

**MICROCONTROLLER**

The microcontroller section features an ESP32-WROVER-I (A1) connected to a 3.3V supply. It includes a RESET button (S1), a blue LED (D1), and various peripheral components like capacitors (C1, C2, C3, C4) and resistors (R1, R2). The board is populated with various pins for I/O, including IO0 through IO25, and SD card interface pins.

**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects various push buttons (START, SELECT, UP, DOWN) and LEDs (B, A, RIGHT, LEFT) to the microcontroller's I2C lines.

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT module (J1) and an ESD0402 (U6, U7, U8) for data protection. It shows the connection of the microcontroller's SD pins to the storage module's pins.

**TFT DISPLAY**

The TFT display section shows the connection of a 3.3V supply to the display's pins, including LCD\_SCK, LCD\_DC, LCD\_CS, LCD\_MOSI, and LCD\_BCKL. It also includes a 100K resistor (R19) and a 600mA/40V transistor (T3).

**Bill of Materials Table**

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**MICROCONTROLLER**

The microcontroller section features an ESP32-WROVER-I (A1) connected to a 3.3V supply. It includes a RESET button (S1), a blue LED (D1), and various peripheral components like capacitors (C1, C2, C3, C4) and resistors (R1, R2). The pin headers are labeled with functions such as VBAT\_S/2, L\_BTN, IO0, IO2, IO4, IO5, IO12, IO13, IO14, IO15, IO18, IO19, IO21, IO22, IO23, IO25, SDO/SD0, SDI/SD1, SHD/SD2, SWP/SD3, SCS/CMD, SCK/CLK, RXD0, TXD0, TX2, RX2, MENU, R\_BTN, CHRG\_STAT/2, USB\_DET/2, LCD\_BCKL, I2S\_BCK/2, and I2S\_LCK/2.

**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) to interface with a 3.3V supply. It includes buttons for START, SELECT, UP, and DOWN, and a 4-pin header for I2C communication (I2C\_SDA, I2C\_SCL, GND, VCC).

**STORAGE**

The storage section features a MICROSD-PUSH-OUT connector (J1) connected to an ESD0402 (U6, U7, U8) and a 10uF capacitor (C2). It includes a JP Bootstrap and a 3.3V supply.

**TFT DISPLAY**

The TFT display section includes a 3.3V supply, a 100K resistor (R19), and a 600mA/40V transistor (T3) connected to the LCD\_BCKL pin. The display is connected to the microcontroller via a 18-pin header (P\$1 to P\$18) with labels for GND, RESET, LCD\_SCK, LCD\_DC, LCD\_CS, LCD\_MOSI, VCC, SDO, GND2, LEDA, LED\_K1, LED\_K2, LED\_K3, LED\_K4, XL, YU, XR, and YD.

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**AUTO RESET**

This section shows two NPN transistors (T1, T2) used for auto-reset functionality. They are connected to DTR/2 and RTS/2 pins of the microcontroller and a 100-pin header (IO0).

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects the microcontroller's I2C lines (SDA, SCL) to the expander's A0, A1, and A2 pins. The expander's P0-P7 pins are connected to various push buttons (START, SELECT, UP, DOWN, LEFT, RIGHT, A, B).

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT connector (J1) and an ESD0402 (U6, U7, U8) ESD protection diode array. It connects the microcontroller's SD pins (SD\_DAT0, SD\_CLK, SD\_CMD) to the storage module.

**TFT DISPLAY**

The TFT display section shows a 1.8-inch TFT display connected to the microcontroller's LCD pins (LCD\_SCK, LCD\_DC, LCD\_CS, LCD\_MOSI, LCD\_BCKL). It also includes a 100-pin header (P\$1-P\$18) for additional connections.

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**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects various buttons (START, SELECT, UP, DOWN) and LEDs (B, A, RIGHT, LEFT) to the microcontroller's I2C lines (I2C\_SDA, I2C\_SCL) and power pins.

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT module (J1) connected to an ESD0402 (U6, U7, U8) ESD protection diode array. It also features a JP Bootstrap and a 10uF capacitor (C2) for the SD card's VDD supply.

**TFT DISPLAY**

The TFT display section shows the connection of a TFT module to the microcontroller. It includes a 3.3V supply, a 100K resistor (R19), and a 600mA/40V transistor (T3) for the LCD\_BCKL pin. The display's pin headers are labeled with functions like RESET, LCD\_SCK, LCD\_DC, LCD\_CS, LCD\_MOSI, VCC, LEDA, LED\_K1, LED\_K2, LED\_K3, LED\_K4, XL, YU, XR, and YD.

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The microcontroller section features an ESP32-WROVER-I (A1) connected to a 3.3V supply. It includes a RESET button (S1), a blue LED (D1), and various peripheral components like capacitors (C1, C2, C3, C4) and resistors (R1, R2). The pinout for the ESP32 is detailed, showing connections for IO pins, SD card interface, and other peripherals.

**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects various push buttons (START, SELECT, UP, DOWN) and LEDs (B, A, RIGHT, LEFT) to the microcontroller's I2C lines.

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT (J1) and an ESD0402 (U6, U7, U8) for data storage. It shows the connection of the microSD card's pins (CD, DAT1, DAT0\_DO, VSS, CLK, VDD, CMD\_DIN, CD\_DAT3\_CS, DAT2) to the microcontroller's SD pins.

**TFT DISPLAY**

The TFT display section shows the connection of a TFT display (P\$1) to the microcontroller's pins. It includes a 3.3V supply, a 100K resistor (R19), and a 600mA/40V transistor (T3) for the LCD\_BCKL pin.

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**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects various push buttons (START, SELECT, UP, DOWN) and LEDs (B, A, RIGHT, LEFT) to the microcontroller's I2C lines.

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT module (J1) and an ESD0402 (U6, U7, U8) for data storage and protection. It shows the connection of the microSD card's pins to the microcontroller's I/O pins.

**TFT DISPLAY**

The TFT display section shows the connection of a TFT display module to the microcontroller. It includes a 3.3V supply, a 100K resistor (R19), and a 600mA/40V transistor (T3) for the LCD\_BCKL pin.

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**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects various push buttons (START, SELECT, UP, DOWN) and LEDs (B, A, RIGHT, LEFT) to the microcontroller's I2C lines.

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT module (J1) and an ESD0402 (U6, U7, U8) for data storage and protection. It shows the connection of the microSD card's pins to the microcontroller's I/O pins.

**TFT DISPLAY**

The TFT display section shows the connection of a TFT display module to the microcontroller. It includes a 3.3V supply, a 100K resistor (R19), and a 600mA/40V transistor (T3) for the LCD\_BCKL pin.

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**AUTO RESET**

This section implements an auto-reset circuit using two 600mA/40V transistors (T1, T2) and 10K resistors (R8, R9) connected to the DTR/2 and RTS/2 pins of the microcontroller.

**INPUT**

The input section uses a PCF8574 (U1) I2C-to-gpio expander. It connects the microcontroller's I2C lines (SCL, SDA) to the expander's A0, A1, and A2 pins. The expander's P0-P7 pins are connected to various push buttons (START, SELECT, UP, DOWN, etc.).

**STORAGE**

The storage section includes a MICROSD-PUSH-OUT (J1) connected to an ESD0402 (U6, U7, U8) ESD protection diode array. It also features a JP1 bootstrap jumper and a 10uF capacitor (C2) for the SD card's VDD supply.

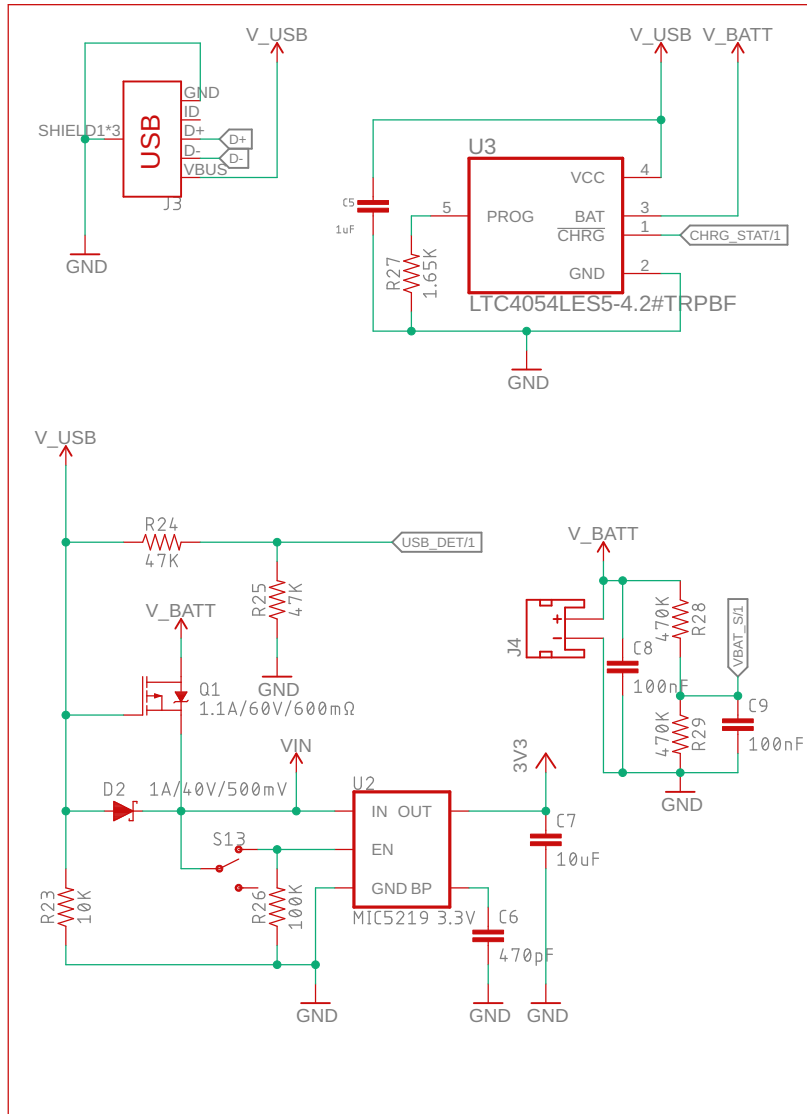
**TFT DISPLAY**

The TFT display section shows the connection of a TFT display module to the microcontroller. It includes a 3.3V supply, a 100K resistor (R19), and a 600mA/40V transistor (T3) for the LCD\_BCKL pin. The display's pins (P\$1 through P\$18) are connected to the microcontroller's corresponding pins.

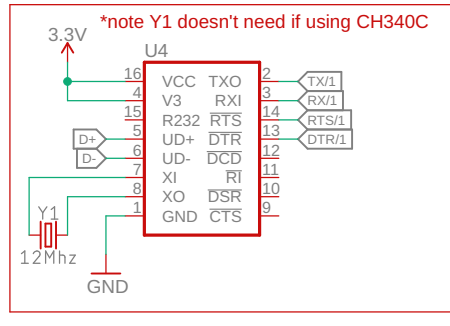
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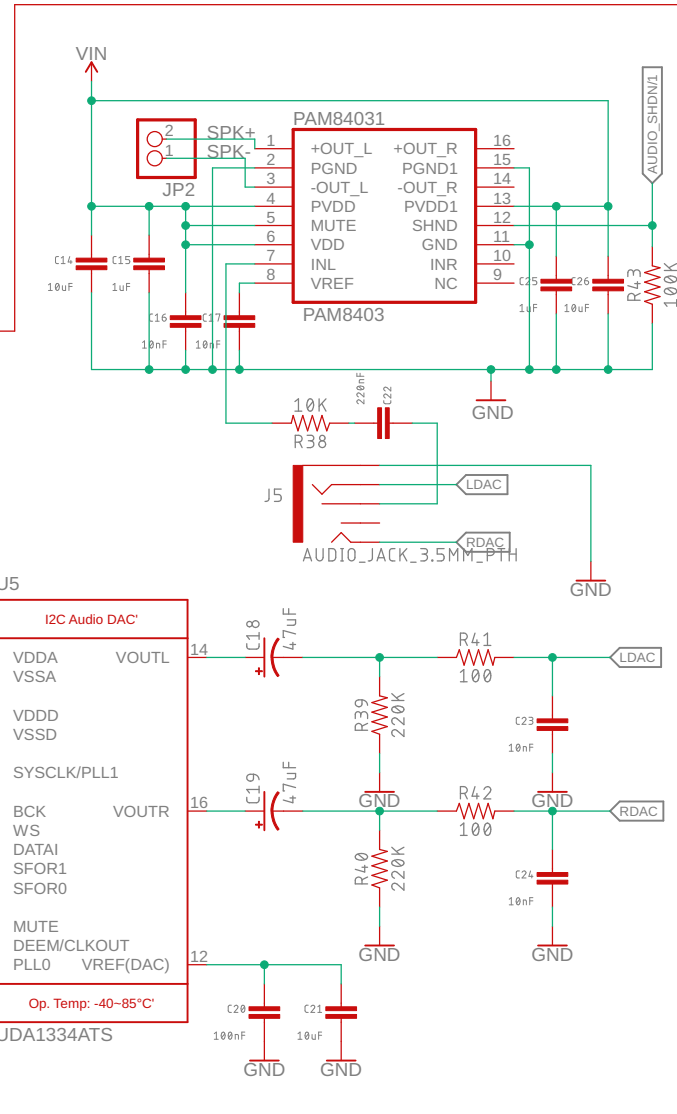
## POWER SUPPLY & CHARGER



## USB TO SERIAL



## AUDIO



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