

Test Points

POWER

- TP7: V_BUS
- TP8: GND
- TP9: CUR_ALERT
- TP10: V_MEASURED
- TP11: V_FUSED
- TP12: +V
- TP13: VG
- TP14: 3V3
- TP15: +5V

FTDI

- TP16: U0R
- TP17: U0T
- TP18: ENABLE
- TP19: IO0

MOTOR

- TP20: DRV_ENABLE
- TP21: DRV_VREF12
- TP22: DRV_VREF34
- TP23: DRV110_OUT

INTERFACE

- TP24: RGB
- TP25: RGB_OUT
- TP26: DIAL_A
- TP27: DIAL_B

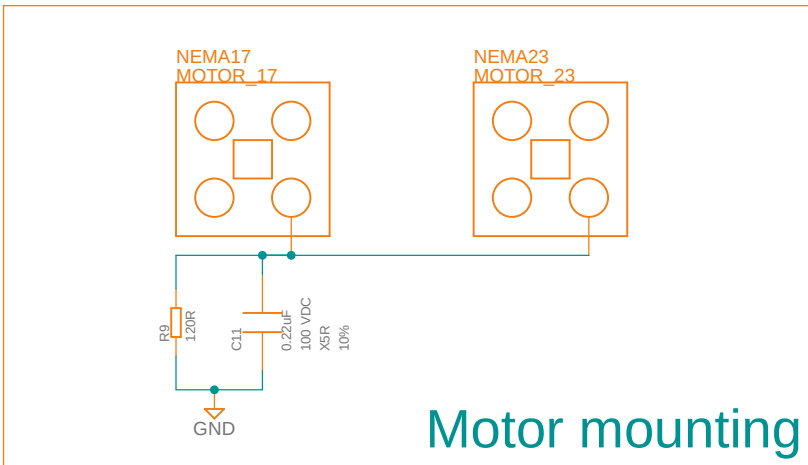
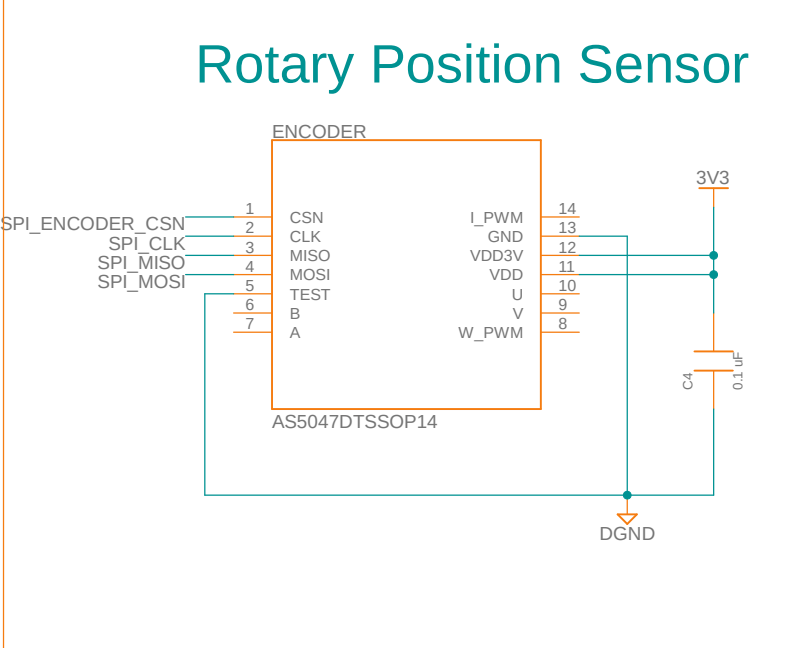
CAN

- TP28: CAN_TXD
- TP29: CAN_RXD
- TP30: BUS_CAN_VDD

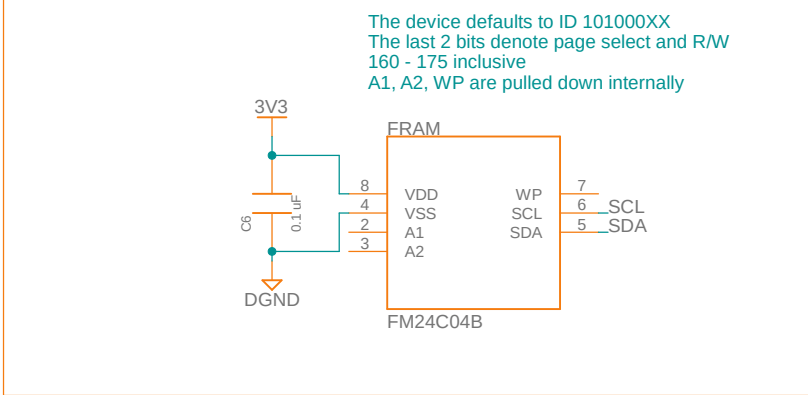
MCU

- IO0: RB0 3V3
- DRV_IN2: RB1 GND
- GND: CB5 3V3
- U0T: RB2 RXD
- U0R: RB3 TXD
- UVLO: RL UVLO GND

STEF01



FRAM Memory

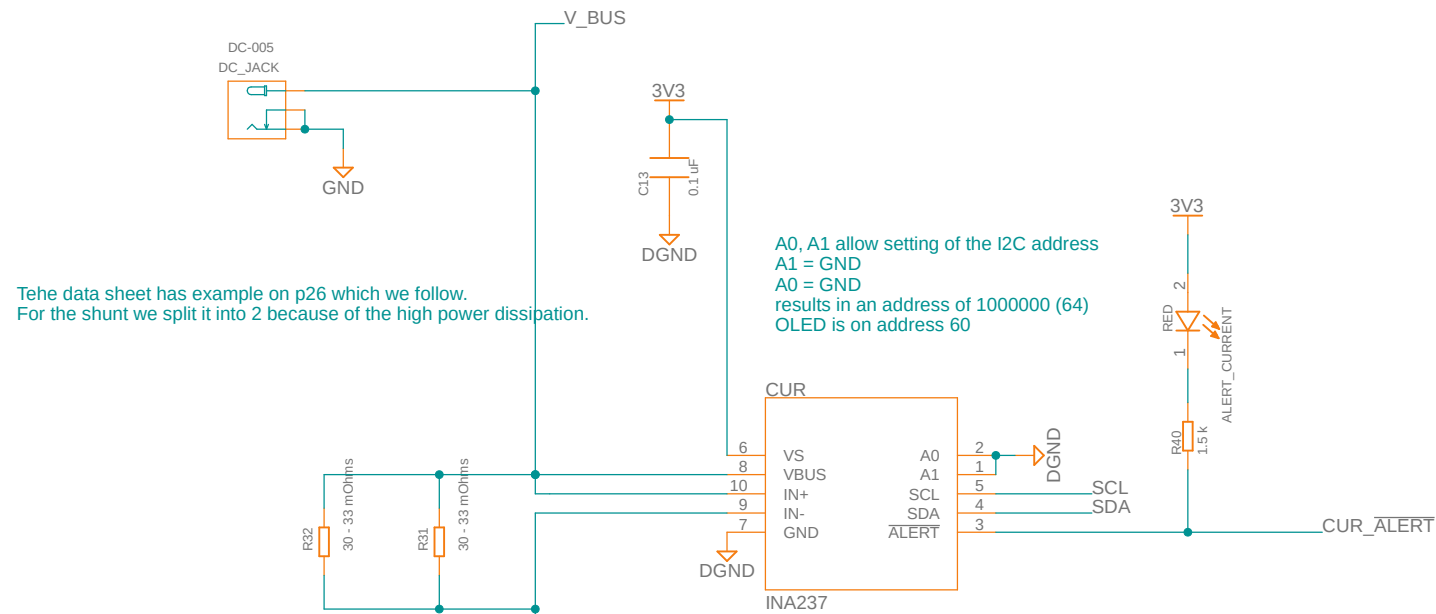


Schematic

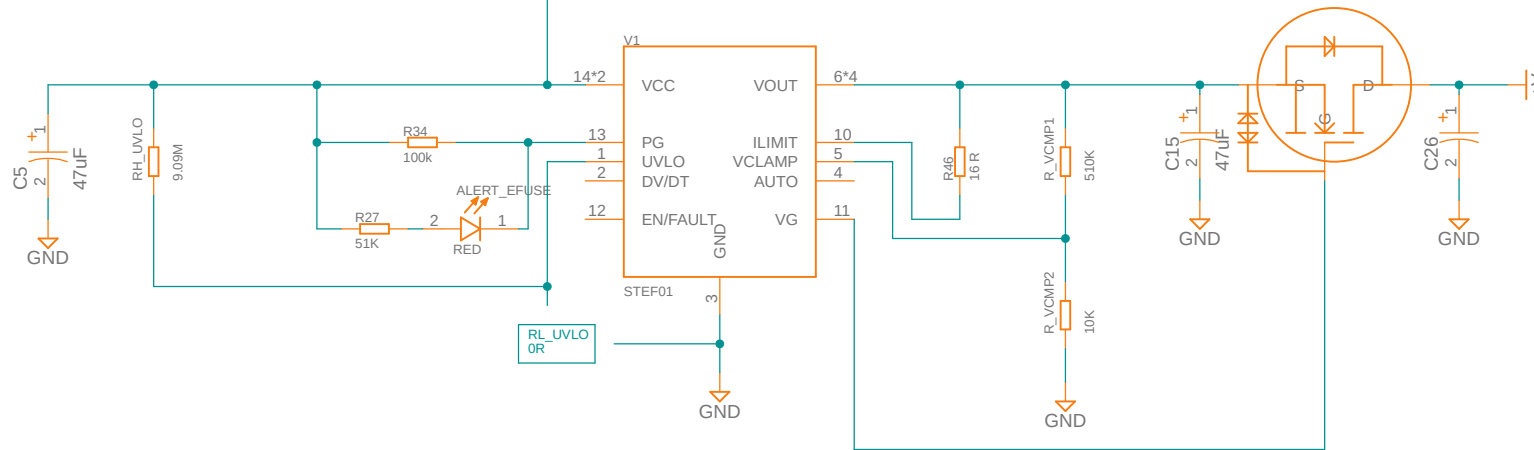
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DC Inputs



Electronic Fuse



Adding an external RH_UVLO
of 9M sets the undervoltage
threshold at 10.009V
9.09M --> 10.04V

VCC- VOUT < 1V:
PG high impedance -> PG = HIGH
else
PG low impedance -> PG = LOW

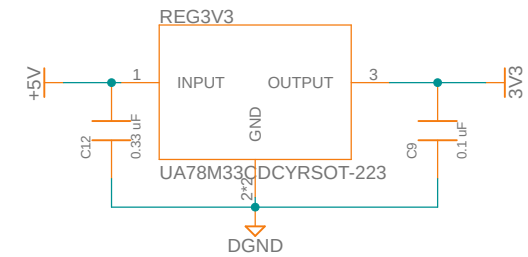
AUTO Pulling to GND will allow the STEF01 to reset itself after overtemperature. Temp will dip below hysteresis value before this is attempted

```
def r_one(V_clamp, r_two):
    A = 1 / r_two + pow(10, -2)
    B = V_clamp - 1
    C = 1 / 2700
    return 1 / (A / B - C)
```

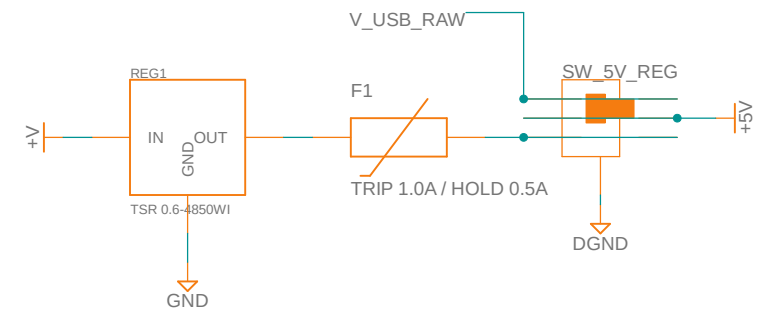
R_1 = 507.6K
R_2 = 10K
V_CLIP = 48V

R_1 = 510K
R_2 = 10K
V_CLIP = 48.2V

3.3V regulator



5V regulator and switch



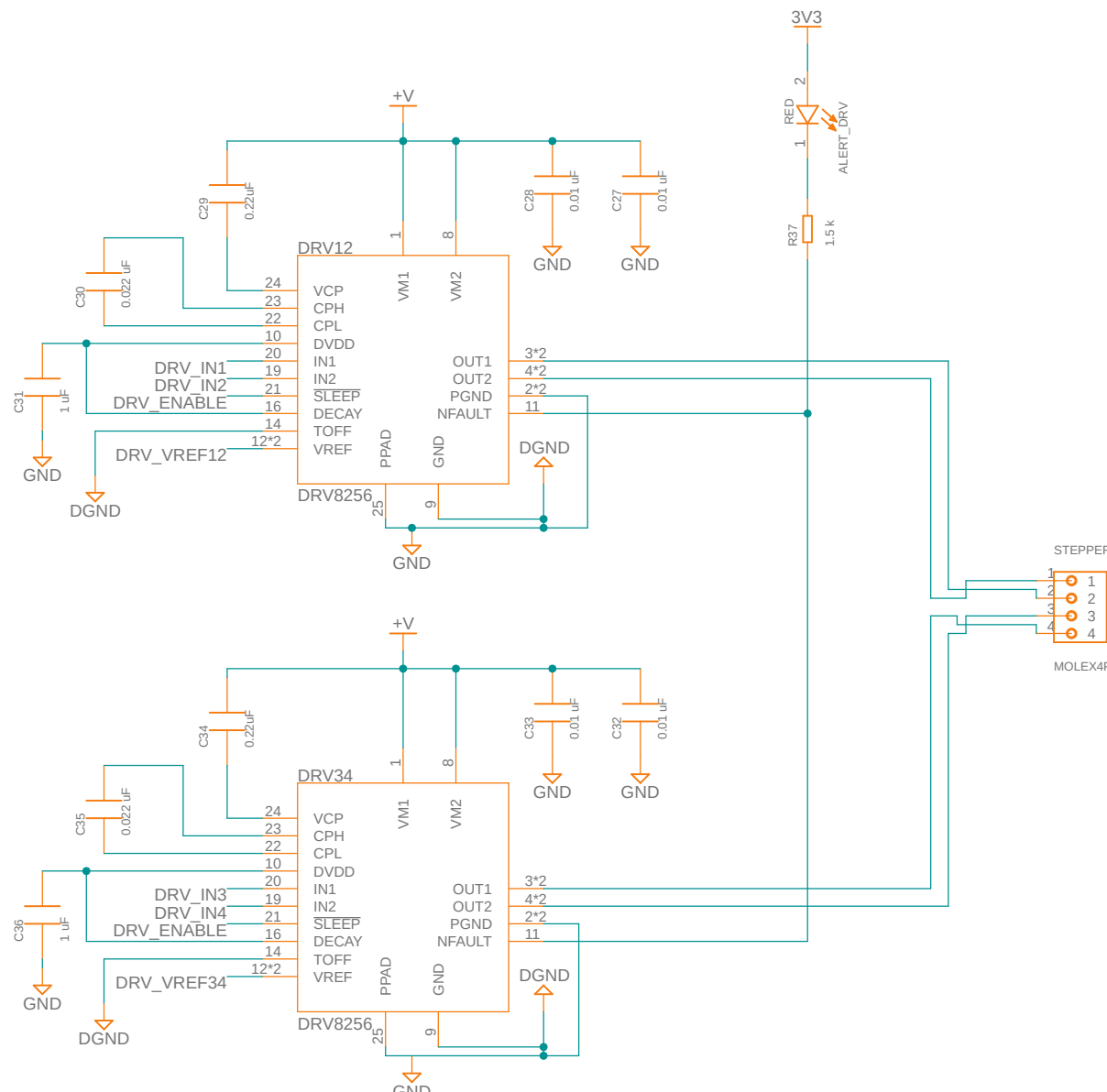
Power

Schematic

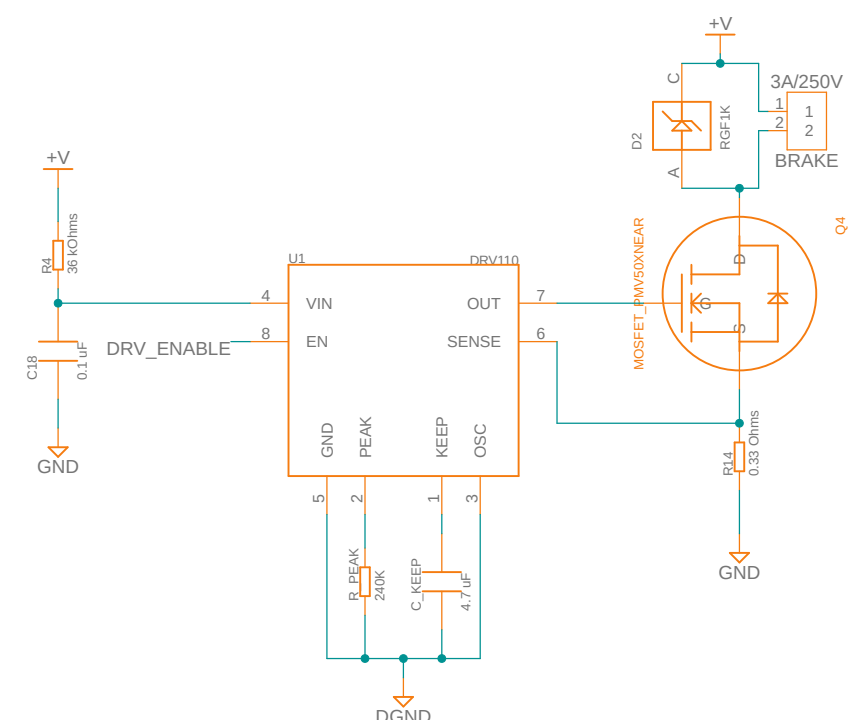
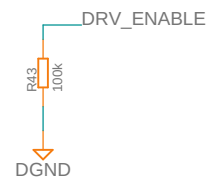
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Drive is disabled until specifically enabled
Note : don't pull this pin high at boot because it will disable program



IPEAK = 0.7A
IHOLD = 0.2A
RSense = 0.33ohms

$$I_{peak} = \frac{V_{ref}}{R_{sense}} = \frac{1\Omega \times 900mA \times 66.67\text{ k}\Omega}{R_{peak}} \times \frac{1}{R_{sense}}$$

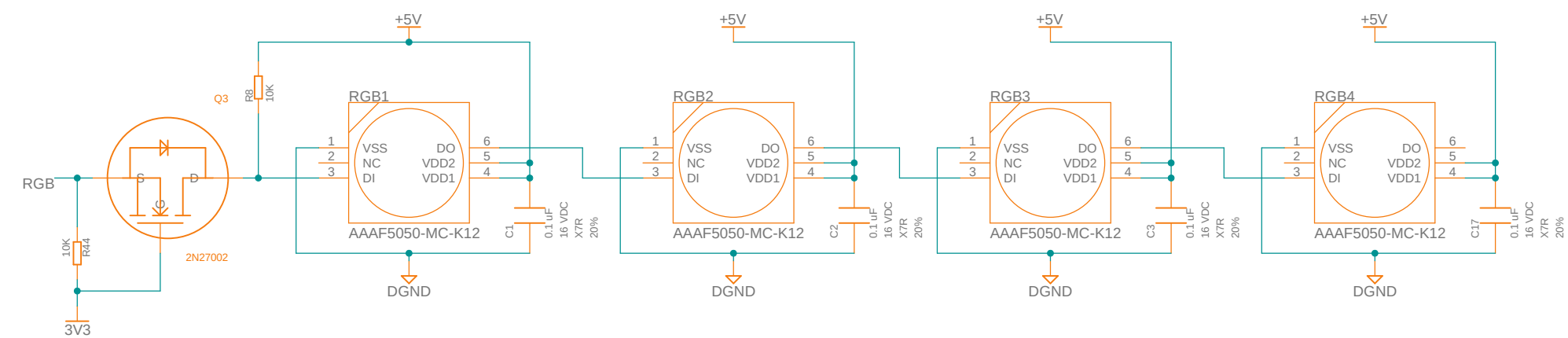
* We can't change the RSense atm but supposed to be 0.25ohm for 0.2A IHold.

RPEAK = 1 * 0.9 * 66666 / (IPEAK * 0.33) = 260 kOhm
RHOLD = 1 * 0.15 * 66666 / (IHOLD * 0.33) = 151 kOhm

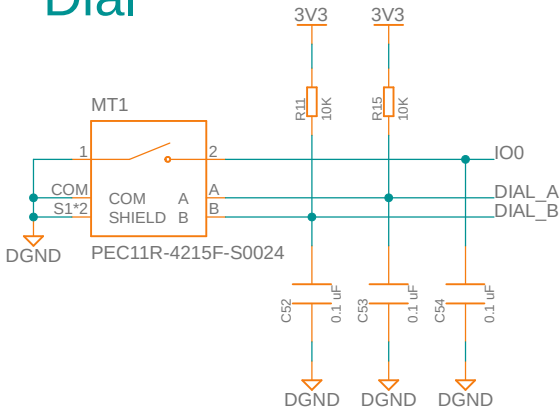
See Paper Dropbox "KC64 - Motor + Brake test" for calculations

Motor Drivers

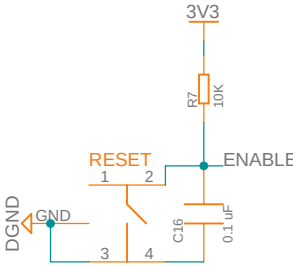
Neopixels



Dial

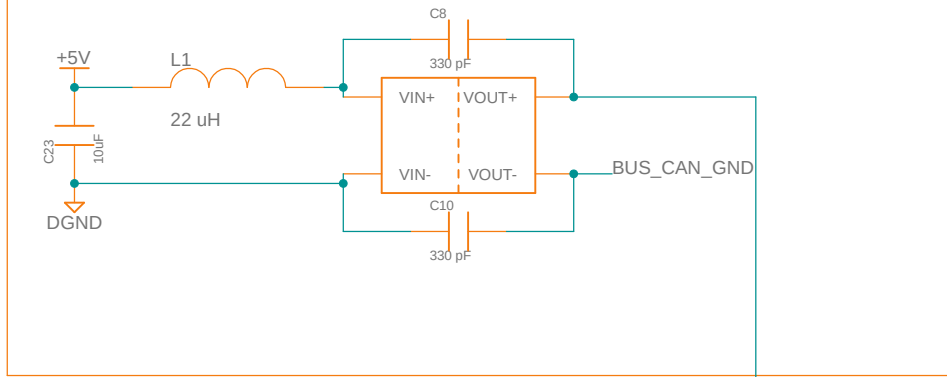


Push buttons

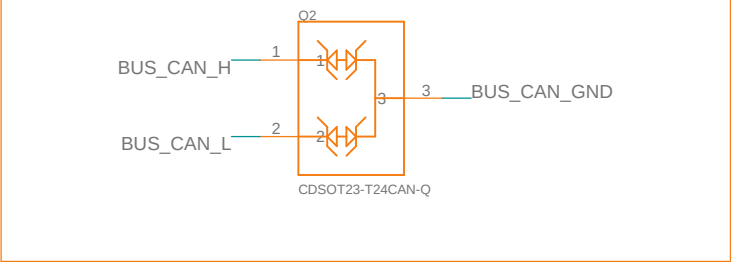


Interface

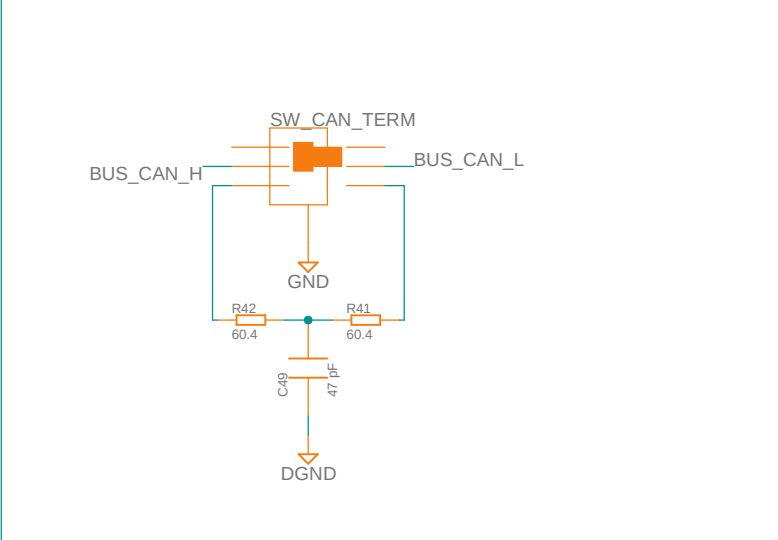
Isolated CAN Transceiver



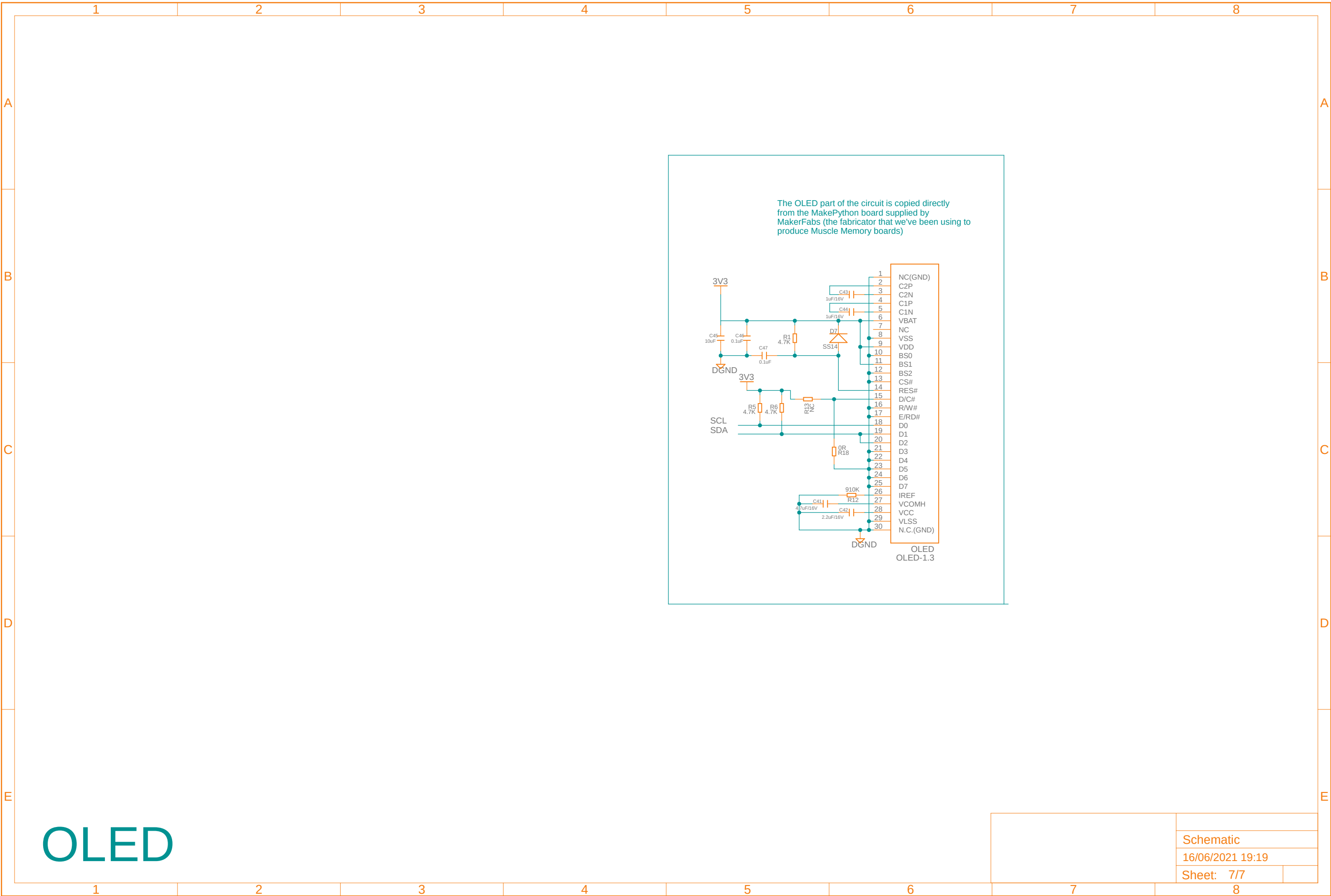
ESD



CAN terminator switch



CAN Transceiver



OLED