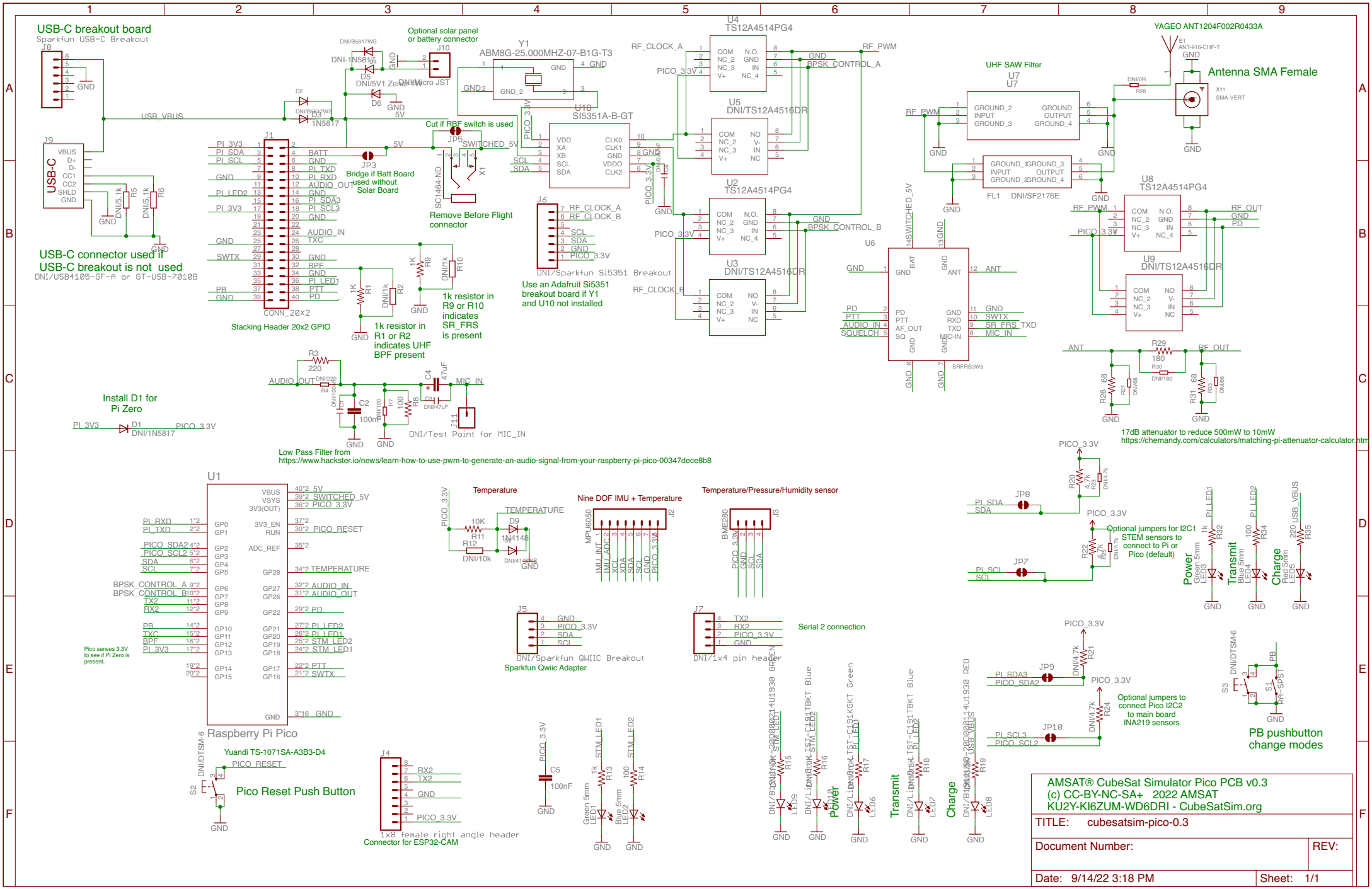
USB-C breakout board
Sparkfun USB-C Breakout
J8
J9
USB-C
VBUS
D+
D-
CC1
CC2
SHLD
GND
USB_VBUS
DNI/5.1k
R5
R6
USB-C connector used if
USB-C breakout is not used
DNI/USB4105-GF-A or GT-USB-7010B
Optional solar panel
or battery connector
J10
Micro JST
DNI/B5817WS
DNI-1N5817
D5
DNI/5V1 Zener
D6
D2
D3
1N5817
5V
Y1
ABM8G-25.000MHZ-07-B1G-T3
GND2
U10
SI5351A-B-GT
VDD
XA
XB
SCL
SDA
CLK0
CLK1
GND
VDDO
CLK2
PICO_3.3V
Cut if RBF switch is used
JP5
SWITCHED_5V
X1
SC1464-ND
Remove Before Flight
connector
J1
CONN_20X2
PI_3V3
PI_SDA
PI_SCL
GND
PI_LED2
PI_3V3
SWTX
PB
BATT
PI_TXD
PI_RXD
AUDIO_OUT
PI_SDA3
PI_SCL3
AUDIO_IN
TXC
RBF
PI_LED1
PTT
PD
JP3
Bridge if Batt Board
used without
Solar Board
Stacking Header 20x2 GPIO
1K
R1
R2
DNI/1k
R9
R10
1k resistor in
R9 or R10
indicates
SR_FRS
is present
1k resistor in
R1 or R2
indicates UHF
BPF present
J6
RF_CLOCK_A
RF_CLOCK_B
SCL
SDA
PICO_3.3V
DNI/Sparkfun Si5351 Breakout
Use an Adafruit Si5351
breakout board if Y1
and U10 not installed
U4
TS12A4514PG4
U5
DNI/TS12A4516DR
U2
TS12A4514PG4
U3
DNI/TS12A4516DR
COM
NC_2
NC_3
V+
N.O.
GND
IN
NC_4
NO
V-
NC
RF_CLOCK_A
RF_CLOCK_B
RF_PWM
BPSK_CONTROL_A
BPSK_CONTROL_B
UHF SAW Filter
U7
GROUND_2
INPUT
GROUND_3
GROUND
OUTPUT
GROUND_4
FL1
DNI/SF2176E
YAGEO ANT1204F002R0433A
E1
ANT-916-CHP-T
Antenna SMA Female
X11
SMA-VERT
DNI/0R
R28
U8
TS12A4514PG4
U9
DNI/TS12A4516DR
RF_OUT
PD
U6
SWITCHED_5V
BAT
ANT
PTT
AF_OUT
SQ
AUDIO_IN
SQUELCH
RXD
TXD
MIC-IN
SR_FRS
MIC_IN
SRFRS0W5
R29
180
R30
DNI/180
R26
68
R27
DNI/68
R31
68
R32
DNI/68
17dB attenuator to reduce 500mW to 10mW
https://chemandy.com/calculators/matching-pi-attenuator-calculator.htm
R3
220
DNI/220
R4
DNI/100
C1
C2
100nF
R7
DNI/100
R8
100
C4
47uF
C3
DNI/47uF
MIC_IN
J11
DNI/Test Point for MIC_IN
AUDIO_OUT
Low Pass Filter from
https://www.hackster.io/news/learn-how-to-use-pwm-to-generate-an-audio-signal-from-your-raspberry-pi-pico-00347dece8b8
Install D1 for
Pi Zero
D1
DNI/1N5817
U1
Raspberry Pi Pico
VBUS
VSYS
3V3(OUT)
3V3_EN
RUN
ADC_REF
GP0
GP1
GP2
GP3
GP4
GP5
GP6
GP7
GP8
GP9
GP10
GP11
GP12
GP13
GP14
GP15
GP28
GP27
GP26
GP22
GP21
GP20
GP19
GP18
GP17
GP16
5V
SWITCHED_5V
PICO_3.3V
PICO_RESET
TEMPERATURE
AUDIO_IN
AUDIO_OUT
PD
PI_LED2
PI_LED1
STM_LED2
STM_LED1
PTT
SWTX
GND
PI_RXD
PI_TXD
PICO_SDA2
PICO_SCL2
SDA
SCL
BPSK_CONTROL_A
BPSK_CONTROL_B
TX2
RX2
PB
TXC
BPF
PI_3V3
Pico senses 3.3V
to see if Pi Zero is
present.
Temperature
R11
10K
R12
DNI/10k
D9
1N4148
Nine DOF IMU + Temperature
J2
MPU6050
IMU_INT
IMU_ADC
XCL
XDA
SDA
SCL
GND
PICO_3.3V
Temperature/Pressure/Humidity sensor
J3
BME280
PICO_3.3V
GND
SCL
SDA
J5
GND
PICO_3.3V
SDA
SCL
DNI/Sparkfun QWIIC Breakout
Sparkfun Qwiic Adapter
J7
TX2
RX2
PICO_3.3V
GND
DNI/1x4 pin header
Serial 2 connection
PICO_3.3V
R20
4.7k
R26
DNI/4.7k
JP8
PI_SDA
SDA
R22
4.7k
R25
DNI/4.7k
JP7
PI_SCL
SCL
Optional jumpers for I2C1
STEM sensors to
connect to Pi or
Pico (default)
Power
Green 5mm
LED3
Transmit
Blue 5mm
LED4
Charge
Red 5mm
LED5
PI_LED1
PI_LED2
USB_VBUS
1k
R32
100
R34
220
R35
PICO_3.3V
R21
DNI/4.7k
JP9
PI_SDA3
PICO_SDA2
R24
DNI/4.7k
JP10
PI_SCL3
PICO_SCL2
Optional jumpers to
connect Pico I2C2
to main board
INA219 sensors
DNI/DTSM-6
S3
S1
RA-SPST
PB
PB pushbutton
change modes
DNI/DTSM-6
S2
Yuandi TS-1071SA-A3B3-D4
PICO_RESET
Pico Reset Push Button
J4
RX2
TX2
GND
PICO_3.3V
1x8 female right angle header
Connector for ESP32-CAM
C5
100nF
STM_LED1
STM_LED2
1k
R13
100
R14
Green 5mm
LED1
Blue 5mm
LED2
R15
R16
R17
R18
R19
LED9
LED10
LED6
LED7
LED8
Power
Transmit
Charge
AMSAT® CubeSat Simulator Pico PCB v0.3
(c) CC-BY-NC-SA+ 2022 AMSAT
KU2Y-KI6ZUM-WD6DRI - CubeSatSim.org
TITLE: cubesatsim-pico-0.3
Document Number:
REV:
Date: 9/14/22 3:18 PM
Sheet: 1/1