U1
Pico
Raspberry Pi Pico

LO_Q GPIO0
LO_I GPIO1
BAND_0 GPIO2
BAND_1 GPIO3
BAND_2 GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
SDATA_B GPIO10
GPIO11 GPIO12
CS GPIO13
GPIO14
SCLK GPIO15
SDATA_A

VBUS
VSYS
3V3_EN
3V3
ADC_VREF
AGND
GPIO28_ADC2
GPIO27_ADC1
GPIO26_ADC0
RUN
GPIO22

+5V
+3.3V

GPIO28
GPIO27
GPIO26
GPIO22
GPIO21
GPIO20
GPIO19
GPIO18
GPIO17
GPIO16

Debug +5V
SWCLK
SWDIO
GND
Conn_01x04
J1

R4 1k
R5 R3 1k

R2 470
R2 470

JP1 Jumper_2_Open
RX_I
JP2 Jumper_2_Open
RX_Q

GPIO11 732-5319-ND
GPIO12 61300611121
GPIO16 Würth Elektronik
GPIO17 61300611121
J3
+3.3V
GND

22-23-2021 J2
22-23-2021 J4
22-23-2021 J6

GPIO18 GPIO22
GPIO19 GPIO26
GPIO20 GPIO27
GPIO21 GPIO28
90122-0126 J5
+3.3V

4-Channel, Dual, Simultaneous Sampling,
2.2V to 3.6V, 12-Bit, 3Msps SAR ADC

IC1
MAX11190ATE+T

AIN1A
AIN1B
AIN2A
AIN2B

REFA REFB VDD_1 VDD_2
GND_1 SCLK DOUT1B DOUT1A
OVDD DOUT0A
CHSEL
GND_2

EP

JP3 Jumper_2_Open RX_I
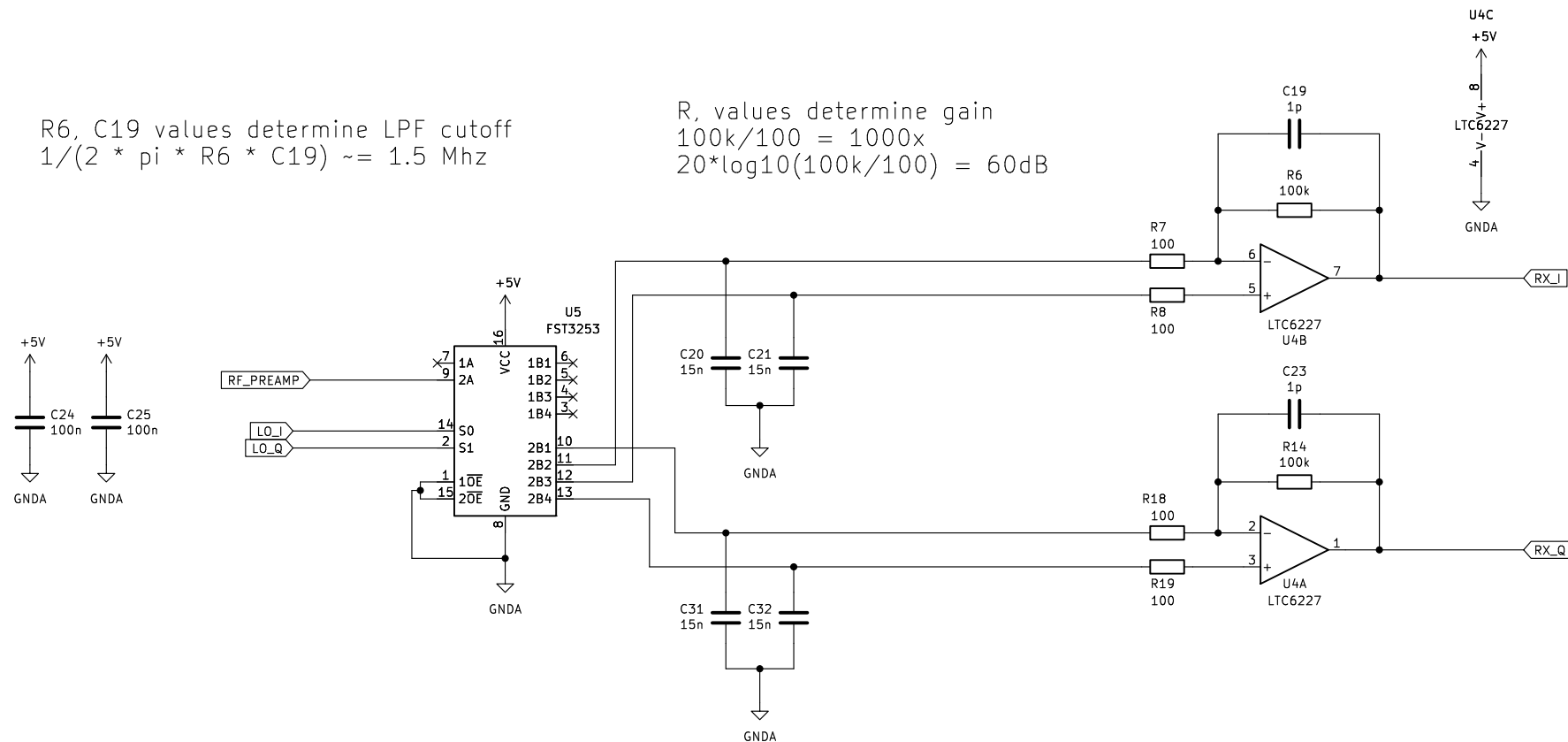JP4 Jumper_2_Open RX_Q

+3.3V
C7 100nF
C1 100nF
C2 100nF
C5
GNDA
USE CHAN 1A/1B

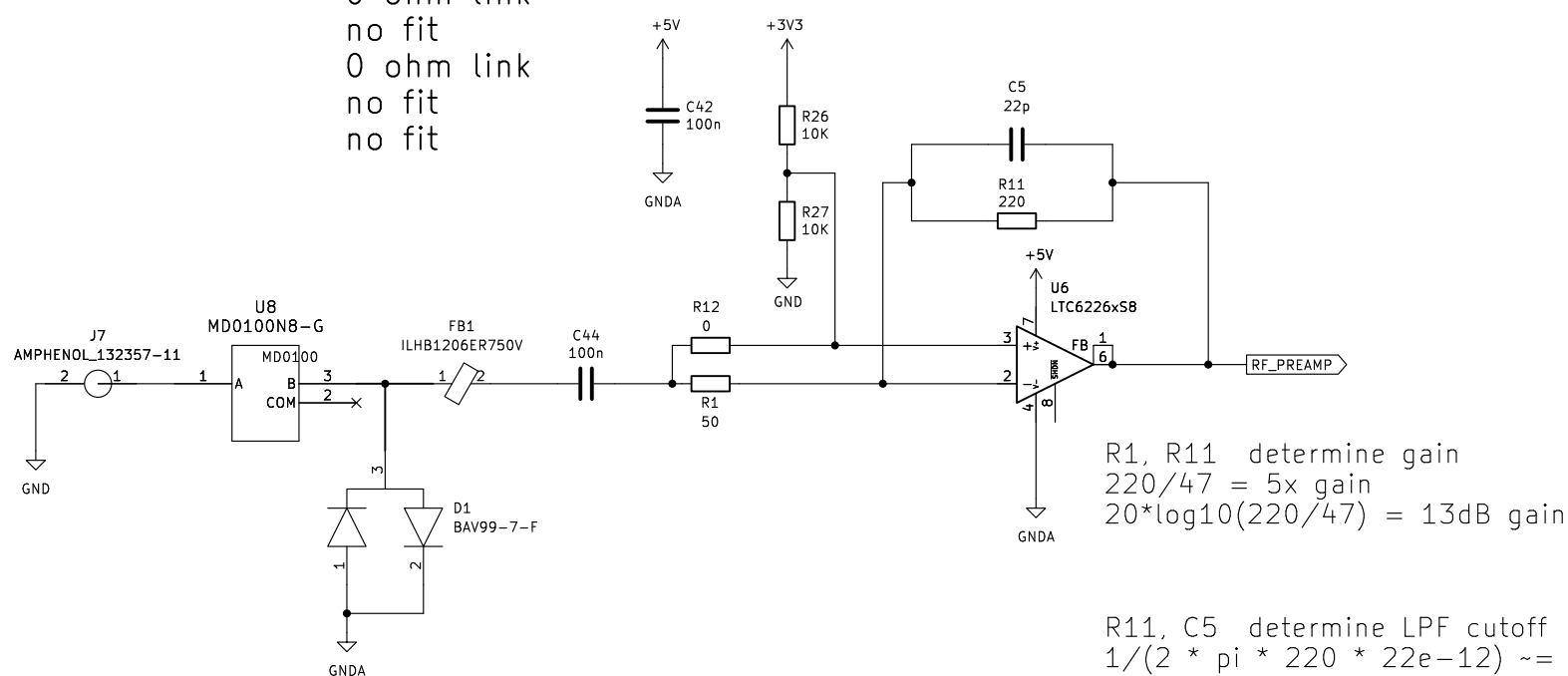R6, C19 values determine LPF cutoff
1/(2 * pi * R6 * C19) ~= 1.5 Mhz

R, values determine gain
100k/100 = 1000x
20*log10(100k/100) = 60dB

C19 1p
R6 100k
U4C
+5V
LTC6227
GNDA

R7 100
R8 100
U4B
LTC6227
RX_I

C23 1p
R14 100k
R18 100
R19 100
U4A
LTC6227
RX_Q

U5
FST3253
VCC
1A 2A
1B1 1B2 1B3 1B4
2B1 2B2 2B3 2B4
S0 S1
1OE 2OE
GND

RF_PREAMP
LO_I
LO_Q

C24 100n
C25 100n
GNDA

C20 15n C21 15n
C31 15n C32 15n
GNDA

WITH PREAMP   WITHOUT PREAMP
R12   no fit   0 ohm link
R1   47   no fit
R11   220   0 ohm link
C5   22p   no fit
U6   fit   no fit

J7
AMPHENOL_132357-11
GND

U8
MD0100N8-G
MD0100
A B
COM

FB1
ILHB1206ER750V
D1
BAV99-7-F
GNDA

C44 100n
R12 0
R1 50

+5V +3V3
C42 100n
R26 10K
R27 10K
GND
GNDA

C5 22p
R11 220
R26 10K

U6
LTC6226xS8
+5V
FB
RF_PREAMP
GNDA

R1, R11 determine gain
220/47 = 5x gain
20*log10(220/47) = 13dB gain

R11, C5 determine LPF cutoff
1/(2 * pi * 220 * 22e-12) ~= 32.8 MHz