

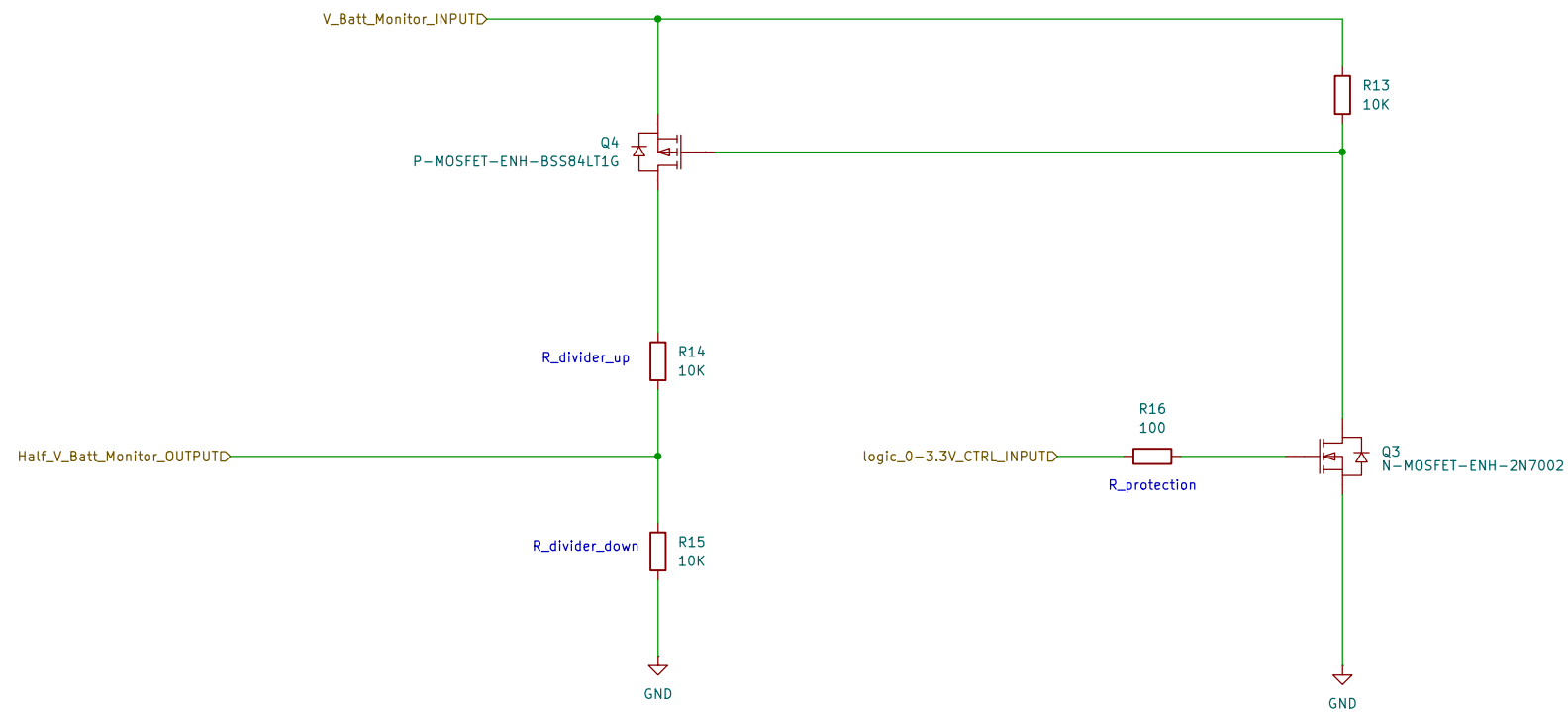
The three pull-up resistors (lmd, 0603 package) should be of values between:  
6.7k (faster rise times, supports higher speeds, less prone to signal integrity problems, consumes slightly more power)  
and 10k (slower, more prone to signal integrity problems, consumes less power)

Analog to Digital Converter (ADC)  
The ESP32 has 12 bits ADC input channels (while the ESP8266 only has 1x 10 bits ADC).  
These are the GPIOs that can be used as ADC and respective channels:  
AD1.CH0 (GPIO 36), AD1.CH1 (GPIO 37), AD1.CH2 (GPIO 38), AD1.CH3 (GPIO 39),  
AD1.CH4 (GPIO 32), AD1.CH5 (GPIO 33), AD1.CH6 (GPIO 34), AD1.CH7 (GPIO 35),  
AD2.CH0 (GPIO 4), AD2.CH1 (GPIO 5), AD2.CH2 (GPIO 15), AD2.CH3 (GPIO 16),  
AD2.CH4 (GPIO 13), AD2.CH5 (GPIO 12), AD2.CH6 (GPIO 14), AD2.CH7 (GPIO 27),  
AD2.CH8 (GPIO 25).  
Note: ADC2 pins cannot be used when Wi-Fi is used.  
So, if you're using Wi-Fi and you're having trouble getting the value from an ADC2 GPIO, you may consider using an ADC1 GPIO instead. That should solve your problem.  
The ESP32 ADC pins don't have a linear behavior.  
You'll probably won't be able to distinguish between 0 and 0.1V, or between 1.2 and 1.3V.  
You need to keep that in mind when using the ADC pins.  
It is better to scale the input signal to the ADC to Voltages to a range [0.7V; 1.9V].

Input only pins  
GPIOs 34 to 39 are GPIOs - input only pins.  
These pins don't have internal pull-up or pull-down resistors.  
They can't be used as outputs, so use these pins only as inputs:  
GPIO 34  
GPIO 35 (SENSOR\_VP)  
GPIO 36  
GPIO 39 (SENSOR\_VN)

Pulsanti di BOOT e RESET.

The ESP32 goes in BOOT when IO0 goes low (IO0 connected directly to GND).  
In reality when ENA goes low (ENA connected directly to GND).  
The switches have the pins 1 and 2 directly connected, and also the pins 3 and 4.  
Whenever, when the button is being pressed, 1 connects to 3, while 2 connects to 4.  
So, when pressed, we have the BOOT and RESET behaviour desired.  
that is the direct connection between IO0/ENA to GND.  
In our case, even if we use all the pins, the behaviour is still the same [the direct connection between IO0/ENA to GND, but with two vias instead of one].  
The capacitors are used in order to filter the debouncing effect that occurs when we press the button.



This Buck-Boost (TPS63001DRCR) is an efficient converter (up to 96%), and can convert either the 5V coming from the USB, or eventually the 3-3.6V coming from the batteries, to fixed 3.3V necessary for the esp32.

