

A

A

B

B

C

C

D

D

MPPT Solar Converter

SOLAR CAR 2021

REV 1

Title COVER		Badgerloop Electrical 133 Engineering Research Building 1500 Engineering Drive Madison, Wi 53706	
Engineer: Shelby Riggleman	Revision:1	Date: 12/18/2021 Time: 7:50:56 PM Sheet 1 of 8	

Connectors

A

A

B

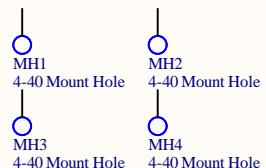
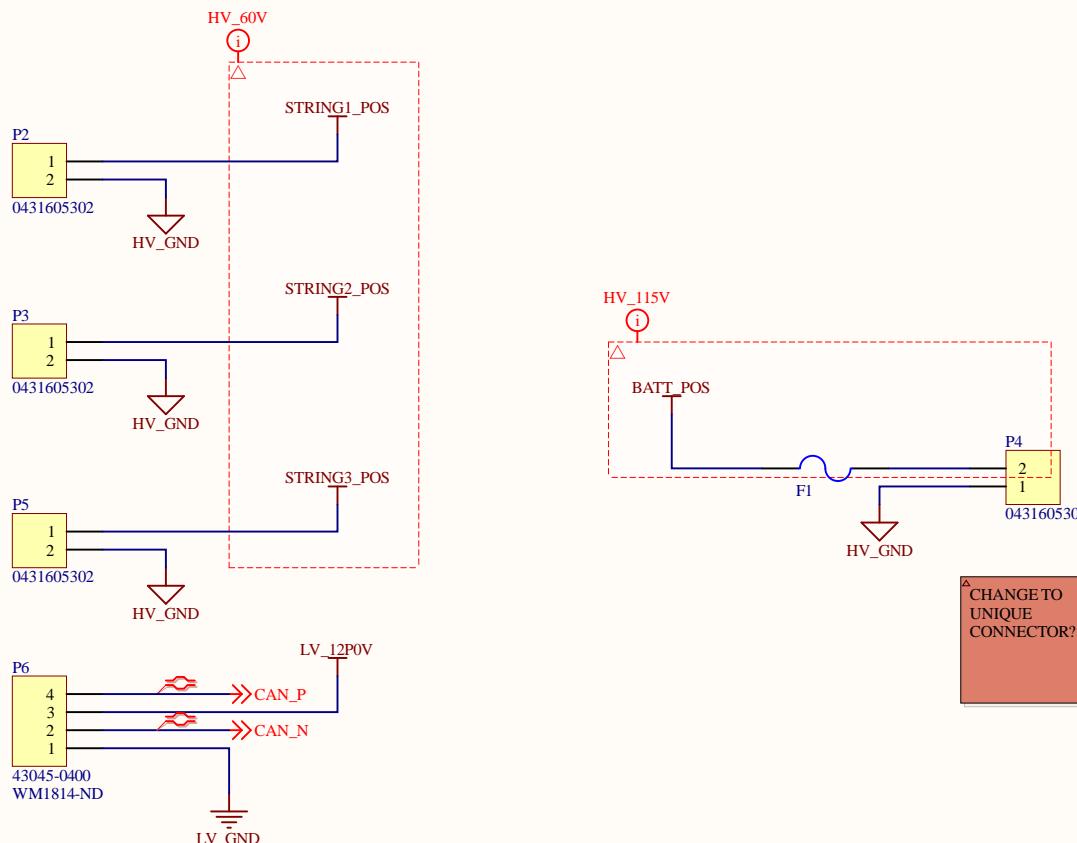
B

C

C

D

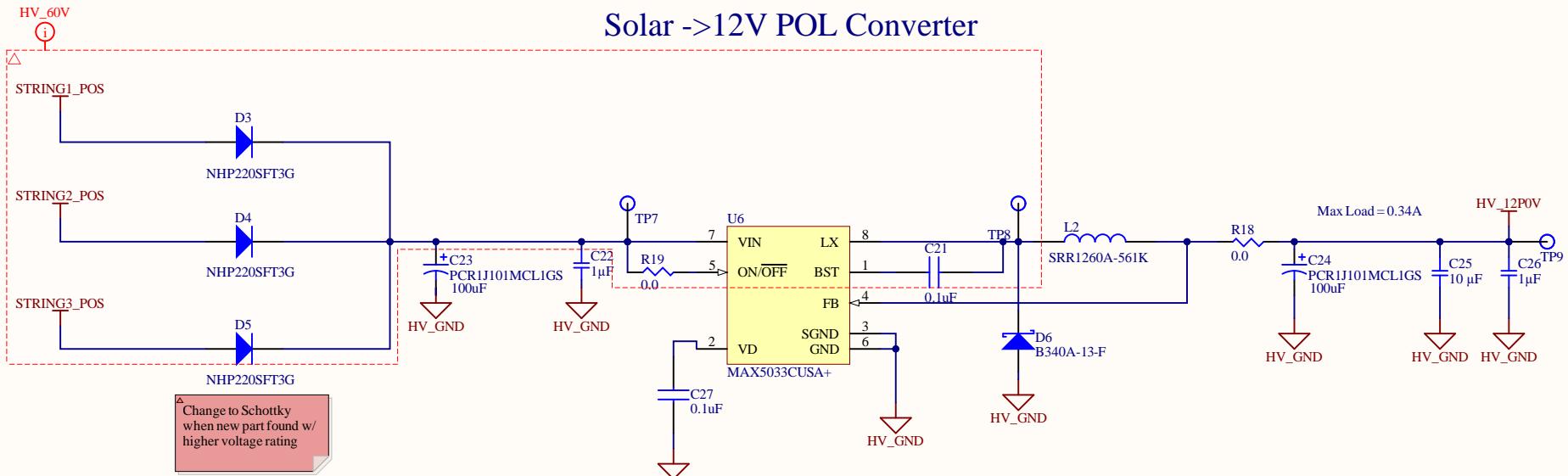
D



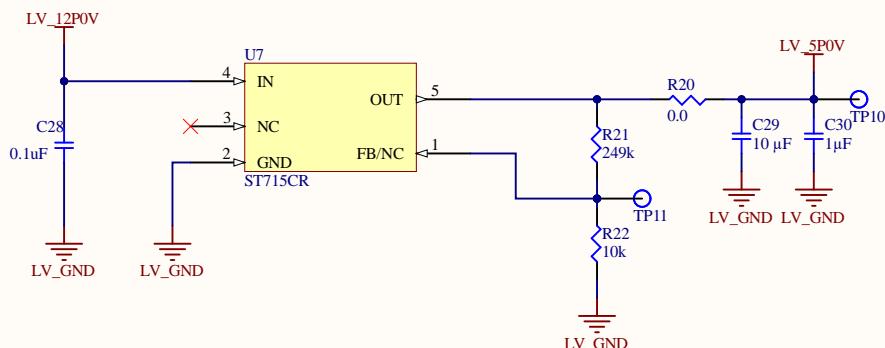
Title Connectors	
Engineer: Shelby Riggelman	Revision: 1
Date: 12/18/2021	Time: 7:50:56 PM
File: Connectors.SchDoc	Sheet 2 of 8

BADGER
LOOP

Point of Load Converters



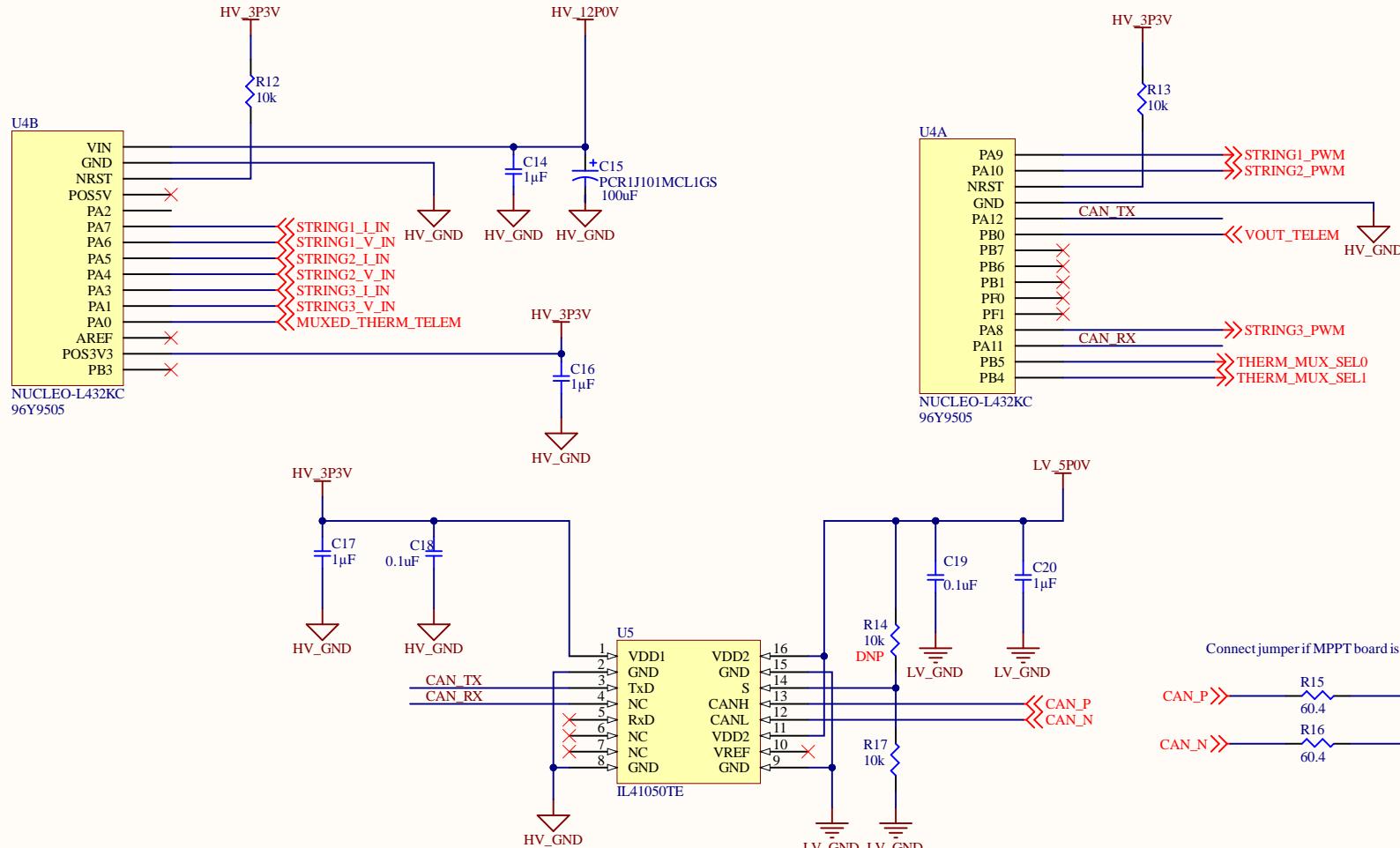
LV 12V -> 5V



Title Nucleo	
Engineer: Shelby Riggleman	Revision: 1
Date: 12/18/2021	Time: 7:50:56 PM
File: POL_converter.SchDoc	Sheet 3 of 8

**BADGER
LOOP**

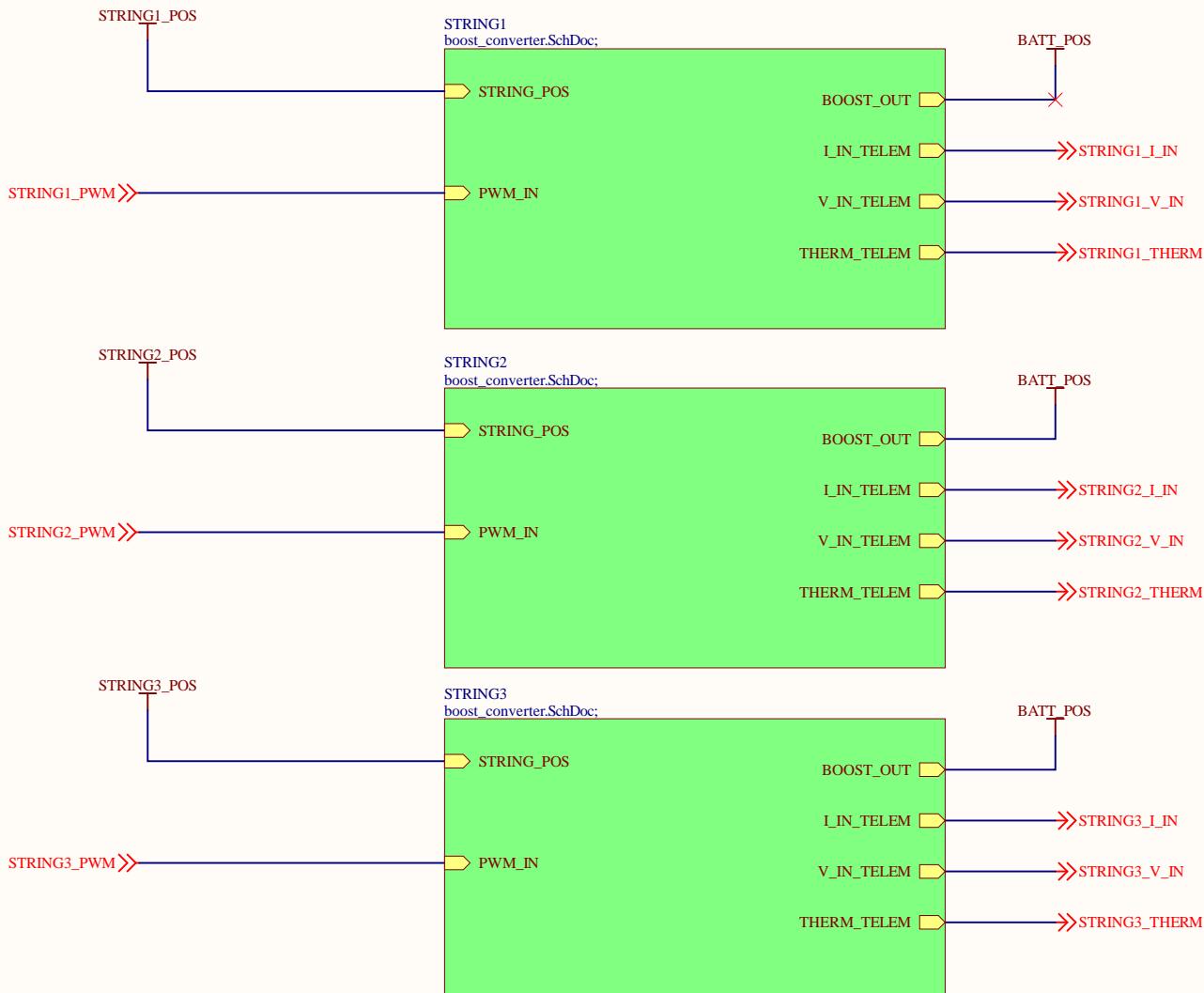
Nucleo MCU & CAN



Title Nucleo	
Engineer: Shelby Riggleman	Revision: 1
Date: 12/18/2021	Time: 7:50:56 PM
File: Nucleo.SchDoc	Sheet 4 of 8

BADGER
LOOP

Solar Strings MPPTs



Title Boost Strings	
Engineer: Shelby Riggelman	Revision: 1
Date: 12/18/2021	Time: 7:50:57 PM
File: solar_boost_strings.SchDoc	Sheet 5 of 8

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LOOP

Solar Boost Converter

1

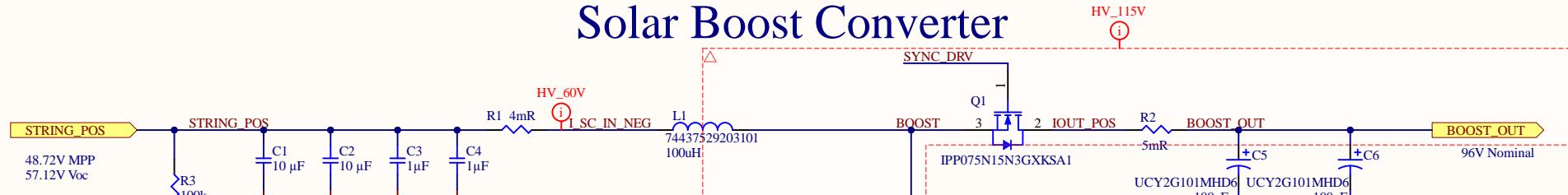
2

3

4

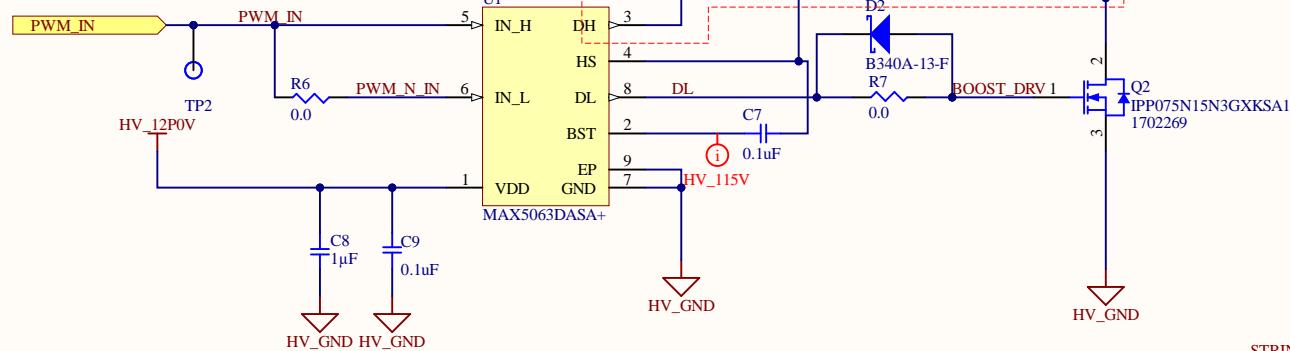
A

A



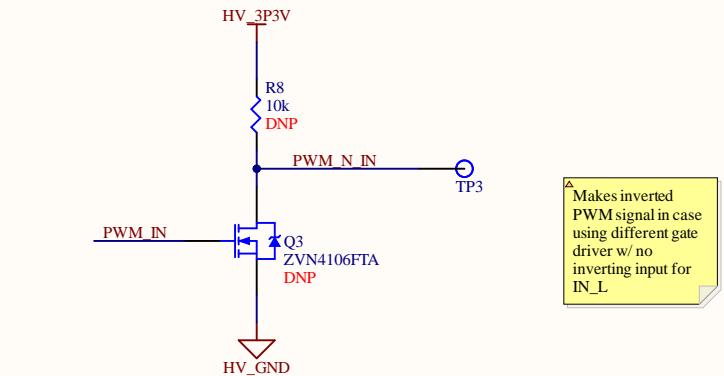
B

B

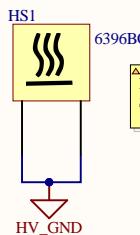


C

C



Makes inverted PWM signal in case using different gate driver w/o inverting input for IN_L



For Boost FET, not Sync FET



Title **Boost Converter**

Engineer: Shelby Riggelman

Revision: 1

Date: 12/18/2021 Time: 7:50:57 PM Sheet 6 of 8

File: boost_converter.SchDoc

BADGER LOOP

1

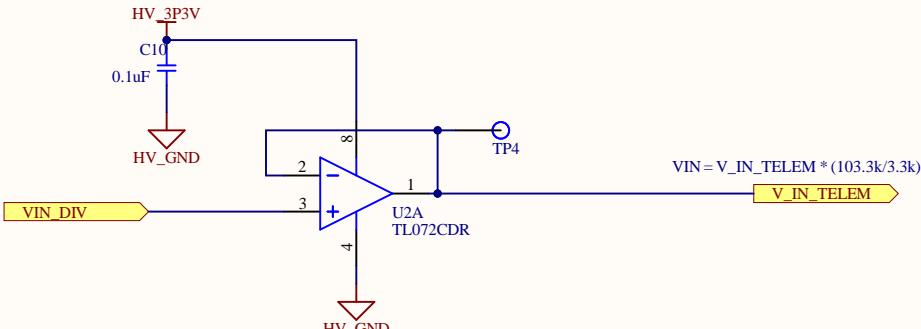
2

3

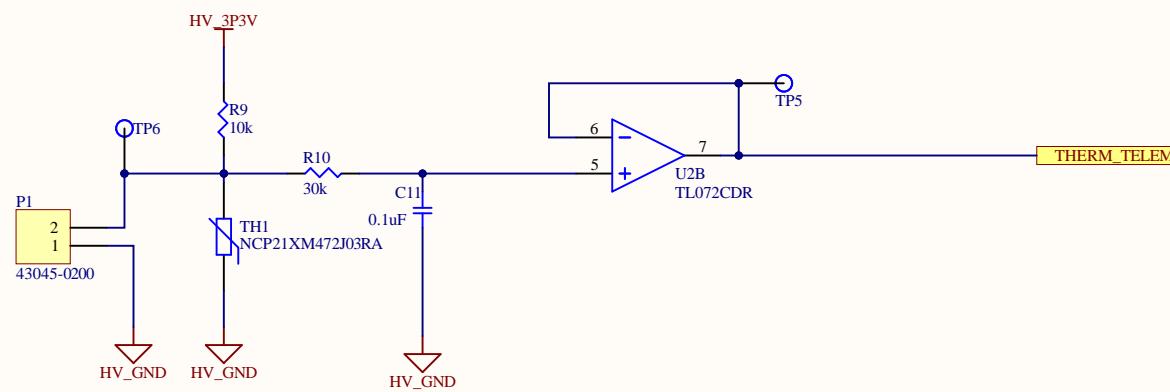
4

Solar Boost Converter Telemetry

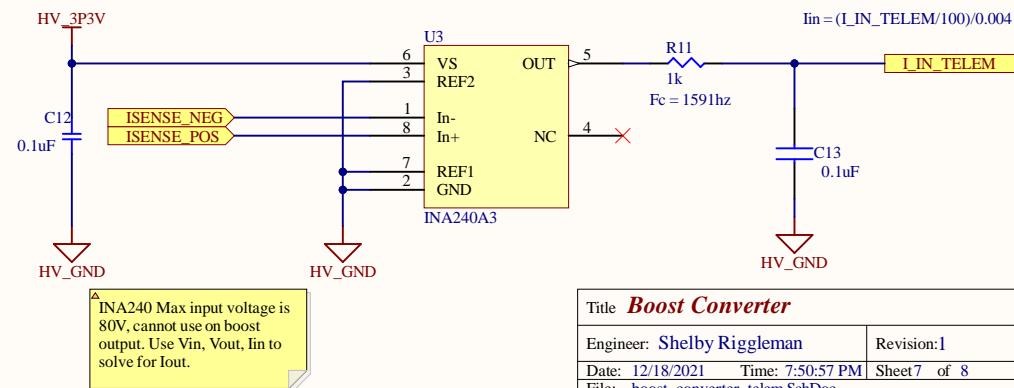
A
String Input Voltage



B
Thermistor Output



C
String Input Current

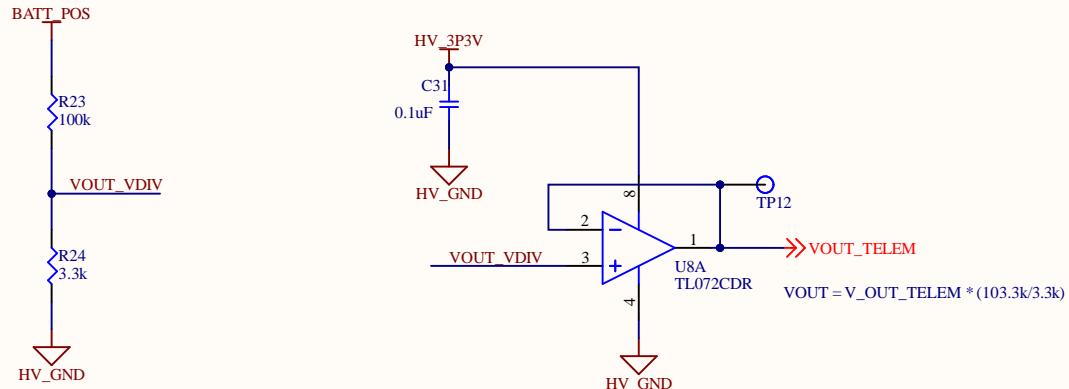


Title Boost Converter	
Engineer: Shelby Riggelman	Revision: 1
Date: 12/18/2021	Time: 7:50:57 PM
File: boost_converter_telem.SchDoc	Sheet 7 of 8

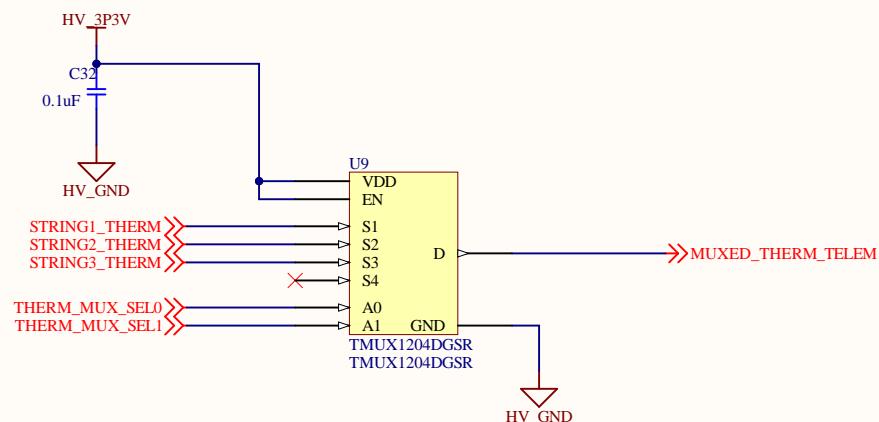
BADGER
LOOP

Global Telemetry

Output (Battery) Voltage

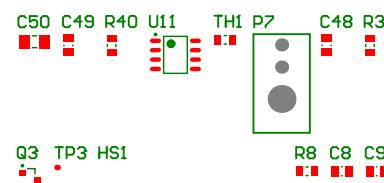
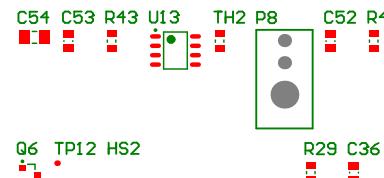
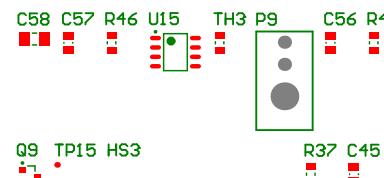


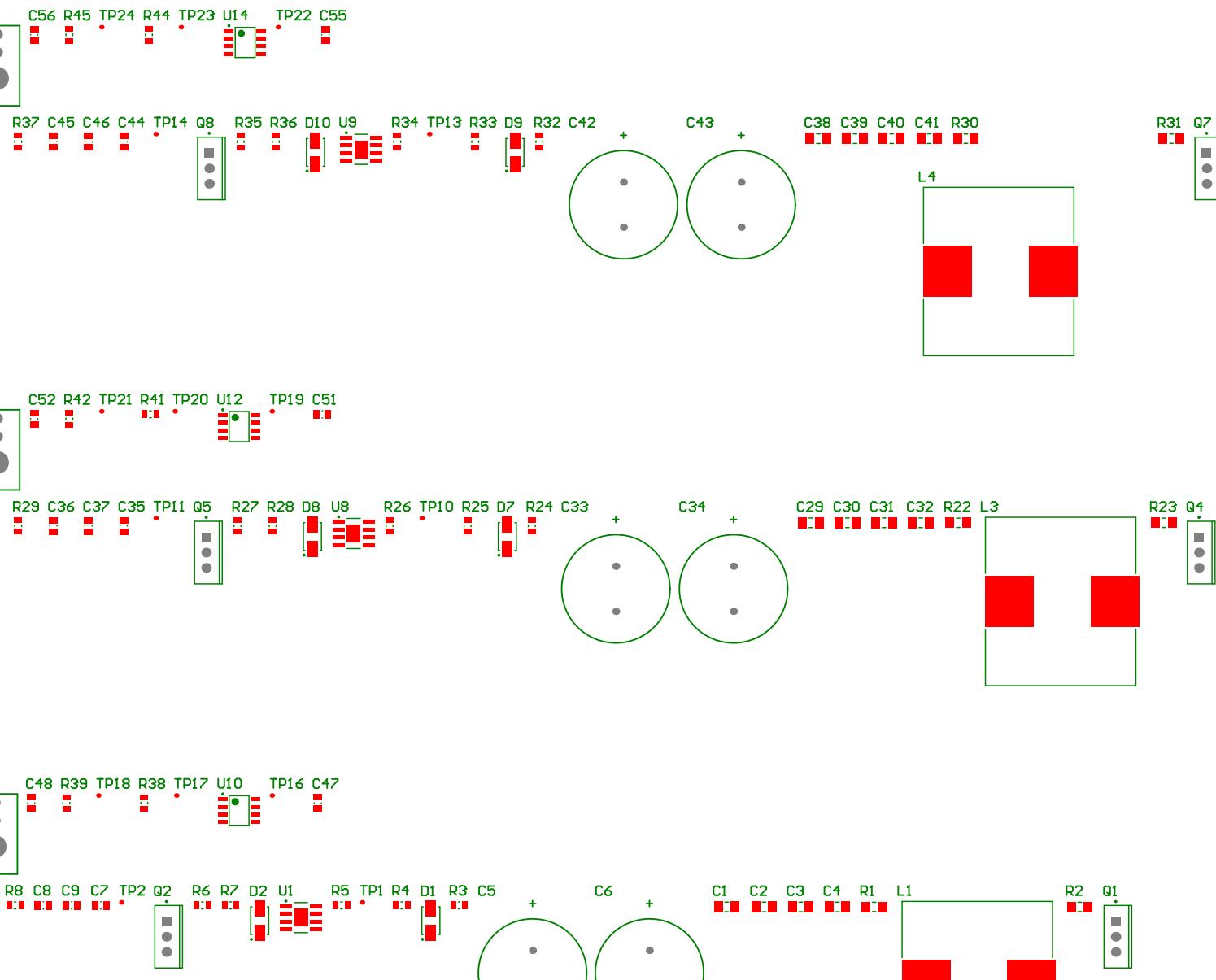
String Thermistor Telem (Muxed)

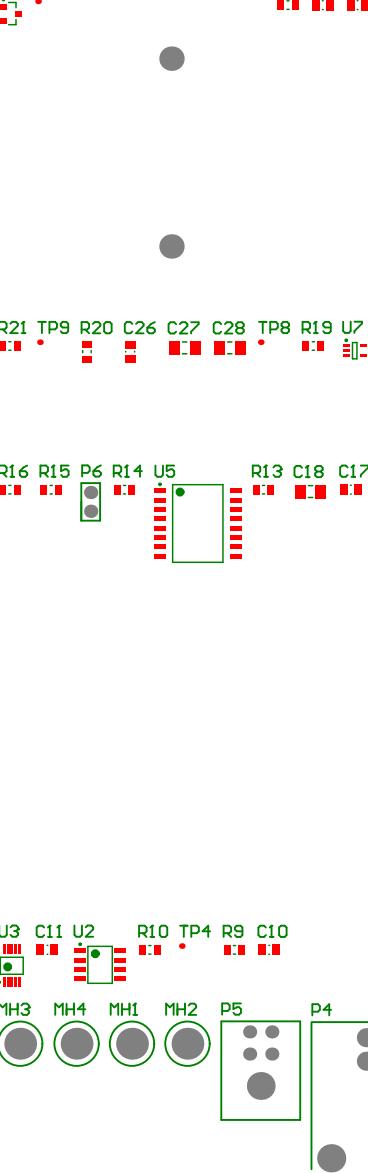


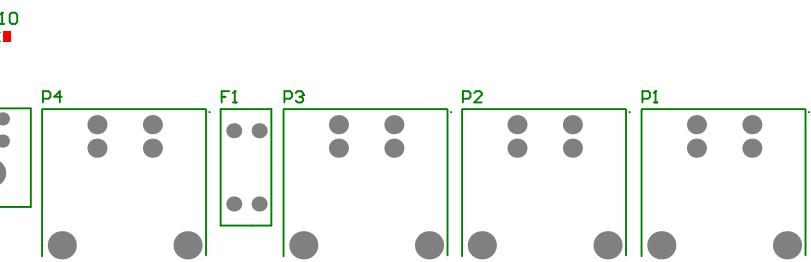
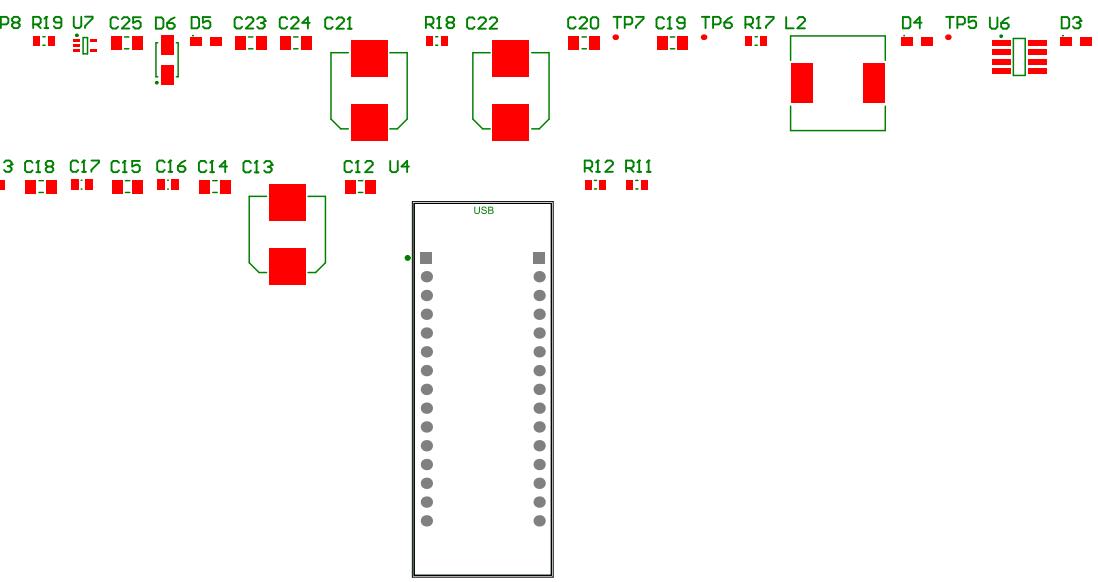
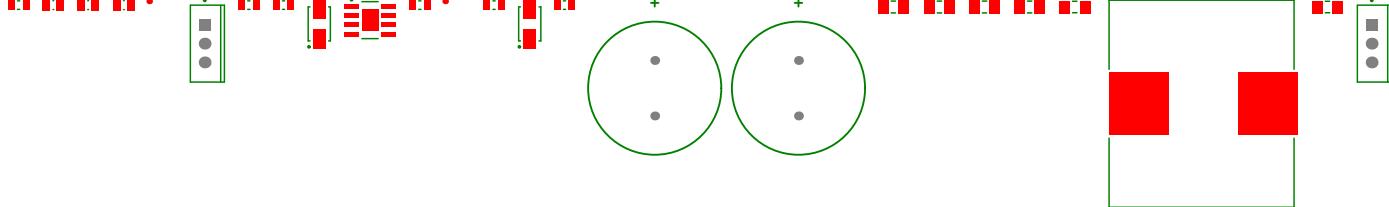
Title Nucleo	
Engineer: Shelby Riggleman	Revision: 1
Date: 12/18/2021	Time: 7:50:58 PM
File: global_telem.SchDoc	Sheet 8 of 8

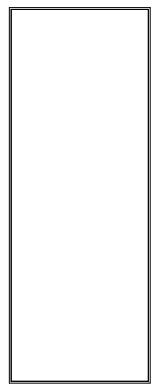
**BADGER
LOOP**

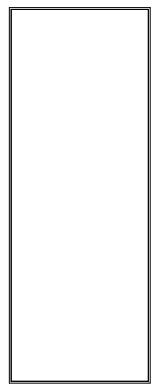












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