Top-left block (U1 Pico)

U1
Pico
Raspberry Pi Pico

GPIO0, GPIO1, GPIO2, GPIO3, GPIO4, GPIO5, GPIO6, GPIO7, GPIO8, GPIO9, GPIO10, GPIO11, GPIO12, GPIO13, GPIO14, GPIO15

VBUS, VSYS, GND, 3V3_EN, 3V3, ADC_VREF, AGND, GPIO28_ADC2, GPIO27_ADC1, GPIO26_ADC0, RUN, GPIO22, GND, GPIO21, GPIO20, GPIO19, GPIO18, GND, GPIO17, GPIO16

+5V, +3.3V

LO_Q, LO_I

GPIO2B
PICO_RX_I
PICO_RX_Q
GPIO22
GPIO21
GPIO20
GPIO19
GPIO18
GPIO17
GPIO16

IN_CH
CHSEL
SDATA_B
C5
SCLK
SDATA_A

SWCLK
SWDIO

Debug
+5V
Conn_01x04
J1
1 2 3 4
SWCLK
SWDIO
GND
4.7nF

R2
4.7K
GND

IN_CH	ADC_MAX	ADC_PICO
0	1	0
1	0	1

GPIO11, GPIO12, GPIO16, GPIO17
90122-0126
J3
GPIO2, GPIO3, GPIO4, GPIO5
+3.3V
GND

GPIO18, GPIO19, GPIO20, GPIO21
90122-0126
J5
GPIO22, GPIO7, GPIO6, GPIO2B
+3.3V
GND

22-23-2021 J2
22-23-2021 J4
22-23-2021 J6
+5V
GND

Top-right block (ADC)

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

+3.3V

IC2
TS5A23159DGSR
COM1, NC1, VCC, NC2, COM2
IN1, NO1, GND, NO2, IN2

RX_I, ADC_RX_I, ADC_RX_Q, RX_Q
C6 100nF
GNDA

IN_CH, PICO_RX_I, PICO_RX_Q, IN_CH

R4 1K
D2 LED
GND

LED	MODE
OFF	ADC by MAX
ON	ADC by Pico

IC1
MAX11190ATE+T
AIN1A, AIN1B, AIN2A, AIN2B
GND_1, SCLK, DOUT1B, DOUT1A
SCLK, SDATA_B, DOUT1B, DOUT1A, SDATA_A
REFA, REFB, VDD_1, VDD_2
OVDD, CHSEL, CS, GND_2
EP

+3.3V
C3 4.7uF
C4 100nF
GNDA

C7 10uF, C1 100nF, C2 100nF, C8 10uF
+3.3V
GNDA

CHSEL	
0	AIN1A/AIN1B
1	AIN2A/AIN2B

Middle block (LPF / gain)

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

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

+5V
U5
FST3253
1A, 2A, 1B1, 1B2, 1B3, 1B4, S0, S1, 1OE, 2OE, 2B1, 2B2, 2B3, 2B4, VCC, GND

RF_PREAMP
LO_I
LO_Q

C24 100n
C25 100n
GNDA

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

C19 1p
R6 100k
R7 100
R8 100
U4B
LTC6227
+5V U4C
LTC6227
GNDA
470 R9
R10 1k
GND
max ~3.3V RX_I

C23 1p
R14 100k
R18 100
R19 100
U4A
LTC6227
470 R13
R15 1k
GND
max ~3.3V RX_Q

Bottom block (preamp)

	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

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

C5 22p
R11 220
U6
LTC6226xS8
+5V
RF_PREAMP

J7
AMPHENOL_132357-11
GND
U8
MD0100N8-G
MD0100
A, B, COM
FB1
ILHB1206ER750V
C44 100n
R12 0
R1 50
GNDA
D1
BAV99-7-F

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

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