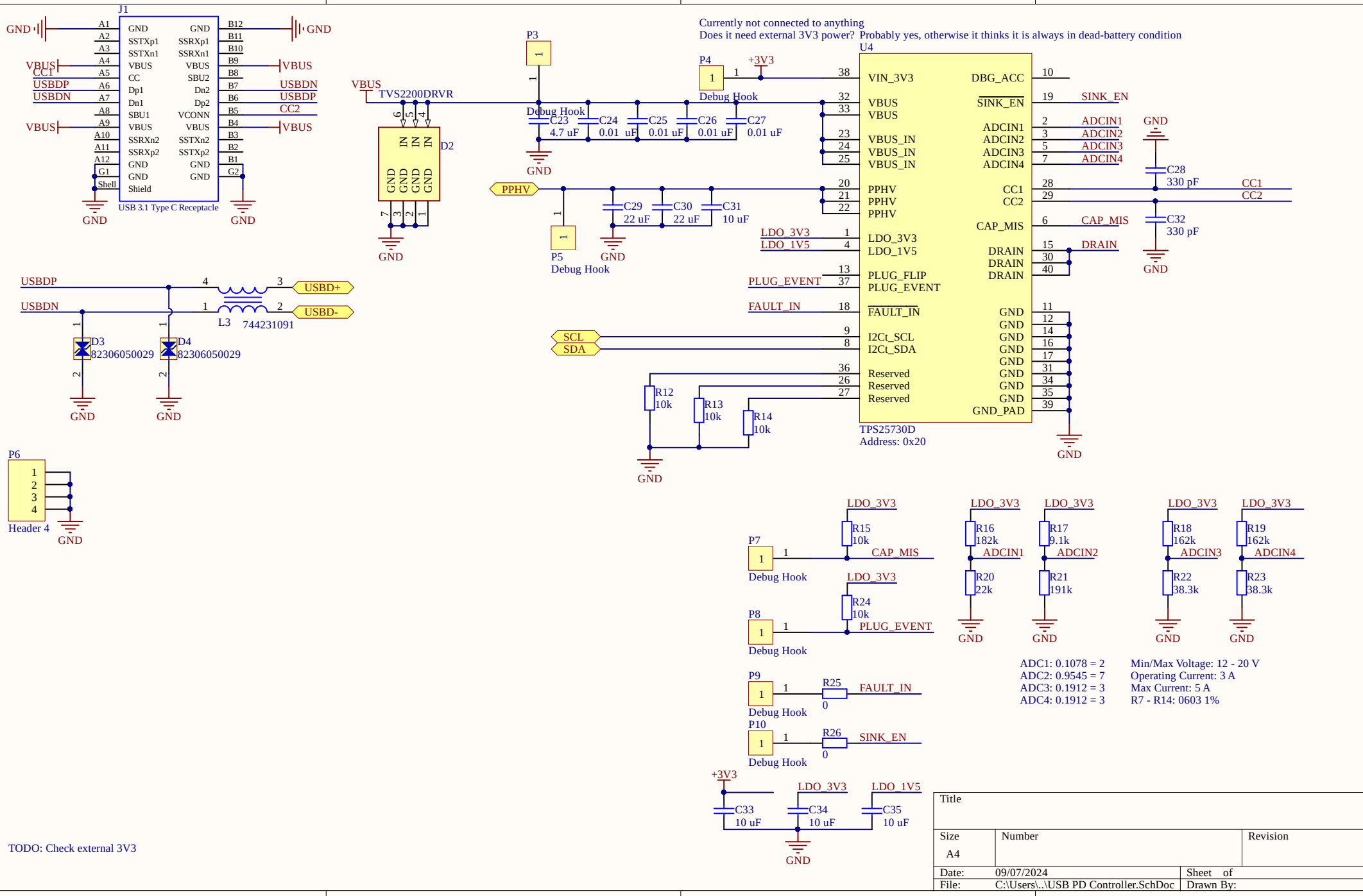
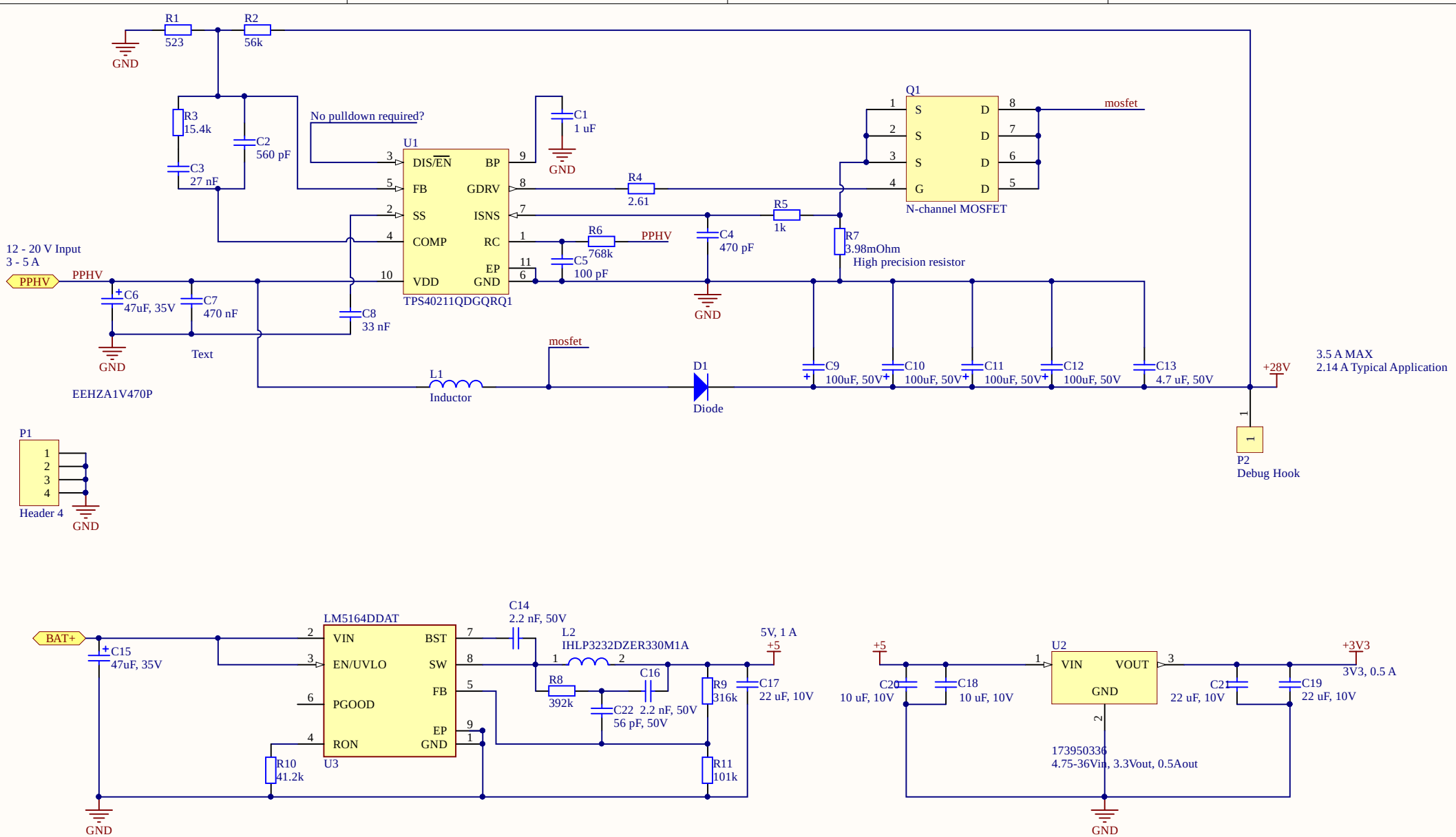
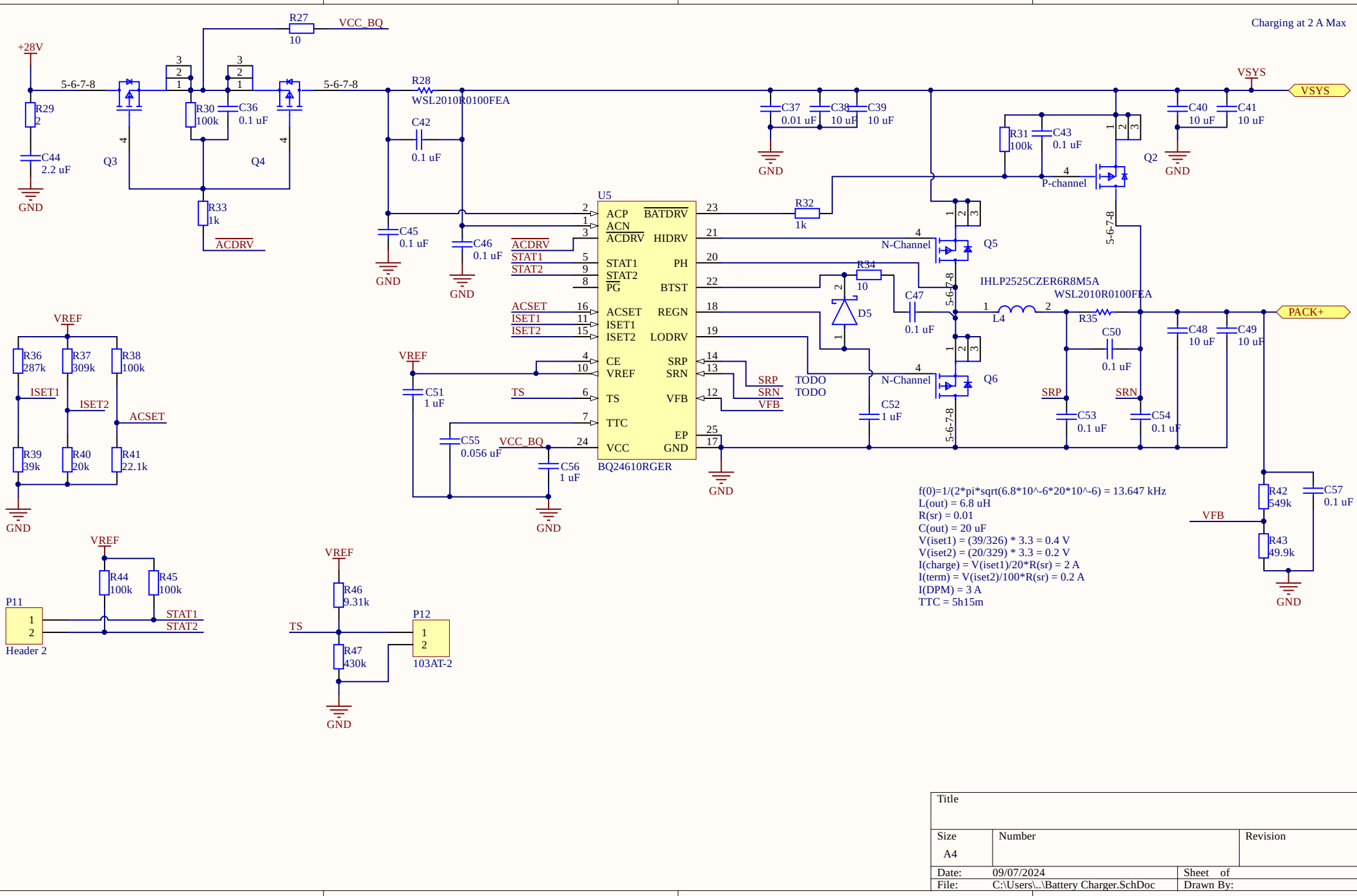
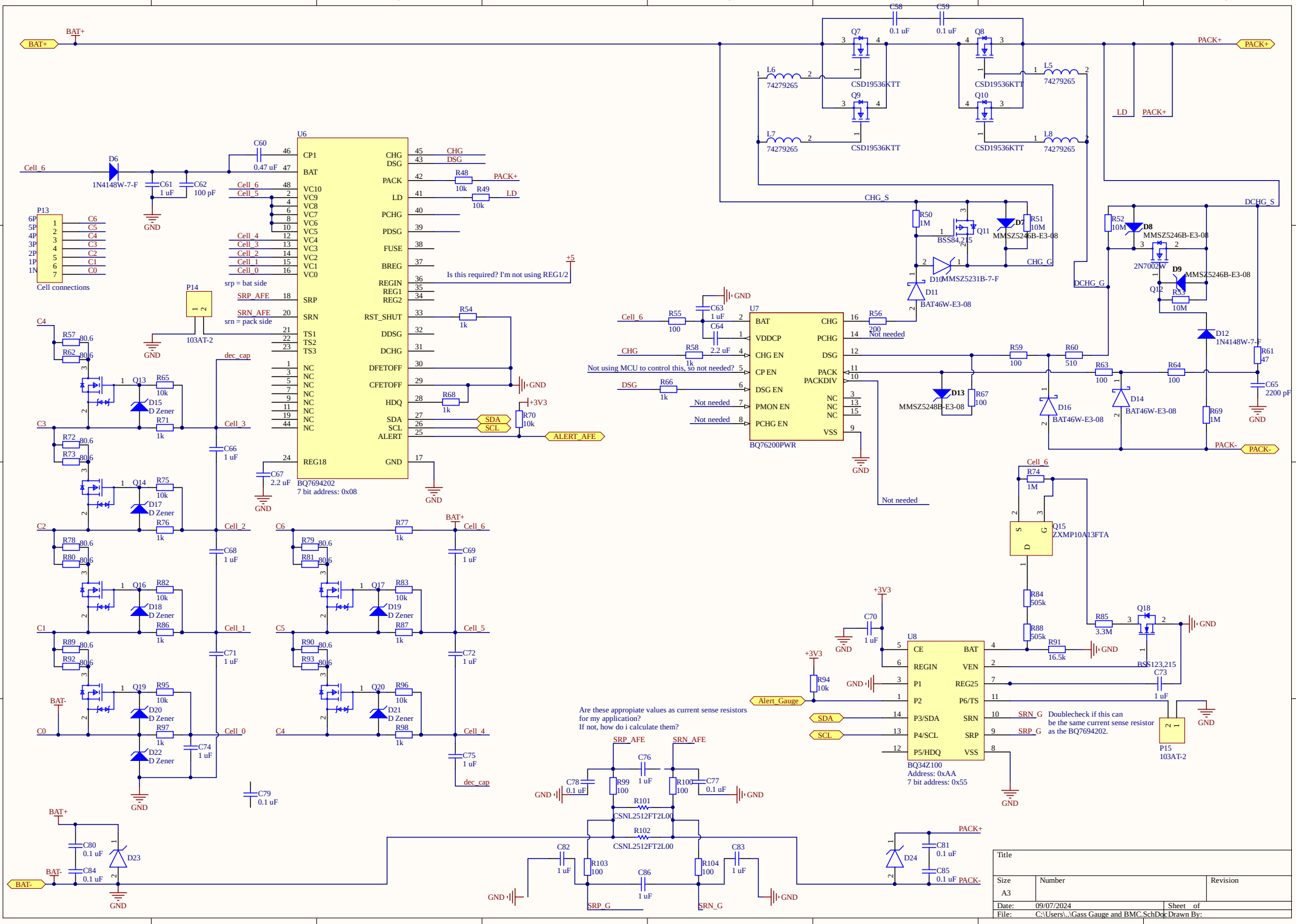
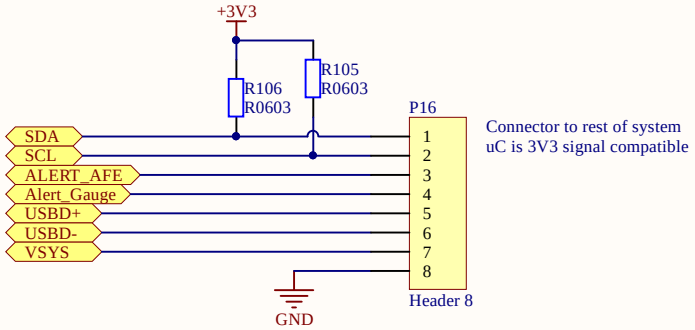

J1
USB 3.1 Type C Receptacle
TVS2200DRVR
D2
P3
P4
P5
Debug Hook
U4
TPS25730D
Address: 0x20
Currently not connected to anything
Does it need external 3V3 power? Probably yes, otherwise it thinks it is always in dead-battery condition
L3
744231091
D3
82306050029
D4
82306050029
P6
Header 4
P7
P8
P9
P10
TODO: Check external 3V3
ADC1: 0.1078 = 2
ADC2: 0.9545 = 7
ADC3: 0.1912 = 3
ADC4: 0.1912 = 3
Min/Max Voltage: 12 - 20 V
Operating Current: 3 A
Max Current: 5 A
R7 - R14: 0603 1%
Title
Size
A4
Number
Revision
Date: 09/07/2024
File: C:\Users\..\USB PD Controller.SchDoc
Sheet of
Drawn By:


R1
523
R2
56k
GND
R3
15.4k
C2
560 pF
C3
27 nF
No pulldown required?
U1
DIS/EN
BP
FB
GDRV
SS
ISNS
COMP
RC
EP
VDD
GND
TPS40211QDGQRQ1
C1
1 uF
GND
R4
2.61
Q1
S
D
G
mosfet
N-channel MOSFET
R5
1k
R6
768k
PPHV
C5
100 pF
C4
470 pF
GND
R7
3.98mOhm
High precision resistor
12 - 20 V Input
3 - 5 A
PPHV
C6
47uF, 35V
C7
470 nF
C8
33 nF
GND
Text
EEHZA1V470P
mosfet
L1
Inductor
D1
Diode
C9
100uF, 50V
C10
100uF, 50V
C11
100uF, 50V
C12
100uF, 50V
C13
4.7 uF, 50V
+28V
3.5 A MAX
2.14 A Typical Application
P2
Debug Hook
P1
Header 4
GND
BAT+
C15
47uF, 35V
LM5164DDAT
VIN
BST
EN/UVLO
SW
PGOOD
FB
RON
EP
GND
U3
C14
2.2 nF, 50V
L2
IHLP3232DZER330M1A
5V, 1 A
+5
R8
392k
C16
C22 2.2 nF, 50V
56 pF, 50V
R9
316k
C17
22 uF, 10V
R10
41.2k
R11
101k
GND
+5
C20
10 uF, 10V
C18
10 uF, 10V
U2
VIN
VOUT
GND
173950336
4.75-36Vin, 3.3Vout, 0.5Aout
+3V3
3V3, 0.5 A
C21
22 uF, 10V
C19
22 uF, 10V
GND
TODO: Measurement Points
Title
Size
A4
Number
Revision
Date:
09/07/2024
Sheet of
File:
C:\Users\..\Boost Converter.SchDoc
Drawn By:


Charging at 2 A Max
+28V
R27
10
VCC_BQ
R28
WSL2010R0100FEA
VSYS
R29
2
C44
2.2 uF
GND
Q3
Q4
R30
100k
C36
0.1 uF
R33
1k
ACDRV
C42
0.1 uF
C45
0.1 uF
C46
0.1 uF
C37
0.01 uF
C38
10 uF
C39
10 uF
C40
10 uF
C41
10 uF
R31
100k
C43
0.1 uF
Q2
P-channel
U5
ACP
ACN
ACDRV
STAT1
STAT2
PG
ACSET
ISET1
ISET2
CE
VREF
TS
TTC
VCC
BATDRV
HIDRV
PH
BTST
REGN
LODRV
SRP
SRN
VFB
EP
GND
BQ24610RGER
R32
1k
Q5
N-Channel
R34
10
D5
C47
0.1 uF
IHLP2525CZER6R8M5A
WSL2010R0100FEA
L4
R35
C50
0.1 uF
C48
10 uF
C49
10 uF
PACK+
TODO
TODO
Q6
C52
1 uF
C53
0.1 uF
C54
0.1 uF
VREF
R36
287k
R37
309k
R38
100k
ISET1
ISET2
ACSET
R39
39k
R40
20k
R41
22.1k
C51
1 uF
C55
0.056 uF
C56
1 uF
R42
549k
C57
0.1 uF
R43
49.9k
VFB
P11
Header 2
R44
100k
R45
100k
STAT1
STAT2
R46
9.31k
R47
430k
P12
103AT-2
f(0)=1/(2*pi*sqrt(6.8*10^-6*20*10^-6) = 13.647 kHz
L(out) = 6.8 uH
R(sr) = 0.01
C(out) = 20 uF
V(iset1) = (39/326) * 3.3 = 0.4 V
V(iset2) = (20/329) * 3.3 = 0.2 V
I(charge) = V(iset1)/20*R(sr) = 2 A
I(term) = V(iset2)/100*R(sr) = 0.2 A
I(DPM) = 3 A
TTC = 5h15m
Title
Size
A4
Number
Revision
Date:
09/07/2024
Sheet of
File:
C:\Users\..\Battery Charger.SchDoc
Drawn By:


BAT+
PACK+
LD
CHG_S
DCHG_S
CHG_G
DCHG_G
PACK-
U6
BQ7694202
7 bit address: 0x08
U7
BQ76200PWR
U8
BQ34Z100
Address: 0xAA
7 bit address: 0x55
Cell connections
srp = bat side
srn = pack side
Is this required? I'm not using REG1/2
Not using MCU to control this, so not needed?
Not needed
Are these appropiate values as current sense resistors for my application?
If not, how do i calculate them?
Doublecheck if this can be the same current sense resistor as the BQ7694202.
Title
Size
A3
Number
Revision
Date: 09/07/2024
Sheet of
File: C:\Users\..\Gass Gauge and BMC.SchDoc
Drawn By:



Connector to rest of system
uC is 3V3 signal compatible

Does the return line of the rest of the system have to go to GND or PACK- for current sensing?

Title		
Size: A4	Number	Revision
Date: 09/07/2024		Sheet of
File: C:\Users\..\To System.SchDoc		Drawn By: