USB-C connector

J1
USB_C_Receptacle

VBUS — A4
CC1 — A5
CC2 — B5
D- — A7
D- — B7 — USB_D-
D+ — A6
D+ — B6 — USB_D+
RX1- — B10
RX1+ — B11
TX1- — A3
TX1+ — A2
RX2- — A10
RX2+ — A11
TX2- — B3
TX2+ — B2
SBU1 — A8
SBU2 — B8
SHIELD
S1
A1 — GND

R10 5.1K
R11 5.1K
GND

K_2 K_1
D1
ESD7L5.0DT5G
A
GND

Power source 3V3

+3V3
PWR_FLAG
PWR_FLAG
J5
1
2
Screw_Terminal_01x02
GND

Pico Debug Probe Headers

Conn_01x03_Pin
SWDIO 3
2
SWDCLK 1
J7
GND

UART Debug
Conn_01x02_Pin
GPS_TX 2
GPS_RX 1
J9

SPI Debug
Conn_01x04_Pin
SPI0_CSn 4
SPI0_SCK 3
SPI0_TX 2
SPI0_RX 1
J10

I2C Debug
Conn_01x02_Pin
I2C0_SDA 2
I2C0_SCL 1
J8

MOSFET Headers
Conn_01x02_Pin
PYRO1 2
PYRO2 1
J4

Buzzer
BUZZER 1
BZ1
Buzzer
GND

DSHOT Connector
Conn_01x06_Socket
DSHOT_1 1
DSHOT_2 2
DSHOT_3 3
DSHOT_4 4
5
6
J3
GND

Gyroscope and Accelerometer
+3V3
C17 0.1uF
GND
U1
VLOGIC 8
VDD 13
SDA 24 — I2C0_SDA
SCL 23 — I2C0_SCL
ADO 9 — 0x68
FSYNC 11
CLKIN 1
INT 12 — INT
AUX_DA 6
AUX_CL 7
CPOUT 20 — C18 2.2nF
REGOUT 10 — C19 2.2nF
GND 18
MPU-6050
GND

MCU
RP2350A
+3V3
3V3
RST — RST
USB_D- — USB_D-
USB_D+ — USB_D+
SWDCLK — SWCLK
SWDIO — SWDIO
QSPI_SD0 — QSPI_SD0
QSPI_SD1 — QSPI_SD1
QSPI_SD2 — QSPI_SD2
QSPI_SD3 — QSPI_SD3
QSPI_CSN — QSPI_CSN
QSPI_SCLK — QSPI_SCLK
RADIO_RX_INT — GPIO26/ADC0
GPIO27/ADC1
USER_SW — GPIO28/ADC2
GPIO29/ADC3

GPIO0 — GPS_TX
GPIO1 — GPS_RX
GPIO2 — GPIO2
GPIO3 — GPIO3
GPIO4 — I2C0_SDA
GPIO5 — I2C0_SCL
GPIO6 — GPIO6
GPIO7 — GPIO7
GPIO8 — PSRAM_CS
GPIO9 — RED_LED
GPIO10 — INT
GPIO11 — BUZZER
GPIO12 — R16 DNC — RADIO_RX_TIMEOUT
GPIO13 — GPIO14
GPIO14 — GPIO15
GPIO15 — SPI0_RX
GPIO16 — SPI0_CSn
GPIO17 — SPI0_SCK
GPIO18 — SPI0_TX
GPIO19 — DSHOT_1
GPIO20 — DSHOT_2
GPIO21 — DSHOT_3
GPIO22 — DSHOT_4
GPIO23 — PYRO1
GPIO24 — PYRO2
GPIO25

File: rp2350a.kicad_sch

Indicator LED
D2
LED
RED_LED
R15 220
GND

Flash Memory
+3V3
IC1
W25Q128JVPIQ
VCC 8
CLK 6 — QSPI_SCLK
DI_(IO0) 5 — QSPI_SD0
DO_(IO1) 2 — QSPI_SD1
WP_(IO2) 3 — QSPI_SD2
HOLD_OR_/RESET_(IO3) 7 — QSPI_SD3
GND_1 4
GND_2 9
CS 1 — QSPI_CSN
C30 100nF
GND
R12 10K
+3V3
D3
MBR0530
+3V3
R21 10K

Reset and Boot buttons
SW1
SW_Push
USER_SW
R23 10K
R22 10K
R13 1K
SW2
SW_Push
R14 1K
RST
GND

PSRAM
U9
APS6404L-3SQR-ZR
PSRAM_CS — CE 1
QSPI_SCLK — SCLK 6
EXP 9
VDD 8
SI/SIO(0) 5 — QSPI_SD0
SO/SIO(1) 2 — QSPI_SD1
SIO(2) 3 — QSPI_SD2
SIO(3) 7 — QSPI_SD3
VSS 4
+3V3
C29 2.2uF
GND

GPS module
+3V3
C21 1uF
GND
GND
Waveshare23721
VCC 1
GND 2
PPS 5
RX 4 — GPS_RX
TX 3 — GPS_TX
U3

Barometer and Thermometer
+3V3
C27 100nF
C28 100nF
GND
BMP280
I2C0_SCL 4 — SCK 6
I2C0_SDA 3 — SDI 8
0x76 5 — SDO VDDIO
CSB — VDD
GND 1
GND 7
U8
+3V3
GND

Pin Header
J6
GPIO2 6
GPIO3 5
GPIO6 4
GPIO7 3
GPIO15 2
GPIO14 1
Conn_01x06_Pin

LoRa Module
+3V3
C31 22u
C32 100n
GND
U4
RFM98W-433S2
SPI0_SCK — SCK
SPI0_TX — MOSI
SPI0_RX — MISO
SPI0_CSn — NSS
VDD 3.3V
RST — RESET 6
DIO5 7
DIO4 12
DIO3 11
DIO2 16
DIO1 15 — RADIO_RX_TIMEOUT
DIO0 14 — R18 100 — RADIO_RX_INT
ANT 9
Conn_Coaxial
GND GND GND
C15 100n
GND

Author: Wiktor Kociuba
Team ApolLO
Sheet: /
File: CanSat.kicad_sch
Title: Main Board
Size: A4   Date: 2026-01-26   **Rev: v2.0.0**
KiCad E.D.A. 9.0.3   Id: 1/2

1V1 power rail

+1V1

PWR_FLAG

C12 100nF　C11 4.7uF　C10 100nF

GND

3V3 power rail

3V3D

C1 100nF　C2 100nF　C3 100nF　C4 100nF　C5 100nF　C6 100nF　C7 100nF

GND

3V3D

33　R20

PWR_FLAG

VREG_AVDD

C8 4.7uF

GND

+1V1

C9 4.7uF　C16 4.7uF　L1 3.3u

GND

Raspberry Pi
RP2350A QFN-60

DVDD 39 23 6
QSPI_IOVDD 54
IOVDD 45 38 30 20 11 1
USB_OTP_VDD 53
ADC_AVDD 44

46 VREG_AVDD
49 VREG_VIN
50 VREG_FB
48 VREG_LX
47 VREG_PGND

QSPI_CSN　60 QSPI_SS
QSPI_SD0　27 R6　57 QSPI_SD0
QSPI_SD1　27 R7　59 QSPI_SD1
QSPI_SD2　27 R8　58 QSPI_SD2
QSPI_SD3　27 R9　55 QSPI_SD3
QSPI_SCLK　27 R5　56 QSPI_SCLK

XIN　21 XIN
XOUT　22 XOUT

26 RUN

SWCLK　24 SWCLK
SWDIO　25 SWD

USB_DP　52 N_USB_D-
USB_DM　51 N_USB_D+

R3　27

R3 and R4 needs to be close to the RP2350A

USB_D-
USB_D+

27　R4

GPIO0　2 GPIO0
GPIO1　3 GPIO1
GPIO2　4 GPIO2
GPIO3　5 GPIO3
GPIO4　7 GPIO4
GPIO5　8 GPIO5
GPIO6　9 GPIO6
GPIO7　10 GPIO7
GPIO8　12 GPIO8
GPIO9　13 GPIO9
GPIO10　14 GPIO10
GPIO11　15 GPIO11
GPIO12　16 GPIO12
GPIO13　17 GPIO13
GPIO14　18 GPIO14
GPIO15　19 GPIO15
GPIO16　27 GPIO16
GPIO17　28 GPIO17
GPIO18　29 GPIO18
GPIO19　31 GPIO19
GPIO20　32 GPIO20
GPIO21　33 GPIO21
GPIO22　34 GPIO22
GPIO23　35 GPIO23
GPIO24　36 GPIO24
GPIO25　37 GPIO25

GPIO26_ADC0　40 GPIO26/ADC0
GPIO27_ADC1　41 GPIO27/ADC1
GPIO28_ADC2　42 GPIO28/ADC2
GPIO29_ADC3　43 GPIO29/ADC3

GND 61

U5
RP2350_60QFN

GND

GND

3V3D

R1 10K

RST

C14 1uF

Oscillator

Y2
ASE-12.000MHz-E-T

GND

R2 10K

C13 1uF

GND

4 VDD
1 TRI-STATE_(STBY)

OUTPUT 3
GND/CASE 2

GND

XIN