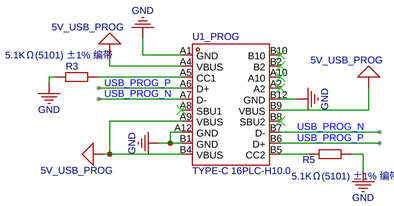
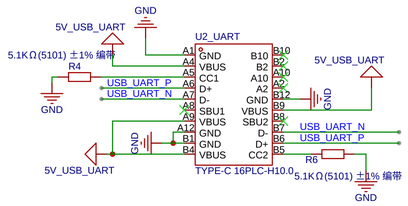
Connectors

USB C Prog



USB C UART



CAN Bus / PWR In

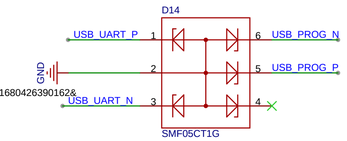
External power supply (laying out for 5V-30V)

standard 5.08 mm pitch
screw terminal

Extended Part
DB128V-5.08-4P-GN-S

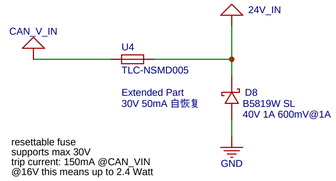
USB 2 data TVS protection

https://www.ti.com/lit/an/slvaf82a/slvaf82a.pdf?ts=1680426390162&



Power Supply

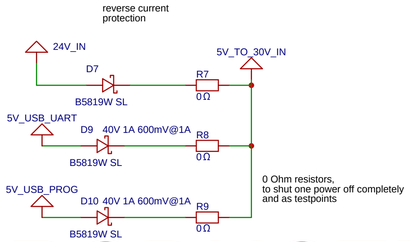
CAN power: short and reverse polarity protection



Extended Part
30V 50mA 自恢复

resettable fuse
supports max 30V
trip current: 150mA @CAN_VIN
@16V this means up to 2.4 Watt

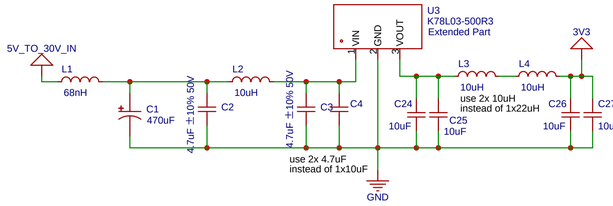
Power or-ing: USB XOR external power



0 Ohm resistors,
to shut one power off completely
and as testpoints

4.5V-24V (30V) to 3V3

I have good experience with the Mornsun K78L03 switcher (high efficiency)
including EMC compliance

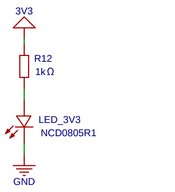


WARNING: UNFINISHED, UNPRODUCED, UNTESTED !

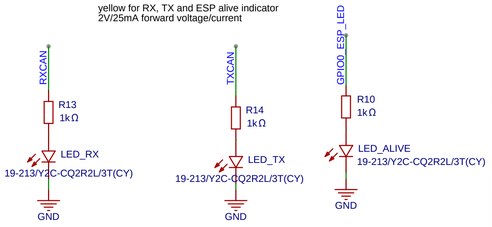
LED

limiting LED current to 1mA,
we do not want them too bright :)

red for power
2.1V / 25mA forward voltage/current



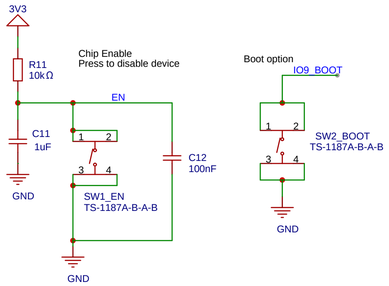
yellow for RX, TX and ESP alive indicator
2V/25mA forward voltage/current

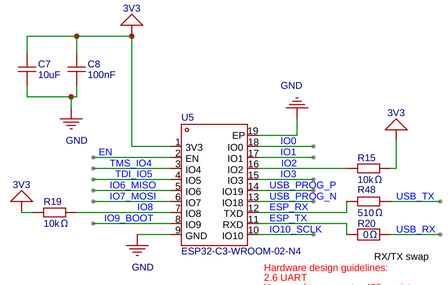


ESP32 C3 as System on Module

see https://www.espressif.com/sites/default/files/documentation/esp32-c3-wroom-02_datasheet_en.pdf

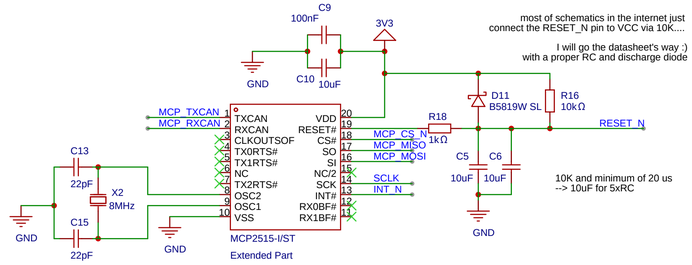
Fig 7 Peripheral Schematics



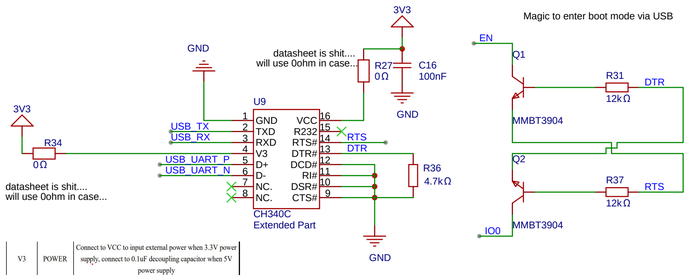


Hardware design guidelines:
2.6 UART
You need to connect a 499 resistor
to the U0TXD line to suppress the 80
MHz harmonics.
Using 510Ohm basic part

CAN Controller



USB to UART (backup if native USB fails)

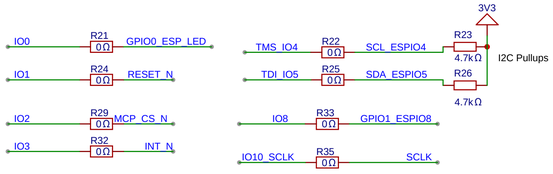


V3	POWER	Connect to VCC to input external power when 3.3V power supply, connect to 0.1uF decoupling capacitor when 5V power supply

Magic to enter boot mode via USB

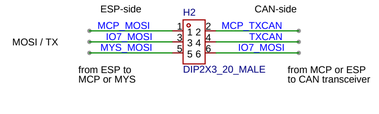
The DTR# pin of CH340 is used as a configuration input pin before the USB configuration is complete. An external 4.7KΩ pull-down resistor can be connected with this pin to generate default low level during USB enumeration, apply larger supply current to the USB bus via the configuration descriptor.

Configuration / multi purpose / Debugging



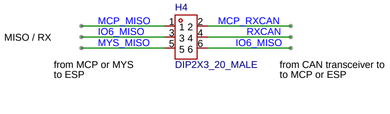
3-way Solderbriges to route MISO / MOSI
to MCP, directly to CAN or to the Mys connector.

generates ugly stubs, but the CAN is driven very slowly...



from ESP to
MCP or MYS

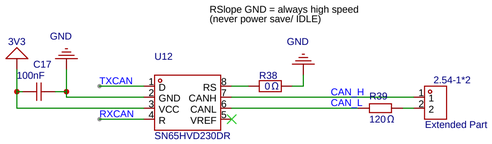
from MCP or ESP
to CAN transceiver



from MCP or MYS
to ESP

from CAN transceiver to
to MCP or ESP

3V3 CAN transceiver



optional 120 Ohm termination
via Jumper.

Only required, if the bus is not
terminated, yet on BOTH sides.

Leave open, if this device
is added to an existing system.

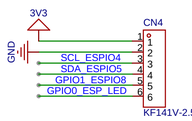
The CAN Bus of my Tecalor TTF 07 cool heatpump operates at 5V.

Fortunately, CAN supports a mixed 3V3 and 5V operation:
https://www.analog.com/en/technical-articles/can-bus-transceivers-operate-from-33v-or-5v-and-withstand-60v-faults.html
(Analog.com is a well-established manufacturer. They know what they are publishing!)

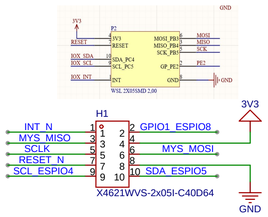
--> This means we can use a 3V3 transceiver and can be on the same 3V3 powerrail as the ESP. No need to go to 5V

Unrelated to CAN for testing and multi purpose

some GPIO to spring connector



2x5 pol 2mm MySensors wired connector
(want to re-use the board for other projects)

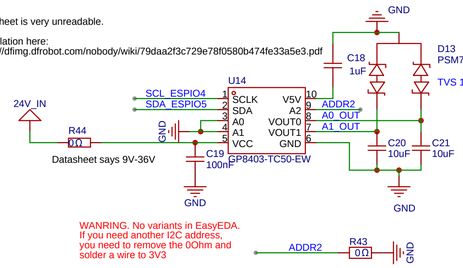


footprint should fit
WSL 2X05SMD 2,00

Unrelated to CAN control ventilation (TVZ 170 e plus) via 2x 0..10V analog out and 1 potential free relay to control the bypass

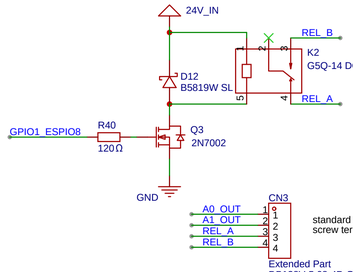
datasheet is very unreadable.

Translation here:
https://dfimg.dfrobot.com/nobody/wiki/79daa2f3c729e78f0580b474fe33a5e3.pdf



WANRING, No variants in EasyEDA.
If you need another I2C address,
you need to remove the 0Ohm and
solder a wire to 3V3

1x relay output for bypass control



Schematic	Schematic1	Update Date	2023-04-10
Page		Create Date	2023-03-07
Drawed	Martin Kaiser	Part Number	
Reviewed	-		
		ESP32_CAN	
		VER	SIZE
		PAGE 1 OF 1	
EasyEDA		V0.2	A2