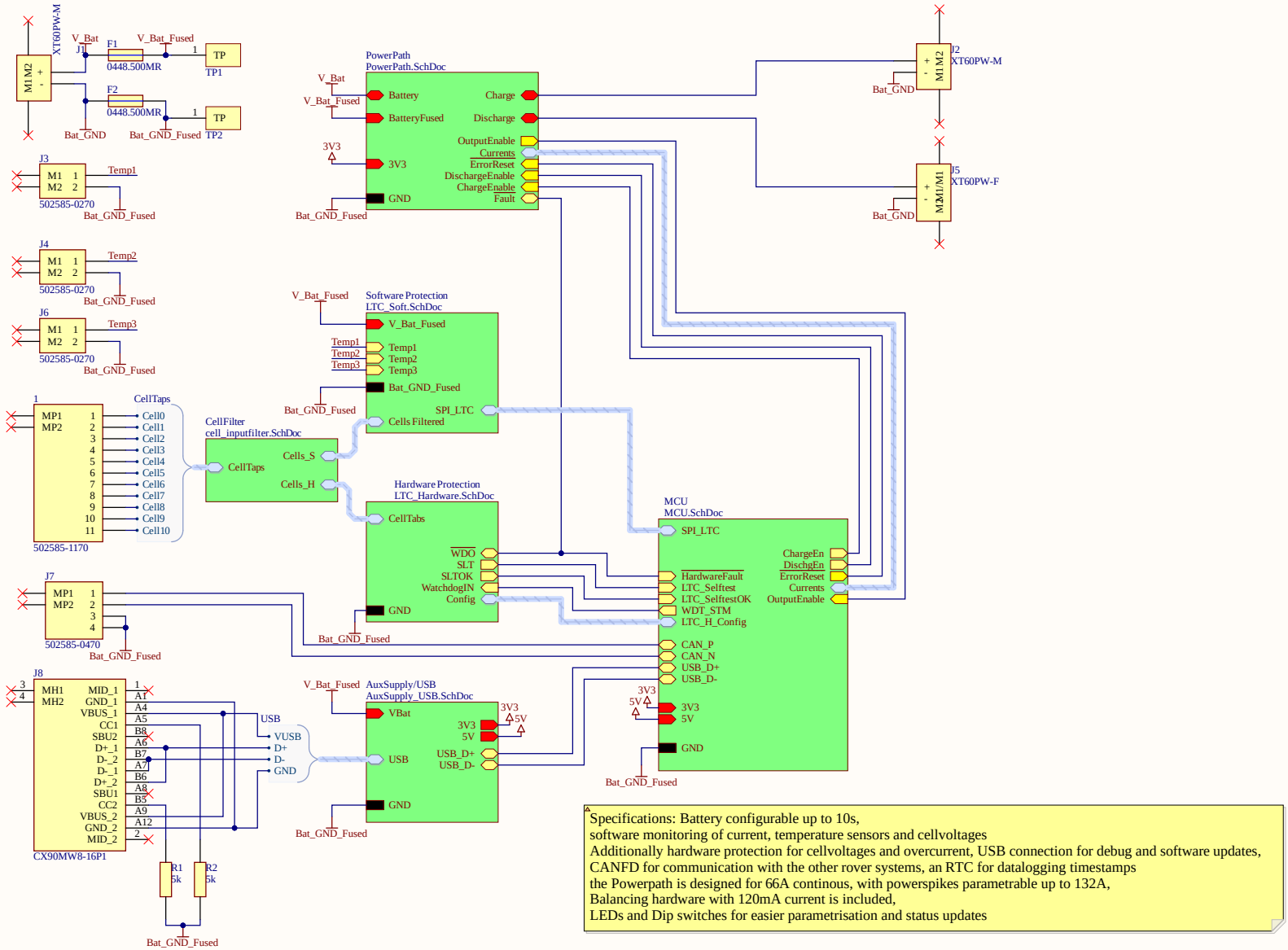
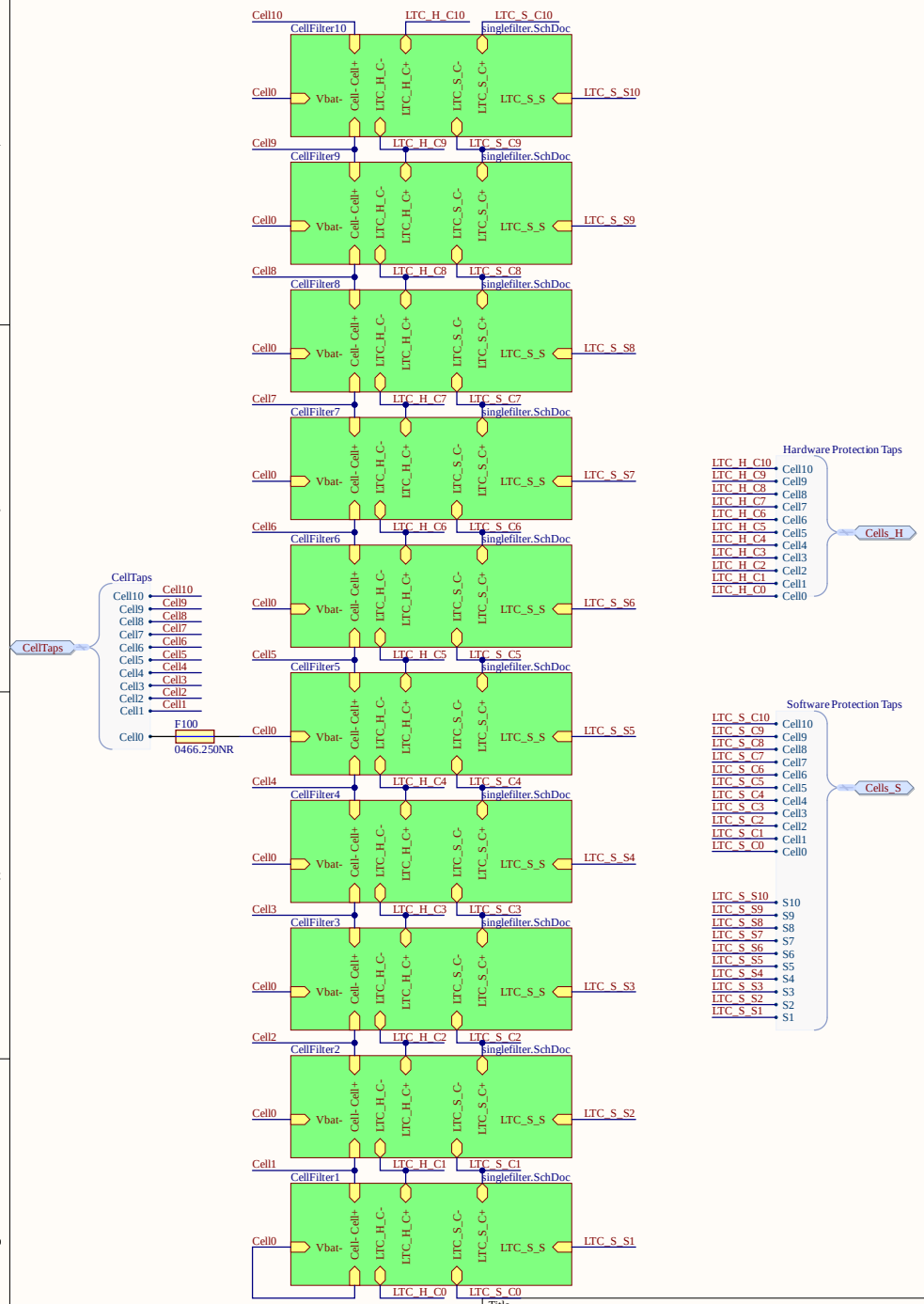
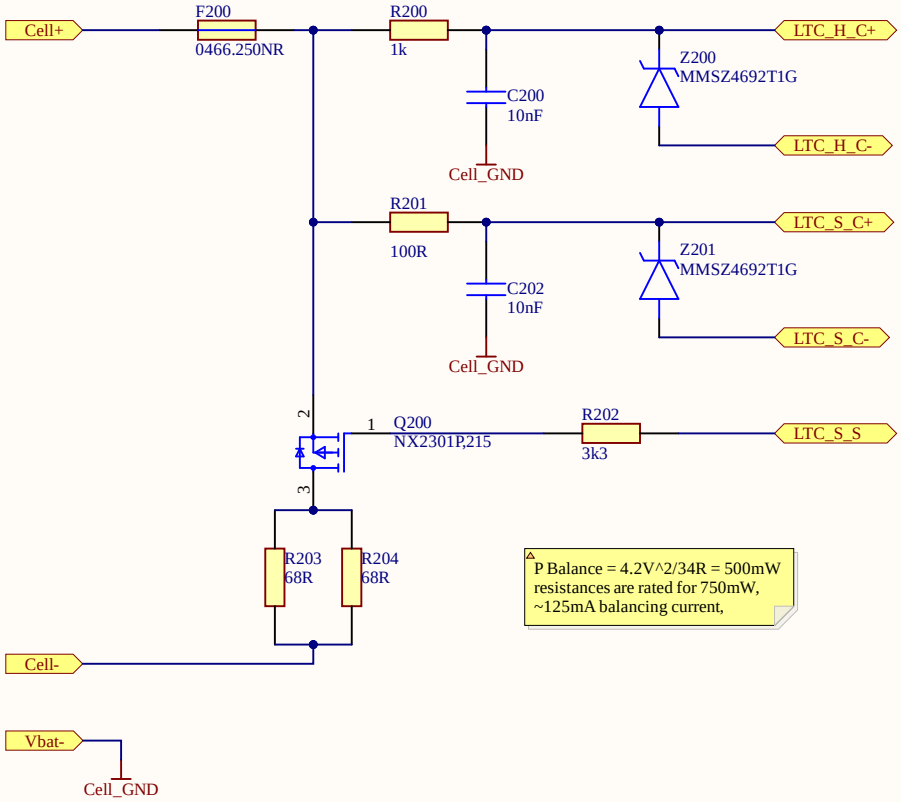


Title	Battman Main	
Size: A3	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 1 of 9
File: C:\Users\..\Main.SchDoc		Drawn By: Otto Riha



Title	cell_inputfilter.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 2 of 10
File: C:\Users\..\cell_inputfilter.SchDoc		Drawn By: Otto Riha



recommended filtering from LTC 6801 datasheet: 1kOhm 10nF to GND

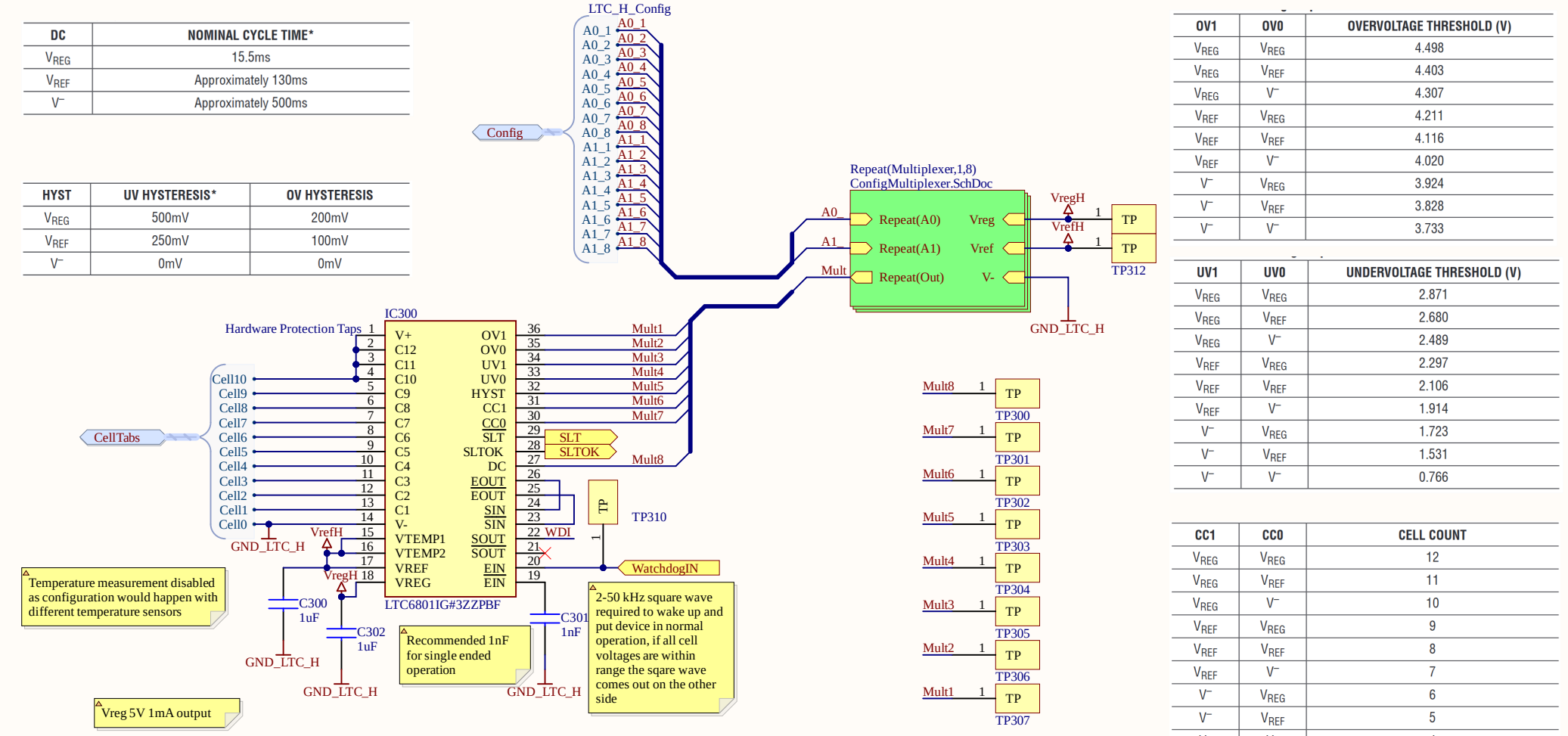
recomended filter components for maximum measurement accuracy from LTC 6811 datasheet: 100R 10nF, the zeners are there to reduce stress on internal protection circuit

P Balance = 4.2V^2/34R = 500mW
resistances are rated for 750mW,
~125mA balancing current,

Title	singlefilter.SchDoc		
Size: A4	Number: 1	Revision: A0	
Date: 3/17/2025		Sheet 3 of 10	
File: C:\Users\..\singlefilter.SchDoc		Drawn By: Otto Riha	

DC	NOMINAL CYCLE TIME*
V_{REG}	15.5ms
V_{REF}	Approximately 130ms
V^-	Approximately 500ms

HYST	UV HYSTERESIS*	OV HYSTERESIS
V_{REG}	500mV	200mV
V_{REF}	250mV	100mV
V^-	0mV	0mV



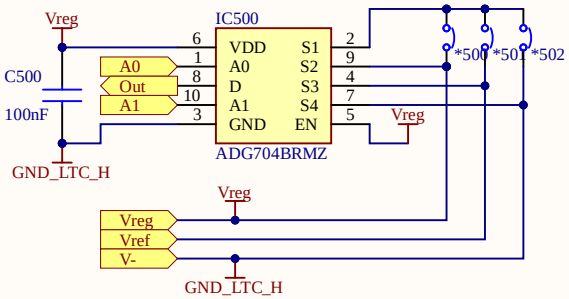
OV1	OV0	OVERVOLTAGE THRESHOLD (V)
V_{REG}	V_{REG}	4.498
V_{REG}	V_{REF}	4.403
V_{REG}	V^-	4.307
V_{REF}	V_{REG}	4.211
V_{REF}	V_{REF}	4.116
V_{REF}	V^-	4.020
V^-	V_{REG}	3.924
V^-	V_{REF}	3.828
V^-	V^-	3.733

UV1	UV0	UNDERVOLTAGE THRESHOLD (V)
V_{REG}	V_{REG}	2.871
V_{REG}	V_{REF}	2.680
V_{REG}	V^-	2.489
V_{REF}	V_{REG}	2.297
V_{REF}	V_{REF}	2.106
V_{REF}	V^-	1.914
V^-	V_{REG}	1.723
V^-	V_{REF}	1.531
V^-	V^-	0.766

CC1	CC0	CELL COUNT
V_{REG}	V_{REG}	12
V_{REG}	V_{REF}	11
V_{REG}	V^-	10
V_{REF}	V_{REG}	9
V_{REF}	V_{REF}	8
V_{REF}	V^-	7
V^-	V_{REG}	6
V^-	V_{REF}	5
V^-	V^-	4

LOGIC INPUTS			MAX6369/MAX6370
SET2	SET1	SET0	t_{DELAY}, t_{WD}
0	0	0	1ms
0	0	1	10ms
0	1	0	30ms
0	1	1	Disabled
1	0	0	100ms
1	0	1	1s
1	1	0	10s
1	1	1	60s

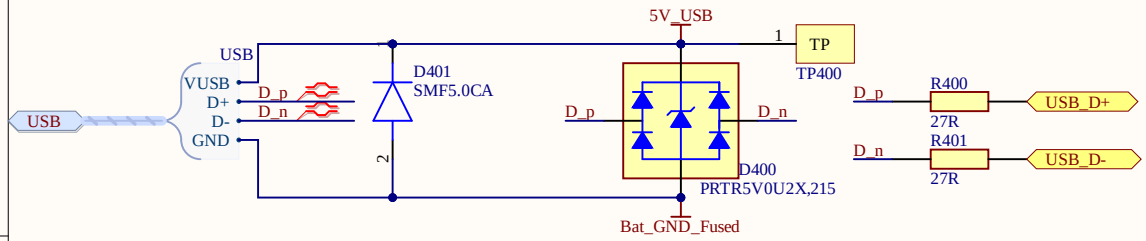
Title	LTC_Hardware.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 4 of 10
File: C:\Users\..\LTC_Hardware.SchDoc		Drawn By: Otto Riha



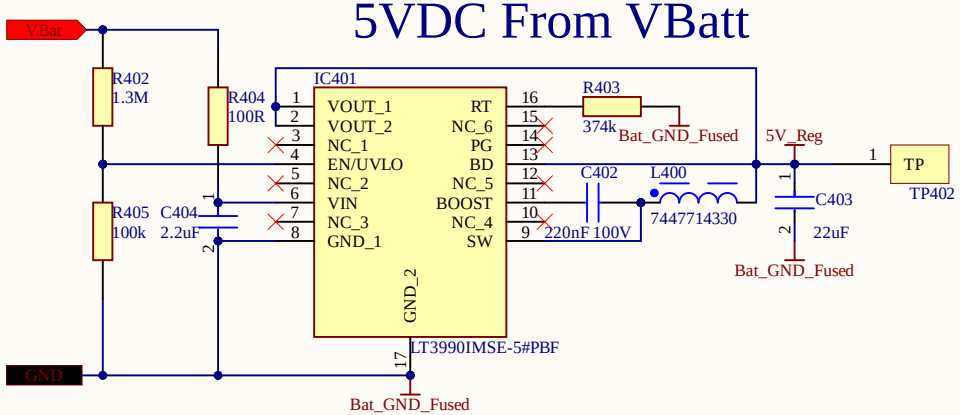
Jumper for default setting when miultiplexer in A0=A1=0 position, max consumption 1uA

Title	ConfigMultiplexer.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 5 of 10
File: C:\Users\..\ConfigMultiplexer.SchDoc		Drawn By: Otto Riha

USB INPUT Protection

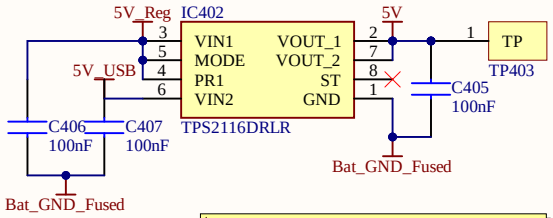


5VDC From VBatt



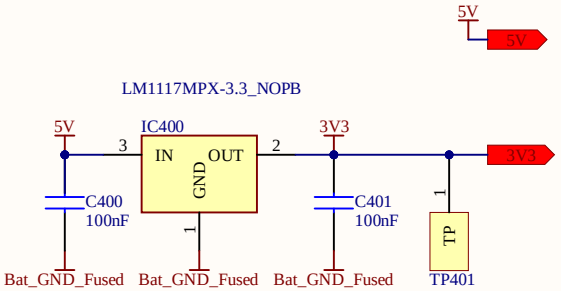
Undervoltage Lockup configured for 16.7V which corresponds to 2.4V/ cell on 7s and is an additional measure against deep discharge

5V Selector

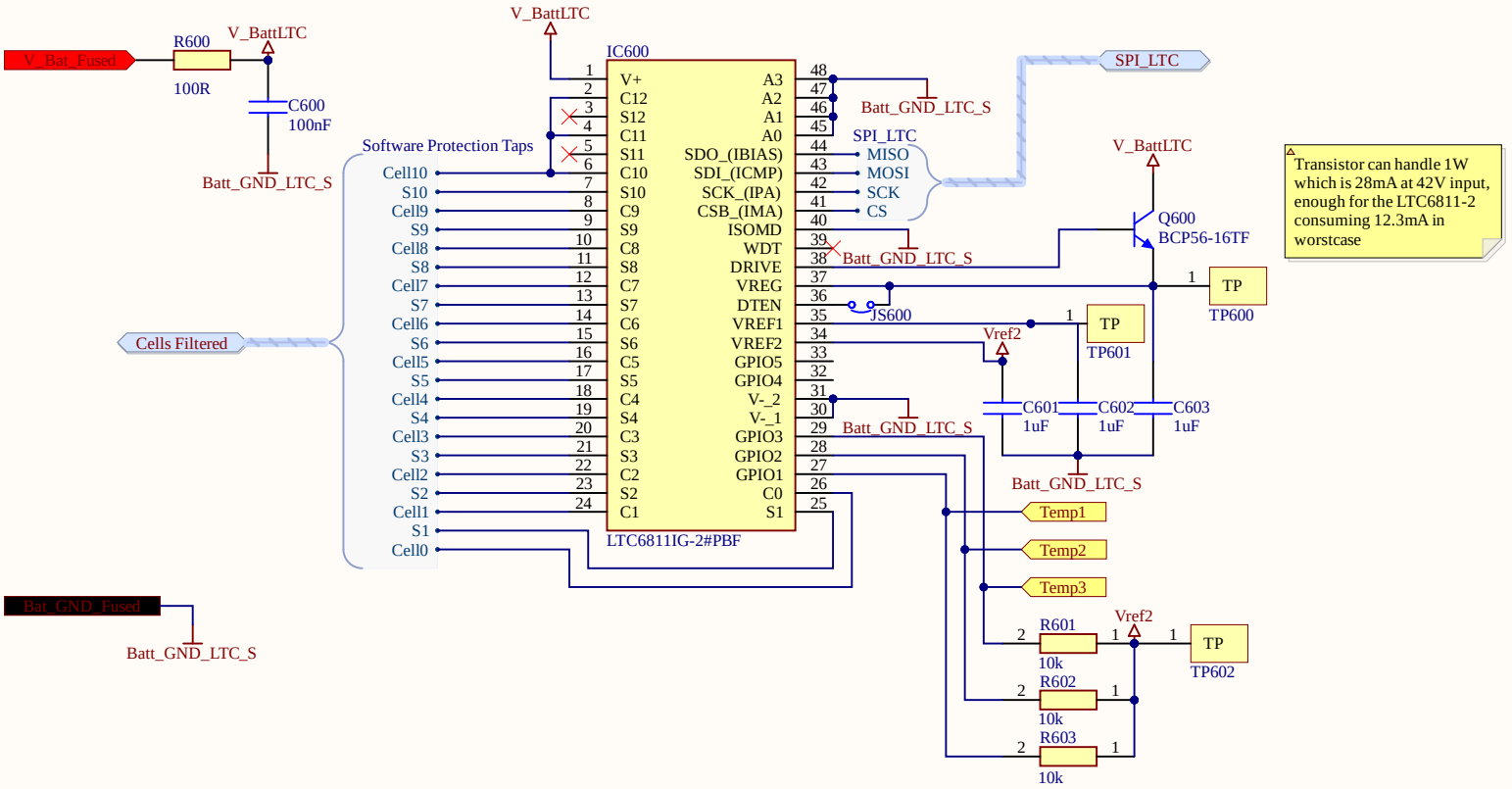


Defaults to battery supply, USB is only a fallback option to program/read out data without connected battery

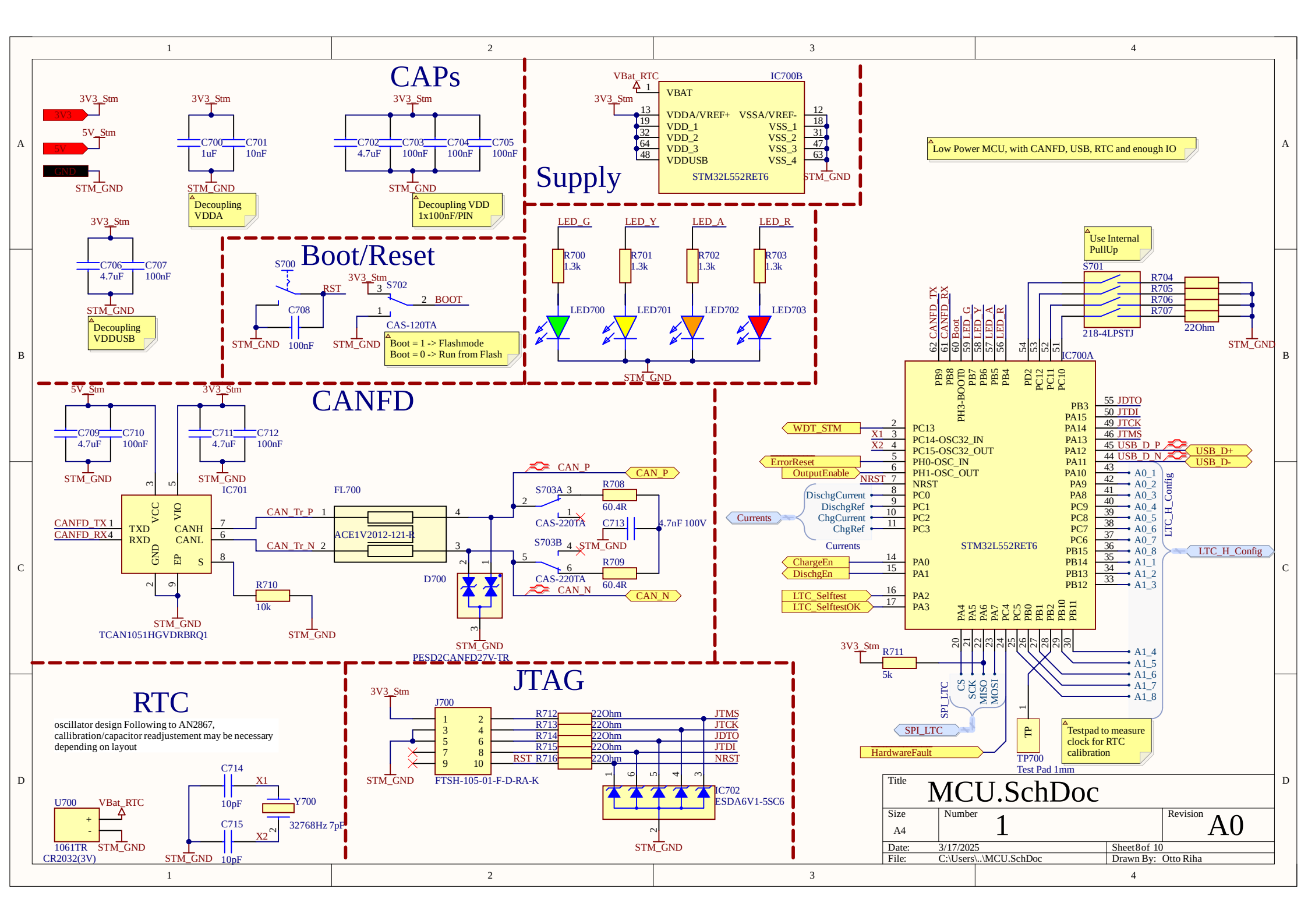
3,3V LDO

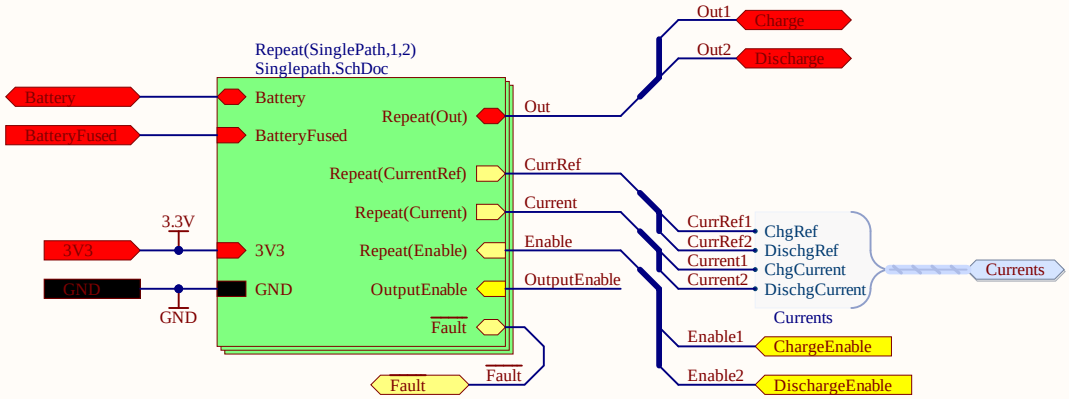


Title	AuxSupply_USB.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 6 of 10
File: C:\Users\..\AuxSupply_USB.SchDoc		Drawn By: Otto Riha

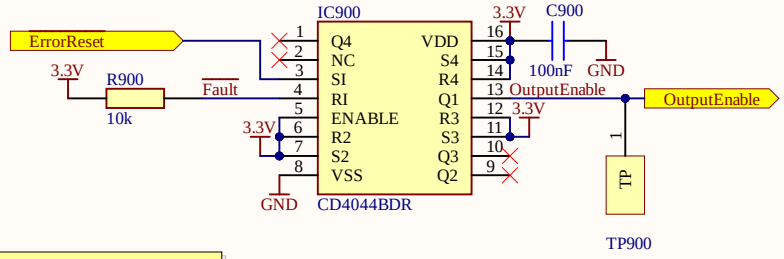


Title	LTC_Soft.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 7 of 10
File: C:\Users\..\LTC_Soft.SchDoc		Drawn By: Otto Riha


CAPs
Supply
Boot/Reset
CANFD
RTC
JTAG
Low Power MCU, with CANFD, USB, RTC and enough IO
3V3_Stm
5V_Stm
STM_GND
C700 1uF
C701 10nF
C702 4.7uF
C703 100nF
C704 100nF
C705 100nF
Decoupling VDDA
Decoupling VDD 1x100nF/PIN
C706 4.7uF
C707 100nF
Decoupling VDDUSB
VBat_RTC
IC700B
VBAT
VDDA/VREF+
VDD_1
VDD_2
VDD_3
VDDUSB
VSSA/VREF-
VSS_1
VSS_2
VSS_3
VSS_4
STM32L552RET6
S700
RST
C708 100nF
S702
BOOT
CAS-120TA
Boot = 1 -> Flashmode
Boot = 0 -> Run from Flash
LED_G
LED_Y
LED_A
LED_R
R700 1.3k
R701 1.3k
R702 1.3k
R703 1.3k
LED700
LED701
LED702
LED703
Use Internal PullUp
S701
218-4LPSTJ
R704
R705
R706
R707
22Ohm
IC700A
STM32L552RET6
WDT_STM
ErrorReset
OutputEnable
NRST
DischgCurrent
DischgRef
ChgCurrent
ChgRef
Currents
ChargeEn
DischgEn
LTC_Selftest
LTC_SelftestOK
USB_D+
USB_D-
LTC_H_Config
IC701
TCAN1051HGVDRBRQ1
CANFD_TX
CANFD_RX
CAN_Tr_P
CAN_Tr_N
FL700
ACE1V2012-121-R
CAN_P
CAN_N
S703A
S703B
CAS-220TA
R708 60.4R
R709 60.4R
C713 4.7nF 100V
R710 10k
D700
PESD2CANFD27V-TR
R711 5k
SPI_LTC
CS
SCK
MISO
MOSI
HardwareFault
TP
TP700
Test Pad 1mm
Testpad to measure clock for RTC calibration
RTC
oscillator design Following to AN2867, callibration/capacitor readjustement may be necessary depending on layout
U700
1061TR
CR2032(3V)
C714 10pF
C715 10pF
X1
X2
Y700
32768Hz 7pF
J700
FTSH-105-01-F-D-RA-K
R712 22Ohm
R713 22Ohm
R714 22Ohm
R715 22Ohm
RST R716 22Ohm
JTMS
JTCK
JDTO
JTDI
NRST
IC702
ESDA6V1-5SC6
Title
MCU.SchDoc
Size
A4
Number
1
Revision
A0
Date:
3/17/2025
Sheet8of 10
File:
C:\Users\..\MCU.SchDoc
Drawn By:
Otto Riha



Error latch



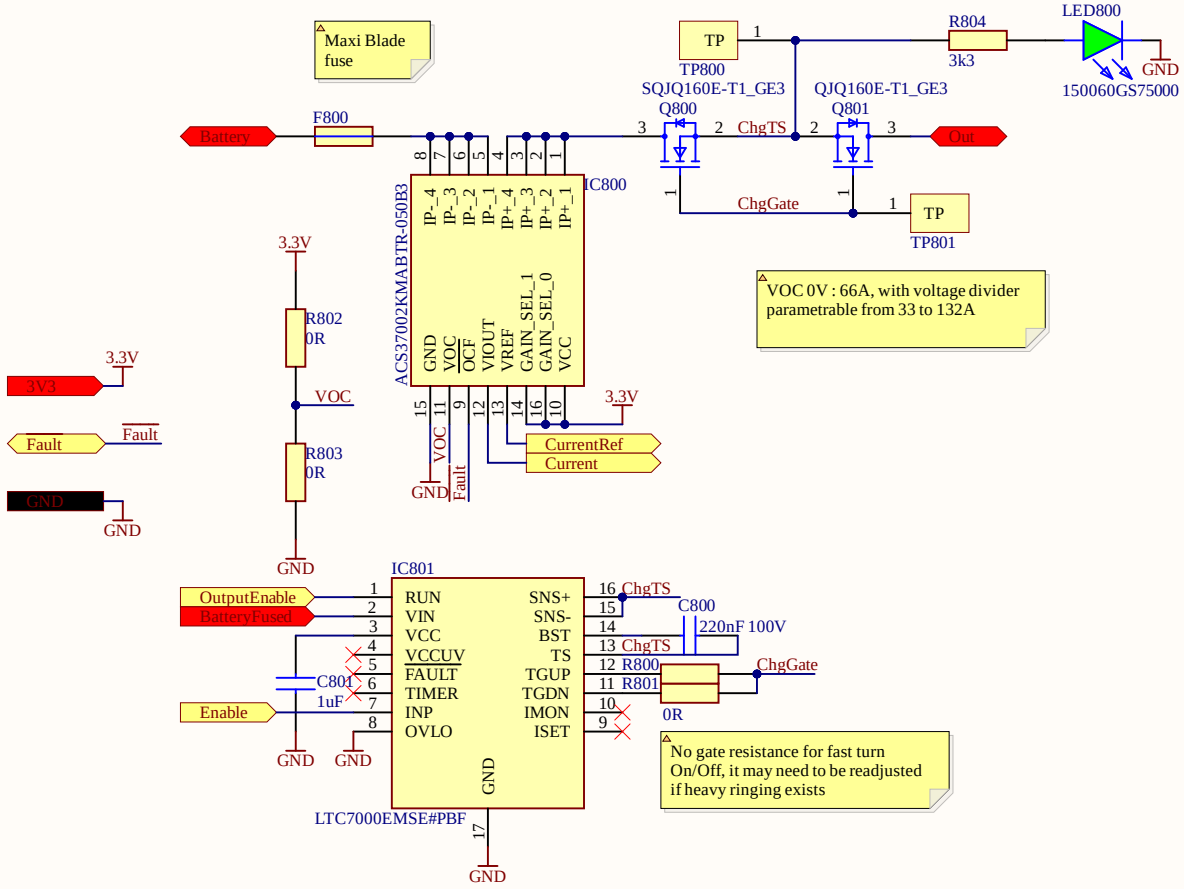
Pullup needed as current sensor and WDT outputs are all open drain

S	R	E	Q
X	X	0	OC*
1	1	1	NC+
0	1	1	1
1	0	1	0
0	0	1	Δ Δ

*OPEN CIRCUIT
+ NO CHANGE
Δ Δ DOMINATED BY R=0 INPUT

CD4044B

Title	PowerPath.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025		Sheet 9 of 10
File: C:\Users\..\PowerPath.SchDoc		Drawn By: Otto Riha



Title	Singlepath.SchDoc	
Size: A4	Number: 1	Revision: A0
Date: 3/17/2025	Sheet 1 of 10	
File: C:\Users\..\Singlepath.SchDoc	Drawn By: Otto Riha	