solar Voc=11.06V ,Ioc=0.1675mA, we will account for temp in the LLO. Voc= 10.16V , Ioc= 0.1780mA, Vmp=8.128 V, Imp= 0.1695mA.

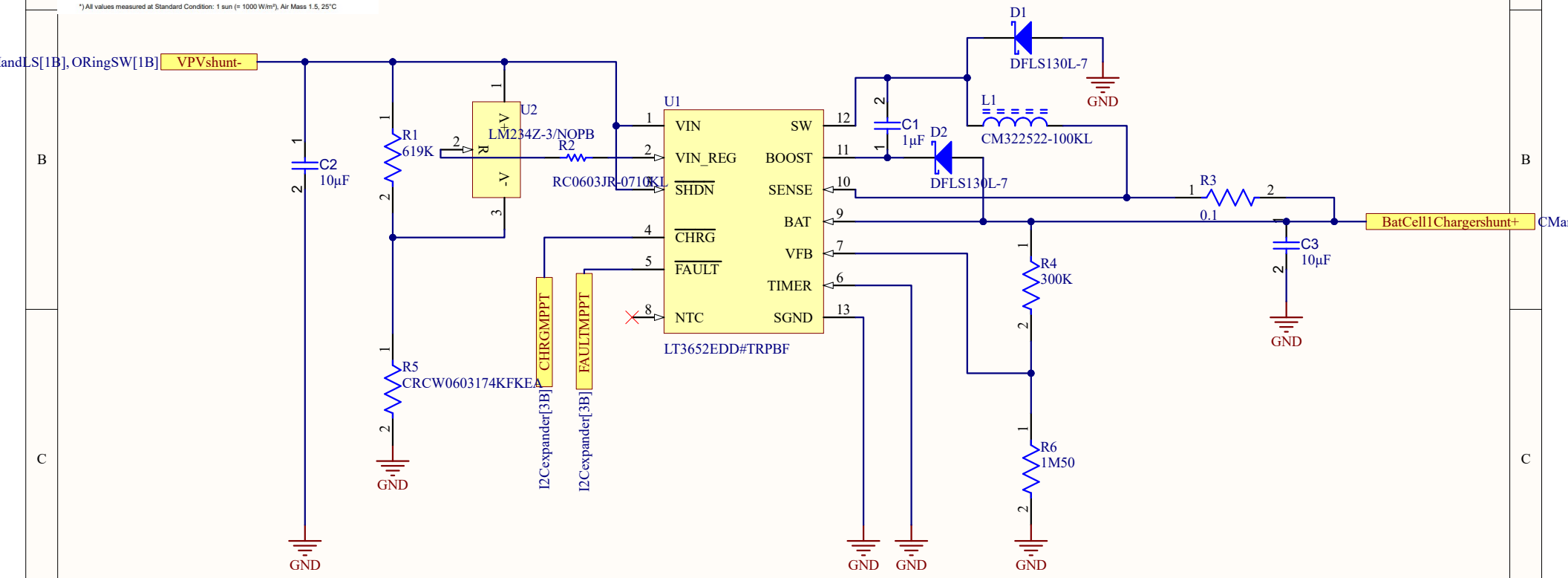
V_{oc}	open circuit voltage	5.53	V
I_{sc}	short circuit current	167.5	mA
V_{mpp}	voltage at max. power point	4.46	V
I_{mpp}	current at max. power point	157.3	mA
P_{mpp}	maximum peak power	702	mW
FF	fill factor	> 70	%
η	solar cell efficiency	25	%
$\Delta V_{oc}/\Delta T$	open circuit voltage temp. coefficient	-13.92	mV/K
$\Delta I_{sc}/\Delta T$	max power temp. coefficient	75.8	uA /K

*) All values measured at Standard Condition: 1 sun (= 1000 W/m²), Air Mass 1.5, 25°C

4.2.3 Charge / discharge condition (I)

Cells shall be charged at constant current of 0.3C to 4.10V with end current of 1/20C. Cells shall be discharged at constant current of 0.5C to 2.85V. Cells are to rest 10 minutes after charge and 20 minutes after discharge at 24 ºC ± 2 ºC.

Pin for 6pnales= 4.12W, Pin for 8= 5.5W, V at battery cell = 4.2V so I charge= 0.6-1A. will make the limit at 1A



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Size A	Number	Revision
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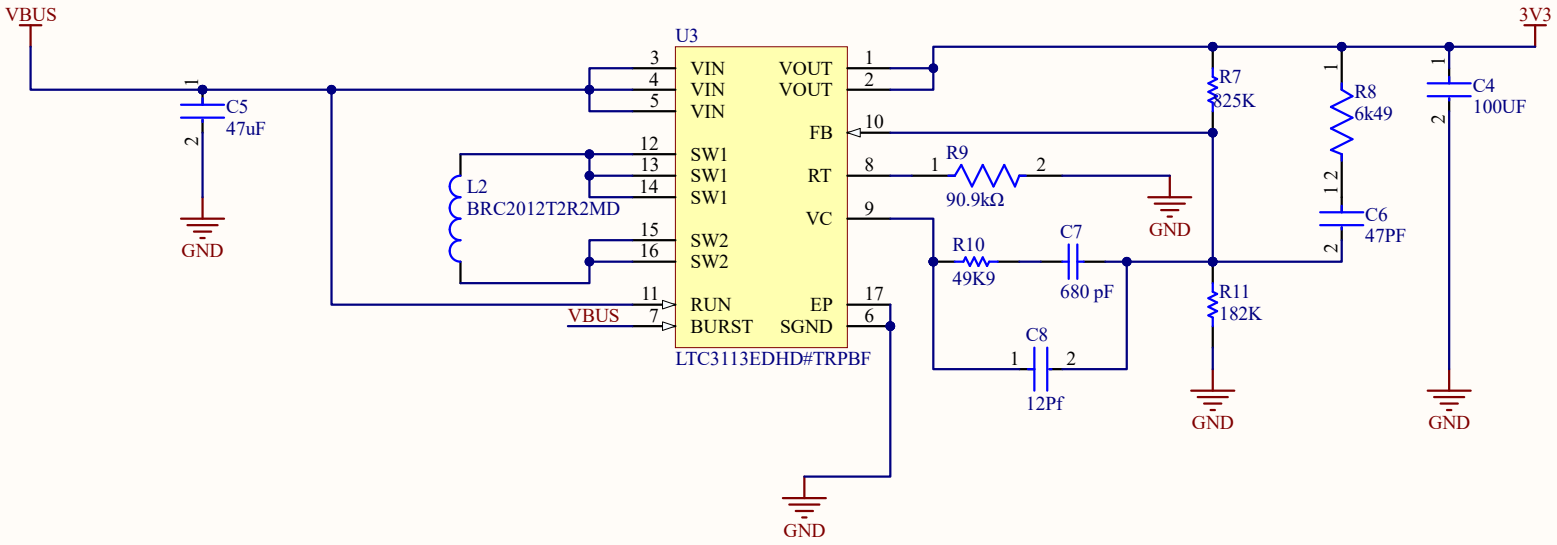

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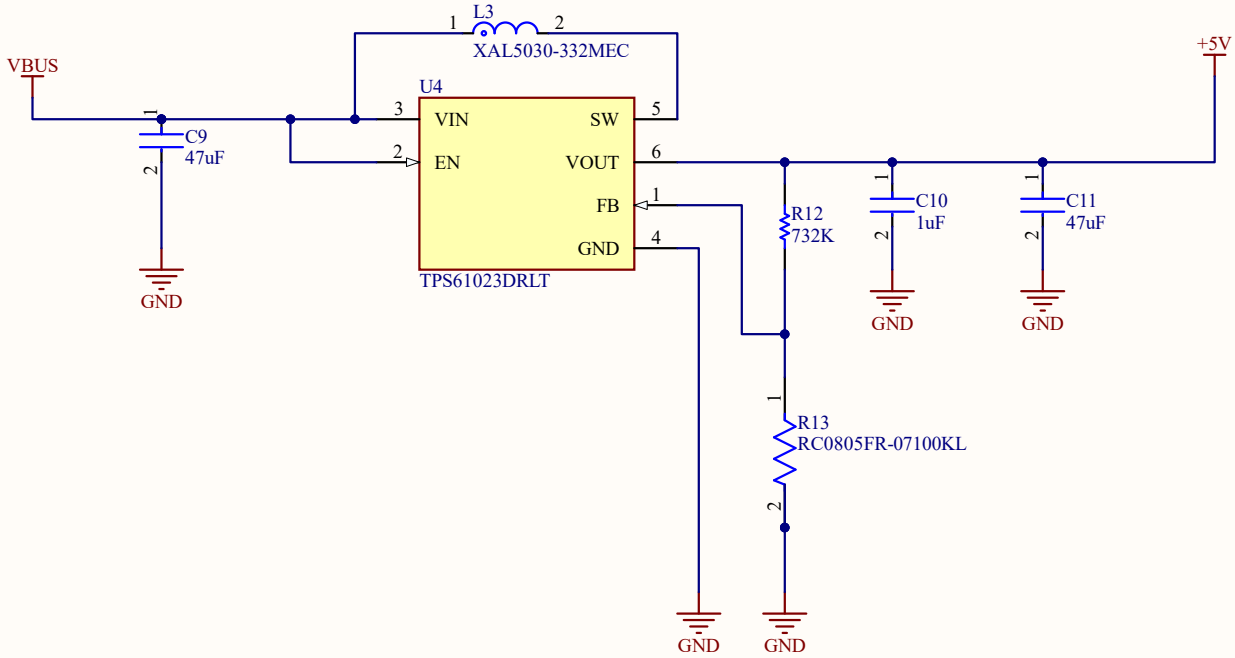

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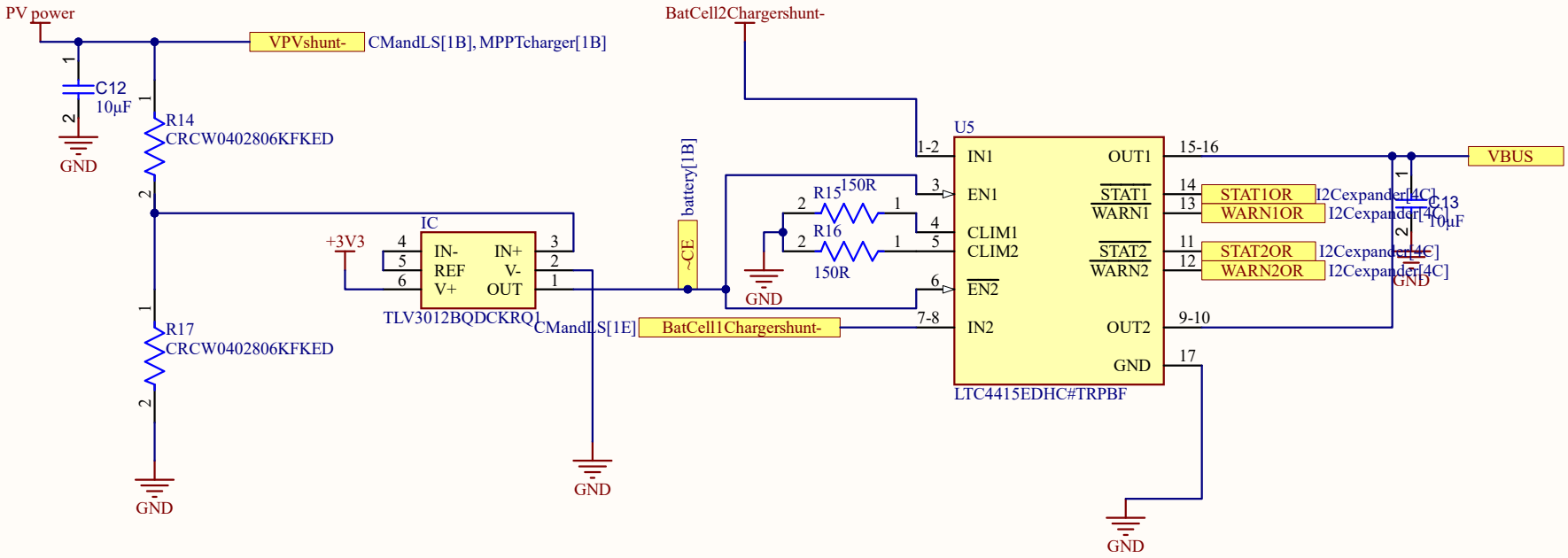

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Date: 4/24/2025		Sheet of
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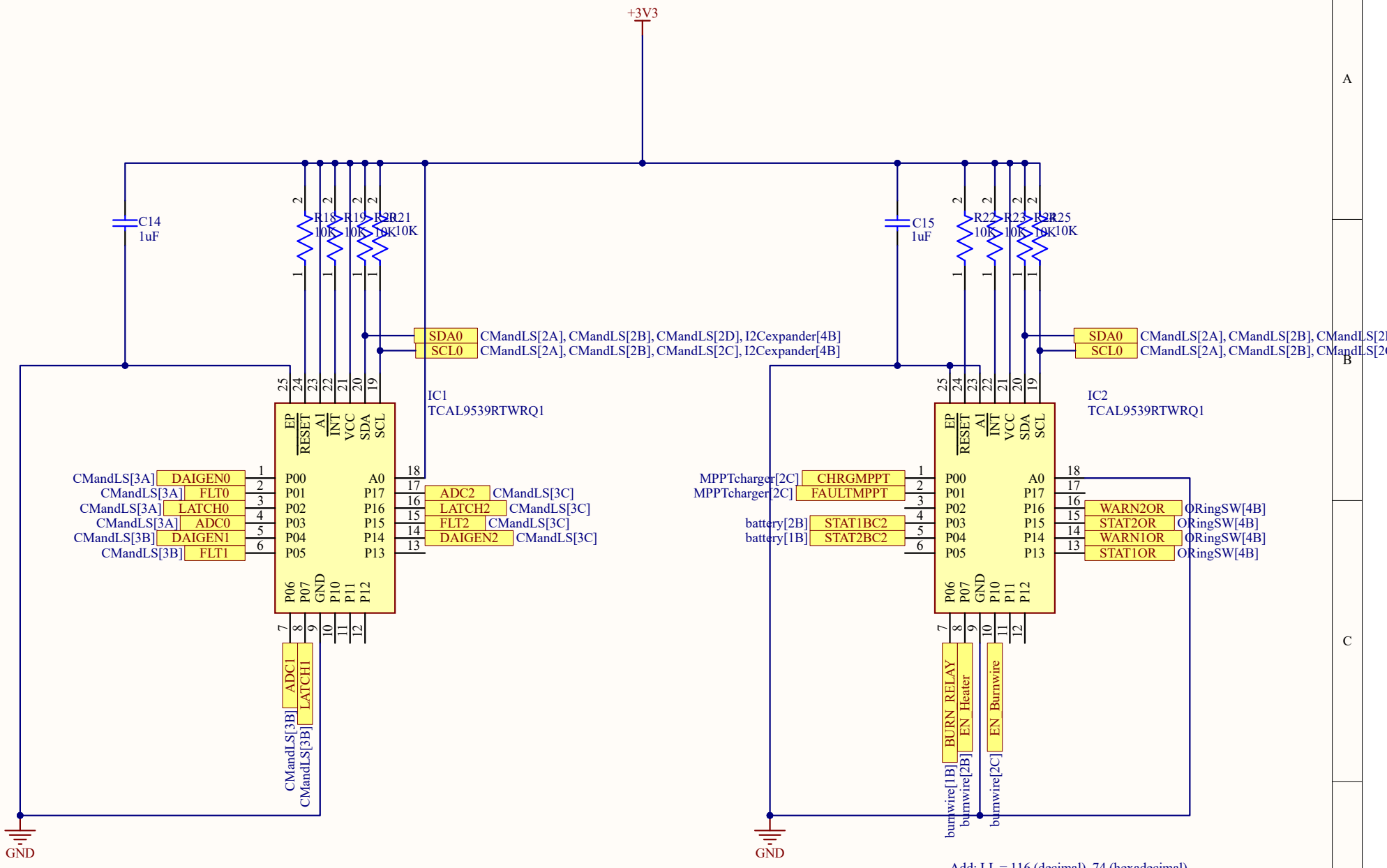

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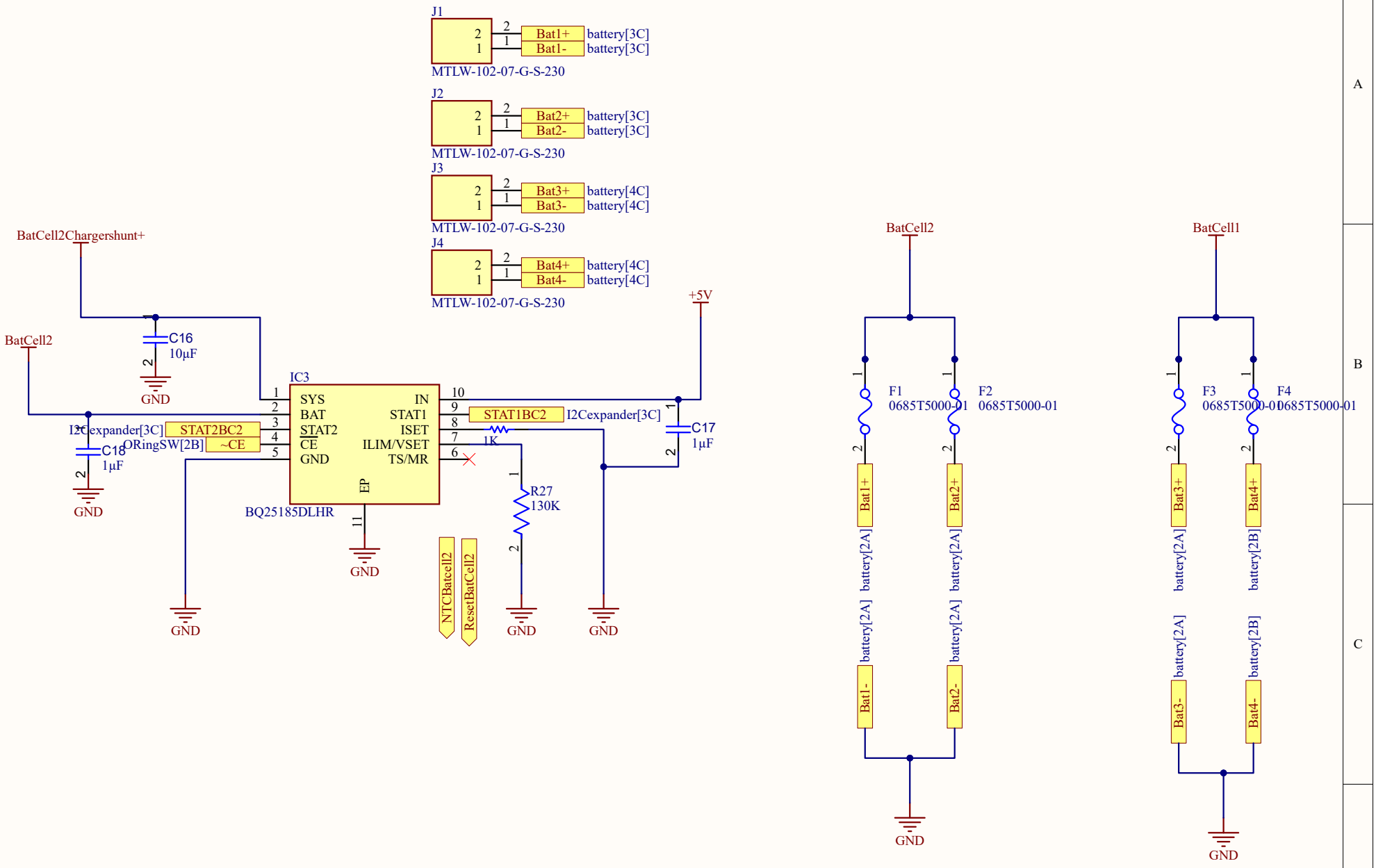
J1
Bat1+
Bat1-
battery[3C]
MTLW-102-07-G-S-230
J2
Bat2+
Bat2-
J3
Bat3+
Bat3-
battery[4C]
J4
Bat4+
Bat4-
BatCell2Chargershunt+
BatCell2
C16
10µF
IC3
SYS
BAT
STAT2
CE
GND
IN
STAT1
ISET
ILIM/VSET
TS/MR
EP
BQ25185DLHR
STAT2BC2
STAT1BC2
I2Cexpander[3C]
ORingSW[2B]
~CE
C18
1µF
1K
R27
130K
C17
+5V
NTCBatcell2
ResetBatCell2
BatCell1
F1
F2
F3
F4
0685T5000-01
battery[2A]
battery[2B]
Title
CUBESAT_EPS_BATTERIES
Size
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Number
Revision
Date:
4/24/2025
Sheet of
File:
C:\Users\..\battery.SchDoc
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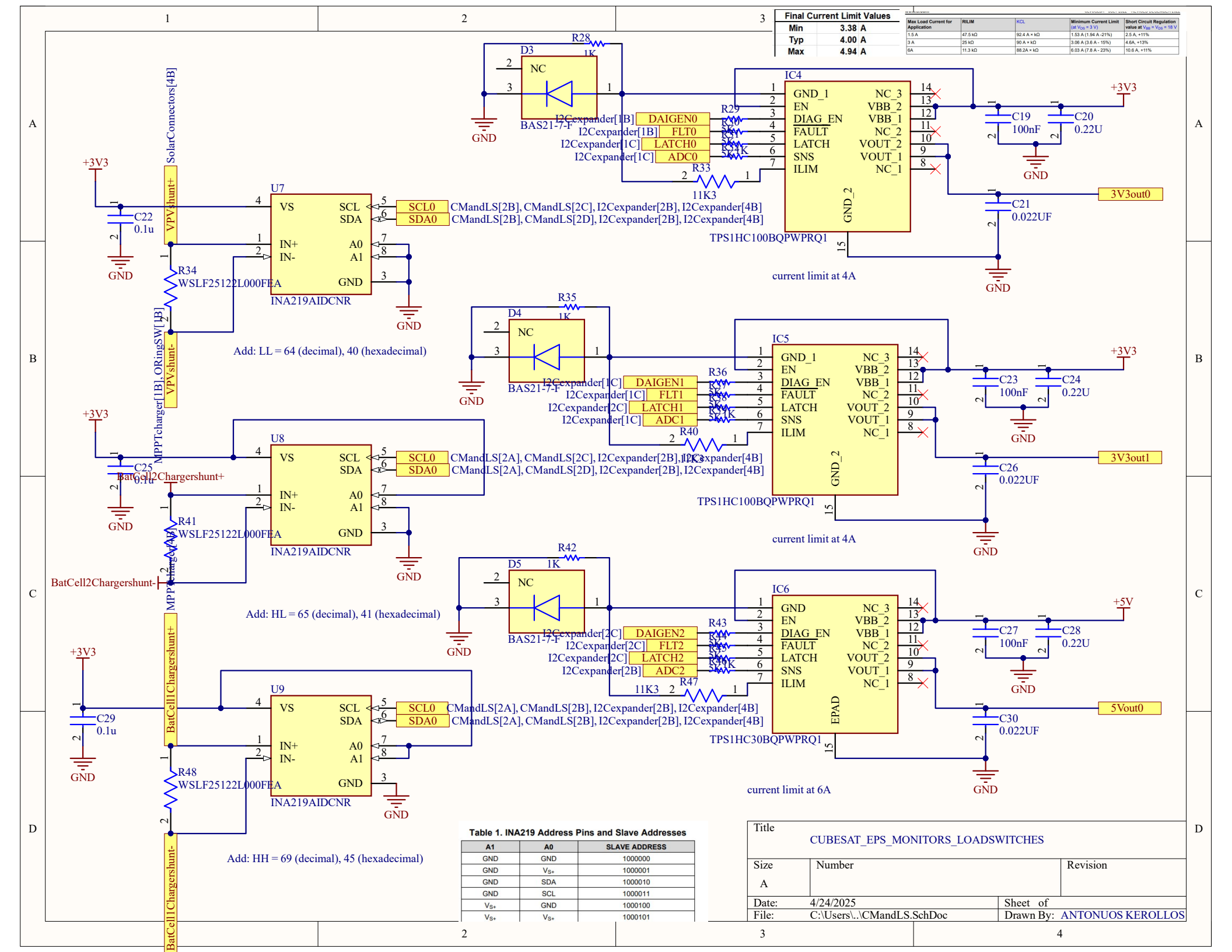
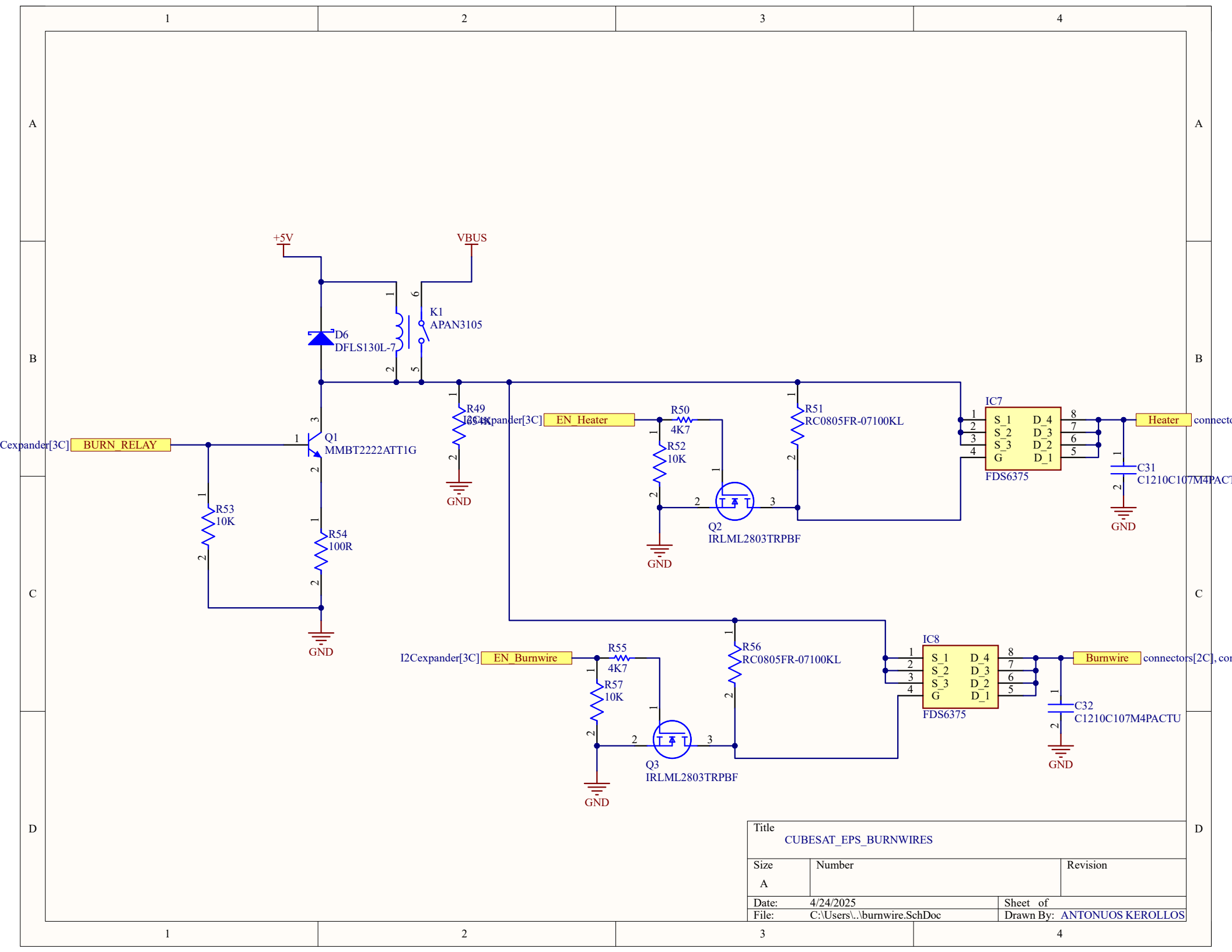

Final Current Limit Values
Min 3.38 A
Typ 4.00 A
Max 4.94 A
SolarConnectors[4B]
MPPTcharger[1B], ORingSW[1B]
BatCell2Chargershunt+
BatCell2Chargershunt-
BatCell1Chargershunt+
BatCell1Chargershunt-
VPVshunt+
VPVshunt-
U7
U8
U9
INA219AIDCNR
R34 WSLF25122L000FEA
R41 WSLF25122L000FEA
R48 WSLF25122L000FEA
Add: LL = 64 (decimal), 40 (hexadecimal)
Add: HL = 65 (decimal), 41 (hexadecimal)
Add: HH = 69 (decimal), 45 (hexadecimal)
SCL0 CMandLS[2B], CMandLS[2C], I2Cexpander[2B], I2Cexpander[4B]
SDA0 CMandLS[2B], CMandLS[2D], I2Cexpander[2B], I2Cexpander[4B]
SCL0 CMandLS[2A], CMandLS[2C], I2Cexpander[2B], I2Cexpander[4B]
SDA0 CMandLS[2A], CMandLS[2D], I2Cexpander[2B], I2Cexpander[4B]
SCL0 CMandLS[2A], CMandLS[2B], I2Cexpander[2B], I2Cexpander[4B]
SDA0 CMandLS[2A], CMandLS[2B], I2Cexpander[2B], I2Cexpander[4B]
IC4
IC5
IC6
TPS1HC100BQPWPRQ1
TPS1HC30BQPWPRQ1
current limit at 4A
current limit at 4A
current limit at 6A
D3 BAS21-7-F
D4 BAS21-7-F
D5 BAS21-7-F
I2Cexpander[1B] DAIGEN0
I2Cexpander[1B] FLT0
I2Cexpander[1C] LATCH0
I2Cexpander[1C] ADC0
I2Cexpander[1C] DAIGEN1
I2Cexpander[1C] FLT1
I2Cexpander[2C] LATCH1
I2Cexpander[1C] ADC1
I2Cexpander[2C] DAIGEN2
I2Cexpander[2C] FLT2
I2Cexpander[2C] LATCH2
I2Cexpander[2B] ADC2
3V3out0
3V3out1
5Vout0
+3V3
+5V
GND
Table 1. INA219 Address Pins and Slave Addresses
A1 | A0 | SLAVE ADDRESS
GND | GND | 1000000
GND | VS+ | 1000001
GND | SDA | 1000010
GND | SCL | 1000011
VS+ | GND | 1000100
VS+ | VS+ | 1000101
Title CUBESAT_EPS_MONITORS_LOADSWITCHES
Size A
Number
Revision
Date: 4/24/2025
Sheet of
File: C:\Users\..\CMandLS.SchDoc
Drawn By: ANTONUOS KEROLLOS


+5V
VBUS
K1
APAN3105
D6
DFLS130L-7
R49
I2Cexpander[3C]
EN_Heater
R50
4K7
R52
10K
R51
RC0805FR-07100KL
IC7
S_1
S_2
S_3
G
D_4
D_3
D_2
D_1
FDS6375
Heater
C31
C1210C107M4PACT
Q2
IRLML2803TRPBF
GND
Cexpander[3C]
BURN_RELAY
Q1
MMBT2222ATT1G
R53
10K
R54
100R
I2Cexpander[3C]
EN_Burnwire
R55
4K7
R57
10K
R56
RC0805FR-07100KL
IC8
FDS6375
Burnwire
connectors[2C], con
C32
C1210C107M4PACTU
Q3
IRLML2803TRPBF
Title
CUBESAT_EPS_BURNWIRES
Size
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Revision
Date:
4/24/2025
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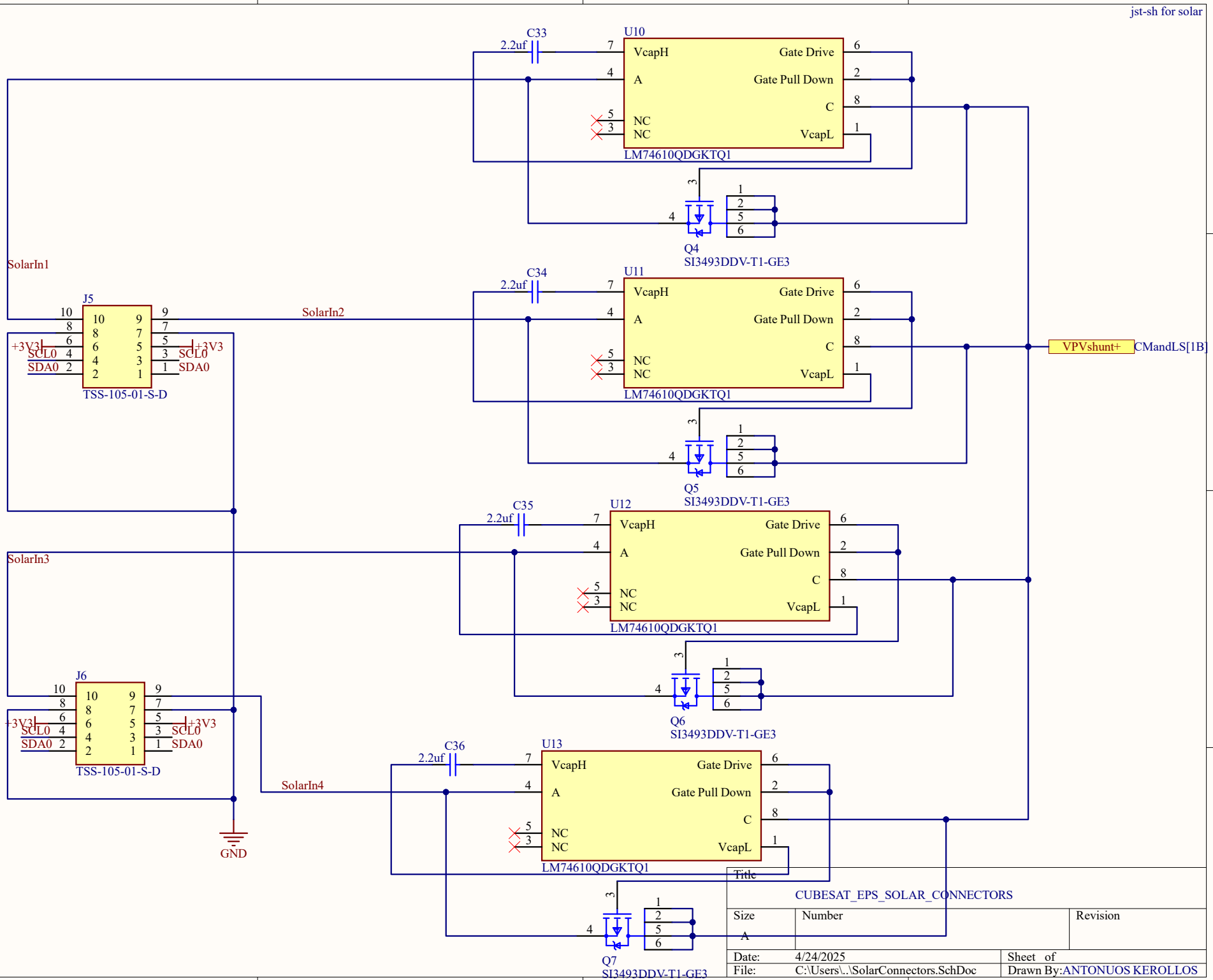
jst-sh for solar
C33
2.2uf
U10
VcapH
Gate Drive
A
Gate Pull Down
C
NC
NC
VcapL
LM74610QDGKTQ1
Q4
SI3493DDV-T1-GE3
SolarIn1
J5
TSS-105-01-S-D
SolarIn2
C34
U11
Q5
SI3493DDV-T1-GE3
VPVshunt+
CMandLS[1B]
C35
U12
Q6
SI3493DDV-T1-GE3
SolarIn3
J6
TSS-105-01-S-D
C36
U13
Q7
SI3493DDV-T1-GE3
SolarIn4
GND
+3V3
SCL0
SDA0
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CUBESAT_EPS_SOLAR_CONNECTORS
Size
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Number
Revision
Date: 4/24/2025
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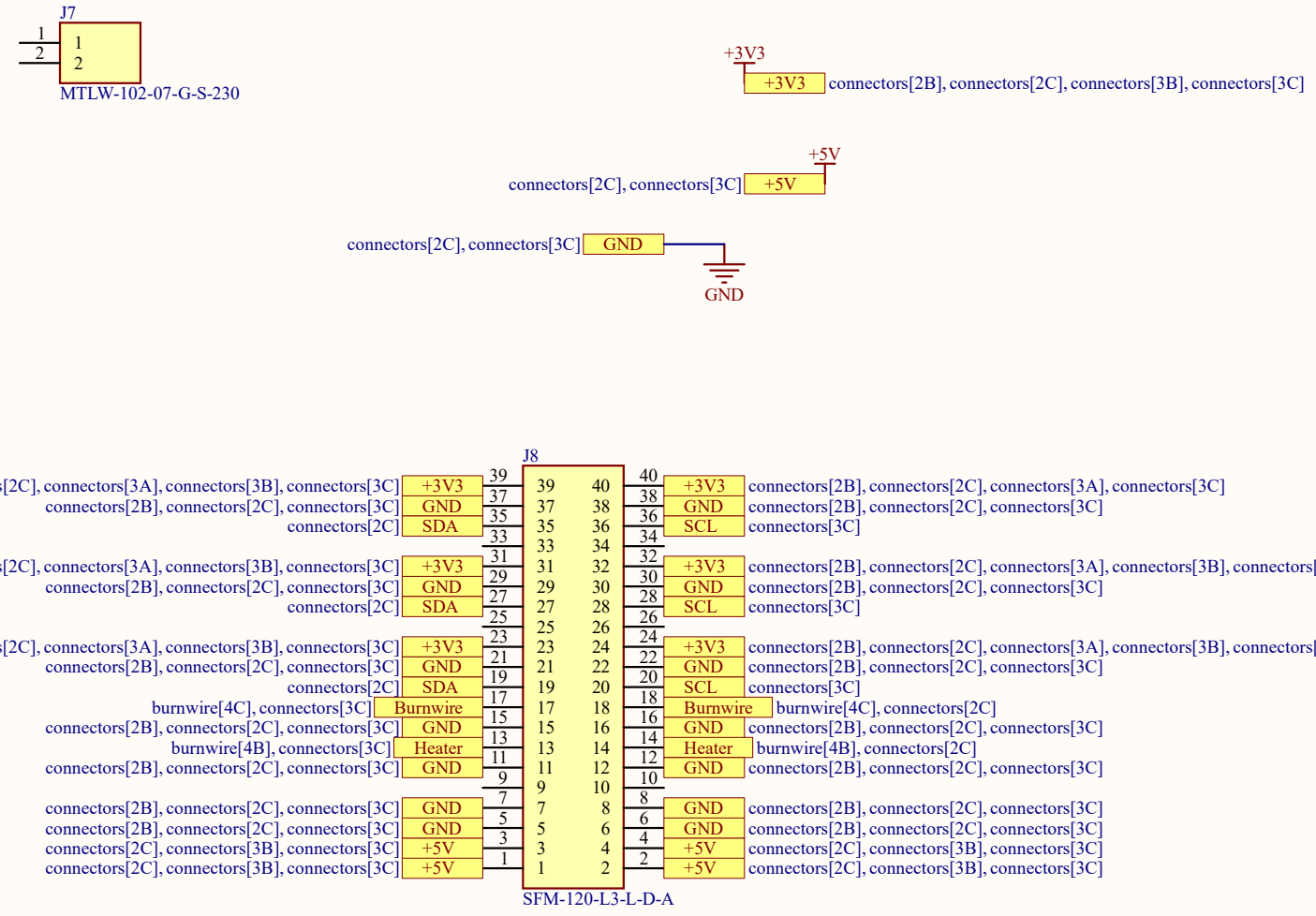

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Date: 4/24/2025		Sheet of
File: C:\Users\..\connectors.SchDoc		Drawn By: ANTONUOS KEROLLOS