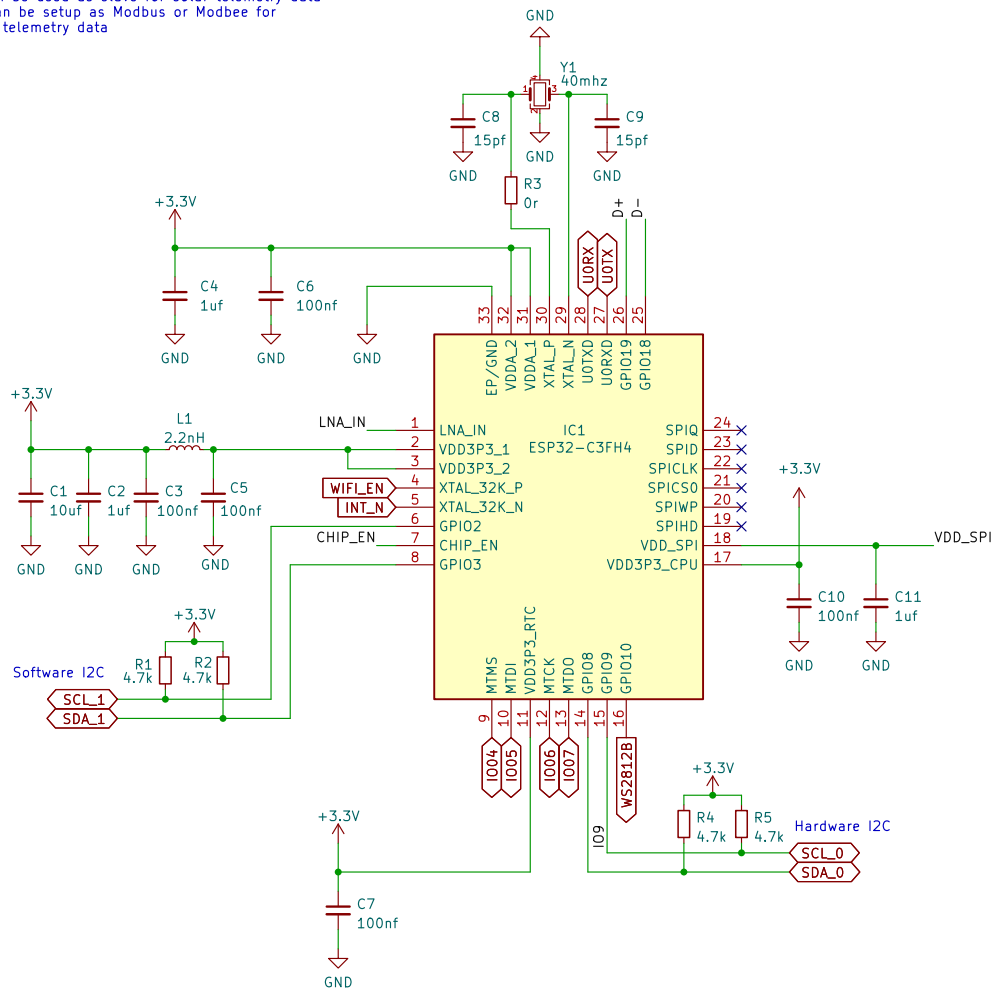


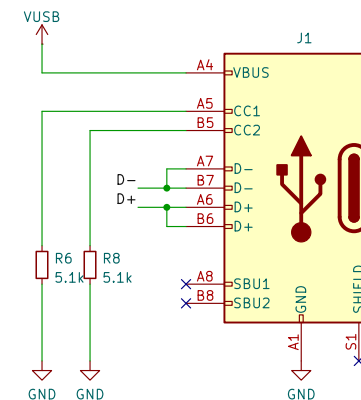
ESP32-C3

Notes:
Schematic design from reference hardware guide line.
Design based from model with internal flash and psram
Model: ESP32-C3FH4
See ESP-32-C3 Datasheet for pin details

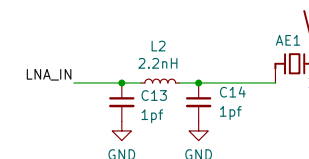
ESP32-C3 is a host to control the BQ25798 Power/MPPT
I2C_1 is software based to control the BQ25798
I2C_0 can be used as slave for solar telemetry data
RS485 can be setup as Modbus or Modbee for solar telemetry data



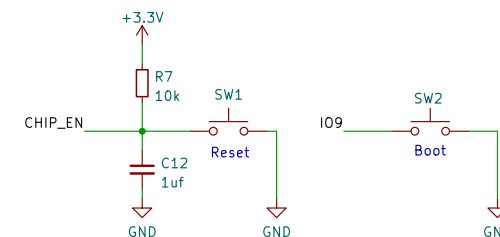
USB-C



Antenna Chip



Reset/Boot



Sheet: /
File: Modbee-MPPT-TI-C3.kicad_sch

Title: ModBee MPPT TI C3

Size: A4 Date: 2026-04-13

KiCad E.D.A. 10.0.4

Rev: 0.02

Id: 1/3

Synchronous Buck

The diagram illustrates a Synchronous Buck converter circuit. The input voltage V_{DC_SYS} is connected to the VIN pin of the buck converter U1 through a diode D1. A 10uF capacitor C15 is connected between V_{DC_SYS} and GND. The output voltage V_{USB} is connected to the VIN pin through a diode D2. A 10uF capacitor C16 is connected between V_{USB} and GND. The EN pin of U1 is connected to GND through a 100nF capacitor C52. The VIN pin is connected to the BOOT pin through a 100nF capacitor C17. The SW pin is connected to the FB pin through a 6.8uH inductor L3. The FB pin is connected to GND through a 68pF capacitor C18. The SW pin is connected to the output +3.3V through an inductor L3. The output +3.3V is connected to GND through a 22uF capacitor C23. The output +3.3V is also connected to GND through a 22uF capacitor C22. The output +3.3V is also connected to GND through a 22uF capacitor C20. The output +3.3V is also connected to GND through a 22k resistor R14. The output +3.3V is also connected to GND through a 100k resistor R13.

RS485 Transceiver

Cut Bridge to disable 120ohm EOL termination resistor

Plug In Terminals/Connectors

J4

VDC_SYS 1 2 3 4 VDC_SYS

GND GND

J2

VDC_IN 1 2 3 4 VDC_IN

GND GND

J5

BAT+ 1 2 3 4 BAT+

GND GND

J3

PV_IN 1 2 3 4 PV_IN

GND GND

J6

RS485_A 1 2 3 4 RS485_A

RS485_B 5 6 RS485_B

GND GND

Grove Connectors I2C 3.3V MAX

+3.3V_I2C

GND

+3.3V_I2C

J7

GND

+3.3V_I2C

GND

J8

GND

Jumper to connect 3.3V to I2C 3.3V

Only use this if connecting sensor only

Do not connect this if Grove I2C is powered from another board

+3.3V +3.3V_I2C

JP3 JP

Debug/GPIO

+3.3V

J10

1 2 3 4 5 6

I004 I005 I006 I007

GND

H1

H2

H3

H4

WIFI/RESET

Short Press Enable WIFI
for set time

Long Press Reset EEPROM
Press > 30sec

The diagram shows a vertical line representing the pin. At the top, an arrow points up to +3.3V. Below this is a switch symbol labeled SW3. Further down is a green dot, which is connected to a red box labeled 'WIFLEN'. Below the dot is a resistor symbol labeled R16 10k, which is connected to a triangle symbol labeled GND at the bottom.

BATT TEMP

Negative temperature coefficient thermistor
10k

The diagram shows a circuit for measuring battery temperature. A green line connects the TS_1 input to a junction. From this junction, the signal can pass through JP2 (which is crossed out with a red X) to R29 (a 10k thermistor) and then to GND. Alternatively, the signal can pass through J11 (pins 1 and 2) and then to GND.

Status LED

Green = MCU OK
Red = Fault
Blue = Status

The diagram shows a WS2812B LED strip connected to a D3 LED driver. The D3 driver is powered by +3.3V and GND. The D3 driver's VDD pin is connected to +3.3V, and its GND pin is connected to GND. The D3 driver's DIN pin is connected to the DIN pin of the WS2812B. The D3 driver's VOUT pin is connected to the VOUT pin of the WS2812B. The D3 driver's VOUT pin is also connected to a 100nf capacitor, which is connected to GND. The D3 driver's VOUT pin is also connected to the LED strip.

