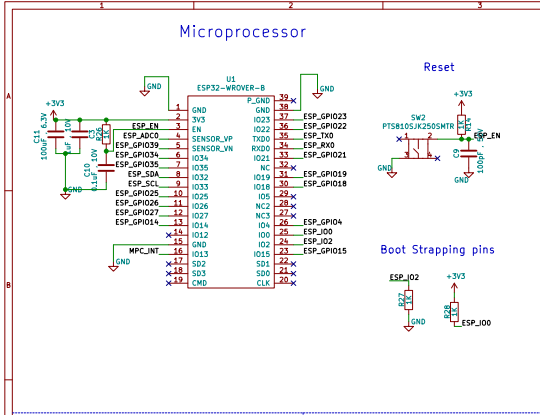
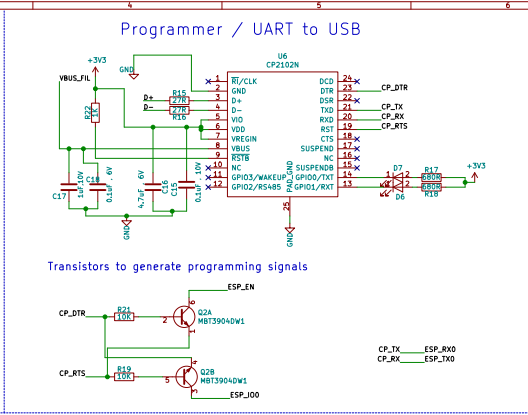
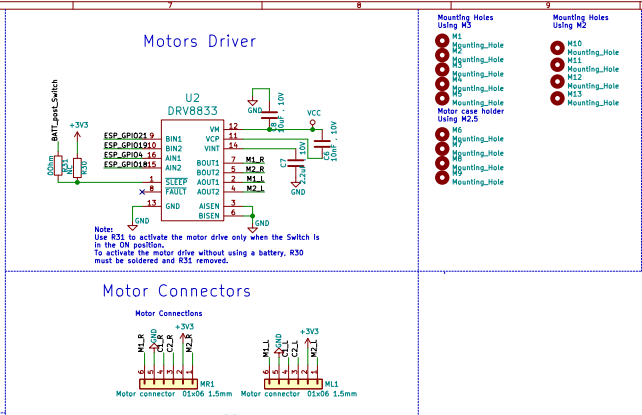


The diagram illustrates the pinout of the ESP32 microprocessor, showing connections for various pins and components. The pins are numbered 1 through 38, and the connections are as follows:

- Pin 1:** GND
- Pin 2:** GND
- Pin 3:** VCC
- Pin 4:** ESP_EN
- Pin 5:** ESP_ADC0
- Pin 6:** ESP_GPIO39
- Pin 7:** ESP_GPIO35
- Pin 8:** ESP_SDA
- Pin 9:** ESP_SCL
- Pin 10:** ESP_GPIO25
- Pin 11:** ESP_GPIO26
- Pin 12:** ESP_GPIO27
- Pin 13:** ESP_GPIO14
- Pin 14:** MPT_INCT
- 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

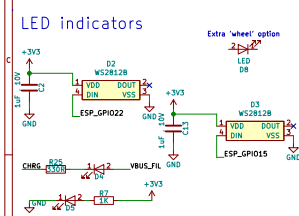
The diagram also shows connections for a reset button and a boot strapping pin. The reset button is connected to the reset pin (pin 38) and ground. The boot strapping pin is connected to the boot pin (pin 37) and ground.

[illegible][illegible]

-
- The diagram shows a rectangular domain divided into two horizontal regions, A and B. Region A is the upper half and Region B is the lower half. The top boundary is labeled '10' and the bottom boundary is labeled '11'. The left boundary is labeled '12' and the right boundary is labeled '13'. The interface between A and B is labeled '14'.

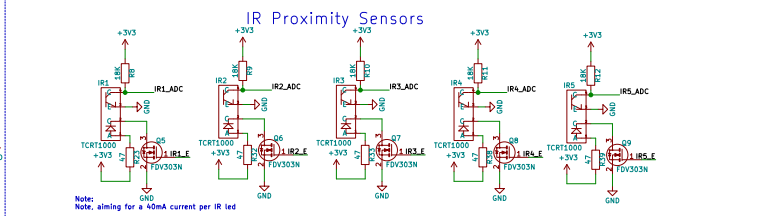
LED indicators

The diagram shows two WS2812B chips, D2 and D3, connected to an ESP32. Chip D2 is connected to ESP_GPIOD22 and its VDD is powered by a +3V3 supply through a 10k pull-up resistor. Chip D3 is connected to ESP_GPIOD15 and its VDD is powered by a +3V3 supply through a 10k pull-up resistor. Both chips have their GND pins connected to ground. The output of the first chip is connected to the input of the second chip. A note indicates an extra 'wheel' option for the second chip.



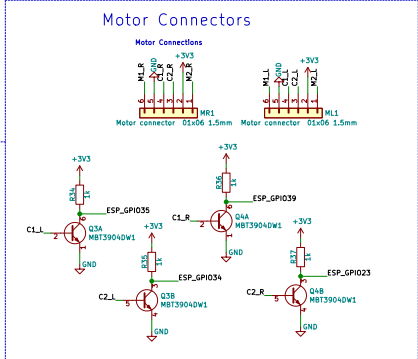
IR Proximity Sensors

Note:
Note, aiming for a 40mA current per IR led



Motor Connectors

The diagram illustrates the motor connector pinouts for the ESP32S3 and ESP32C3. The top part shows two motor connector pinouts: one for ESP32S3 (pins 1-4) and one for ESP32C3 (pins 1-4). The bottom part shows the corresponding motor connector pinouts for ESP32S3 (pins 1-4) and ESP32C3 (pins 1-4).

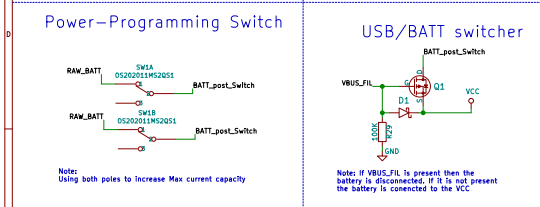


The diagram illustrates two circuit configurations for a USB/BATT switch.

Power-Programming Switch: This circuit uses two SPST switches, SW1A and SW1B, to control the BATT_post-Switch. SW1A is connected to RAW_BATT and SW1B is connected to RAW_BATT. Both switches are controlled by a common signal line, BATT_post-Switch, which is connected to the common terminal of both switches. The output of SW1A is connected to the BATT_post-Switch, and the output of SW1B is connected to the BATT_post-Switch.

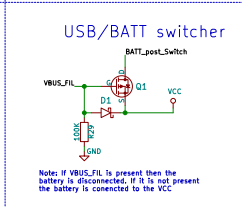
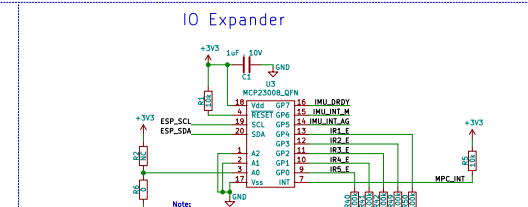
USB/BATT switch: This circuit uses a single SPST switch, Q1, to control the BATT_post-Switch. The switch is controlled by a common signal line, BATT_post-Switch, which is connected to the gate of Q1. The source of Q1 is connected to VBUS_FIL and the drain is connected to VCC. A diode D1 is connected in parallel with the switch, with its anode to VBUS_FIL and its cathode to VCC. A 100k resistor is connected between the gate and the source of Q1. The output of the switch is connected to the BATT_post-Switch.

Note: Using both poles to increase Max current capacity



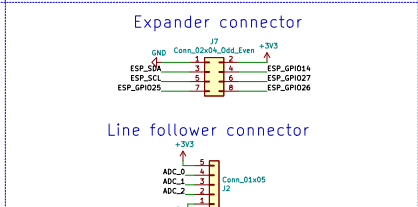
USB/BATT switch

Note: If VBUS_FIL is present then the battery is disconnected. If it is not present the battery is connected to the VCC

[illegible]

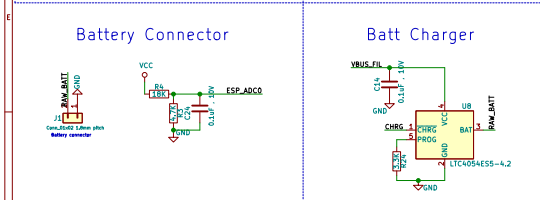
The diagram illustrates two types of connectors used in the system:

- Expander connector:** A 17-pin connector. The top 8 pins (1-8) are labeled "Conn_02x08a_0x0d_17pins" and are connected to ESP_SDA (pin 1), ESP_SCL (pin 2), ESP_GPI025 (pin 3), ESP_GPI026 (pin 4), ESP_GPI027 (pin 5), ESP_GPI028 (pin 6), ESP_GPI029 (pin 7), and ESP_GPI030 (pin 8). The bottom 9 pins (9-17) are labeled "+3V3" and are connected to ESP_SDA (pin 9), ESP_SCL (pin 10), ESP_GPI025 (pin 11), ESP_GPI026 (pin 12), ESP_GPI027 (pin 13), ESP_GPI028 (pin 14), ESP_GPI029 (pin 15), ESP_GPI030 (pin 16), and ESP_GPI031 (pin 17).
- Line follower connector:** A 6-pin connector. The top 3 pins (1-3) are labeled "Conn_01x05" and are connected to ADC_0 (pin 1), ADC_1 (pin 2), and ADC_2 (pin 3). The bottom 3 pins (4-6) are labeled "+3V3" and are connected to ADC_0 (pin 4), ADC_1 (pin 5), and ADC_2 (pin 6).



Line follower connector

Diagram of a line follower connector. The connector has 5 pins. Pin 5 is connected to +3V3. Pin 4 is labeled ADC_0. Pin 3 is labeled ADC_1. Pin 2 is labeled ADC_2. Pin 1 is connected to ground. The connector is labeled Conn_01x05 J2.

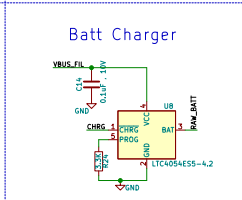
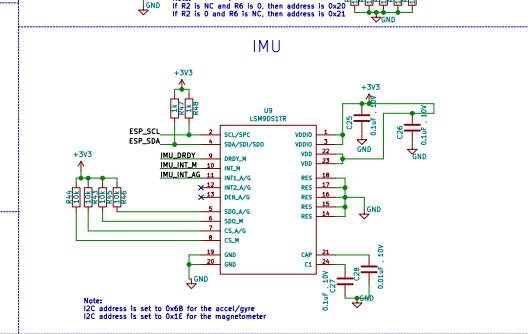
[illegible]

Batt Charger

The diagram shows the LTC4054ESS-4.2 IC configured as a battery charger. The connections are as follows:

- VBUS_FIL**: Connected to the **VCC** pin of the IC through a **0.1uF** capacitor.
- GND**: Connected to the **GND** pin of the IC.
- CHRG**: Connected to the **CHRG** pin of the IC through a **220k** resistor.
- BAT**: Connected to the **BAT** pin of the IC, which is also connected to a battery symbol.

The IC is labeled **LTC4054ESS-4.2**.

[illegible]

ADC

+3V3

C19
100nF

GND

U5

IRL_ADC -> CH0
ADC_0 -> CH1
ADC_1 -> CH2
ADC_2 -> CH3
IRL_ADC -> CH0
IR2_ADC -> CH1
IR2_ADC -> CH2
IR2_ADC -> CH3

ESP-SO4
ESP_SDA
ESP_SCL

REFin/REFinv

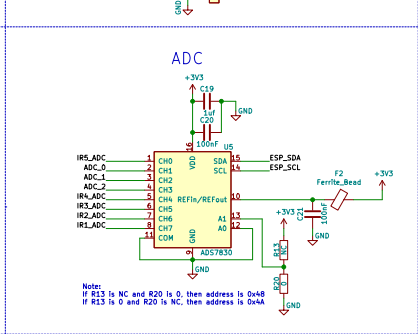
F2 Ferrite Bead

+3V3

AD5780

CS
DI
DO
GND

Notes:
If R13 is NC and R20 is 0, then address is 0x4B
If R13 is D and R20 is NC, then address is 0x4A



Wireless Charging Input

Note:
Use it with something like the DF Robot Wireless Charging Module
5V/300mA it needs to be 5V regulated

