

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: 1/4/2022 Time: 10:42:55 AM Sheet 1 of 8	

Connectors

A

A

B

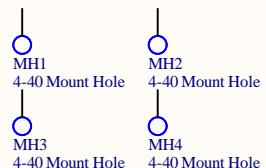
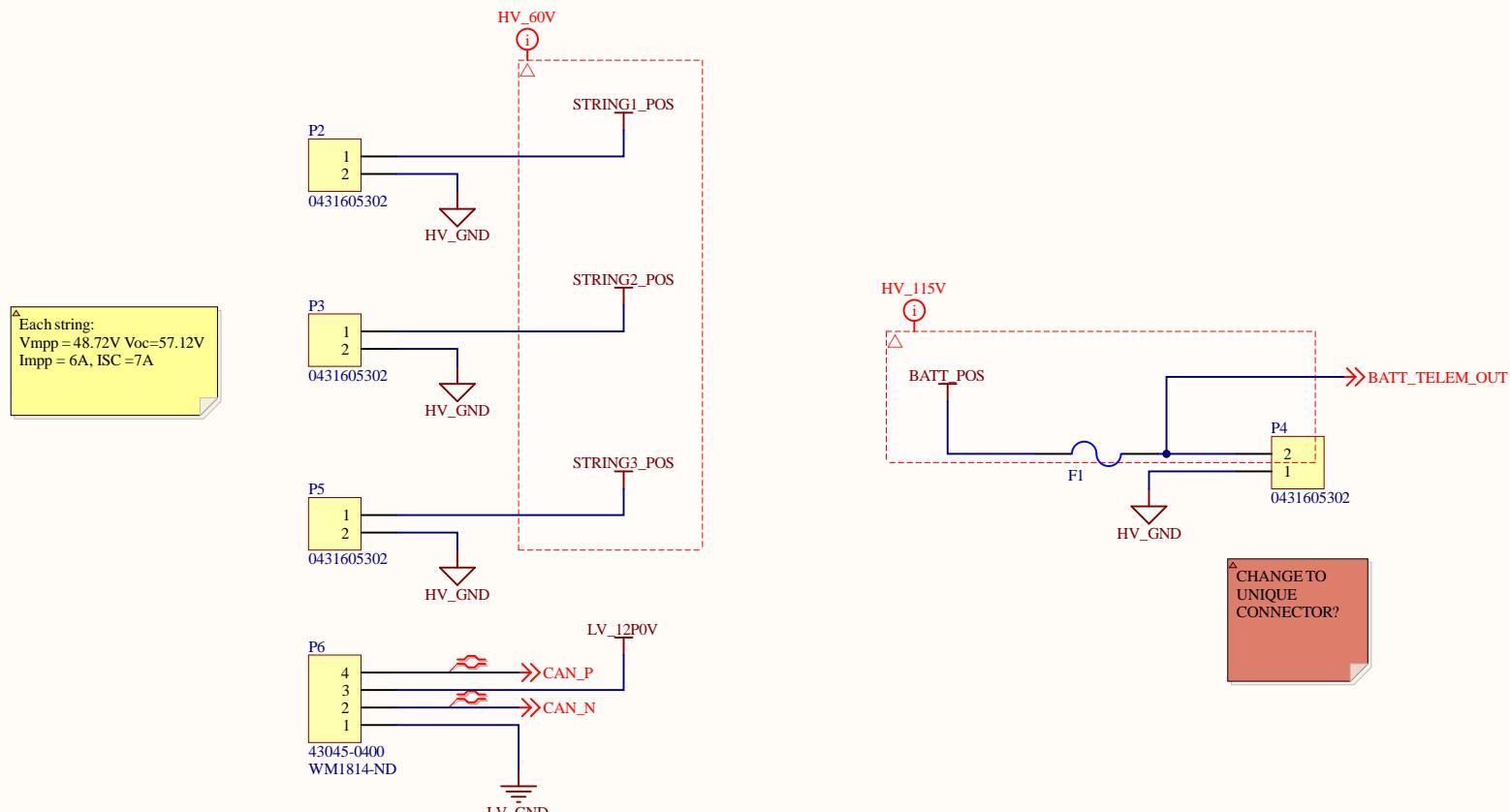
B

C

C

D

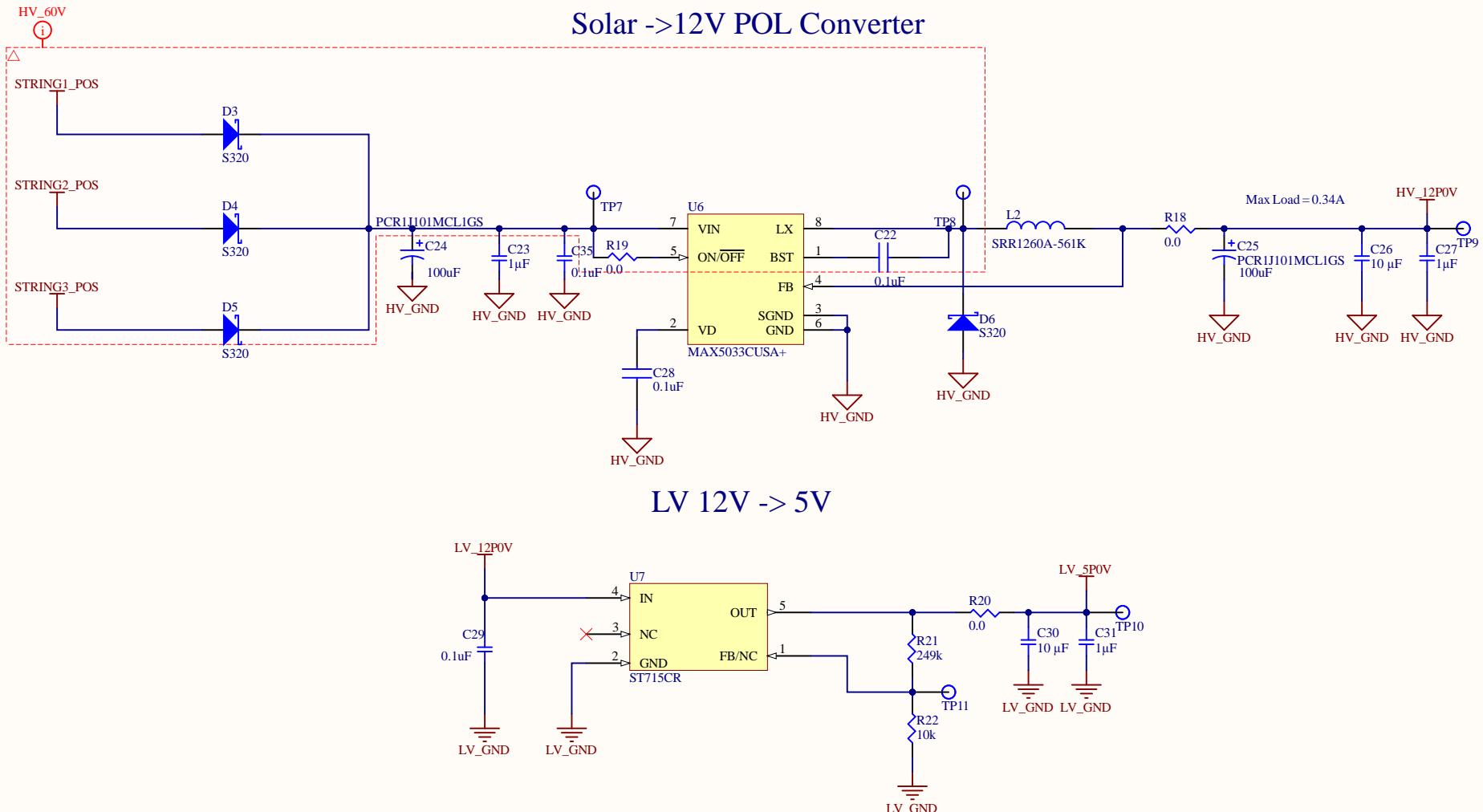
D



Title Connectors	
Engineer: Shelby Riggelman	Revision: 1
Date: 1/4/2022	Time: 10:42:55 AM Sheet 2 of 8
File: Connectors.SchDoc	

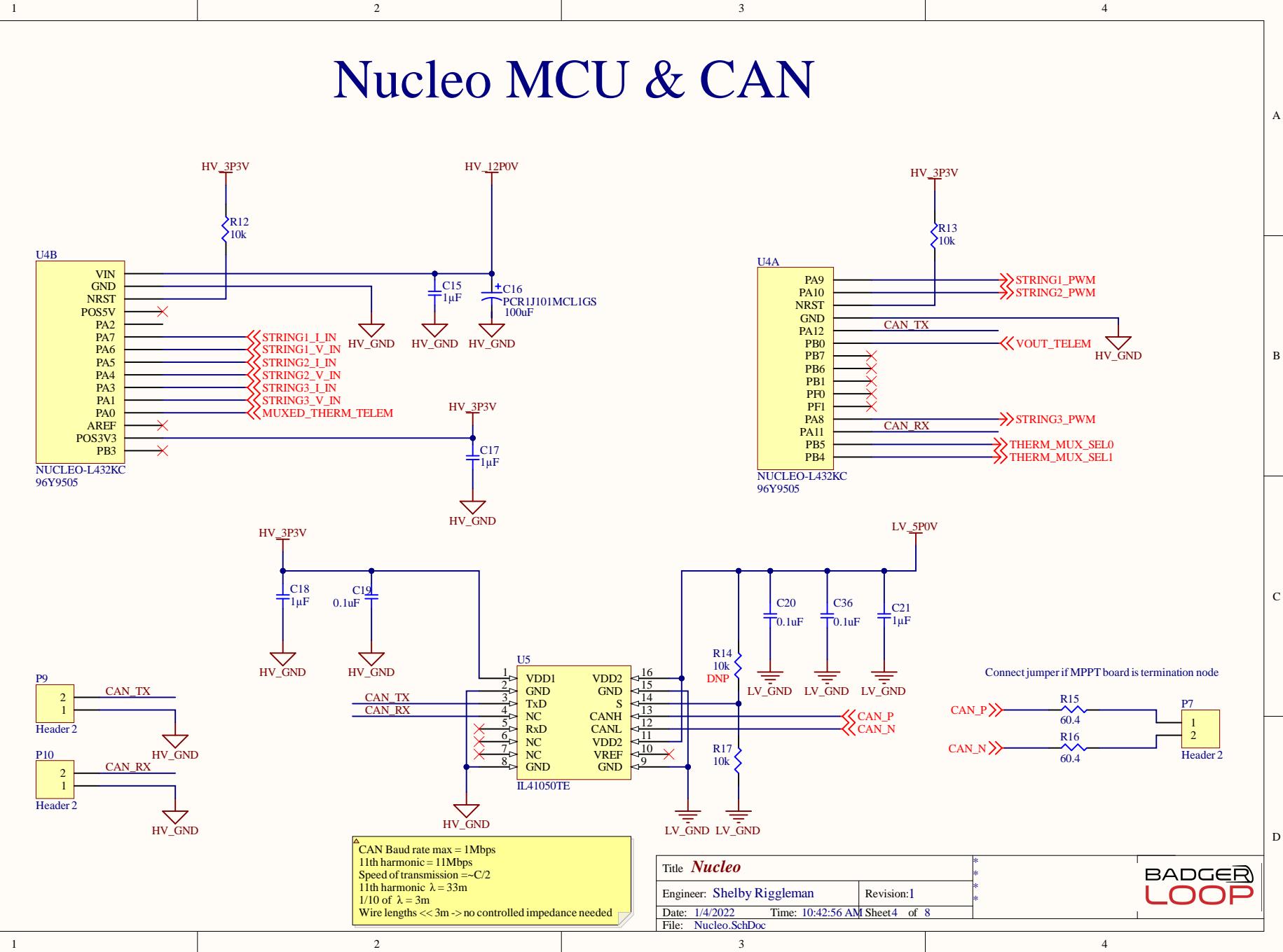
BADGER
LOOP

Point of Load Converters

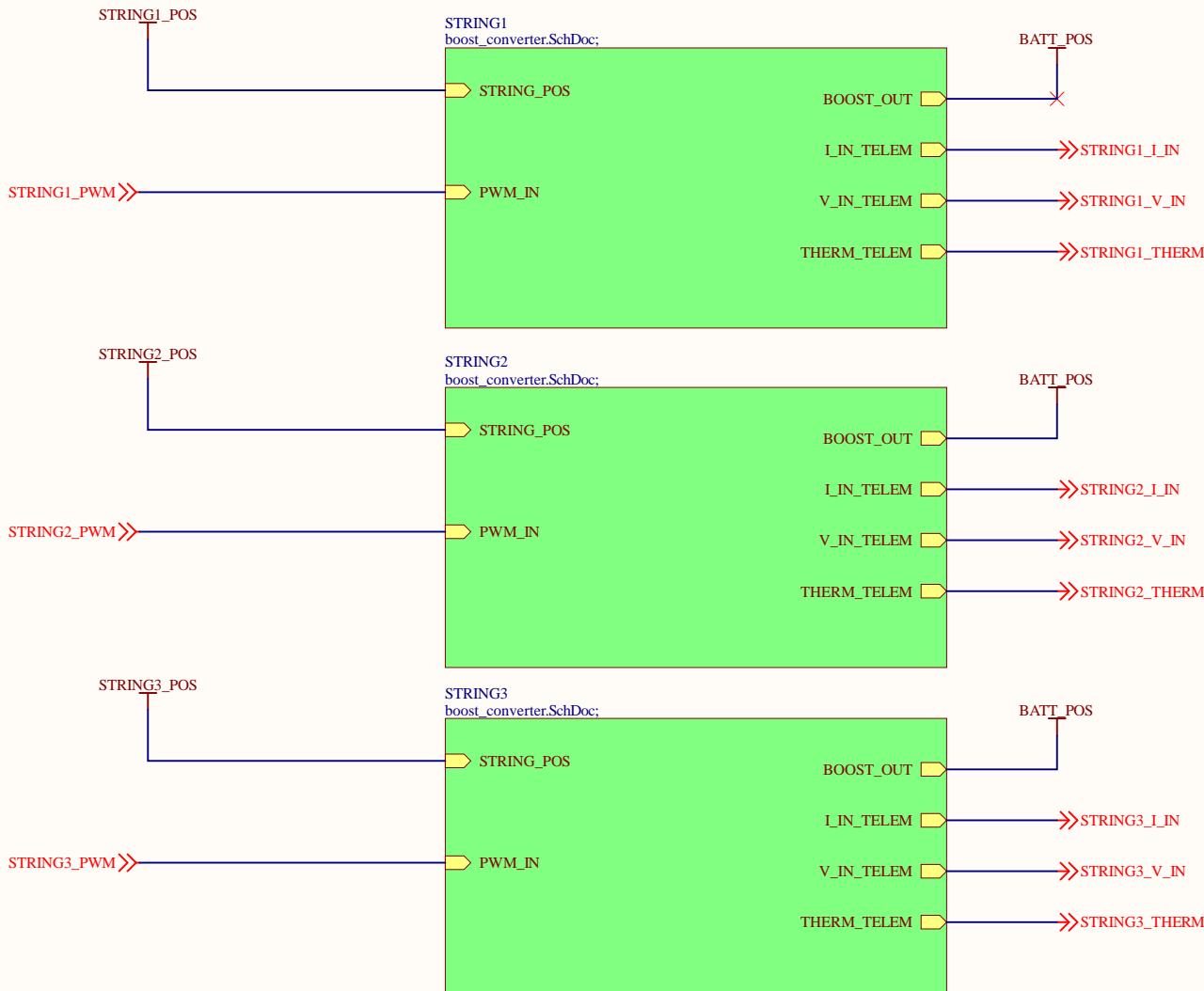


Title Nucleo	
Engineer: Shelby Riggleman	Revision:1
Date: 1/4/2022	Time: 10:42:55 AM Sheet3 of 8
File: POL_converter.SchDoc	

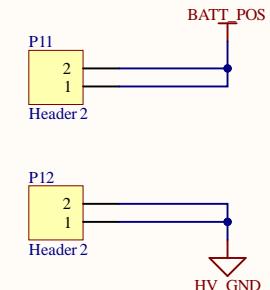
**BADGER
LOOP**



Solar Strings MPPTs



Debug Headers



Title Boost Strings	
Engineer: Shelby Riggelman	Revision: 1
Date: 1/4/2022	Time: 10:42:56 AM Sheet 5 of 8
File: solar_boost_strings.SchDoc	

BADGER
LOOP

Solar Boost Converter

A

B

C

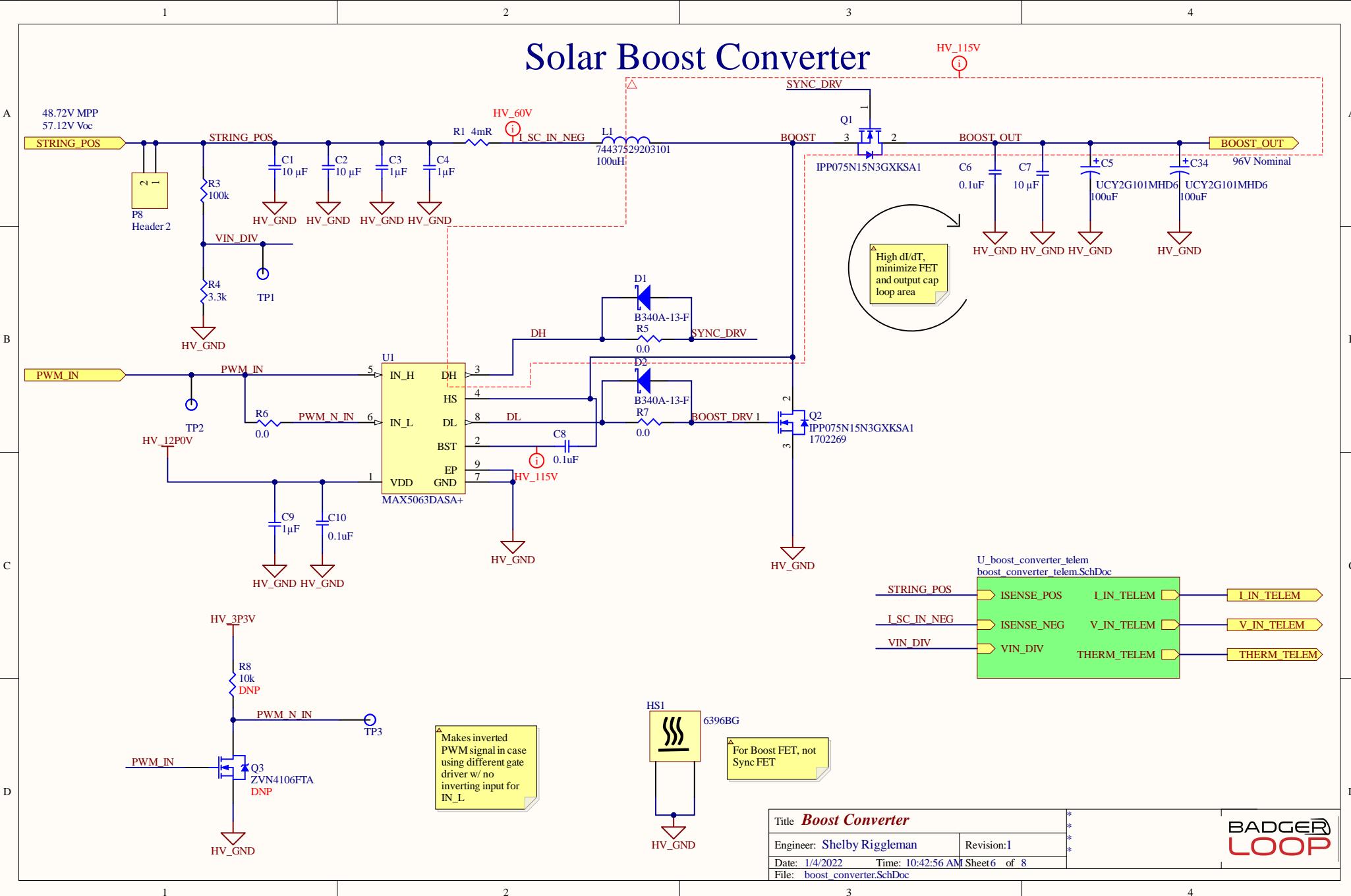
D

A

B

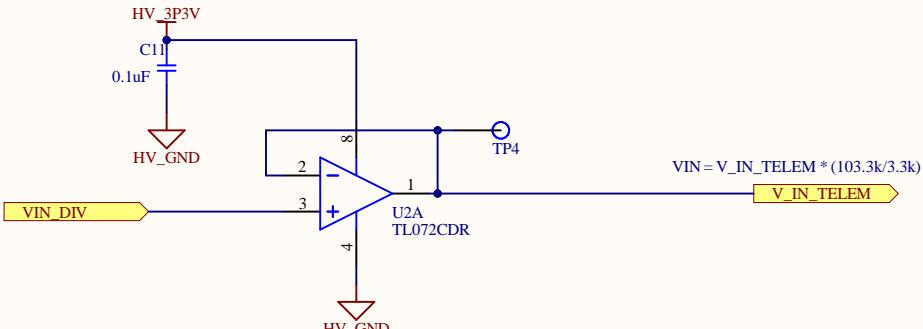
C

D

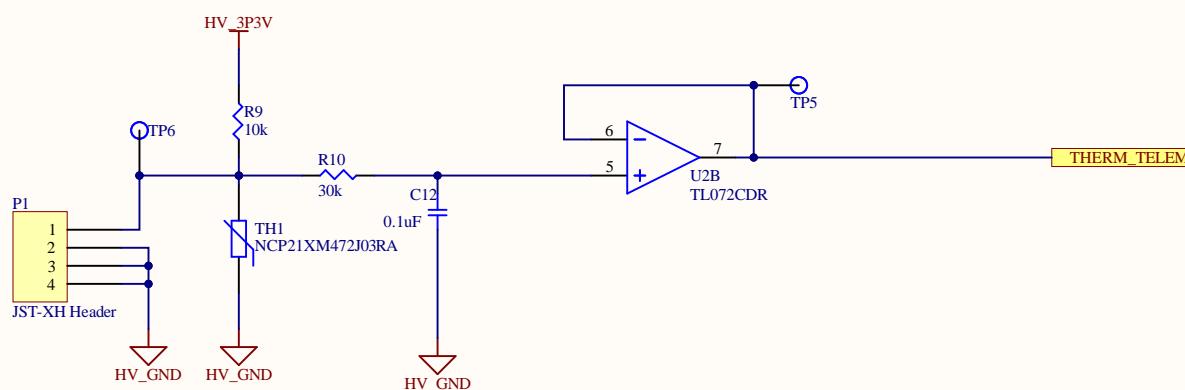


Solar Boost Converter Telemetry

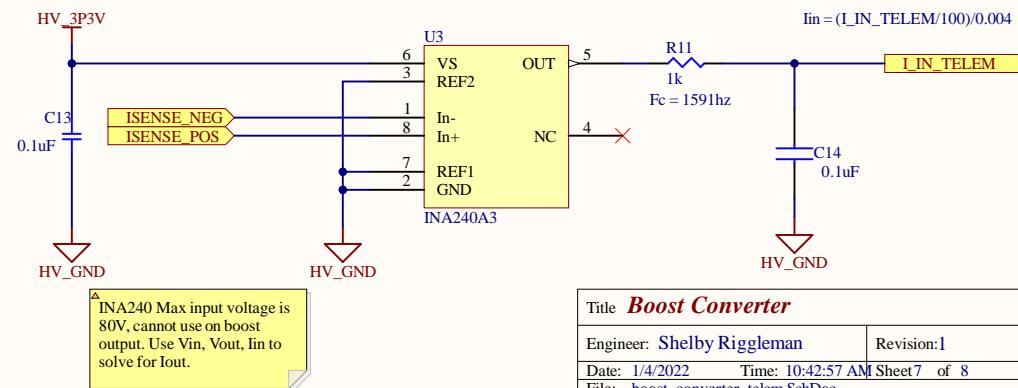
A
String Input Voltage



B
Thermistor Output



C
String Input Current

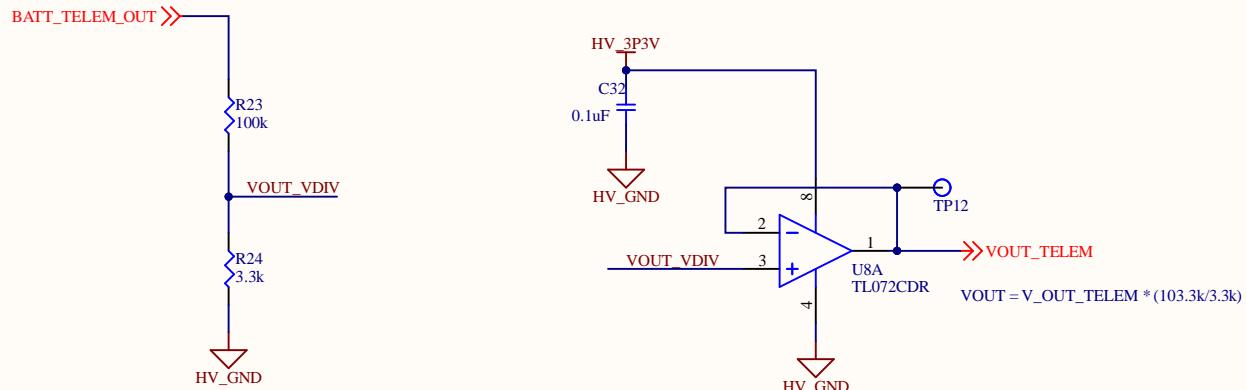


Title Boost Converter	
Engineer: Shelby Riggelman	Revision: 1
Date: 1/4/2022	Time: 10:42:57 AM
File: boost_converter_telem.SchDoc	Sheet 7 of 8

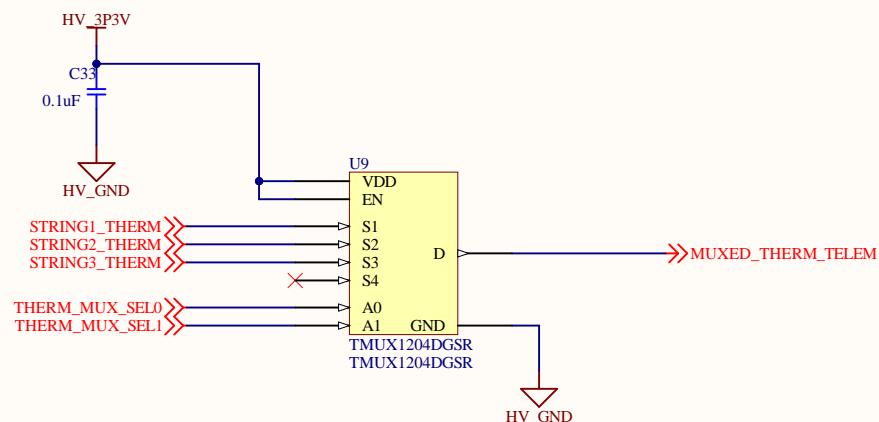
BADGER
LOOP

Global Telemetry

Output (Battery) Voltage



String Thermistor Telem (Muxed)



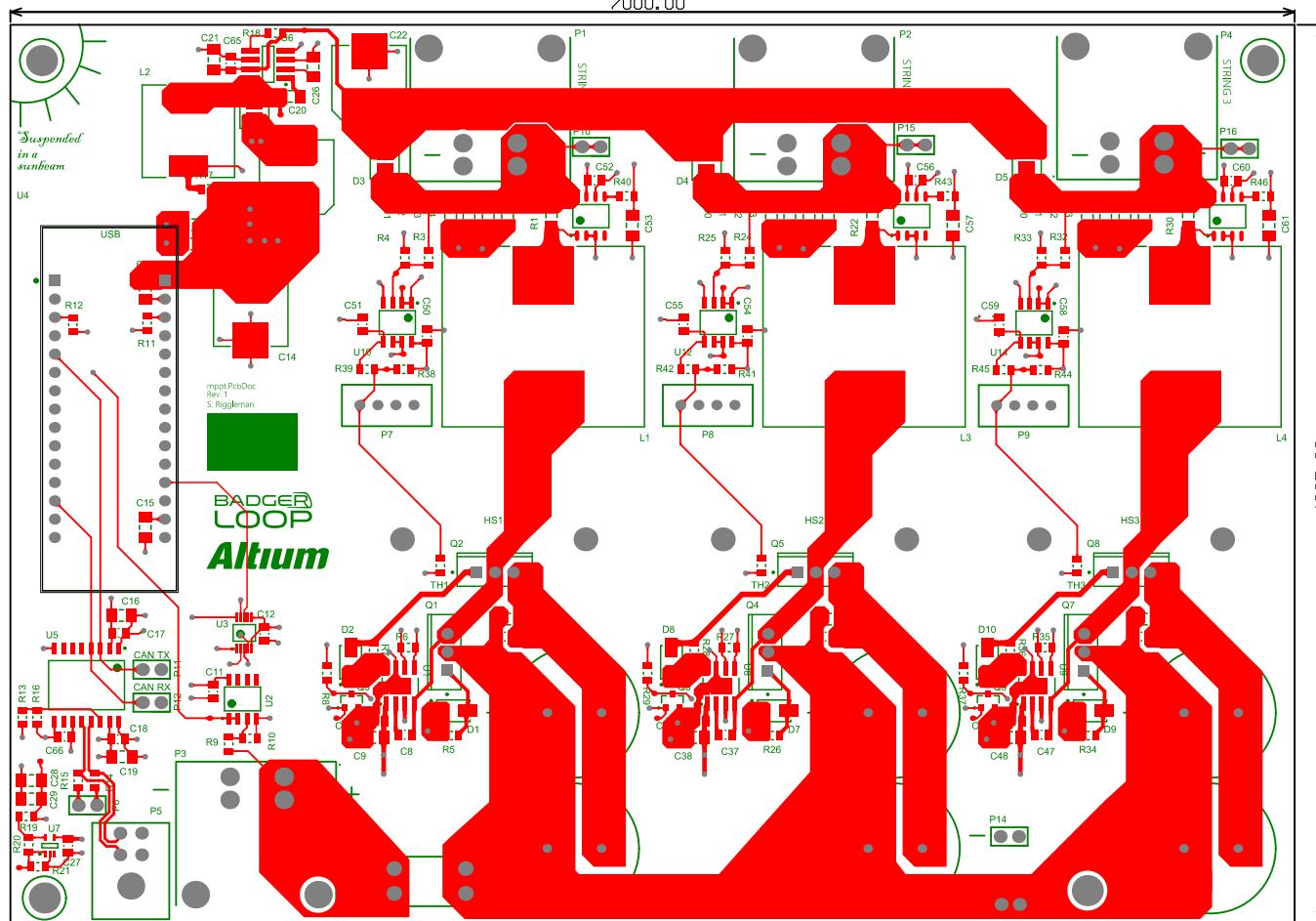
Title Nucleo	
Engineer: Shelby Riggleman	Revision:1
Date: 1/4/2022	Time: 10:42:57 AM Sheet 8 of 8
File: global_telem.SchDoc	

**BADGER
LOOP**

Layer	Name	Material	Thickness	Constant	Board Layer Stack
	Top Overlay				
	Top Solder	Solder Resist	0.40mil	3.5	
1	Top Layer		1.40mil		
	Dielectric 2	PP-006	2.80mil	4.1	
2	Layer 1	CF-004	1.38mil		
	Dielectric 1	FR-4	12.60mil	4.8	
3	Layer 2	CF-004	1.38mil		
	Dielectric 3	PP-006	2.80mil	4.1	
4	Bottom Layer		1.40mil		
	Bottom Solder	Solder Resist	0.40mil	3.5	
	Bottom Overlay				

Total board thickness: 24.56mil

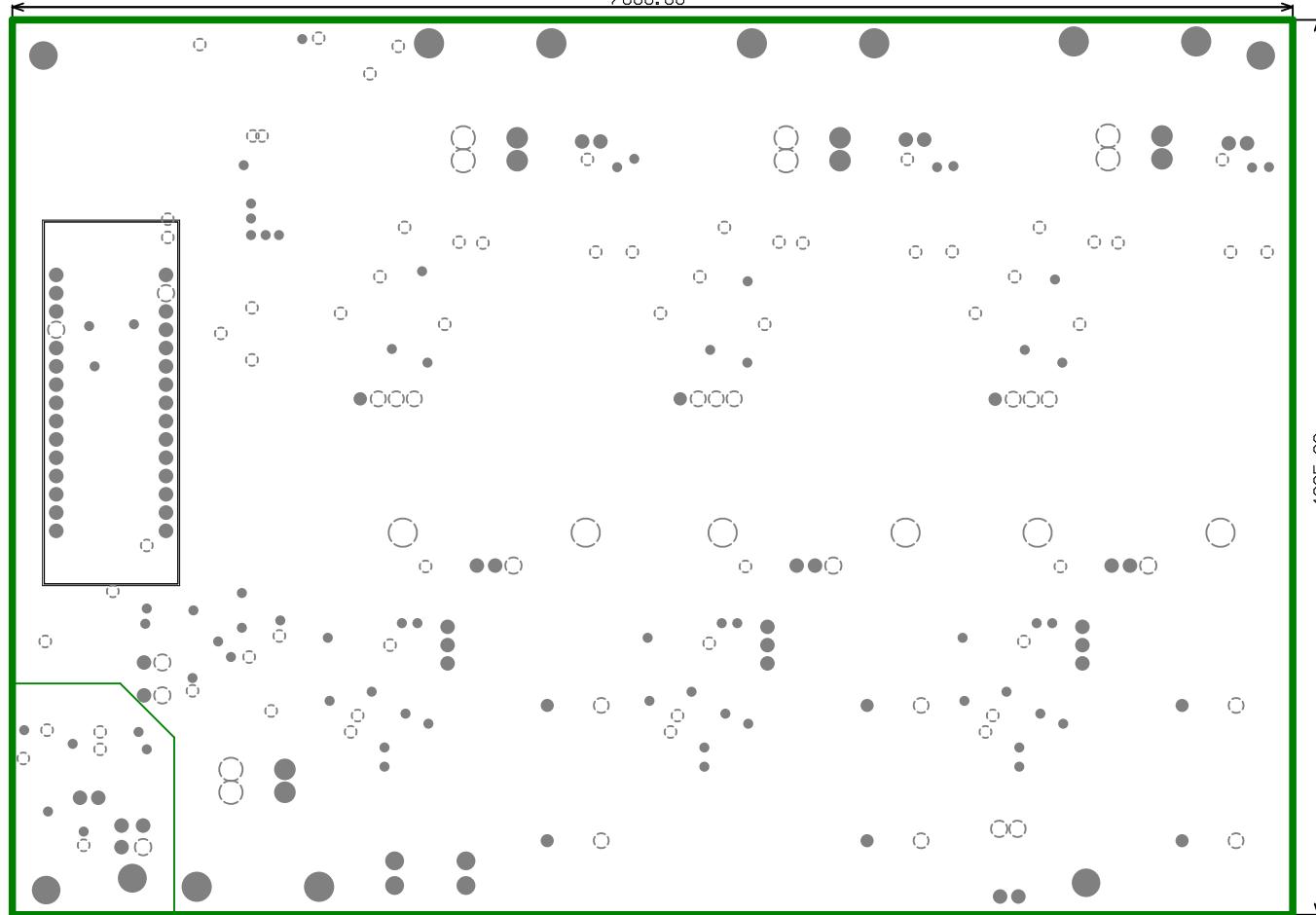
7000.00



Layer	Name	Material	Thickness	Constant	Board Layer Stack
	Top Overlay				
	Top Solder	Solder Resist	0.40mil	3.5	
1	Top Layer		1.40mil		
	Dielectric 2	PP-006	2.80mil	4.1	
2	Layer 1	CF-004	1.38mil		
	Dielectric 1	FR-4	12.60mil	4.8	
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	Dielectric 3	PP-006	2.80mil	4.1	
4	Bottom Layer		1.40mil		
	Bottom Solder	Solder Resist	0.40mil	3.5	
	Bottom Overlay				

Total board thickness: 24.56mil

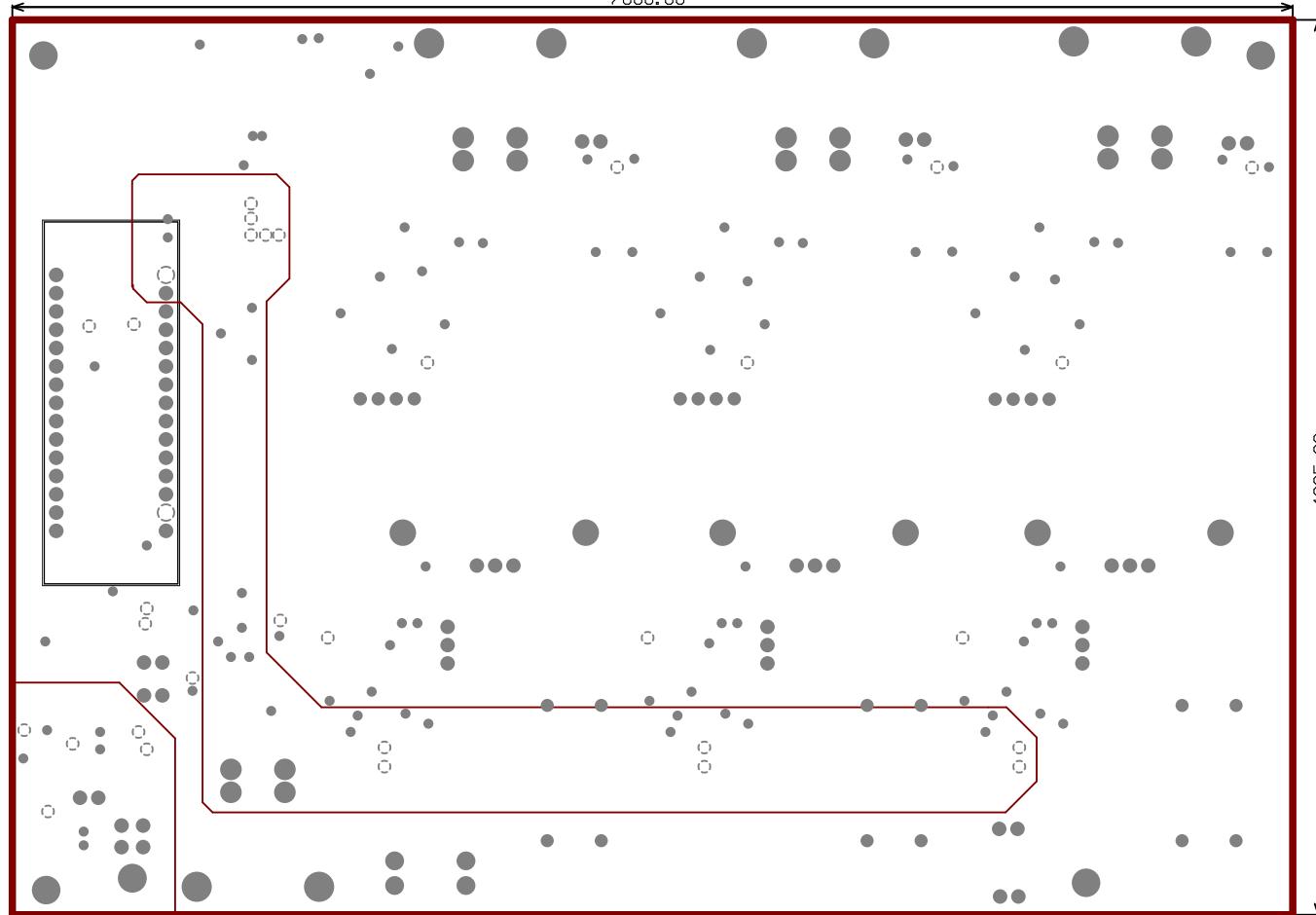
2000.00



Layer	Name	Material	Thickness	Constant	Board Layer Stack
	Top Overlay				
	Top Solder	Solder Resist	0.40mil	3.5	
1	Top Layer		1.40mil		
	Dielectric 2	PP-006	2.80mil	4.1	
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4	Bottom Layer		1.40mil		
	Bottom Solder	Solder Resist	0.40mil	3.5	
	Bottom Overlay				

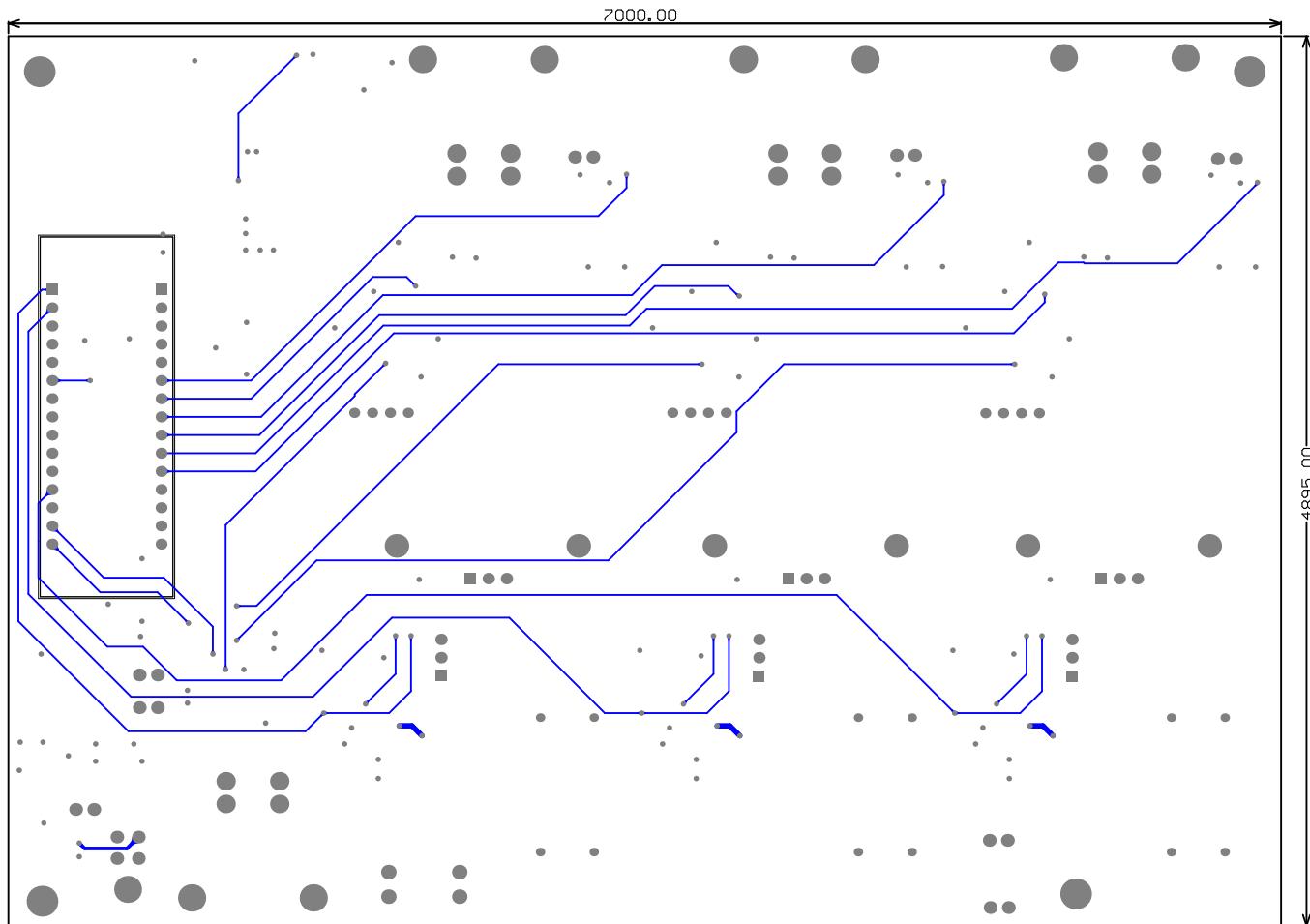
Total board thickness: 24.56mil

2000.00



Layer	Name	Material	Thickness	Constant	Board Layer Stack
	Top Overlay				
	Top Solder	Solder Resist	0.40mil	3.5	
1	Top Layer		1.40mil		
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3	Layer 2	CF-004	1.38mil		
	Dielectric 3	PP-006	2.80mil	4.1	
4	Bottom Layer		1.40mil		
	Bottom Solder	Solder Resist	0.40mil	3.5	
	Bottom Overlay				

Total board thickness: 24.56mil



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	Bottom Overlay				

Total board thickness: 24.56mil

7000.00

