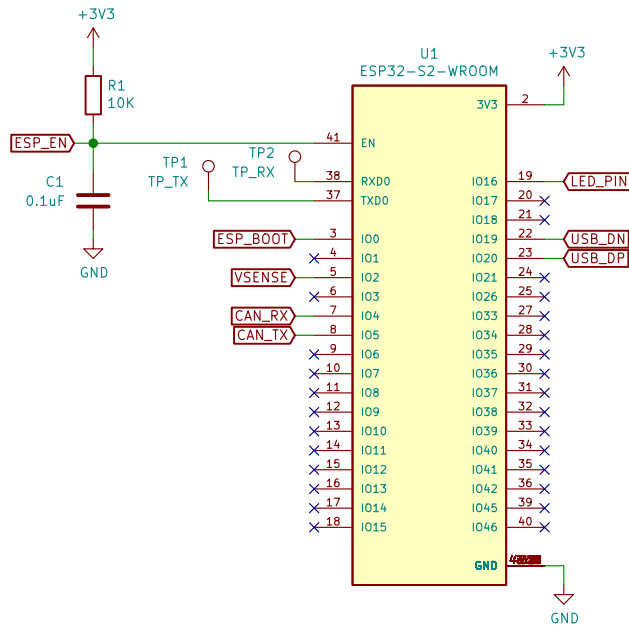


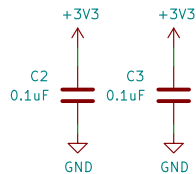
ESP32-S2



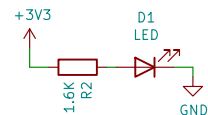
ESP32-S2 has USB capabilities with a USB DFU, so there is no need for a USB-UART

ESP32-S2-WROOM uses a PCB antenna (IPEX unpopulated)
ESP32-S2-WROOM-I is identical except that the IPEX is populated and connected
These 2 parts can be used interchangeably

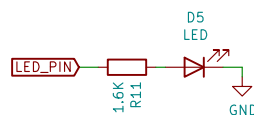
Decoupling Caps



Status LED

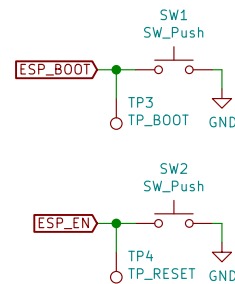


Indicator to check if the buck regulator is operating normally



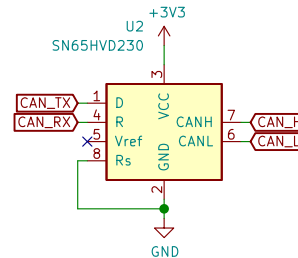
User-controlled LED pin

Boot, Reset Button



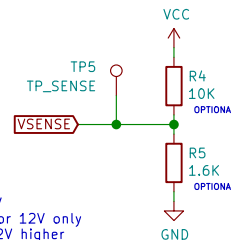
Entering USB DFU:
Press Boot button
Press and release Reset button
Release Boot button

CAN Transceiver



Rs to strong GND for sharp signal transitions

Voltage Sense



Scales 0-24V to 0-3.3V
This board is intended for 12V only
Actual input is about 0.2V higher

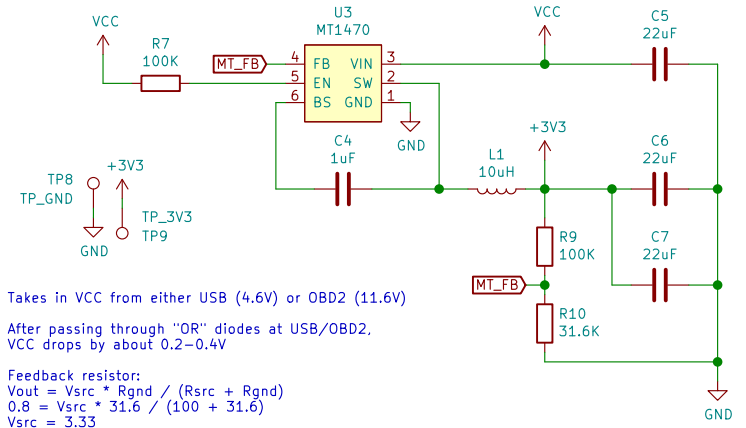
Prefer ADC1 : GPIO1 - GPIO10
ADC2 is shared with WiFi

CAN Termination



Optional: convenient for ECU emulation
when paired with female OBD header
Normally a single 120R is enough for a bus to function

Voltage Regulator

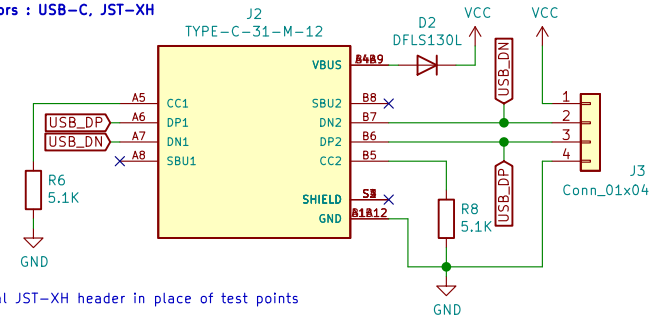


Takes in VCC from either USB (4.6V) or OBD2 (11.6V)

After passing through "OR" diodes at USB/OBD2,
VCC drops by about 0.2-0.4V

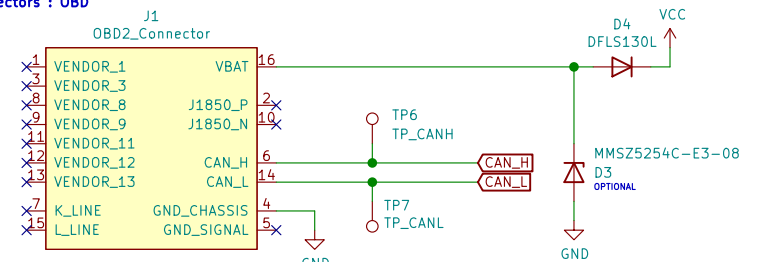
Feedback resistor:
 $V_{out} = V_{src} \cdot R_{gnd} / (R_{src} + R_{gnd})$
 $0.8 = V_{src} \cdot 31.6 / (100 + 31.6)$
 $V_{src} = 3.33$

Connectors : USB-C, JST-XH



Optional JST-XH header in place of test points

Connectors : OBD



Optional zener footprint for overvoltage protection, unpopulated by default

For next revision (1.1):
Thicken traces for switching regulator
Pin 1 markings for U footprints
Edge cuts: shift 1.8mm to 2.1mm towards USB side for better enclosure fit
Edge cuts: reduce protrusion at OBD connector to fit enclosure, shift or remove 2x CAN TP

Sheet: /

File: OkayCAN.sch

Title: OkayCAN

Size: A4 Date: 01-11-2021

KiCad E.D.A. kicad (5.1.6)-1

Rev: 1.1

Id: 1/1