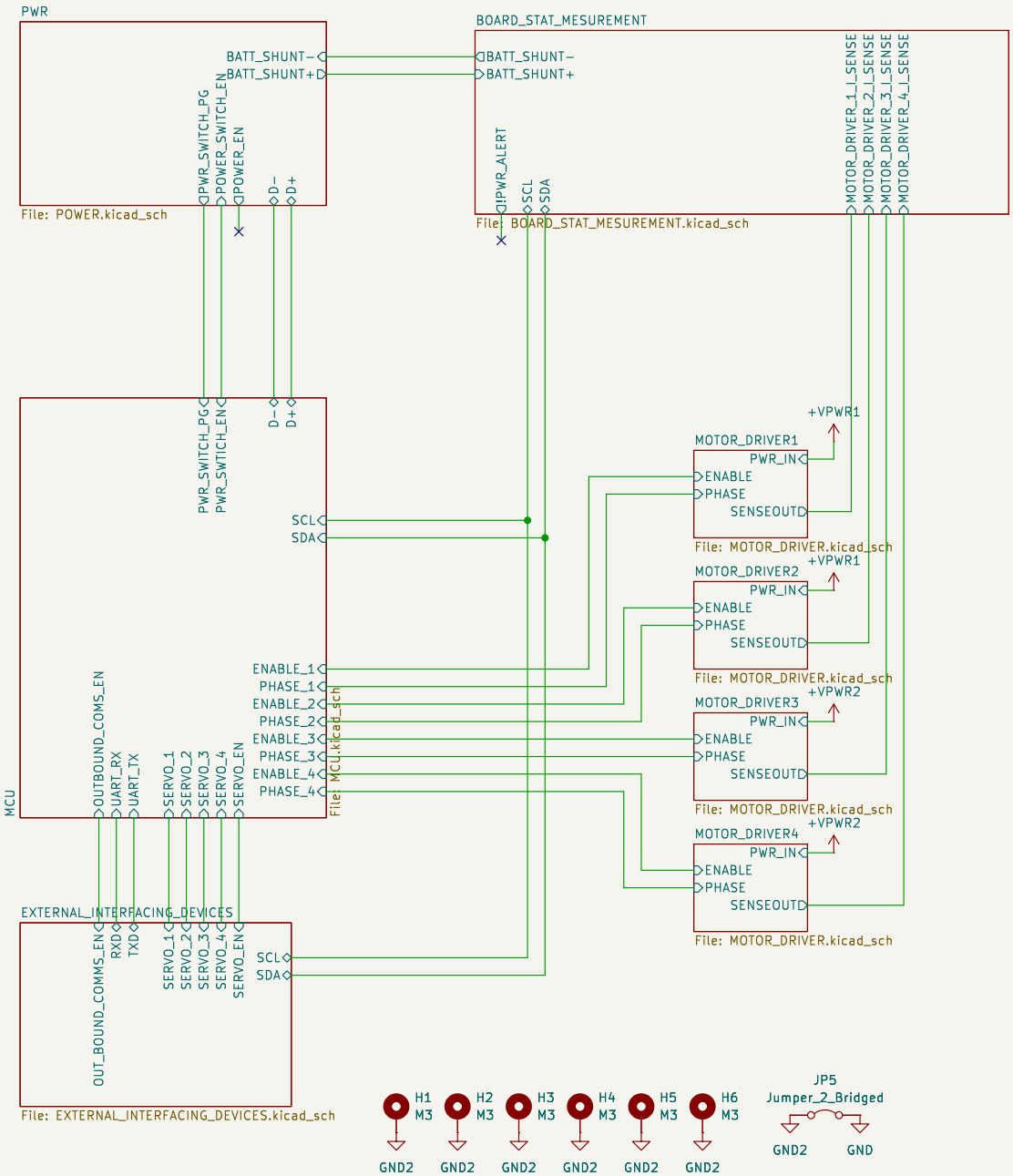

CHANGE LOG

Sheet: / File: esp32-racer.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
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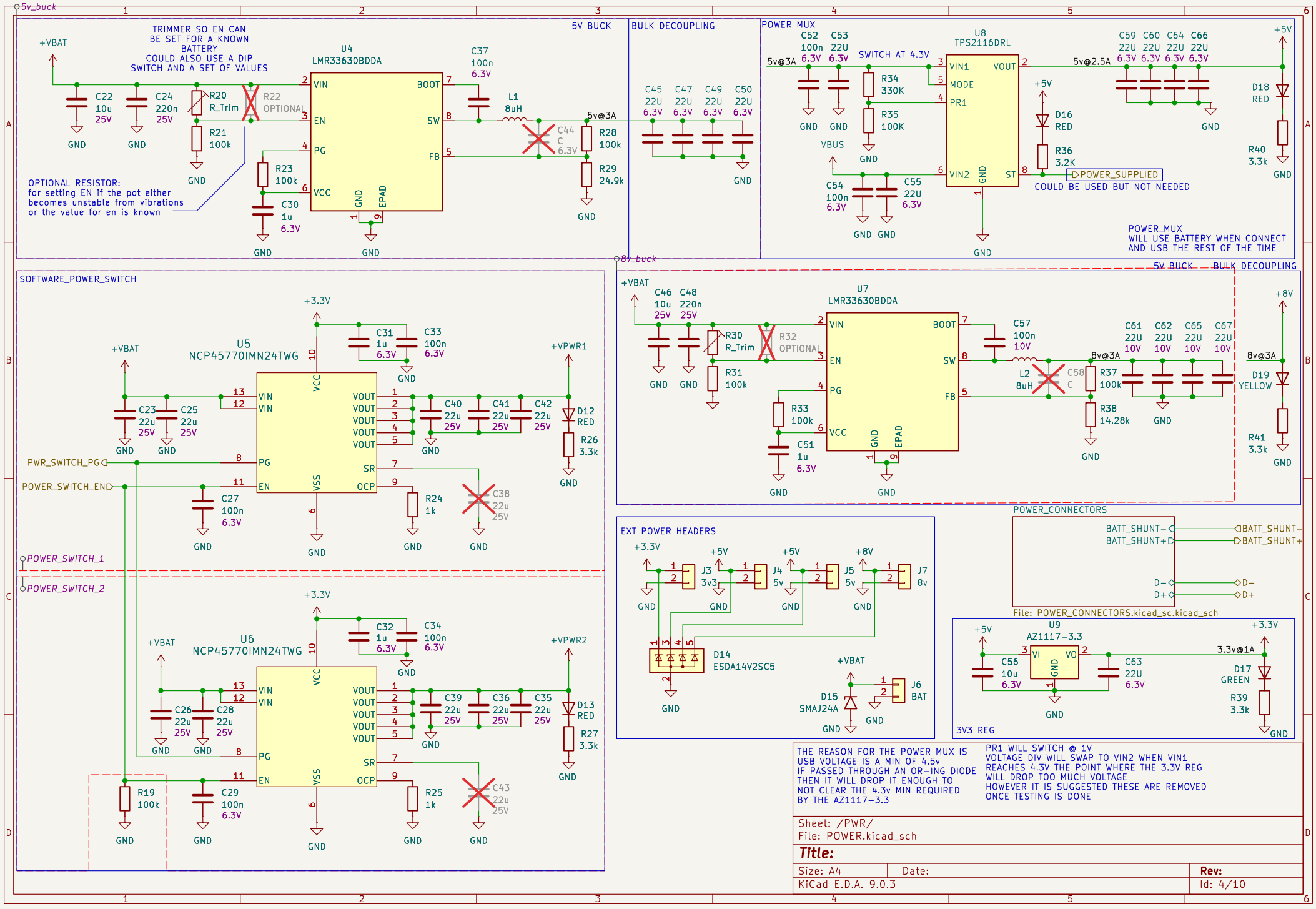
5v_buck
5V BUCK
BULK DECOUPLING
POWER MUX
TRIMMER SO EN CAN BE SET FOR A KNOWN BATTERY COULD ALSO USE A DIP SWITCH AND A SET OF VALUES
+VBAT
U4
LMR33630BDDA
VIN
EN
PG
VCC
BOOT
SW
FB
GND
EPAD
C22 10u 25V
C24 220n 25V
R20 R_Trim
R22 OPTIONAL
R21 100k
R23 100k
C30 1u 6.3V
C37 100n 6.3V
L1 8uH
C44 C 6.3V
R28 100k
R29 24.9k
5v@3A
C45 C47 C49 C50 22U 6.3V
OPTIONAL RESISTOR:
for setting EN if the pot either becomes unstable from vibrations or the value for en is known
U8
TPS2116DRL
VIN1
VIN2
MODE
PR1
VOUT
ST
SWITCH AT 4.3V
5v@3A
5v@2.5A
C52 100n 6.3V
C53 22U 6.3V
R34 330K
R35 100K
C54 100n 6.3V
C55 22U 6.3V
C59 C60 C64 C66 22U 6.3V
D16 RED
R36 3.2K
D18 RED
R40 3.3k
+5V
VBUS
POWER_SUPPLIED
COULD BE USED BUT NOT NEEDED
POWER_MUX
WILL USE BATTERY WHEN CONNECT AND USB THE REST OF THE TIME
8v_buck
5V BUCK
BULK DECOUPLING
U7
LMR33630BDDA
C46 10u 25V
C48 220n 25V
R30 R_Trim
R32 OPTIONAL
R31 100k
R33 100k
C51 1u 6.3V
C57 100n 10V
L2 8uH
C58 C
R37 100k
R38 14.28k
C61 C62 C65 C67 22U 10V
8v@3A
D19 YELLOW
R41 3.3k
+8V
SOFTWARE_POWER_SWITCH
U5
NCP45770IMN24TWG
+3.3V
+VPWR1
C31 1u 6.3V
C33 100n 6.3V
C23 C25 22u 25V
C40 C41 C42 22u 25V
D12 RED
R26 3.3k
PWR_SWITCH_PG
POWER_SWITCH_END
C27 100n 6.3V
R24 1k
C38 22u 25V
POWER_SWITCH_1
POWER_SWITCH_2
U6
NCP45770IMN24TWG
+VPWR2
C32 1u 6.3V
C34 100n 6.3V
C26 C28 22u 25V
C39 C36 C35 22u 25V
D13 RED
R27 3.3k
R19 100k
C29 100n 6.3V
R25 1k
C43 22u 25V
EXT POWER HEADERS
J3 3v3
J4 5v
J5 5v
J7 8v
J6 BAT
D14 ESDA14V2SC5
D15 SMAJ24A
POWER_CONNECTORS
BATT_SHUNT-
BATT_SHUNT+
D-
D+
File: POWER_CONNECTORS.kicad_sc.kicad_sch
U9
AZ1117-3.3
VI
VO
C56 10u 6.3V
C63 22U 6.3V
3.3v@1A
D17 GREEN
R39 3.3k
3V3 REG
THE REASON FOR THE POWER MUX IS USB VOLTAGE IS A MIN OF 4.5v IF PASSED THROUGH AN OR-ING DIODE THEN IT WILL DROP IT ENOUGH TO NOT CLEAR THE 4.3v MIN REQUIRED BY THE AZ1117-3.3
PR1 WILL SWITCH @ 1V VOLTAGE DIV WILL SWAP TO VIN2 WHEN VIN1 REACHES 4.3V THE POINT WHERE THE 3.3V REG WILL DROP TOO MUCH VOLTAGE HOWEVER IT IS SUGGESTED THESE ARE REMOVED ONCE TESTING IS DONE
Sheet: /PWR/
File: POWER.kicad_sch
Title:
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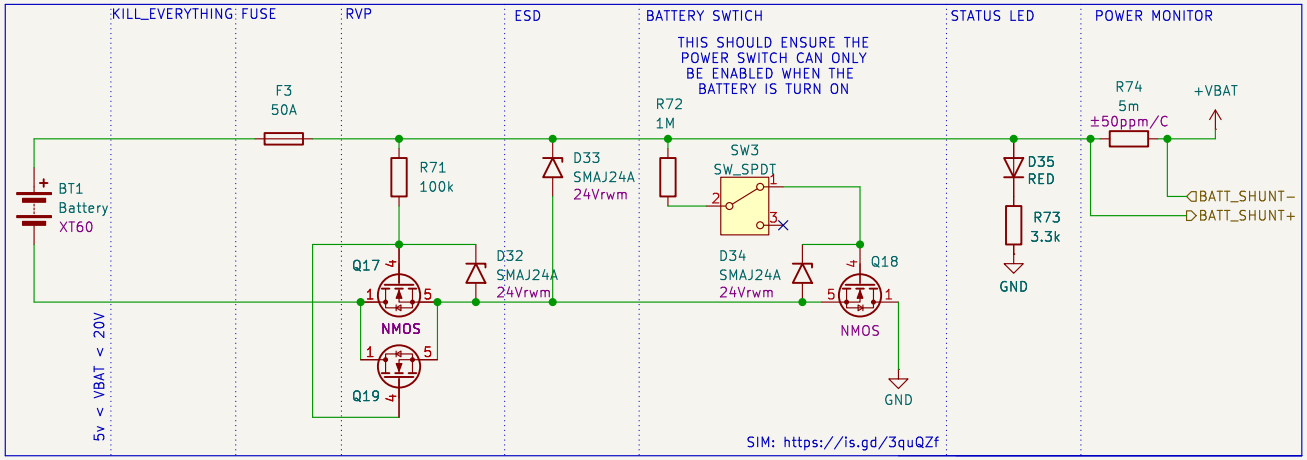

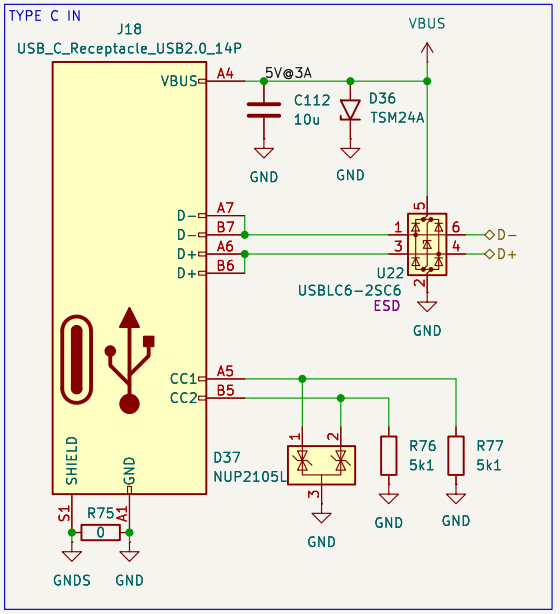

Sheet: /PWR/POWER_CONNECTORS/		
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Size: A4	Date:	**Rev:**
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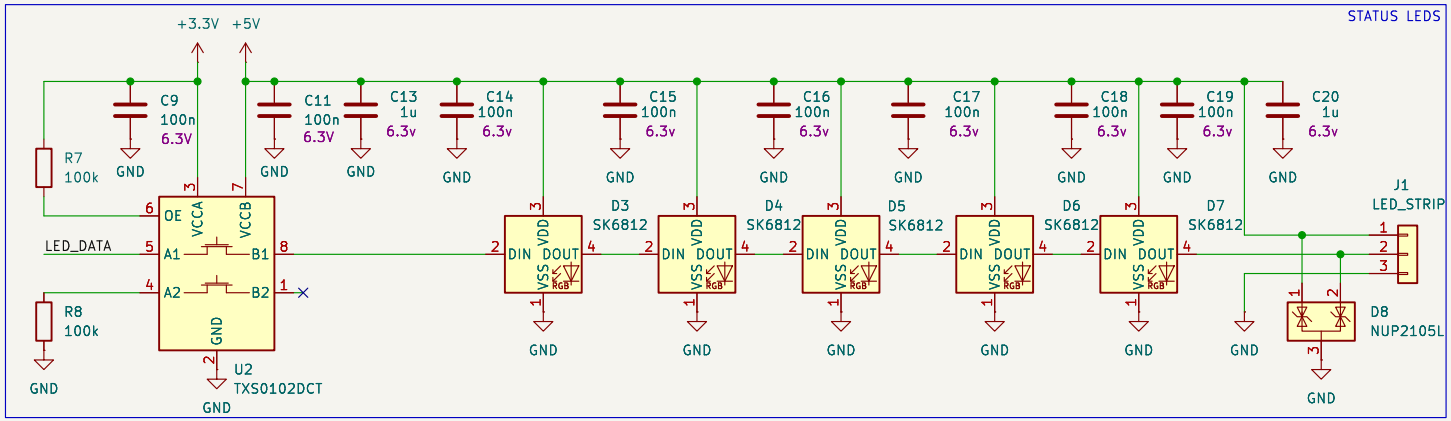

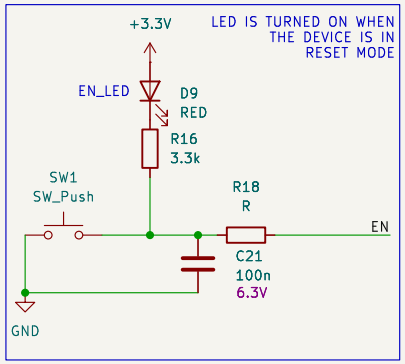

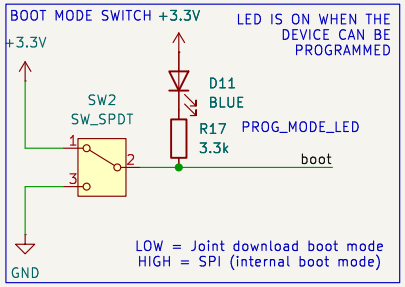

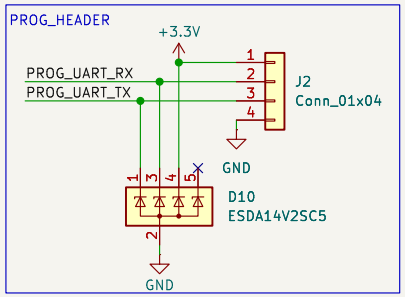

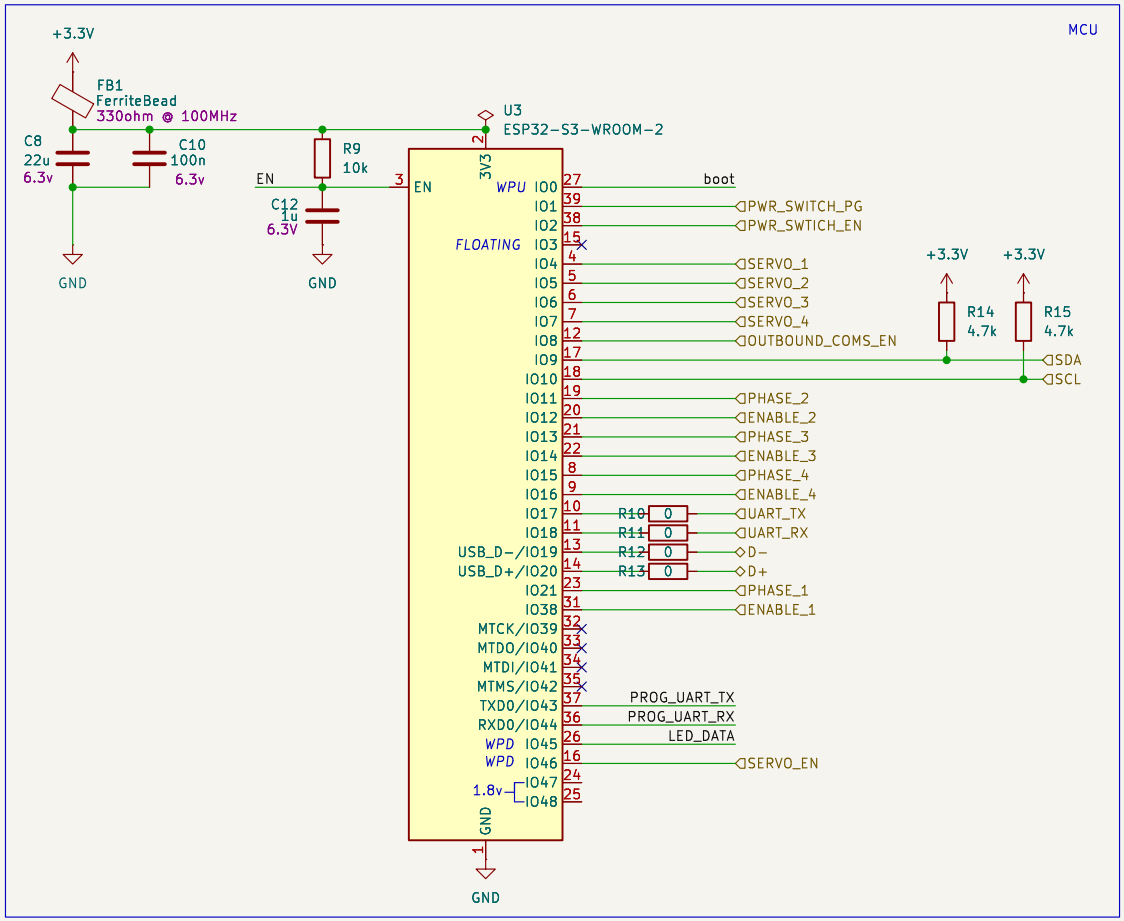

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Title:		
Size: A4	Date:	**Rev:**
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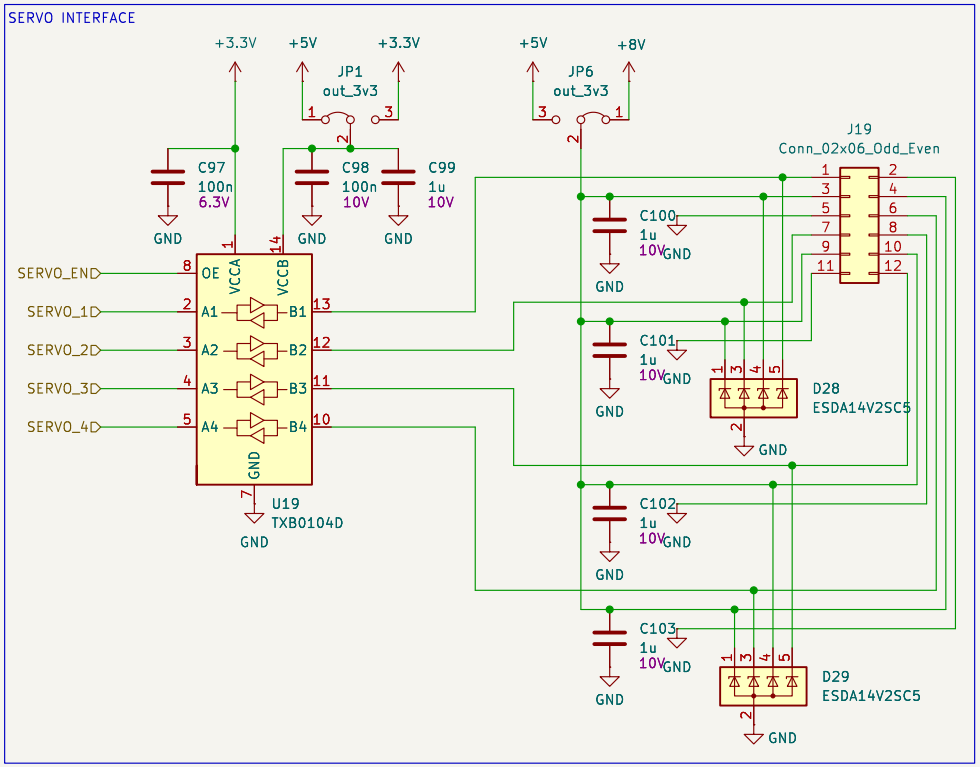

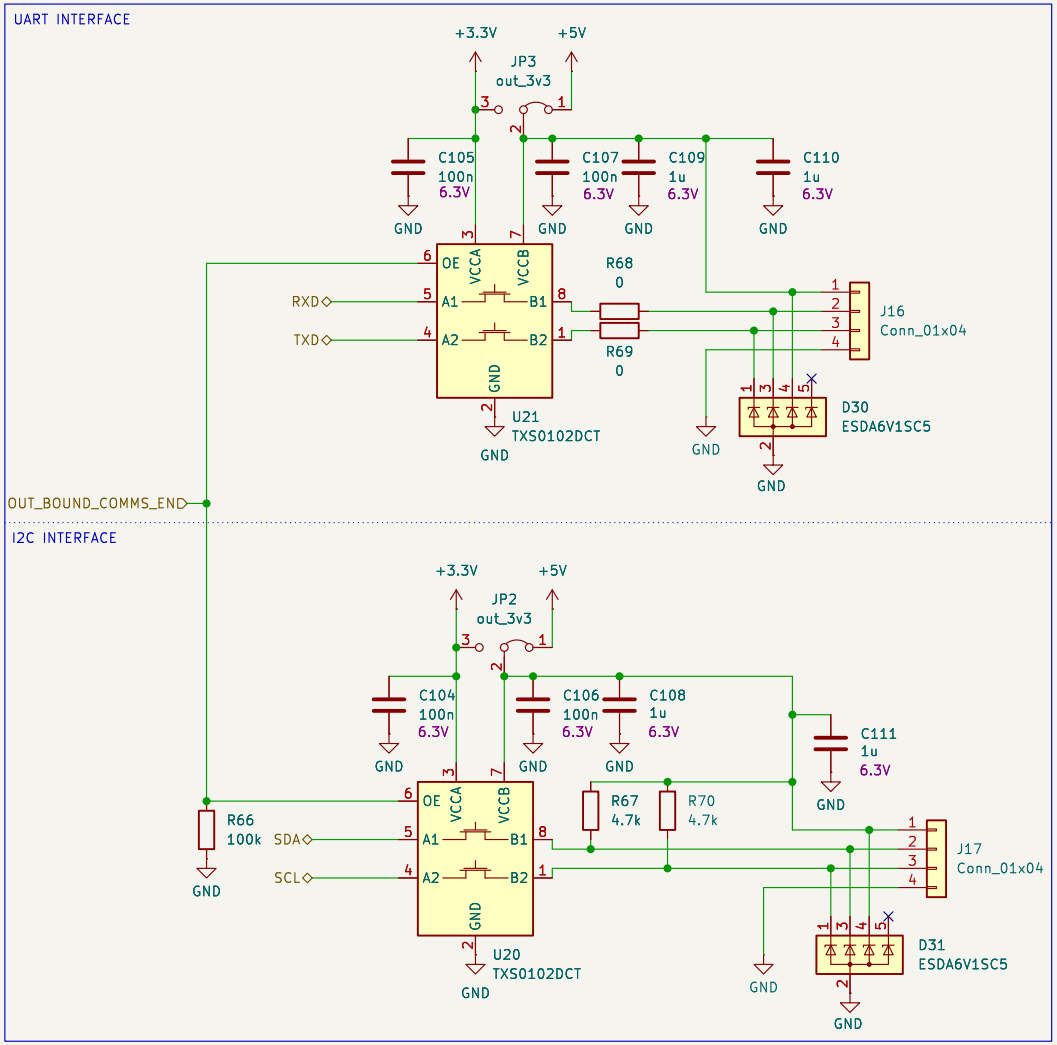

Sheet: /EXTERNAL_INTERFACING_DEVICES/
File: EXTERNAL_INTERFACING_DEVICES.kicad_sch

Title:

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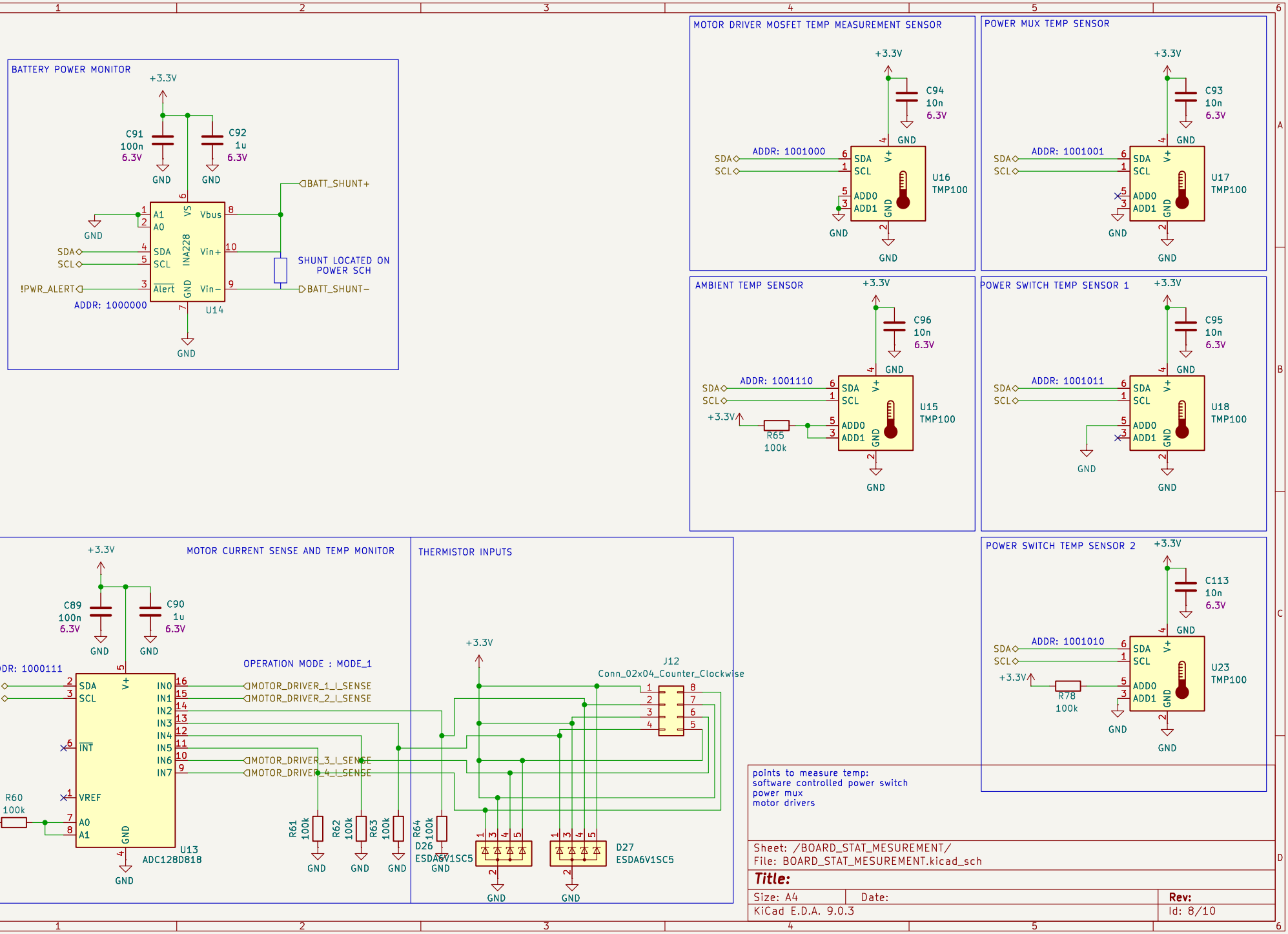
BATTERY POWER MONITOR
+3.3V
C91
100n
6.3V
C92
1u
6.3V
GND
BATT_SHUNT+
A1
A0
SDA
SCL
Alert
VS
Vbus
Vin+
Vin−
INA228
SHUNT LOCATED ON
POWER SCH
!PWR_ALERT
BATT_SHUNT−
ADDR: 1000000
U14
MOTOR DRIVER MOSFET TEMP MEASUREMENT SENSOR
C94
10n
6.3V
ADDR: 1001000
ADD0
ADD1
V+
U16
TMP100
POWER MUX TEMP SENSOR
C93
10n
6.3V
ADDR: 1001001
U17
TMP100
AMBIENT TEMP SENSOR
C96
10n
6.3V
ADDR: 1001110
R65
100k
U15
TMP100
POWER SWITCH TEMP SENSOR 1
C95
10n
6.3V
ADDR: 1001011
U18
TMP100
POWER SWITCH TEMP SENSOR 2
C113
10n
6.3V
ADDR: 1001010
R78
100k
U23
TMP100
MOTOR CURRENT SENSE AND TEMP MONITOR
C89
100n
6.3V
C90
1u
6.3V
ADDR: 1000111
OPERATION MODE : MODE_1
INT
VREF
IN0
IN1
IN2
IN3
IN4
IN5
IN6
IN7
MOTOR_DRIVER_1_I_SENSE
MOTOR_DRIVER_2_I_SENSE
MOTOR_DRIVER_3_I_SENSE
MOTOR_DRIVER_4_I_SENSE
R60
100k
R61
100k
R62
100k
R63
100k
R64
100k
U13
ADC128D818
THERMISTOR INPUTS
J12
Conn_02x04_Counter_Clockwise
D26
ESDA6V1SC5
D27
ESDA6V1SC5
points to measure temp:
software controlled power switch
power mux
motor drivers
Sheet: /BOARD_STAT_MESUREMENT/
File: BOARD_STAT_MESUREMENT.kicad_sch
Title:
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KiCad E.D.A. 9.0.3
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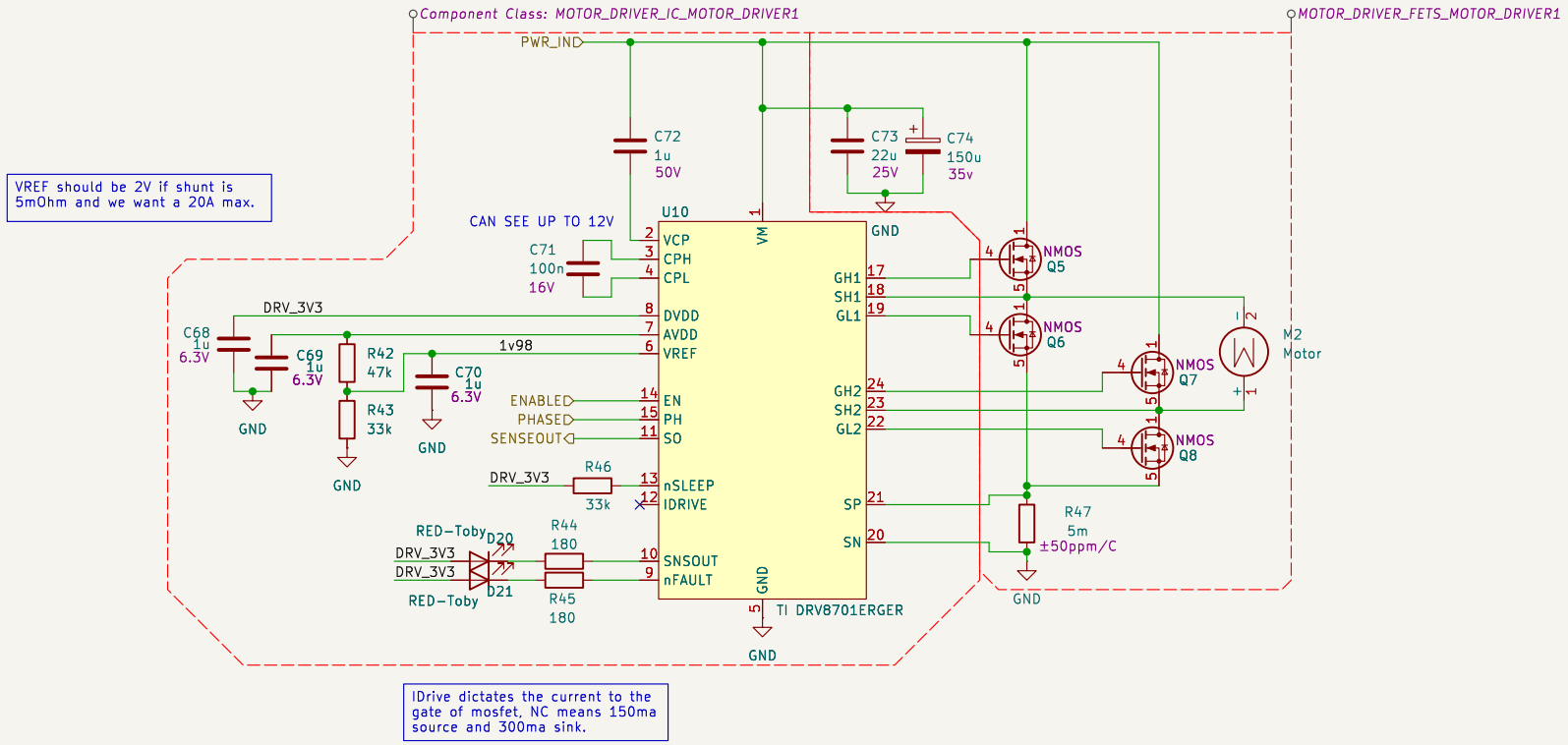

Sheet: /MOTOR_DRIVER1/		
File: MOTOR_DRIVER.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
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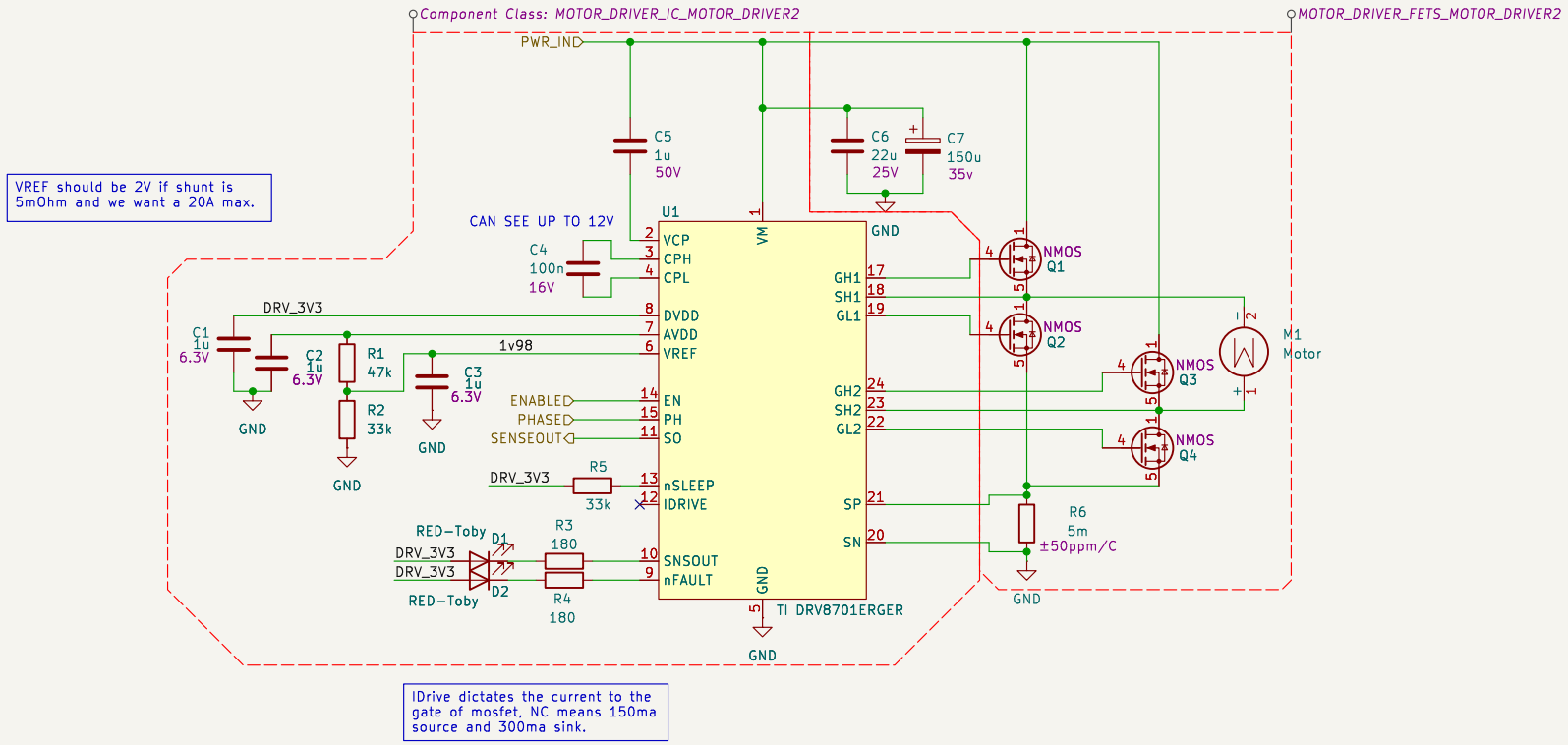
Component Class: MOTOR_DRIVER_IC_MOTOR_DRIVER2
MOTOR_DRIVER_FETS_MOTOR_DRIVER2
VREF should be 2V if shunt is 5mOhm and we want a 20A max.
PWR_IND
C5 1u 50V
C6 22u 25V
C7 150u 35v
CAN SEE UP TO 12V
C4 100n 16V
U1
VCP
CPH
CPL
VM
GND
DVDD
AVDD
VREF
EN
PH
SO
nSLEEP
IDRIVE
SNSOUT
nFAULT
GH1
SH1
GL1
GH2
SH2
GL2
SP
SN
TI DRV8701ERGER
NMOS Q1
NMOS Q2
NMOS Q3
NMOS Q4
M1 Motor
DRV_3V3
C1 1u 6.3V
C2 1u 6.3V
R1 47k
R2 33k
1v98
C3 1u 6.3V
ENABLED
PHASED
SENSEOUT
R5 33k
R3 180
R4 180
RED-Toby
D1
D2
R6 5m ±50ppm/C
IDrive dictates the current to the gate of mosfet, NC means 150ma source and 300ma sink.
Sheet: /MOTOR_DRIVER2/
File: MOTOR_DRIVER.kicad_sch
Title:
Size: A4
Date:
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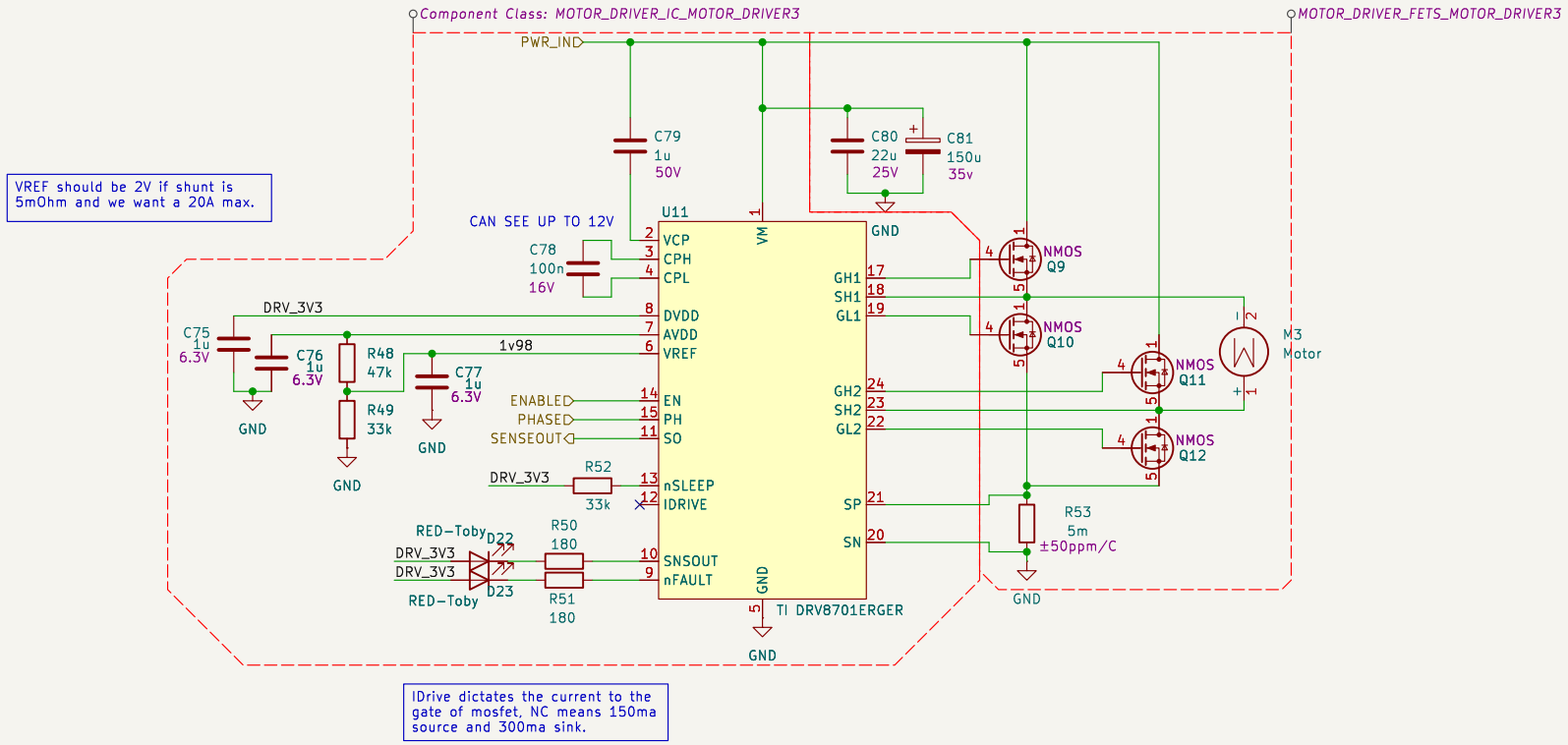
Component Class: MOTOR_DRIVER_IC_MOTOR_DRIVER3
MOTOR_DRIVER_FETS_MOTOR_DRIVER3
VREF should be 2V if shunt is 5mOhm and we want a 20A max.
PWR_IND
C79 1u 50V
C80 22u 25V
C81 150u 35v
CAN SEE UP TO 12V
C78 100n 16V
U11
VCP
CPH
CPL
VM
GND
DVDD
AVDD
VREF
GH1
SH1
GL1
NMOS Q9
NMOS Q10
NMOS Q11
NMOS Q12
M3 Motor
DRV_3V3
C75 1u 6.3V
C76 1u 6.3V
R48 47k
R49 33k
1v98
C77 1u 6.3V
ENABLED
PHASED
SENSEOUT
EN
PH
SO
GH2
SH2
GL2
R52 33k
nSLEEP
IDRIVE
SP
SN
R53 5m ±50ppm/C
RED-Toby
D22
D23
R50 180
R51 180
SNSOUT
nFAULT
TI DRV8701ERGER
IDrive dictates the current to the gate of mosfet, NC means 150ma source and 300ma sink.
Sheet: /MOTOR_DRIVER3/
File: MOTOR_DRIVER.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. 9.0.3
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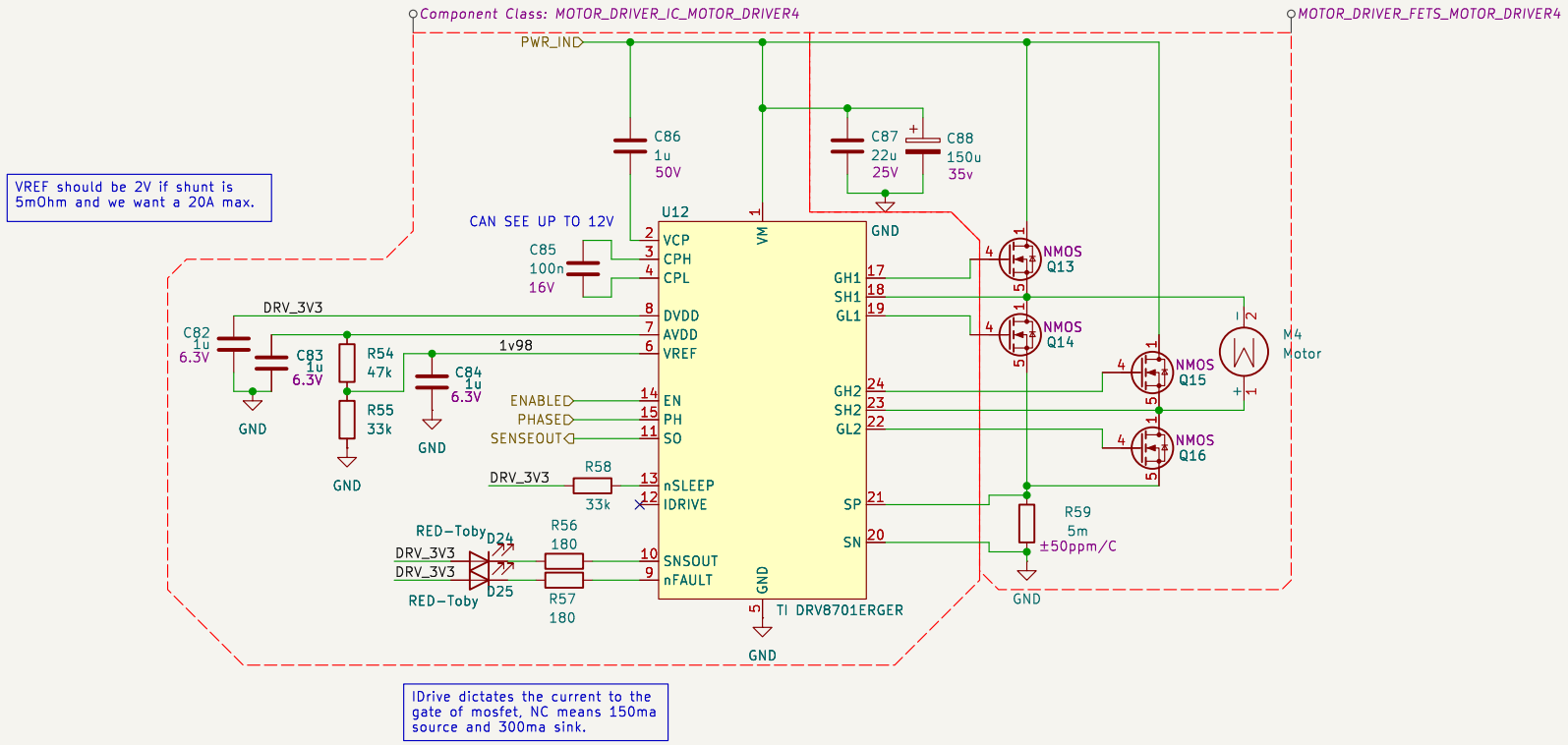

Sheet: /MOTOR_DRIVER4/
File: MOTOR_DRIVER.kicad_sch

Title:

Size: A4 | Date: | **Rev:**
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