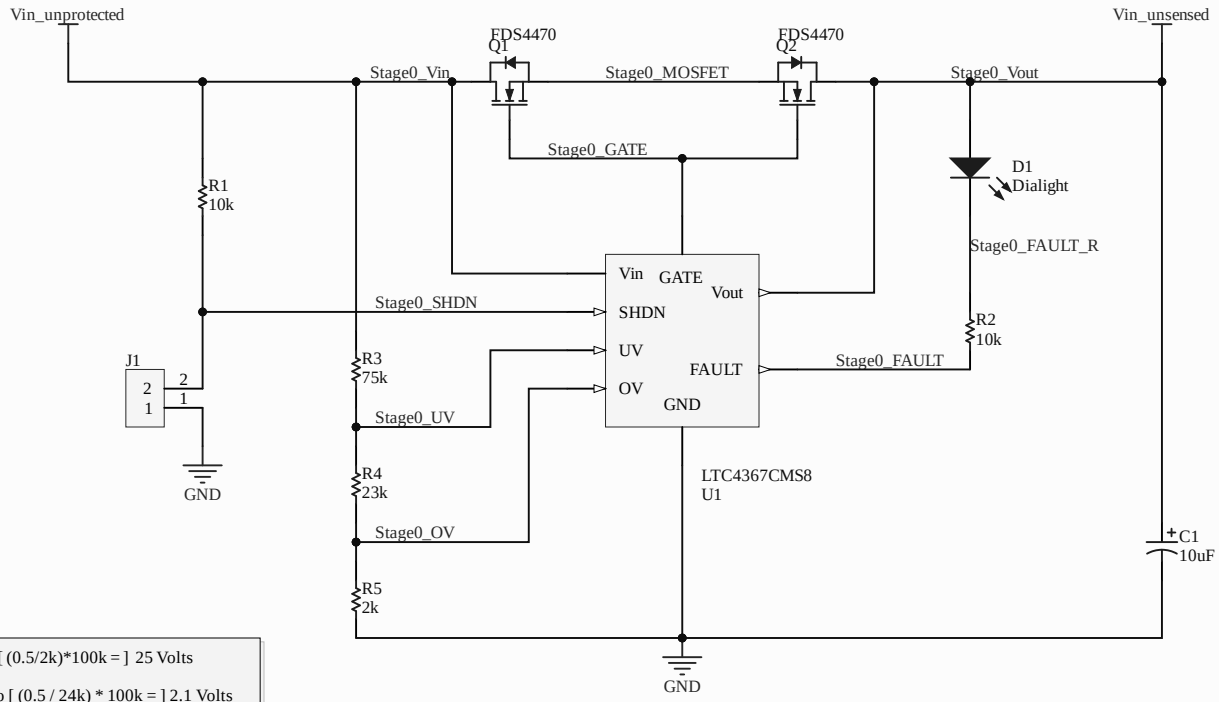

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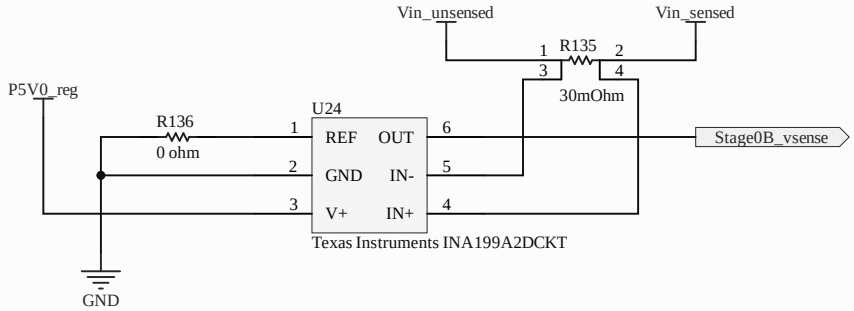

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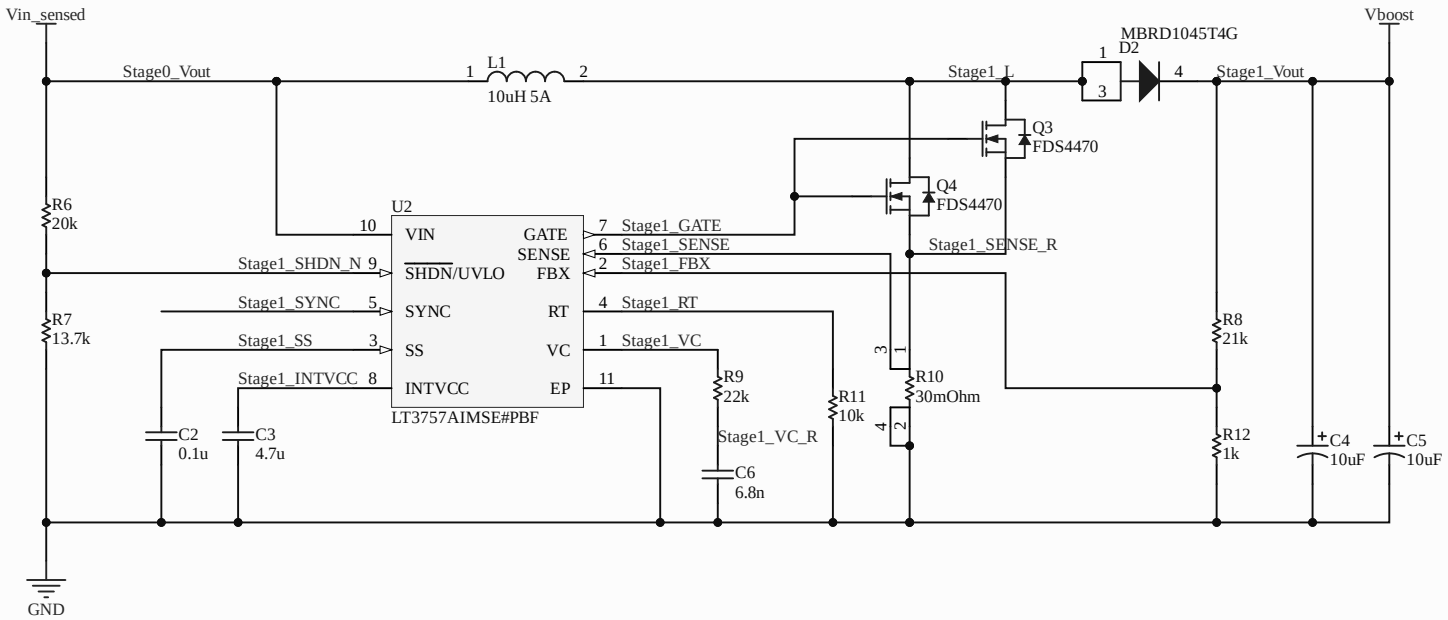

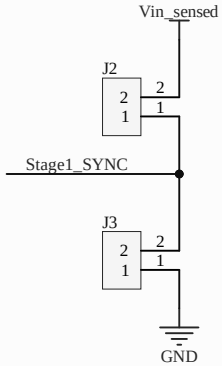

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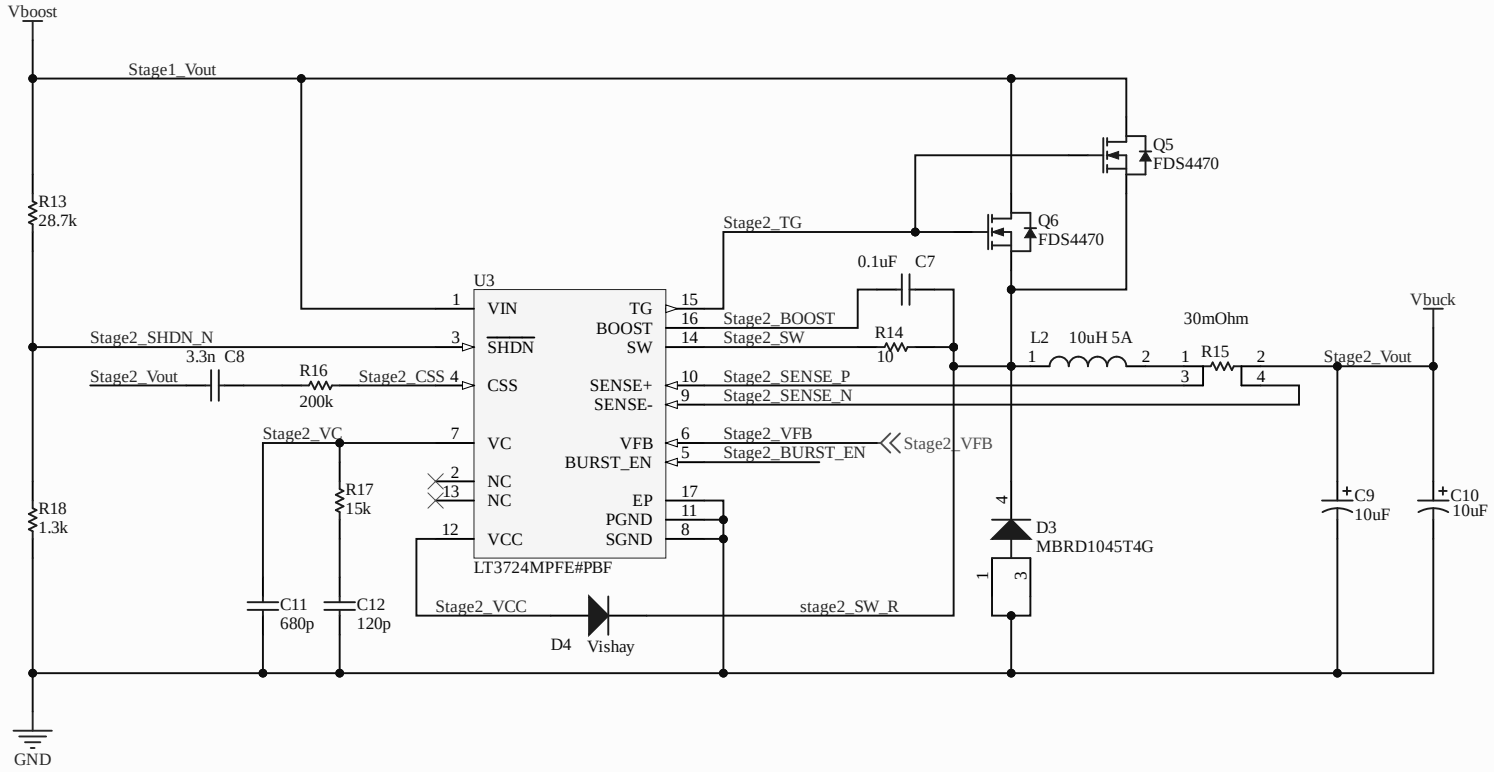

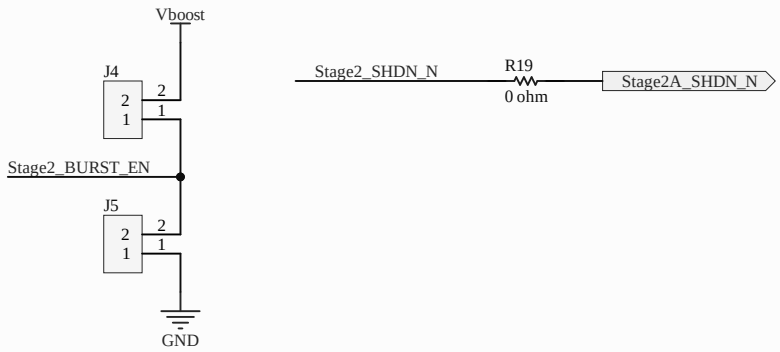

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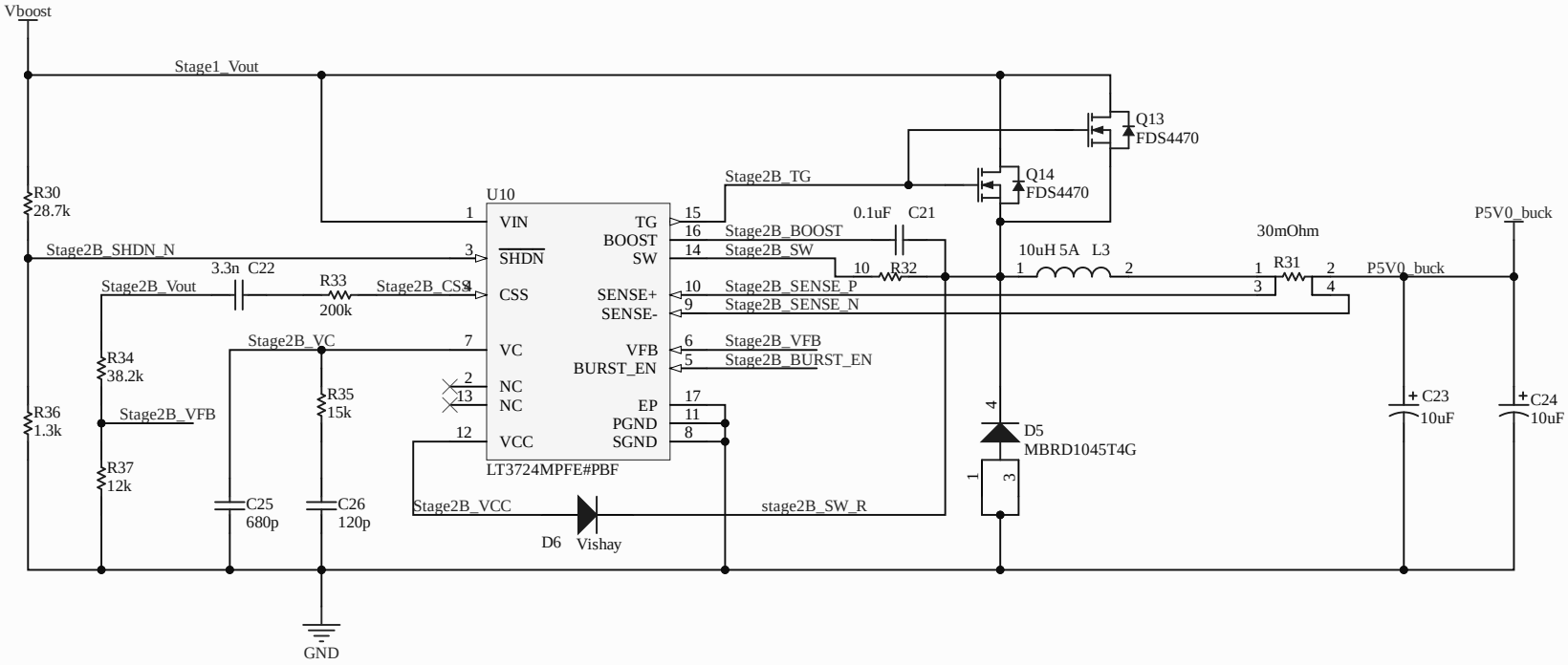

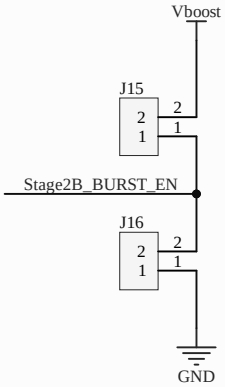

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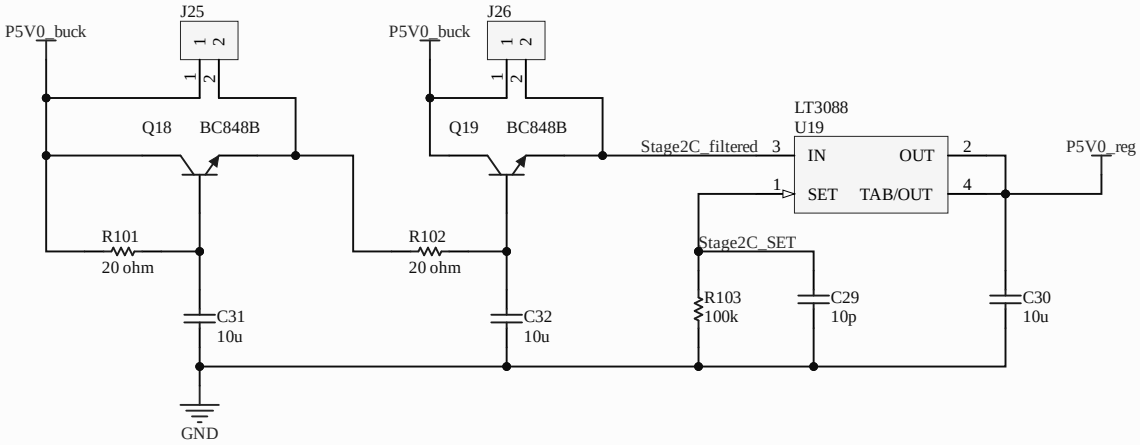
Size A	Number	Revision
Date: 3/07/2022		Sheet of
File: Stage2B_5volt_buck.SchDoc		Drawn By:

This should create a very clean P5V0 rail.



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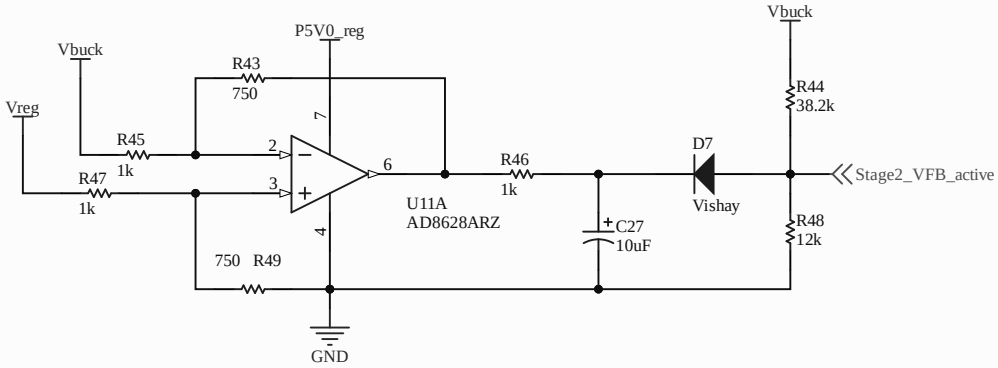
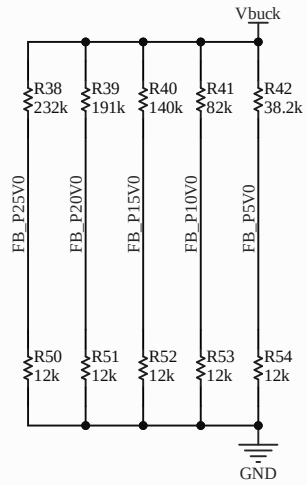
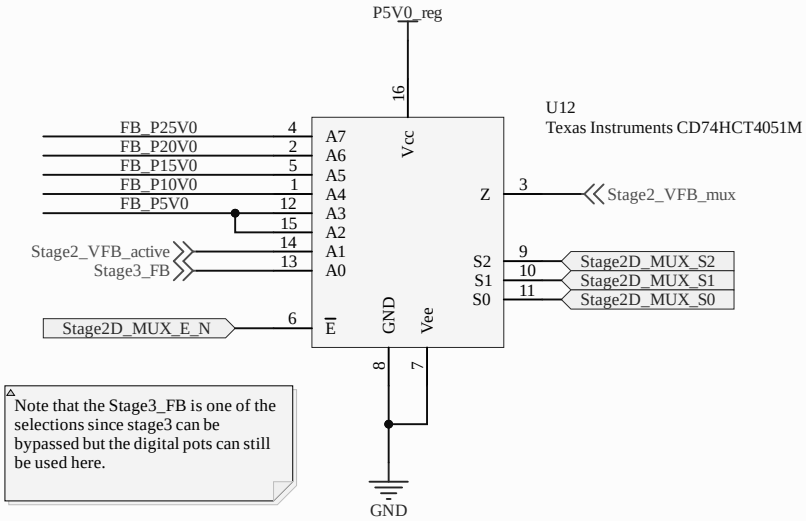
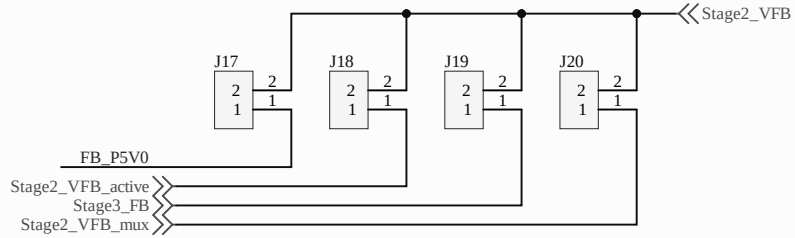
File:	Stage2C_5volt_reg.SchDoc	Drawn By:	







Note that the Stage3_FB is one of the selections since stage3 can be bypassed but the digital pots can still be used here.



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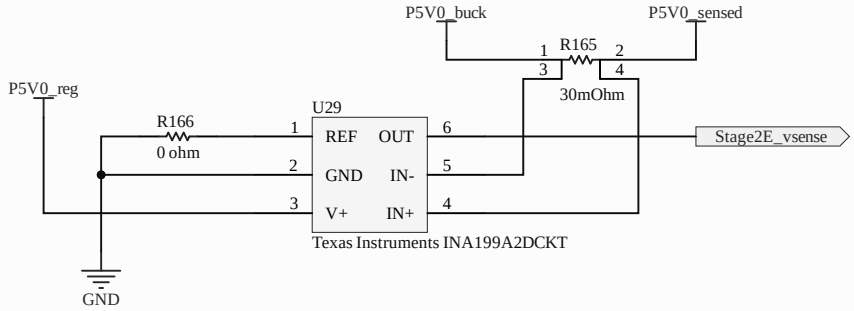
File: Stage2D_active_feedback.SchDoc		Drawn By:



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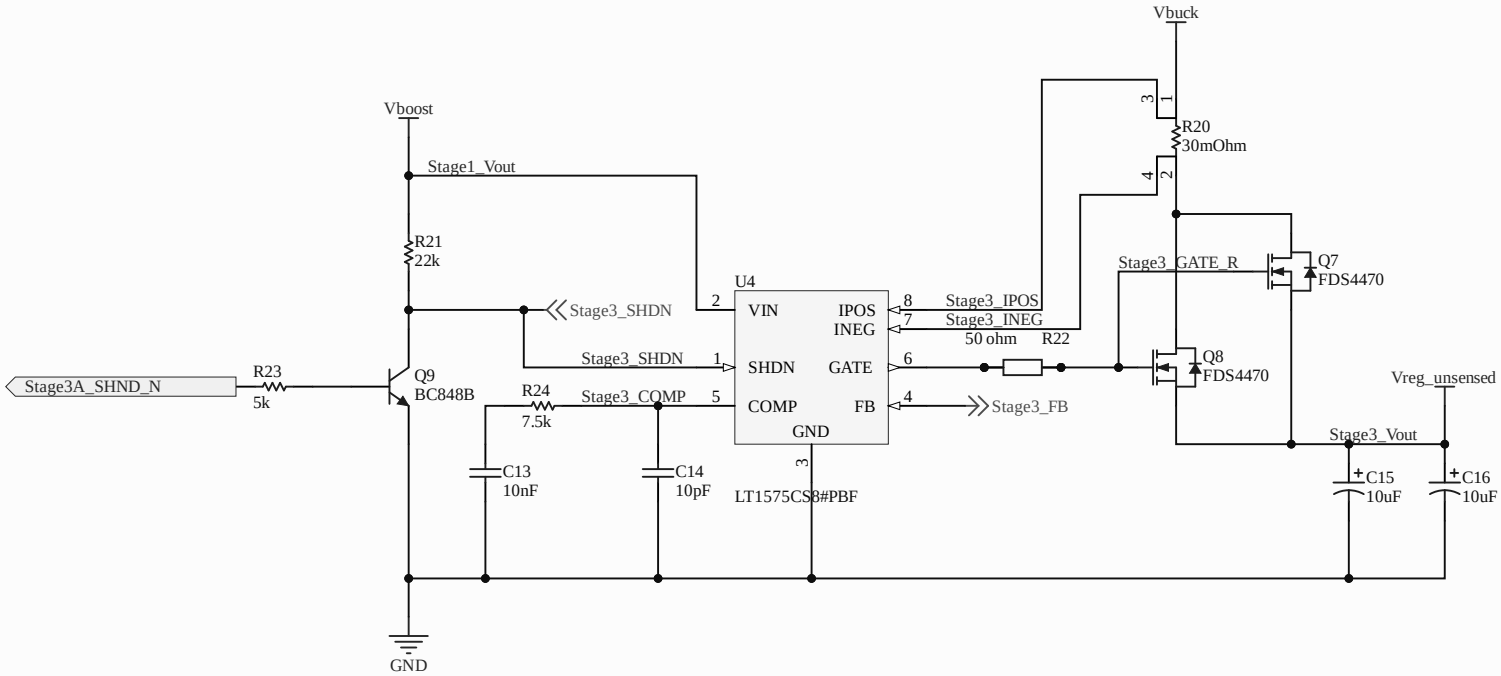
File:	Steage2E_current_sense.SchDoc	Drawn By:	



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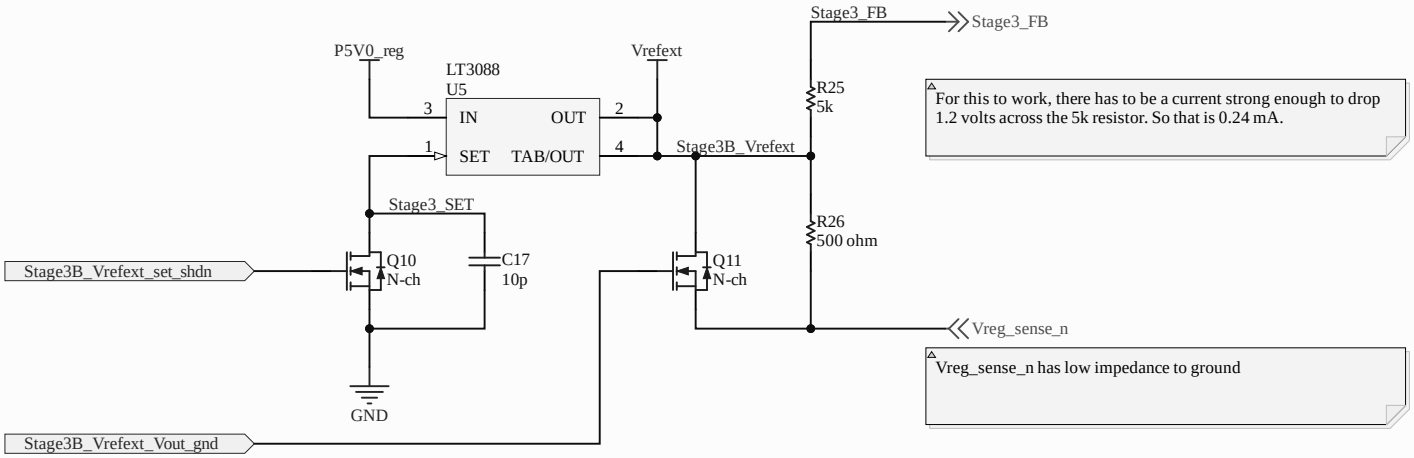
Date: 3/07/2022	Sheet of	
File: Stage3A_Linear_Regulator_controller.SchDoc	Drawn By:	



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Date: 3/07/2022		Sheet of
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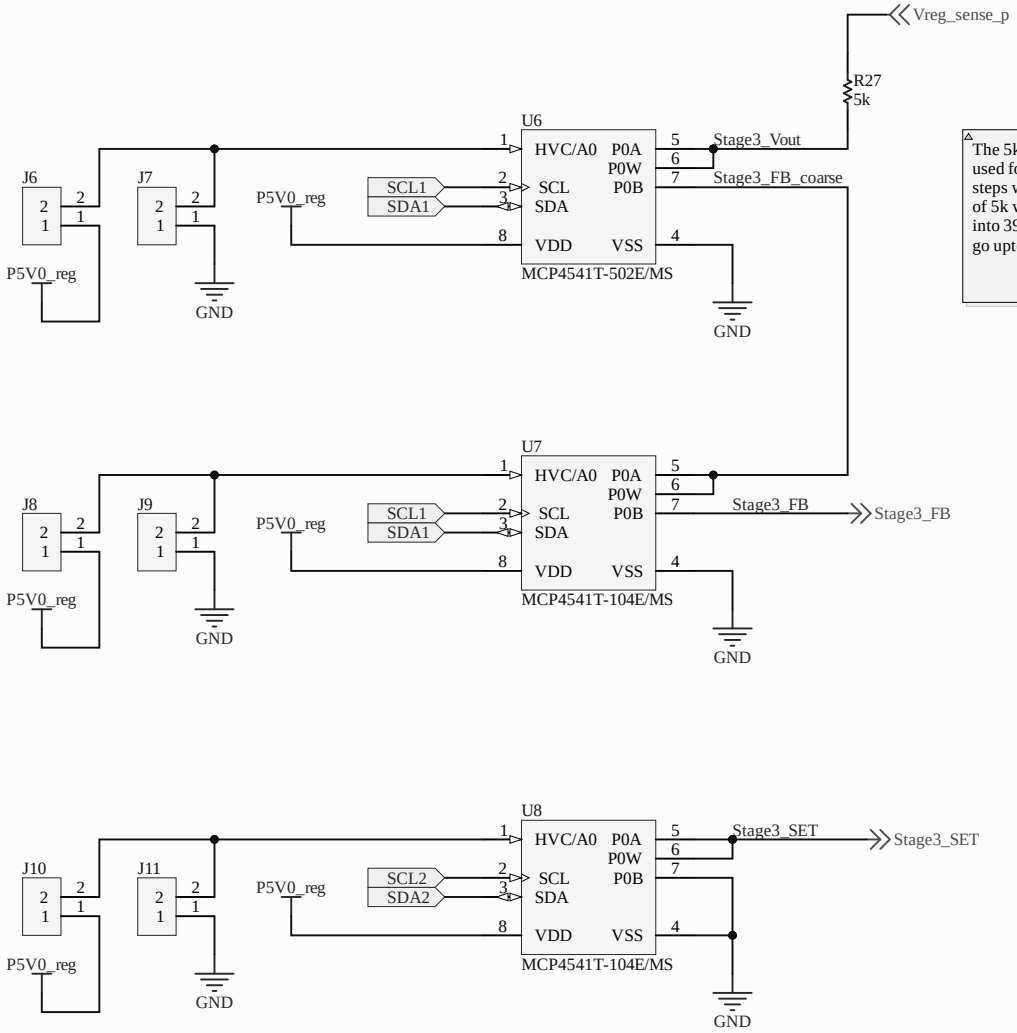

The 5k will make sure that Rtop >= Rbot and the two digital pot will be used for coarse and fine adjustments. The coarse pot of 100k with 128 steps will have a step size of 781 ohms. So not all the steps of the fine pot of 5k will be relevant since its step is 39 ohms. Now if we divide the 100k into 39 ohm steps we get a total of 2564 steps since this power supply will go upto 20 volts we have a resolution of 10 mV.

This will set Vrefext. Vrefext = 50uA * R. where R is control of the digital pot with steps of 781 ohms * 50uA = 40 mV

Title		
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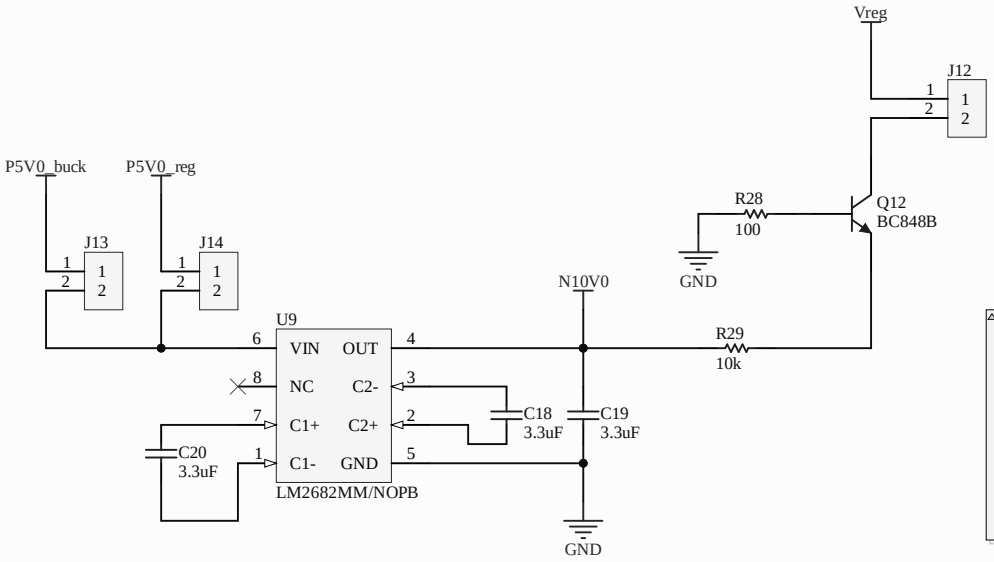
File: Stage3C_digital_pot.SchDoc		Drawn By:



We just need a 0.25mA running on the output such that there is at least a 1.2V drop on a 5k resistor.

Title		
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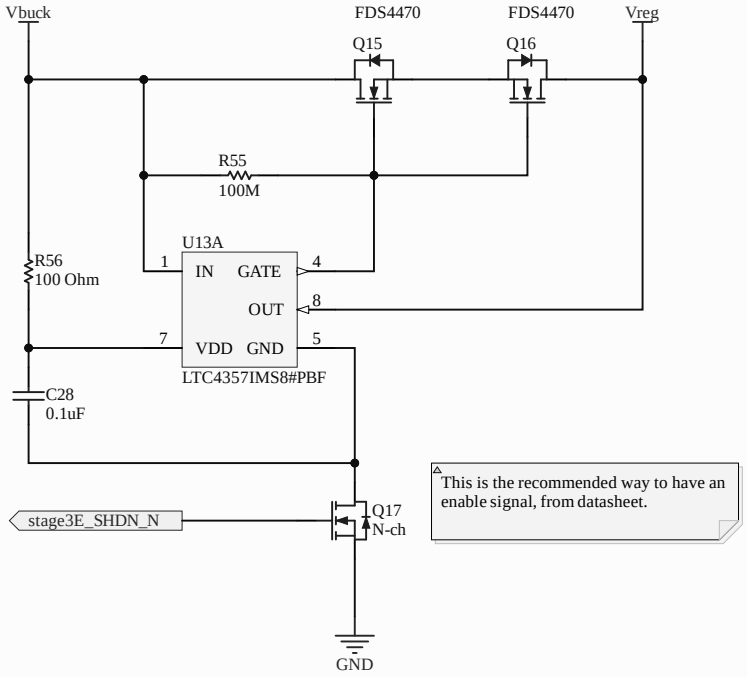
Date: 3/07/2022		Sheet of
File: Stage3D_neg_voltage.SchDoc		Drawn By:



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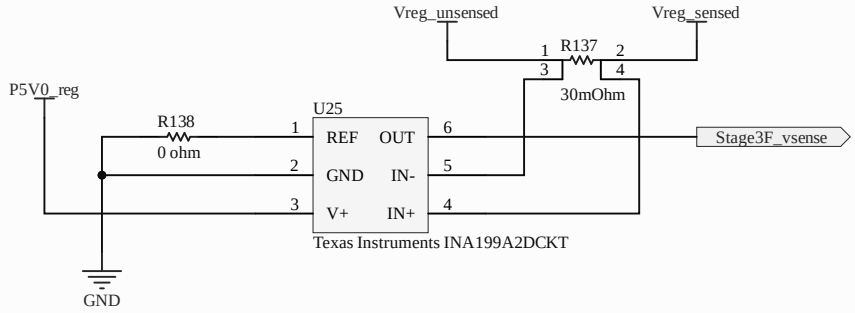

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Size A	Number		Revision
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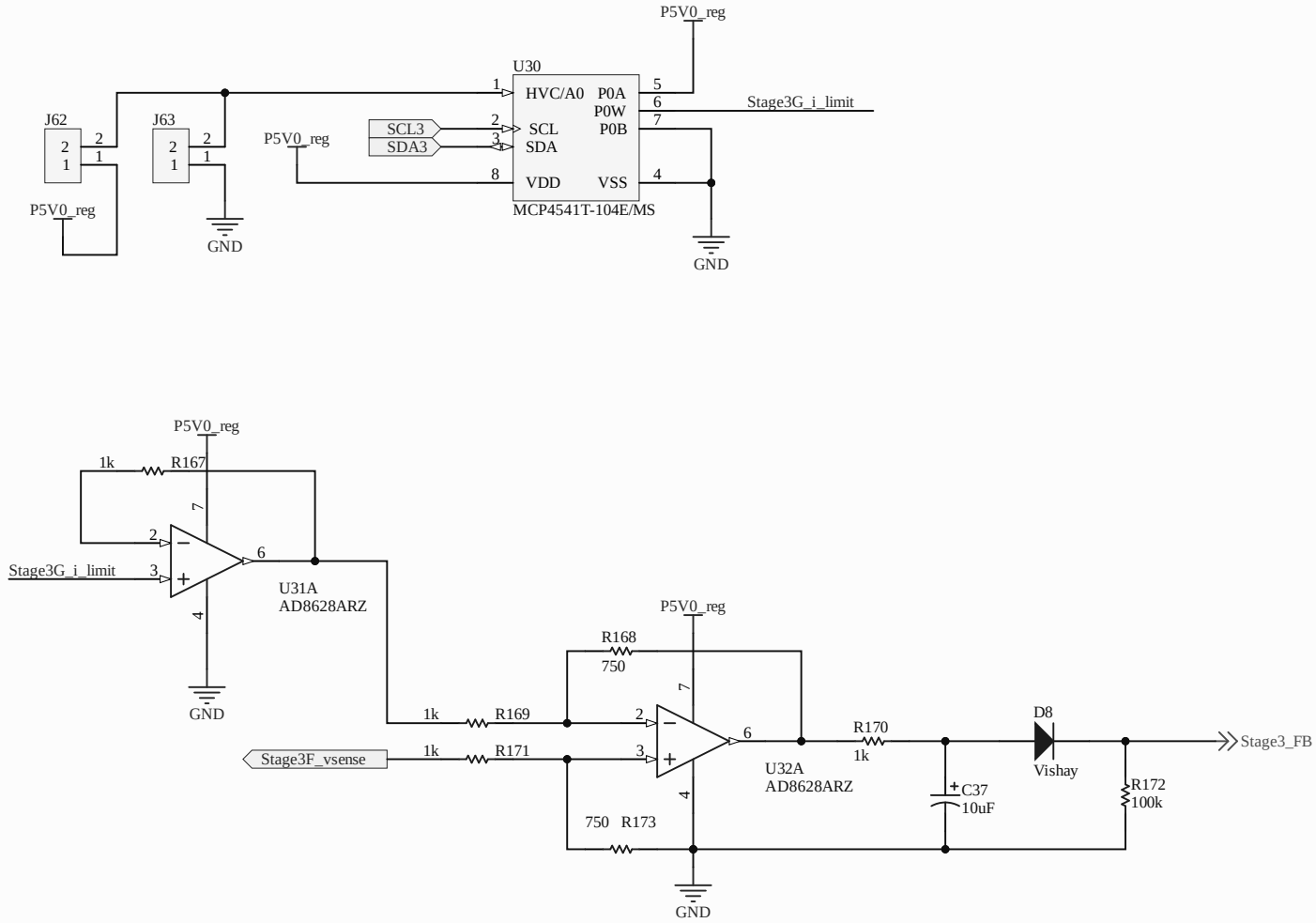
File:	Stage3F_current_sense.SchDoc	Drawn By:	



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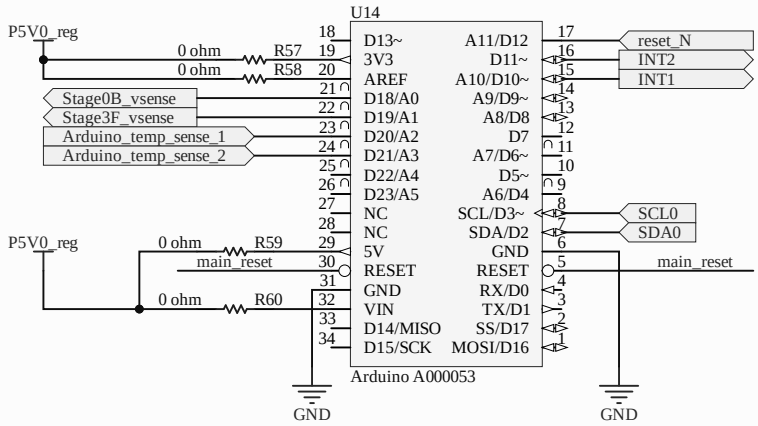

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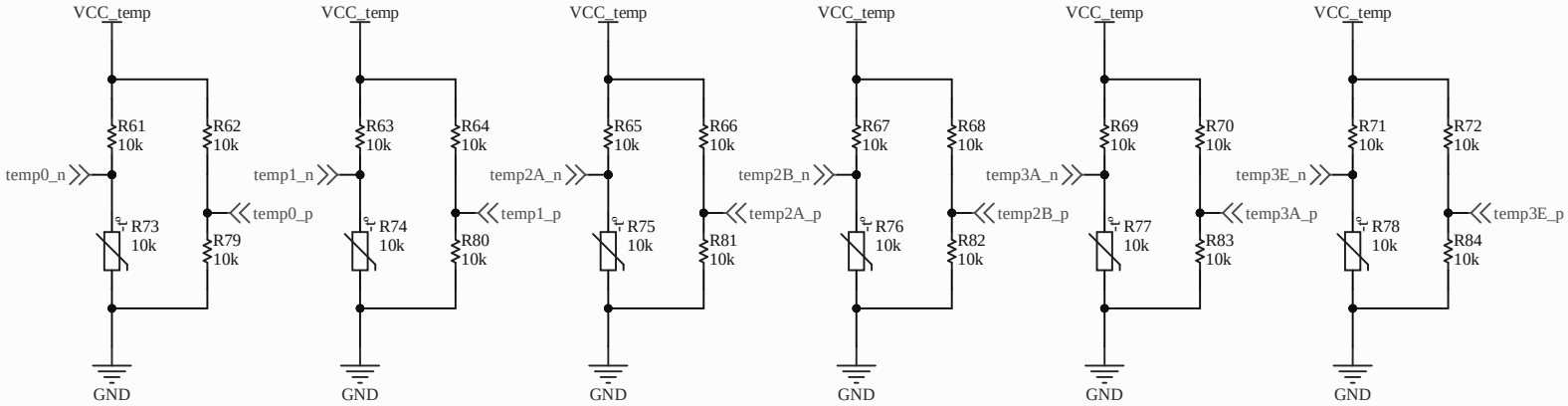

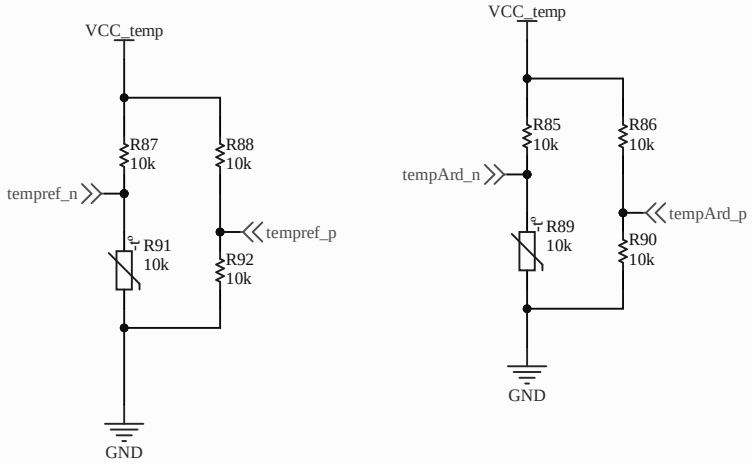

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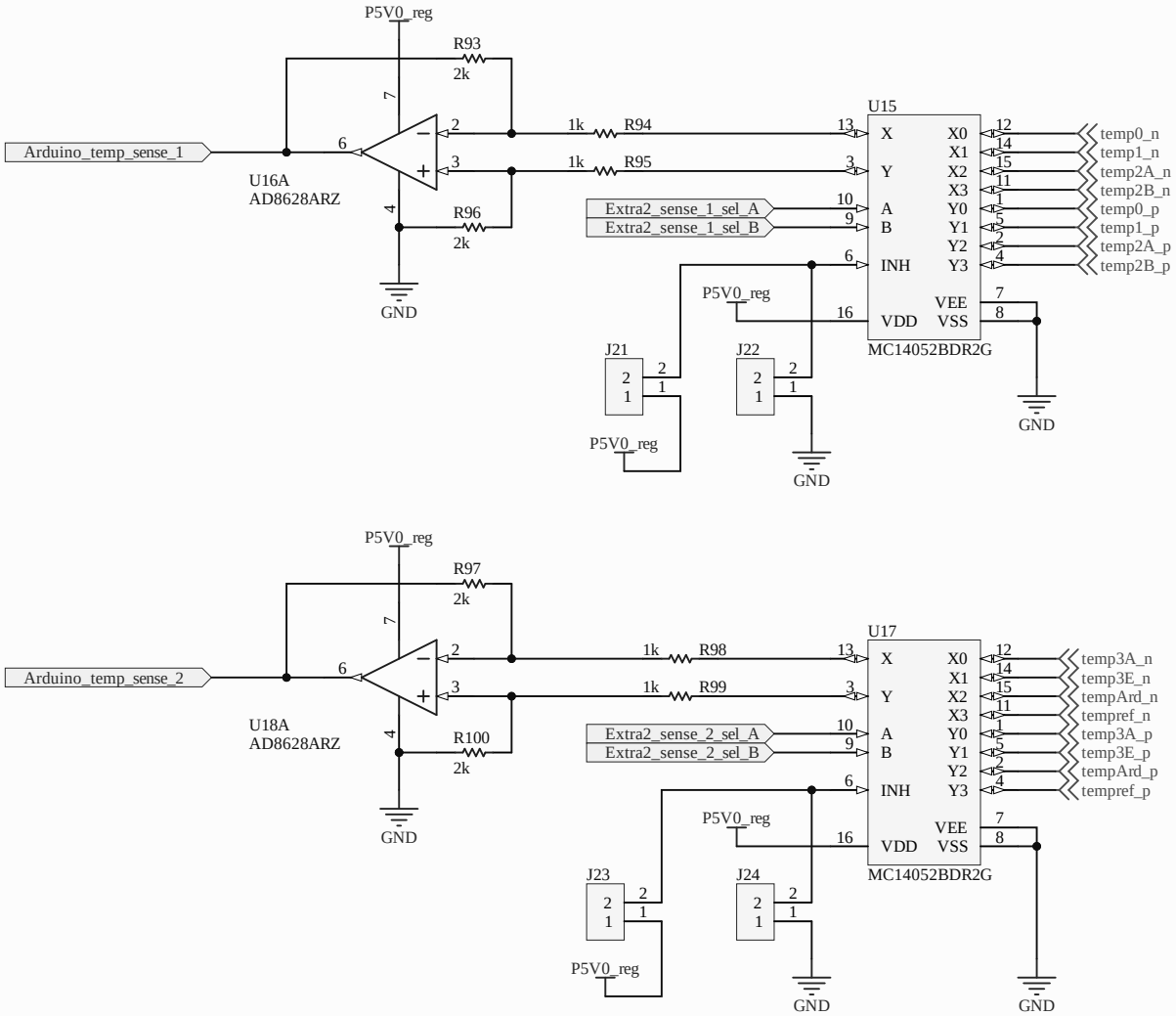

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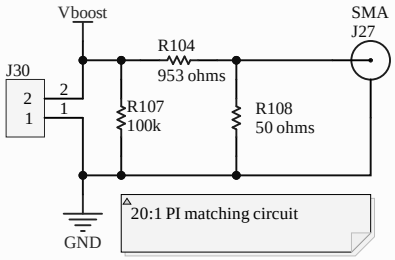

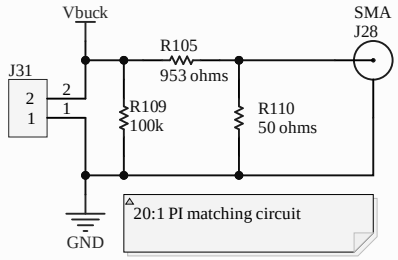

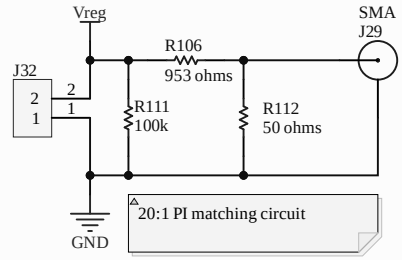

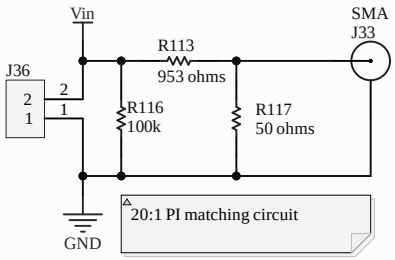

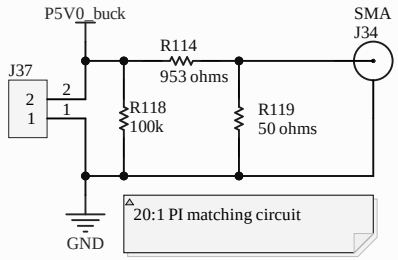

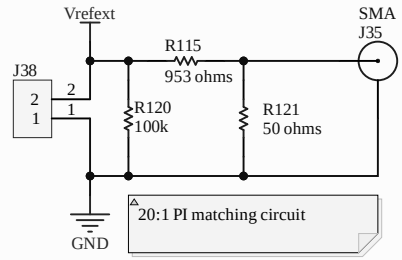

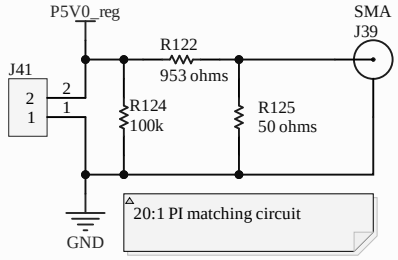

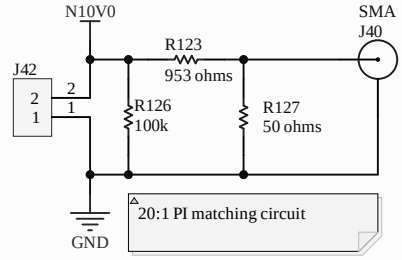

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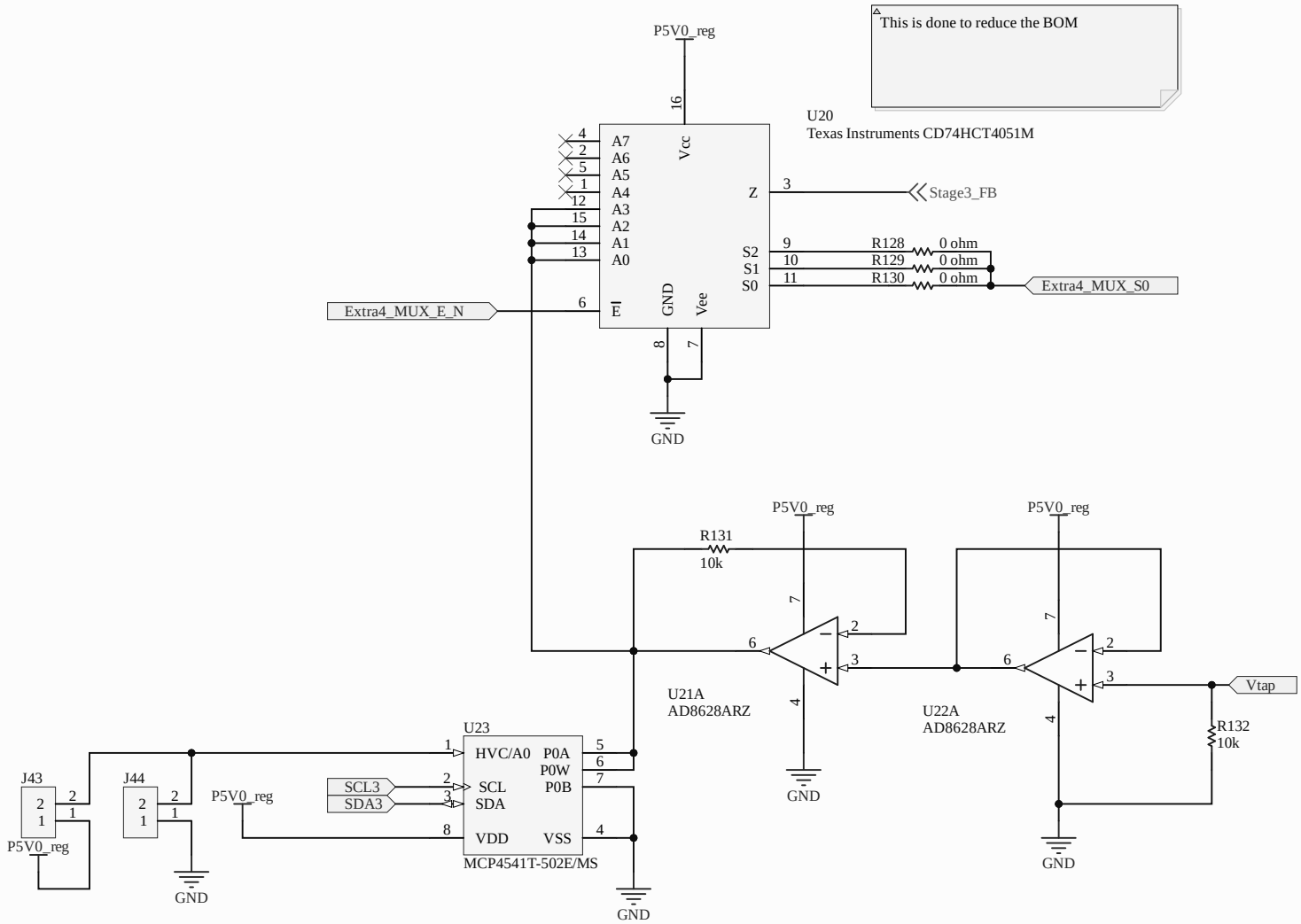

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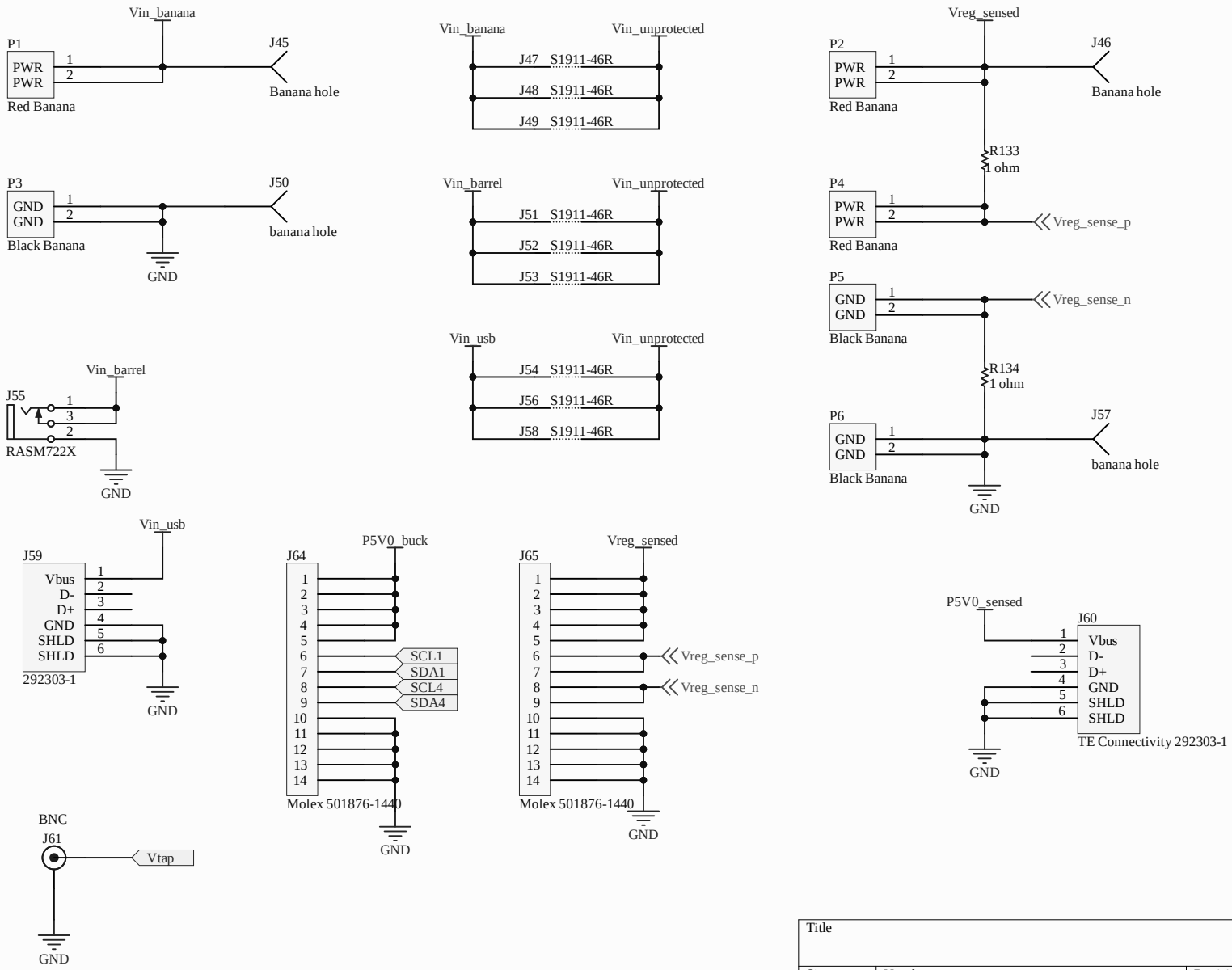
Vin_banana
P1
PWR
PWR
1
2
J45
Banana hole
Red Banana
Vin_banana
Vin_unprotected
J47 S1911-46R
J48 S1911-46R
J49 S1911-46R
Vreg_sensed
P2
PWR
PWR
1
2
J46
Banana hole
Red Banana
R133
1 ohm
P3
GND
GND
1
2
J50
banana hole
Black Banana
GND
Vin_barrel
Vin_unprotected
J51 S1911-46R
J52 S1911-46R
J53 S1911-46R
P4
PWR
PWR
1
2
Vreg_sense_p
Red Banana
P5
GND
GND
1
2
Vreg_sense_n
Black Banana
Vin_barrel
J55
1
3
2
RASM722X
GND
Vin_usb
Vin_unprotected
J54 S1911-46R
J56 S1911-46R
J58 S1911-46R
R134
1 ohm
P6
GND
GND
1
2
J57
banana hole
Black Banana
GND
Vin_usb
J59
Vbus
D-
D+
GND
SHLD
SHLD
1
2
3
4
5
6
292303-1
GND
P5V0_buck
J64
1
2
3
4
5
6
7
8
9
10
11
12
13
14
SCL1
SDA1
SCL4
SDA4
Molex 501876-1440
GND
Vreg_sensed
J65
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Vreg_sense_p
Vreg_sense_n
Molex 501876-1440
GND
P5V0_sensed
J60
1
2
3
4
5
6
Vbus
D-
D+
GND
SHLD
SHLD
TE Connectivity 292303-1
GND
BNC
J61
Vtap
GND
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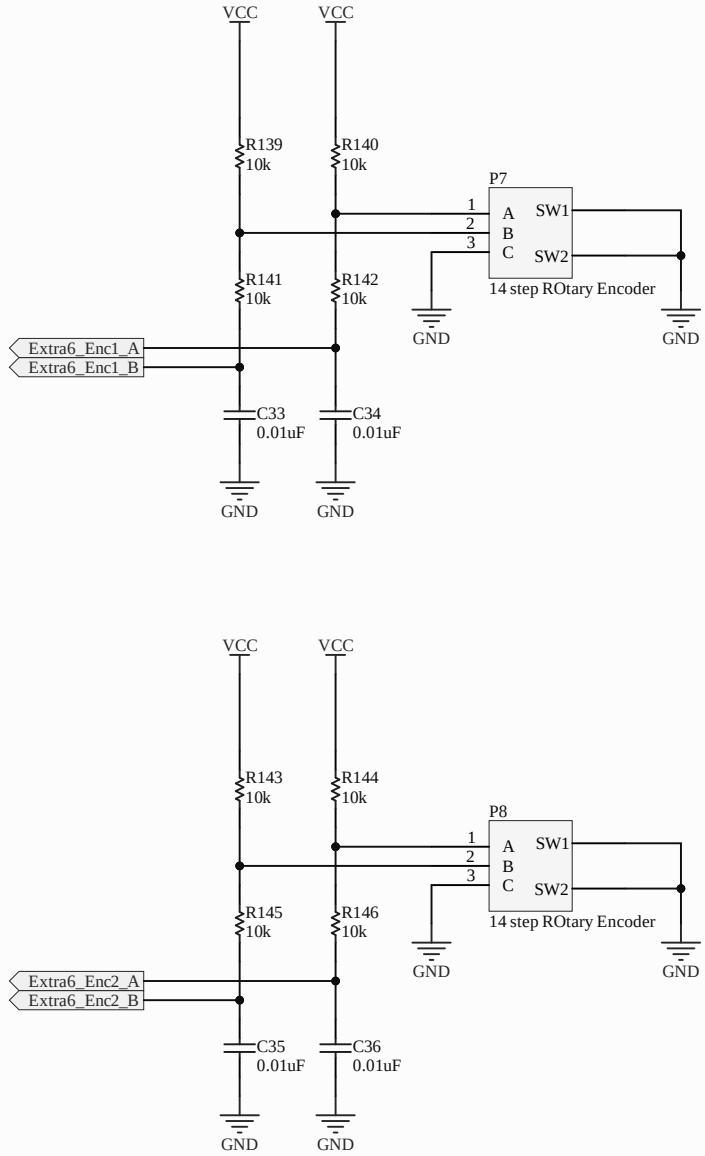

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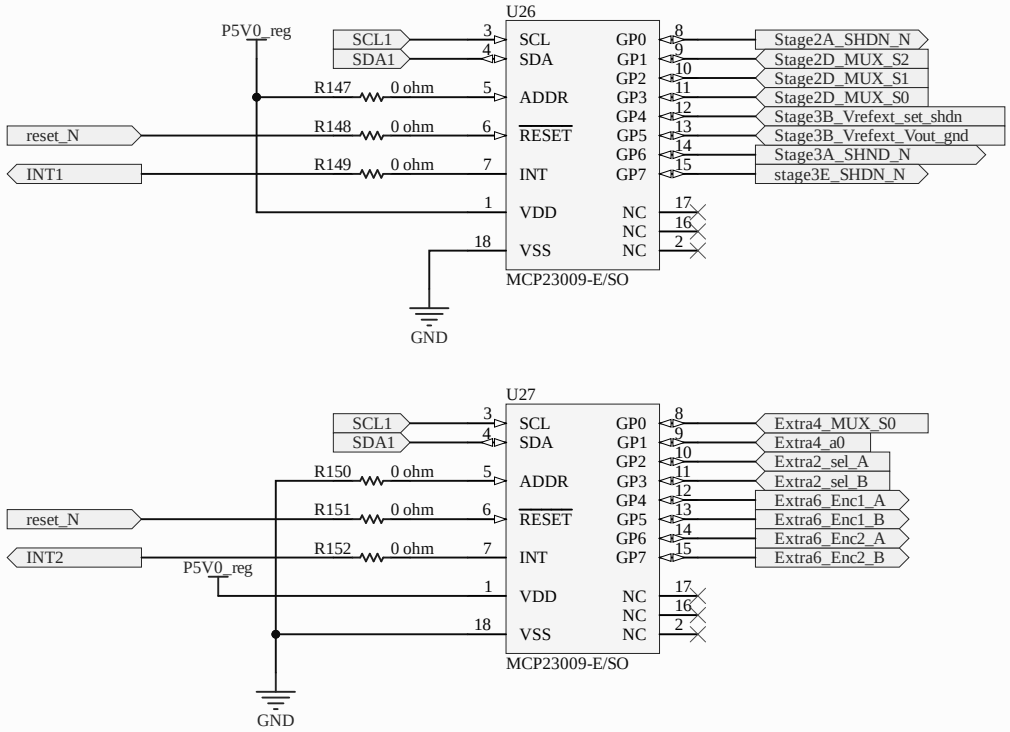

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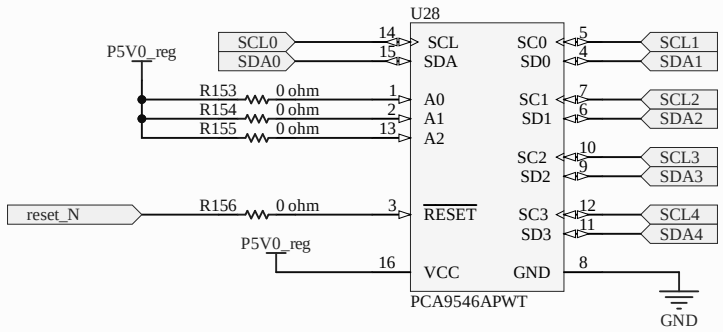

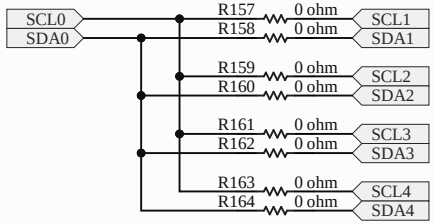

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Size: A	Number	Revision
Date: 3/07/2022		Sheet of
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