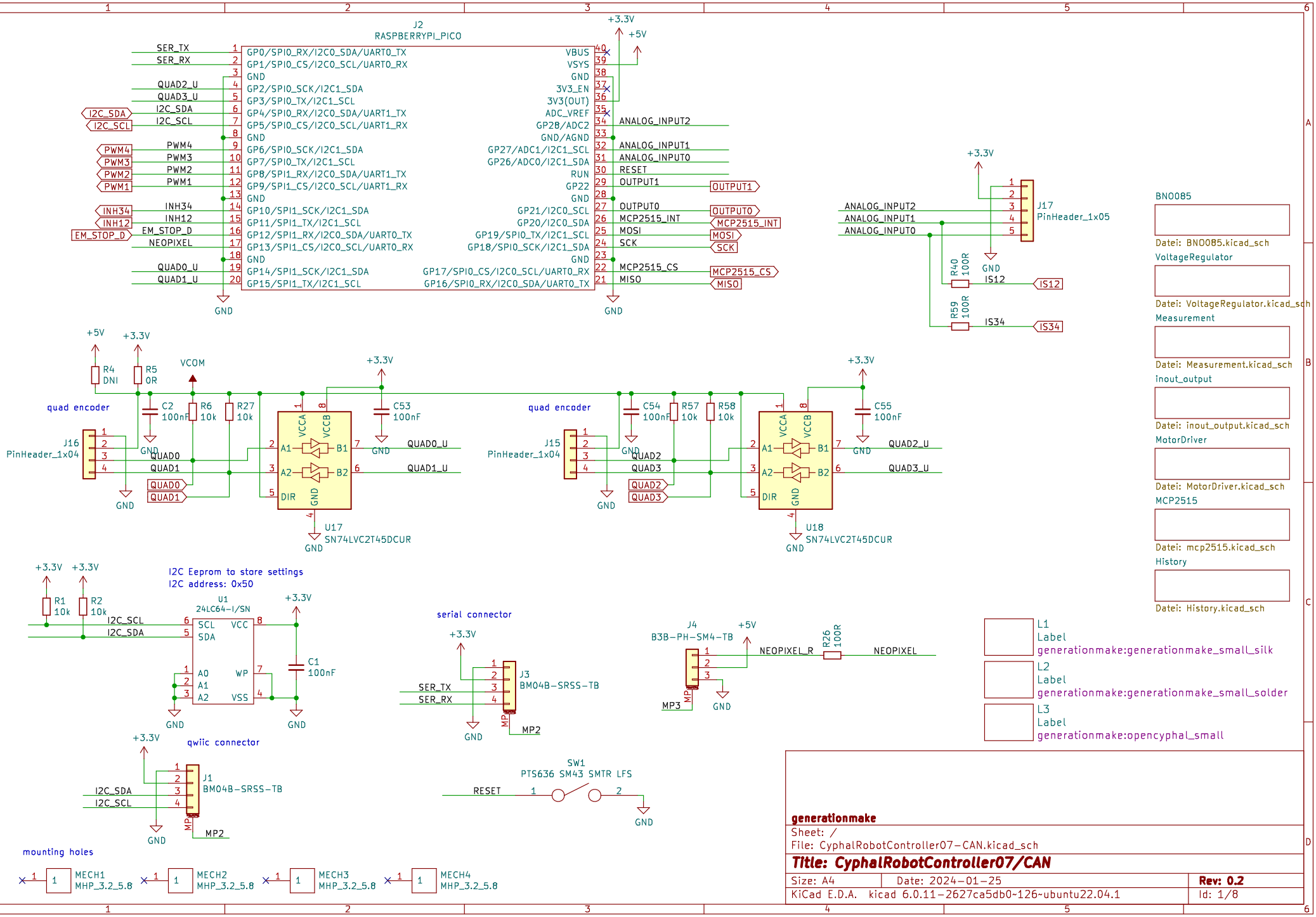
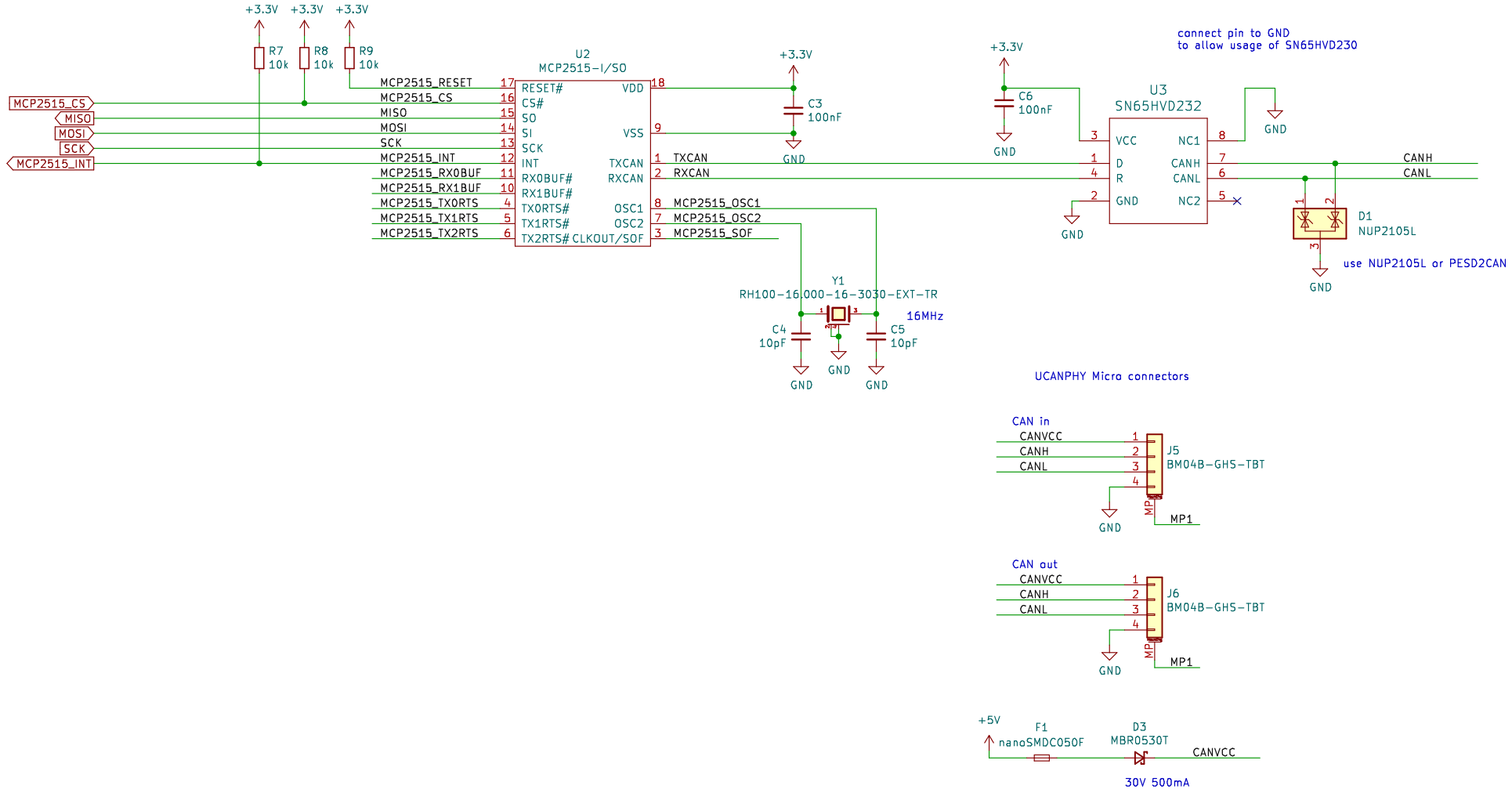
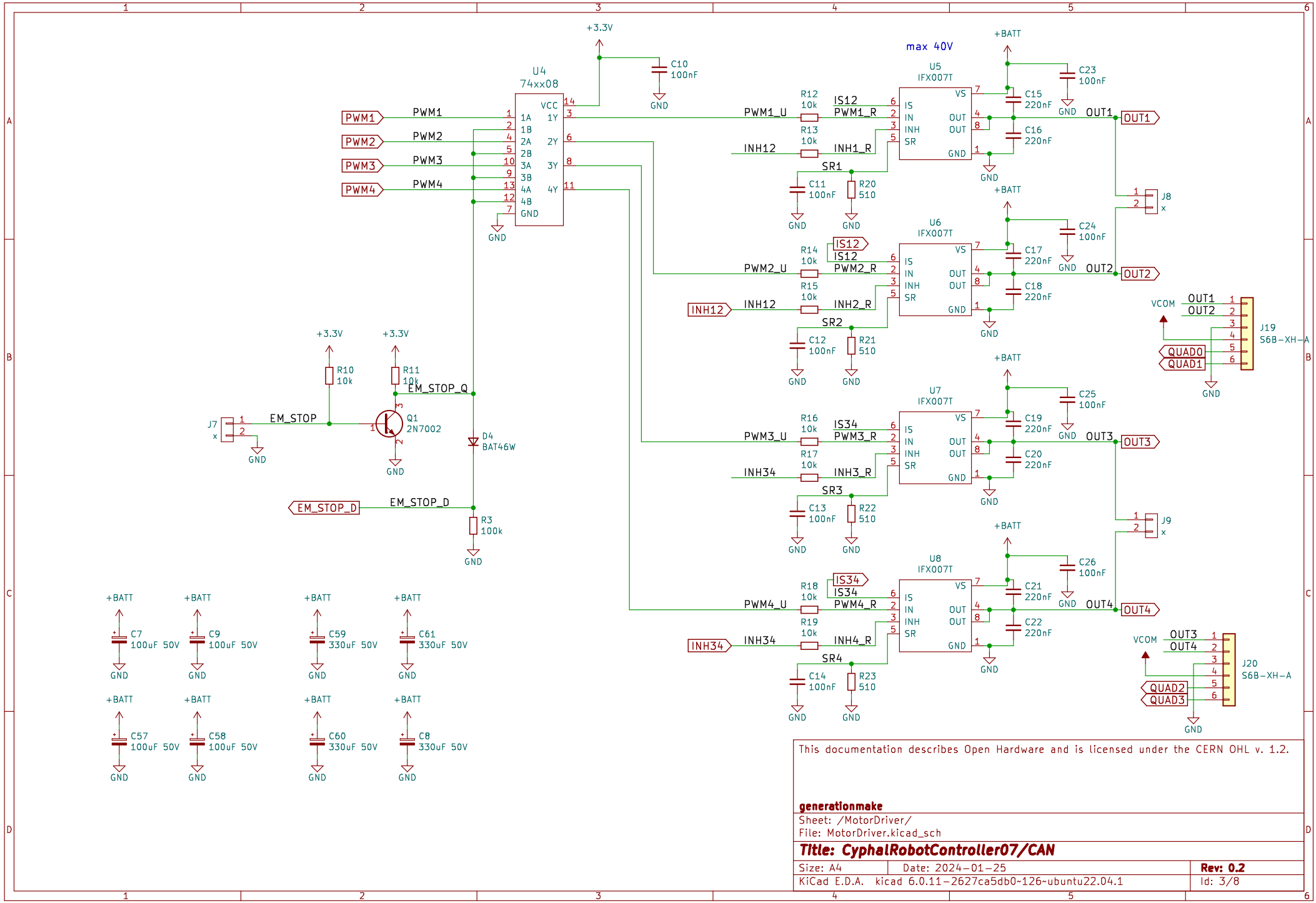
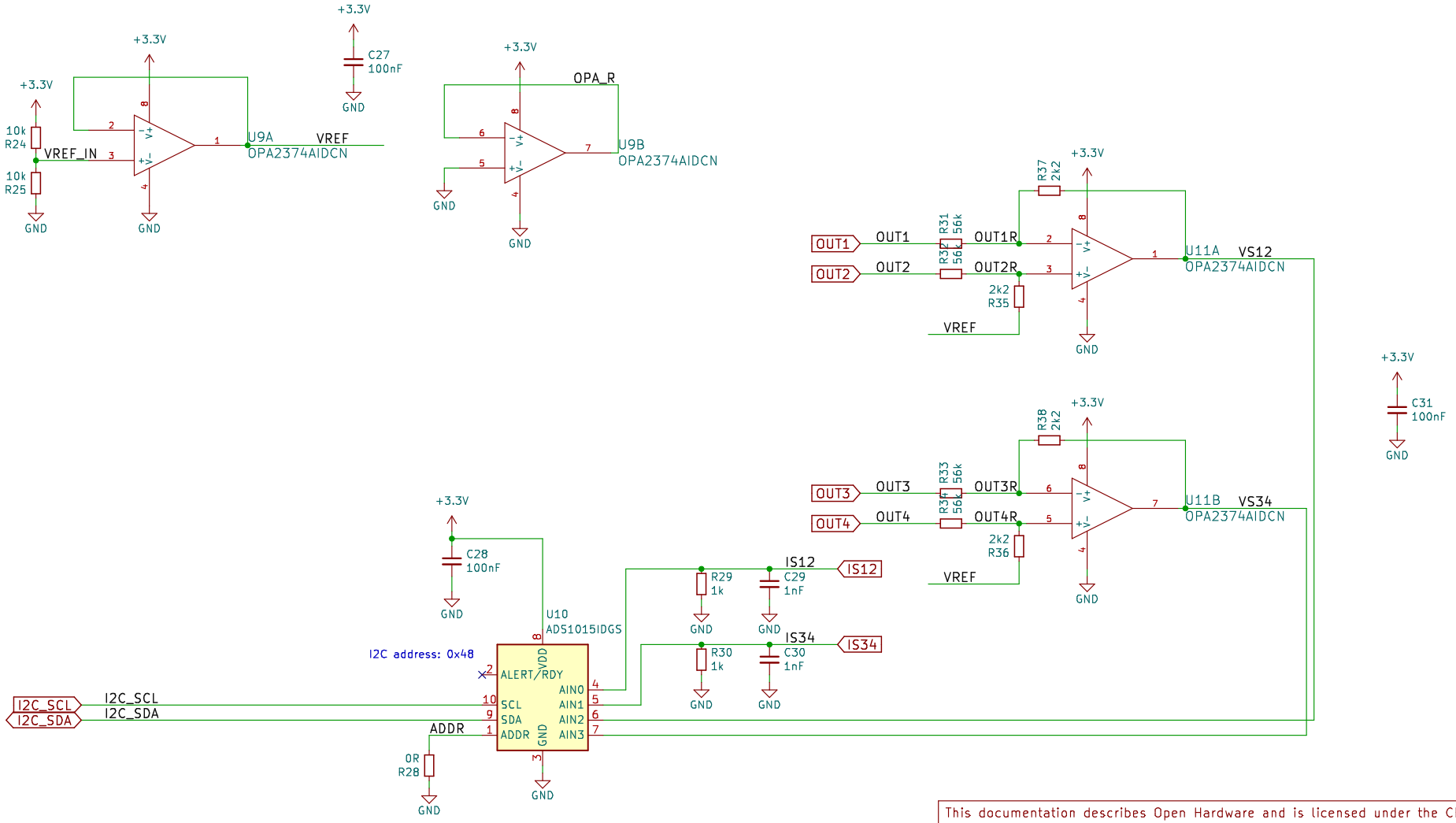

J2
RASPBERRYPI_PICO
GP0/SPI0_RX/I2C0_SDA/UART0_TX
GP1/SPI0_CS/I2C0_SCL/UART0_RX
GP2/SPI0_SCK/I2C1_SDA
GP3/SPI0_TX/I2C1_SCL
GP4/SPI0_RX/I2C0_SDA/UART1_TX
GP5/SPI0_CS/I2C0_SCL/UART1_RX
GP6/SPI0_SCK/I2C1_SDA
GP7/SPI0_TX/I2C1_SCL
GP8/SPI1_RX/I2C0_SDA/UART1_TX
GP9/SPI1_CS/I2C0_SCL/UART1_RX
GP10/SPI1_SCK/I2C1_SDA
GP11/SPI1_TX/I2C1_SCL
GP12/SPI1_RX/I2C0_SDA/UART0_TX
GP13/SPI1_CS/I2C0_SCL/UART0_RX
GP14/SPI1_SCK/I2C1_SDA
GP15/SPI1_TX/I2C1_SCL
VBUS
VSYS
3V3_EN
3V3(OUT)
ADC_VREF
GP28/ADC2
GP27/ADC1/I2C1_SCL
GP26/ADC0/I2C1_SDA
RUN
GP22
GP21/I2C0_SCL
GP20/I2C0_SDA
GP19/SPI0_TX/I2C1_SCL
GP18/SPI0_SCK/I2C1_SDA
GP17/SPI0_CS/I2C0_SCL/UART0_RX
GP16/SPI0_RX/I2C0_SDA/UART0_TX
SER_TX
SER_RX
QUAD2_U
QUAD3_U
I2C_SDA
I2C_SCL
PWM4
PWM3
PWM2
PWM1
INH34
INH12
EM_STOP_D
NEOPIXEL
QUAD0_U
QUAD1_U
ANALOG_INPUT2
ANALOG_INPUT1
ANALOG_INPUT0
RESET
OUTPUT1
OUTPUT0
MCP2515_INT
MOSI
SCK
MCP2515_CS
MISO
+3.3V
+5V
GND
J17
PinHeader_1x05
R40
100R
R59
100R
IS12
IS34
quad encoder
J16
PinHeader_1x04
J15
R4
DNI
R5
0R
VCOM
C2
100nF
R6
10k
R27
10k
C53
100nF
C54
C55
R57
R58
QUAD0
QUAD1
QUAD2
QUAD3
U17
U18
SN74LVC2T45DCUR
VCCA
VCCB
A1
A2
B1
B2
DIR
I2C Eeprom to store settings
I2C address: 0x50
U1
24LC64-I/SN
R1
10k
R2
10k
C1
100nF
SCL
SDA
VCC
WP
VSS
A0
A1
A2
serial connector
J3
BM04B-SRSS-TB
MP2
J4
B3B-PH-SM4-TB
MP3
NEOPIXEL_R
R26
100R
NEOPIXEL
qwiic connector
J1
SW1
PTS636 SM43 SMTR LFS
RESET
mounting holes
MECH1
MECH2
MECH3
MECH4
MHP_3.2_5.8
BNO085
Datei: BNO085.kicad_sch
VoltageRegulator
Datei: VoltageRegulator.kicad_sch
Measurement
Datei: Measurement.kicad_sch
inout_output
Datei: inout_output.kicad_sch
MotorDriver
Datei: MotorDriver.kicad_sch
MCP2515
Datei: mcp2515.kicad_sch
History
Datei: History.kicad_sch
L1
Label
generationmake:generationmake_small_silk
L2
Label
generationmake:generationmake_small_solder
L3
Label
generationmake:opencyphal_small
generationmake
Sheet: /
File: CyphalRobotController07-CAN.kicad_sch
Title: CyphalRobotController07/CAN
Size: A4
Date: 2024-01-25
Rev: 0.2
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1
Id: 1/8



generationmake		
Sheet: /MCP2515/		
File: mcp2515.kicad_sch		
Title: CyphalRobotController07/CAN		
Size: A4	Date: 2024-01-25	**Rev: 0.2**
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1		Id: 2/8


max 40V
U4
74xx08
U5
IFX007T
U6
IFX007T
U7
IFX007T
U8
IFX007T
+3.3V
+BATT
GND
PWM1
PWM2
PWM3
PWM4
PWM1_U
PWM2_U
PWM3_U
PWM4_U
PWM1_R
PWM2_R
PWM3_R
PWM4_R
IS12
IS34
INH12
INH34
INH1_R
INH2_R
INH3_R
INH4_R
SR1
SR2
SR3
SR4
OUT1
OUT2
OUT3
OUT4
EM_STOP
EM_STOP_Q
EM_STOP_D
VCOM
QUAD0
QUAD1
QUAD2
QUAD3
J19
S6B-XH-A
J20
S6B-XH-A
Q1
2N7002
D4
BAT46W
This documentation describes Open Hardware and is licensed under the CERN OHL v. 1.2.
generationmake
Sheet: /MotorDriver/
File: MotorDriver.kicad_sch
Title: CyphalRobotController07/CAN
Size: A4
Date: 2024-01-25
Rev: 0.2
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1
Id: 3/8



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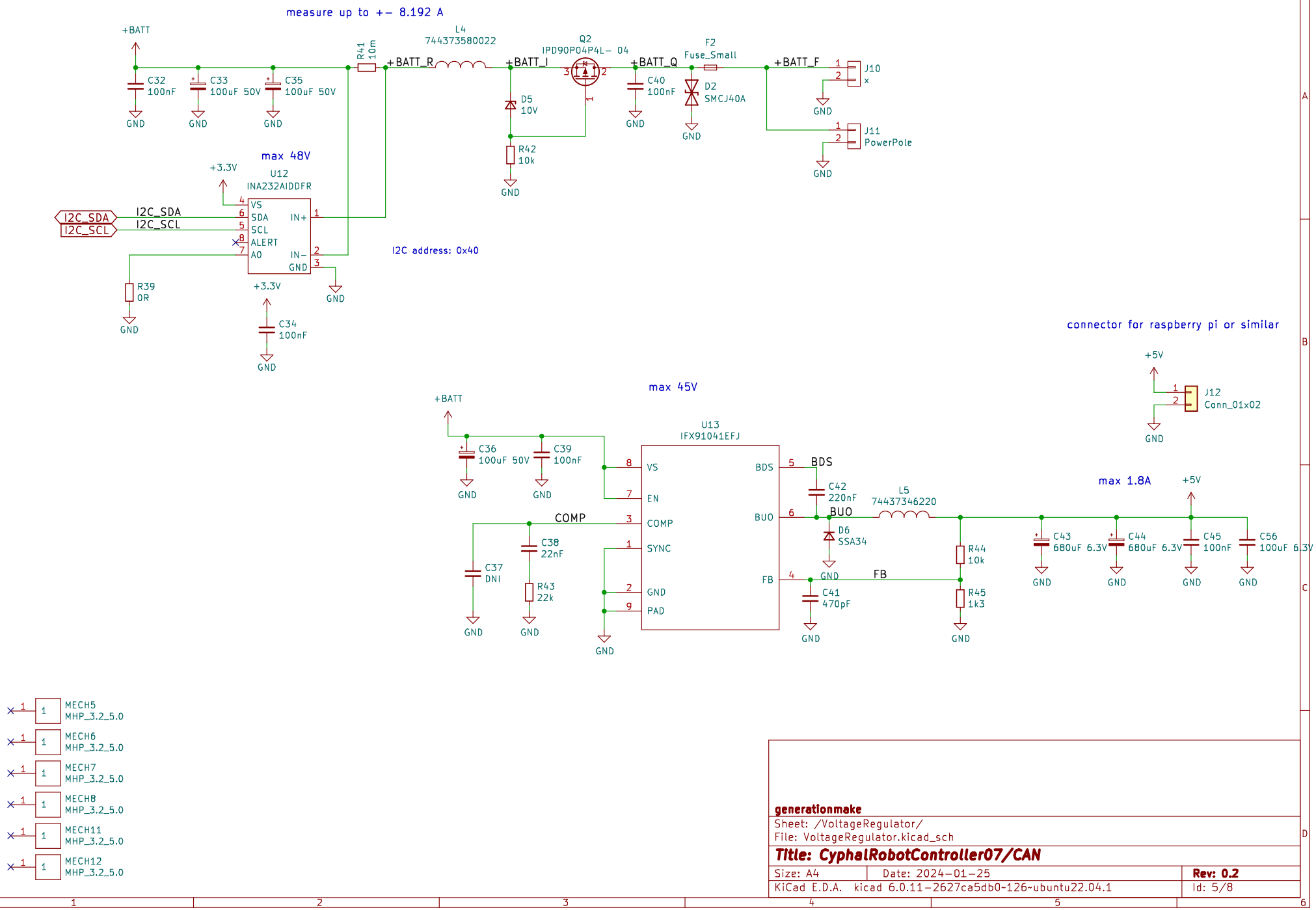
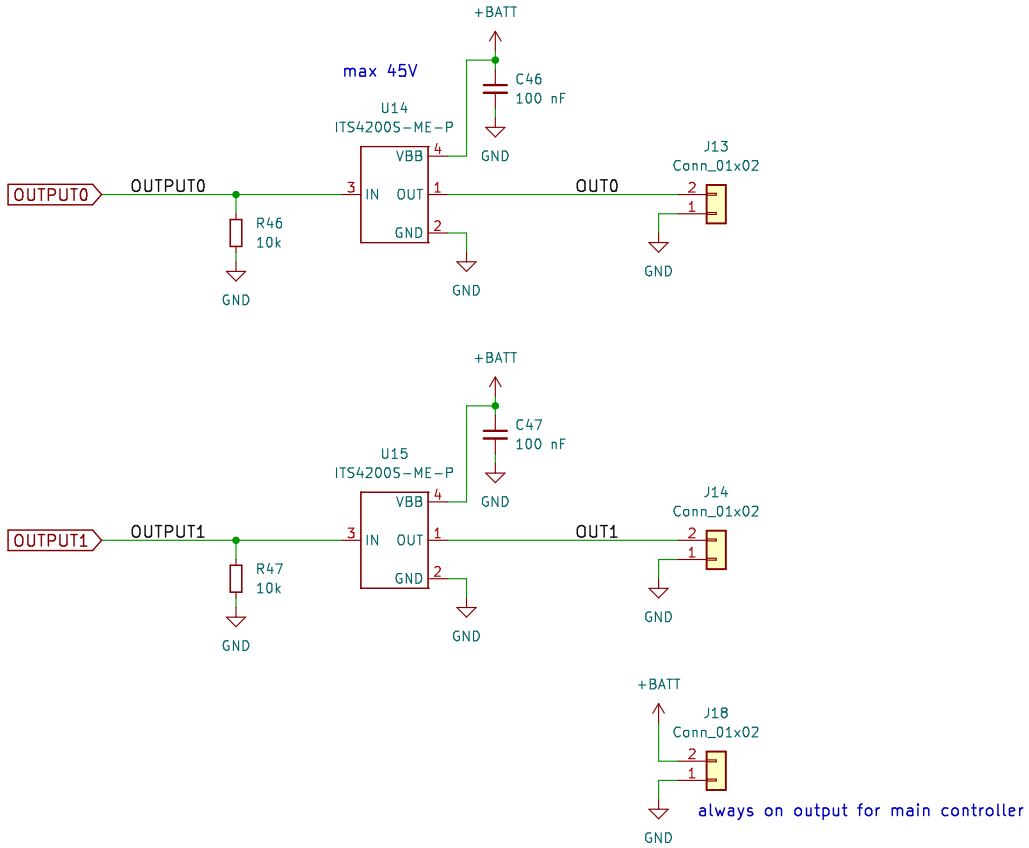
generationmake

Sheet: /Measurement/
File: Measurement.kicad_sch

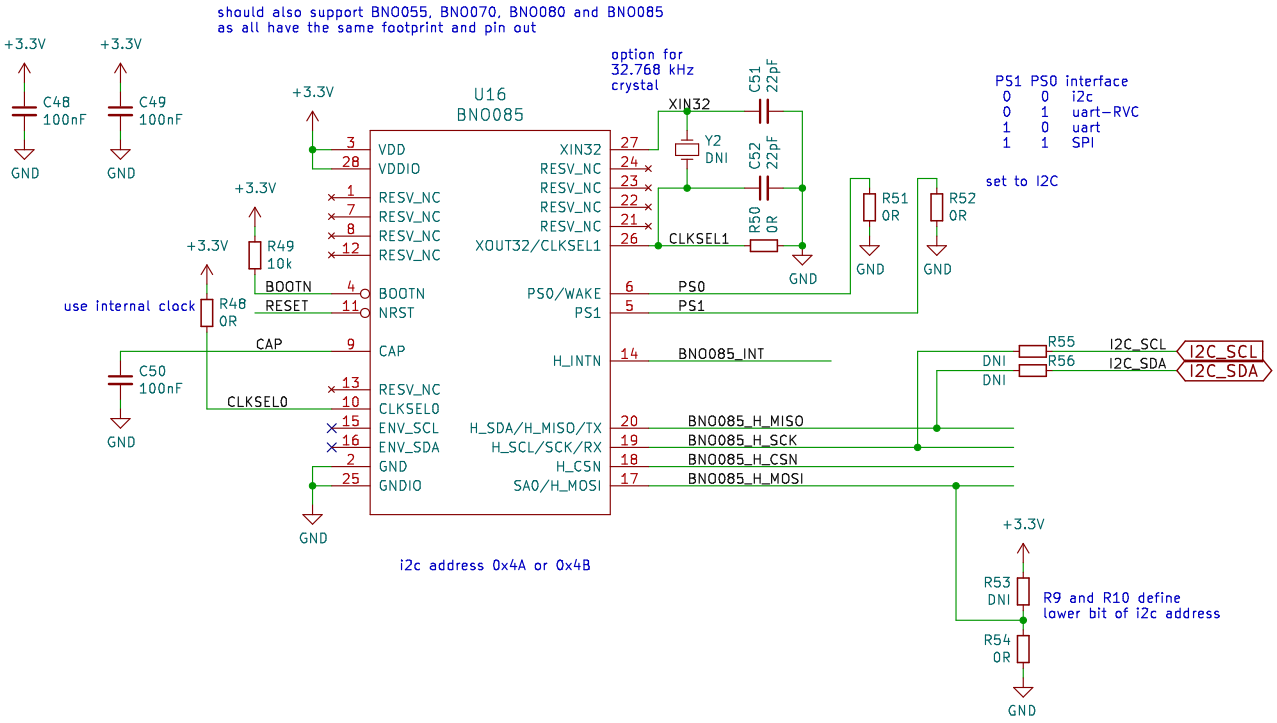
Title: CyphalRobotController07/CAN

Size: A4	Date: 2024-01-25	**Rev: 0.2**
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1		Id: 4/8


measure up to +- 8.192 A
+BATT
C32
100nF
C33
100uF 50V
C35
100uF 50V
GND
R41
10m
L4
744373580022
+BATT_R
+BATT_I
Q2
IPD90P04P4L- 04
D5
10V
R42
10k
+BATT_Q
C40
100nF
F2
Fuse_Small
D2
SMCJ40A
+BATT_F
J10
x
J11
PowerPole
max 48V
+3.3V
U12
INA232AIDDFR
I2C_SDA
I2C_SCL
VS
SDA
SCL
ALERT
A0
IN+
IN-
GND
I2C address: 0x40
R39
0R
C34
100nF
connector for raspberry pi or similar
+5V
J12
Conn_01x02
max 45V
U13
IFX91041EFJ
C36
100uF 50V
C39
100nF
VS
EN
COMP
SYNC
GND
PAD
BDS
BUO
FB
C42
220nF
L5
74437346220
D6
SSA34
C41
470pF
R44
10k
R45
1k3
C37
DNI
C38
22nF
R43
22k
max 1.8A
C43
680uF 6.3V
C44
680uF 6.3V
C45
100nF
C56
100uF 6.3V
MECH5
MECH6
MECH7
MECH8
MECH11
MECH12
MHP_3.2_5.0
generationmake
Sheet: /VoltageRegulator/
File: VoltageRegulator.kicad_sch
Title: CyphalRobotController07/CAN
Size: A4
Date: 2024-01-25
Rev: 0.2
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1
Id: 5/8



generationmake		
Sheet: /inout_output/		
File: inout_output.kicad_sch		
Title: CyphalRobotController07/CAN		
Size: A4	Date: 2024-01-25	**Rev: 0.2**
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1		Id: 6/8



generationmake		
Sheet: /BNO085/		
File: BNO085.kicad_sch		
Title: CyphalRobotController07/CAN		
Size: A4	Date: 2024-01-25	**Rev: 0.2**
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1		Id: 7/8

0.1	2023-10-01	Bernhard Mayer	initial release
0.2	2023-12-03	Bernhard Mayer	combined 3.3V nets
	2023-12-03	Bernhard Mayer	changed R45 to 1k3
	2023-12-03	Bernhard Mayer	added weak pull down on EM_STOP_D
	2023-12-03	Bernhard Mayer	added always on connector for +BATT
	2023-12-03	Bernhard Mayer	added JST XH connector for motor and encoder
	2024-01-15	Bernhard Mayer	added level converters on encoder inputs
	2024-01-21	Bernhard Mayer	used raspberry pi pico with headers
	2024-01-21	Bernhard Mayer	added protection on CAN
	2024-01-21	Bernhard Mayer	added tvs diode on input
	2024-01-21	Bernhard Mayer	replaced tantal with electrolytic capacitors
	2024-01-22	Bernhard Mayer	replaced INA226 by INA232 to support up to 40V
	2024-01-22	Bernhard Mayer	connected current sense output to analog in of RP2040

generationmake

Sheet: /History/
File: History.kicad_sch

Title: CyphalRobotController07/CAN

Size: A4	Date: 2024-01-25	**Rev: 0.2**
KiCad E.D.A. kicad 6.0.11-2627ca5db0~126~ubuntu22.04.1		Id: 8/8