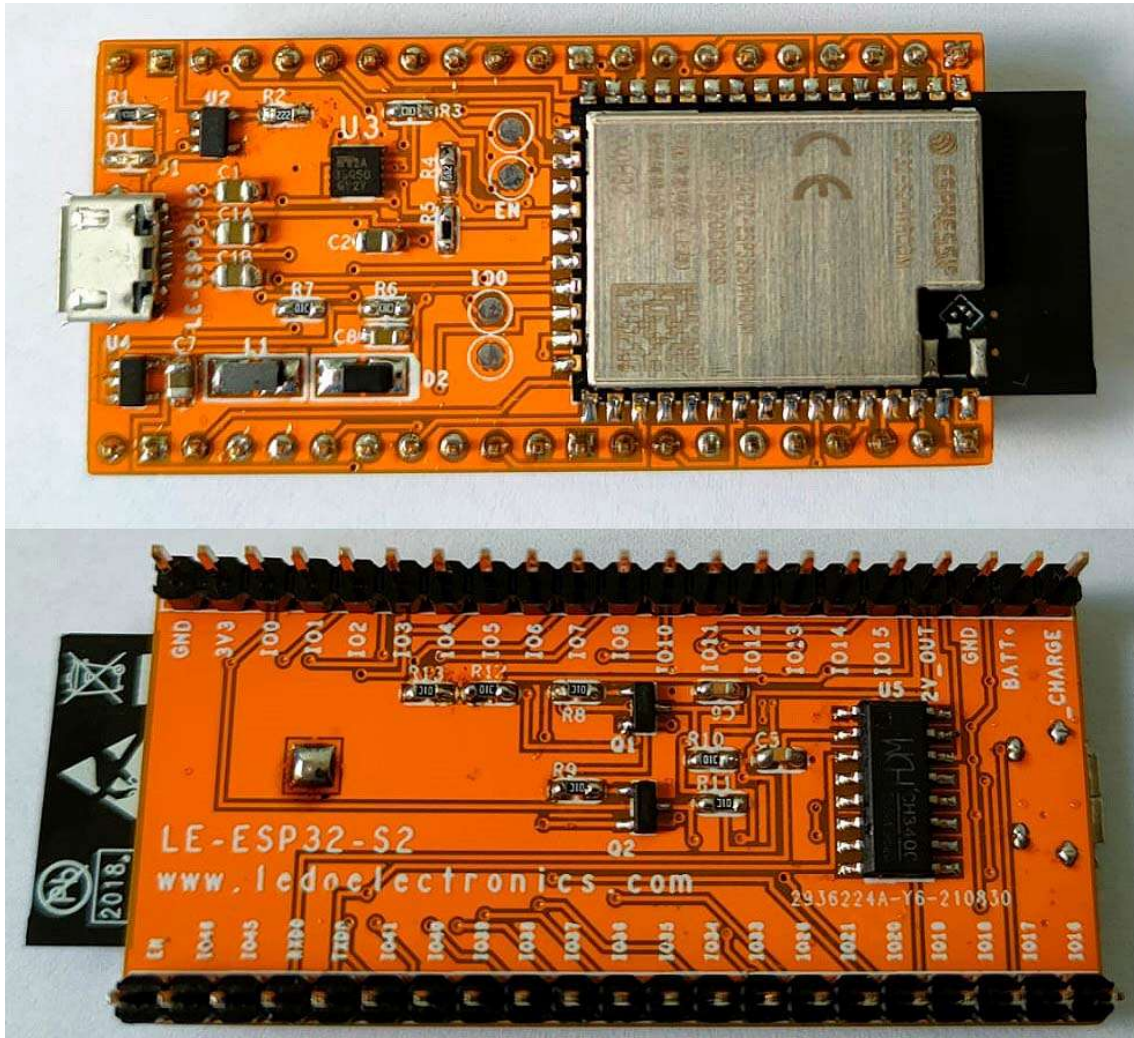


Le-ESP32-S2 IoT BOARD



- For IoT applications development
- Powered by a 3.7V Li-Po battery
- Onboard built-in Li-Po battery charge management
- Based on Espressif ESP32-S2 WROOM module
- On board 12V Step Up DC-DC Converter
- Programming from PC via USB port
- Access to all pins of the ESP32-S2 WROOM module
- Compatible with Espressif, Arduino and PlatformIo
- Compatible with Google and Amazon IoT platforms

The module is based on the 32-bit processor with Wi-Fi ESP32-S2 from Espressif Systems, and differs from the rest of commercial modules, in that it incorporates a charge management and monitoring circuit of a 3.7V Li-Po battery, for which can be used in the design of autonomous IoT equipment, not dependent on the AC power line. In addition, it has a DC-DC boost regulator, which supplies an output voltage of 12V DC, which can be used to power sensors and other low-consumption electronic circuits.

The Le-Esp32-S2 module can be powered with 5V from the microUSB connector present on the board, or from any source that offers a voltage between 4.5V and 7V applied to pins 21 and 19 of the board.

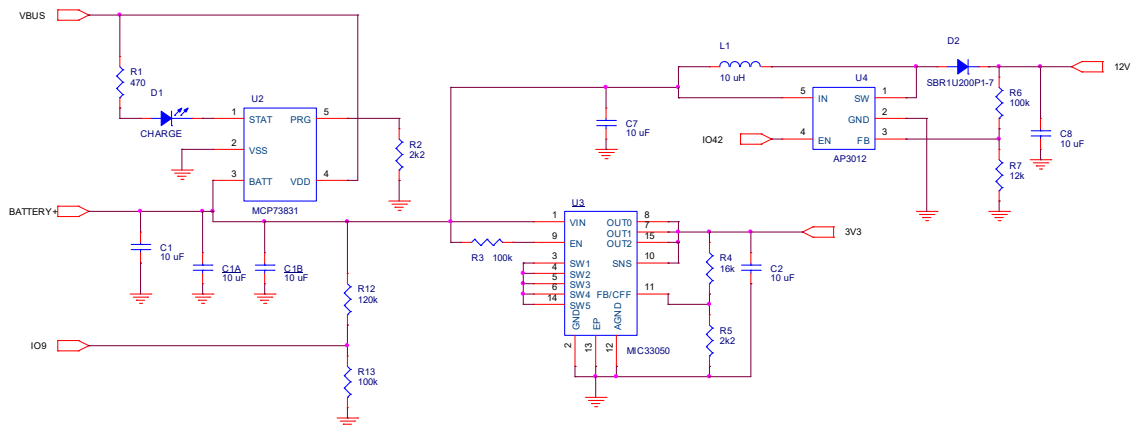


Fig.1. Power circuits.

To achieve maximum use of the battery, the high-performance regulator MIC33050 is used, which can also operate with an input voltage lower than the 3.3V output voltage required to power the entire digital system.

The output of the voltage divider formed by resistors R12 and R13 is connected to the IO09 pin of the microcontroller (ADC1_CH8), so we can monitor the state of the battery.

The step-up DC-DC converter (U4) gives us a 12V DC output, which we can use to power sensors and other circuits, as long as the current does not exceed 150 mA continuously. The control input of this converter is connected to the IO42 output of the microcontroller, this allows disabling it when we do not need it, and thus save battery power.

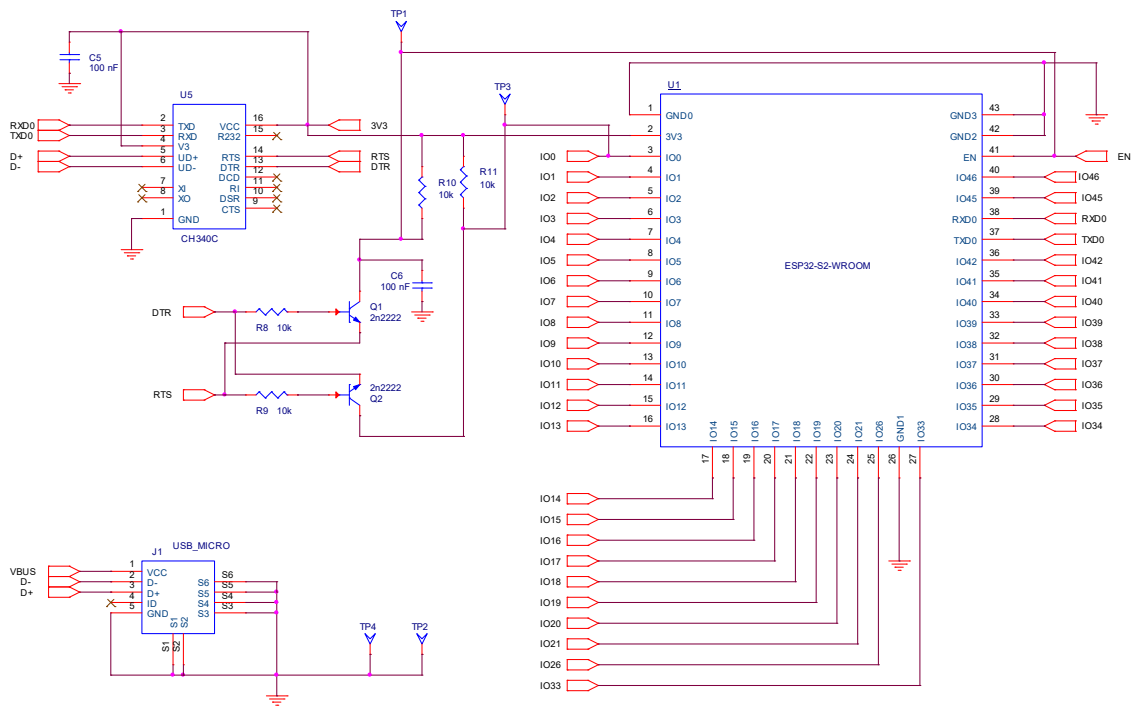


Fig.2. CPU and USB programming circuit.

The IC U5 and the transistors Q1 and Q2 allow the automatic programming of the ESP32-S2 microcontroller, from the IDE of Espressif, Arduino and PlatformIO, so to load the project it is only necessary to connect the module to the PC using a USB cable. In these development environments, one of the ESP32-S2-WROOM, ESP32-S2-Saola, NODEMCU-32-S2, etc. boards must be chosen.

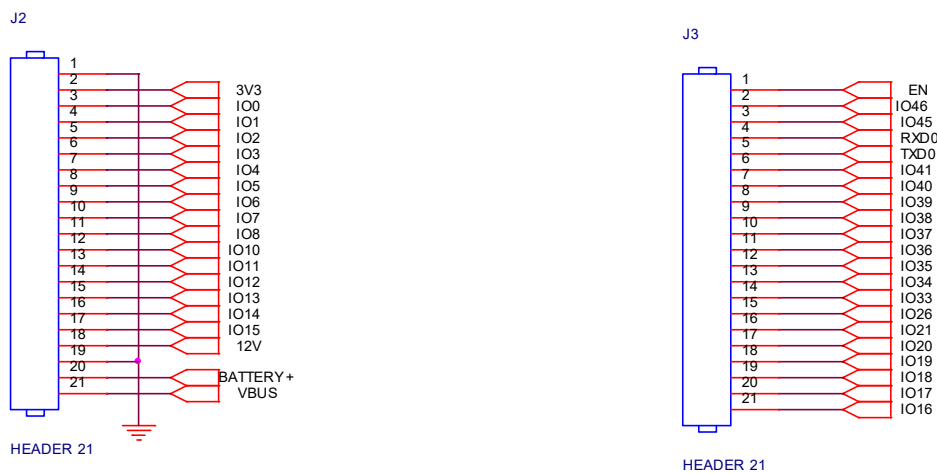


Fig.3. Board Pinout.

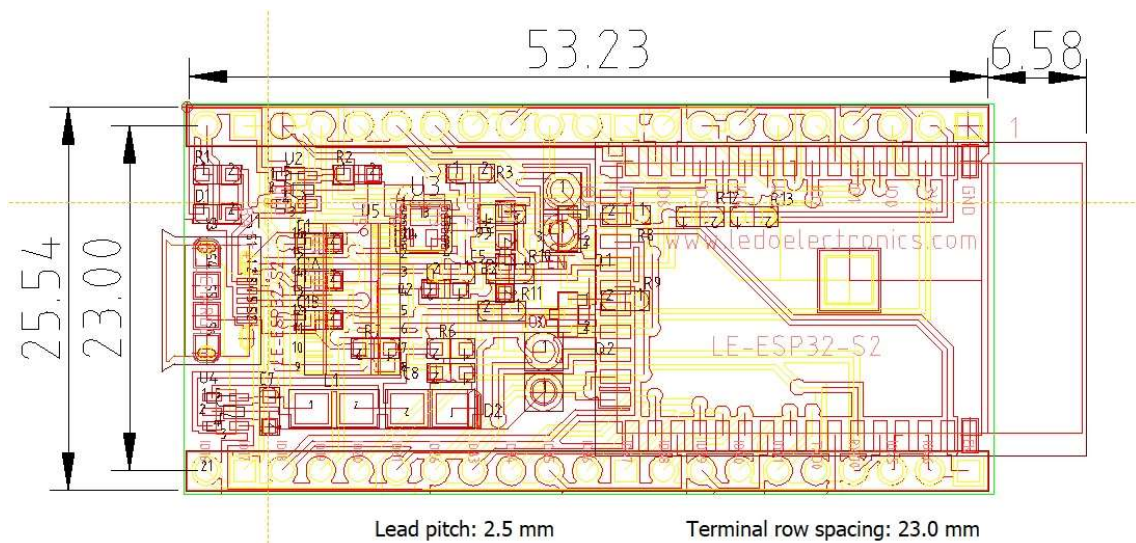
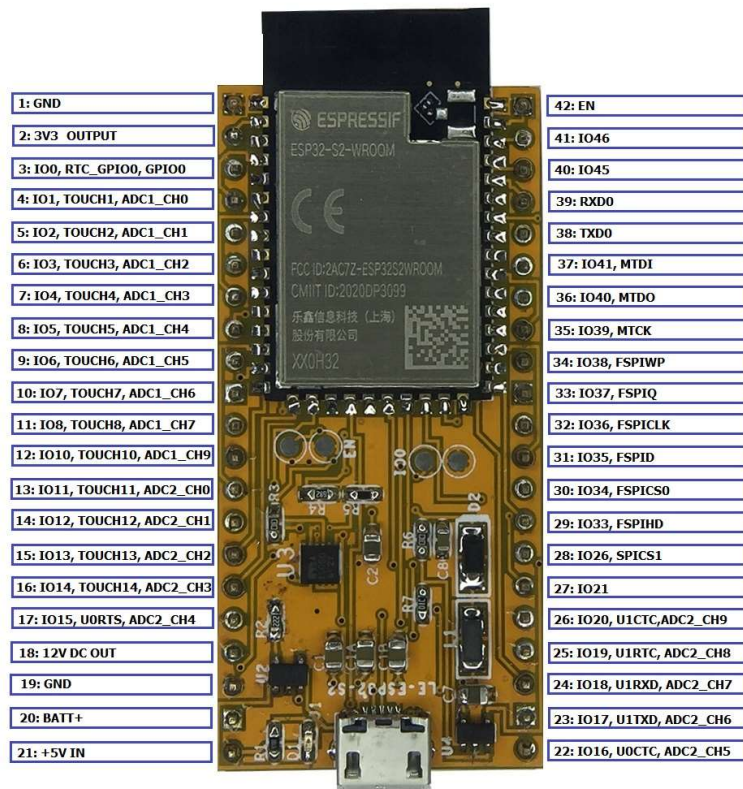


Fig.4. Module outline.