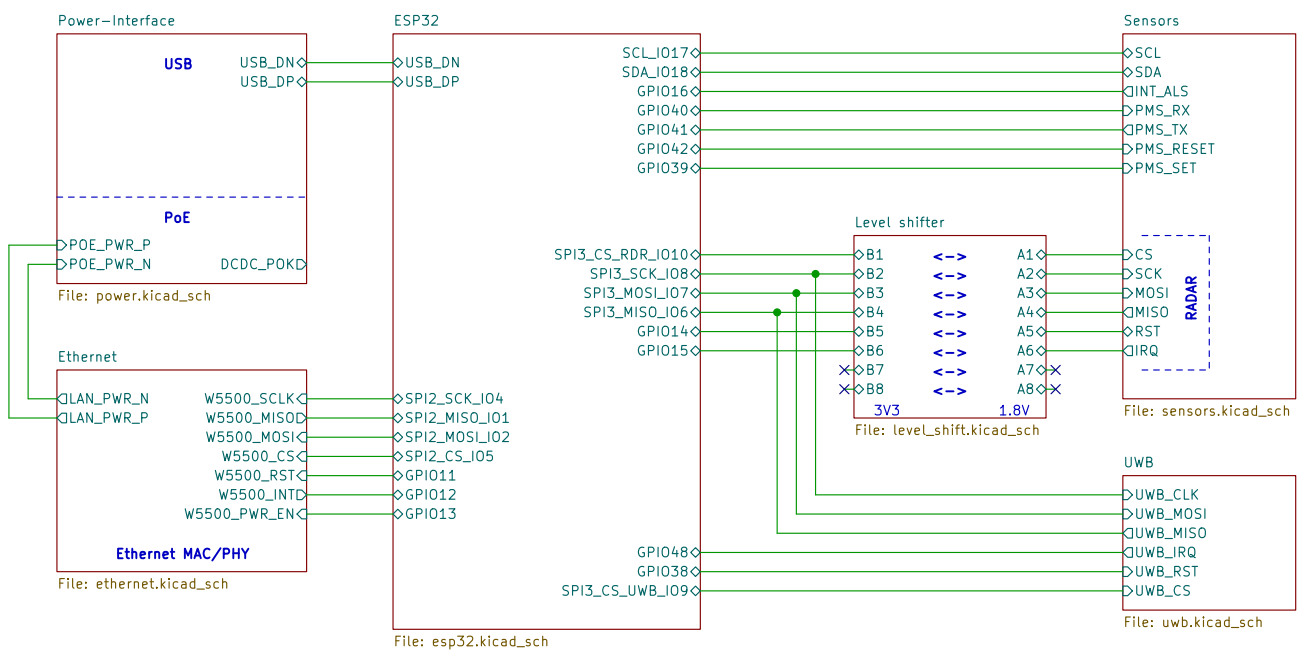


# Ambient Tracker PRO – Block Diagram



- H1 MountingHole
- H2 MountingHole
- H3 MountingHole

- FID1 Fiducial
- FID2 Fiducial
- FID3 Fiducial



ezlo

Ezlo

Sheet: /  
File: tracker-pro.kicad\_sch

Title: Ambient Tracker PRO

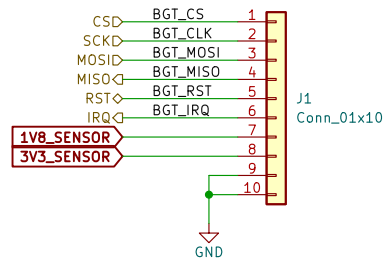
Size: A4 Date: 2022-12-20

KiCad E.D.A. kicad (6.0.10)

Rev: A

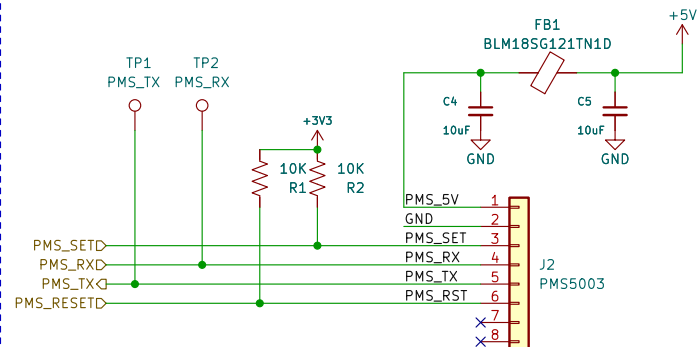
Id: 1/7

## RADAR SENSOR



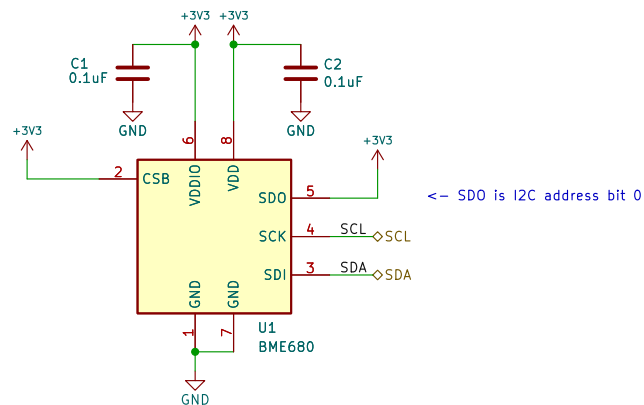
Radar sensor sits externally on it's own PCB and is connected via FPC to the mainboard.

## PMS5003 PM2.5 Sensor



PMS5003 logic is 3V3, but the internal fan runs at 5V. Matching female connector is Molex 053261-0871 PicoBlade.

## 4-in-1 VOC Humidity Pressure Temperature

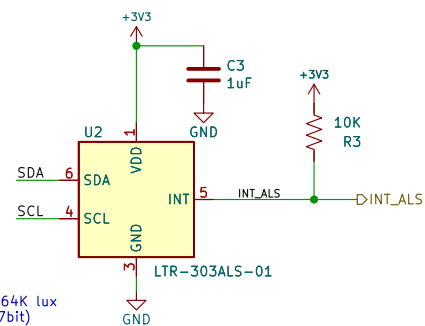


← SDO is I2C address bit 0

CSB → VDDIO = I2C active  
CSB → GND = SPI active  
I2C ADDR = BIN 1110111 HEX 0x77  
I2C pull-up resistors are on the ESP32 sheet.

BSEC: Bosch Sensortec Environmental Cluster  
BSEC precisely performs several calculations outside the device such as ambient air temperature, ambient relative humidity, pressure and air quality (IAQ) level.  
<https://www.bosch-sensortec.com/software-tools/software/bsec/>  
<https://github.com/BoschSensortec/BSEC-Arduino-library>

## ALS – Ambient Light Sensor



range = 0.01lux – 64K lux  
I2C ADDR = 0x29 (7bit)

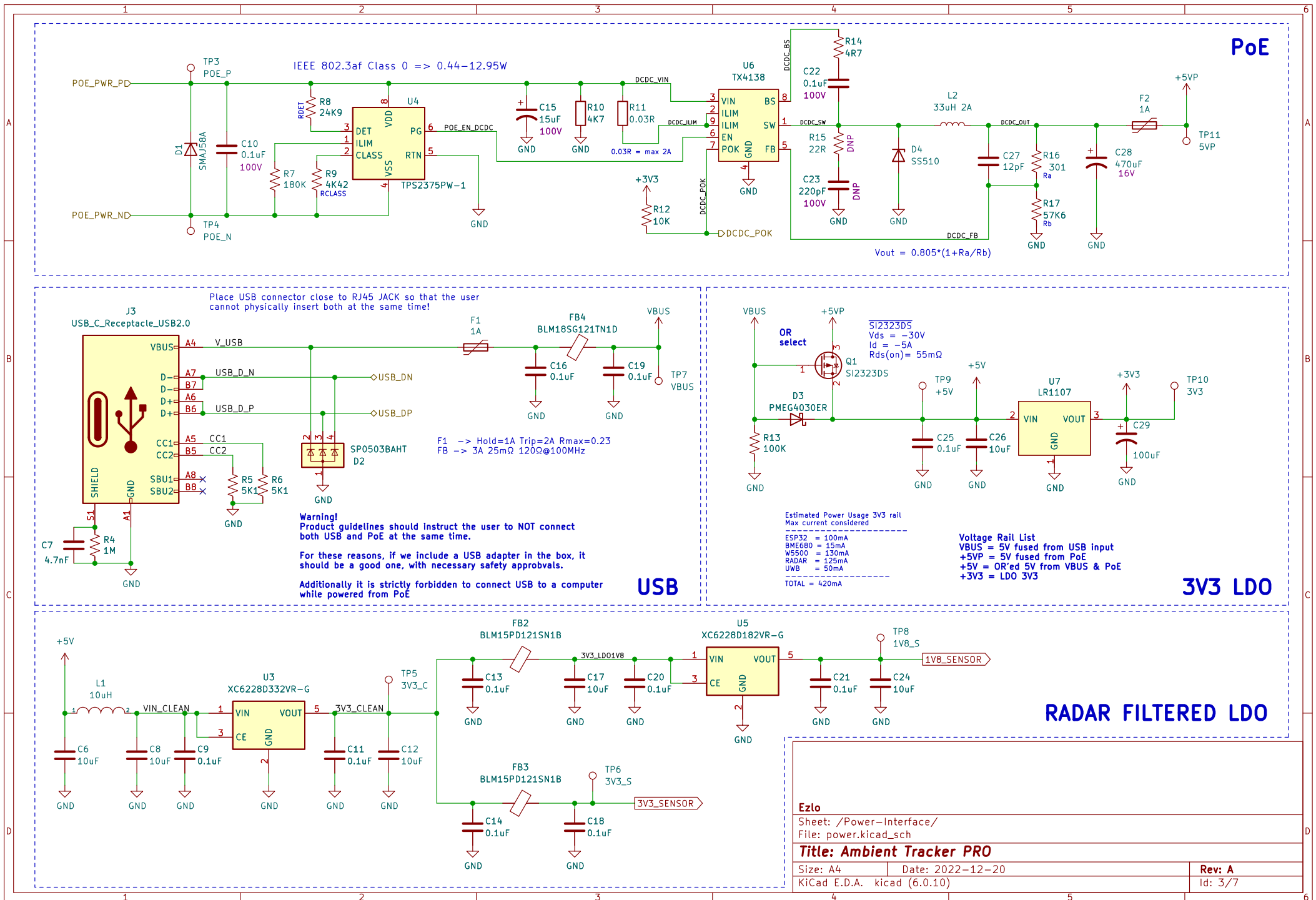
### Ezlo

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File: sensors.kicad\_sch

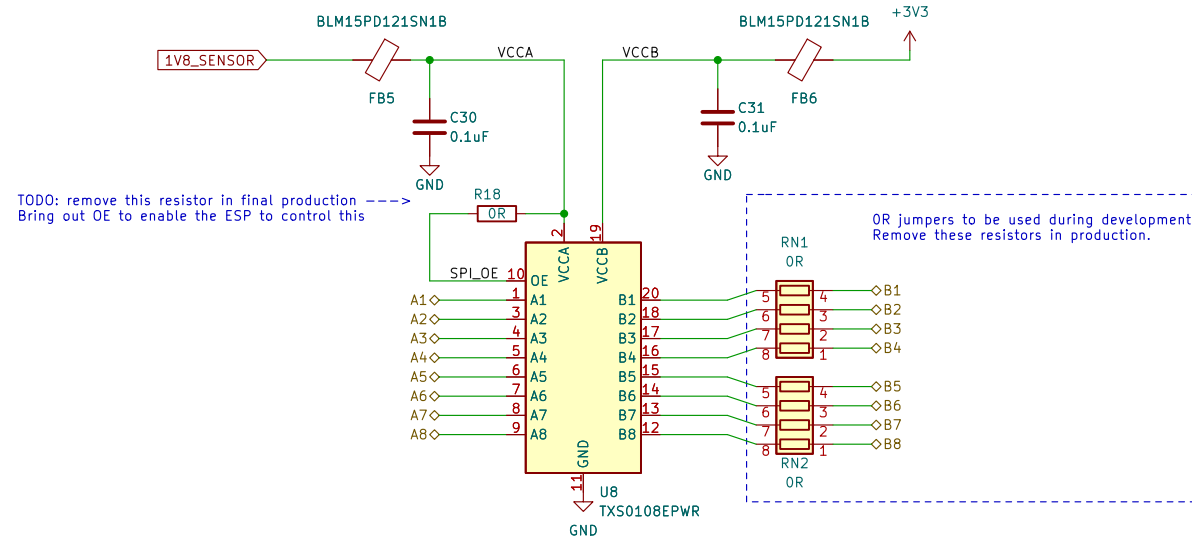
### Title: Ambient Tracker PRO

Size: A4 Date: 2022-12-20  
KiCad E.D.A. kicad (6.0.10)

Rev: A  
Id: 2/7



# Level Shifter



1.4 V to 3.6 V on A port and 1.65 V to 5.5 V on B port ( $V_{CCA} \leq V_{CCB}$ )!

**Ezlo**

Sheet: /Level shifter/

File: level\_shift.kicad\_sch

**Title: Ambient Tracker PRO**

Size: A4

Date: 2022-12-20

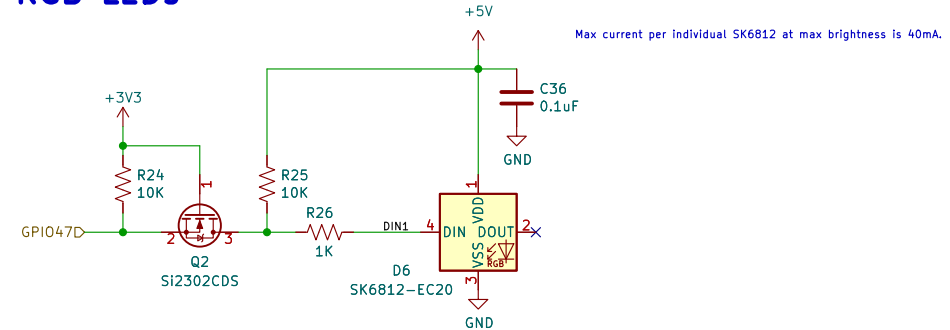
Rev: A

KiCad E.D.A. kicad (6.0.10)

Id: 4/7

## ESP32

## RGB LEDs



### TEST POINTS

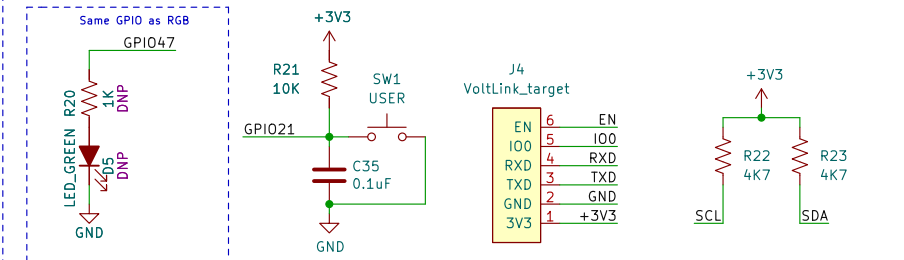
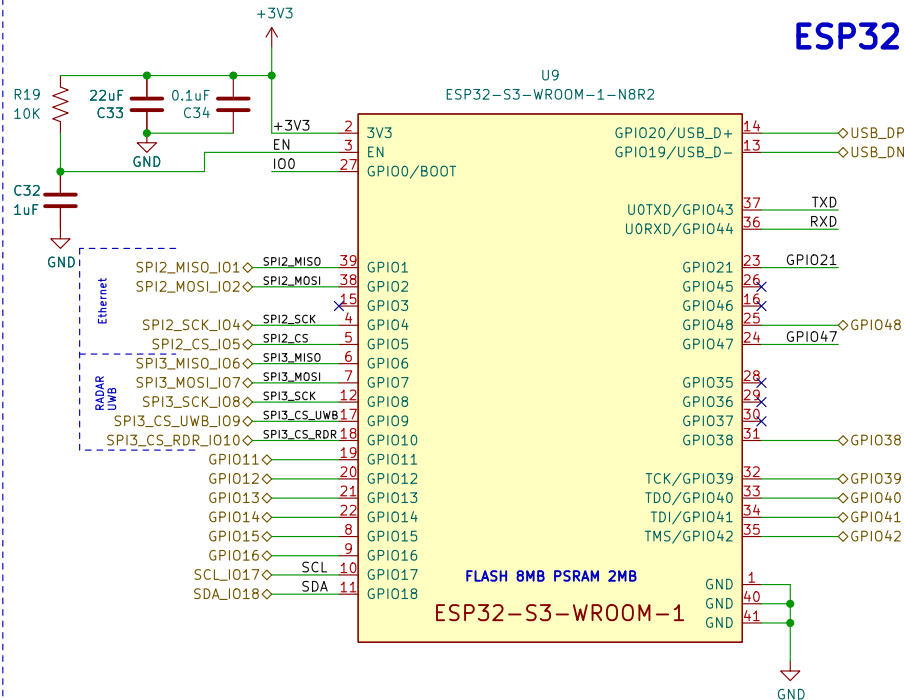
TP12	SCL	SPI3_MISO	SPI3_MISO
TP13	SDA	SPI3_MOSI	SPI3_MOSI
TP14	SPI2_MISO	SPI3_SCK	SPI3_SCK
TP15	SPI2_MOSI	SPI3_CS_UWB	SPI3_CS_UWB
TP16	SPI2_SCK	TP21	SPI3_CS_UWB
TP17	SPI2_CS	TP22	SPI3_CS_RDR

Pins occupied when quad Flash/PSRAM is used 2MB PSRAM  
These are S3 chip pins, not wroom module pins!  
PIN28/GPIO26/SPI\_CS1  
PIN30/GPIO27/SPI\_D0  
PIN31/GPIO28/SPI\_WP  
PIN32/GPIO29/SPI\_CS0  
PIN33/GPIO30/SPI\_CLK  
PIN34/GPIO31/SPI\_Q  
PIN35/GPIO32/SPI\_DQ5

Pins occupied when octal Flash/PSRAM is used 8MB PSRAM  
These are S3 chip pins, not wroom module pins!  
PIN28/GPIO26/SPI\_CS1  
PIN30/GPIO27/SPI\_D0  
PIN31/GPIO28/SPI\_WP  
PIN32/GPIO29/SPI\_CS0  
PIN33/GPIO30/SPI\_CLK  
PIN34/GPIO31/SPI\_Q  
PIN35/GPIO32/SPI\_D0  
PIN38/GPIO33/SPI\_I04  
PIN39/GPIO34/SPI\_I05  
PIN40/GPIO35/SPI\_I06  
PIN41/GPIO36/SPI\_I07  
PIN42/GPIO37/SPI\_DQ5

Presence Sensor Pro  
Controller : ESP32S3  
Module : ESP32-WROOM-1 SR38

S.N.	Pin Name	Purpose	Port Pin	MCU Pin	Remarks
1	SPI2 MISO		GPIO 1	6	
2	SPI2 MOSI		GPIO 2	7	Fast SPI for Ethernet MAC
3	SPI2 SCK		GPIO 4	9	Chip
4	MAC CHIP CS		GPIO 5	10	
5	SPI3 MISO		GPIO 6	11	
6	SPI3 MOSI		GPIO 7	12	SPI3 for UWB and BGT60TR13C
7	SPI3 SCK		GPIO 8	13	Chip
8	UWB CS		GPIO 9	14	
9	BGT60TR13 CS		GPIO 10	15	



Strapping pins  
• BOOT = IO0  
• JTAG = IO3  
• VSP1 = IO45  
• LOG = IO46

SPI0/1: GPIO26-32 are usually used for SPI flash and PSRAM and not recommended for other uses. When using Octal Flash or Octal PSRAM or both, GPIO33-37 are connected to SPII04 ~ SPII07 and SPIDQ5. Therefore on ESP32-S3R8 / ESP32-S3R8V board GPIO33-37 are also not recommended for other uses.

For 2MB PSRAM version (embedded chip ESP32-S3R2 quad SPI) pins IO35, IO36, IO37 should be free to use.  
For 8MB PSRAM version (embedded chip ESP32-S3R8 octal SPI) pins IO35, IO36, IO37 connect to PSRAM and are not available for other uses.

USB-JTAG: GPIO 19 and 20 are used by USB-JTAG by default. In order to use them as GPIOs, USB-JTAG will be disabled by the drivers.

Ezlo

Sheet: /ESP32/  
File: esp32.kicad\_sch

Title: Ambient Tracker PRO

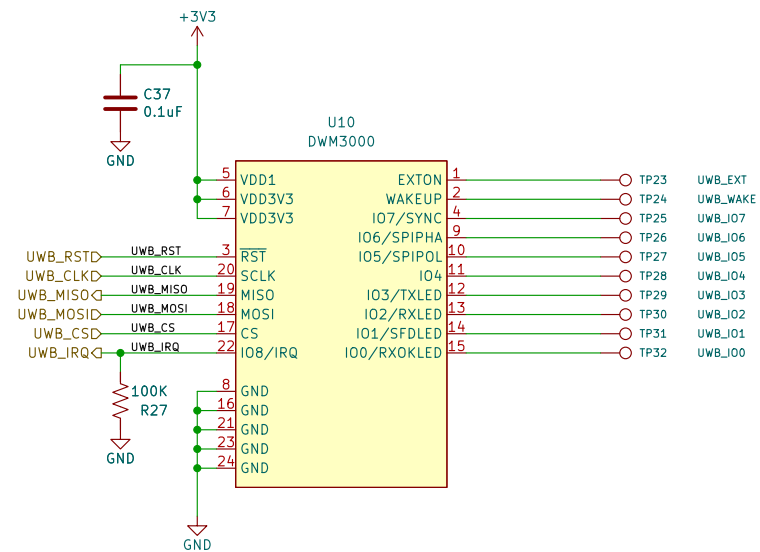
Size: A4 Date: 2022-12-20

KiCad E.D.A. kicad (6.0.10)

Rev: A

Id: 5/7

## Ultra WideBand Module



**Ezlo**

Sheet: /UWB/  
File: uwb.kicad\_sch

**Title: Ambient Tracker PRO**

Size: A4 Date: 2022-12-20  
KiCad E.D.A. kicad (6.0.10)

**Rev: A**  
Id: 6/7

