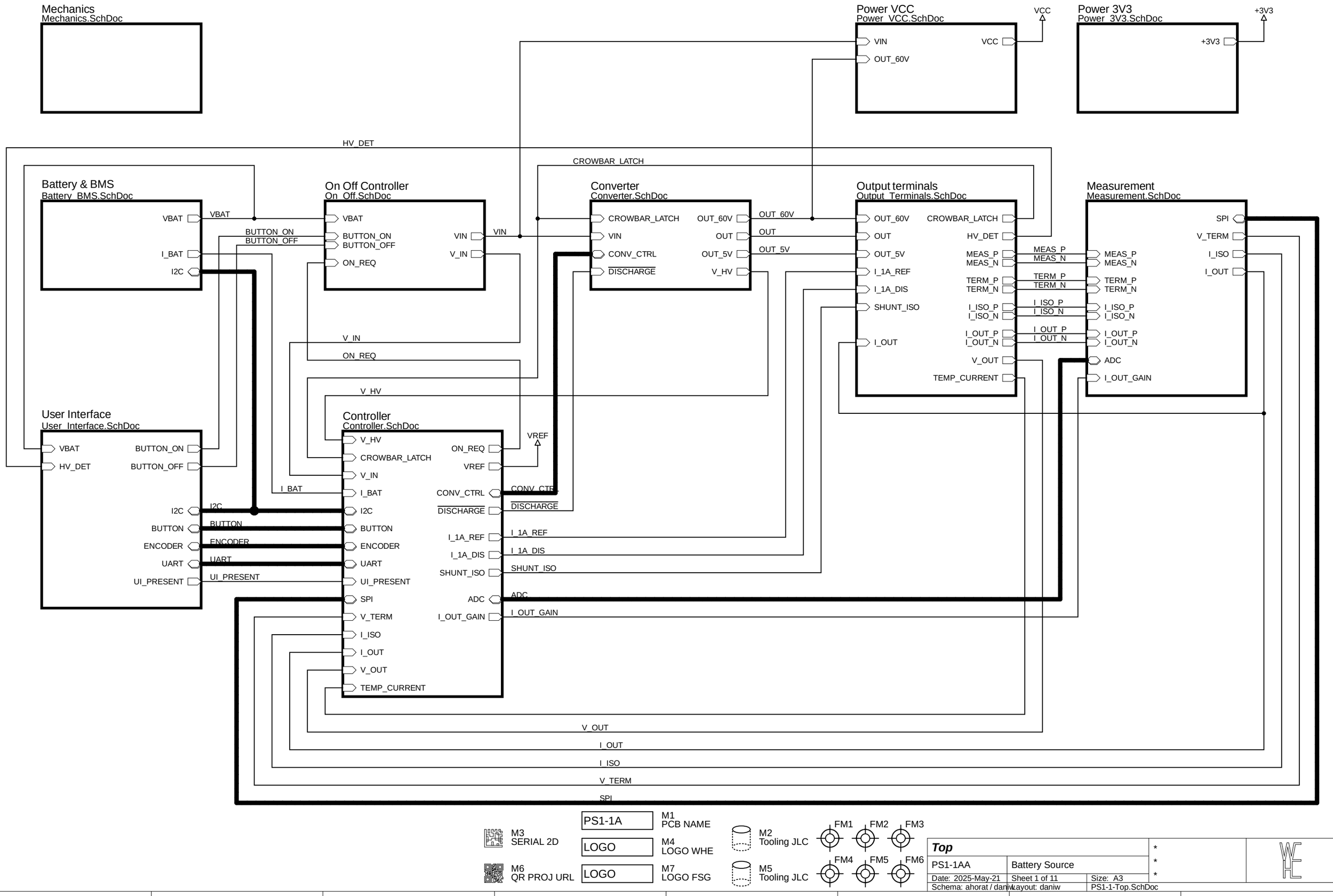
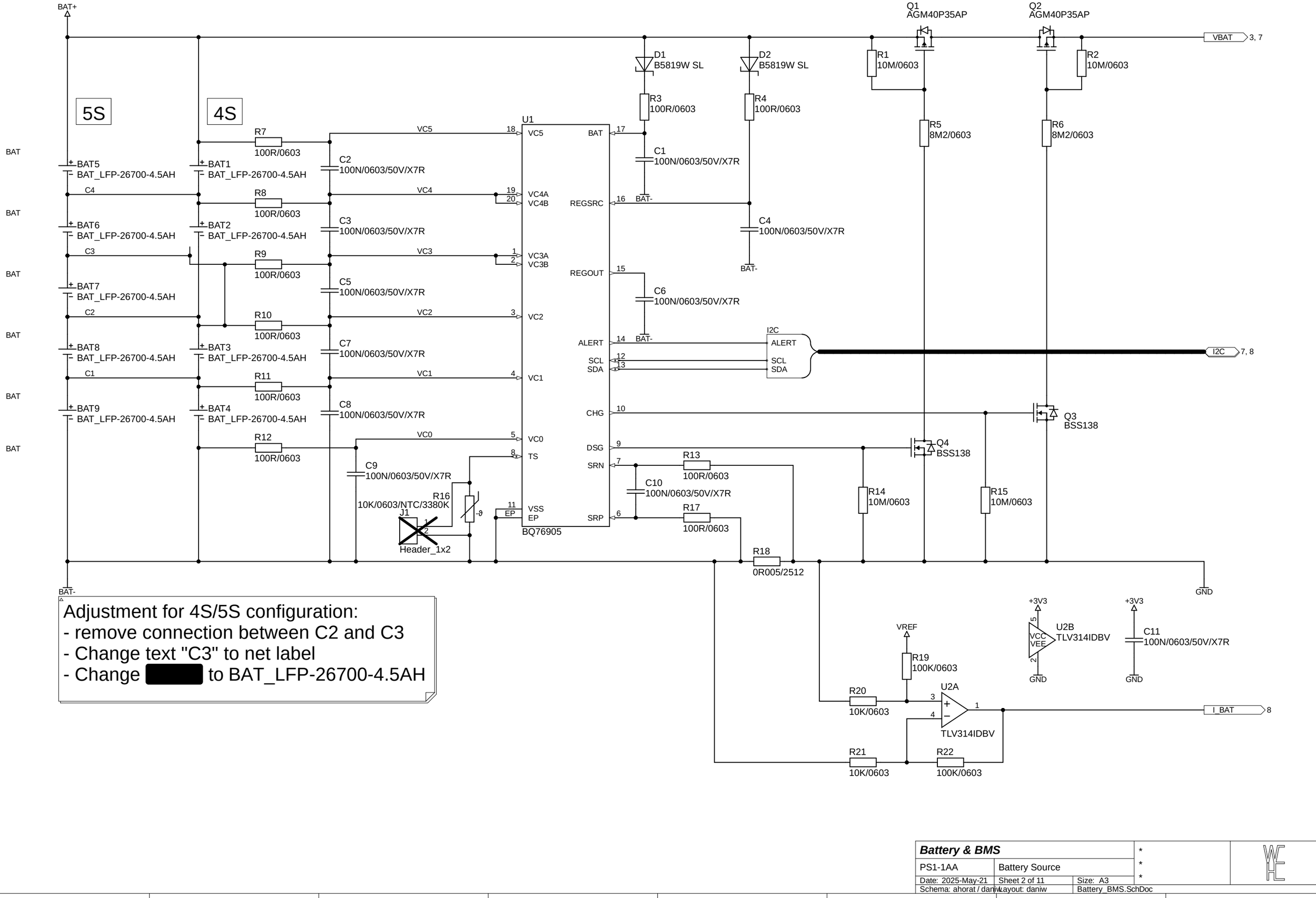
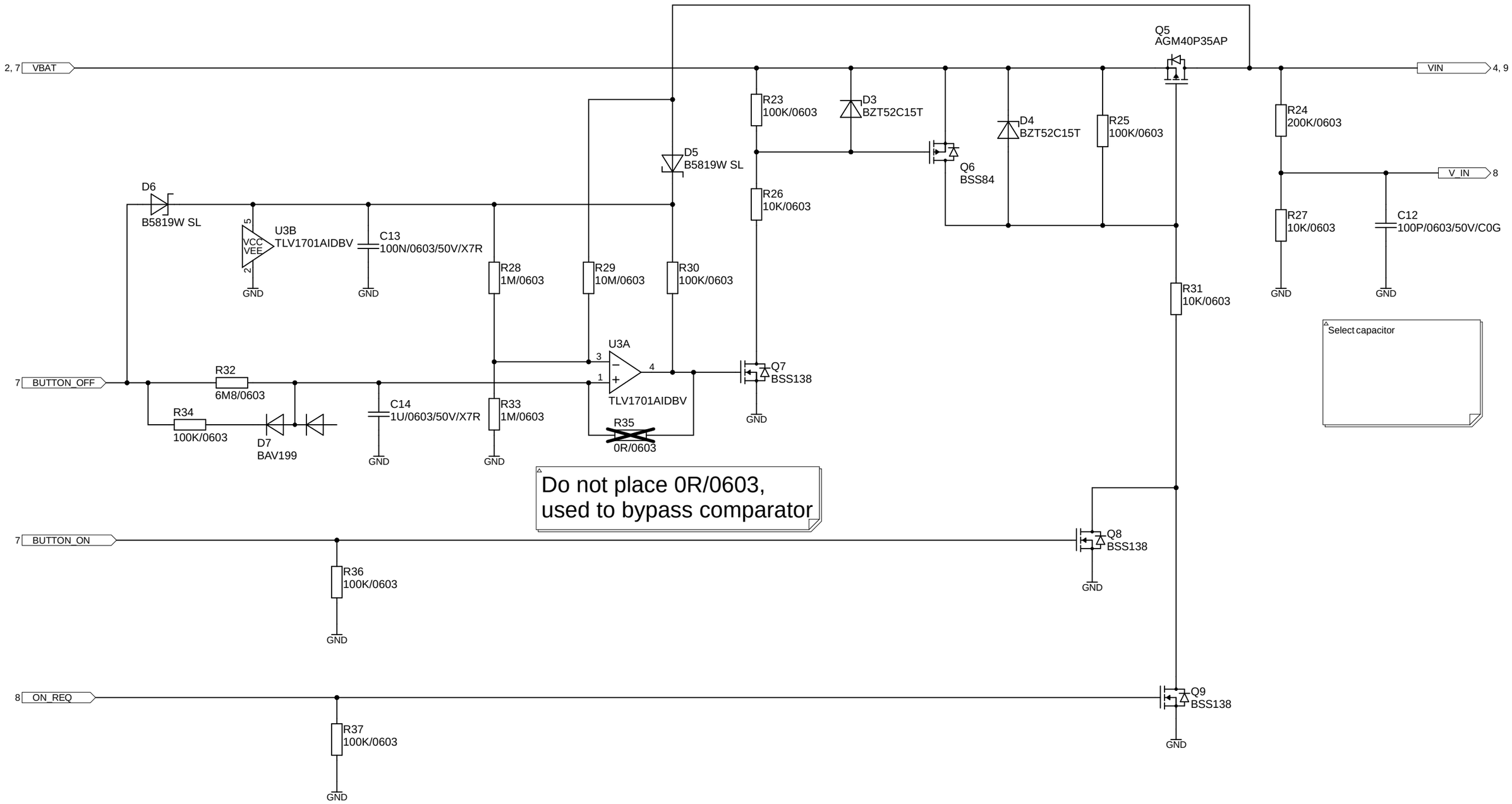

Mechanics
Mechanics.SchDoc
Power VCC
Power_VCC.SchDoc
VIN
OUT_60V
VCC
Power 3V3
Power_3V3.SchDoc
+3V3
HV_DET
CROWBAR_LATCH
Battery & BMS
Battery_BMS.SchDoc
VBAT
I_BAT
I2C
On Off Controller
On_Off.SchDoc
BUTTON_ON
BUTTON_OFF
ON_REQ
VIN
V_IN
Converter
Converter.SchDoc
CROWBAR_LATCH
VIN
CONV_CTRL
DISCHARGE
OUT_60V
OUT
OUT_5V
V_HV
Output terminals
Output_Terminals.SchDoc
OUT_60V
OUT
OUT_5V
I_1A_REF
I_1A_DIS
SHUNT_ISO
I_OUT
CROWBAR_LATCH
HV_DET
MEAS_P
MEAS_N
TERM_P
TERM_N
I_ISO_P
I_ISO_N
I_OUT_P
I_OUT_N
V_OUT
TEMP_CURRENT
Measurement
Measurement.SchDoc
SPI
V_TERM
I_ISO
I_OUT
ADC
I_OUT_GAIN
User Interface
User_Interface.SchDoc
VBAT
HV_DET
BUTTON_ON
BUTTON_OFF
I2C
BUTTON
ENCODER
UART
UI_PRESENT
Controller
Controller.SchDoc
V_HV
CROWBAR_LATCH
V_IN
I_BAT
I2C
BUTTON
ENCODER
UART
UI_PRESENT
SPI
V_TERM
I_ISO
I_OUT
V_OUT
TEMP_CURRENT
ON_REQ
VREF
CONV_CTRL
DISCHARGE
I_1A_REF
I_1A_DIS
SHUNT_ISO
ADC
I_OUT_GAIN
V_OUT
I_OUT
I_ISO
V_TERM
SPI
M1
PCB NAME
PS1-1A
M2
Tooling JLC
M3
SERIAL 2D
M4
LOGO WHE
LOGO
M5
Tooling JLC
M6
QR PROJ URL
M7
LOGO FSG
LOGO
FM1
FM2
FM3
FM4
FM5
FM6
Top
PS1-1AA
Battery Source
Date: 2025-May-21
Sheet 1 of 11
Size: A3
Schema: ahorat / daniw
Layout: daniw
PS1-1-Top.SchDoc



Battery & BMS			*
PS1-1AA	Battery Source		*
Date: 2025-May-21	Sheet 2 of 11	Size: A3	*
Schema: ahorat / daniw	Layout: daniw	Battery_BMS.SchDoc	



ON / OFF Controller			* * *
PS1-1AA	Battery Source		
Date: 2025-May-21	Sheet 3 of 11	Size: A3	
Schema: ahorat / daniw	Layout: daniw	On_Off.SchDoc	

Transformer manually gapped (0.3mm) resulting in a total airgap of 0.6mm

HV_DIV_1

R38 R39 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R50 R51 R52 R53 — 10K/0805

R54 R55 R56 R57 — 10K/0805 — HV

R58 R59 R60 R61 — 10K/0805 — HV

D8 STTH112A — D9 STTH112A

R62 51K/5W/0617 — R63 51K/5W/0617

K2B G6RL-14-ASI DC12 — K1B G6RL-14-ASI DC12 — OUT 5

3, 9 VIN

C19 C20 C21 C22 C23 C24 C25 22U/0805/25V/X5R — GND

L2 L3 L4 ELP22/6/16 2WDG

L1 ELP22/6/16 24WDG — T_S3

L9 ELP22/6/16 8WDG — T_S2

L5 L6 EELP22 CLAMP

L10 L11 ELP22/6/16 1WDG — T_S1

L7 L8 ELP22/6/16 N87 — T_P0

R64 240K/0805 — HV_DIV_1

C15 C16 C17 C18 10N/1210/2kV — GND

R65 0R/2512

R66 240K/0805 — HV_DIV_2

R68 240K/0805

R71 240K/0805 — HV_DIV_3

R73 1K/0603 — GND

T_S0

+3V3 — D11 BAV199 — R67 10K/0603 — C26 100P/0603/50V/C0G

CONV_CTRL — PRIM_ZERO — R69 10K/0603

8 CONV_CTRL

R70 10K/0603 — VCC

R72 100K/0603 — GND

U4 1EDN7512B — VDD — IN+ — IN- — OUT — GND

PRIM

R75 0R/0805 — Q10 AGM18N10AP — GND

+3V3 — D14 BAV199 — R77 10K/0603 — C27 100P/0603/50V/C0G

SEC_ZERO — R79 10K/0603 — Q12 IPB107N20N3G — GND

R80 10K/0603 — GND

U5 1EDN7512B — VDD — IN+ — IN- — OUT — GND

SEC — R84 0R/0805

EN — Q14 BSS138 — R87 100K/0603 — GND

C34 100N/0603/50V/X7R — C35 100N/0603/50V/X7R

U6 1EDN7512B — VDD — IN+ — IN- — OUT — GND

R88 0R/0805 — Q15 IPB107N20N3G

C36 100N/0603/50V/X7R

CONF_ISO

CONF_CURR

TEMP_PRIM

TEMP_SEC

TEMP_TRAFO

5, 8 CROWBAR_LATCH — Q16 BSS138 — R95 100K/0603

R96 100K/0603 — Q20 BSS138

8 DISCHARGE — R100 100K/0603

R91 10K/0603 — R97 10K/0603/NTC/3380K — Transformer temperature

R92 10K/0603 — R98 10K/0603/NTC/3380K — Secondary MOSFET temperature

R93 10K/0603 — R99 10K/0603/NTC/3380K — Primary MOSFET temperature

VCC — D10 B5819W SL — K1A G6RL-14-ASI DC12

V_HV 8

VCC — D12 B5819W SL — K2A G6RL-14-ASI DC12

VCC — D13 B5819W SL — K3A G6RL-14-ASI DC12

Q11 BSS138 — Q13 BSS138

K3B G6RL-14-ASI DC12

R74 240K/0805 — HV_DIV_1

R76 240K/0805 — HV_DIV_2

R78 0R/2512

OUT_60V 5, 9

R81 1K/1210 — R82 240K/0805 — HV_DIV_1

R83 1K/1210 — R85 240K/0805

R86 1K/1210

OUT_5V 5

C28 C29 15U/RADIAL/100V

C30 C31 C32 C33 1U/1206/100V

C37 C38 C39 C40 680U/RADIAL/6.3V

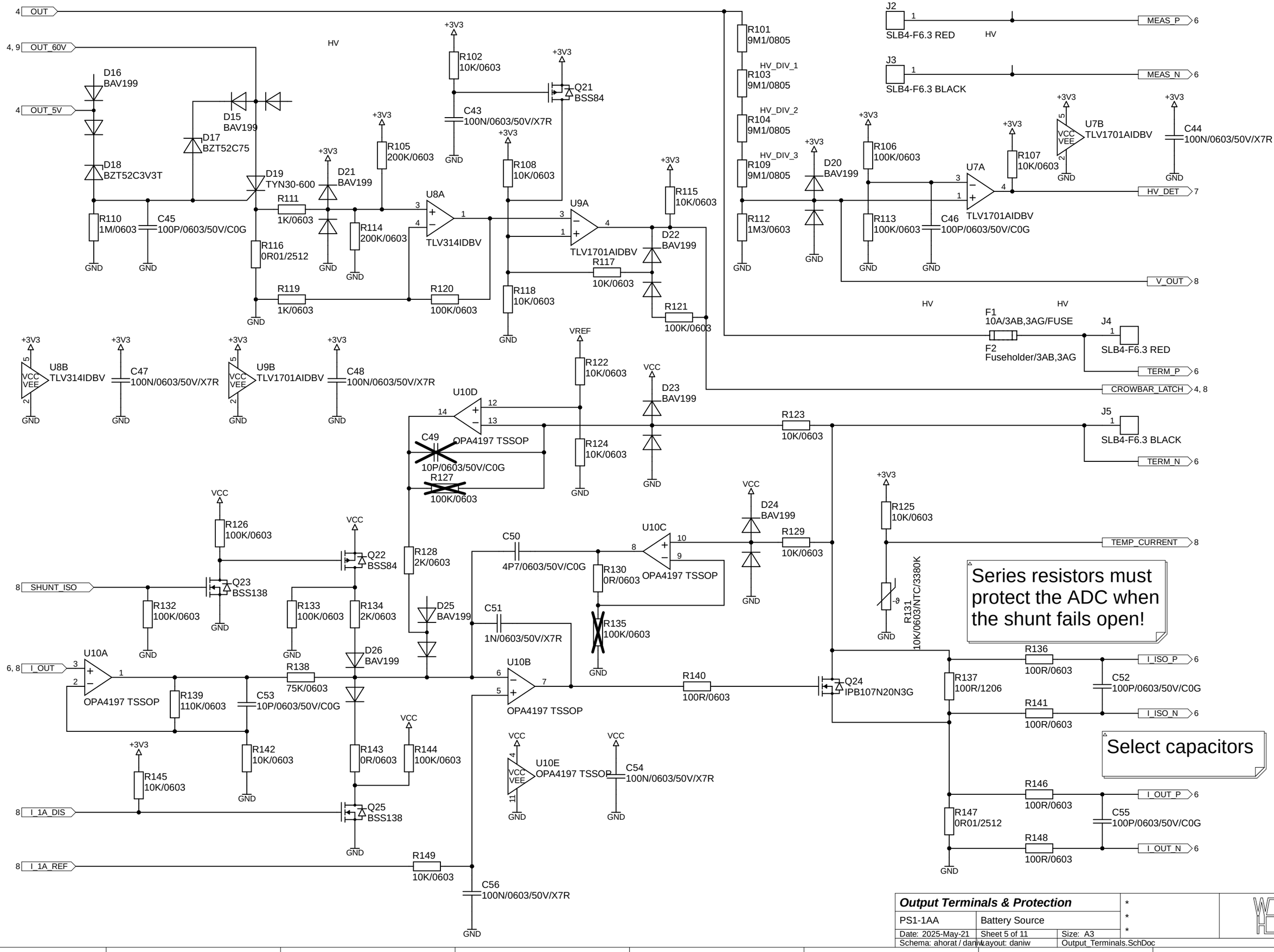
C41 C42 47U/0805/6.3V

R89 10R/1210 — R90 10R/1210 — R94 10R/1210

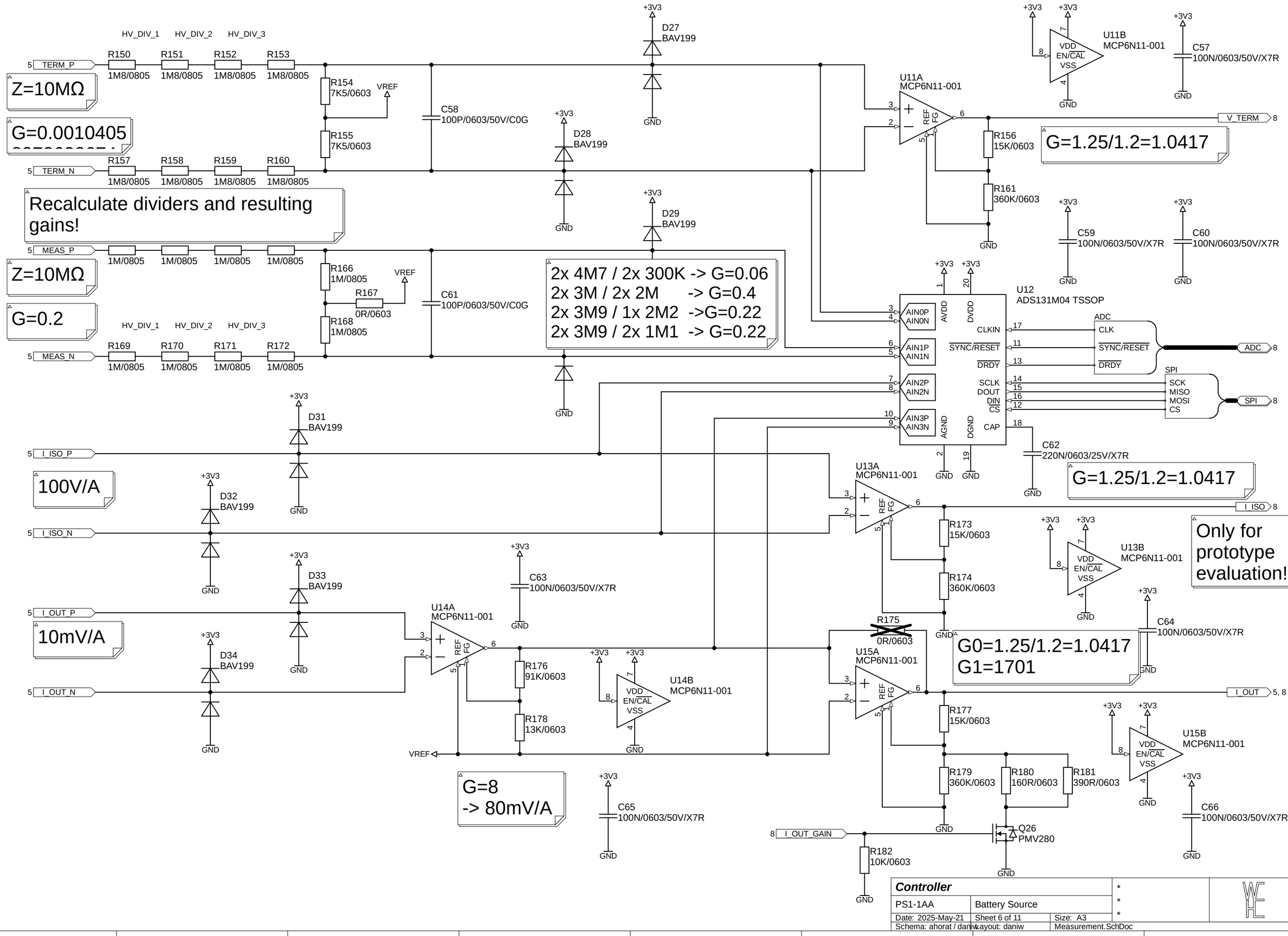
HV

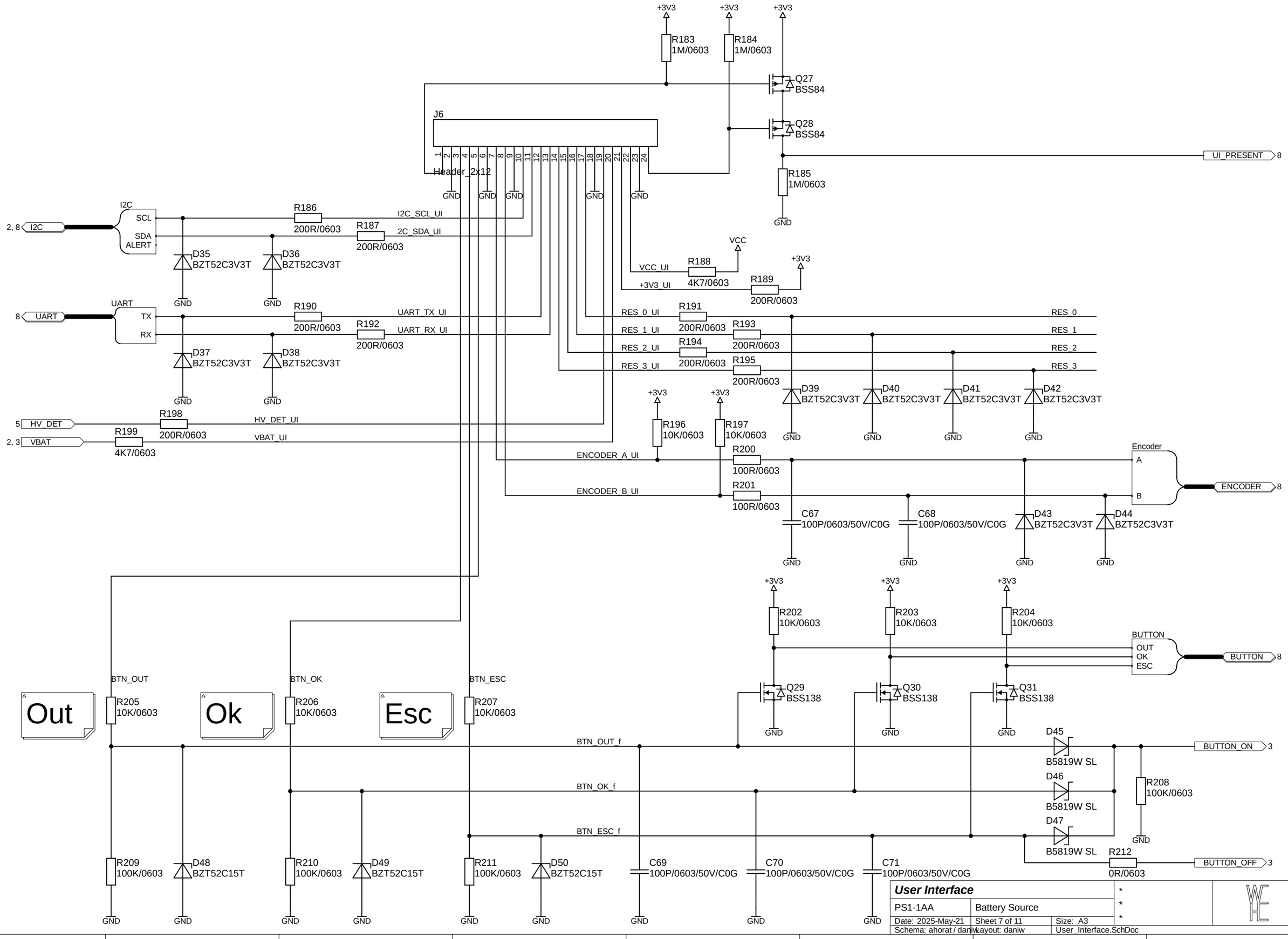
Q17 PMV280 — Q18 PMV280 — Q19 IPN95R3K7P7

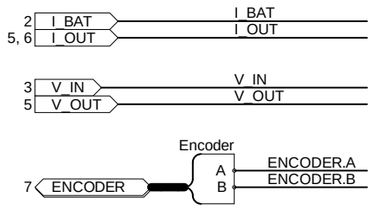
Converter		*
PS1-1AA	Battery Source	*
Date: 2025-May-21	Sheet 4 of 11	Size: A3 *
Schema: ahorat / daniw	Layout: daniw	Converter.SchDoc

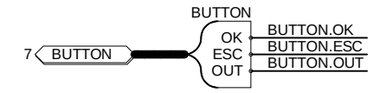


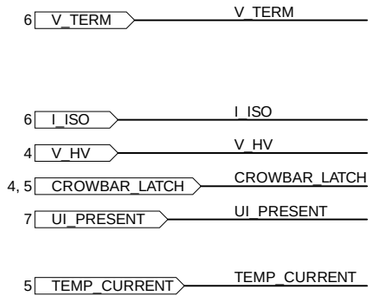
Output Terminals & Protection		*
PS1-1AA	Battery Source	*
Date: 2025-May-21	Sheet 5 of 11	Size: A3 *
Schema: ahorat / daniw	Layout: daniw	Output_Terminals.SchDoc

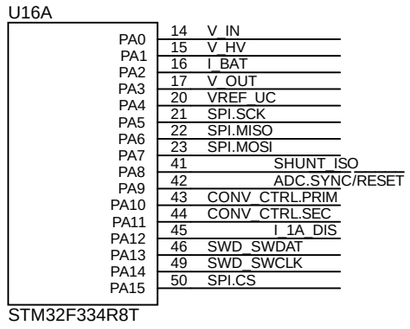

HV_DIV_1
HV_DIV_2
HV_DIV_3
TERM_P
R150
R151
R152
R153
1M8/0805
Z=10MΩ
G=0.0010405
R154
7K5/0603
R155
7K5/0603
VREF
C58
100P/0603/50V/C0G
D27
BAV199
D28
BAV199
TERM_N
R157
R158
R159
R160
Recalculate dividers and resulting gains!
MEAS_P
1M/0805
R166
1M/0805
R167
0R/0603
R168
1M/0805
C61
100P/0603/50V/C0G
D29
BAV199
2x 4M7 / 2x 300K -> G=0.06
2x 3M / 2x 2M -> G=0.4
2x 3M9 / 1x 2M2 ->G=0.22
2x 3M9 / 1x 1M1 -> G=0.22
MEAS_N
R169
R170
R171
R172
Z=10MΩ
G=0.2
I_ISO_P
D31
BAV199
100V/A
I_ISO_N
D32
BAV199
I_OUT_P
D33
BAV199
10mV/A
I_OUT_N
D34
BAV199
U11A
MCP6N11-001
U11B
MCP6N11-001
VDD
EN/CAL
VSS
C57
100N/0603/50V/X7R
R156
15K/0603
R161
360K/0603
G=1.25/1.2=1.0417
V_TERM
C59
100N/0603/50V/X7R
C60
100N/0603/50V/X7R
U12
ADS131M04 TSSOP
AIN0P
AIN0N
AIN1P
AIN1N
AIN2P
AIN2N
AIN3P
AIN3N
AVDD
DVDD
AGND
DGND
CLKIN
SYNC/RESET
DRDY
SCLK
DOUT
DIN
CS
CAP
ADC
CLK
SPI
SCK
MISO
MOSI
C62
220N/0603/25V/X7R
U13A
MCP6N11-001
U13B
MCP6N11-001
G=1.25/1.2=1.0417
I_ISO
R173
15K/0603
R174
360K/0603
Only for prototype evaluation!
U14A
MCP6N11-001
U14B
MCP6N11-001
C63
100N/0603/50V/X7R
R175
0R/0603
C64
100N/0603/50V/X7R
R176
91K/0603
R178
13K/0603
VREF
G=8
-> 80mV/A
C65
100N/0603/50V/X7R
U15A
MCP6N11-001
U15B
MCP6N11-001
G0=1.25/1.2=1.0417
G1=1701
I_OUT
R177
15K/0603
R179
360K/0603
R180
160R/0603
R181
390R/0603
C66
100N/0603/50V/X7R
I_OUT_GAIN
Q26
PMV280
R182
10K/0603
REF
FG
+3V3
GND
Controller
PS1-1AA
Battery Source
Date: 2025-May-21
Sheet 6 of 11
Size: A3
Schema: ahorat / daniw
Layout: daniw
Measurement.SchDoc

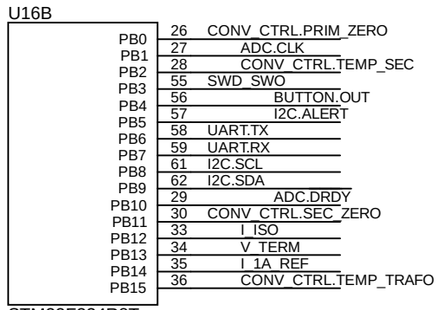

+3V3
R183 1M/0603
R184 1M/0603
Q27 BSS84
Q28 BSS84
J6
Header_2x12
UI_PRESENT 8
R185 1M/0603
GND
I2C
2, 8 I2C
SCL
SDA
ALERT
R186 200R/0603
R187 200R/0603
I2C_SCL_UI
2C_SDA_UI
D35 BZT52C3V3T
D36 BZT52C3V3T
VCC
VCC_UI
R188 4K7/0603
+3V3_UI
R189 200R/0603
UART
8 UART
TX
RX
R190 200R/0603
R192 200R/0603
UART_TX_UI
UART_RX_UI
D37 BZT52C3V3T
D38 BZT52C3V3T
RES_0_UI
RES_1_UI
RES_2_UI
RES_3_UI
R191 200R/0603
R193 200R/0603
R194 200R/0603
R195 200R/0603
RES_0
RES_1
RES_2
RES_3
D39 BZT52C3V3T
D40 BZT52C3V3T
D41 BZT52C3V3T
D42 BZT52C3V3T
5 HV_DET
2, 3 VBAT
R198 200R/0603
R199 4K7/0603
HV_DET_UI
VBAT_UI
R196 10K/0603
R197 10K/0603
ENCODER_A_UI
ENCODER_B_UI
R200 100R/0603
R201 100R/0603
Encoder
A
B
ENCODER 8
C67 100P/0603/50V/C0G
C68 100P/0603/50V/C0G
D43 BZT52C3V3T
D44 BZT52C3V3T
R202 10K/0603
R203 10K/0603
R204 10K/0603
BUTTON
OUT
OK
ESC
BUTTON 8
Q29 BSS138
Q30 BSS138
Q31 BSS138
Out
Ok
Esc
BTN_OUT
BTN_OK
BTN_ESC
R205 10K/0603
R206 10K/0603
R207 10K/0603
BTN_OUT_f
BTN_OK_f
BTN_ESC_f
D45 B5819W SL
D46 B5819W SL
D47 B5819W SL
BUTTON_ON 3
BUTTON_OFF 3
R208 100K/0603
R209 100K/0603
R210 100K/0603
R211 100K/0603
R212 0R/0603
D48 BZT52C15T
D49 BZT52C15T
D50 BZT52C15T
C69 100P/0603/50V/C0G
C70 100P/0603/50V/C0G
C71 100P/0603/50V/C0G
User Interface
PS1-1AA
Battery Source
Date: 2025-May-21
Sheet 7 of 11
Size: A3
Schema: ahorat / daniw
Layout: daniw
User_Interface.SchDoc

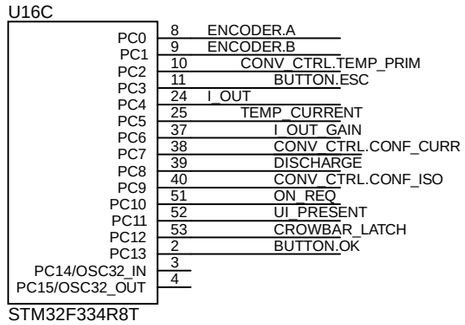


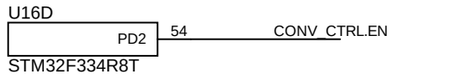


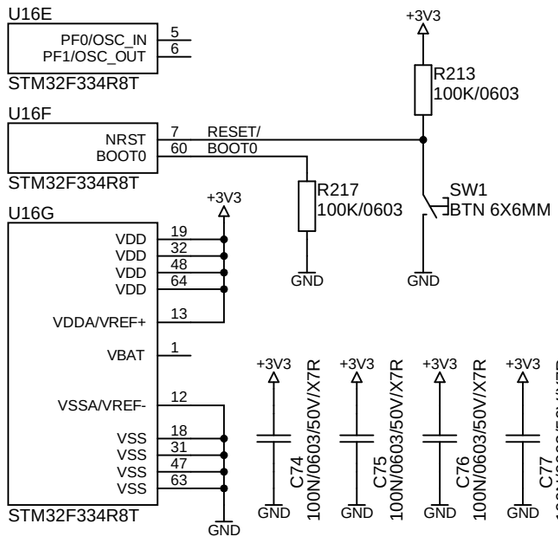


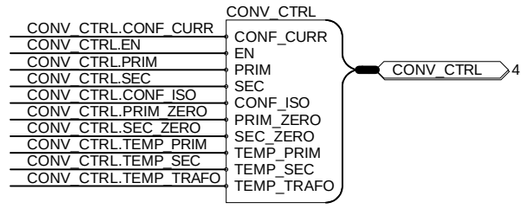


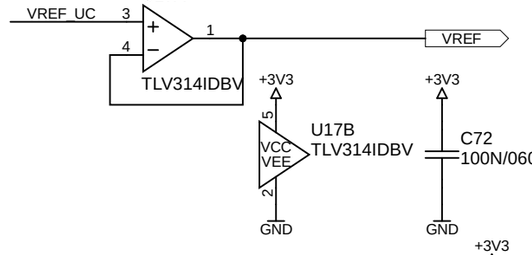


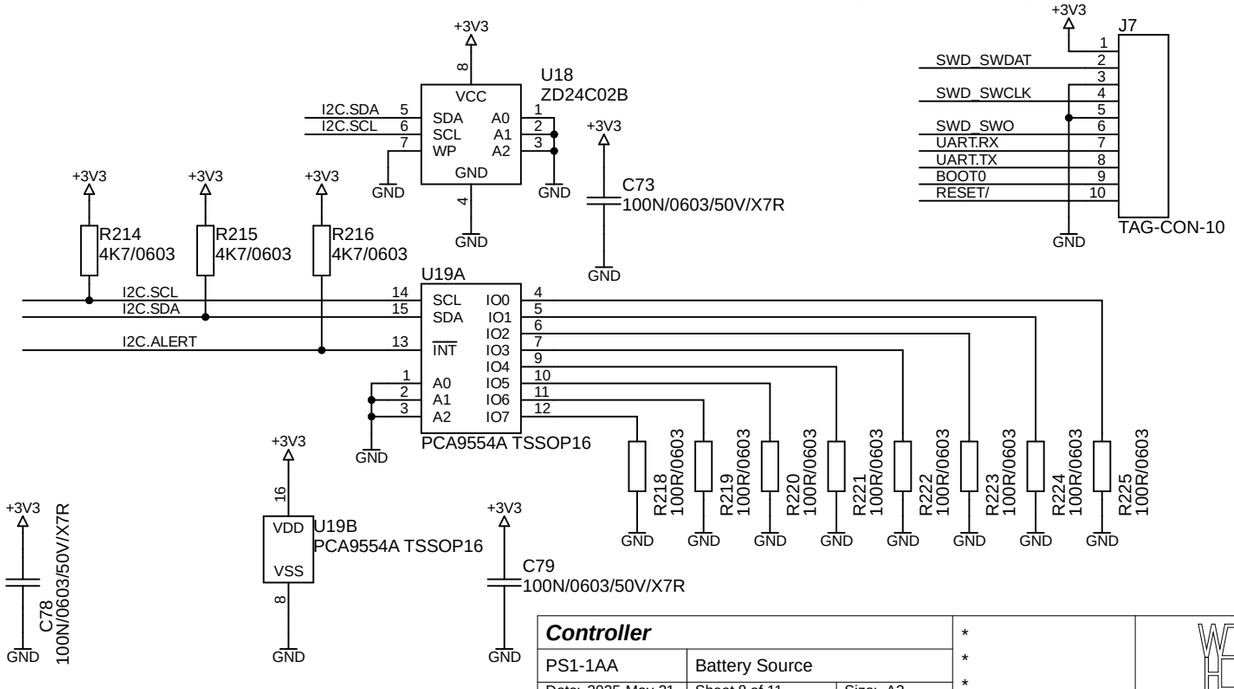




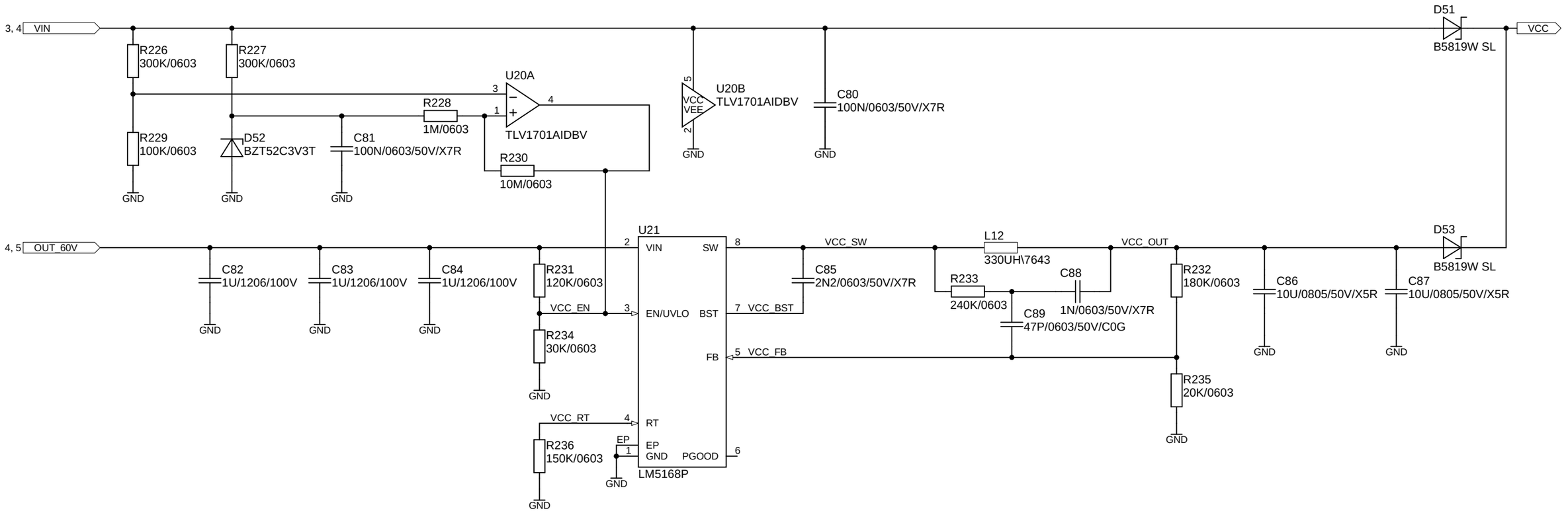




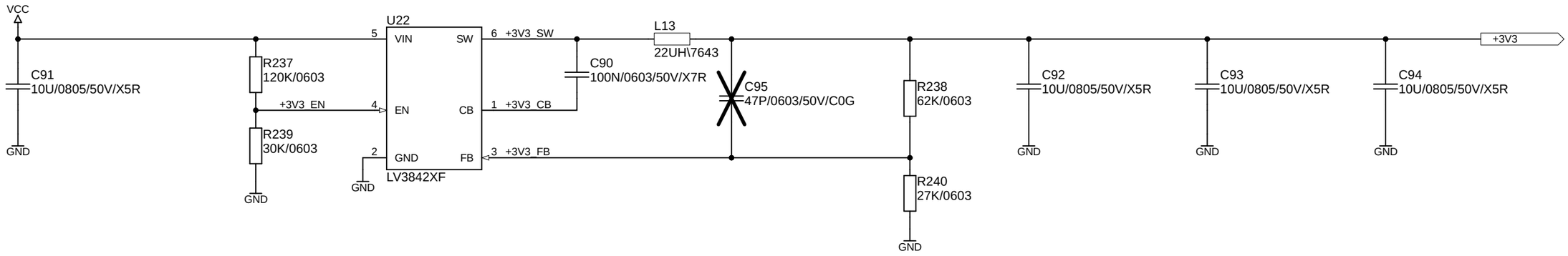




Controller			*
PS1-1AA	Battery Source		*
Date: 2025-May-21	Sheet 8 of 11	Size: A3	*
Schema: ahorat / daniw	Layout: daniw	Controller.SchDoc	



Power VCC			* * *
PS1-1AA	Battery Source		
Date: 2025-May-21	Sheet 9 of 11	Size: A3	
Schema: ahorat / daniw	Layout: daniw	Power_VCC.SchDoc	



Power +3V3			* * *
PS1-1AA	Battery Source		
Date: 2025-May-21	Sheet 10 of 11	Size: A3	
Schema: ahorat / daniw	Layout: daniw	Power_3V3.SchDoc	

Mechanics			* * *
PS1-1AA	Battery Source		
Date: 2025-May-21	Sheet 11 of 11	Size: A3	
Schema: ahorat / daniw	Layout: daniw	Mechanics.SchDoc	