

The circuit diagram shows the internal components of the USB-to-TTL module. The main IC is the CP2102N-Axx-xQFN24 (U14), which is a USB-to-UART bridge. It is connected to the USB pins (VDDC, VDD, GND) and the UART pins (TXD, RXD, RTS, DSR, DTR, DCD). The module is powered by a 5V regulator (U1, LM1117-5.0) and a 1.8V regulator (U2, MCP1802-1.8). The module is connected to a USB cable (U3, USB-C to USB-A) and a TTL module (U4, MAX3232CPE).

The schematic diagram illustrates the electrical connections for the ESP32-WROOM-32E_16MB module (U13). The module is a yellow rectangular component with multiple pins on its left and right sides.

Left Side Connections:

- EN (Pin 3):** Connected to a pull-up resistor R6 (10K) to VDD and a push-button SW2 (SW_SPST_Omron_B3FS-105xp) through a 100nF/50V capacitor to GND.
- SENSOR_VP (Pin 4) and SENSOR_VN (Pin 5):** Connected to a differential sensor circuit consisting of two 100nF capacitors (C11, C12) and a 22uF/20V electrolytic capacitor.
- TXD0 (Pin 35) and RXD0 (Pin 34):** Connected to a TX/RX module (IC1, T53A5018PW).
- NC (Pin 29) and NC1 (Pin 32):** Marked as "x" (no connection).

Right Side Connections:

- TP2 3v3:** Connected to VDD.
- IO Pins (100 to 1033):** A series of pins on the right side, many of which are connected to VDD or GND.
- GND (Pin 39):** Connected to the common ground.

Peripheral Components:

- IC1 (T53A5018PW):** A TX/RX module with pins for IN, TXD0, RXD0, TX_COM, RX_COM, GND, and V+.
- SW1 (SW_DIP_x02):** A push-button switch connected to VDD, GND, and the IN pin of the TX/RX module.
- R44 (100R):** A resistor connected to the IN pin of the TX/RX module.
- D29 (LED):** An LED connected to the IN pin of the TX/RX module and GND.

Peripheral Connector

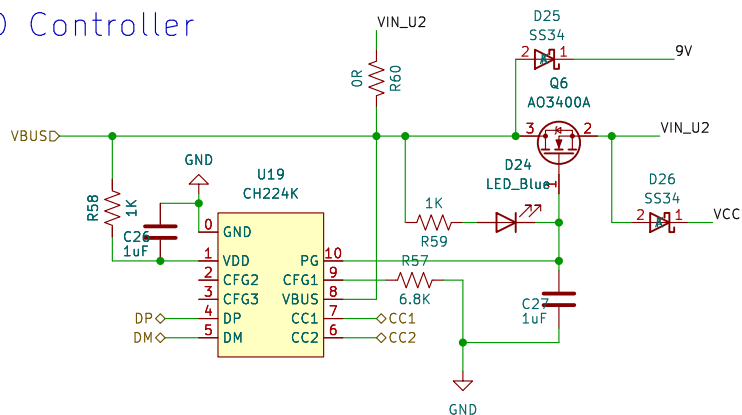
The schematic diagram illustrates the Peripheral Connector circuit. It includes the following components and connections:

- LED_D22 (Blue LED):** Connected to VDD5V through a 220R resistor (R36) and to GND through a 470R resistor (R1).
- TP1 (LED_TP):** Connected to the junction of R36 and R1.
- I/O Pins:**
 - IO33 is connected to LED_DIN.
 - IO15 is connected to the I/O Pin.
 - IO4 is connected to BUZZ.
- SW5 (SW_DIP_x06):** A 6-pin DIP switch with the following connections:
 - IO13 to Pin 1
 - IO12 to Pin 2
 - IO15 to Pin 3
 - IO14 to Pin 4
 - IO5 to Pin 5
 - IO2 to Pin 6
 - Pin 12 to DECHO
 - Pin 11 to TRIG
 - Pin 10 to Button2
 - Pin 9 to Button1
 - Pin 8 to SERVO_L
 - Pin 7 to SERVO_R
- SW8 (SW_DIP_x06):** A 6-pin DIP switch with the following connections:
 - IO16 to Pin 1
 - IO17 to Pin 2
 - IO18 to Pin 3
 - IO19 to Pin 4
 - IO21 to Pin 5
 - IO22 to Pin 6
 - Pin 12 to PWM2
 - Pin 11 to DIR2_F
 - Pin 10 to DIR2_R
 - Pin 9 to PWM1
 - Pin 8 to DIR1_F
 - Pin 7 to DIR1_R
- SW6 (SW_DIP_x05):** A 5-pin DIP switch with the following connections:
 - IO32 to Pin 1
 - IO27 to Pin 2
 - IO26 to Pin 3
 - IO25 to Pin 4
 - IO23 to Pin 5
 - Pin 10 to LIN_5
 - Pin 9 to LIN_4
 - Pin 8 to LIN_3
 - Pin 7 to LIN_2
 - Pin 6 to LIN_1
- SW7 (SW_DIP_x04):** A 4-pin DIP switch with the following connections:
 - IO15 to Pin 1
 - IO13 to Pin 2
 - IO12 to Pin 3
 - IO14 to Pin 4
 - Pin 8 to CS
 - Pin 7 to MOSI_CAM
 - Pin 6 to MISO_CAM
 - Pin 5 to SCK

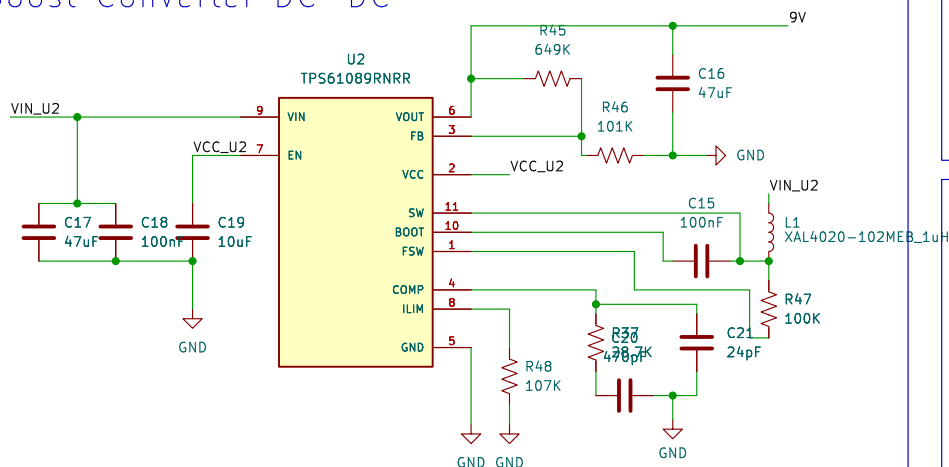
Diagram showing the connection of the 10-bit parallel bus to the external memory. It includes three pin headers: J1 (IO0-IO17), J5 (IO18-IO27), and J6 (IO28-IO33). J1 and J5 are labeled 'Conn_01x10-Pin'. J6 is labeled 'VDD'. A ground symbol is labeled 'GND'.

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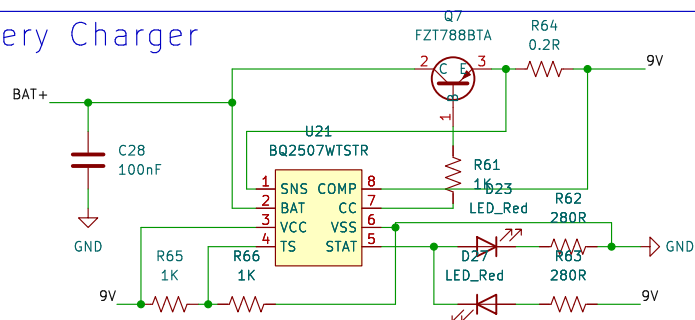
PD Controller



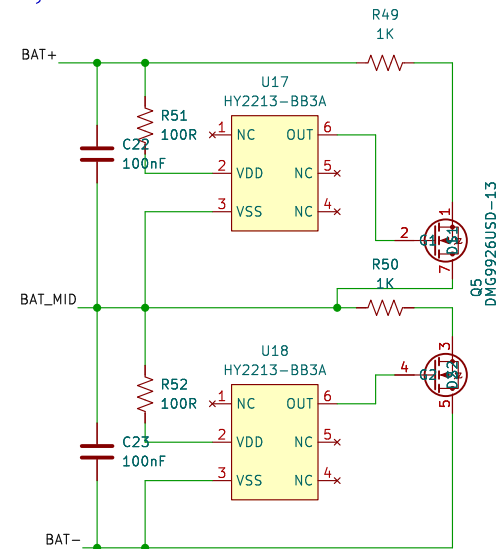
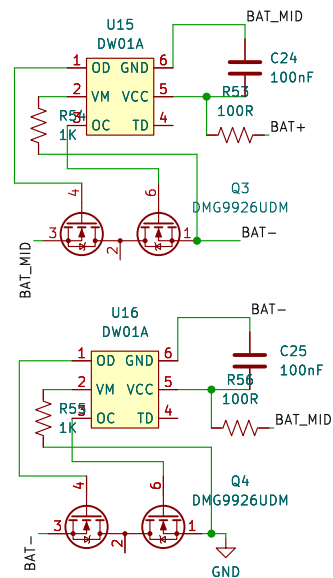
Boost Converter DC-DC



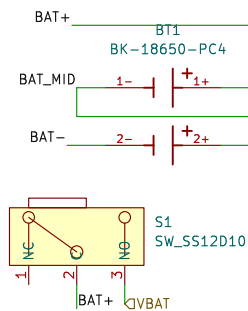
Battery Charger



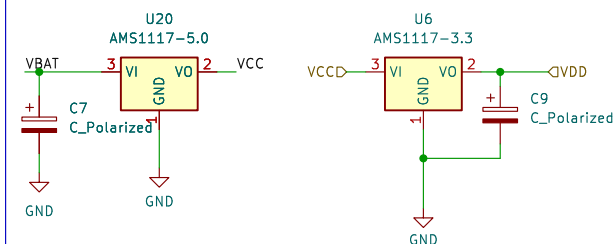
Battery Management System



Battery



Linear Voltage Regulator



Power Circuit

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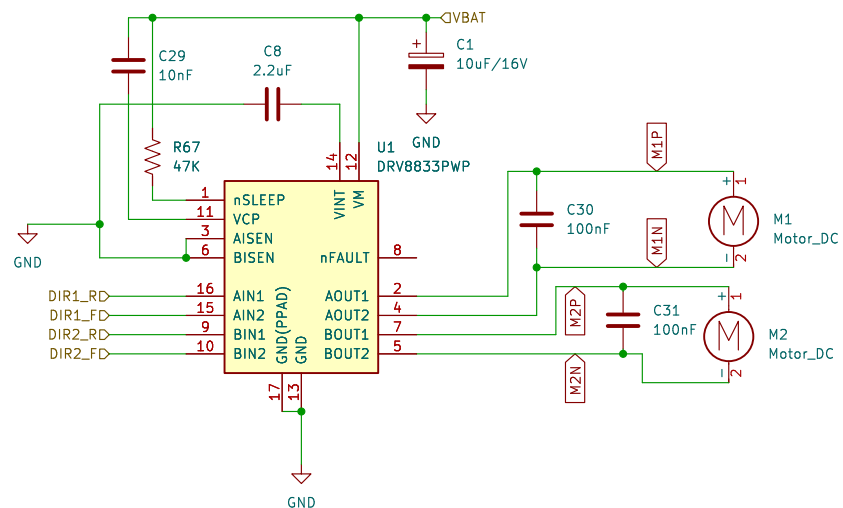
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TP3
TestPoint
DIR1_F

TP4
TestPoint
DIR1_R

TP5
TestPoint
DIR2_R

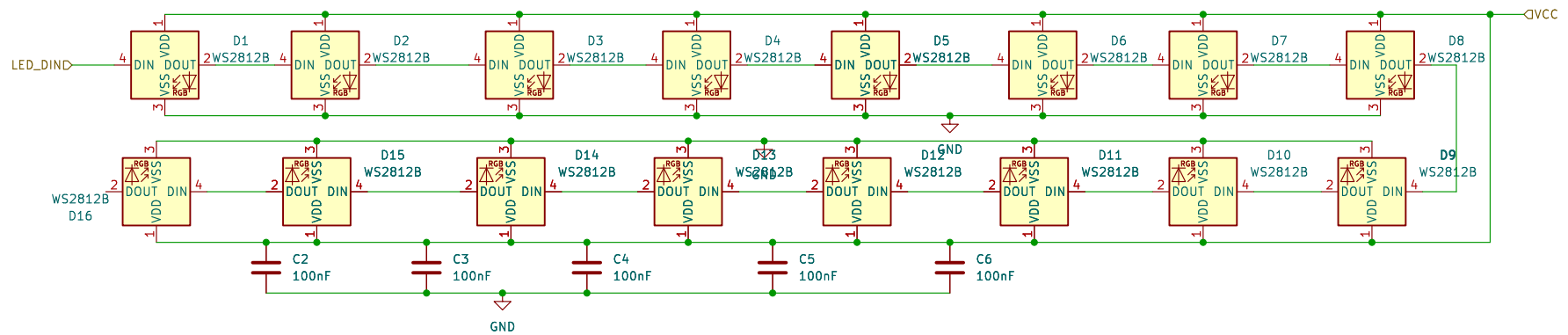
TP6
TestPoint
DIR2_F

DC Motor Driver

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RGB Led

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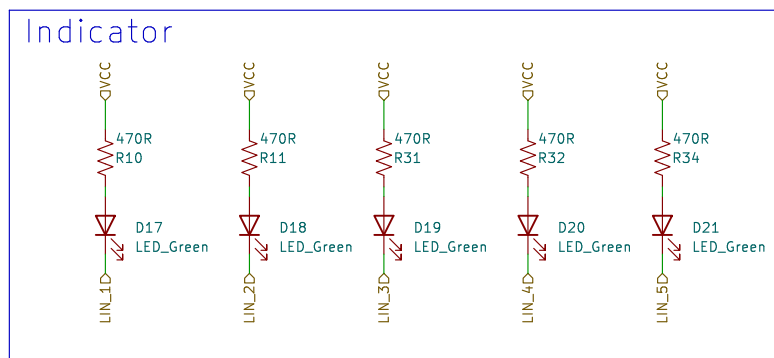
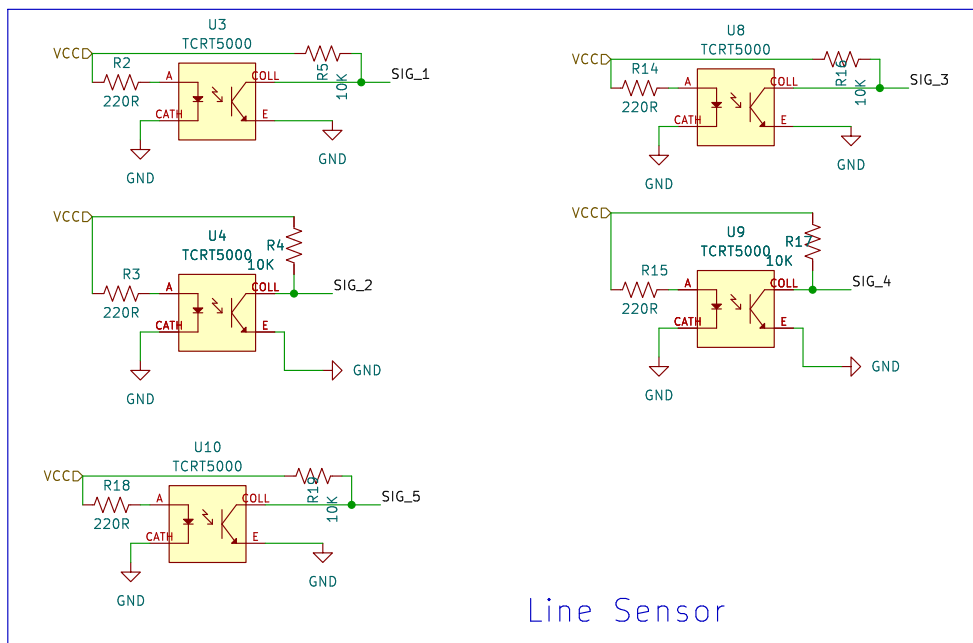
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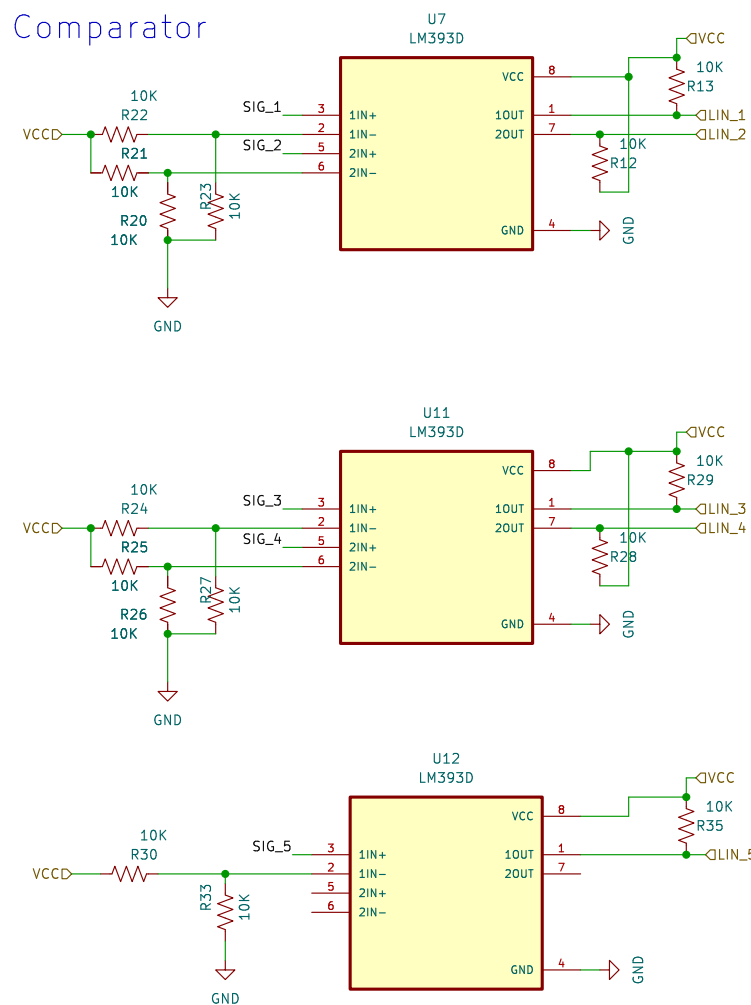
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Comparator



Line Sensor

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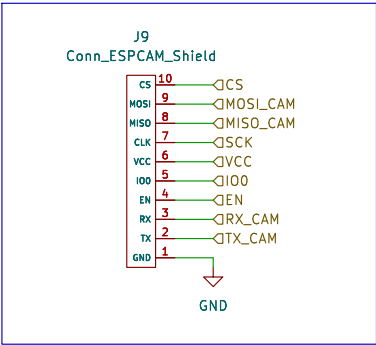
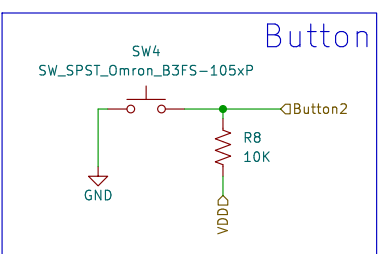
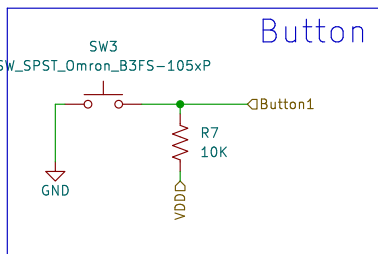
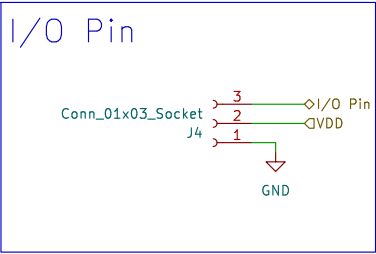
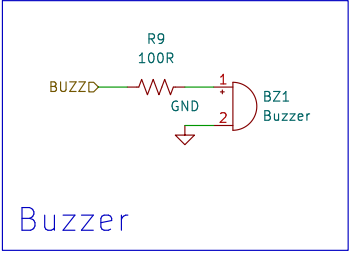
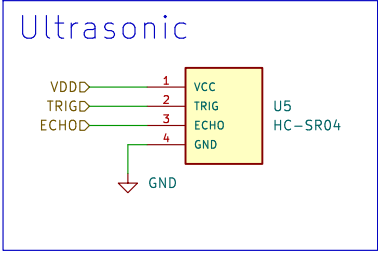
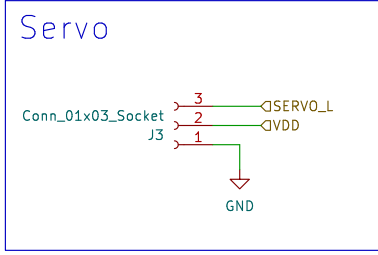
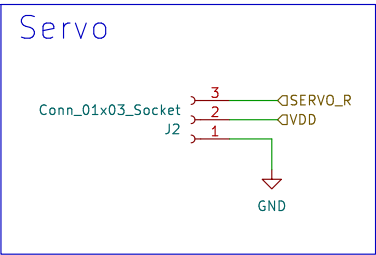
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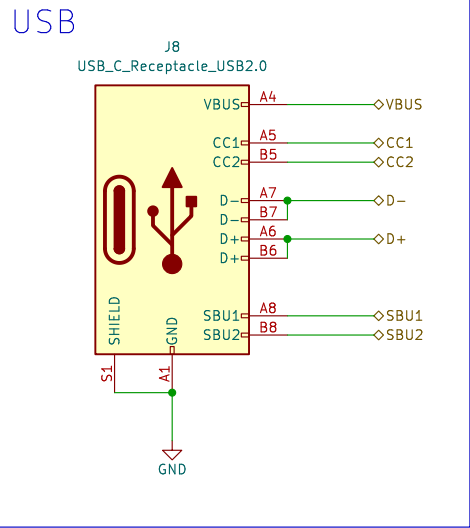
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Peripheral

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Interface

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