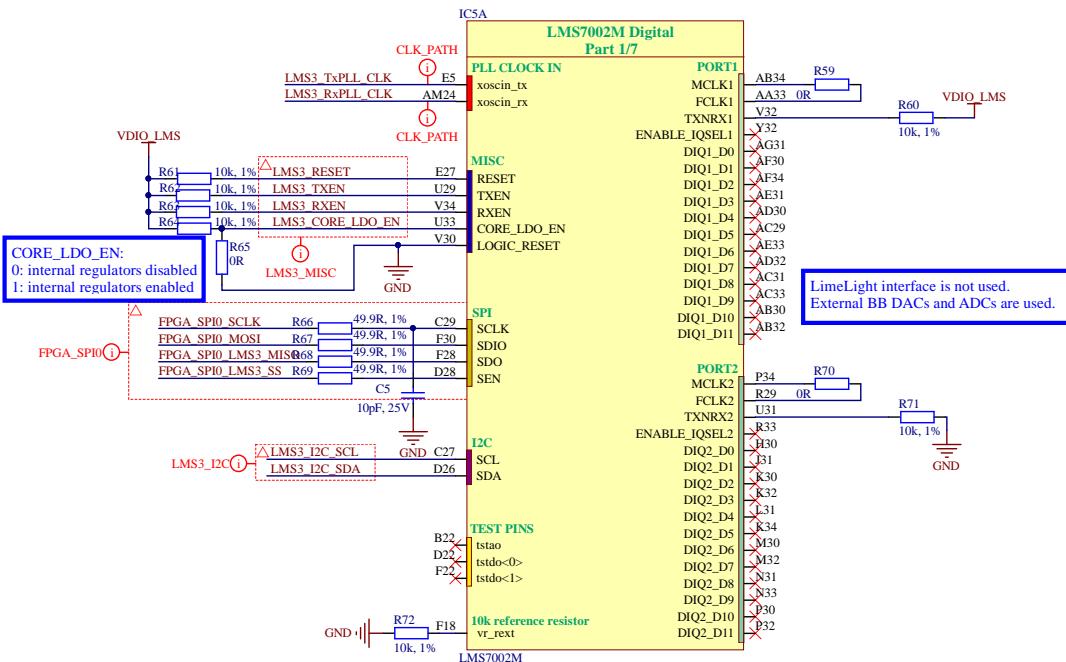
Lime microsystems

NF elements on sheet: -
Number of NF elements on sheet: 0

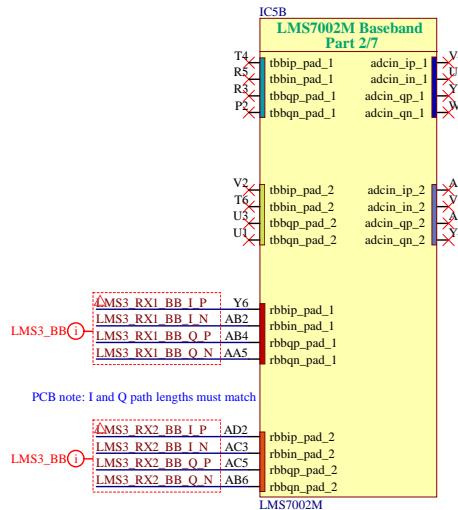
LMS7002M misc

LMS3_ (Calibration)

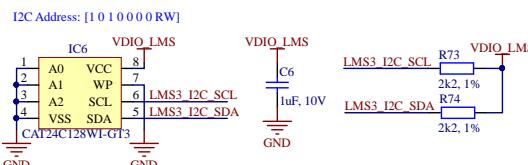
Digital interfaces



Baseband external IO



LMS3 EEPROM



Project name: LimeSDR-X3_Iv2.PrfPcb

Title: LMS7002M misc (LMSI)

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:04:36 Sheet 7 of 31

File: 07_LMS3_Misc.SchDoc Size: A3

Lime Microsystems
Survey Tech Centre
Guildford GU2 7JG
Survey
United Kingdom

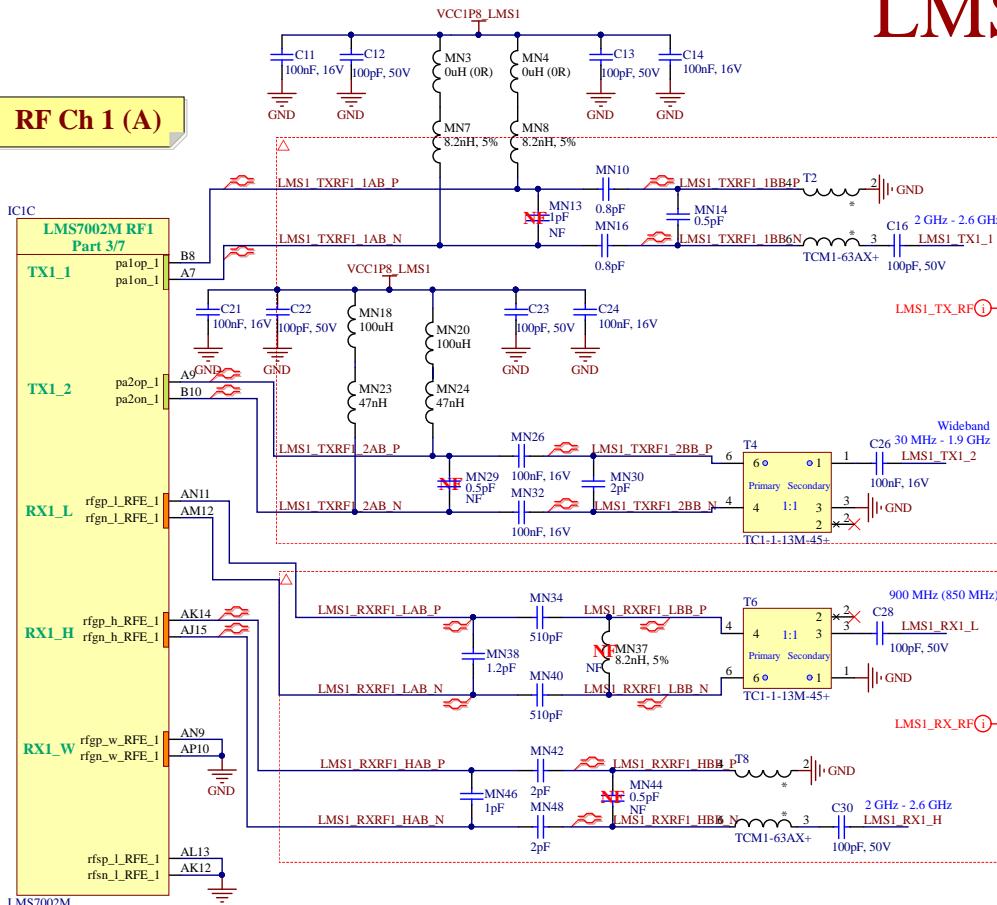


NF elements on sheet: MN11, MN13, MN27, MN29, MN35, MN37, MN43, MN44, ESD1, ESD2
Number of NF elements on sheet: 10

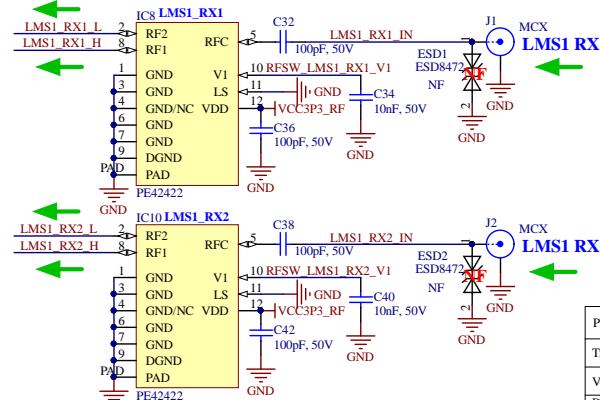
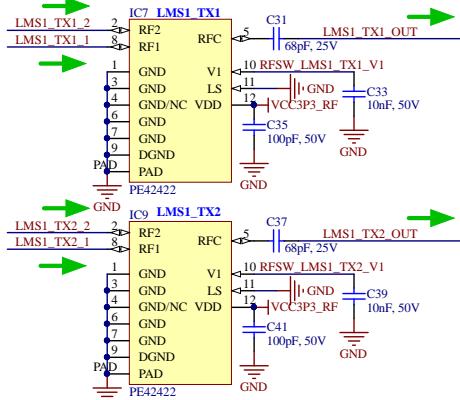
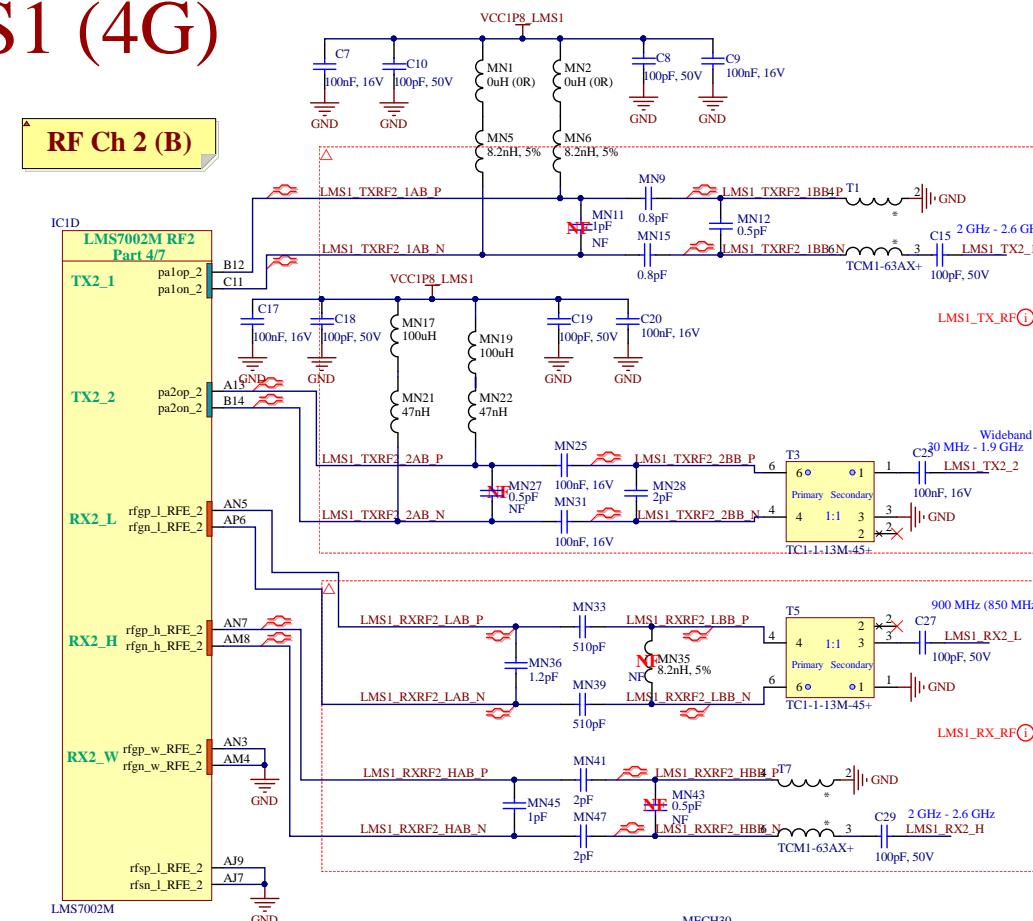
LMS7002M RF circuits (LMS1)

LMS1 (4G)

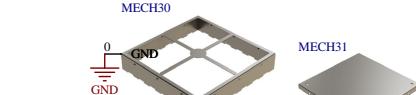
RF Ch 1 (A)



RF Ch 2 (B)



Project name: LimeSDR-X3_Iv2.PnjPcb	
Title: LMS7002M RF (LMS1)	Variant: [No Variations]
Version: 1.2	
Date: 2025-03-14	Time: 15:04:41
File: 08 LMS1_RF.SchDoc	Sheet 8 of 31
	Size: A3
Lime Microsystems Survey Tech Centre Guildford GU2 7JG United Kingdom	



PIC-S-208F PIC-S-208C



S03-30100300R



MECH40



MECH42



MECH44

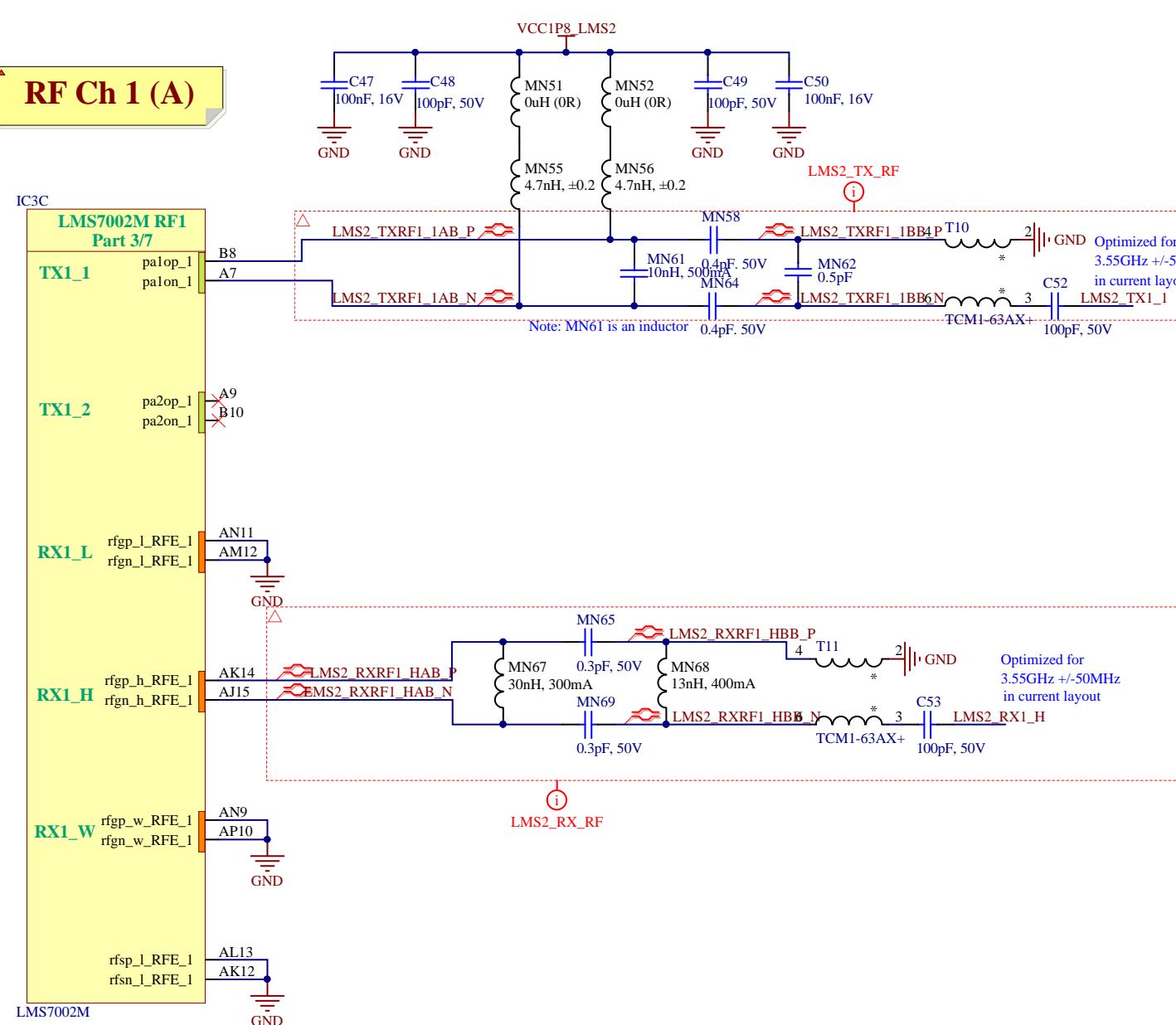
MECH46

NF elements on sheet: -
Number of NF elements on sheet: 0

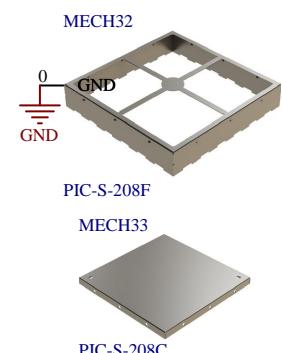
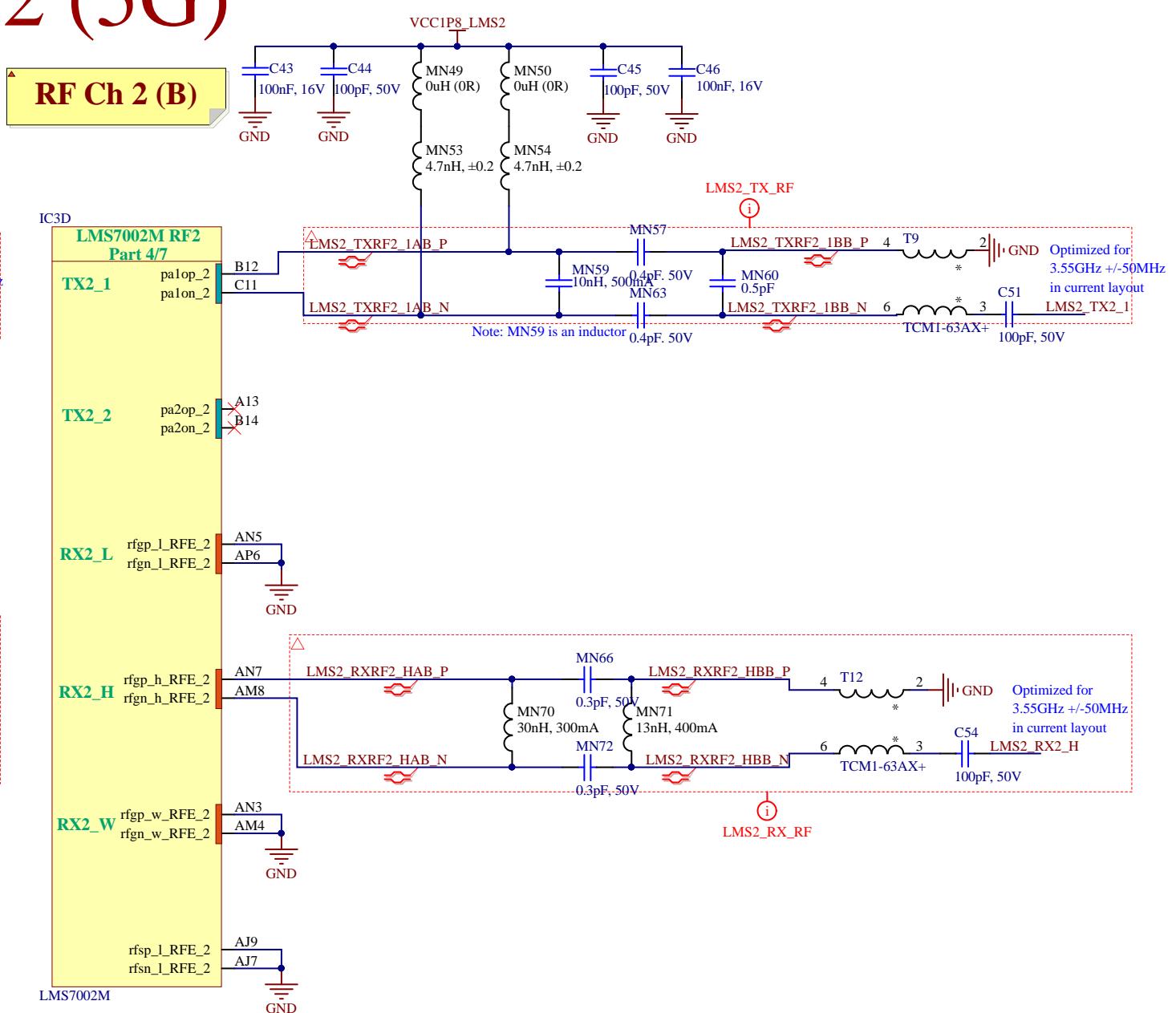
LMS7002M RF circuits (LMS2)

LMS2 (5G)

RF Ch 1 (A)



RF Ch 2 (B)



Project name: LimeSDR-X3_Iv2.PnjPcb

Title: LMS7002M RF (LMS2)

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:04:45 Sheet 9 of 31

File: 09_LMS2_RF.SchDoc Size: A3

Lime Microsystems
Surrey Tech Centre
Guildford GU2 7YG
Surrey
United Kingdom

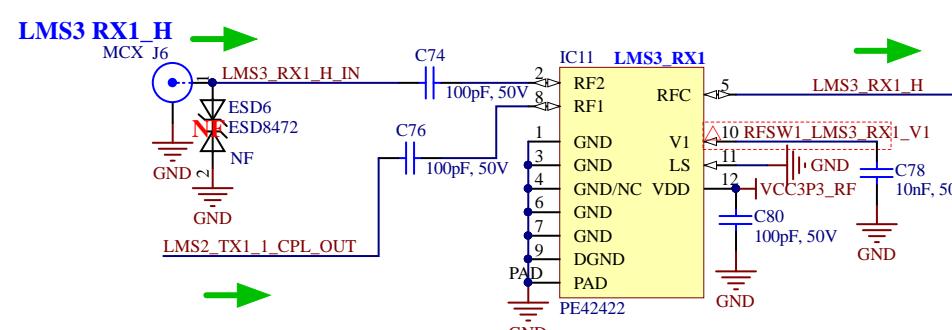
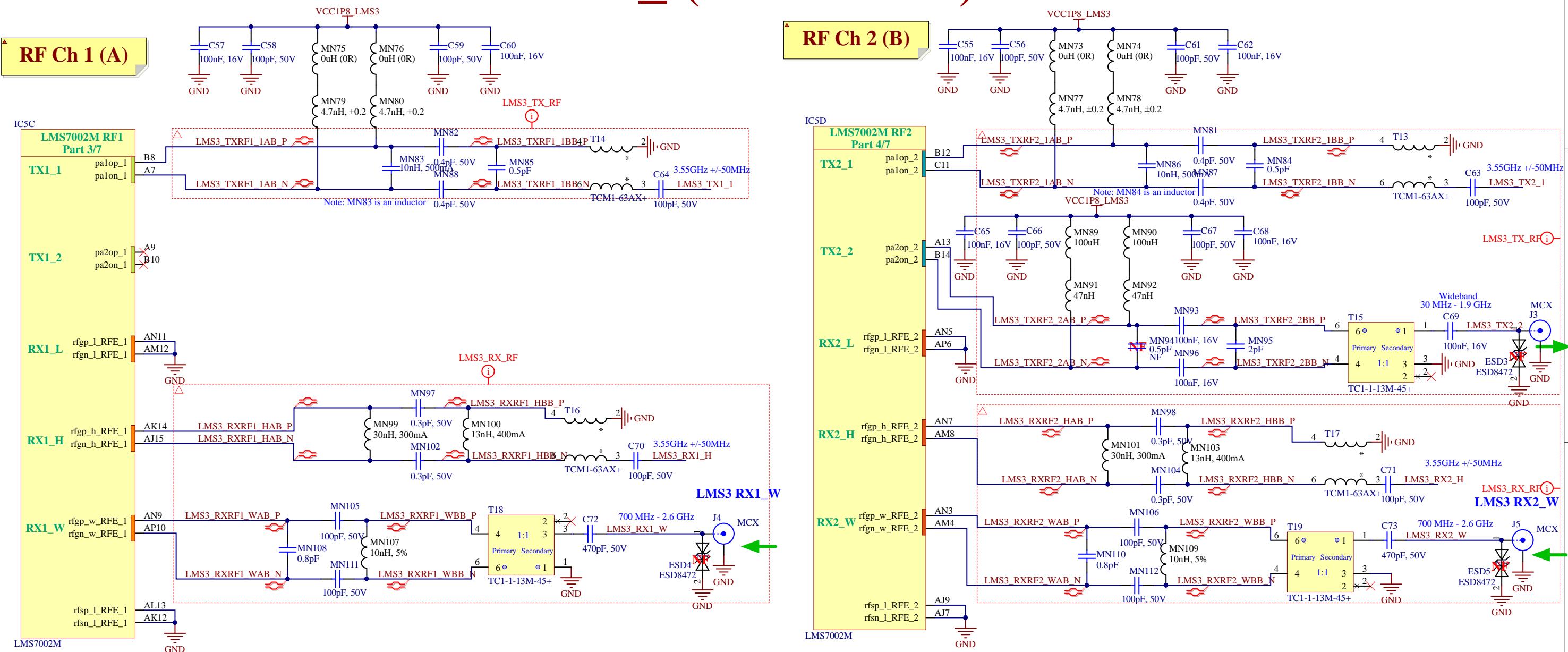


NF elements on sheet: MN94, ESD3, ESD4, ESD5, ESD6, ESD7

Number of NF elements on sheet: 6

LMS7002M RF circuits (LMS3)

LMS3_ (Calibration)



Project name: LimeSDR-X3_Iv2.PrbPcb

Title: LMS7002M RF (LMS3)

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:04:48 Sheet 10 of 31

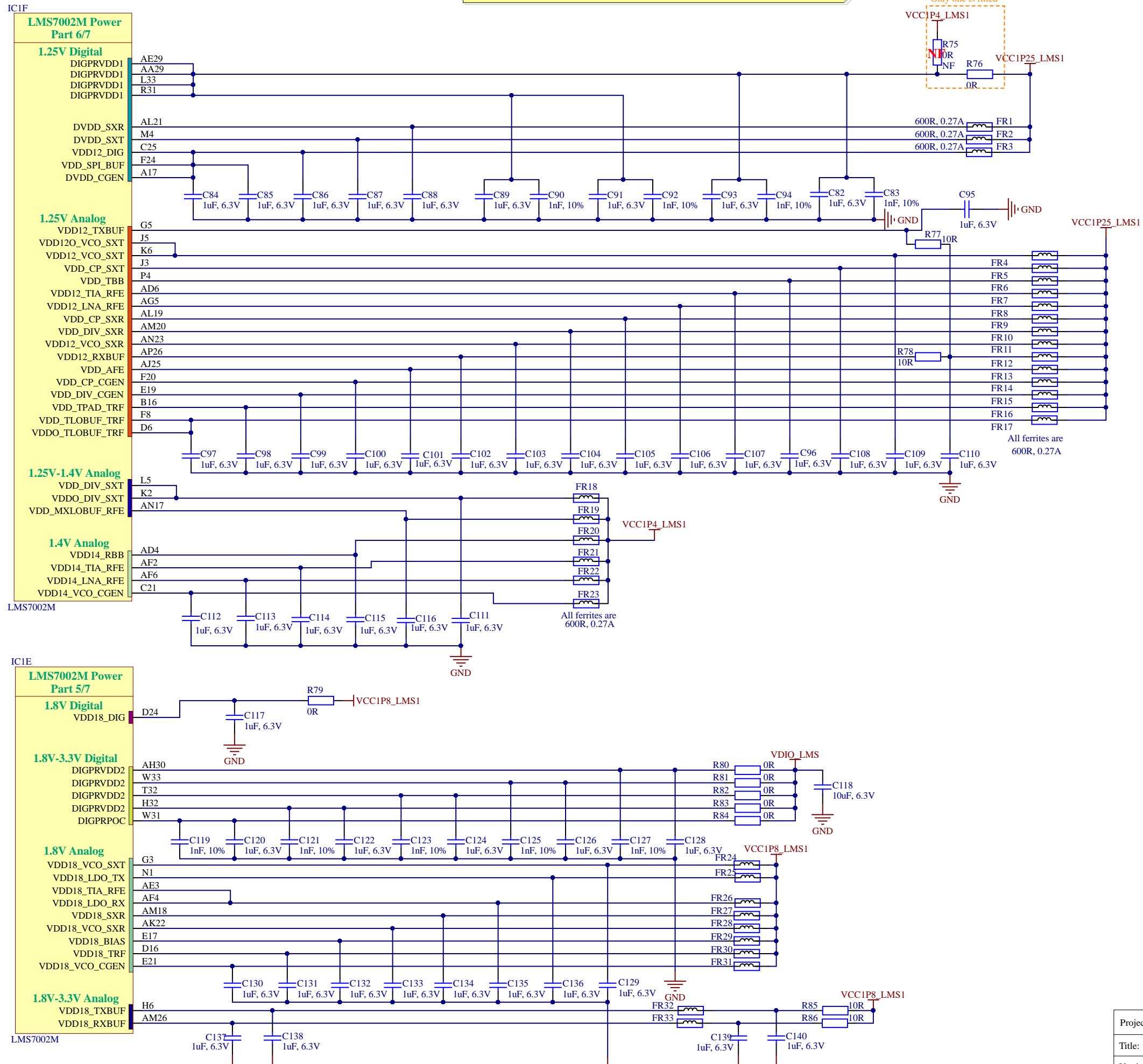
File: 10_LMS3_RF.SchDoc Size: A3

Lime Microsystems
Surry Tech Centre
Guildford GU2 7YG
Surry
United Kingdom



NF elements on sheet: R75
Number of NF elements on sheet: 1

LMS7002M power supply circuit (LMS1)



Project name: LimeSDR-X3_Jv2.PnjPcb

Title: LMS7002M power supply (LMS1)

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:04:52 Sheet 10 of 31

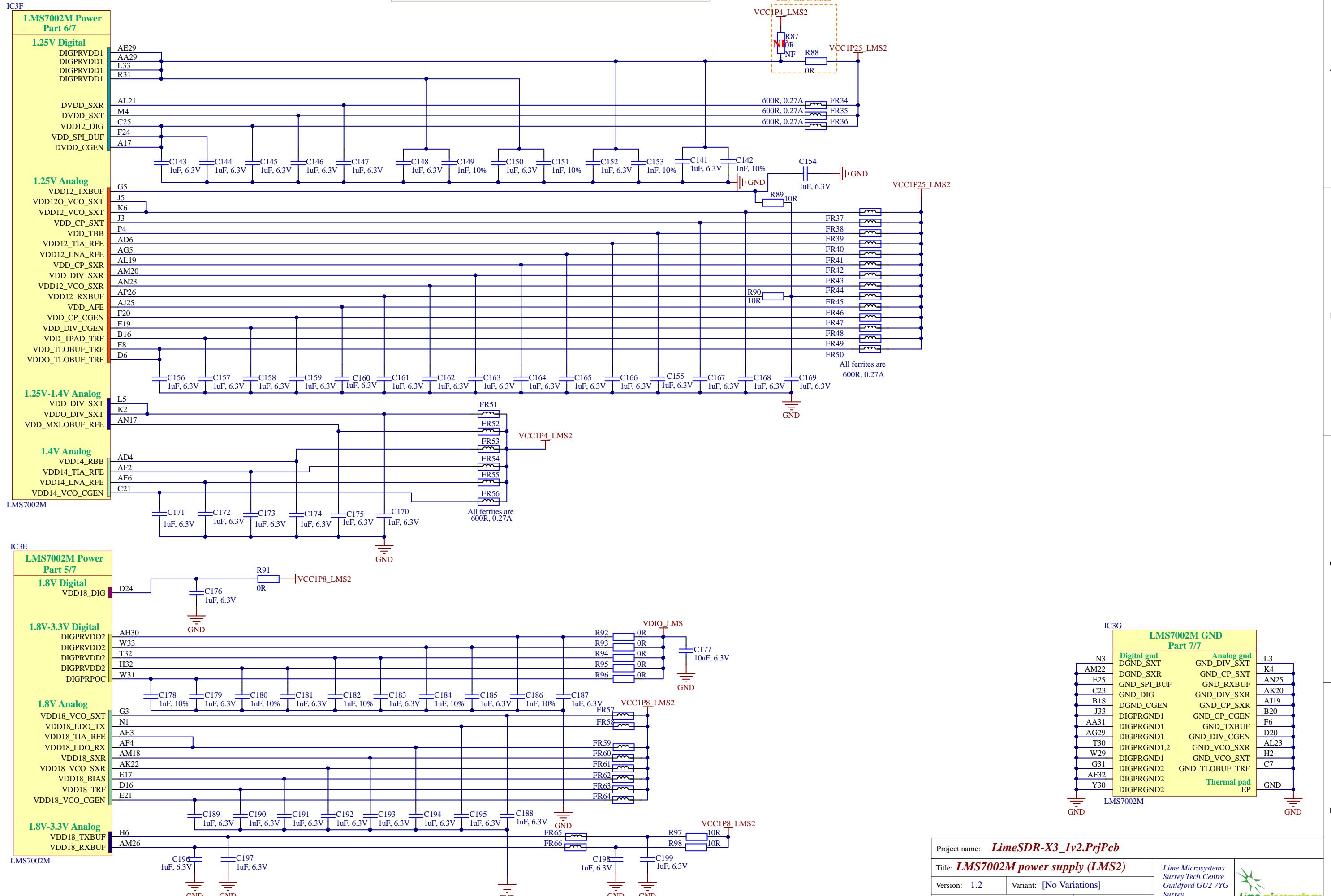
File: 11_LMS1_Power.SchDoc Size: A3

Lime Microsystems
Surrey Tech Centre
Guildford GU2 7YG
Surrey
United Kingdom



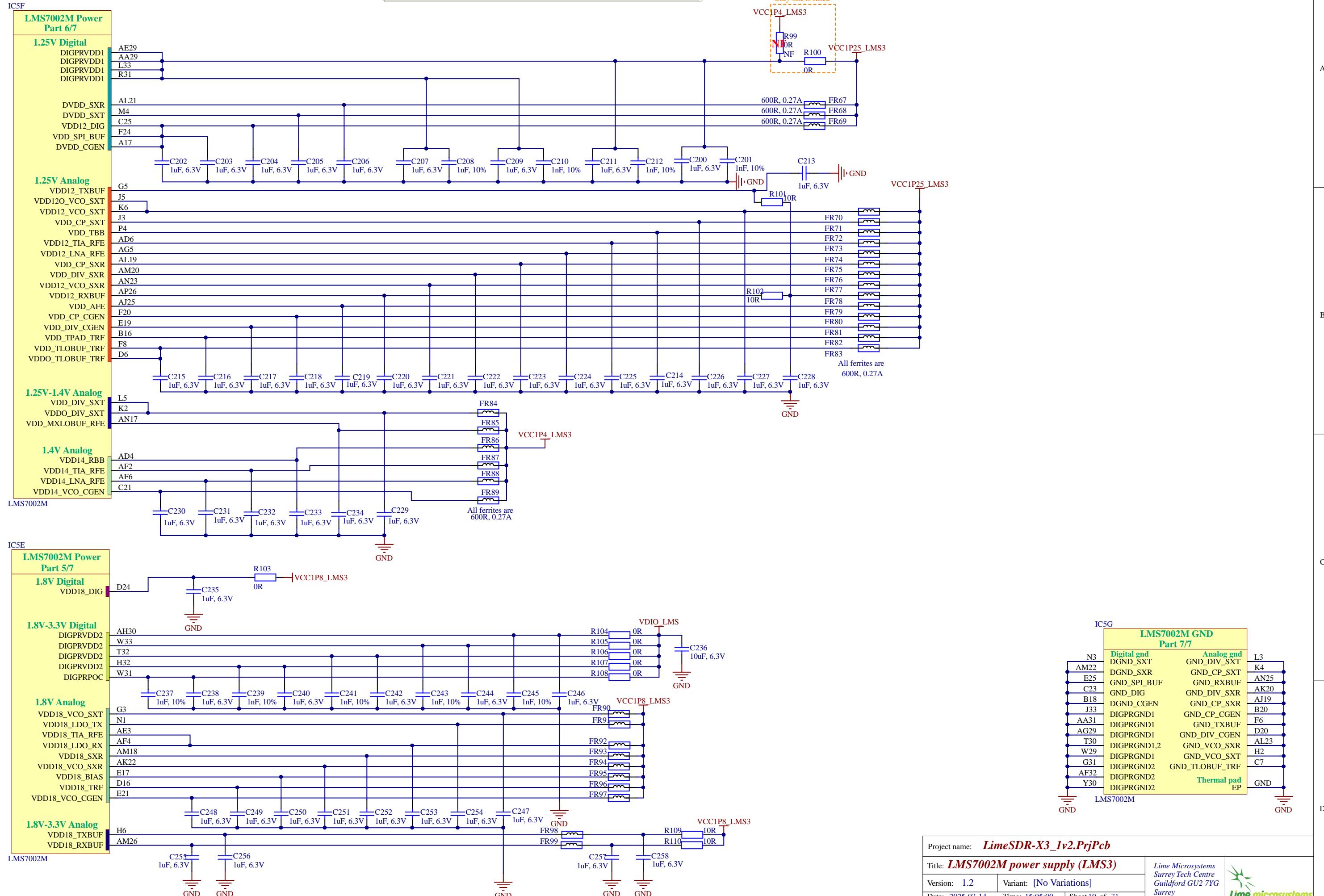
NF elements on sheet: R87
Number of NF elements on sheet: 1

LMS7002M power supply circuit (LMS2)



NF elements on sheet: R99
Number of NF elements on sheet: 1

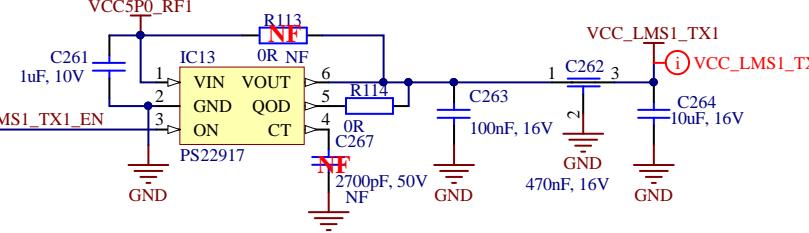
LMS7002M power supply circuit (LMS3)



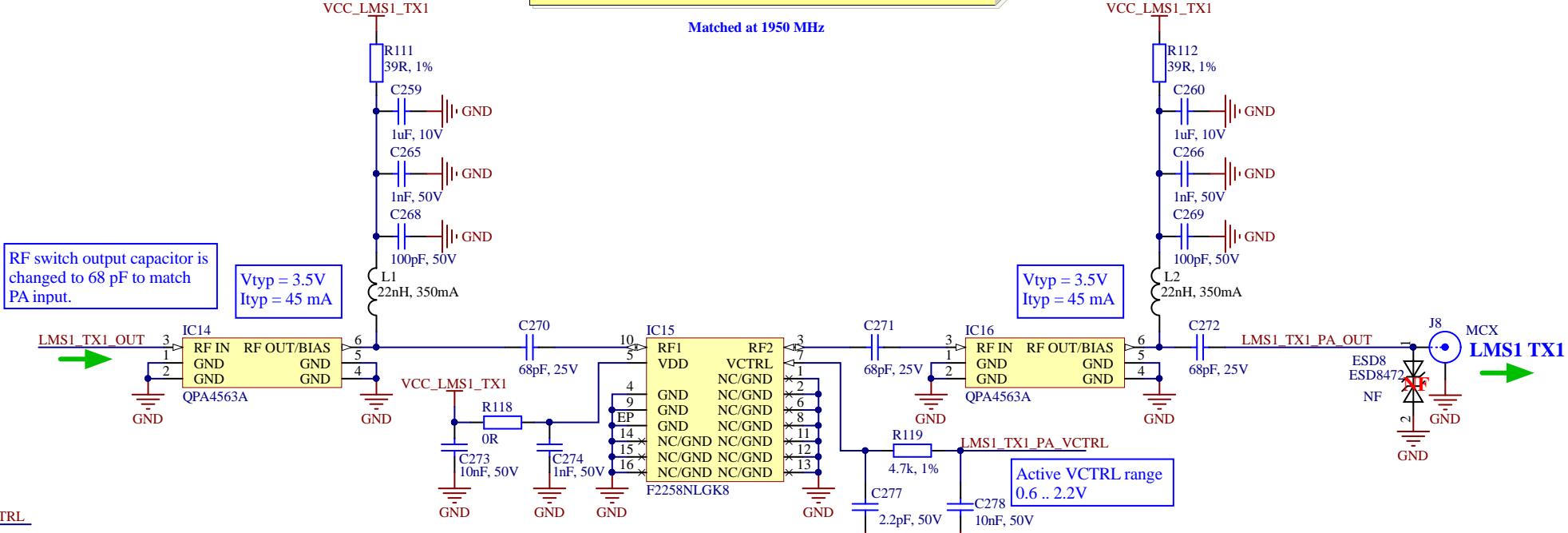
NF elements on sheet: R113, C267, R116, R117, R122, C279, ESD8, R128, C290, ESD9, R131, R132, R137, C302
Number of NF elements on sheet: 14

LMS1 RF PA

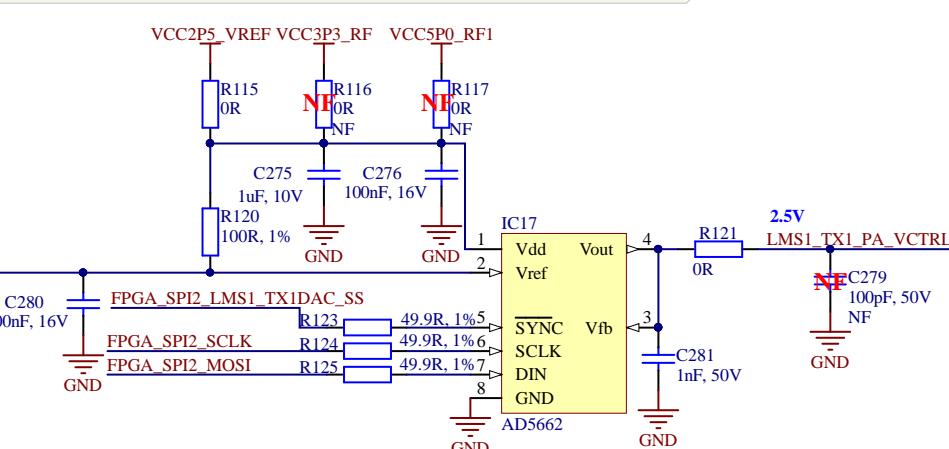
PA power control



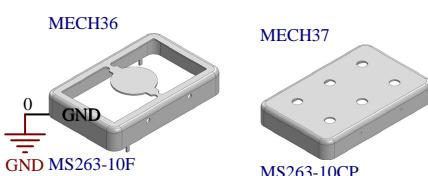
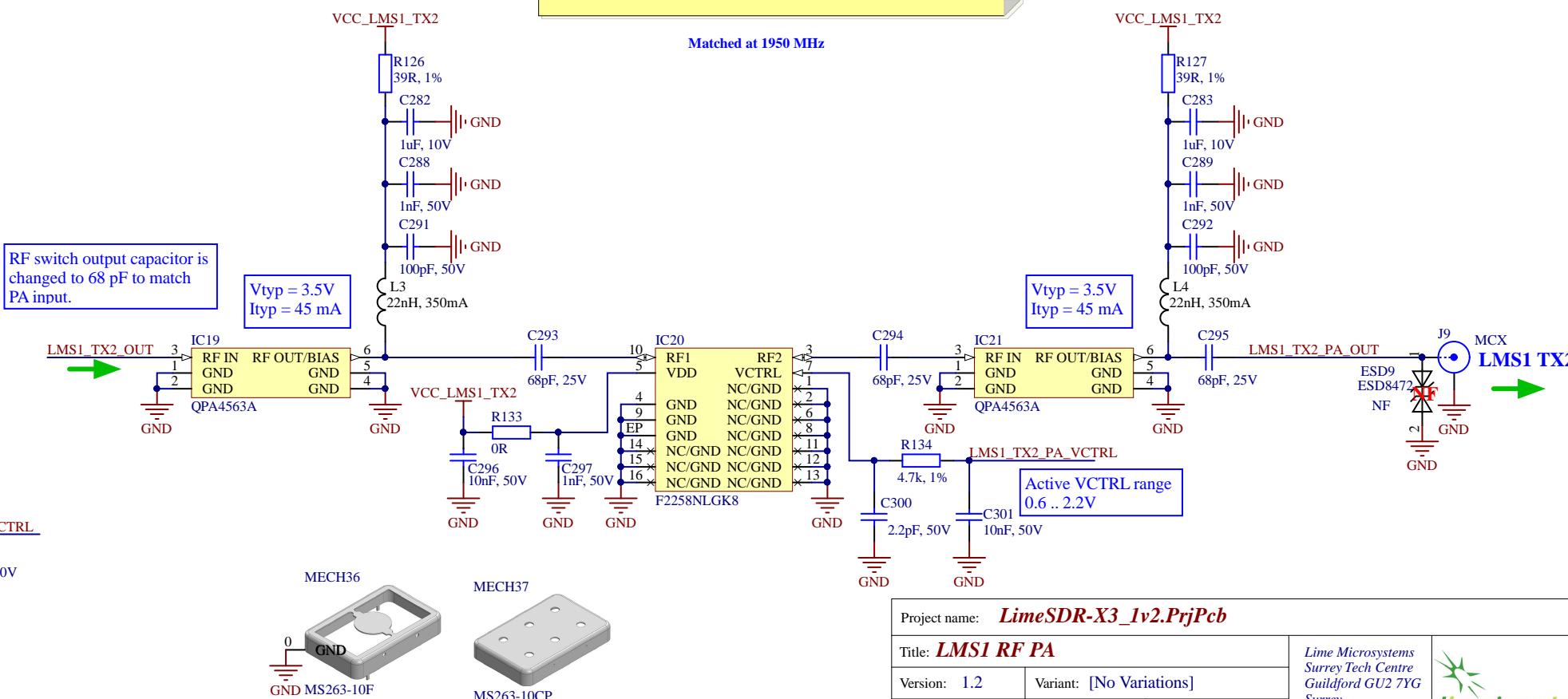
LMS1 TX1 PAs and Attenuator



Voltage variable attenuator (VVA) DAC



LMS1 TX2 PAs and Attenuator



Project name: LimeSDR-X3_Iv2.PrfPcb

Title: LMS1 RF PA

Version: 1.2

Variant: [No Variations]

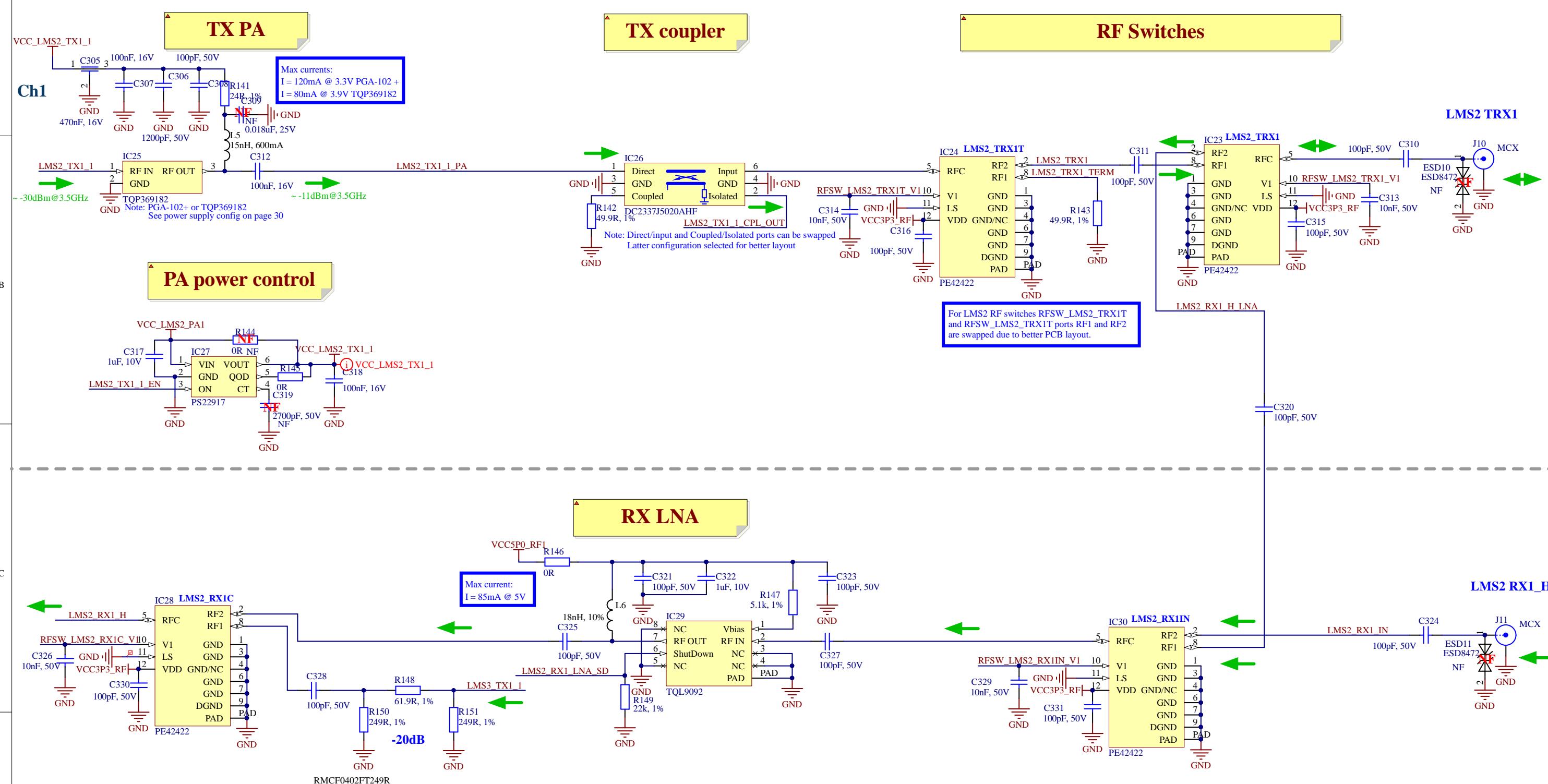
Lime Microsystems
Surrey Tech Centre
Guildford GU2 7YG
Surrey
United Kingdom



NF elements on sheet: C309, ESD10, R144, C319, ESD11

Number of NF elements on sheet: 5

LMS2 RF1 Misc



Project name: LimeSDR-X3_Iv2.PnjPcb

Title: LMS2 RF1 Misc

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:05:08 Sheet 15 of 31

File: 15_LMS2_RF1_Misc.SchDoc Size: A3

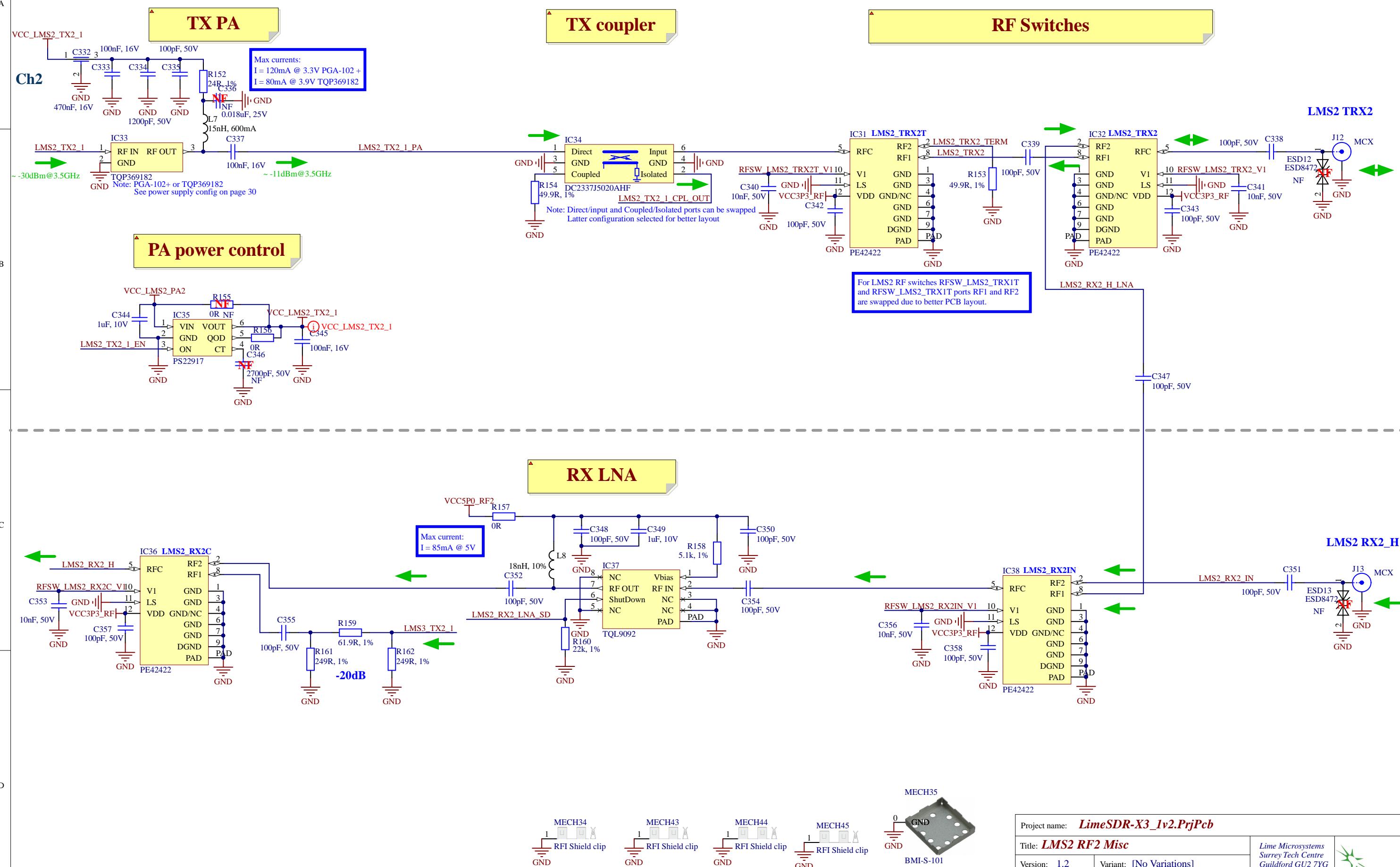
Lime Microsystems
Surrey Tech Centre
Guildford GU2 7YG
Surrey
United Kingdom



NF elements on sheet: C336, ESD12, R155, C346, ESD13

Number of NF elements on sheet: 5

LMS2 RF2 Misc



NF elements on sheet: -
Number of NF elements on sheet: 0

FPGA Banks 12, 13, 14, 15

Board SPI interfaces:

FPGA_SPI0 (VDIO_LMS (default 2.5V)): LMS1, LMS2, LMS3
 FPGA_SPI1 (2.5V): BB_ADC1, BB_ADC2, BB_ADC3, BB_ADC4, CDCM1, CDCM2
 FPGA_SPI2 (2.5V): XO_DAC, XO_20_DAC, LMS1_TX1DAC, LMS1_TX2DAC, ADF

BANK 12

2.5V

XC7A200T-2FBG676C

IO_0_12	AB22	FPGA_SPI1_CDCM_SS
IO_L1P_T0_12	AE25	LMS3_BB_ADC1_DA2_P
IO_L1N_T0_12	AE26	LMS3_BB_ADC1_DA2_N
IO_L2P_T0_12	AC22	LMS3_BB_ADC1_DA1_P
IO_L2N_T0_12	AC23	LMS3_BB_ADC1_DA1_N
IO_L3P_T0_DQS_12	AF24	LMS3_BB_ADC1_DA3_P
IO_L3N_T0_DQS_12	AF25	LMS3_BB_ADC1_DA3_N
IO_L4P_T0_12	AD25	LMS3_BB_ADC1_DA0_P
IO_L4N_T0_12	AD26	LMS3_BB_ADC1_DA0_N
IO_L5P_T0_12	AE23	LMS3_BB_ADC1_DB6_P
IO_L5N_T0_12	AE23	LMS3_BB_ADC1_DB6_N
IO_L6P_T0_12	AD23	LMS2_RX1_LNA_SD
IO_L6N_T0_VREF_12	AD24	LMS2_RX2_LNA_SD
IO_L7P_T1_12	AD21	LMS3_BB_ADC1_DB4_P
IO_L7N_T1_12	AE21	LMS3_BB_ADC1_DB4_N
IO_L8P_T1_12	AF19	LMS3_BB_ADC1_DA4_P
IO_L8N_T1_12	AF20	LMS3_BB_ADC1_DA4_N
IO_L9P_T1_DQS_12	AE22	LMS3_BB_ADC1_DB5_P
IO_L9N_T1_DQS_12	AE22	LMS3_BB_ADC1_DB5_N
IO_L10P_T1_12	AD20	LMS3_BB_ADC1_DB3_P
IO_L10N_T1_12	AE20	LMS3_BB_ADC1_DB3_N
IO_L11P_T1_SRCC_12	AB21	WR_PTP_CLK1_125_P
IO_L11N_T1_SRCC_12	AC21	WR_PTP_CLK1_125_N
IO_L12P_T1_MRCC_12	AA20	LMS3_BB_ADC1_CLKOUT_P
IO_L12N_T1_MRCC_12	IO_L12P_T1_MRCC_13	LMS3_BB_ADC1_CLKOUT_N
IO_L13P_T2_MRCC_12	AA19	WR_PTP_CLK0_20
IO_L13N_T2_MRCC_12	AB19	
IO_L14P_T2_SRCC_12	AC19	
IO_L14N_T2_SRCC_12	AD19	
IO_L15P_T2_DQS_12	AC18	CDCM_RESET_N
IO_L15N_T2_DQS_12	AD18	PD_LMS3_BB_ADC2_DRV
IO_L16P_T2_12	AE18	LMS3_BB_ADC1_DA5_P
IO_L16N_T2_12	AE18	LMS3_BB_ADC1_DA5_N
IO_L17P_T2_12	Y18	LMS3_BB_ADC1_DB2_P
IO_L17N_T2_12	Y18	LMS3_BB_ADC1_DB2_N
IO_L18P_T2_12	AA18	LMS3_BB_ADC1_DA6_P
IO_L18N_T2_12	AE17	LMS3_BB_ADC1_DA6_N
IO_L19P_T2_12	AA17	FPGA_SPI2_LMS1_TX1DAC_SS
IO_L19N_T3_VREF_12	AB17	FPGA_SPI2_LMS1_TX2DAC_SS
IO_L20P_T3_12	AC17	LMS3_BB_ADC1_DB0_P
IO_L20N_T3_12	AD17	LMS3_BB_ADC1_DB0_N
IO_L21P_T3_DQS_12	Y16	LMS3_BB_ADC1_DB1_P
IO_L21N_T3_DQS_12	Y17	LMS3_BB_ADC1_DB1_N
IO_L22P_T3_12	AB16	CDCM_STATUS0
IO_L22N_T3_12	AC16	CDCM_STATUS1
IO_L23P_T3_12	AA15	CDCM_SYNCR
IO_L23N_T3_12	W14	PD_LMS2_BB_ADC1_DRV
IO_L24P_T3_12	W15	PD_LMS2_BB_ADC2_DRV
IO_L24N_T3_12	W16	PD_LMS3_BB_ADC1_DRV
IO_25_12		

BANK 13

2.5V

XC7A200T-2FBG676C

U24	LM75_OS	
U25	LMS3_BB_ADC2_DA5_P	
U26	LMS3_BB_ADC2_DA5_N	
V26	LMS3_BB_ADC2_DA6_P	
AC22	LMS3_BB_ADC2_DA6_N	
W26	LMS3_BB_ADC2_DB0_P	
AC23	LMS3_BB_ADC2_DB0_N	
AC26	LMS3_BB_ADC2_DB6_P	
AC26	LMS3_BB_ADC2_DB6_N	
IO_L3P_T0_DQS_13	AB26	LMS3_BB_ADC2_DB8_P
IO_L3N_T0_DQS_13	AB26	LMS3_BB_ADC2_DB8_N
IO_L4P_T0_13	W25	LMS3_BB_ADC2_DB6_P
IO_L4N_T0_13	Y26	LMS3_BB_ADC2_DB6_N
IO_L5P_T0_13	Y25	LMS3_BB_ADC2_DB5_P
IO_L5N_T0_13	AA25	LMS3_BB_ADC2_DB5_N
IO_L6P_T0_13	V24	HW_VER2
W24	BOM_VER2	
IO_L6N_T0_VREF_13	W24	GND
IO_L7P_T1_13	AA24	LMS3_BB_ADC2_DB1_P
IO_L7N_T1_13	AB25	LMS3_BB_ADC2_DB1_N
IO_L8P_T1_13	AA22	LMS3_BB_ADC2_DA4_P
IO_L8N_T1_13	AA23	LMS3_BB_ADC2_DA4_N
IO_L9P_T1_DQS_13	AB24	LMS3_BB_ADC2_DB3_P
IO_L9N_T1_DQS_13	AC24	LMS3_BB_ADC2_DB3_N
IO_L10P_T1_13	V23	LMS3_BB_ADC2_DA2_P
IO_L10N_T1_13	W23	LMS3_BB_ADC2_DA2_N
Y22	HW_VER1	
Y23	BOM_VER1	
IO_L11P_T1_SRCC_13	Y23	X
IO_L11N_T1_SRCC_13	Y23	
IO_L12P_T1_MRCC_13	U22	LMS3_BB_ADC2_CLKOUT_P
IO_L12N_T1_MRCC_13	V22	LMS3_BB_ADC2_CLKOUT_N
IO_L13P_T2_MRCC_13	U21	CLK100_FPGA_P
IO_L13N_T2_MRCC_13	V21	MRCC
IO_L14P_T2_SRCC_13	W21	CLK100_FPGA_N
IO_L14N_T2_SRCC_13	T20	
IO_L15P_T2_DQS_13	Y21	MRCC
IO_L15N_T2_DQS_13	T20	FPGA_LED1_G
IO_L16P_T2_DQS_13	Y20	
IO_L16N_T2_12	Y20	LMS3_BB_ADC2_DB2_P
IO_L17P_T2_12	Y20	LMS3_BB_ADC2_DB2_N
IO_L17N_T2_12	T19	LMS3_BB_ADC2_DA3_P
IO_L17P_T2_13	Y19	LMS3_BB_ADC2_DA3_N
IO_L18P_T2_12	T19	LMS3_BB_ADC2_DB4_P
IO_L18N_T2_12	W19	LMS3_BB_ADC2_DB4_N
IO_L19P_T2_12	V18	HW_VER0
IO_L19N_T3_VREF_13	W18	GND
IO_L20P_T3_12	T14	LMS3_BB_ADC2_DA0_P
IO_L20N_T3_12	T15	LMS3_BB_ADC2_DA0_N
IO_L21P_T3_DQS_13	T17	LMS3_BB_ADC2_DA1_P
IO_L21N_T3_DQS_13	T18	LMS3_BB_ADC2_DA1_N
IO_L22P_T3_12	U15	FPGA_LED3_G
IO_L22N_T3_12	U16	FPGA_LED2_G
IO_L23P_T3_12	U14	FPGA_LED4_G
IO_L23N_T3_12	V14	FPGA_LED4_R
IO_L24P_T3_12	V16	FPGA_LED3_R
IO_L24N_T3_12	V17	FPGA_LED2_R
IO_25_13	U17	FPGA_LED1_R

BANK 14

3.3V

XC7A200T-2FBG676C

M19	ADF_MUXOUT	
IO_L1P_T0_D00_MOSI_14	R14	FPGA_CFG_D00
IO_L1N_T0_D01_DIN_14	R15	FPGA_CFG_D01
IO_L2P_T0_D02_14	P14	FPGA_CFG_D02
IO_L2N_T0_D03_14	N14	FPGA_CFG_D03
IO_L3P_T0_DQ5_PUDC_B_14	P15	PMOD_A_PIN9
IO_L3N_T0_DQS_EMCCLK_14	N16	PMOD_A_PIN10
IO_L4P_T0_D04_14	N17	FPGA_I2C_SDA
IO_L4N_T0_D05_14	R16	WR_PTP_SFP_TX_FAULT
IO_L5P_T0_D06_14	R17	WR_PTP_SFP_TX_DISABLE
IO_L5N_T0_D07_14	P18	FPGA_CFG_CS
IO_L6N_T0_D08_VREF_14	N18	WR_PTP_SFP_MOD_DEF2
IO_L7P_T1_D09_14	K25	WR_PTP_SFP_MOD_DEF1
IO_L7N_T1_D10_14	K26	WR_PTP_SFP_MOD_DEF0
IO_L8P_T1_D11_14	M20	WR_PTP_SFP_RATE_SEL
IO_L8N_T1_D12_14	L20	GNSS_UART_TX
IO_L9P_T1_DQS_14	L24	GNSS_UART_RX
IO_L9N_T1_DQS_D13_14	M25	EXT_PPS_IN
IO_L10P_T1_D14_14	M24	PMOD_B_PIN2
IO_L10N_T1_D15_14	M25	EXT_SYNC_OUT
IO_L11P_T1_SRCC_14	L22	WR_PTP_CLK1_20
IO_L11N_T1_SRCC_14	L23	PMOD_B_PIN1
IO_L12P_T1_MRCC_14	M21	LMK2_CLK_MRCC_P
IO_L12N_T1_MRCC_14	M22	PMOD_B_PIN3
IO_L13P_T2_MRCC_14	N21	EXT_PPS_IN_MRCC_P
IO_L13N_T2_MRCC_14	N22	PMOD_B_PIN4
IO_L14P_T2_SRCC_14	P20	EXT_SYNC_IN_SRCC_P
IO_L14N_T2_SRCC_14	P21	PMOD_A_PIN3
IO_L15P_T2_DQS_RDWR_B_14	N23	PMOD_B_PIN10
IO_L15N_T2_DQS_DOUT_CS0_B_14	N24	LMS2_BB_DAC2_PD
IO_L16P_T2_CSI_B_14	P19	PMOD_A_PIN4
IO_L16N_T2_12	N19	PMOD_B_PIN7
IO_L17P_T2_A14_D31_14	P23	PMOD_A_PIN2
IO_L17P_T2_A14_D30_14	P24	PMOD_B_PIN8
IO_L17N_T2_A13_D29_14	P20	PMOD_A_PIN7
IO_L18P_T2_A12_D28_14	R21	PMOD_A_PIN8
IO_L18N_T2_A11_D27_14	R25	PMOD_A_PIN1
IO_L19P_T3_A10_D26_14	P25	PMOD_B_PIN9
IO_L19N_T3_A09_D25_VREF_14	N26	XO_VC_FPGA
IO_L20P_T3_A08_D24_14	M26	LMS2_BB_DAC1_PD
IO_L20N_T3_A07_D23_14	T24	WR_PTP_SFP_LOS
IO_L21P_T3_DQS_14	T25	PTP_CLK1_OUT
IO_L21N_T3_DQS_A06_D22_14	R26	PTP_CLK2_OUT
IO_L22P_T3_A05_D21_14	R26	PTP_CLK3_OUT
IO_L22N_T3_A04_D20_14	T22	EXT_PPS_OUT
IO_L23P_T3_A03_D19_14	R22	PCIE_SMCLK
IO_L23N_T3_A02_D18_14	T23	PCIE_SMDAT
IO_L24P_T3_A01_D17_14	R23	PCIE_PERSTn
IO_L24N_T3_A00_D16_14	R18	PCIE_WAKEn
IO_25_14		

BANK 15

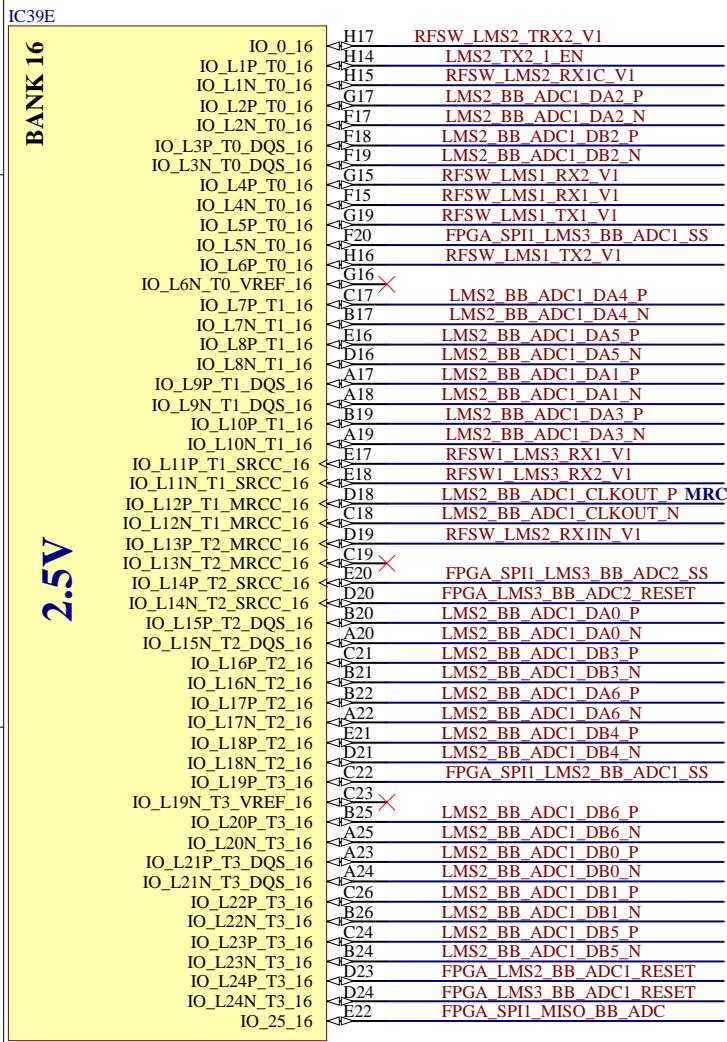
2.5V

XC7A200T-2FBG676C

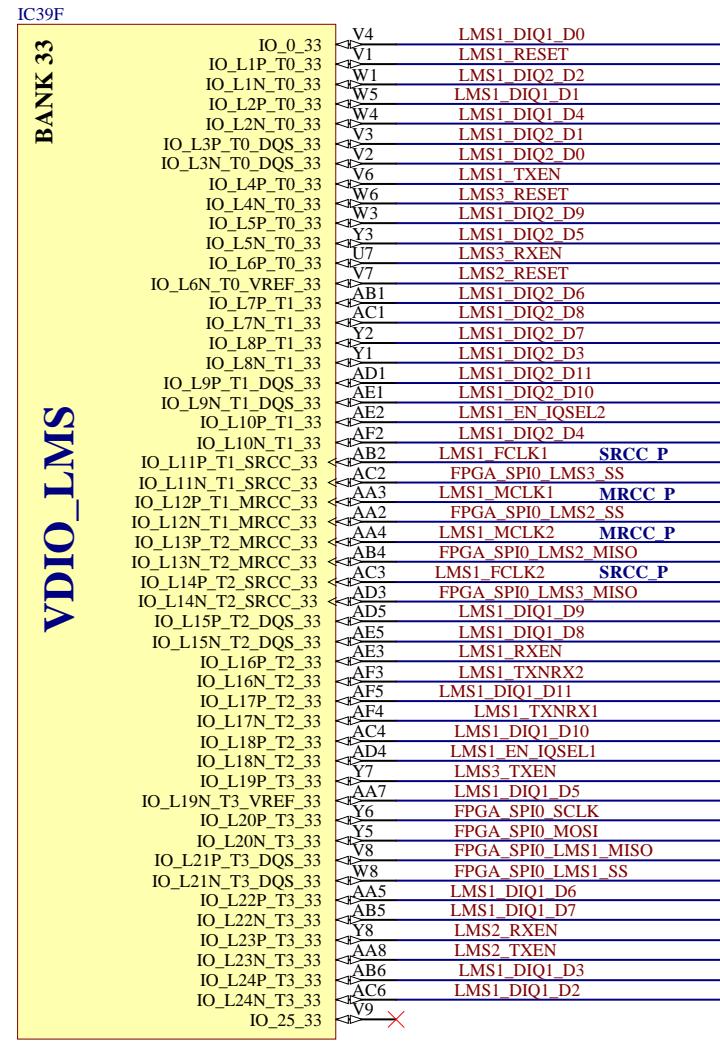
K18	RFSW_LMS2_TRX

NF elements on sheet: -
Number of NF elements on sheet: 0

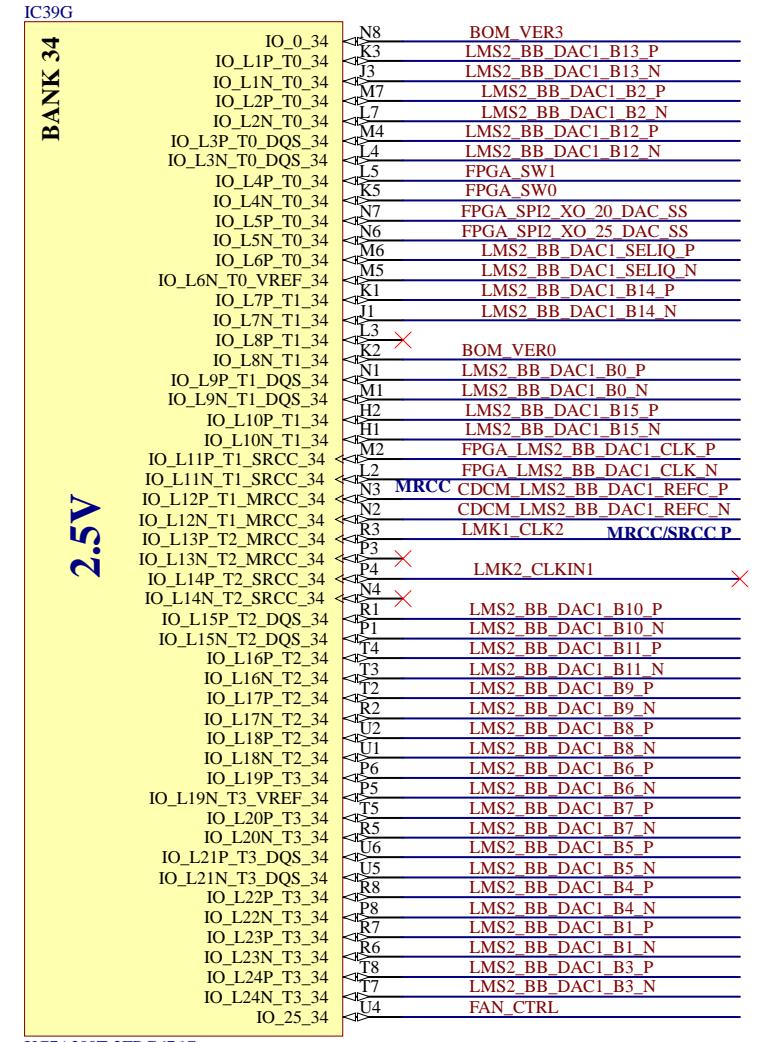
FPGA Banks 16, 33, 34, 35



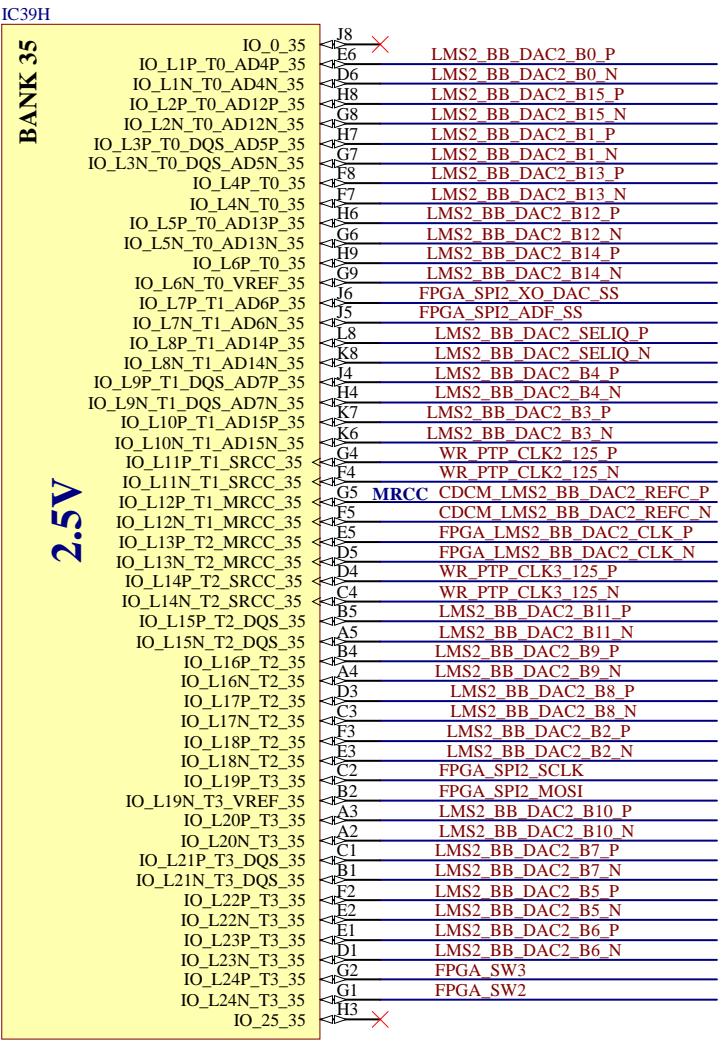
XC7A200T-2FBG676C



XC7A200T-2FBG676C



XC7A200T-2FBG676C



XC7A200T-2FBG676C

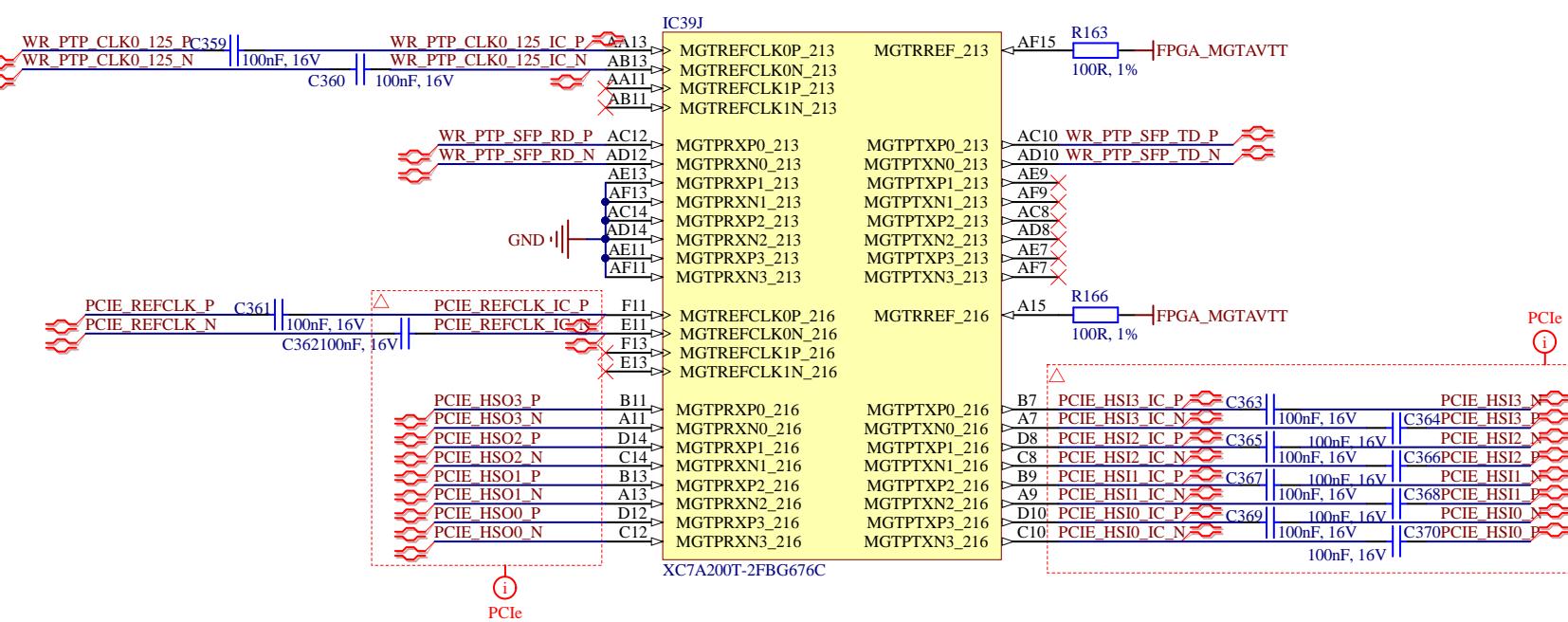
Project name: LimeSDR-X3_Inv2.PrfPcb

NF elements on sheet: R169, R170, R171, R174, R175, IC40, R186, R188

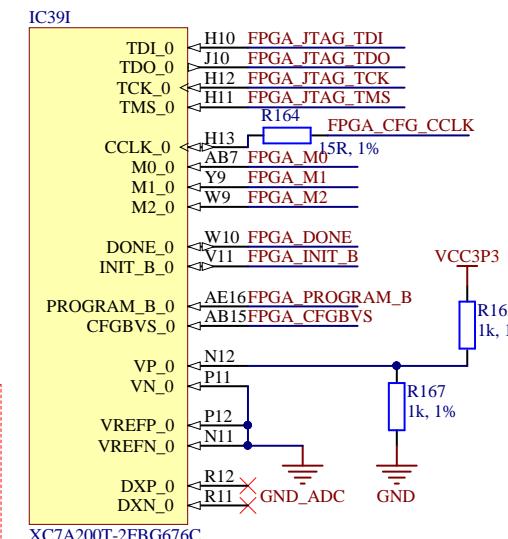
Number of NF elements on sheet: 8

FPGA misc (PCIe, config)

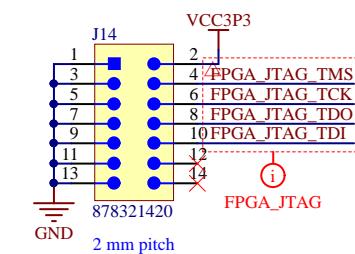
PCI Express x4



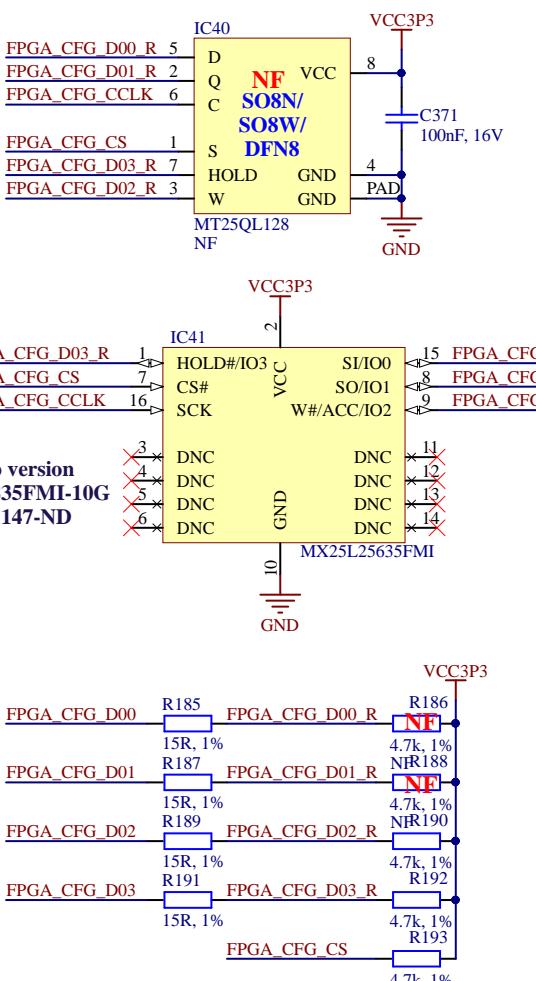
FPGA Configuration



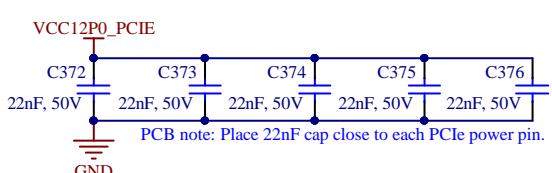
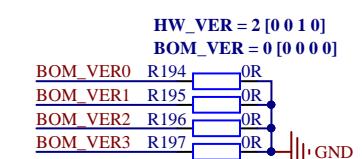
FPGA JTAG



FPGA Configuration Flash



HW_VER, BOM_VER

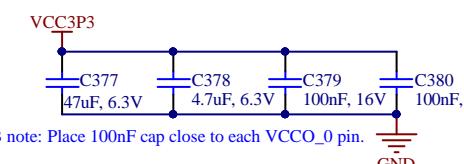


NF elements on sheet: BATTH1, BATT1, R199

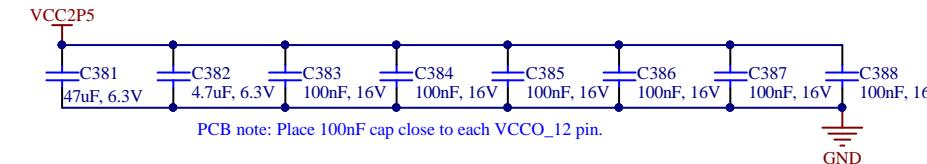
Number of NF elements on sheet: 3

FPGA power

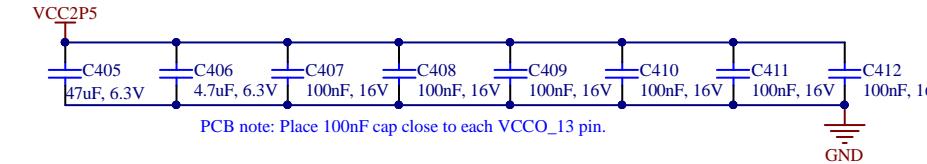
A



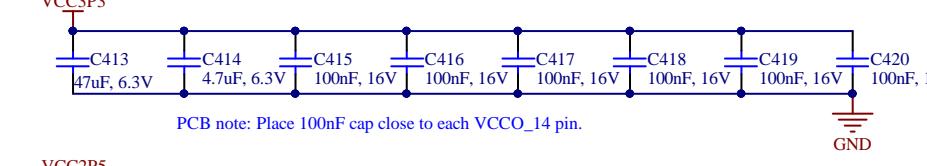
PCB note: Place 100nF cap close to each VCCO_0 pin.



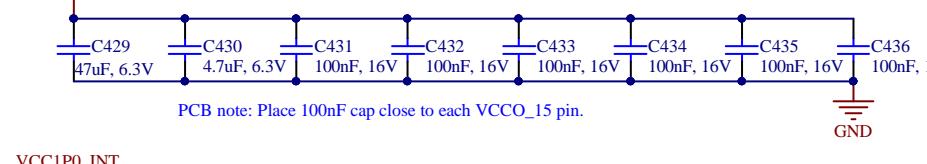
PCB note: Place 100nF cap close to each VCCO_12 pin.



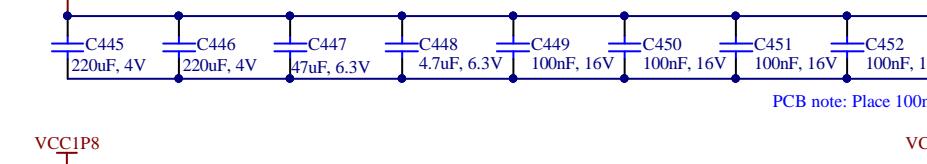
PCB note: Place 100nF cap close to each VCCO_13 pin.



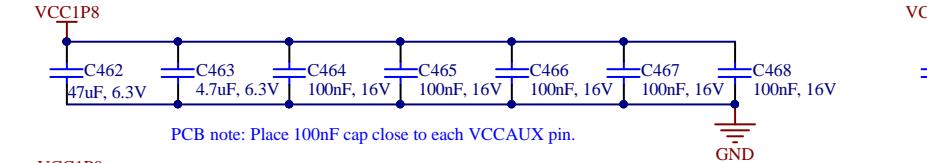
PCB note: Place 100nF cap close to each VCCO_14 pin.



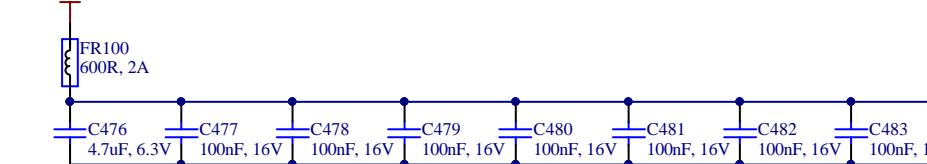
PCB note: Place 100nF cap close to each VCCO_15 pin.



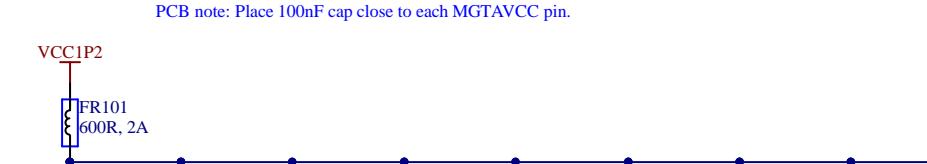
PCB note: Place 100nF cap close to each VCCINT pin.



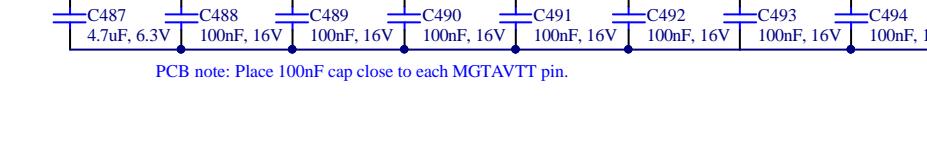
PCB note: Place 100nF cap close to each VCCAUX pin.



PCB note: Place 100nF cap close to each VCCBRAM pin.



PCB note: Place 100nF cap close to each MGTAVCC pin.



PCB note: Place 100nF cap close to each MGTAVTT pin.



FR102 600R, 2A
FR103 600R, 2A
C500 1uF, 10V
C501 100nF, 16V
GND_ADC

Project name: LimeSDR-X3_Iv2.PrjPcb

Title: **FPGA power**

Version: 1.2 Variant: [No Variations]

Lime Microsystems
Surry Tech Centre
Guildford GU2 7YG
Surry
United Kingdom



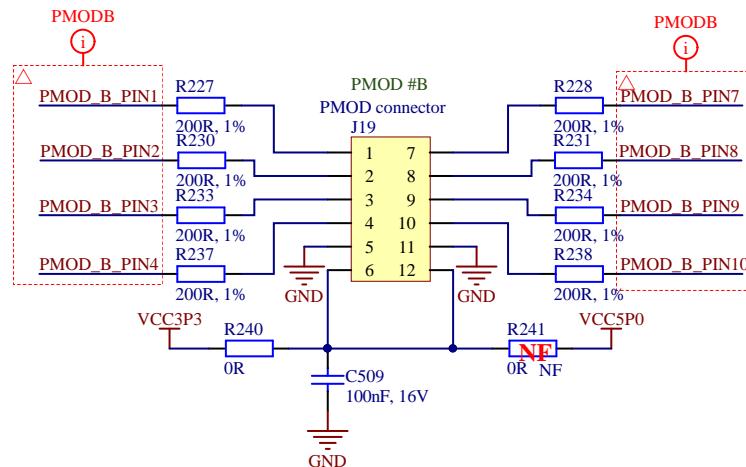
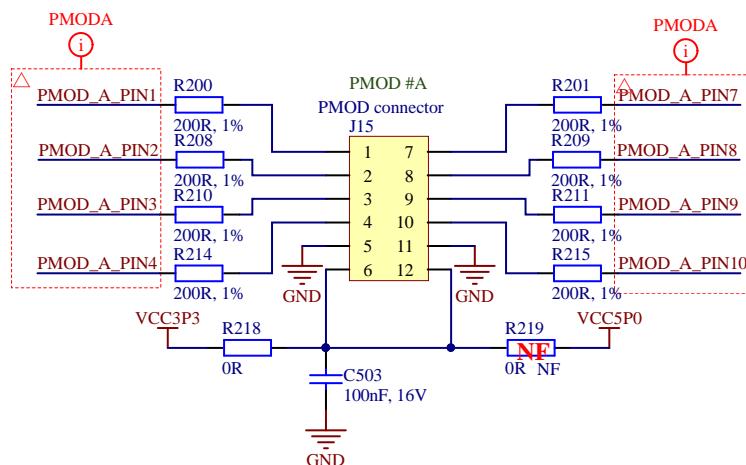
Date: 2025-03-14 Time: 15:05:28 Sheet 20 of 31

File: 20_FPGA_Power.SchDoc Size: A3

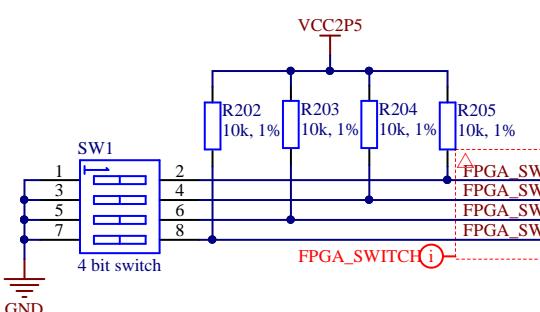
NF elements on sheet: R219, R223, R225, R232, R235, C502, IC45, R241, R242, ESD14, J20, R245, R248, R249, R252, R250
Number of NF elements on sheet: 16

Peripherals

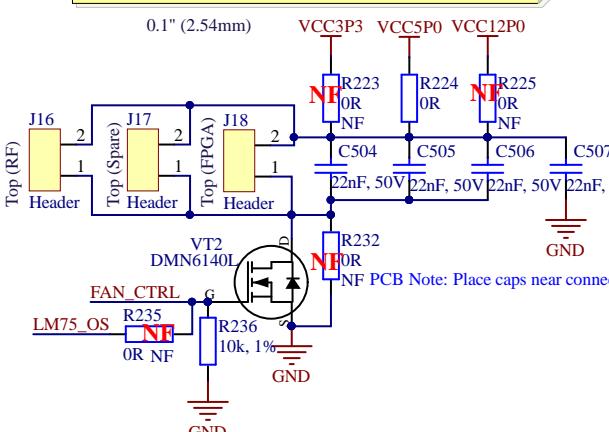
PMOD 12-pin connectors



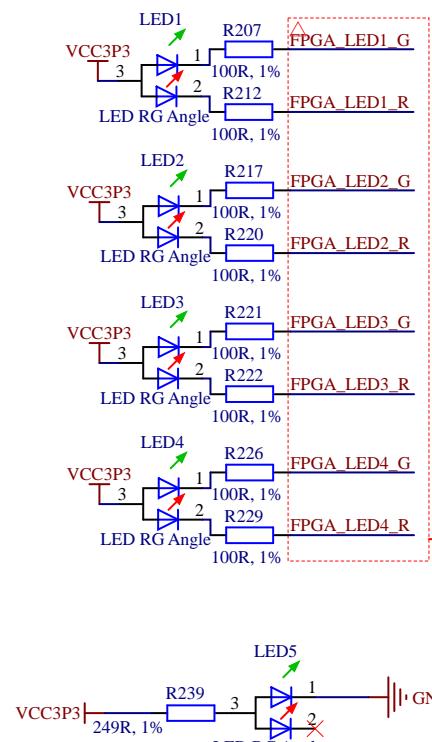
FPGA_SW



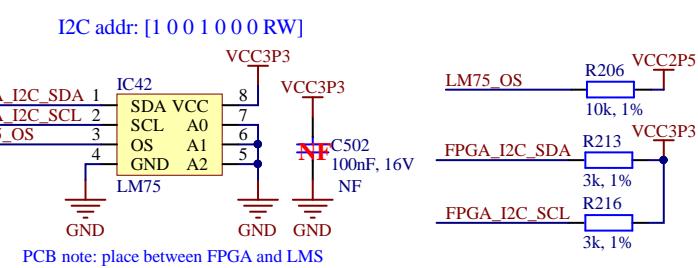
FAN control



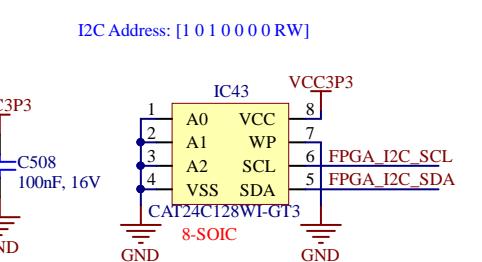
FPGA LEDs



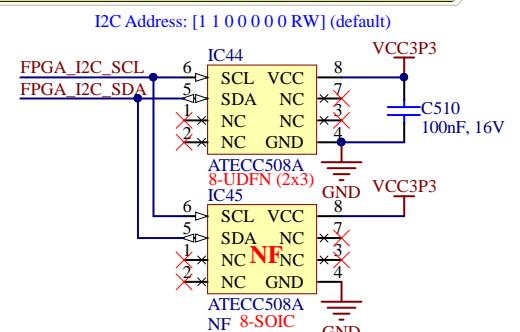
I2C Temperature sensor



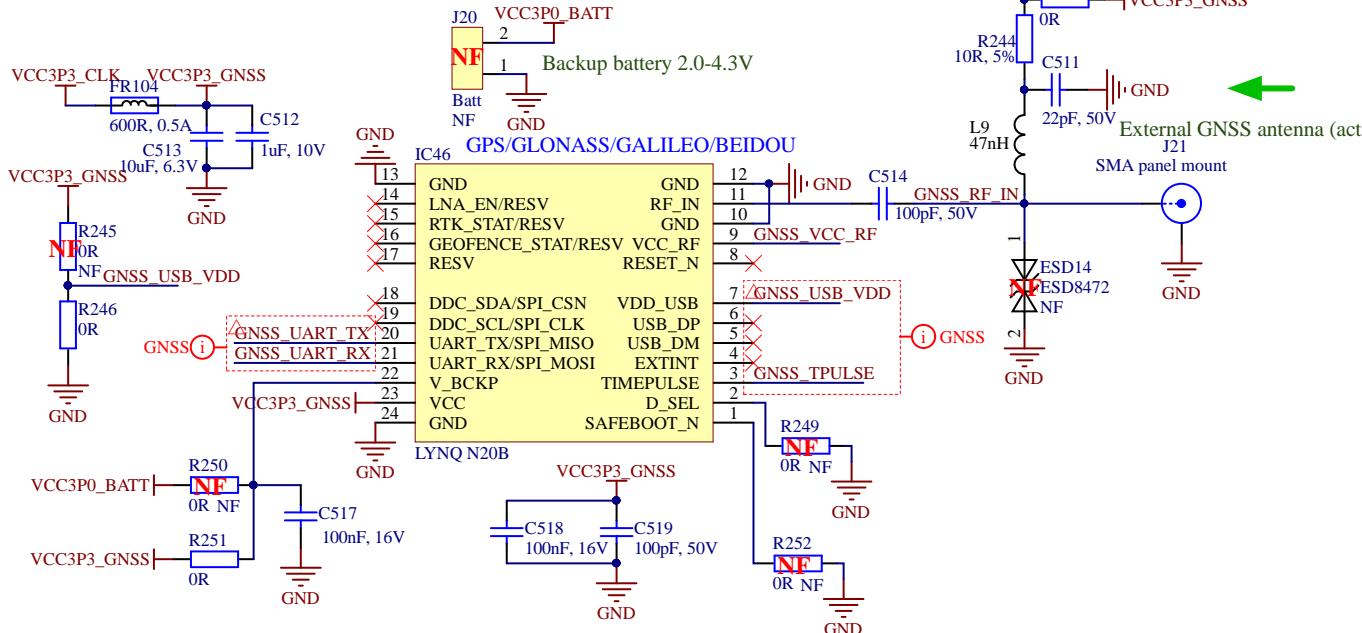
I2C EEPROM



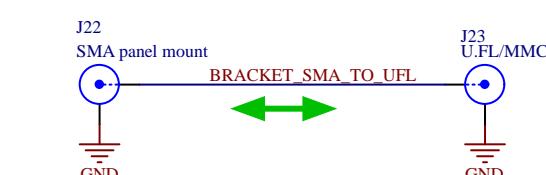
I2C secure key storage



GNSS receiver

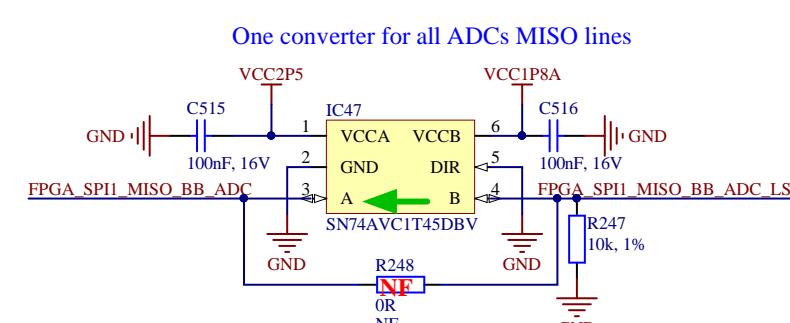


External SMA to internal U.FL



Can be connected internal U.FL connector via pigtail

SPI1 MISO BB ADCs level converter



Project name: LimeSDR-X3_Iv2.PrbPcb

Title: Peripherals

Version: 1.2 Variant: [No Variations]

Lime Microsystems
Surrey Tech Centre
Guildford GU2 7YG
Surrey
United Kingdom



Date: 2025-03-14 Time: 15:05:34 Sheet 21 of 31 File: 21_Peripherals.SchDoc Size: A3

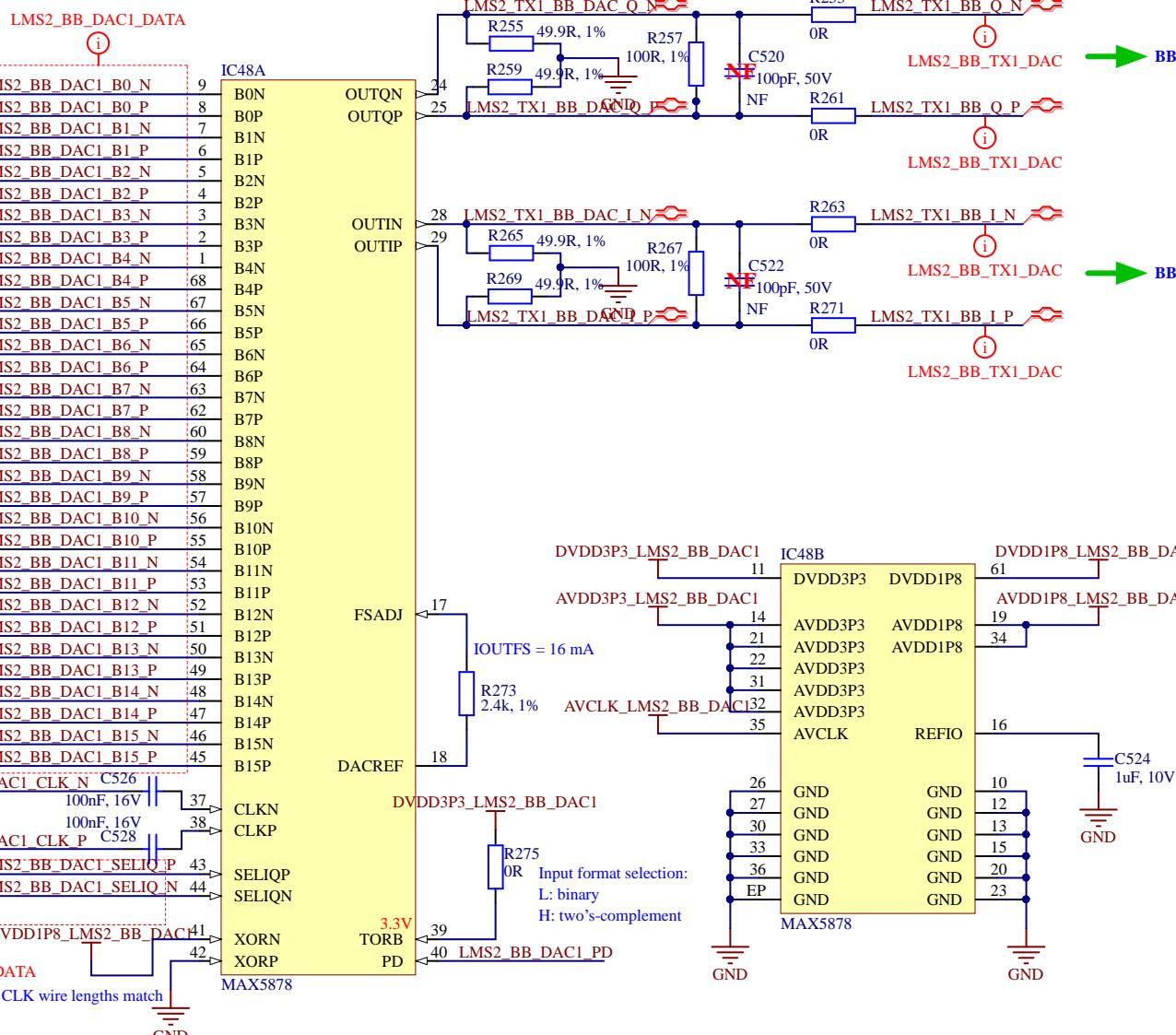
NF elements on sheet: R520, C522, C521, C523

Number of NF elements on sheet: 4

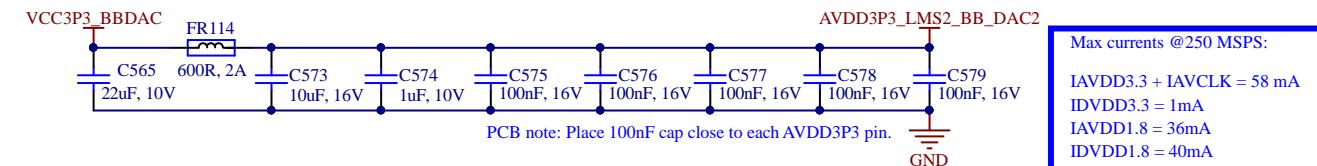
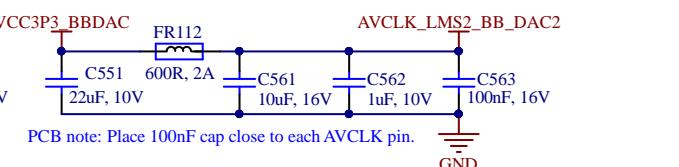
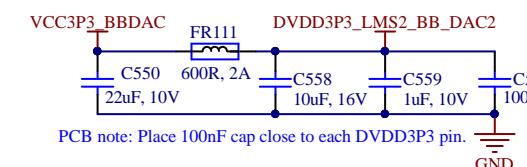
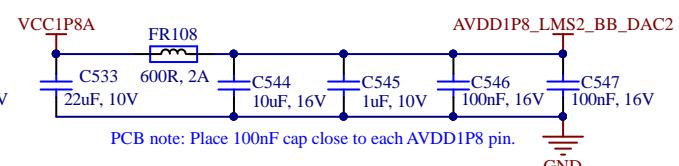
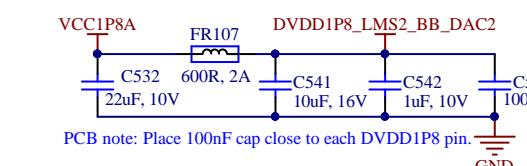
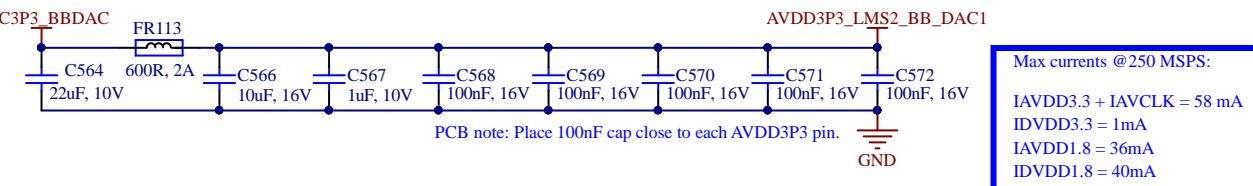
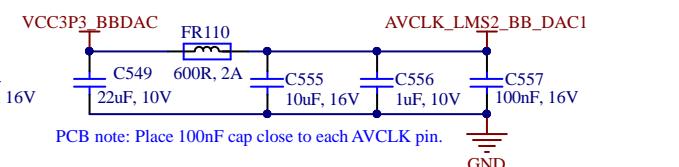
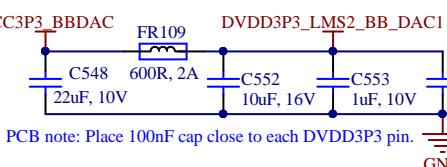
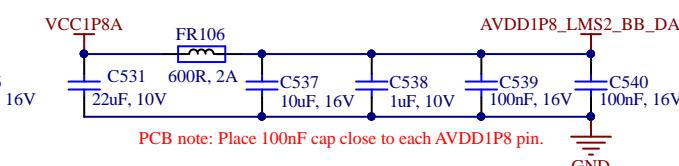
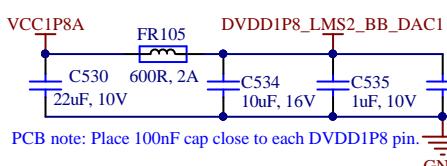
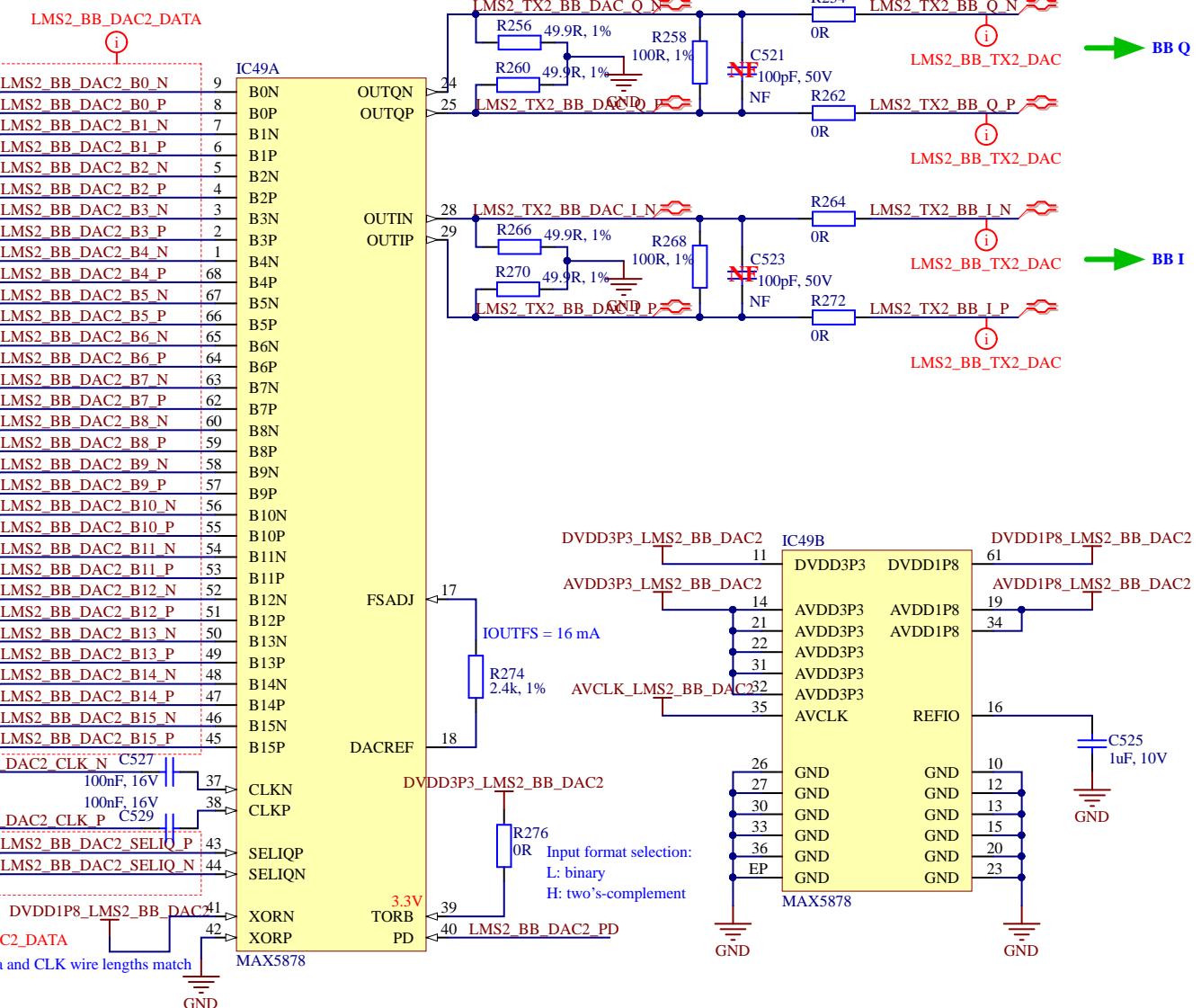
LMS2_TX1_BB DAC

LMS2_TX2_BB DAC

2 ch., 16-bit, 250MSPS



2 ch., 16-bit, 250MSPS



Project name: LimeSDR-X3_Iv2.PrbPcb

Title: LMS2 TX BB DACs

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:05:38 Sheet 22 of 31

File: 22_LMS2_TX_BB_DACs.SchDoc Size: A3

Lime Microsystems
Surry Tech Centre
Guildford GU2 7FG
Surry
United Kingdom

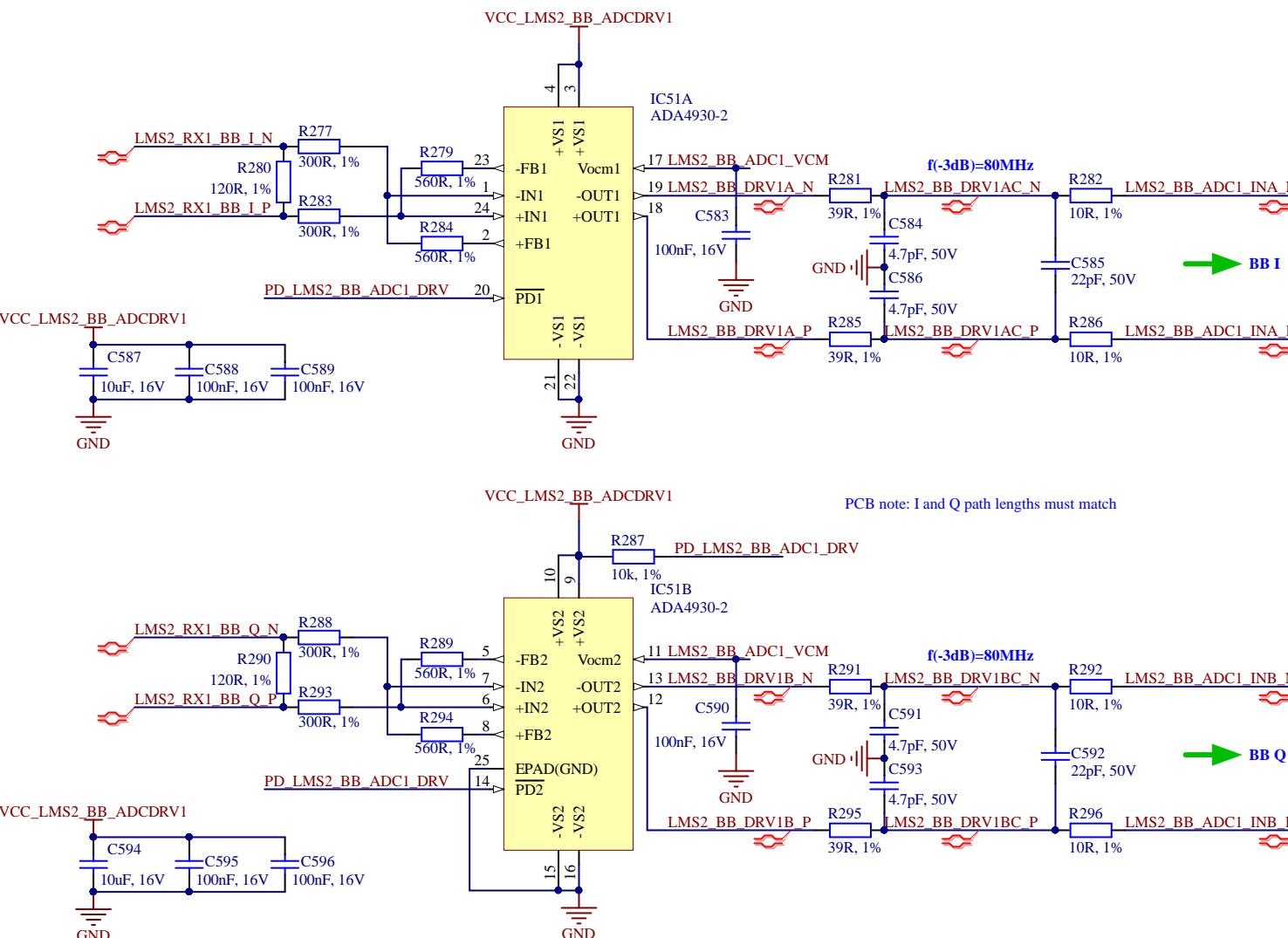


NF elements on sheet: R304
Number of NF elements on sheet: 1

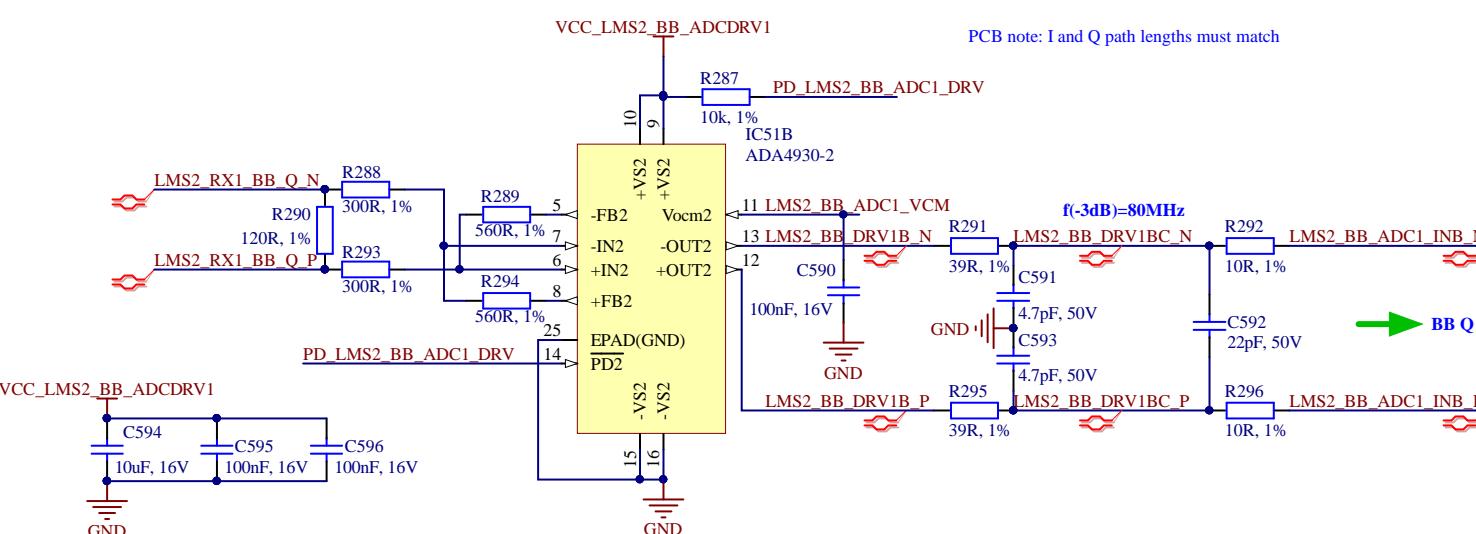
LMS2 RX1 BB ADC

A

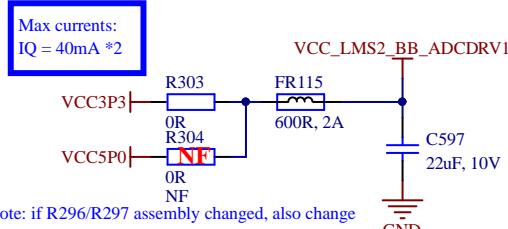
ADC Drivers



B



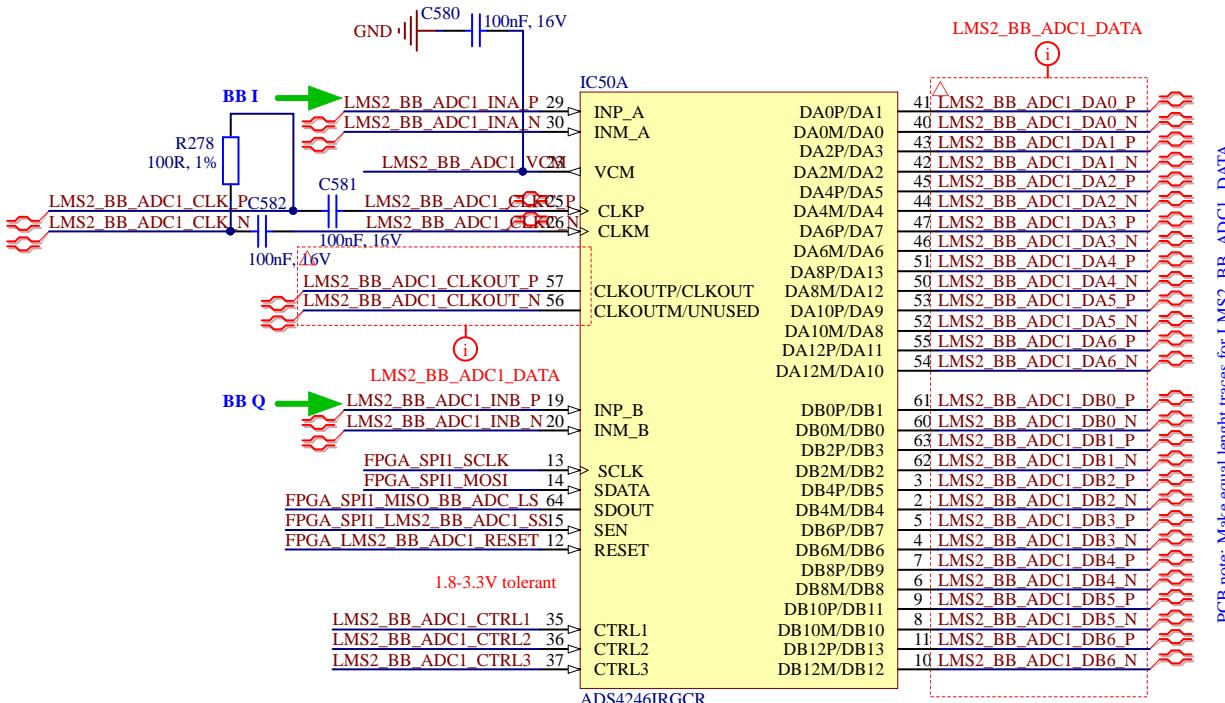
C



Note: if R296/R297 assembly changed, also change equivalent resistors on pages 24, 25 and 26.

ADC

2 ch., 14-bit, 160MSPS

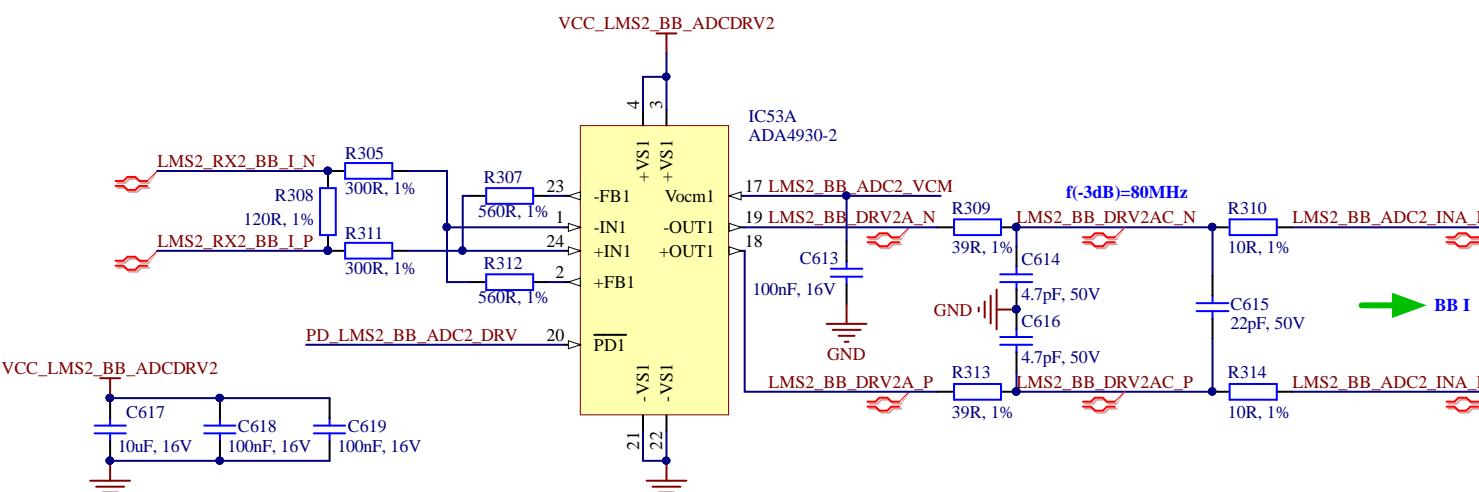


NF elements on sheet: R332
Number of NF elements on sheet: 1

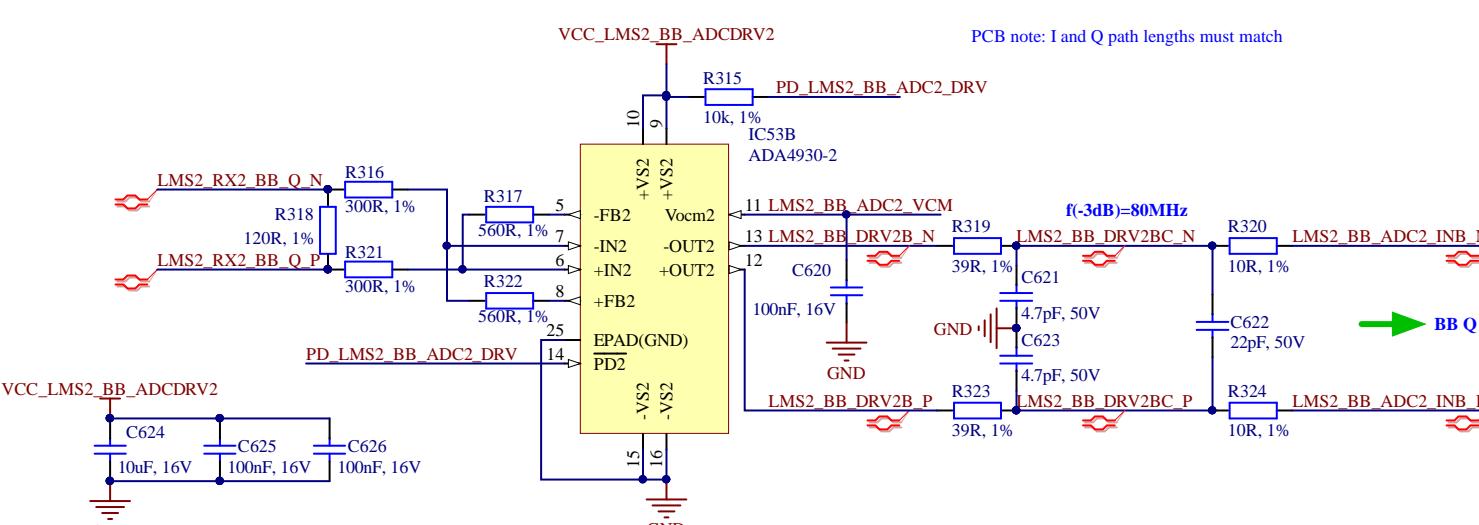
LMS2 RX2 BB ADC

A

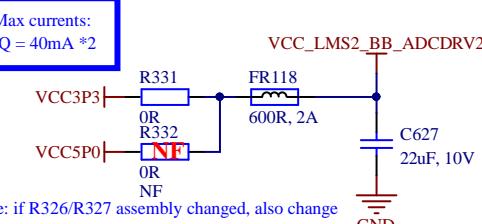
ADC Drivers



B



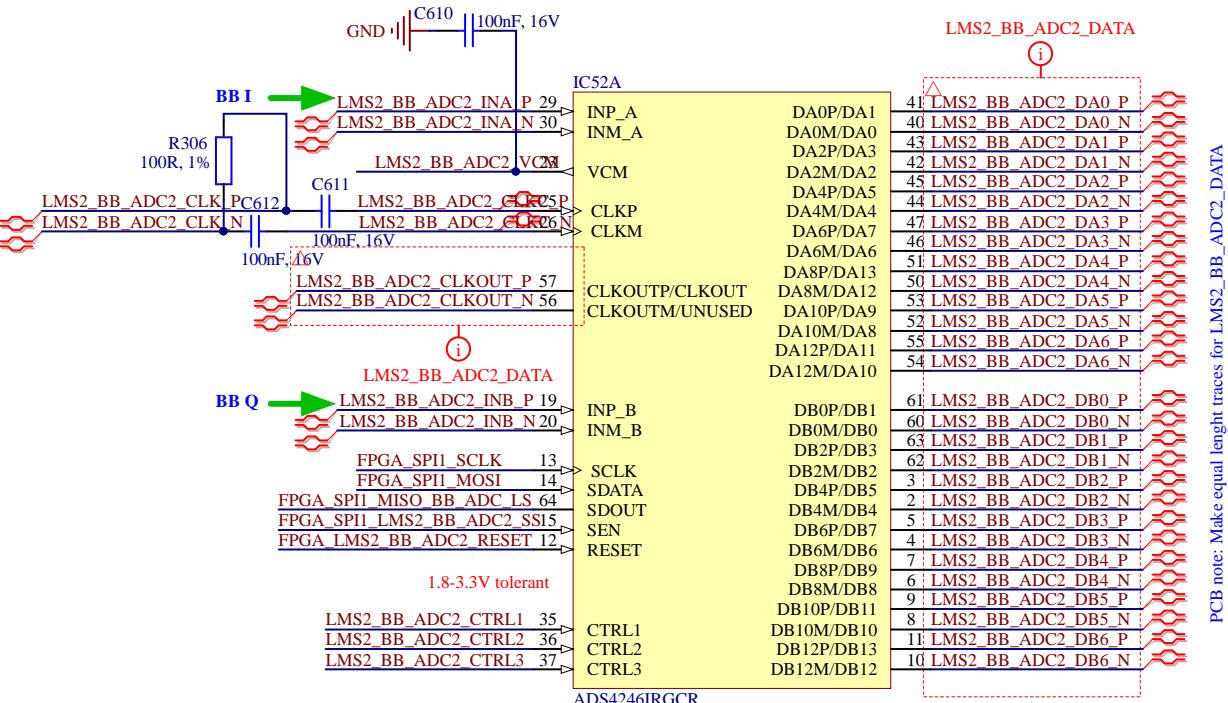
C



D

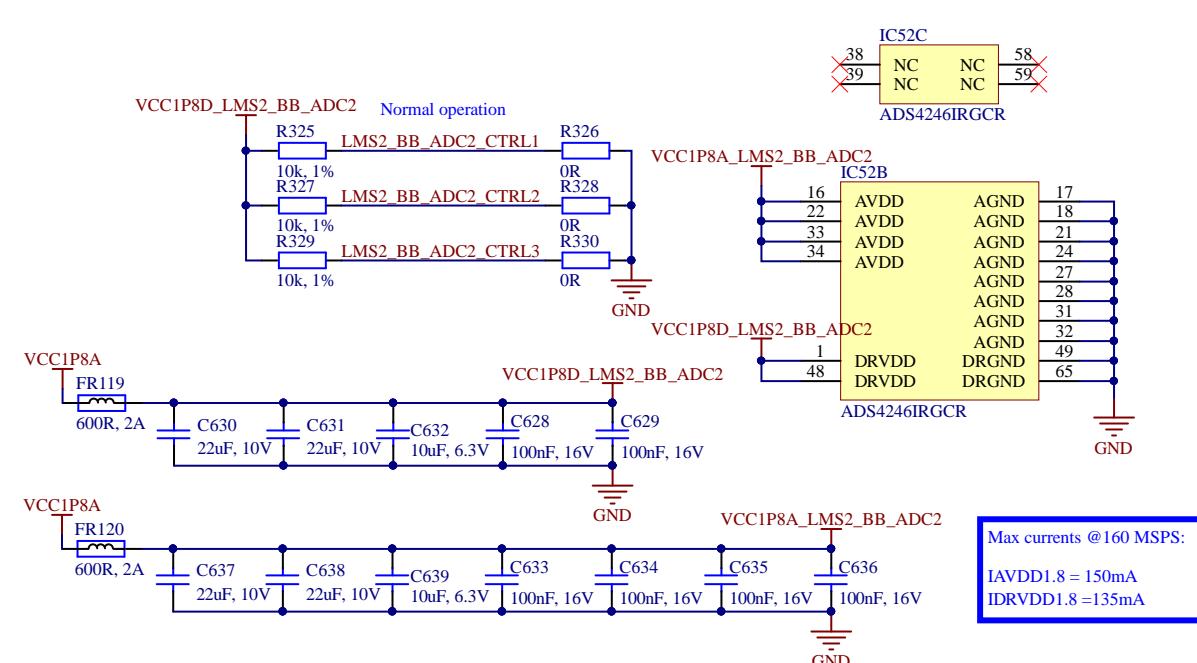
ADC

2 ch., 14-bit, 160MSPS



PCB note: Make equal length traces for LMS2_BB_ADC2_DATA

ADC Control & Power



Max currents @ 160 MSPS:

IAVDD1.8 = 150mA
IDRVD1.8 = 135mA

Project name: LimeSDR-X3_Iv2.PjPcb

Title: LMS2 RX2 BB ADC		Lime Microsystems Surry Tech Centre Guildford GU2 7FG Surry United Kingdom	
Version: 1.2	Variant: [No Variations]		
Date: 2025-03-14	Time: 15:05:47	Sheet 24 of 31	
File: 24_LMS2_RX2_BB_ADC.SchDoc	Size: A3		



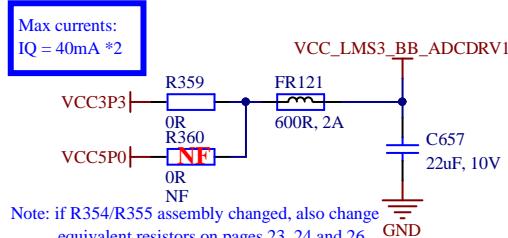
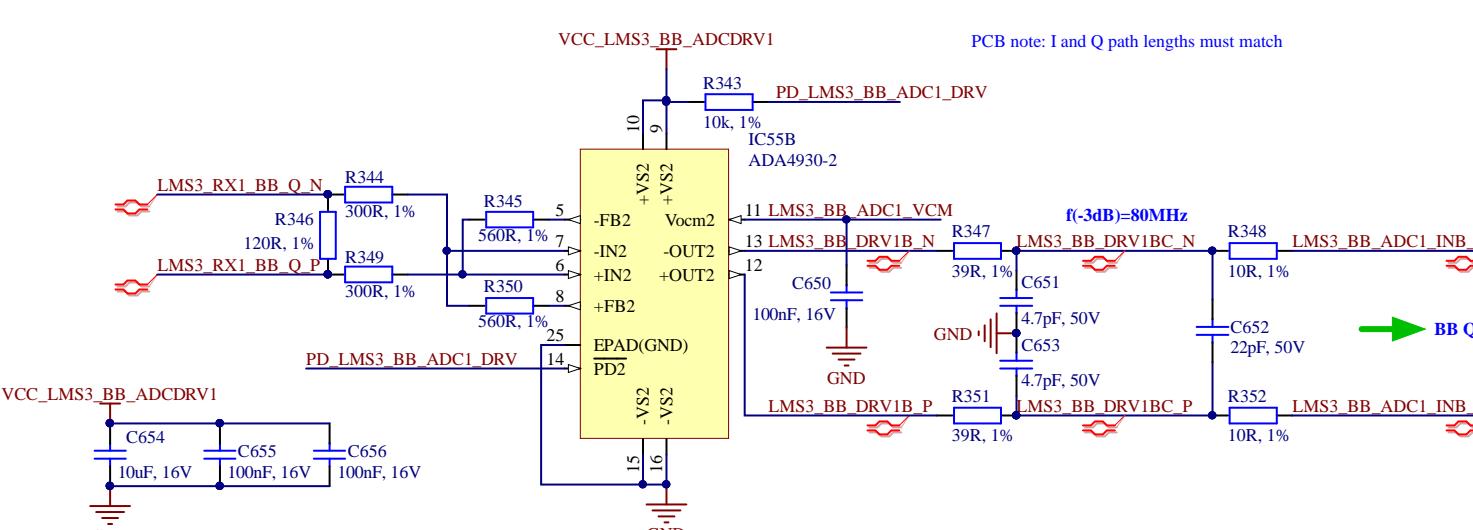
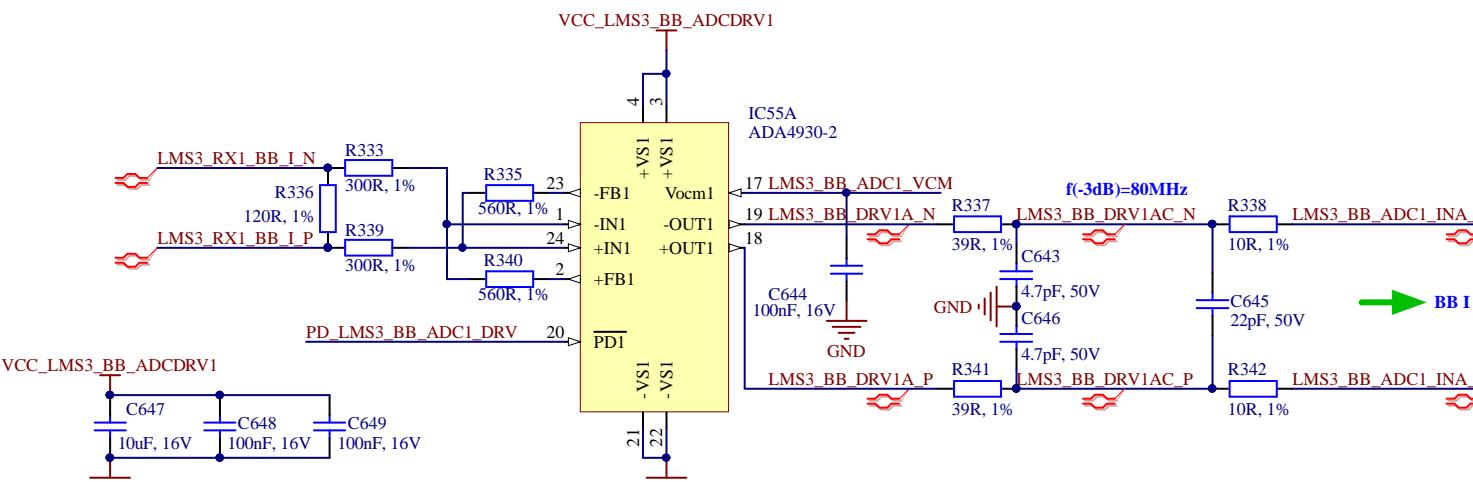
Title: LMS2 RX2 BB ADC		Lime Microsystems Surry Tech Centre Guildford GU2 7FG Surry United Kingdom	
Version: 1.2	Variant: [No Variations]		
Date: 2025-03-14	Time: 15:05:47	Sheet 24 of 31	
File: 24_LMS2_RX2_BB_ADC.SchDoc	Size: A3		

1 2 3 4 5 6 7 8

NF elements on sheet: R360
Number of NF elements on sheet:

LMS3 RX1 BB ADC

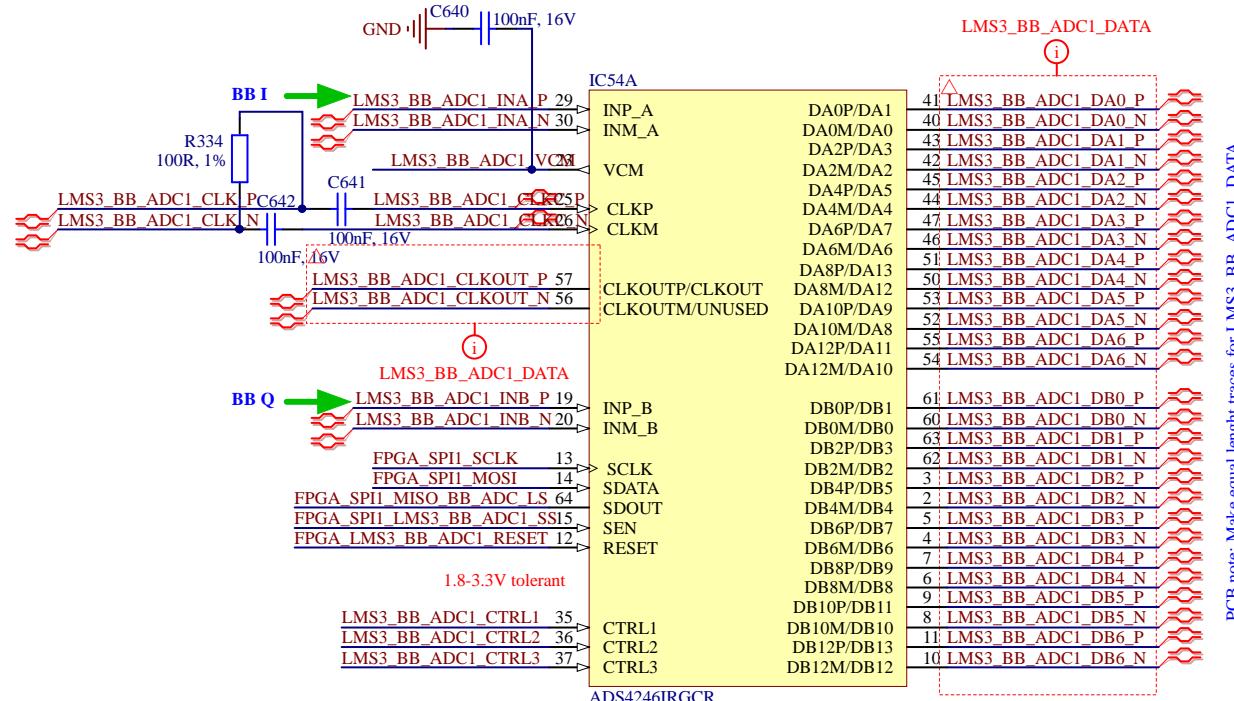
ADC Drivers



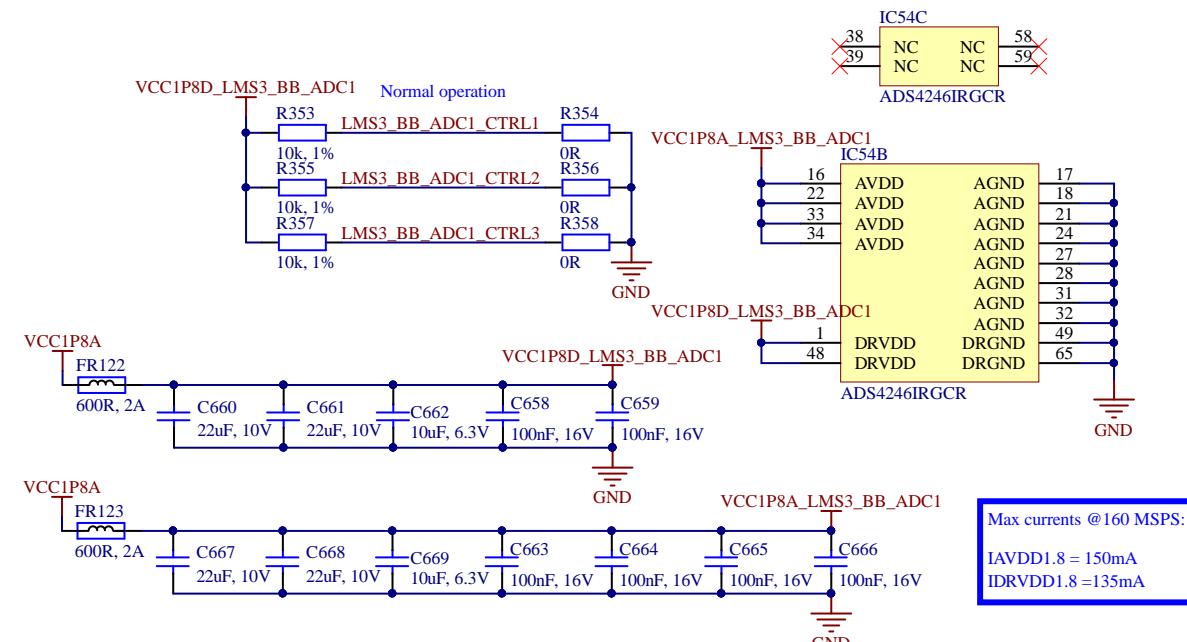
NF
Note: if R354/R355 assembly changed, also change equivalent resistors on pages 23, 24 and 1.

ADC

2 ch., 14-bit, 160MSPS



ADC Control & Power



Max currents @160 MSPS:
IAVDD1.8 = 150mA

Local ADC and DAC fiducial Top

FL
↑

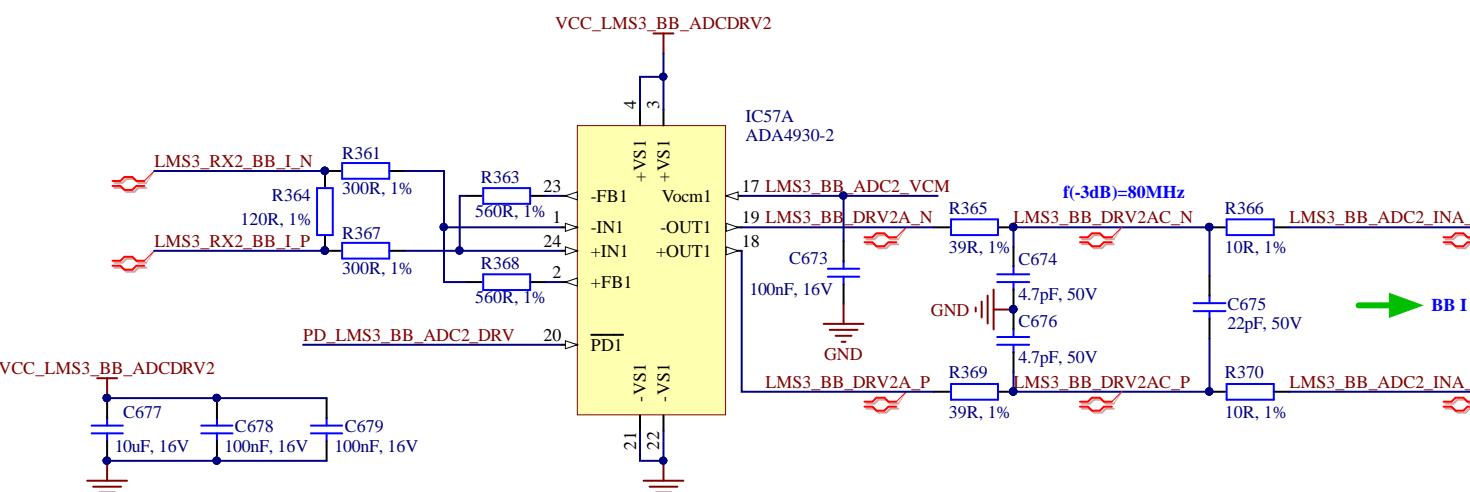
Project name: **LimeSDR-X3_1v2.PrjPcb**

Title: LMS3 RX1 BB ADC		Lime Microsystems <i>Surrey Tech Centre</i> <i>Guildford GU2 7YG</i> <i>Surrey</i> <i>United Kingdom</i>	 Lime microsystems
Version: 1.2	Variant: [No Variations]		
Date: 2025-03-14	Time: 15:05:50		
File: 25_LMS3_RX1_BB_ADC.SchDoc	Sheet 25 of 31		
		Size: A3	

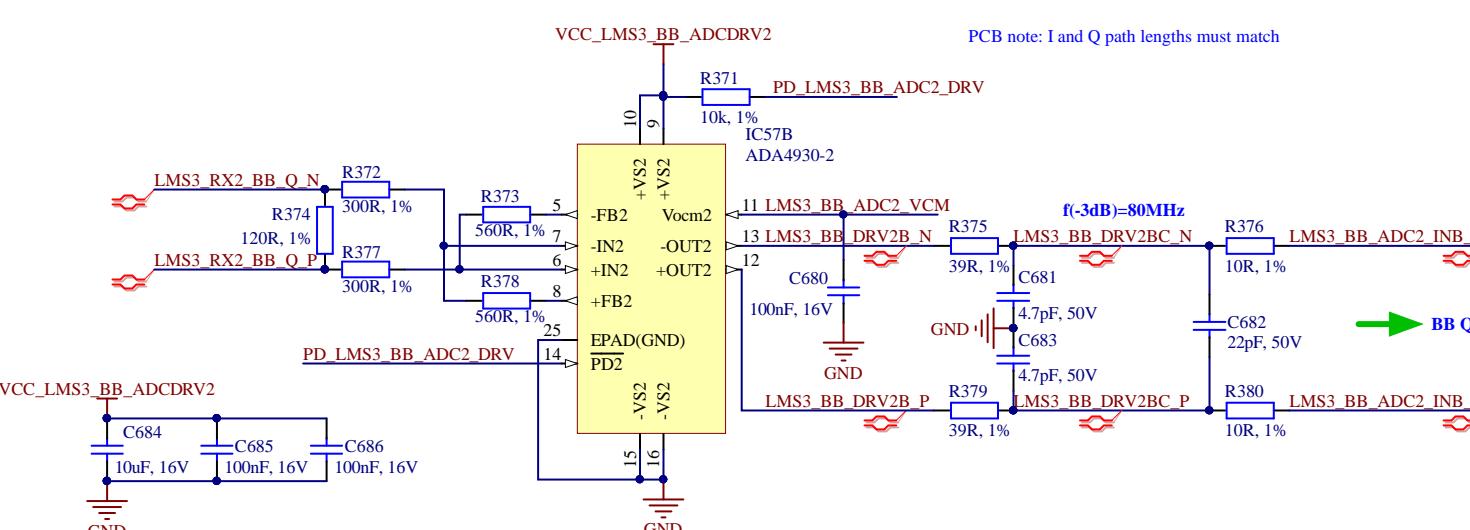
NF elements on sheet: R388
Number of NF elements on sheet: 1

LMS3 RX2 BB ADC

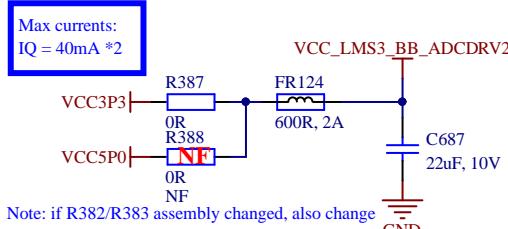
A ADC Drivers



B



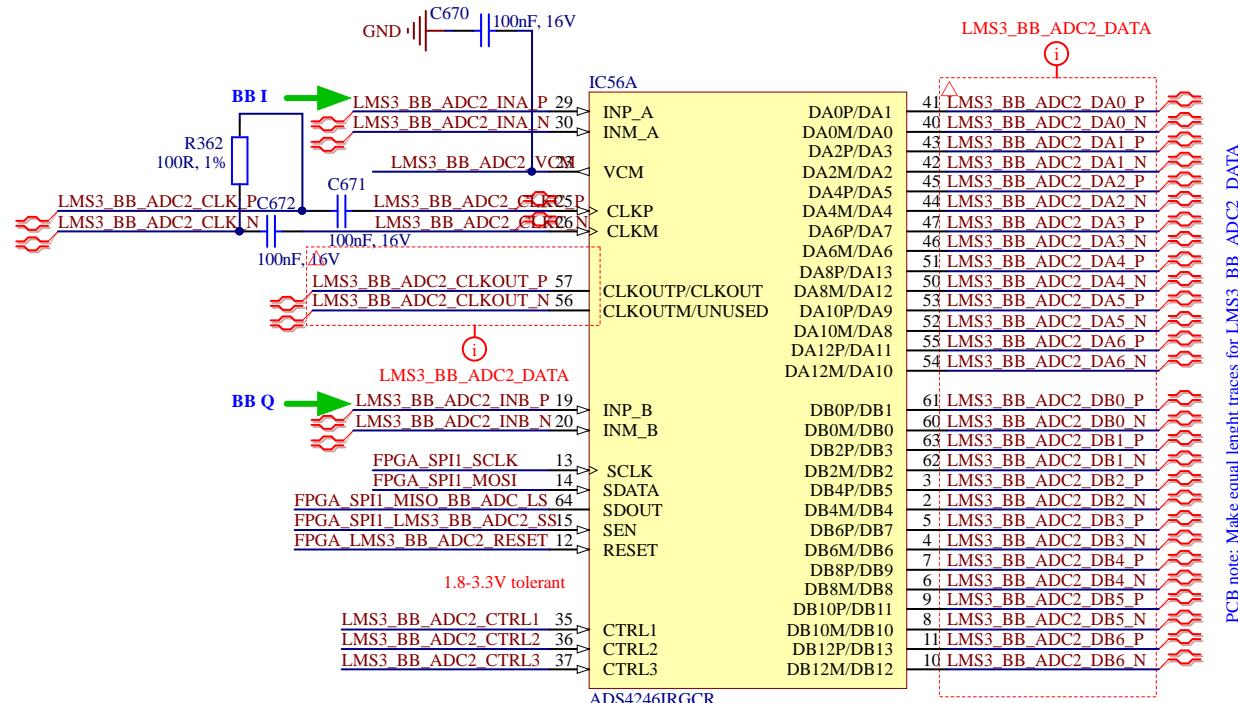
C



D

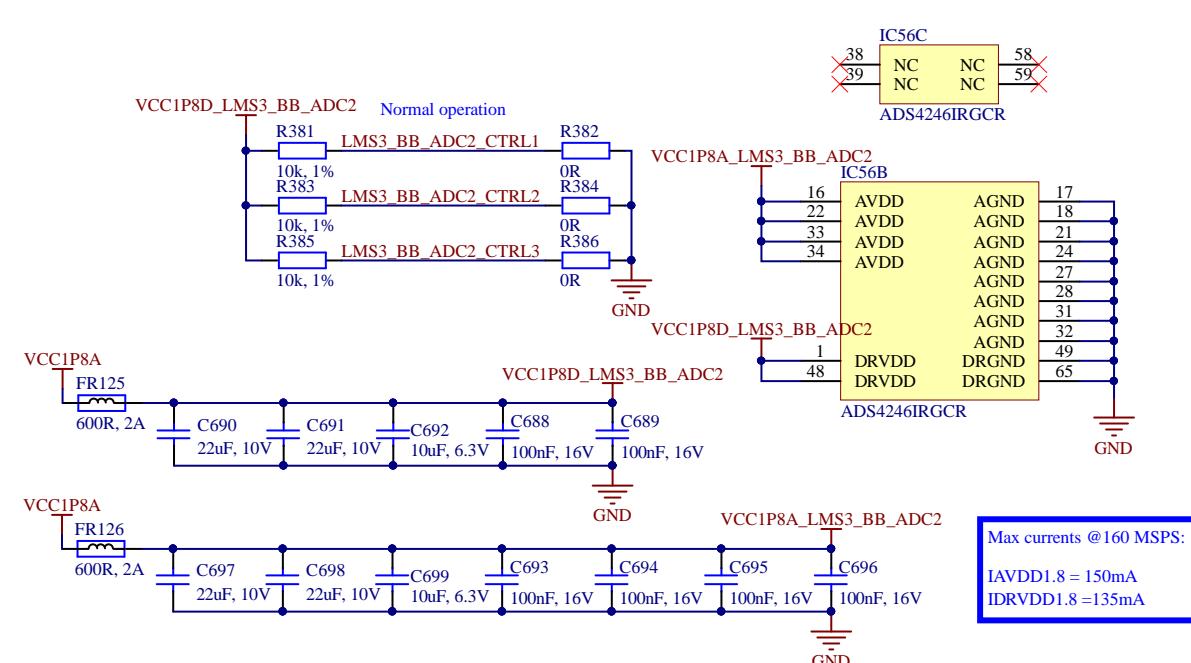
A ADC

2 ch., 14-bit, 160MSPS



PCB note: Make equal length traces for LMS3_BB_ADC2_DATA

C ADC Control & Power



Project name: LimeSDR-X3_Iv2.PnjPcb

Title: LMS3 RX2 BB ADC

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:05:54 Sheet 26 of 31

File: 26_LMS3_RX2_BB_ADC.SchDoc Size: A3

Lime Microsystems
Surry Tech Centre
Guildford GU2 7FG
Surry
United Kingdom



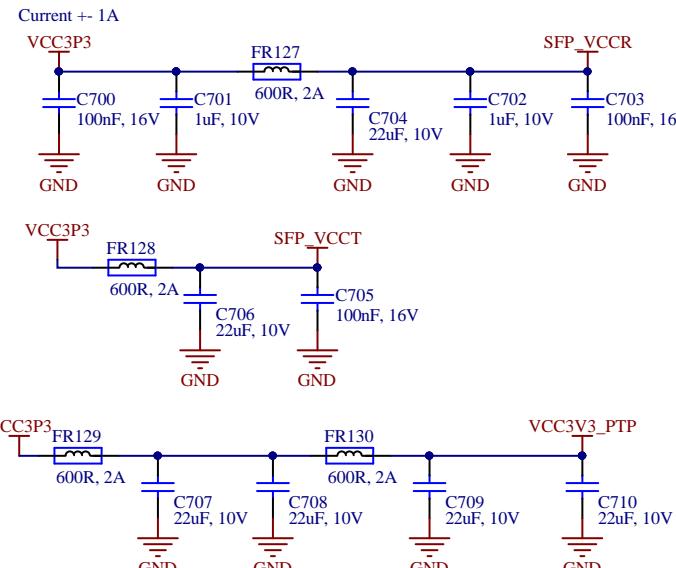
Local ADC and DAC fiducial Top



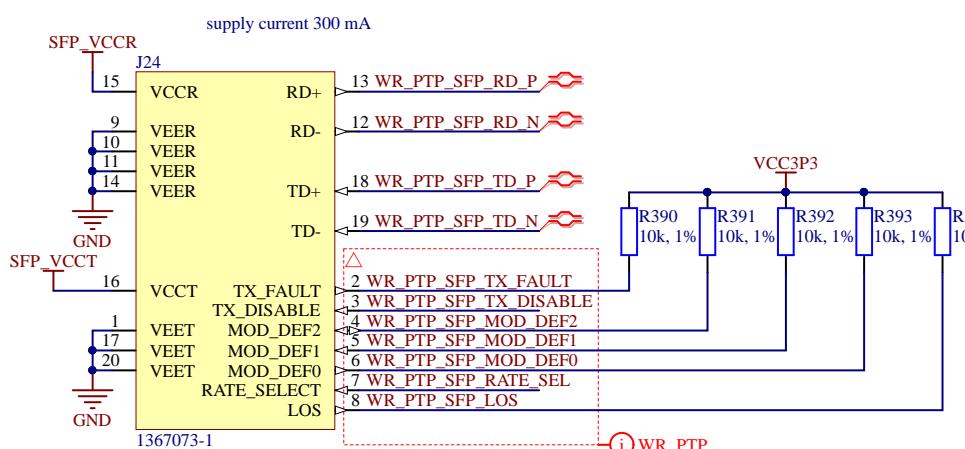
NF elements on sheet: R396, R401, R402, C725, IC60, R404, R405, R406, R407, R408, R409, R412, R415
Number of NF elements on sheet: 13

White Rabbit PTP

Power filters

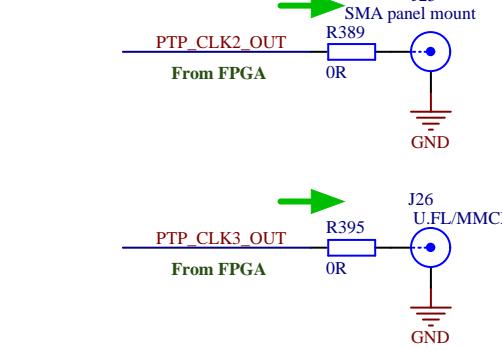


SFP connector

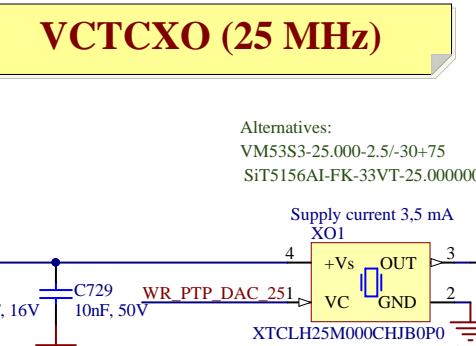
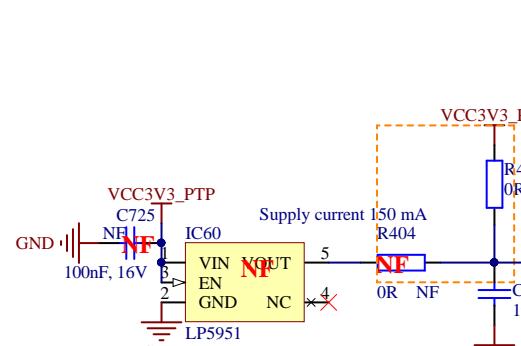
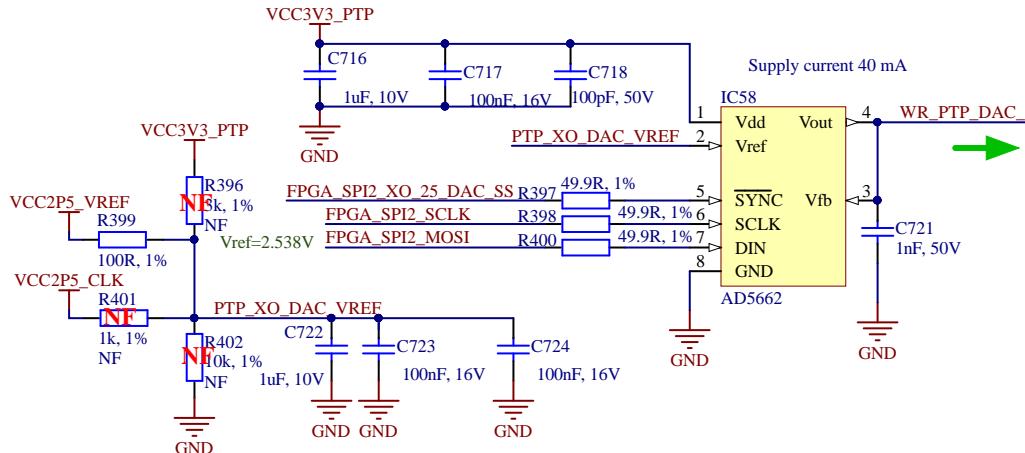


Compliant SFP devices see "http://www.ohwr.org/projects/white-rabbit/wiki/SFP"

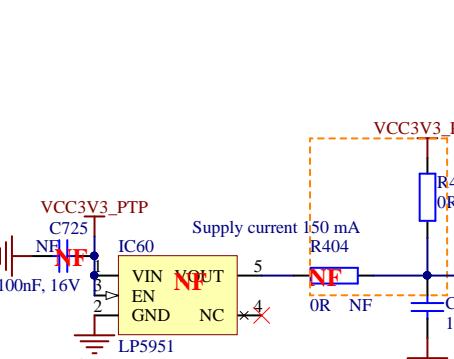
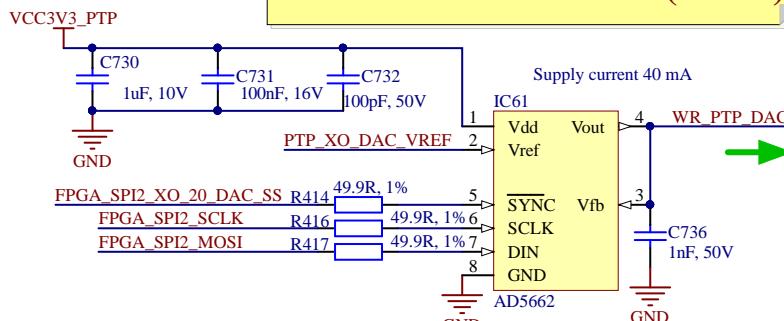
PTP CLK OUT



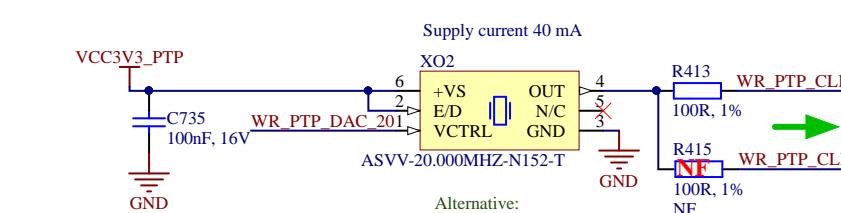
XO 25 MHz VC DAC (16 bit)



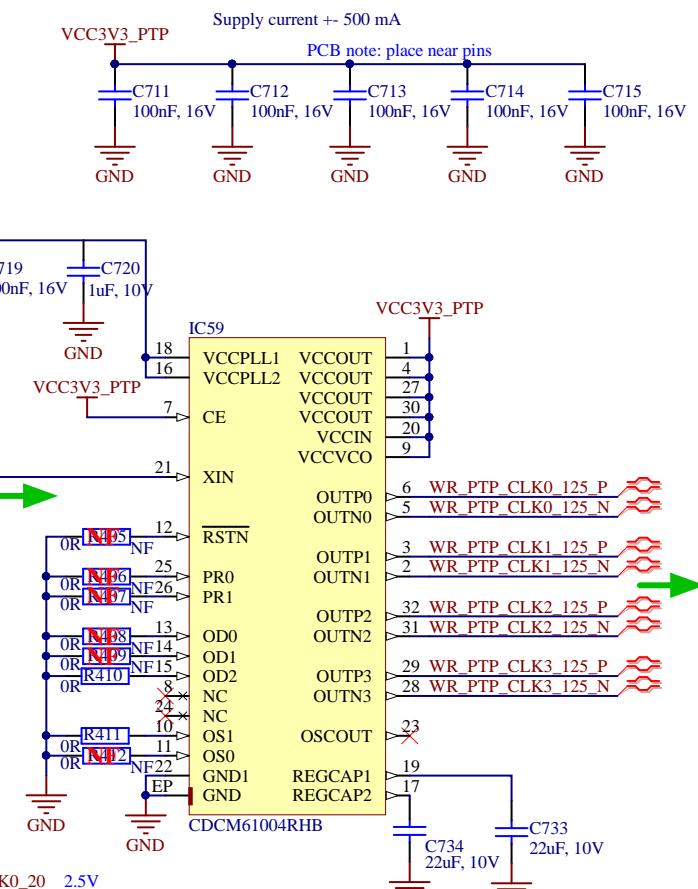
XO 20 MHz VC DAC (16 bit)



VCXO (20 MHz)



Frequency synthesizer



Config (pins have internal pull-ups):
Presc. div. = 4, feedback div. = 20 (PR [1 1])
Output divider = 4 (OD [0 1 1])
Output Type: LVDS, OSC_OUT Off (OS [0 1])

Project name: LimeSDR-X3_Iv2.PrtPcb

Title: White Rabbit PTP

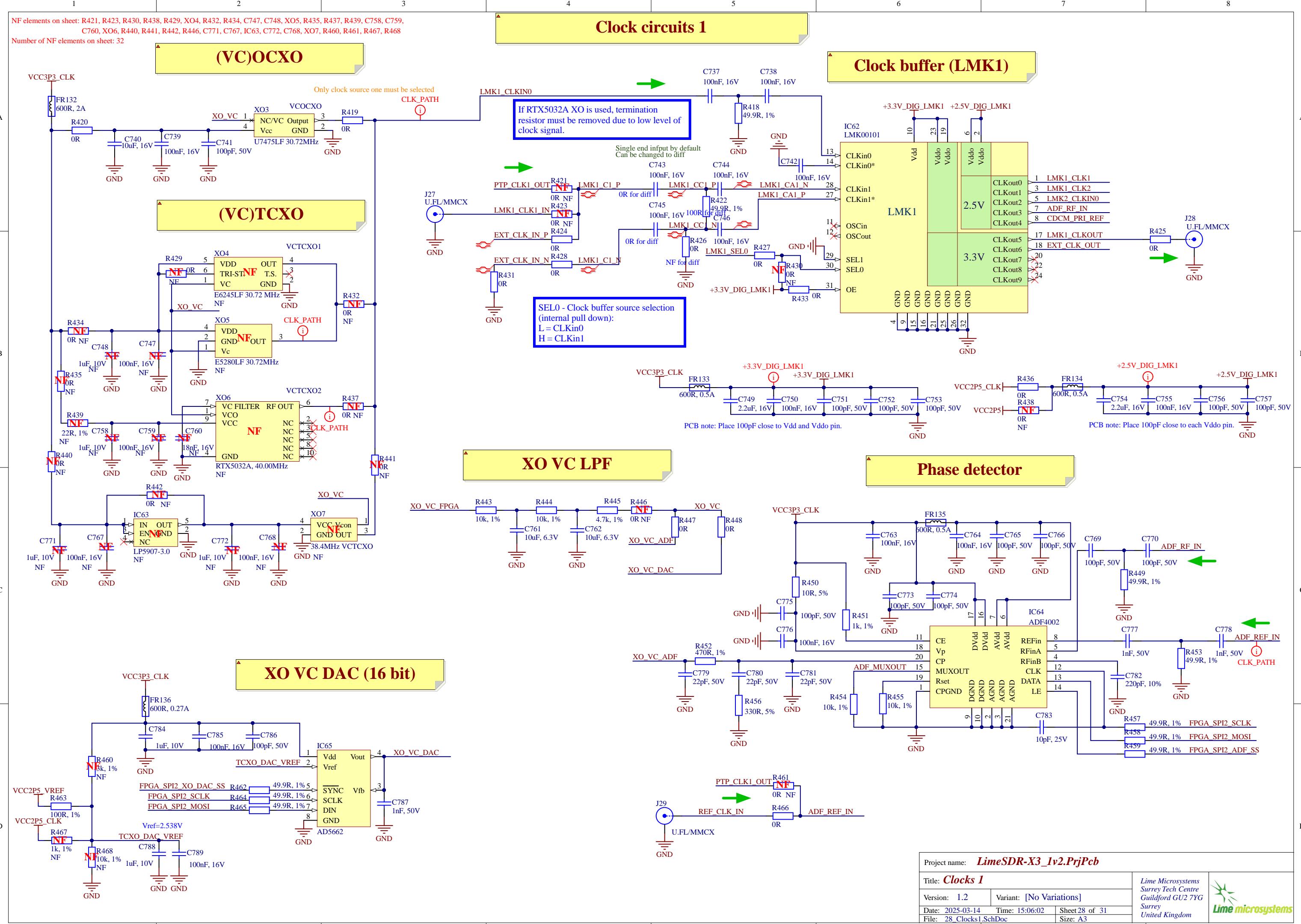
Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:05:58 Sheet 27 of 31

File: 27_WR_PTP.SchDoc Size: A3

Lime Microsystems
Surrey Tech Centre
Guildford GU2 7YG
Surrey
United Kingdom

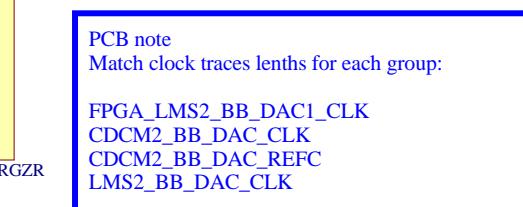
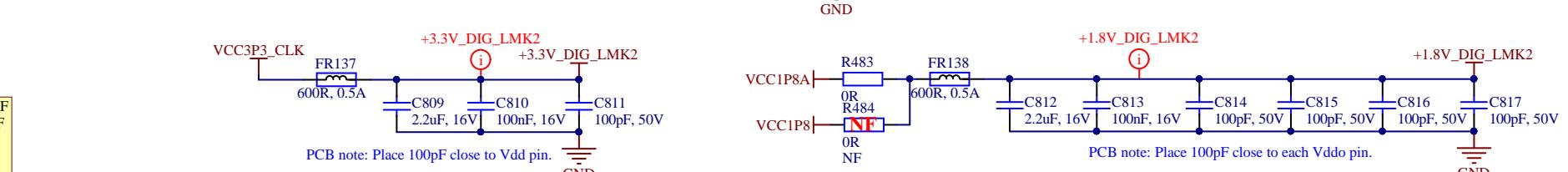
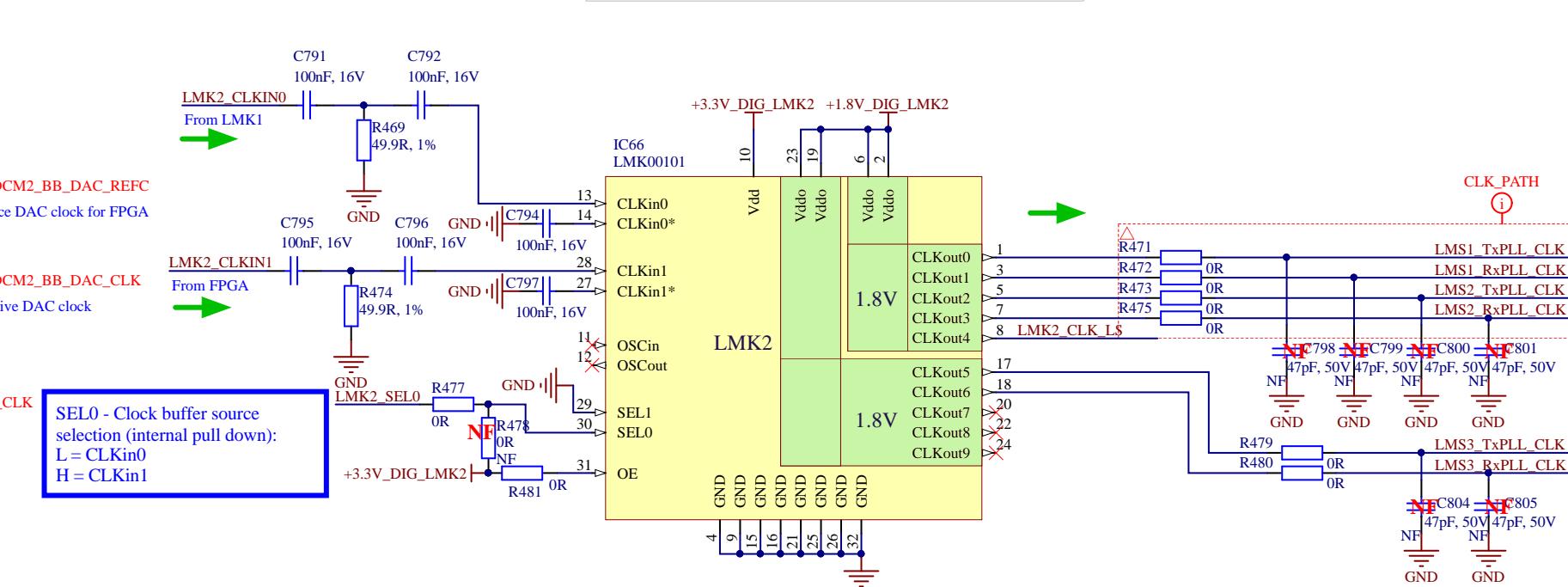
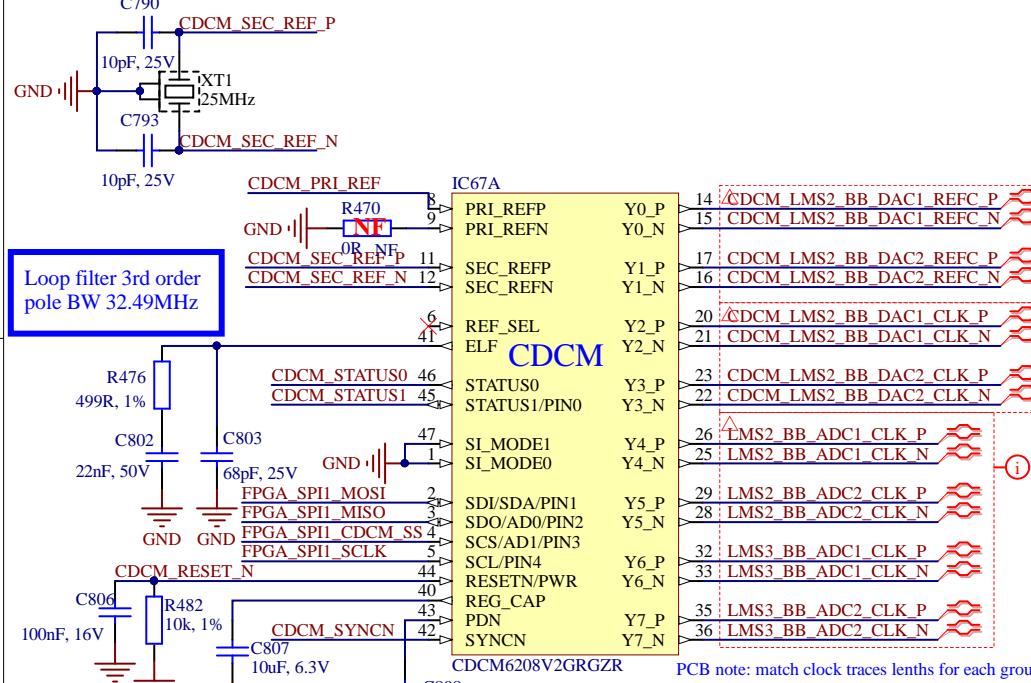




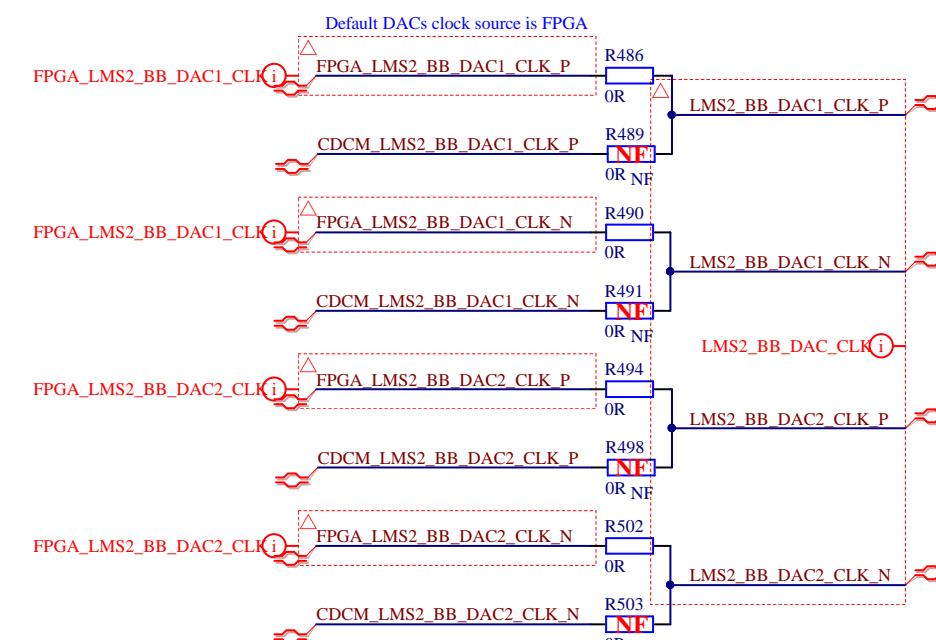
NF elements on sheet: R470, R478, C798, C799, C800, C801, C804, C805, R484, R485, R487, R488, R489, R491, R493, R496, R497, R498, R500, R503
Number of NF elements on sheet: 20

Clock circuits 3

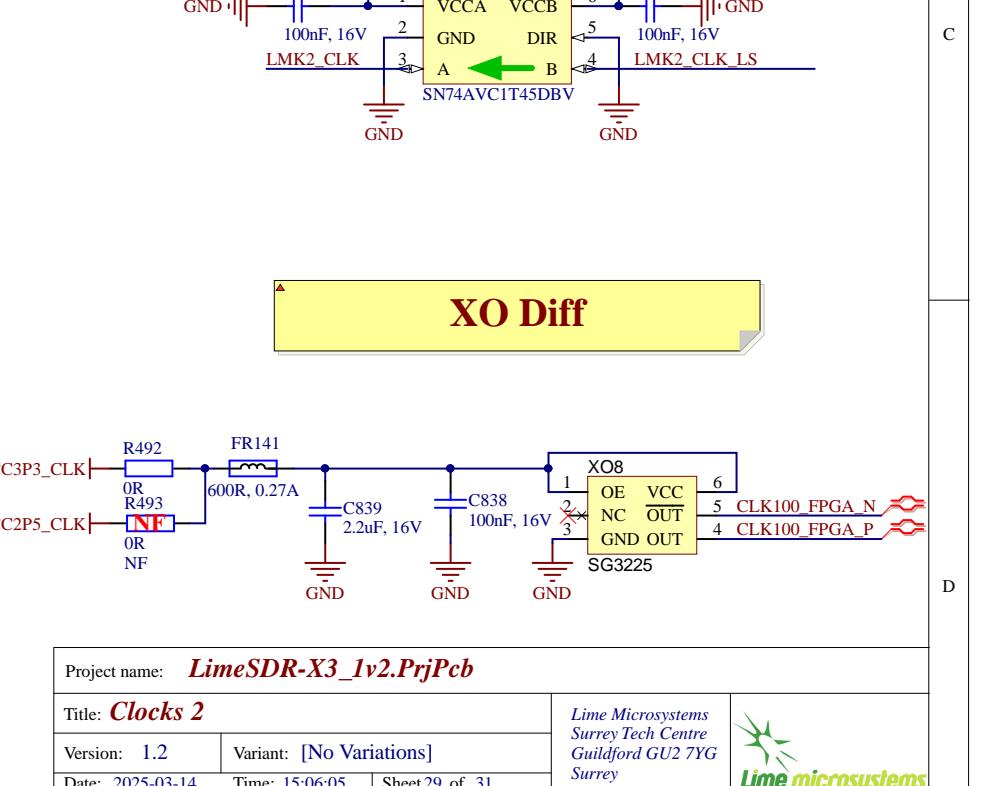
Clock generator for BB DACs, ADCs



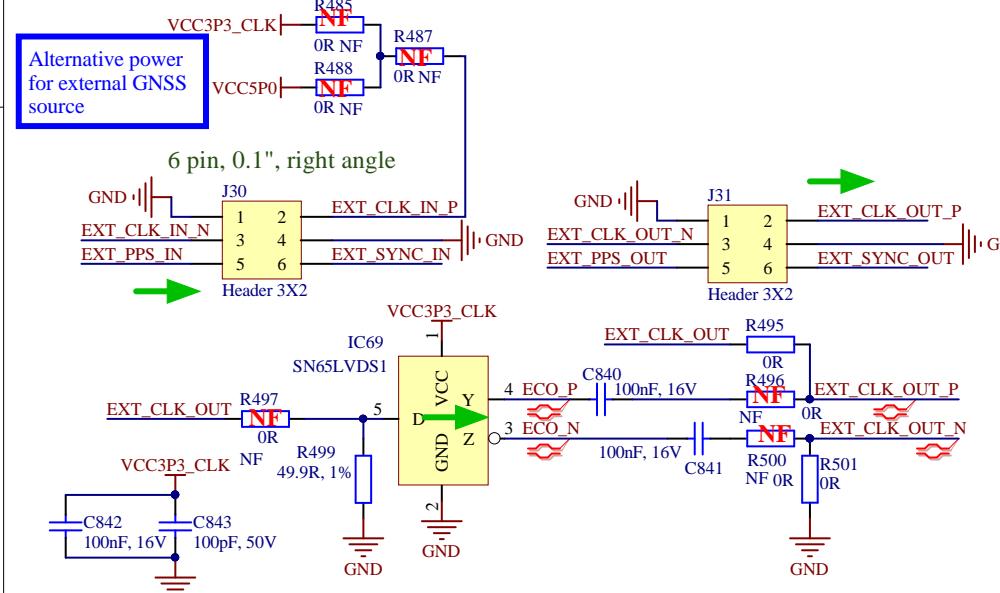
DACs clock source selection



XO Diff



External sync In/Out



Project name: LimeSDR-X3_Iv2.PrfPcb

Title: Clocks 2

Version: 1.2 Variant: [No Variations]

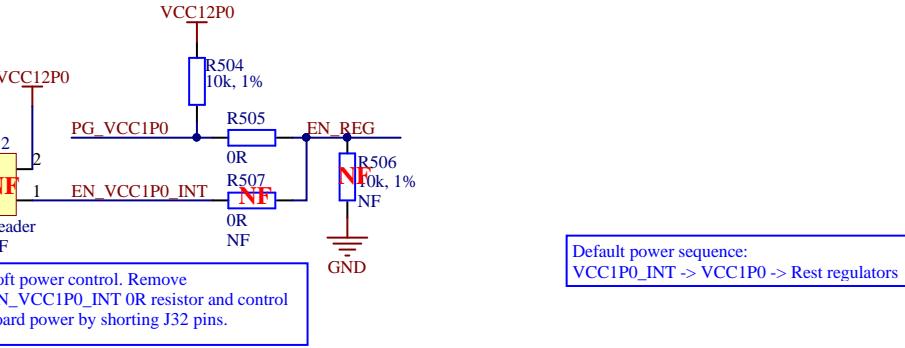
Lime Microsystems
Surry Tech Centre
Guildford GU2 7FG
Surry
United Kingdom



NF elements on sheet: J32, R506, R507, R509, R516, R528, C852, R517, C855, R518, C858, R535, R536, C882, R534, C885, R548, C902, C903, R546, FUSE1
Number of NF elements on sheet: 21

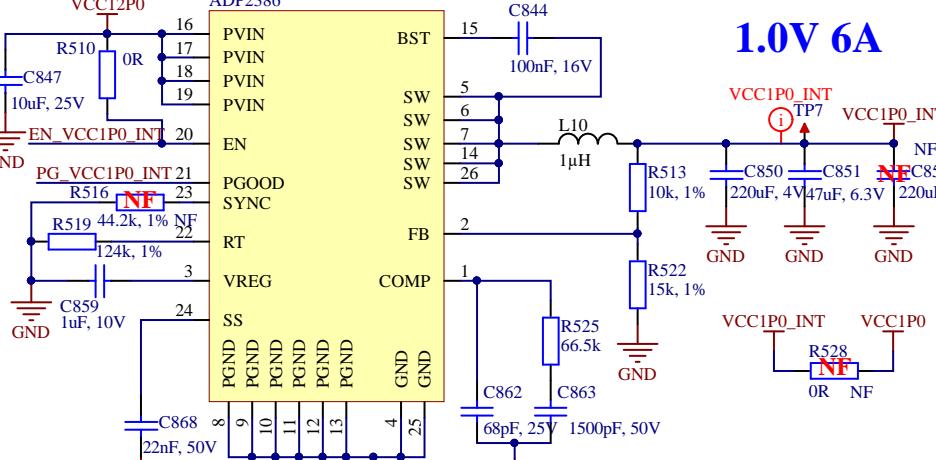
Board power circuits 1

A

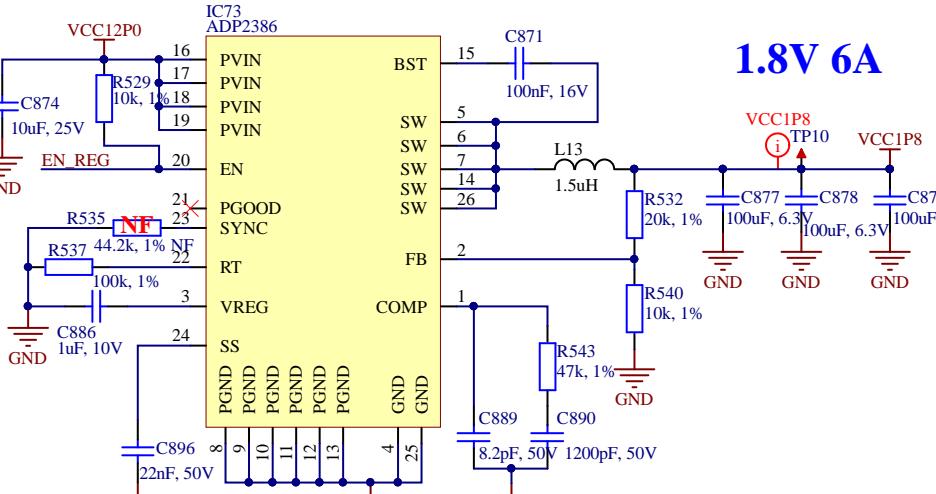


Main switching regulators

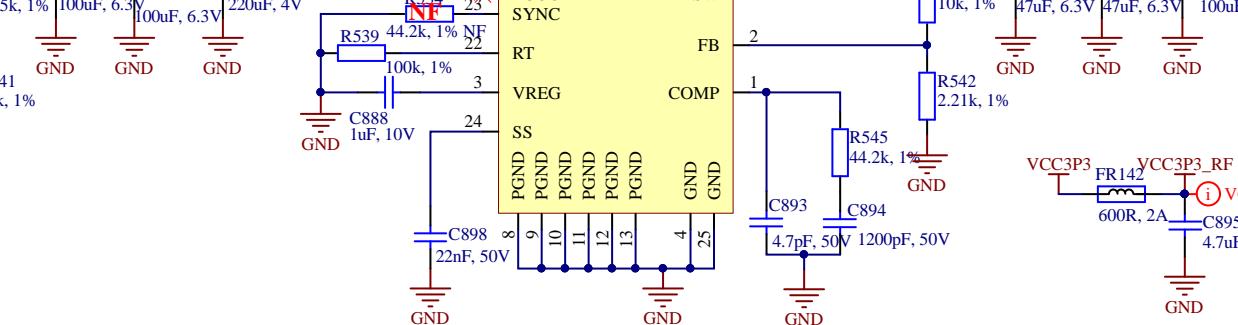
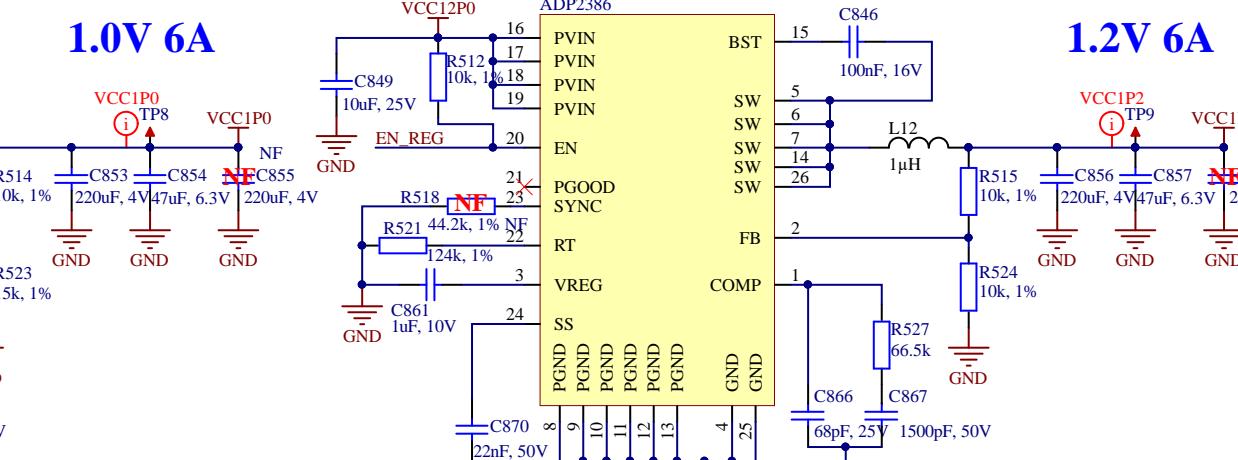
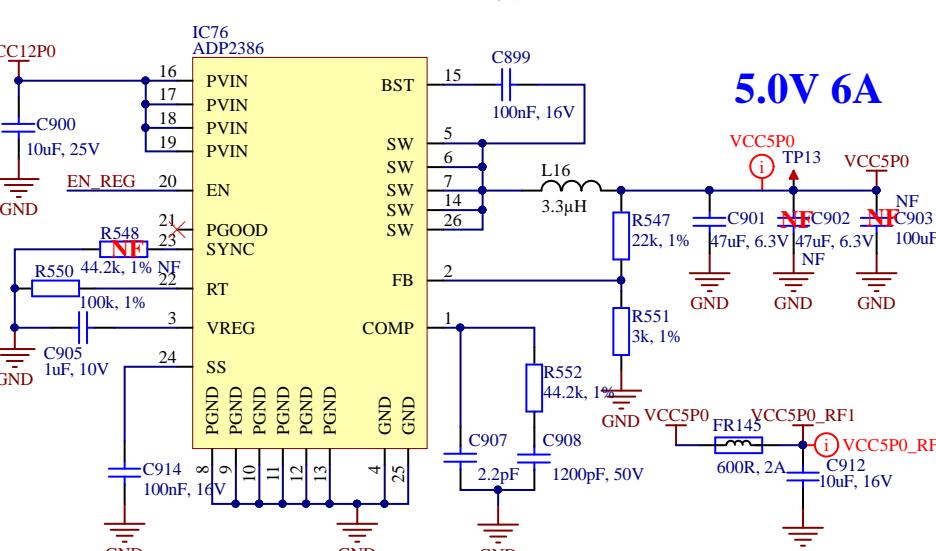
B



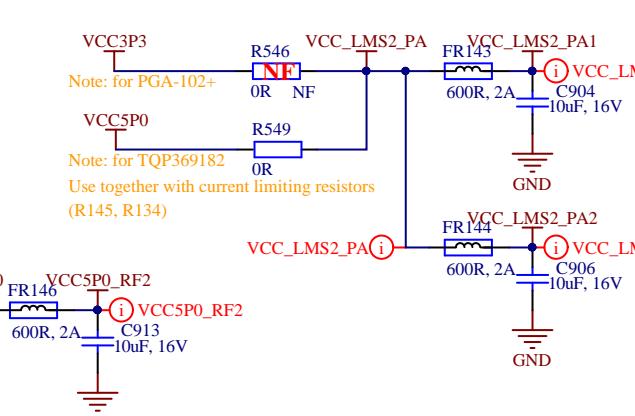
C



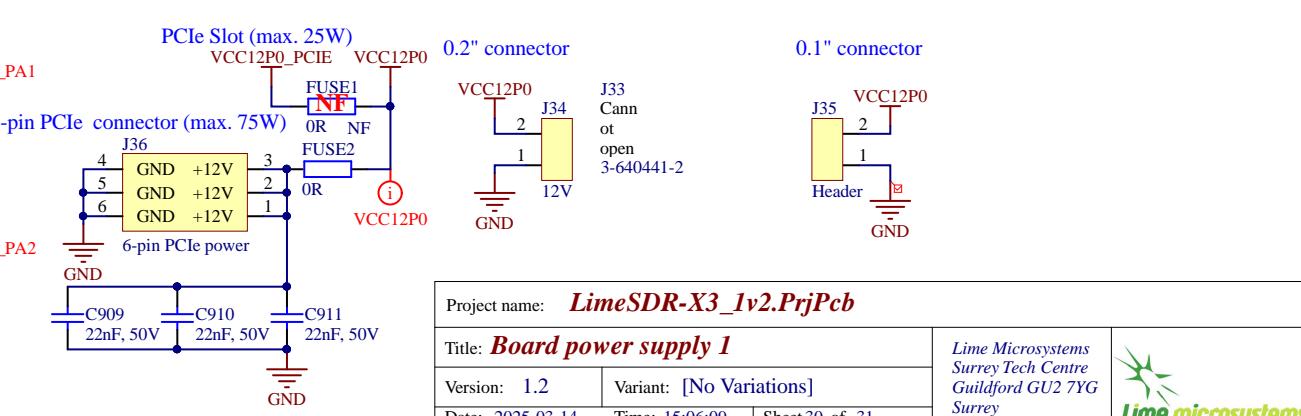
D



RF PA power selection



Power input



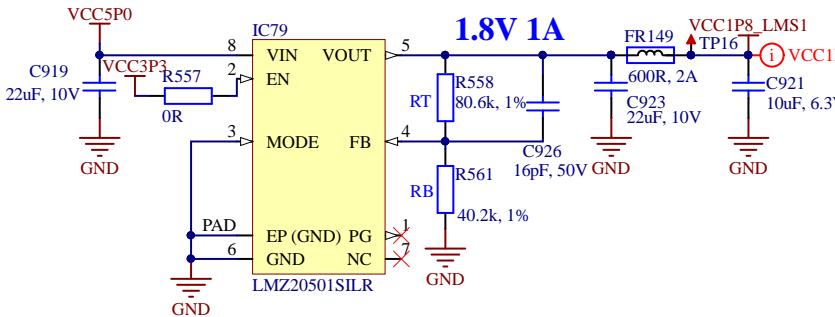
NF elements on sheet: FR156, FR157, R574,C947, R586, FR163, FR161, R580

Number of NF elements on sheet: 8

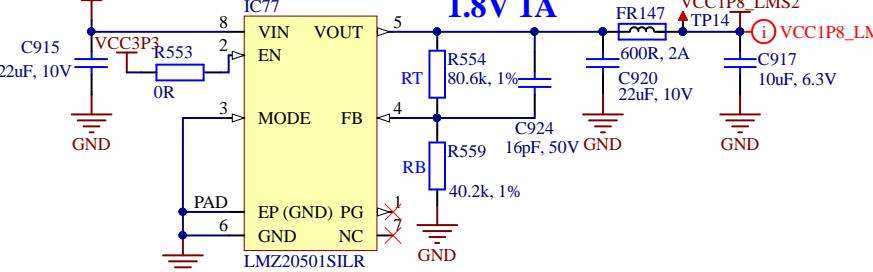
Total number of NF elements on all sheets: 176

Board power circuits 2

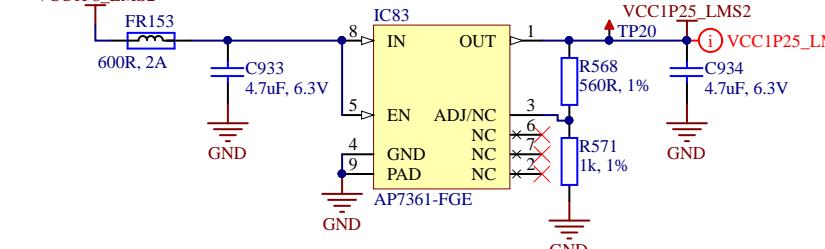
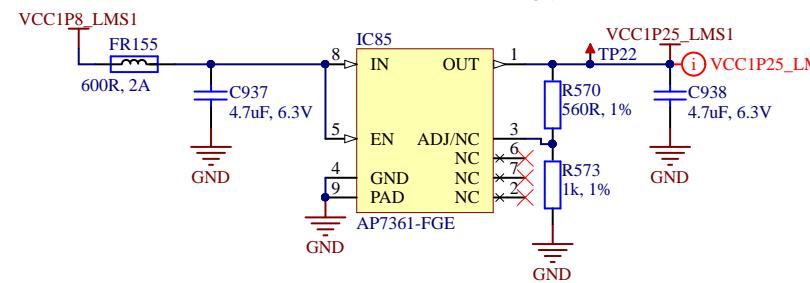
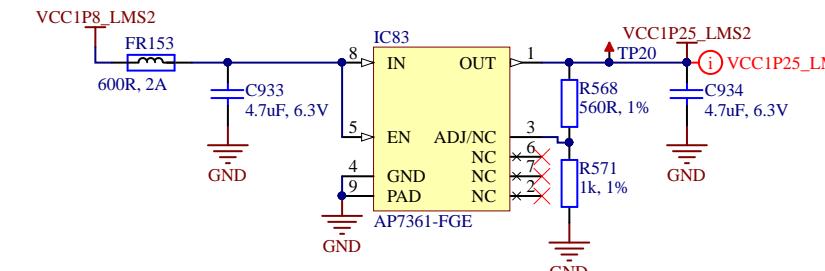
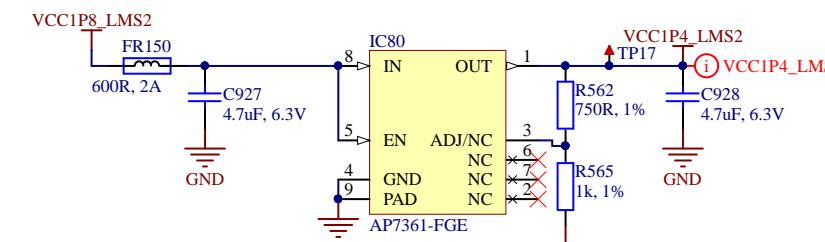
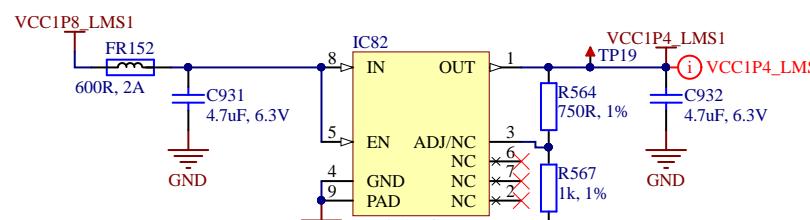
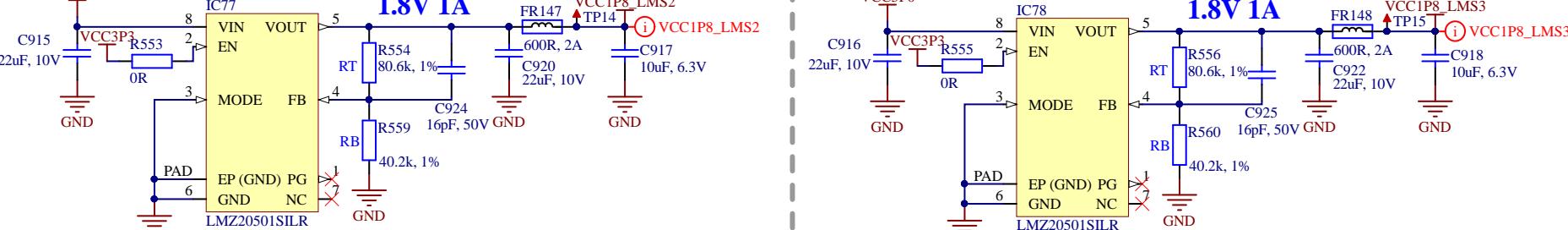
LMS 1



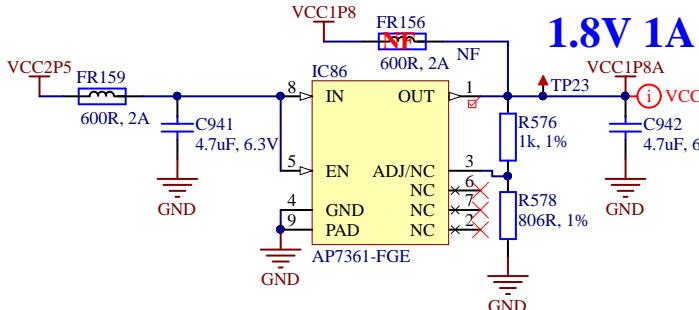
LMS 2



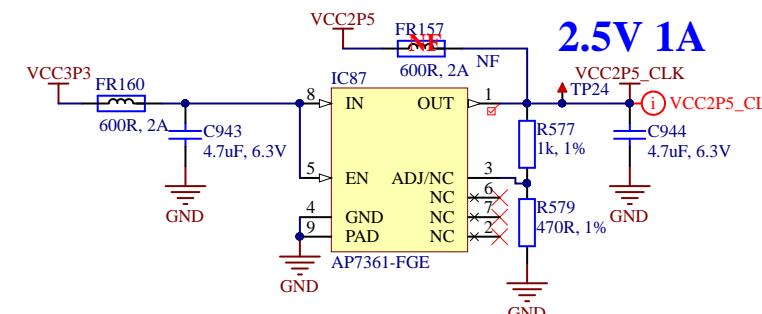
LMS 3



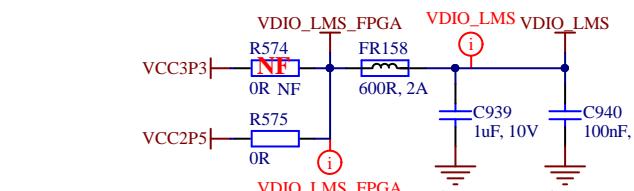
Misc power



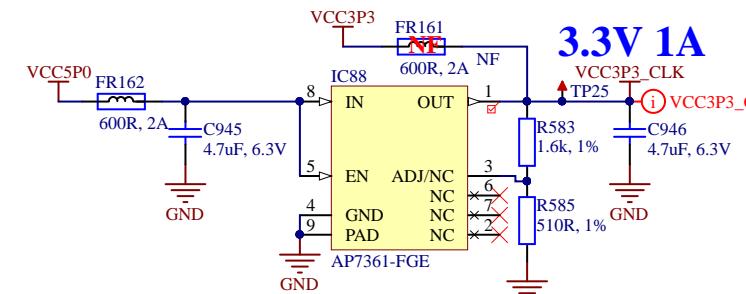
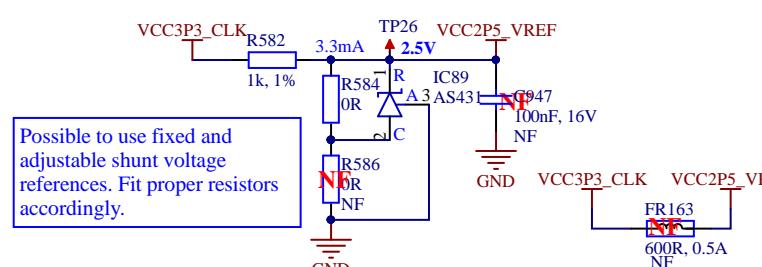
Clock network power



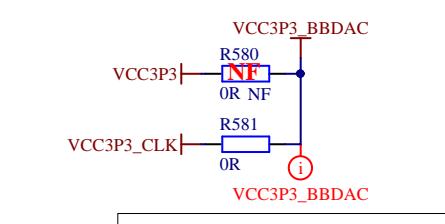
LMS VDIO power selection



Voltage reference (2.5V)



VCC3P3_BBDAC power selection



Project name: LimeSDR-X3_Iv2.PrfPcb

Title: Board power supply 2

Version: 1.2 Variant: [No Variations]

Date: 2025-03-14 Time: 15:06:13 Sheet 31 of 31

File: 31_Power2.SchDoc Size: A3

Lime Microsystems
Surry Tech Centre
Guildford GU2 7FG
Surry
United Kingdom

