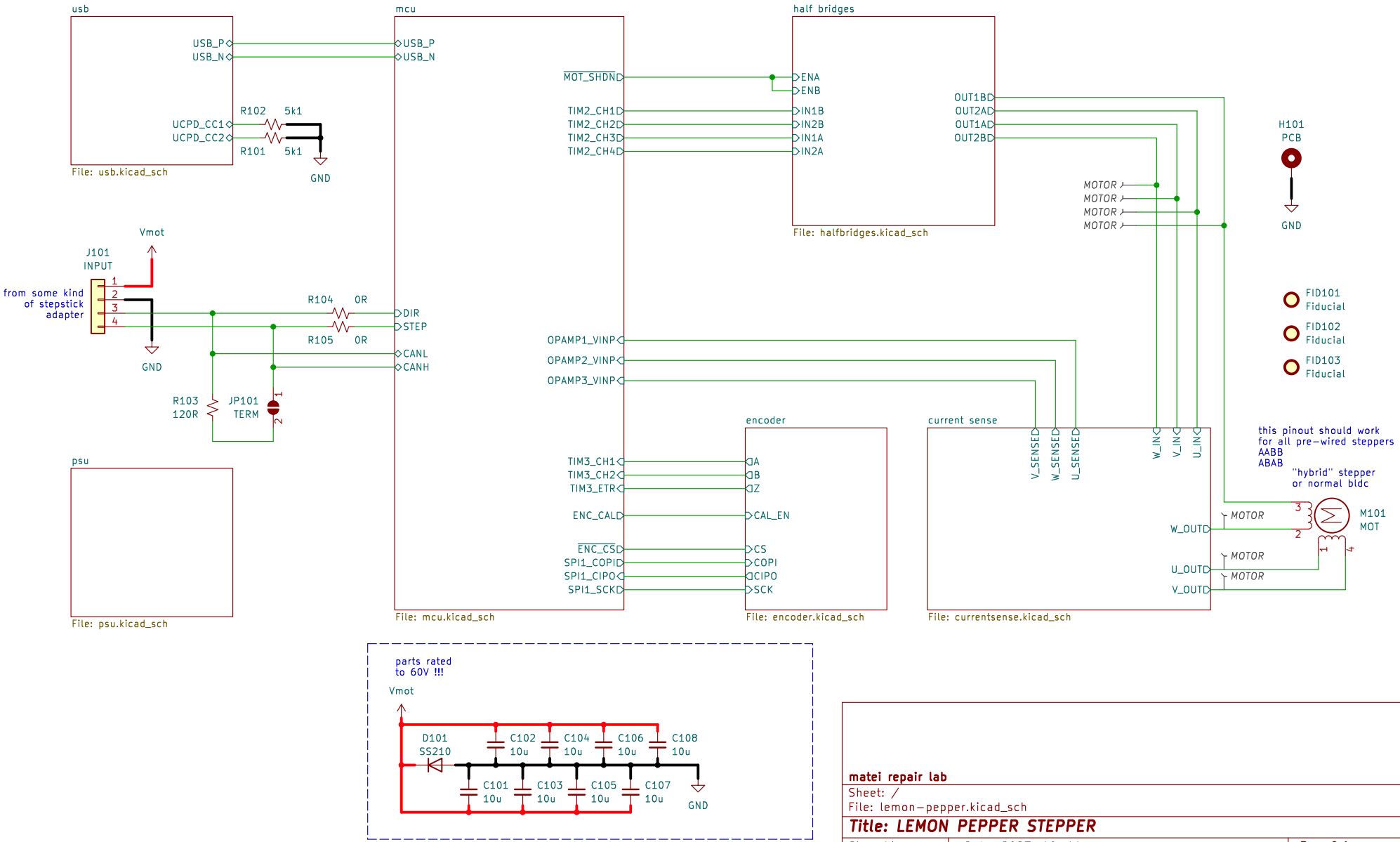
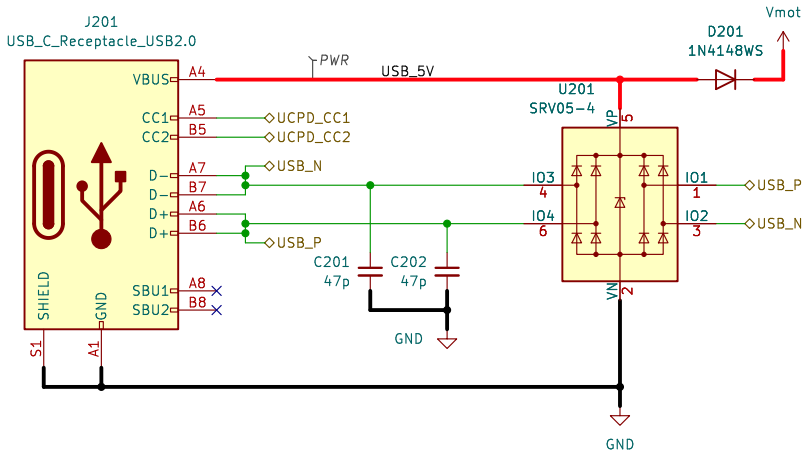
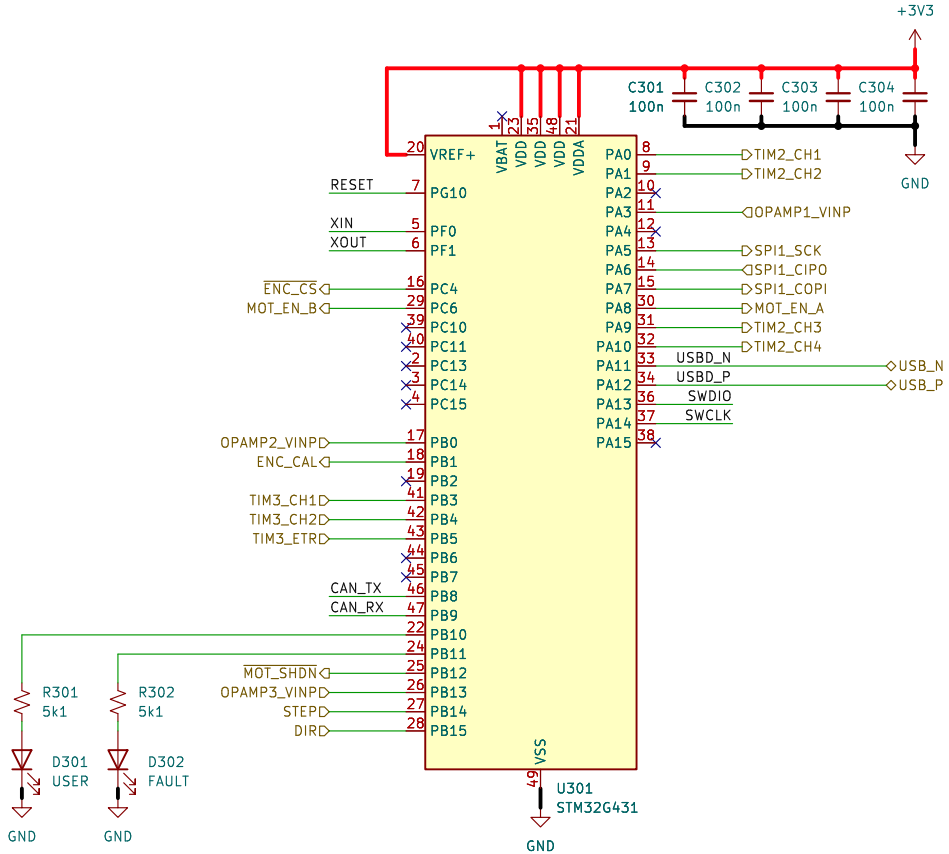
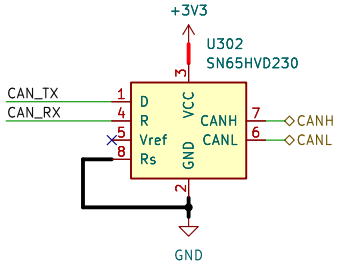

usb
USB_P
USB_N
UCPD_CC1
UCPD_CC2
R102 5k1
R101 5k1
GND
File: usb.kicad_sch
mcu
USB_P
USB_N
MOT_SHDN
TIM2_CH1
TIM2_CH2
TIM2_CH3
TIM2_CH4
DIR
STEP
CANL
CANH
OPAMP1_VINP
OPAMP2_VINP
OPAMP3_VINP
TIM3_CH1
TIM3_CH2
TIM3_ETR
ENC_CALD
ENC_CSD
SPI1_COPID
SPI1_CIPO
SPI1_SCKD
File: mcu.kicad_sch
half bridges
ENA
ENB
IN1B
IN2B
IN1A
IN2A
OUT1B
OUT2A
OUT1A
OUT2B
File: halfbridges.kicad_sch
MOTOR
MOTOR
MOTOR
MOTOR
H101
PCB
GND
FID101
Fiducial
FID102
Fiducial
FID103
Fiducial
Vmot
J101
INPUT
from some kind
of stepstick
adapter
GND
R104 0R
R105 0R
R103
120R
JP101
TERM
psu
File: psu.kicad_sch
encoder
A
B
Z
CAL_EN
CS
COPI
CIPO
SCK
File: encoder.kicad_sch
current sense
V_SENSED
W_SENSED
U_SENSED
W_IN
V_IN
U_IN
W_OUT
U_OUT
V_OUT
MOTOR
MOTOR
MOTOR
File: currentsense.kicad_sch
this pinout should work
for all pre-wired steppers
AABB
ABAB
"hybrid" stepper
or normal bldc
M101
MOT
parts rated
to 60V !!!
Vmot
D101
SS210
C102 10u
C104 10u
C106 10u
C108 10u
C101 10u
C103 10u
C105 10u
C107 10u
GND
matei repair lab
Sheet: /
File: lemon-pepper.kicad_sch
Title: LEMON PEPPER STEPPER
Size: A4
Date: 2023-10-11
Rev: 0.1
KiCad E.D.A. kicad 7.0.8
Id: 1/7

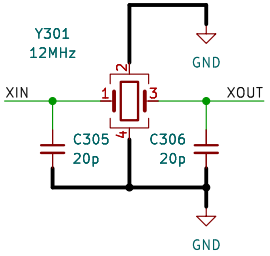


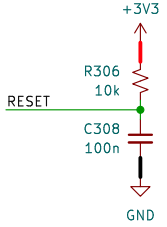
matei repair lab		
Sheet: /usb/		
File: usb.kicad_sch		
Title: USB & ESD		
Size: A4	Date: 2023-10-11	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.8		Id: 2/7

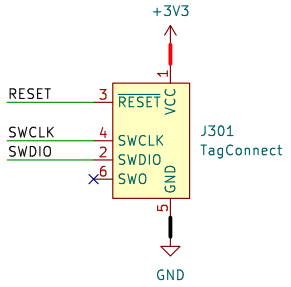
MCU



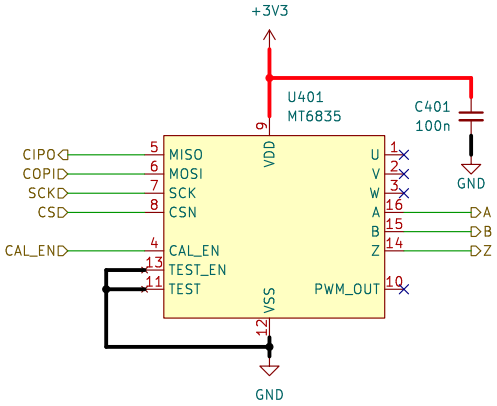




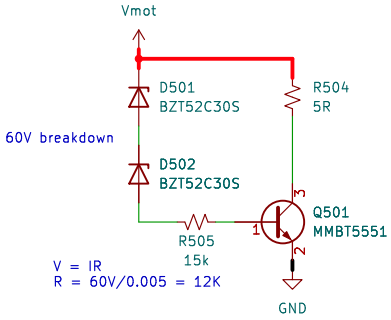


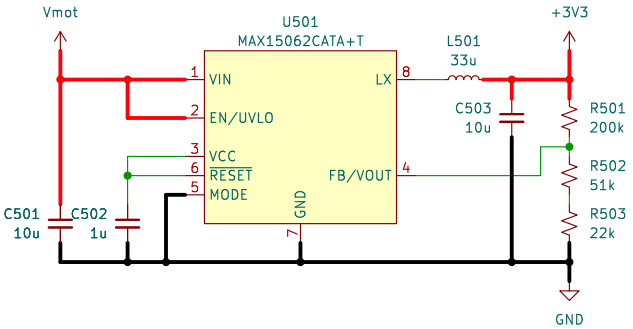


matei repair lab		
Sheet: /mcu/		
File: mcu.kicad_sch		
Title: MICROCONTROLLER		
Size: A4	Date: 2023-10-11	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.8		Id: 3/7



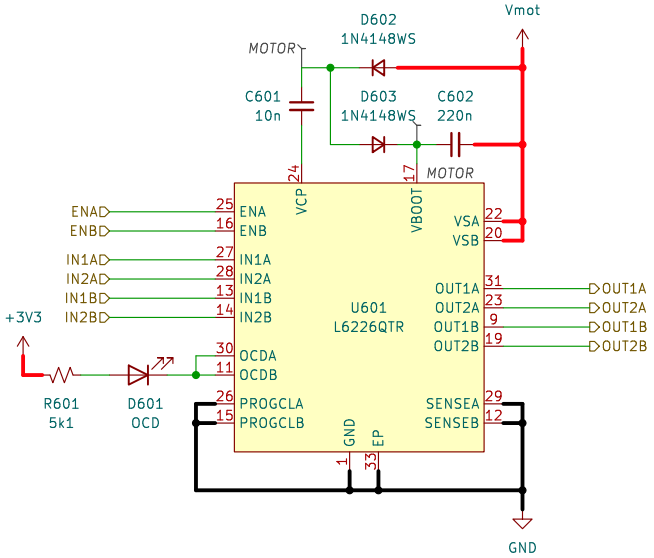
matei repair lab		
Sheet: /encoder/		
File: encoder.kicad_sch		
Title: MAGNETIC ENCODER 14 BIT		
Size: A4	Date: 2023-10-11	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.8		Id: 4/7





Ra = Rb(Vout/0.9 – 1)
3.36V (closest to 3v3 with basic parts)

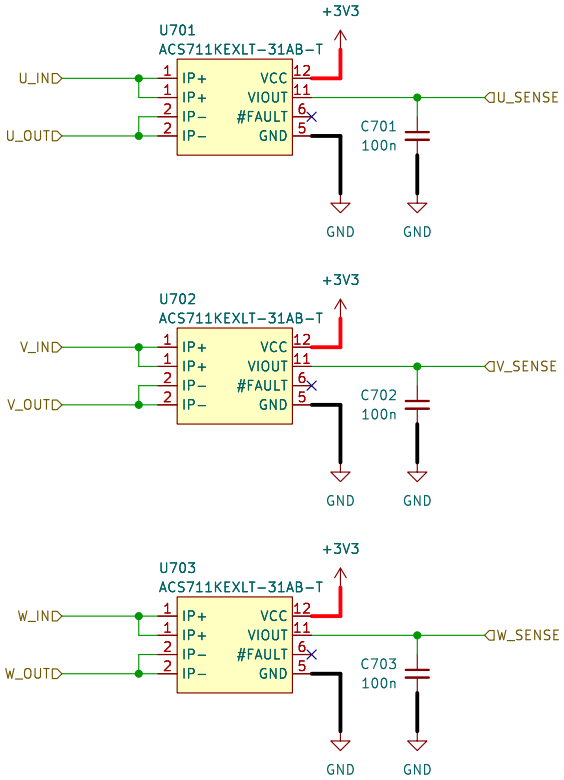
matei repair lab		
Sheet: /psu/		
File: psu.kicad_sch		
Title: POWER SUPPLY & FILTERING		
Size: A4	Date: 2023-10-11	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.8		Id: 6/7



Sheet: /half bridges/
File: halfbridges.kicad_sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 7.0.8		Id: 7/7



5A model
410mV/A sensitivity

expected current +-1A (2A peak)
820mV range -> 3.3V
need gain of ~4 at G431 OP-AMP input
for full resolution

due to "hybrid" phase connection, it may be possible
to have 8x gain on the independent phases, and
just this 4x gain on the center tap.

matei repair lab		
Sheet: /current sense/		
File: currentsense.kicad_sch		
Title: HALL CURRENT SENSING		
Size: A4	Date: 2023-10-11	**Rev: 0.1**
KiCad E.D.A. kicad 7.0.8		Id: 8/7