

[illegible]

RPi/Multiplexer Header

3V3
PWR_FLAG
SDA/GPIO_2, unused
SCL/GPIO_3, unused
GPIO_4/GPCLK0, used by multiplexer
GPIO_17, used by multiplexer
GPIO_27, ENAB_RF
GPIO_22, RF_RST
GPIO_10, MOSI
GPIO_9, MISO
GPIO_11, SCLK
GPIO_0/ID_SD, unused
GPIO_5, RF_CS
GPIO_6, unused
PWM1/GPIO_13, unused
GPIO_19, PCM_FS
GPIO_26, RF_BUSY
GPIO_15, TX
GPIO_14, RX
PCM_CLK/GPIO_18, used by multiplexer
GPIO_23, RF_TX_EN
GPIO_24, RF_RX_EN
GPIO_25, TCXO_EN
SPI0_CE0/GPIO_8, unused
GPIO_1/ID_SC, unused
PWM0/GPIO_12, unused
GPIO_16, unused
GPIO_20, PCM_DIN
GPIO_21, PCM_DOUT

RPi Payload Power Converter

Note: ENAB_RPI must be run high to enable power to Raspberry Pi!
EN_Low < 0.4V, RP2350B Low = 0V
EN_High > 1.5V, RP2350B High = 3.3V
Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW

Regulator - 5V OUT
U1: TPS54426PWP
C1: 22uF, C2: 22uF, C3: 47uF, C4: 47uF, C5: 0.1uF, C6: 3.3nF, C7: 1uF, C11: 22pF
R2: 330k, R3: 121k, R4: 22.1k, R5: 100k
ENAB_RPI
5V, GND, VBATT, 5V

Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements

2400 MHz Radio Module

U2: LORA1280F27-TCXO
VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND, RXEN, TXEN
TCXO_EN, RF_TX_EN, RF_RX_EN, RF_I01, RF_I02, RF_I03, RF_CS, RF_RST, RF_BUSY

RF Regulator

U3: TPS7A4501DCQT
SHDN, IN, OUT, SENSE/ADJ
ENAB_RF, VBATT, V_RF, GND
C14: 47uF, R11: 10k, R6: 10k, R7: 3.3k, C8: 10uF
Set RF Voltage: $V_{OUT} = 1.21 \cdot (1 + R_6/R_7) + (5V - 6 \cdot R_6)$
 $V_{OUT} = 4.9V$ ($R_6 = 10k, R_7 = 3.3k$)

Pycubed Connector

J2: 353620950
PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG, GND

RPi Reset

Q1: IRLML2803, R8: 10k, R9: 10k, RPL_RST, GLOBAL_EN, GND, J3: Conn_01x03

Thermistor Circuit

PyCubed_AIN4, TH1: TTD0-10KCB-3-1%, R1: 10k, PYCUBED_3V3, GND
Must be 1% or better

Mounting Holes

Frame, RPi/Multiplexer
Note: H2 requires thinner copper plate to fit 5V trace
H1, H2, H3, H4, H5

Hunter Liu		Stanford Student Space Initiative	
Sheet: /		File: RPi_interface.kicad_sch	
Title: Raspberry Pi Interface Board			
Size: A4	Date: 2024-11-14	Rev: 1.2	
KiCad E.D.A. 8.0.4		Id: 1/1	

RPi/Multiplexer Header

3V3
PWR_FLAG
SDA/GPIO_2, unused
SCL/GPIO_3, unused
GPIO_4/GPCLK0, used by multiplexer
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GPIO_27, ENAB_RF
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GPIO_10, MOSI
GPIO_9, MISO
GPIO_11, SCLK
GPIO_0/ID_SD, unused
GPIO_5, RF_CS
GPIO_6, unused
PWM1/GPIO_13, unused
GPIO_19, PCM_FS
GPIO_26, RF_BUSY
GPIO_15, TX
GPIO_14, RX
PCM_CLK/GPIO_18, used by multiplexer
GPIO_23, RF_TX_EN
GPIO_24, RF_RX_EN
GPIO_25, TCXO_EN
SPI0_CE0/GPIO_8, unused
GPIO_1/ID_SC, unused
PWM0/GPIO_12, unused
GPIO_16, unused
GPIO_20, PCM_DIN
GPIO_21, PCM_DOUT

RPi Payload Power Converter

Note: ENAB_RPI must be run high to enable power to Raspberry Pi!
EN_Low < 0.4V, RP2350B Low = 0V
EN_High > 1.5V, RP2350B High = 3.3V
Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW

Regulator - 5V OUT
U1: TPS54426PWP
C1: 22uF, C2: 22uF, C3: 47uF, C4: 47uF, C5: 0.1uF, C6: 3.3nF, C7: 1uF, C11: 22pF
R2: 330k, R3: 121k, R4: 22.1k, R5: 100k
ENAB_RPI
5V, GND, VBATT, 5V

Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements

2400 MHz Radio Module

U2: LORA1280F27-TCXO
VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND, RXEN, TXEN
TCXO_EN, RF_TX_EN, RF_RX_EN, RF_I01, RF_I02, RF_I03, RF_CS, RF_RST, RF_BUSY

RF Regulator

U3: TPS7A4501DCQT
ENAB_RF, VBATT, V_RF, GND, SHDN, IN, OUT, SENSE/ADJ
C14: 47uF, R11: 10k, R6: 10k, R7: 3.3k, C8: 10uF
Set RF Voltage:
 $V_{OUT} = 1.21 \cdot (1 + R_6/R_7) + (I_E - 6 \cdot R_6)$
 $V_{OUT} = 4.9V$ ($R_6=10k$, $R_7=3.3k$)

Pycubed Connector

J2: 353620950
PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG, GND

RPi Reset

Q1: IRLML2803, R8: 10k, R9: 10k, RPL_RST, GLOBAL_EN, GND, J3: Conn_01x03

Thermistor Circuit

PyCubed_AIN4, TH1: TTD0-10KCB-3-1%, R1: 10k, PYCUBED_3V3, GND

Must be 1% or better

Mounting Holes

Frame RPi/Multiplexer
Note: H2 requires thinner copper plate to fit 5V trace
H1, H2, H3, H4, H5

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Size: A4	Date: 2024-11-14	Rev: 1.2	
KiCad E.D.A. 8.0.4		Id: 1/1	

RPi/Multiplexer Header

Diagram showing the connection of various components to the RPi/Multiplexer Header. Key components include:

- RPi/Multiplexer Header:** J1, PRT-21570, 3V3, +3V3, PWR_FLAG, SDA/GPIO_2, unused, SCL/GPIO_3, unused, GPIO_4/GPCLK0, used by multiplexer, GPIO_17, used by multiplexer, GPIO_27, ENAB_RF, GPIO_22, RF_RS1, 3V3, (unused), GPIO_10, MOSI, GPIO_9, MISO, GPIO_11, SCLK, GPIO_0/ID_SD, unused, GPIO_5, RF_CS, GPIO_6, unused, PWM1/GPIO_13, unused, GPIO_19, PCM_FS, GPIO_26, RF_I01, RF_BUSY, RF_I02, RF_I03, TX, RX, GPIO_14, GPIO_15, PCM_CLK/GPIO_18, used by multiplexer, GPIO_23, GPIO_24, TCXO_EN, GPIO_25, SPI0_CE0/GPIO_8, unused, GPIO_1/ID_SC, unused, PWM0/GPIO_12, unused, GPIO_16, unused, GPIO_20, PCM_DIN, GPIO_21, PCM_DOUT.
- RPi Payload Power Converter:** U1, TPS54426PWP, 5V, VBATT, 4.5 to 18V, C1, C2, 22uF, 22uF, L1, 3.3uH, C5, 0.1uF, C3, 47uF, C4, 47uF, PGND1, PGND2, SW1, SW2, VBST, VIN1, VIN2, EPAD, EN, PG, GND, SS, VREG5, VFB, VO, R2, 330k, ENAB_RPI, C6, 3.3nF, R5, 100k, R3, 121k, R4, 22.1k, C7, 1uF, C11, 22pF, 5V, GND.
- Pycubed Connector:** J2, 353620950, PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG, GND.
- 2400 MHz Radio Module:** U2, LORA1280F27-TCXO, VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND, RF_RX_EN, RF_TX_EN, RXEN, TXEN, GND, 50Ω, J4, Amphenol_901-144.
- RF Regulator:** U3, TPS7A4501DCQT, ENAB_RF, VBATT, C14, 47uF, R11, 10k, V_RF, GND, C8, 10uF, R6, 10k, R7, 3.3k, SHDN, IN, OUT, SENSE/ADJ, GND_1, GND_2, GND.
- RPi Reset:** Q1, IRLML2803, R8, 10k, 5V, R9, 10k, RPL_RST, GLOBAL_EN, GND, J3, Conn_01x03.
- Thermistor Circuit:** R1, 10k, PYCUBED_3V3, TH1, TTD0-10KCB-3-1%, Must be 1% or better, GND.
- Mounting Holes:** H1, H2, H3, H4, H5, Note: H2 requires thinner copper plate to fit 5V trace.

Notes:

- Note: ENAB_RPI must be run high to enable power to Raspberry Pi!
- EN_Low < 0.4V, RP2350B Low = 0V
- EN_High > 1.5V, RP2350B High = 3.3V
- Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW
- On PCB signal ground (SGND) isolated from power ground (PGND) (see datasheet)
- Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements
- TCXO on by default whenever ENAB_RF pulled up. If placed, DNP for flight.
- DNI to decrease LDO inrush current
- Set RF Voltage: $V_{OUT} = 1.21 \cdot (1 + R_6/R_7) + (5V - 6 \cdot R_6)$
- $V_{OUT} = 4.9V$ ($R_6 = 10k, R_7 = 3.3k$)

Title Block:

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RPi/Multiplexer Header

Diagram showing the connection of the RPi/Multiplexer Header (J1) to the board. The header is a 40-pin connector. The board provides the following connections:

- Pin 1: PWR_FLAG
- Pin 2: +3V3
- Pin 3: SDA/GPIO_2, unused
- Pin 4: SCL/GPIO_3, unused
- Pin 5: GPIO_4/GPCLK0, used by multiplexer
- Pin 6: GPIO_17, used by multiplexer
- Pin 7: ENAB_RF
- Pin 8: RF_RST
- Pin 9: GPIO_10
- Pin 10: GPIO_9
- Pin 11: MOSI
- Pin 12: GPIO_11
- Pin 13: SCLK
- Pin 14: GPIO_0/ID_SD, unused
- Pin 15: GPIO_5
- Pin 16: RF_CS
- Pin 17: GPIO_6, unused
- Pin 18: PWM1/GPIO_13, unused
- Pin 19: GPIO_19, PCM_FS
- Pin 20: RF_I01
- Pin 21: GPIO_26
- Pin 22: RF_BUSY
- Pin 23: GND
- Pin 24: GND
- Pin 25: TX
- Pin 26: RX
- Pin 27: GPIO_14
- Pin 28: GPIO_15
- Pin 29: PCM_CLK/GPIO_18, used by multiplexer
- Pin 30: TX
- Pin 31: RX
- Pin 32: GPIO_23
- Pin 33: GPIO_24
- Pin 34: GPIO_25
- Pin 35: TCXO_EN
- Pin 36: SPI0_CE0/GPIO_7, unused
- Pin 37: GPIO_1/ID_SC, unused
- Pin 38: PWM0/GPIO_12, unused
- Pin 39: GPIO_16, unused
- Pin 40: GPIO_20, PCM_DIN
- Pin 41: GPIO_21, PCM_DOUT
- Pin 42: RF_I02
- Pin 43: RF_I03

RPi Payload Power Converter

Diagram showing the RPi Payload Power Converter (U1) and the Regulator - 5V OUT. The converter is a TPS54426PWP. The regulator is a TPS7A4501DCQT. The board provides the following connections:

- Pin 1: ENAB_RPI
- Pin 2: ENAB_RPI
- Pin 3: ENAB_RPI
- Pin 4: ENAB_RPI
- Pin 5: ENAB_RPI
- Pin 6: ENAB_RPI
- Pin 7: ENAB_RPI
- Pin 8: ENAB_RPI
- Pin 9: ENAB_RPI
- Pin 10: ENAB_RPI
- Pin 11: ENAB_RPI
- Pin 12: ENAB_RPI
- Pin 13: ENAB_RPI
- Pin 14: ENAB_RPI
- Pin 15: ENAB_RPI
- Pin 16: ENAB_RPI
- Pin 17: ENAB_RPI
- Pin 18: ENAB_RPI
- Pin 19: ENAB_RPI
- Pin 20: ENAB_RPI
- Pin 21: ENAB_RPI
- Pin 22: ENAB_RPI
- Pin 23: ENAB_RPI
- Pin 24: ENAB_RPI
- Pin 25: ENAB_RPI
- Pin 26: ENAB_RPI
- Pin 27: ENAB_RPI
- Pin 28: ENAB_RPI
- Pin 29: ENAB_RPI
- Pin 30: ENAB_RPI
- Pin 31: ENAB_RPI
- Pin 32: ENAB_RPI
- Pin 33: ENAB_RPI
- Pin 34: ENAB_RPI
- Pin 35: ENAB_RPI
- Pin 36: ENAB_RPI
- Pin 37: ENAB_RPI
- Pin 38: ENAB_RPI
- Pin 39: ENAB_RPI
- Pin 40: ENAB_RPI

2400 MHz Radio Module

Diagram showing the 2400 MHz Radio Module (U2) and the RF Regulator (U3). The radio module is a LORA1280F27-TCXO. The RF regulator is a TPS7A4501DCQT. The board provides the following connections:

- Pin 1: VCC
- Pin 2: TCXOEN
- Pin 3: NRESET
- Pin 4: RF_BUSY
- Pin 5: BUSY
- Pin 6: DI01
- Pin 7: DI02
- Pin 8: DI03
- Pin 9: NSS
- Pin 10: SCK
- Pin 11: MOSI
- Pin 12: MISO
- Pin 13: GND
- Pin 14: RXEN
- Pin 15: TXEN
- Pin 16: GND
- Pin 17: GND
- Pin 18: GND
- Pin 19: GND
- Pin 20: GND
- Pin 21: GND
- Pin 22: GND
- Pin 23: GND
- Pin 24: GND
- Pin 25: GND
- Pin 26: GND
- Pin 27: GND
- Pin 28: GND
- Pin 29: GND
- Pin 30: GND
- Pin 31: GND
- Pin 32: GND
- Pin 33: GND
- Pin 34: GND
- Pin 35: GND
- Pin 36: GND
- Pin 37: GND
- Pin 38: GND
- Pin 39: GND
- Pin 40: GND

RF Regulator

Diagram showing the RF Regulator (U3) and the Mounting Holes. The RF regulator is a TPS7A4501DCQT. The board provides the following connections:

- Pin 1: SHDN
- Pin 2: IN
- Pin 3: GND_1
- Pin 4: GND_2
- Pin 5: OUT
- Pin 6: SENSE/ADJ
- Pin 7: GND
- Pin 8: GND
- Pin 9: GND
- Pin 10: GND
- Pin 11: GND
- Pin 12: GND
- Pin 13: GND
- Pin 14: GND
- Pin 15: GND
- Pin 16: GND
- Pin 17: GND
- Pin 18: GND
- Pin 19: GND
- Pin 20: GND
- Pin 21: GND
- Pin 22: GND
- Pin 23: GND
- Pin 24: GND
- Pin 25: GND
- Pin 26: GND
- Pin 27: GND
- Pin 28: GND
- Pin 29: GND
- Pin 30: GND
- Pin 31: GND
- Pin 32: GND
- Pin 33: GND
- Pin 34: GND
- Pin 35: GND
- Pin 36: GND
- Pin 37: GND
- Pin 38: GND
- Pin 39: GND
- Pin 40: GND

Pycubed Connector

Diagram showing the Pycubed Connector (J2) and the RPi Reset. The Pycubed connector is a 353620950. The board provides the following connections:

- Pin 1: PWR_FLAG
- Pin 2: VBATT
- Pin 3: PWCUBED_3V3
- Pin 4: PWCUBED_AIN4
- Pin 5: RPL_RST
- Pin 6: ENAB_RPI
- Pin 7: RX
- Pin 8: TX
- Pin 9: PWR_FLAG
- Pin 10: GND
- Pin 11: GND
- Pin 12: GND
- Pin 13: GND
- Pin 14: GND
- Pin 15: GND
- Pin 16: GND
- Pin 17: GND
- Pin 18: GND
- Pin 19: GND
- Pin 20: GND
- Pin 21: GND
- Pin 22: GND
- Pin 23: GND
- Pin 24: GND
- Pin 25: GND
- Pin 26: GND
- Pin 27: GND
- Pin 28: GND
- Pin 29: GND
- Pin 30: GND
- Pin 31: GND
- Pin 32: GND
- Pin 33: GND
- Pin 34: GND
- Pin 35: GND
- Pin 36: GND
- Pin 37: GND
- Pin 38: GND
- Pin 39: GND
- Pin 40: GND

RPi Reset

Diagram showing the RPi Reset (Q1) and the Thermistor Circuit. The RPi reset is an IRLML2803. The board provides the following connections:

- Pin 1: RPL_RST
- Pin 2: GLOBAL_EN
- Pin 3: GND
- Pin 4: RUN
- Pin 5: J3 Conn_01x03
- Pin 6: GND
- Pin 7: GND
- Pin 8: GND
- Pin 9: GND
- Pin 10: GND
- Pin 11: GND
- Pin 12: GND
- Pin 13: GND
- Pin 14: GND
- Pin 15: GND
- Pin 16: GND
- Pin 17: GND
- Pin 18: GND
- Pin 19: GND
- Pin 20: GND
- Pin 21: GND
- Pin 22: GND
- Pin 23: GND
- Pin 24: GND
- Pin 25: GND
- Pin 26: GND
- Pin 27: GND
- Pin 28: GND
- Pin 29: GND
- Pin 30: GND
- Pin 31: GND
- Pin 32: GND
- Pin 33: GND
- Pin 34: GND
- Pin 35: GND
- Pin 36: GND
- Pin 37: GND
- Pin 38: GND
- Pin 39: GND
- Pin 40: GND

Thermistor Circuit

Diagram showing the Thermistor Circuit (TH1) and the Mounting Holes. The thermistor circuit is a TTDO-10KCB-3-1%. The board provides the following connections:

- Pin 1: PYCUBED_3V3
- Pin 2: R1
- Pin 3: TH1

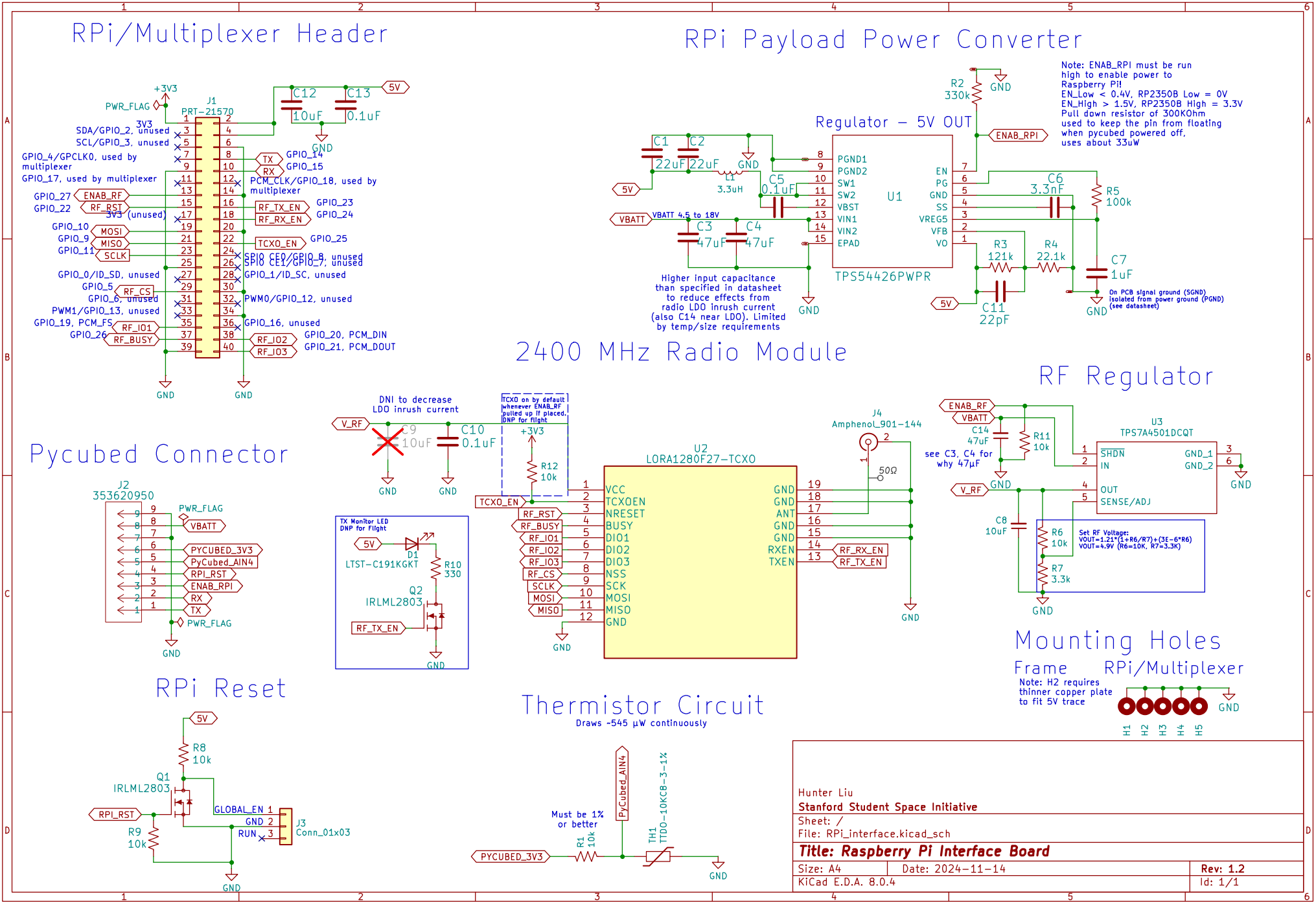
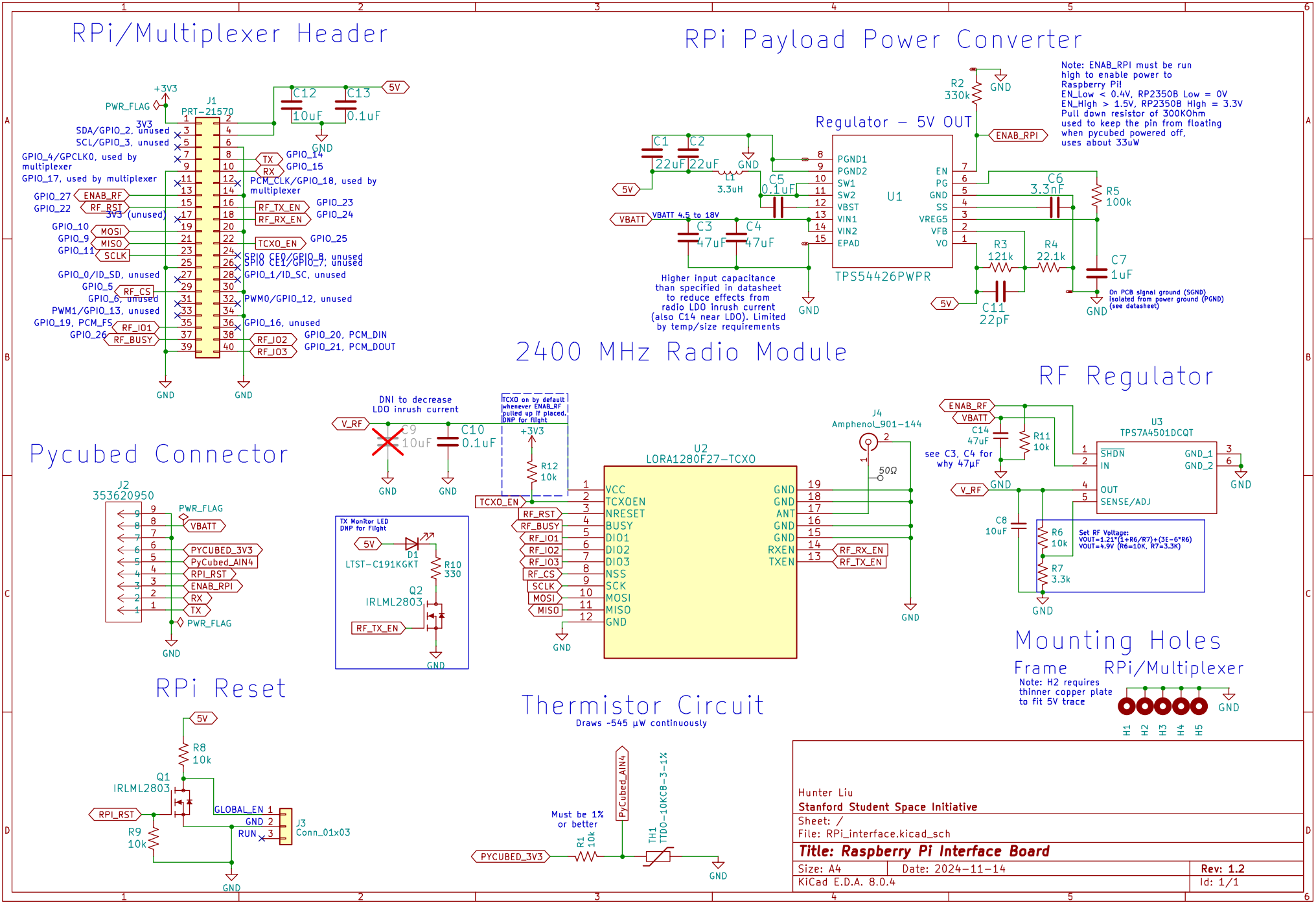
RPi/Multiplexer Header

Diagram showing the connection of various components to the RPi/Multiplexer Header. Key components include:

- RPi/Multiplexer Header:** J1, PRT-21570, 3V3, +3V3, PWR_FLAG, SDA/GPIO_2, unused, SCL/GPIO_3, unused, GPIO_4/GPCLK0, used by multiplexer, GPIO_17, used by multiplexer, GPIO_27, ENAB_RF, GPIO_22, RF_RST, 3V3 (unused), GPIO_10, MOSI, GPIO_9, MISO, GPIO_11, SCLK, GPIO_0/ID_SD, unused, GPIO_5, RF_CS, GPIO_6, unused, PWM1/GPIO_13, unused, GPIO_19, PCM_FS, GPIO_26, RF_BUSY, GND, TX, RX, GPIO_14, GPIO_15, PCM_CLK/GPIO_18, used by multiplexer, GPIO_23, GPIO_24, RF_TX_EN, RF_RX_EN, TCXO_EN, SPI0_CE0/GPIO_8, unused, GPIO_1/ID_SC, unused, PWM0/GPIO_12, unused, GPIO_16, unused, GPIO_20, PCM_DIN, GPIO_21, PCM_DOUT, RF_I01, RF_I02, RF_I03.
- RPi Payload Power Converter:** U1, TPS54426PWPR, 5V, VBATT, 4.5 to 18V, C1, C2, 22uF, 22uF, L1, 3.3uH, C5, 0.1uF, C3, 47uF, C4, 47uF, PGND1, PGND2, SW1, SW2, VBST, VIN1, VIN2, EPAD, EN, PG, GND, SS, VREG5, VFB, VO, R2, 330k, ENAB_RPI, C6, 3.3nF, R5, 100k, R3, 121k, R4, 22.1k, C7, 1uF, C11, 22pF, 5V, GND. Note: ENAB_RPI must be run high to enable power to Raspberry Pi! EN_Low < 0.4V, RP2350B Low = 0V, EN_High > 1.5V, RP2350B High = 3.3V. Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW. Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements.
- Pycubed Connector:** J2, 353620950, PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG, GND.
- 2400 MHz Radio Module:** U2, LORA1280F27-TCXO, VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND, RF_RX_EN, RF_TX_EN, RXEN, TXEN, GND, 50Ω, J4, Amphenol_G901-144.
- RF Regulator:** U3, TPS7A4501DCQT, ENAB_RF, VBATT, C14, 47uF, R11, 10k, V_RF, GND, SHDN, IN, OUT, SENSE/ADJ, GND_1, GND_2, C8, 10uF, R6, 10k, R7, 3.3k, GND. Set RF Voltage: $V_{OUT} = 1.21 \cdot (1 + R6/R7) + (I_E - 6 \cdot R6) \cdot R7$, $V_{OUT} = 4.9V$ ($R6=10k$, $R7=3.3k$).
- RPi Reset:** 5V, R8, 10k, Q1, IRLML2803, RPL_RST, R9, 10k, GLOBAL_EN, GND, J3, Conn_01x03, GND.
- Thermistor Circuit:** PYCUBED_3V3, R1, 10k, TH1, TTD0-10KCB-3-1%, GND. Must be 1% or better.
- Mounting Holes:** H1, H2, H3, H4, H5, GND. Note: H2 requires thinner copper plate to fit 5V trace.

Title Block:

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Stanford Student Space Initiative
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KiCad E.D.A. 8.0.4 Id: 1/1

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RPi/Multiplexer Header

Diagram showing the connection of various components to the RPi/Multiplexer Header. Key components include:

- RPi/Multiplexer Header:** J1, PRT-21570, 3V3, +3V3, PWR_FLAG, SDA/GPIO_2, unused, SCL/GPIO_3, unused, GPIO_4/GPCLK0, used by multiplexer, GPIO_17, used by multiplexer, GPIO_27, ENAB_RF, GPIO_22, RF_RS1, 3V3 (unused), GPIO_10, MOSI, GPIO_9, MISO, GPIO_11, SCLK, GPIO_0/ID_SD, unused, GPIO_5, RF_CS, GPIO_6, unused, PWM1/GPIO_13, unused, GPIO_19, PCM_FS, GPIO_26, RF_I01, RF_BUSY, RF_I02, RF_I03, TX, RX, GPIO_14, GPIO_15, PCM_CLK/GPIO_18, used by multiplexer, GPIO_23, GPIO_24, TCXO_EN, GPIO_25, SPI0_CE0/GPIO_8, unused, GPIO_1/ID_SC, unused, PWM0/GPIO_12, unused, GPIO_16, unused, GPIO_20, PCM_DIN, GPIO_21, PCM_DOUT.
- Capacitors:** C12 (10uF), C13 (0.1uF).
- Resistors:** R2 (330k), R5 (100k), R3 (121k), R4 (22.1k), R6 (10k), R7 (3.3k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

RPi Payload Power Converter

Diagram showing the connection of various components to the RPi Payload Power Converter. Key components include:

- RPi Payload Power Converter:** U1 (TPS54426PWPR), ENAB_RPI, EN, PG, SW1, SW2, VBST, VREG5, VFB, VO, PGND1, PGND2, VIN1, VIN2, EPAD.
- Capacitors:** C1 (22uF), C2 (22uF), C3 (47uF), C4 (47uF), C5 (0.1uF), C6 (3.3nF), C7 (1uF), C8 (10uF).
- Resistors:** R2 (330k), R5 (100k), R3 (121k), R4 (22.1k), R6 (10k), R7 (3.3k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

Pycubed Connector

Diagram showing the connection of various components to the Pycubed Connector. Key components include:

- Pycubed Connector:** J2 (353620950), PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG.
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

2400 MHz Radio Module

Diagram showing the connection of various components to the 2400 MHz Radio Module. Key components include:

- 2400 MHz Radio Module:** U2 (LORA1280F27-TCXO), VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND, RXEN, TXEN.
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

RF Regulator

Diagram showing the connection of various components to the RF Regulator. Key components include:

- RF Regulator:** U3 (TPS7A4501DCQT), SHDN, IN, OUT, SENSE/ADJ, GND_1, GND_2.
- Capacitors:** C14 (47uF), C8 (10uF).
- Resistors:** R11 (10k), R6 (10k), R7 (3.3k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

RPi Reset

Diagram showing the connection of various components to the RPi Reset. Key components include:

- RPi Reset:** Q1 (IRLML2803), RPL_RST, GLOBAL_EN, GND, J3 (Conn_01x03).
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

Thermistor Circuit

Diagram showing the connection of various components to the Thermistor Circuit. Key components include:

- Thermistor Circuit:** R1 (10k), TH1 (TTC0-10KCB-3-1%), PYCUBED_AIN4.
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

Mounting Holes

Diagram showing the connection of various components to the Mounting Holes. Key components include:

- Mounting Holes:** H1, H2, H3, H4, H5.
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

RPi Reset

Diagram showing the connection of various components to the RPi Reset. Key components include:

- RPi Reset:** Q1 (IRLML2803), RPL_RST, GLOBAL_EN, GND, J3 (Conn_01x03).
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

Thermistor Circuit

Diagram showing the connection of various components to the Thermistor Circuit. Key components include:

- Thermistor Circuit:** R1 (10k), TH1 (TTC0-10KCB-3-1%), PYCUBED_AIN4.
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

Mounting Holes

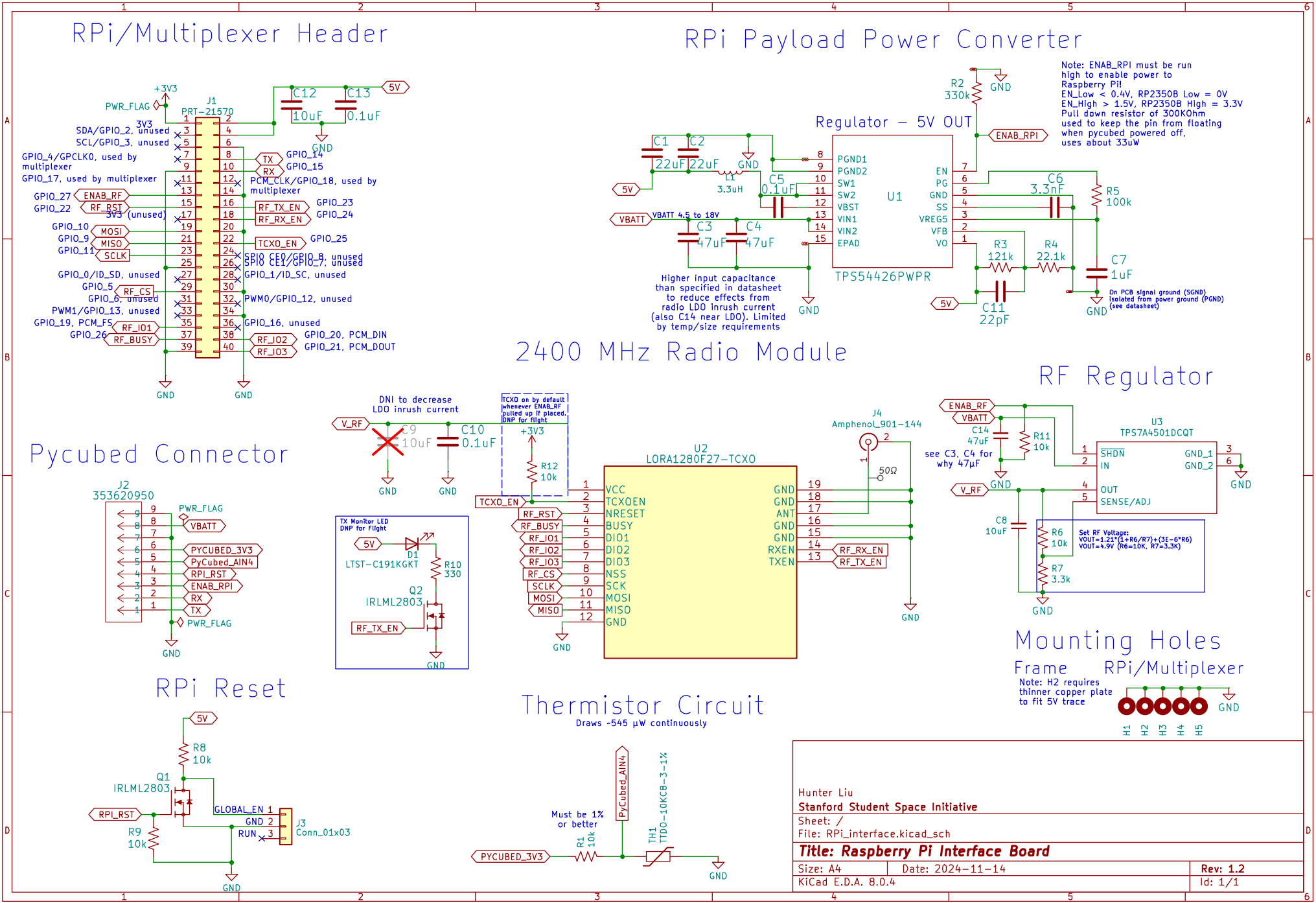
Diagram showing the connection of various components to the Mounting Holes. Key components include:

- Mounting Holes:** H1, H2, H3, H4, H5.
- Capacitors:** C10 (0.1uF), C11 (10uF).
- Resistors:** R10 (330), R11 (10k), R12 (10k).
- Inductors:** L1 (3.3uH), L2 (22uF), L3 (22uF), L4 (47uF), L5 (47uF).
- Diodes:** D1 (LTST-C191KGKT), D2 (IRLML2803).
- Transistors:** Q1 (IRLML2803), Q2 (IRLML2803).
- Other components:** J2 (353620950), J3 (Conn_01x03).

RPi Reset

Diagram showing the connection of various components to the RPi Reset. Key components include:

- RPi Reset:** Q1 (IRLML2803), RPL_RST, GLOBAL_EN, GND, J3 (Conn_01x0

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RPi/Multiplexer Header

3V3
PWR_FLAG
SDA/GPIO_2, unused
SCL/GPIO_3, unused
GPIO_4/GPCLK0, used by multiplexer
GPIO_17, used by multiplexer
GPIO_27, ENAB_RF
GPIO_22, RF_RST
GPIO_10, MOSI
GPIO_9, MISO
GPIO_11, SCLK
GPIO_0/ID_SD, unused
GPIO_5, RF_CS
GPIO_6, unused
PWM1/GPIO_13, unused
GPIO_19, PCM_FS
GPIO_26, RF_BUSY
GPIO_14, TX
GPIO_15, RX
PCM_CLK/GPIO_18, used by multiplexer
GPIO_23, RF_TX_EN
GPIO_24, RF_RX_EN
GPIO_25, TCXO_EN
SPI0 CE0/GPIO_8, unused
GPIO_1/ID_SC, unused
PWM0/GPIO_12, unused
GPIO_16, unused
GPIO_20, PCM_DIN
GPIO_21, PCM_DOUT

RPi Payload Power Converter

Note: ENAB_RPI must be run high to enable power to Raspberry Pi!
EN_Low < 0.4V, RP2350B Low = 0V
EN_High > 1.5V, RP2350B High = 3.3V
Pull down resistor of 300kOhm used to keep the pin from floating when pycubed powered off, uses about 33uW

Regulator - 5V OUT
U1: TPS54426PWP
C1: 22uF, C2: 22uF, L1: 3.3uH, C3: 47uF, C4: 47uF, C5: 0.1uF
5V, VBATT (4.5 to 18V), GND
Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements

2400 MHz Radio Module

U2: LORA1280F27-TCXO
VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND
GND, GND, GND, ANT, GND, RXEN, TXEN

RF Regulator

U3: TPS7A4501DCQT
ENAB_RF, VBATT, C14: 47uF, R11: 10k, GND_1, GND_2, SHDN, IN, OUT, SENSE/ADJ, V_RF
see C3, C4 for why 47uF
C8: 10uF, R6: 10k, R7: 3.3k
Set RF Voltage:
 $V_{OUT} = 1.21 \cdot (1 + R6/R7) + (5V - 6 \cdot R6)$
 $V_{OUT} = 4.9V$ (R6=10k, R7=3.3k)

Pycubed Connector

J2: 353620950
PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG, GND

RPi Reset

Q1: IRLML2803, R8: 10k, R9: 10k, RPL_RST, GLOBAL_EN, GND, J3: Conn_01x03

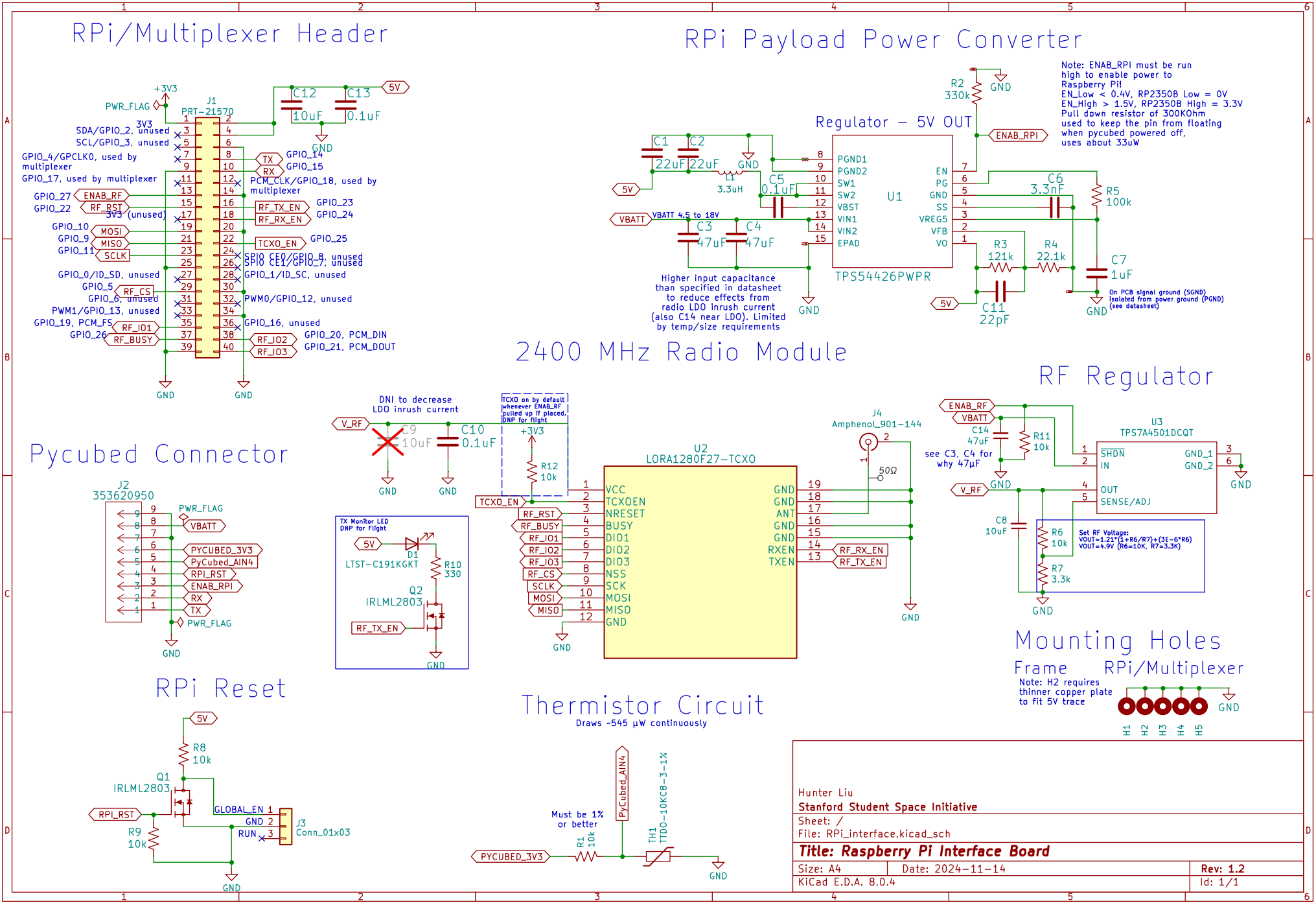
Thermistor Circuit

PyCubed_AIN4, TH1: TTD0-10KCB-3-1%, R1: 10k, PYCUBED_3V3, Must be 1% or better

Mounting Holes

Frame, RPi/Multiplexer
Note: H2 requires thinner copper plate to fit 5V trace
H1, H2, H3, H4, H5

Hunter Liu		Stanford Student Space Initiative	
Sheet: /		File: RPi_interface.kicad_sch	
Title: Raspberry Pi Interface Board			
Size: A4	Date: 2024-11-14	Rev: 1.2	
KiCad E.D.A. 8.0.4		Id: 1/1	

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RPi/Multiplexer Header

3V3
PWR_FLAG
SDA/GPIO_2, unused
SCL/GPIO_3, unused
GPIO_4/GPCLK0, used by multiplexer
GPIO_17, used by multiplexer
GPIO_27, ENAB_RF
GPIO_22, RF_RST
GPIO_10, MOSI
GPIO_9, MISO
GPIO_11, SCLK
GPIO_0/ID_SD, unused
GPIO_5, RF_CS
GPIO_6, unused
PWM1/GPIO_13, unused
GPIO_19, PCM_FS
GPIO_26, RF_BUSY
GPIO_15, TX
GPIO_14, RX
PCM_CLK/GPIO_18, used by multiplexer
GPIO_23, RF_TX_EN
GPIO_24, RF_RX_EN
GPIO_25, TCXO_EN
GPIO_8, unused
GPIO_1/ID_SC, unused
PWM0/GPIO_12, unused
GPIO_16, unused
GPIO_20, PCM_DIN
GPIO_21, PCM_DOUT

RPi Payload Power Converter

Note: ENAB_RPI must be run high to enable power to Raspberry Pi!
EN_Low < 0.4V, RP2350B Low = 0V
EN_High > 1.5V, RP2350B High = 3.3V
Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW

Regulator - 5V OUT
TPS54426PWP
Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements

2400 MHz Radio Module

U2 LORA1280F27-TCXO
TCXO on by default whenever ENAB_RF pulled up. If placed, DNP for flight.

RF Regulator

U3 TPS7A4501DCQT
Set RF Voltage:
 $V_{OUT} = 1.21 \cdot (1 + R_6/R_7) + (5V - 6 \cdot R_6)$
 $V_{OUT} = 4.9V$ ($R_6=10K$, $R_7=3.3K$)

Pycubed Connector

J2 353620950
PWR_FLAG
VBATT
PYCUBED_3V3
PyCubed_AIN4
RPL_RST
ENAB_RPI
RX
TX
PWR_FLAG

RPi Reset

Q1 IRLML2803
R8 10k
R9 10k
GLOBAL_EN 1
GND 2
RUN 3
J3 Conn_01x03

Thermistor Circuit

PyCubed_AIN4
TH1 TTDO-10KCB-3-1%
R1 10k
PYCUBED_3V3
Must be 1% or better

Mounting Holes

Frame RPi/Multiplexer
Note: H2 requires thinner copper plate to fit 5V trace

Hunter Liu		Stanford Student Space Initiative	
Sheet: /		File: RPi_interface.kicad_sch	
Title: Raspberry Pi Interface Board			
Size: A4	Date: 2024-11-14	Rev: 1.2	
KiCad E.D.A. 8.0.4		Id: 1/1	

RPi/Multiplexer Header

Diagram showing the connection of various components to the RPi/Multiplexer Header. Key components include:

- RPi/Multiplexer Header:** J1, PRT-21570, 3V3, +3V3, PWR_FLAG, SDA/GPIO_2, unused, SCL/GPIO_3, unused, GPIO_4/GPCLK0, used by multiplexer, GPIO_17, used by multiplexer, GPIO_27, ENAB_RF, GPIO_22, RF_RST, 3V3 (unused), GPIO_10, MOSI, GPIO_9, MISO, GPIO_11, SCLK, GPIO_0/ID_SD, unused, GPIO_5, RF_CS, GPIO_6, unused, PWM1/GPIO_13, unused, GPIO_19, PCM_FS, GPIO_26, RF_BUSY, GND, TX, RX, GPIO_14, GPIO_15, PCM_CLK/GPIO_18, used by multiplexer, GPIO_23, GPIO_24, RF_TX_EN, RF_RX_EN, TCXO_EN, GPIO_25, SPI0_CE0/GPIO_8, unused, GPIO_1/ID_SC, unused, PWM0/GPIO_12, unused, GPIO_16, unused, GPIO_20, PCM_DIN, GPIO_21, PCM_DOUT, RF_I01, RF_I02, RF_I03.
- RPi Payload Power Converter:** U1, TPS54426PWP, 5V, VBATT, 4.5 to 18V, C1, C2, 22uF, 22uF, L1, 3.3uH, C5, 0.1uF, C3, 47uF, C4, 47uF, PGND1, PGND2, SW1, SW2, VBST, VIN1, VIN2, EPAD, EN, PG, GND, SS, VREG5, VFB, VO, R2, 330k, ENAB_RPI, C6, 3.3nF, R5, 100k, R3, 121k, R4, 22.1k, C7, 1uF, C11, 22pF, 5V, GND. Note: ENAB_RPI must be run high to enable power to Raspberry Pi! EN_Low < 0.4V, RP2350B Low = 0V, EN_High > 1.5V, RP2350B High = 3.3V. Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW. Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements.
- 2400 MHz Radio Module:** U2, LORA1280F27-TCXO, VCC, TCXOEN, NRESET, RF_BUSY, BUSY, DI01, DI02, DI03, NSS, SCK, MOSI, MISO, GND, RF_RST, RF_BUSY, RF_I01, RF_I02, RF_I03, RF_CS, SCLK, MOSI, MISO, GND, RXEN, TXEN, TCXO_EN, R12, 10k, +3V3, DNI to decrease LDO inrush current, V_RF, C9, 10uF, C10, 0.1uF, GND, GND, TX Monitor LED, DNP for Flight, 5V, D1, LTST-C191KGKT, R10, 330, Q2, IRLML2803, RF_TX_EN, GND.
- RF Regulator:** U3, TPS7A4501DCQT, ENAB_RF, VBATT, C14, 47uF, R11, 10k, V_RF, GND, SHDN, IN, OUT, SENSE/ADJ, GND_1, GND_2, C8, 10uF, R6, 10k, R7, 3.3k, GND. Set RF Voltage: $V_{OUT} = 1.21 \cdot (1 + R6/R7) + (SE - 6 \cdot R6)$, $V_{OUT} = 4.9V$ ($R6=10k$, $R7=3.3k$). Note: see C3, C4 for why 47uF.
- Pycubed Connector:** J2, 353620950, PWR_FLAG, VBATT, PYCUBED_3V3, PyCubed_AIN4, RPL_RST, ENAB_RPI, RX, TX, PWR_FLAG, GND.
- RPi Reset:** Q1, IRLML2803, R8, 10k, 5V, R9, 10k, RPL_RST, GLOBAL_EN, 1, GND, 2, RUN, 3, J3, Conn_01x03, GND.
- Thermistor Circuit:** R1, 10k, PYCUBED_3V3, TH1, TTD0-10KCB-3-1%, Must be 1% or better, GND.
- Mounting Holes:** H1, H2, H3, H4, H5, Note: H2 requires thinner copper plate to fit 5V trace.

RPi Payload Power Converter

Note: ENAB_RPI must be run high to enable power to Raspberry Pi!
 EN_Low < 0.4V, RP2350B Low = 0V
 EN_High > 1.5V, RP2350B High = 3.3V
 Pull down resistor of 300KOhm used to keep the pin from floating when pycubed powered off, uses about 33uW

Higher input capacitance than specified in datasheet to reduce effects from radio LDO inrush current (also C14 near LDO). Limited by temp/size requirements

2400 MHz Radio Module

RF Regulator

Set RF Voltage:
 $V_{OUT} = 1.21 \cdot (1 + R6/R7) + (SE - 6 \cdot R6)$
 $V_{OUT} = 4.9V$ ($R6=10k$, $R7=3.3k$)

Mounting Holes

Note: H2 requires thinner copper plate to fit 5V trace

RPi Reset

Thermistor Circuit

Draws ~545 μW continuously

RPi/Multiplexer Header

Note: H2 requires thinner copper plate to fit 5V trace

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Stanford Student Space Initiative
 Sheet: /
 File: RPi_interface.kicad_sch
Title: Raspberry Pi Interface Board
 Size: A4 Date: 2024-11-14 Rev: 1.2
 KiCad E.D.A. 8.0.4 Id: 1/1

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RPi/Multiplexer Header

Diagram showing the connection of the RPi/Multiplexer Header to the board. The header is connected to the RPi's GPIO pins and the Multiplexer's control pins. The Multiplexer is used to switch between the RPi's power and ground pins and the board's power and ground pins.

RPi Payload Power Converter

Diagram showing the RPi Payload Power Converter circuit. It includes a 5V OUT regulator (TPS54426PWP) and a 5V input. The circuit is designed to convert the 5V input to a 5V output, which is then used to power the RPi. The circuit includes various capacitors and resistors to ensure stable operation.

2400 MHz Radio Module

Diagram showing the 2400 MHz Radio Module circuit. It includes a radio module (LORA1280F27-TCXO) and a 2400 MHz antenna. The circuit is designed to communicate with the RPi via a 2400 MHz radio link.

RF Regulator

Diagram showing the RF Regulator circuit. It includes a radio module (LORA1280F27-TCXO) and a 2400 MHz antenna. The circuit is designed to regulate the RF signal from the radio module.

Pycubed Connector

Diagram showing the Pycubed Connector circuit. It includes a Pycubed connector (J2) and a 5V input. The circuit is designed to connect the Pycubed connector to the board's power and ground pins.

RPi Reset

Diagram showing the RPi Reset circuit. It includes a reset button (Q1) and a 5V input. The circuit is designed to reset the RPi when the button is pressed.

Thermistor Circuit

Diagram showing the Thermistor Circuit. It includes a thermistor (TH1) and a 5V input. The circuit is designed to measure the temperature of the RPi.

Mounting Holes

Diagram showing the Mounting Holes. It includes a 5V input and a 5V output. The circuit is designed to provide power to the RPi.

Component	Value
C1	22uF
C2	22uF
C3	47uF
C4	47uF
C5	0.1uF
C6	3.3nF
C7	1uF
C8	10uF
C9	10uF
C10	0.1uF
C11	22pF
C12	10uF
C13	0.1uF
C14	47uF
R1	10k
R2	330k
R3	121k
R4	22.1k
R5	100k
R6	10k
R7	3.3k
R8	10k
R9	10k
R10	330
R11	10k
R12	10k
Q1	IRLML2803
Q2	IRLML2803
Q3	IRLML2803
Q4	IRLML2803
Q5	IRLML2803
Q6	IRLML2803
Q7	IRLML2803
Q8	IRLML2803
Q9	IRLML2803
Q10	IRLML2803
Q11	IRLML2803
Q12	IRLML2803
Q13	IRLML2803
Q14	IRLML2803
Q15	IRLML2803
Q16	IRLML2803
Q17	IRLML2803
Q18	IRLML2803
Q19	IRLML2803
Q20	IRLML2803
Q21	IRLML2803
Q22	IRLML2803
Q23	IRLML2803
Q24	IRLML2803
Q25	IRLML2803
Q26	IRLML2803
Q27	IRLML2803
Q28	IRLML2803
Q29	IRLML2803
Q30	IRLML2803
Q31	IRLML2803
Q32	IRLML2803
Q33	IRLML2803
Q34	IRLML2803
Q35	IRLML2803
Q36	IRLML2803
Q37	IRLML2803
Q38	IRLML2803
Q39	IRLML2803
Q40	IRLML2803
Q41	IRLML2803
Q42	IRLML2803
Q43	IRLML2803
Q44	IRLML2803
Q45	IRLML2803
Q46	IRLML2803
Q47	IRLML2803
Q48	IRLML2803
Q49	IRLML2803
Q50	IRLML2803
Q51	IRLML2803
Q52	IRLML2803
Q53	IRLML2803
Q54	IRLML2803
Q55	IRLML2803
Q56	IRLML2803
Q57	IRLML2803
Q58	IRLML2803
Q59	IRLML2803
Q60	IRLML2803
Q61	IRLML2803
Q62	IRLML2803
Q63	IRLML2803
Q64	IRLML2803
Q65	IRLML2803
Q66	IRLML2803
Q67	IRLML2803
Q68	IRLML2803
Q69	IRLML2803
Q70	IRLML2803
Q71	IRLML2803
Q72	IRLML2803
Q73	IRLML2803
Q74	IRLML2803
Q75	IRLML2803
Q76	IRLML2803
Q77	IRLML2803
Q78	IRLML2803
Q79	IRLML2803
Q80	IRLML2803
Q81	IRLML2803
Q82	IRLML2803
Q83	IRLML2803
Q84	IRLML2803
Q85	IRLML2803
Q86	IRLML2803
Q87	IRLML2803
Q88	IRLML2803
Q89	IRLML2803
Q90	IRLML2803
Q91	IRLML2803
Q92	IRLML2803
Q93	IRLML2803
Q94	IRLML2803

RPi/Multiplexer Header

Diagram showing the connection of the RPi/Multiplexer Header to the board. The header is connected to the RPi's GPIO pins and the Multiplexer's control pins. The Multiplexer is used to switch between the RPi's power and ground pins and the board's power and ground pins.

RPi Payload Power Converter

Diagram showing the RPi Payload Power Converter circuit. It includes a 5V OUT regulator (TPS54426PWP) and a 5V input. The circuit is designed to convert the 5V input to a 5V output, which is then used to power the RPi. The circuit includes various capacitors and resistors to ensure stable operation.

2400 MHz Radio Module

Diagram showing the 2400 MHz Radio Module circuit. It includes a radio module (LORA1280F27-TCXO) and a 2400 MHz antenna. The circuit is designed to communicate with the RPi via a 2400 MHz radio link.

RF Regulator

Diagram showing the RF Regulator circuit. It includes a radio module (LORA1280F27-TCXO) and a 2400 MHz antenna. The circuit is designed to regulate the RF signal from the radio module.

Pycubed Connector

Diagram showing the Pycubed Connector circuit. It includes a Pycubed connector (J2) and a 5V input. The circuit is designed to connect the Pycubed connector to the board's power and ground pins.

RPi Reset

Diagram showing the RPi Reset circuit. It includes a reset button (Q1) and a 5V input. The circuit is designed to reset the RPi when the button is pressed.

Thermistor Circuit

Diagram showing the Thermistor Circuit. It includes a thermistor (TH1) and a 5V input. The circuit is designed to measure the temperature of the RPi.

Mounting Holes

Diagram showing the Mounting Holes. It includes a 5V input and a 5V output. The circuit is designed to provide power to the RPi.

Component	Value
C1	22uF
C2	22uF
C3	47uF
C4	47uF
C5	0.1uF
C6	3.3nF
C7	1uF
C8	10uF
C9	10uF
C10	0.1uF
C11	22pF
C12	10uF
C13	0.1uF
C14	47uF
R1	10k
R2	330k
R3	121k
R4	22.1k
R5	100k
R6	10k
R7	3.3k
R8	10k
R9	10k
R10	330
R11	10k
R12	10k
Q1	IRLML2803
Q2	IRLML2803
Q3	IRLML2803
Q4	IRLML2803
Q5	IRLML2803
Q6	IRLML2803
Q7	IRLML2803
Q8	IRLML2803
Q9	IRLML2803
Q10	IRLML2803
Q11	IRLML2803
Q12	IRLML2803
Q13	IRLML2803
Q14	IRLML2803
Q15	IRLML2803
Q16	IRLML2803
Q17	IRLML2803
Q18	IRLML2803
Q19	IRLML2803
Q20	IRLML2803
Q21	IRLML2803
Q22	IRLML2803
Q23	IRLML2803
Q24	IRLML2803
Q25	IRLML2803
Q26	IRLML2803
Q27	IRLML2803
Q28	IRLML2803
Q29	IRLML2803
Q30	IRLML2803
Q31	IRLML2803
Q32	IRLML2803
Q33	IRLML2803
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Q36	IRLML2803
Q37	IRLML2803
Q38	IRLML2803
Q39	IRLML2803
Q40	IRLML2803
Q41	IRLML2803
Q42	IRLML2803
Q43	IRLML2803
Q44	IRLML2803
Q45	IRLML2803
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Q84	IRLML2803
Q85	IRLML2803
Q86	IRLML2803
Q87	IRLML2803
Q88	IRLML2803
Q89	IRLML2803
Q90	IRLML2803
Q91	IRLML2803
Q92	IRLML2803
Q93	IRLML2803
Q94	IRLML2803