

A

B

C

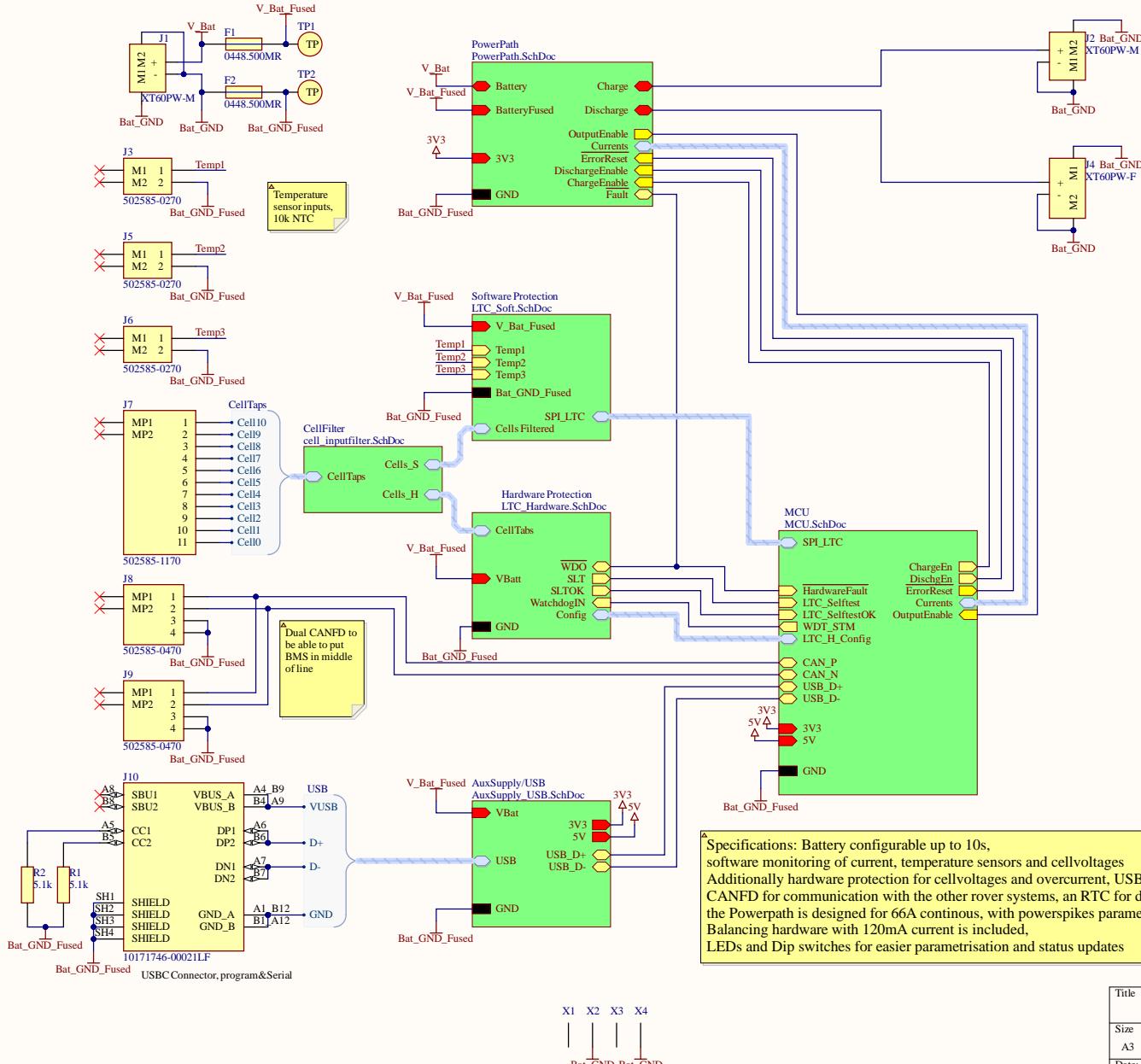
D

A

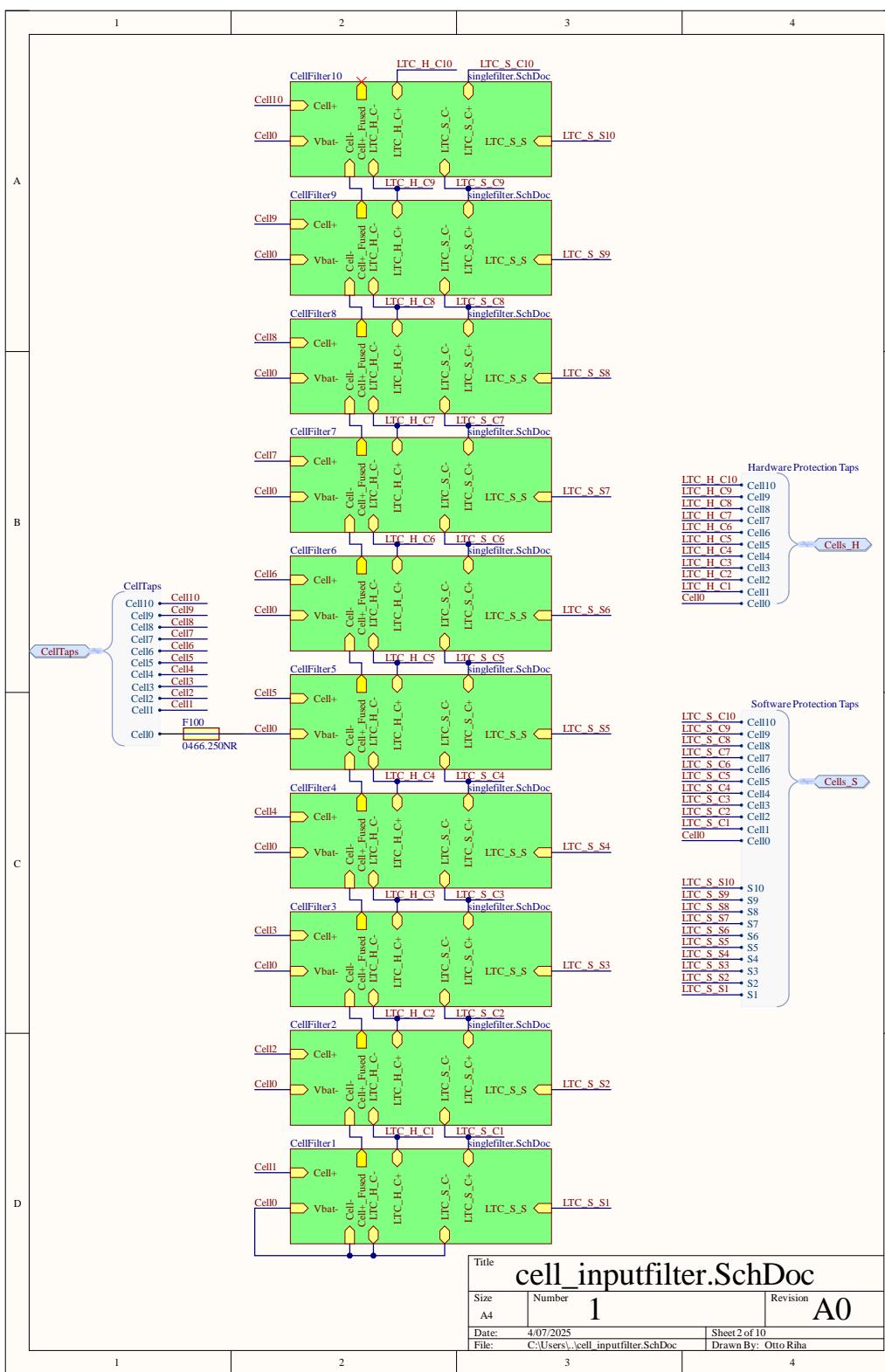
B

C

D

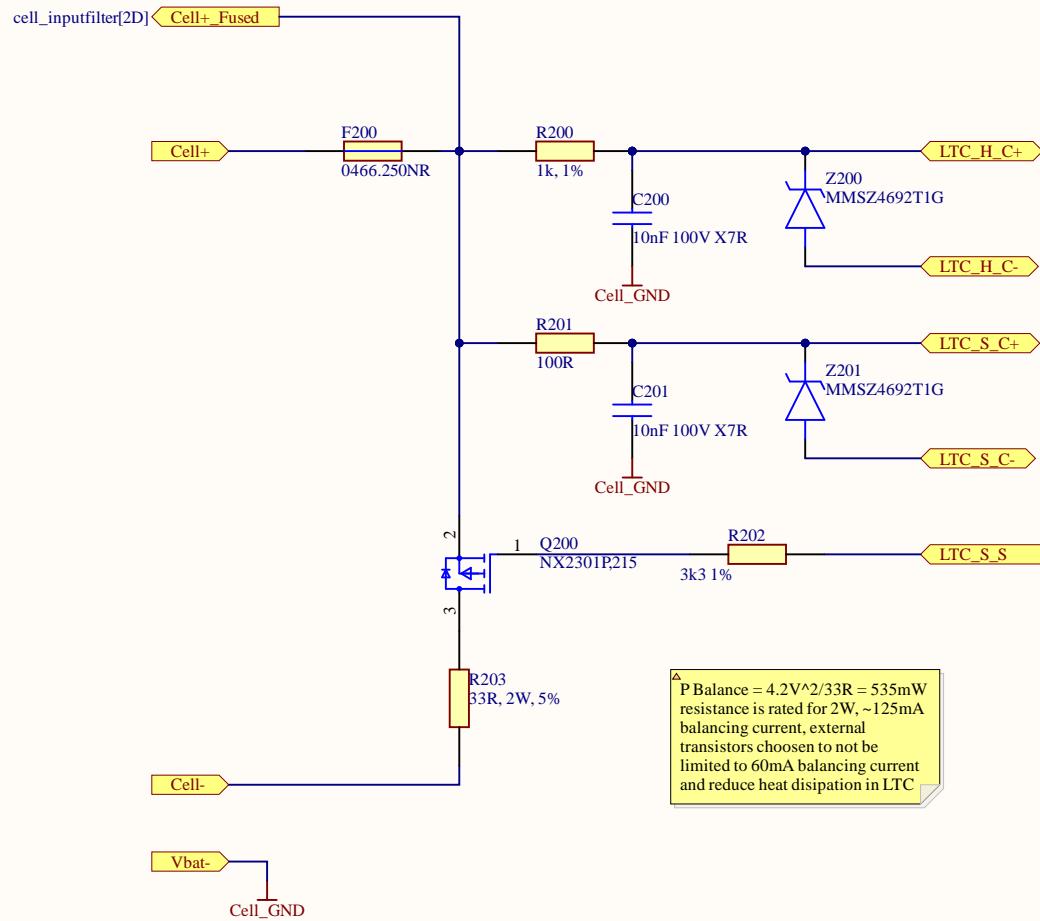


Title			Battman Main
Size	Number	Revision	A2
A3	1		
Date:	4/07/2025	Sheet	1 of 9
File:	C:\Users\...\Main.SchDoc	Drawn By:	Otto Riha



A

A



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

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

B

B

C

C

D

D

Title singlefilter.SchDoc		
Size A4	Number 1	Revision A1
Date: 4/07/2025	Sheet 3 of 10	
File: C:\Users\..\singlefilter.SchDoc	Drawn By: Otto Riha	

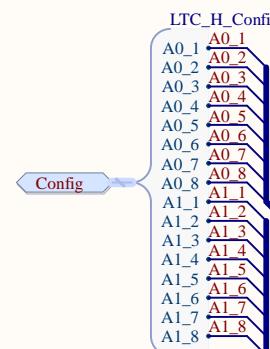
1

2

3

4

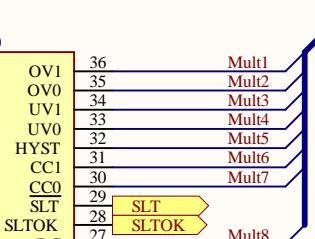
A



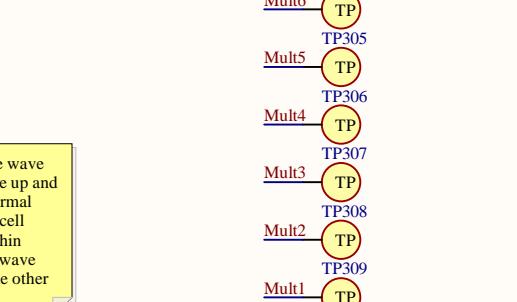
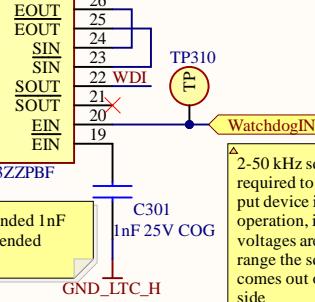
DC	NOMINAL CYCLE TIME*
V _{REG}	15.5ms
V _{REF}	Approximately 130ms
V ⁻	Approximately 500ms

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

B

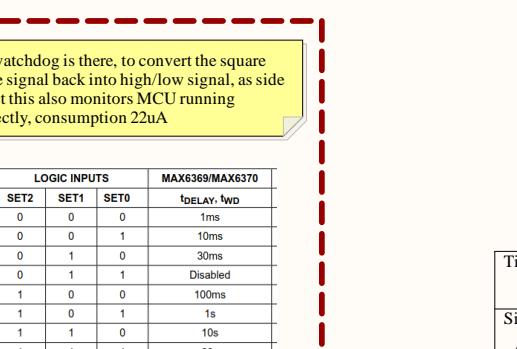
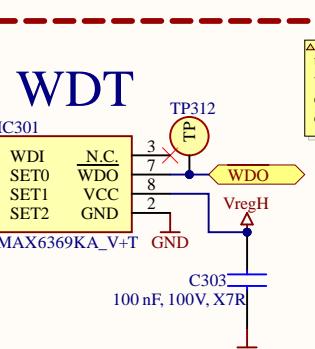


C



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

D



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

HYST	UV HYSTERESIS*	OV HYSTERESIS
V _{REG}	500mV	200mV
V _{REF}	250mV	100mV
V ⁻	0mV	0mV

Title LTC_Hardware.SchDoc		
Size	Number	Revision
A4	1	A1
Date:	4/07/2025	Sheet 4 of 10
File:	C:\Users\...\LTC_Hardware.SchDoc	Drawn By: Otto Riha

A

A

B

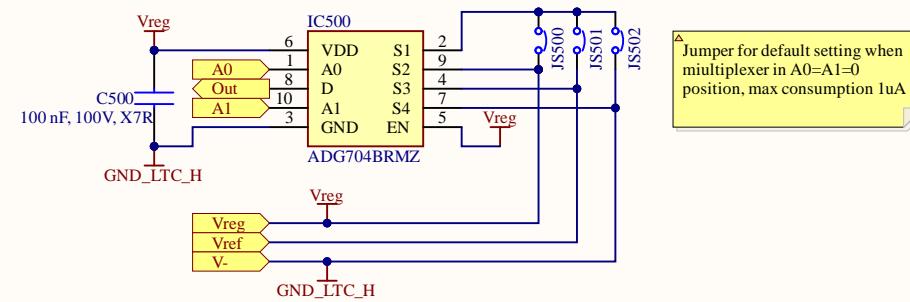
B

C

C

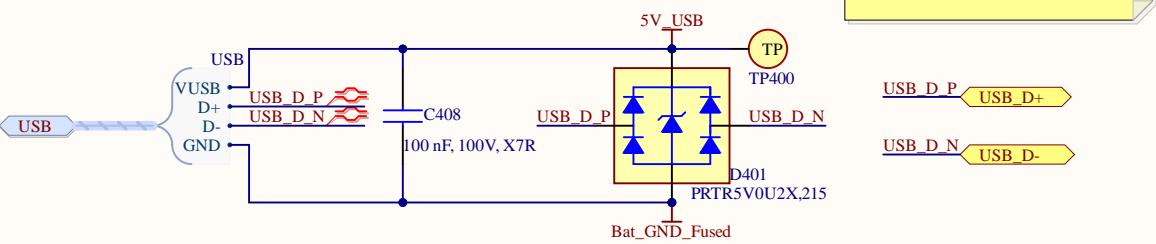
D

D

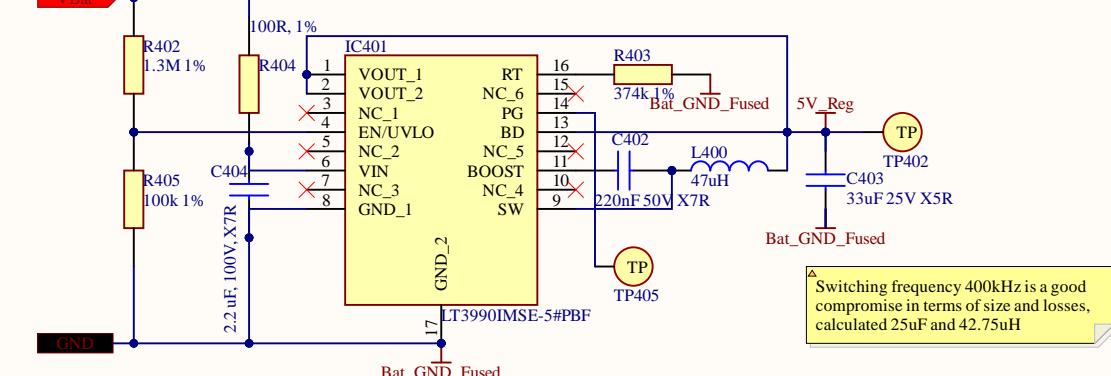


Title		
ConfigMultiplexer.SchDoc		
Size A4	Number 1	Revision A1
Date: 4/07/2025		Sheet 5 of 10
File: C:\Users\..\ConfigMultiplexer.SchDoc		Drawn By: Otto Riha

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

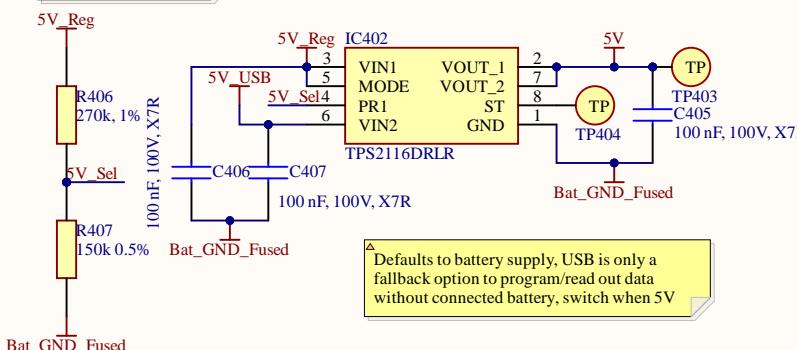
$$L = 3 \frac{V_{OUT} + V_D}{f_{SW}}$$

$$C_{OUT} = \frac{50}{V_{OUT} \cdot f_{SW}}$$

Consumption on 5V:
3.3V LDO 70.1mA
CAN Transceiver 110mA

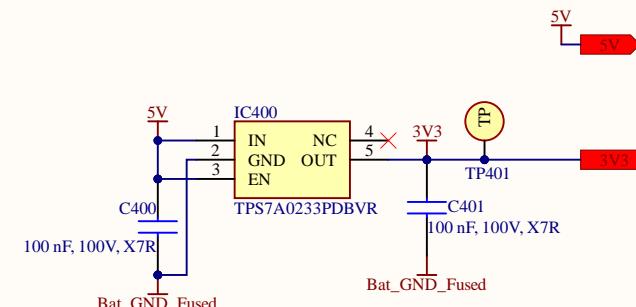
Total 170.1mA

5V Selector



Defaults to battery supply, USB is only a fallback option to program/read out data without connected battery, switch when 5V

3,3V LDO

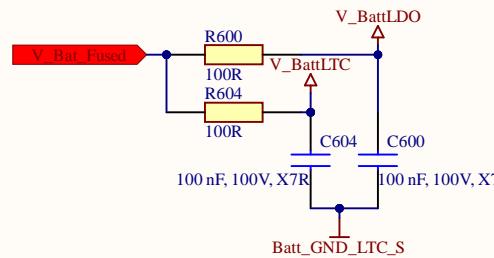


Consumption on 3.3V:
MCU 5.1mA
LED 20mA
Pullups 2mA
Latch 10mA
Current Sensors 30mA
Buzzer 3mA

Total 70.1mA

Title AuxSupply_USB.SchDoc		
Size A4	Number 1	Revision A1
Date: 4/07/2025	Sheet 6 of 10	
File: C:\Users\...\AuxSupply_USB.SchDoc	Drawn By: Otto Riha	

A



V_BattLTC

IC600

Software Protection Taps

Cell10 → 7
S10 → 8
Cell9 → 9
S9 → 10
Cell8 → 11
S8 → 12
Cell7 → 13
S7 → 14
Cell6 → 15
S6 → 16
Cell5 → 17
S5 → 18
Cell4 → 19
S4 → 20
Cell3 → 21
S3 → 22
Cell2 → 23
S2 → 24
Cell1 → 25
S1 → 26
Cell0 → 27

LTC6811IG-2#PBF

TP603 TP604 TP605 TP606

V_BattLTC

A3

A2

A1

A0

SDO_(IBIAS)

SDI_(ICMP)

SCK_(IPA)

CSB_(IMA)

ISOMD

WDT

DRIVE

VREG

DTEN

VREFI

VREF2

GPIO5

GPIO4

V_-2

V_-1

GPIO3

GPIO2

GPIO1

C0

S1

MISO

SPI_LTC

MOSI

SCK

CS

TP

TP600

TP

TP601

TP

TP602

TP

TP603

TP

TP604

TP

TP605

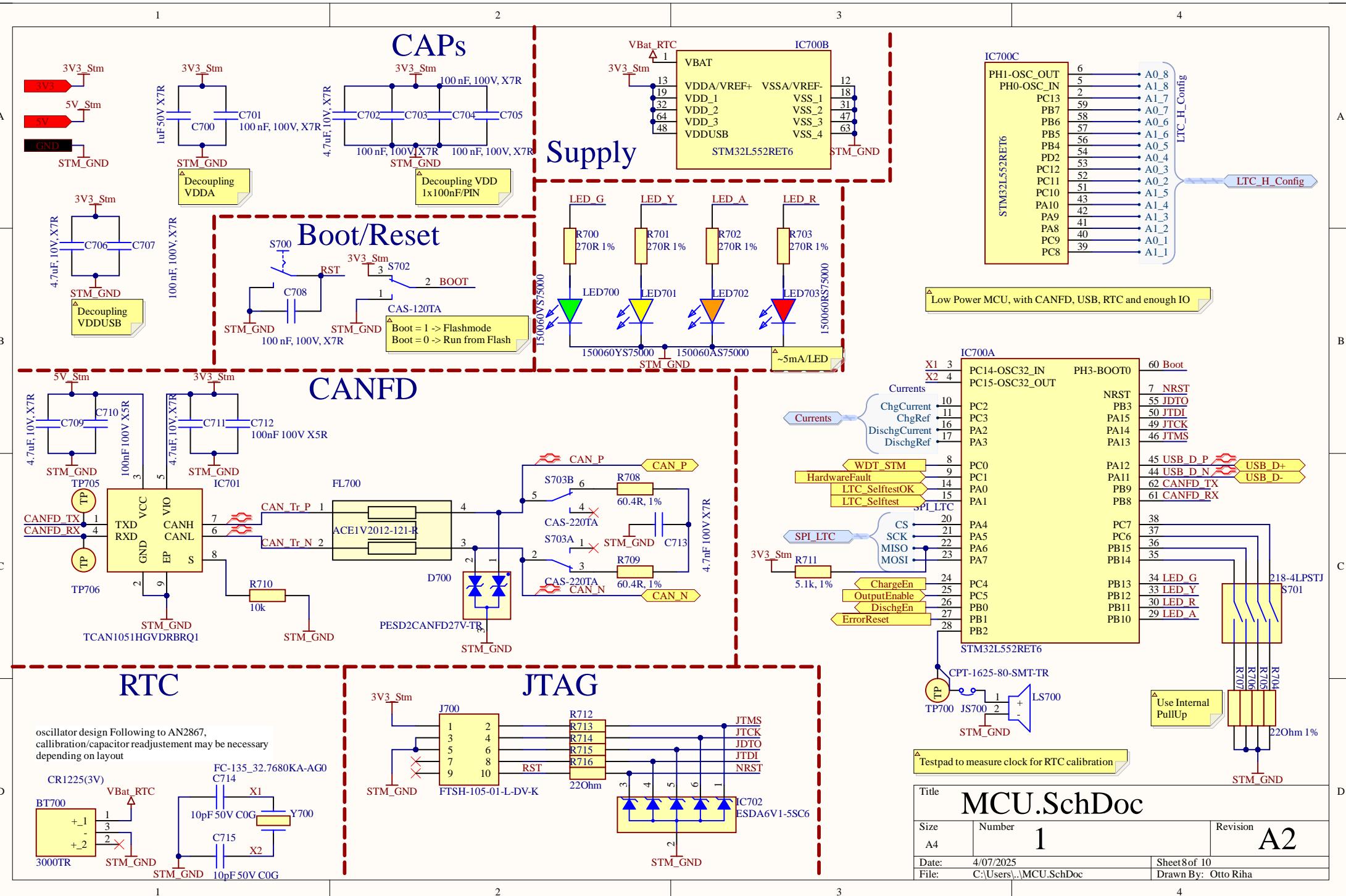
TP

TP606

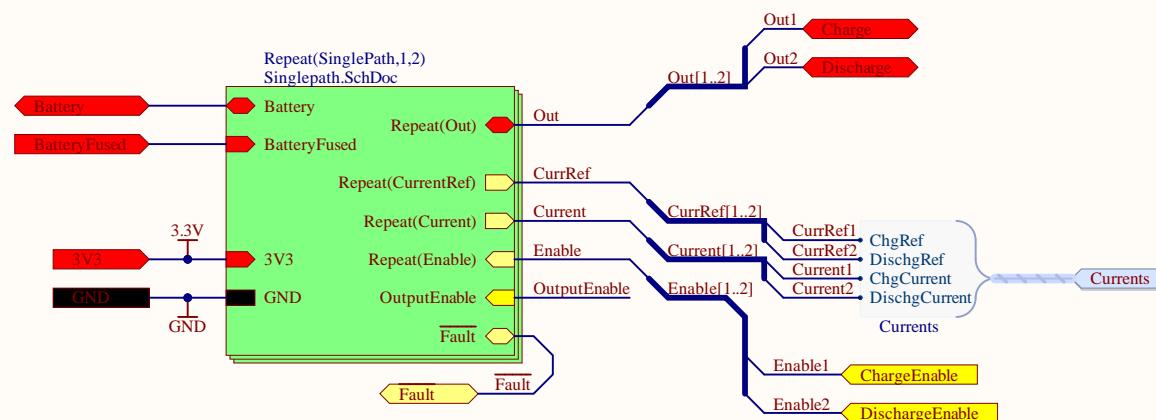
V_BattLDO

Q600 BCP56-16TF

TP



A



B

A

C

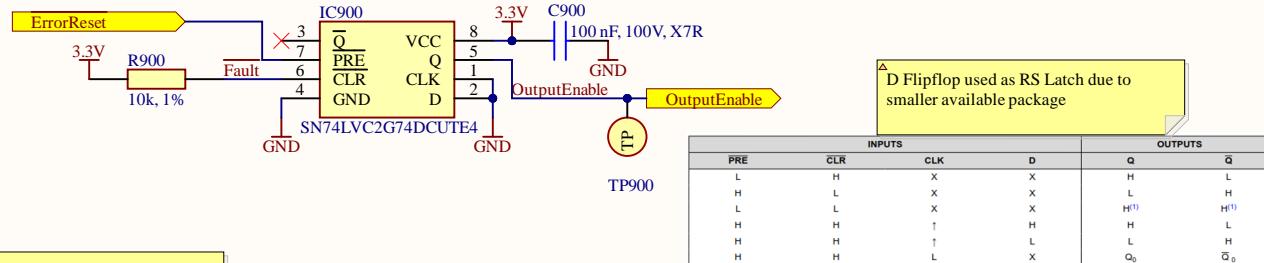
B

D

C

D

Error latch

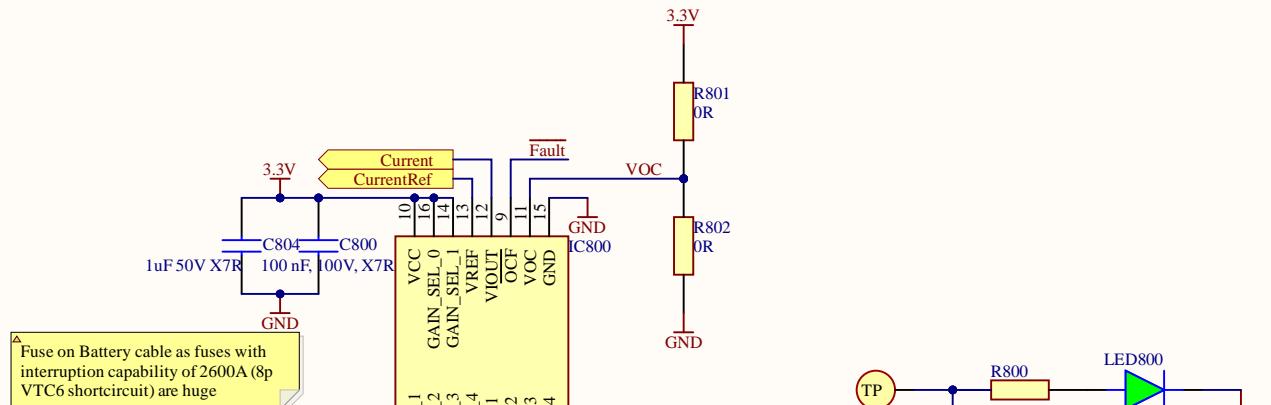


Δ D Flipflop used as RS Latch due to smaller available package

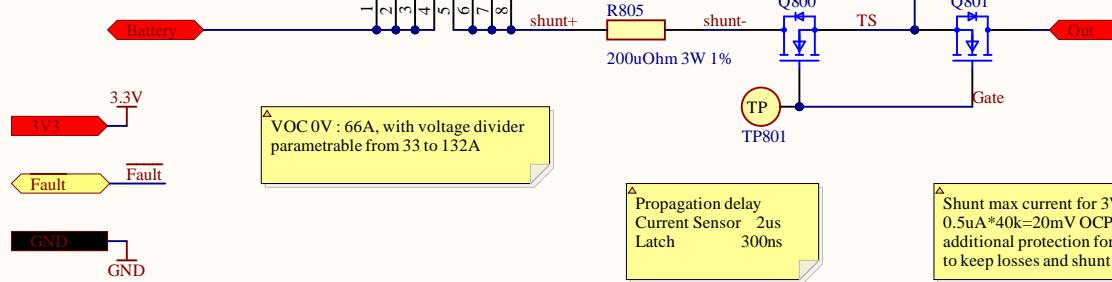
INPUTS			OUTPUTS	
PRE	CLR	CLK	D	Q
L	H	X	X	H
H	L	X	X	L
L	L	X	X	H ⁽¹⁾
H	H	↑	H	H
H	H	↑	L	L
H	H	L	X	Q ₀
				Q̄ ₀

Title		
Size	Number	Revision
A4	1	A1
Date:	4/07/2025	Sheet 9 of 10
File:	C:\Users\..\PowerPath.SchDoc	Drawn By: Otto Riha

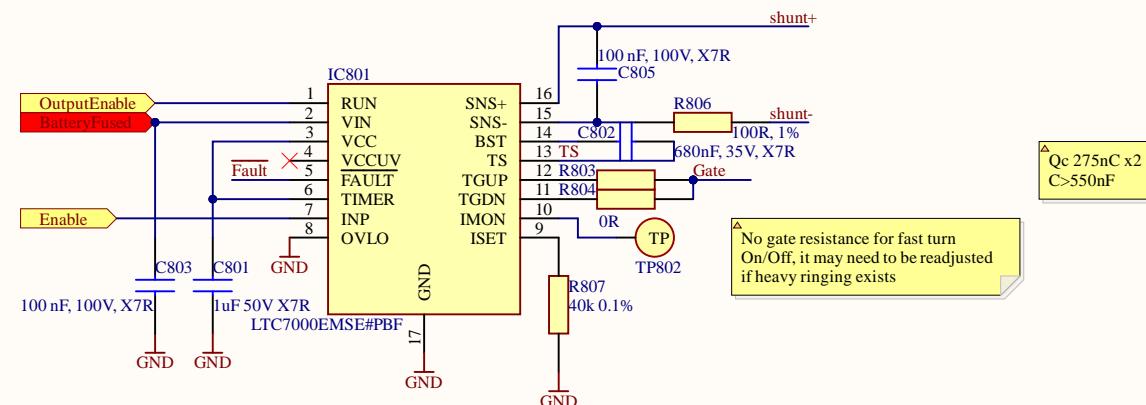
A



B



C



D

Title Singlepath.SchDoc		
Size A4	Number 1	Revision A2
Date: 4/07/2025	Sheet 1 of 10	
File: C:\Users\...\Singlepath.SchDoc		Drawn By: Otto Riha

