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Electrical power system battery module 4 cells Hardware:

- Designed by: Amanda Batista Medeiros
- Based on FloripaSat-I Battery Board
- Reviewers: André M. P. Mattos
- Support: Gabriel M. Marcelino and Yan C. Azeredo

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<https://ohwr.org/project/cernohl/wikis/Documents/CERN-OHL-version-2>.

Project github repository: <https://github.com/spacelab-ufsc/battery-module-4c>

Project info

Rev	Description	Date	Author
0.1	<ul style="list-style-type: none">- Initial release- Hardware improvements and fixes based on the first EPS batteries board- Charge capacity increase, from 2 batteries (series) to 4 baterries (series/parallel)	04-Oct-2020	Andre M. P. Mattos
0.2	<ul style="list-style-type: none">- Updating battery contacts now using nickel strip pads- RTDs repositioning- New battery mechanical case mouting holes- Removing PC104 interface	16-Jun-2021	Yan C. Azeredo

Revision History

Block Diagram

SpaceLab - Federal University of Santa Catarina

Project: *bat2_project.pripcb* / [No Variations]

Title: *Project's info and block diagram*

Designed by: *Amanda B. Medeiros*

Date: 6/16/2021

Revision: v0.2

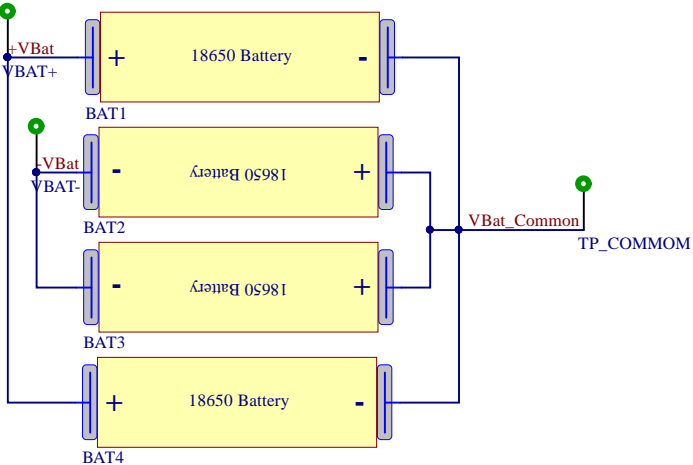
Sheet 1 of 2



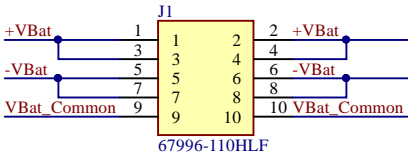
Project Code: *BAT4C*

Size: A4

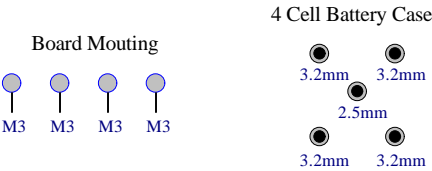
BATTERIES CONNECTIONS



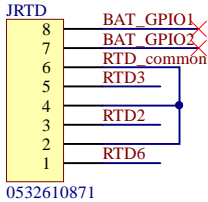
BATTERIES BOARD TO BOARD CONNECTOR TO EPS



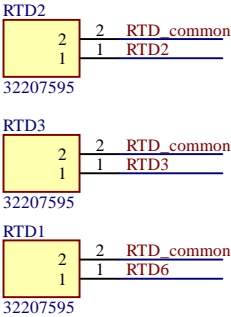
MECHANICAL HOLES



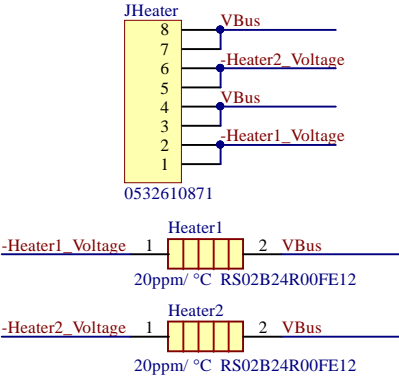
PICOBLADE INTERFACE



RTD SENSORS



HEATER CONNECTION



SpaceLab - Federal University of Santa Catarina

Project: bat2_project.pripcb / [No Variations]

Title: Batteries pads and connectors

Designed by: Amanda B. Medeiros

Date: 6/16/2021

Revision: v0.2

Sheet 2 of 2

Project Code: BAT4C

Size: A4

1

2

3

4

A

A

B

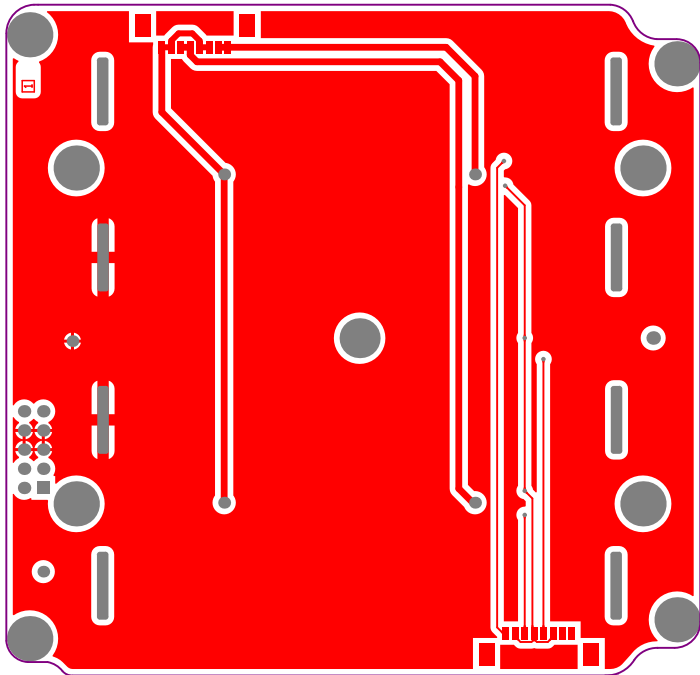
B

C

C

D

D




Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.010mm	3.5	
3	Top Layer	Copper	0.035mm		
4	Dielectric Core	FR-4	1.500mm	4.2	
5	Bottom Layer	Copper	0.035mm		
6	Bottom Solder	Solder Resist	0.010mm	3.5	
7	Bottom Overlay				

Fabrication specifications:

- Copper base 10Z:
 - PCB Material: Prepeg FR4—Standard
 - PCB Thickness: 1.6mm
 - PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
 - Soldermask Color: Green
 - Vias: Force Complete Tenting
 - Stack-up (herein included)

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

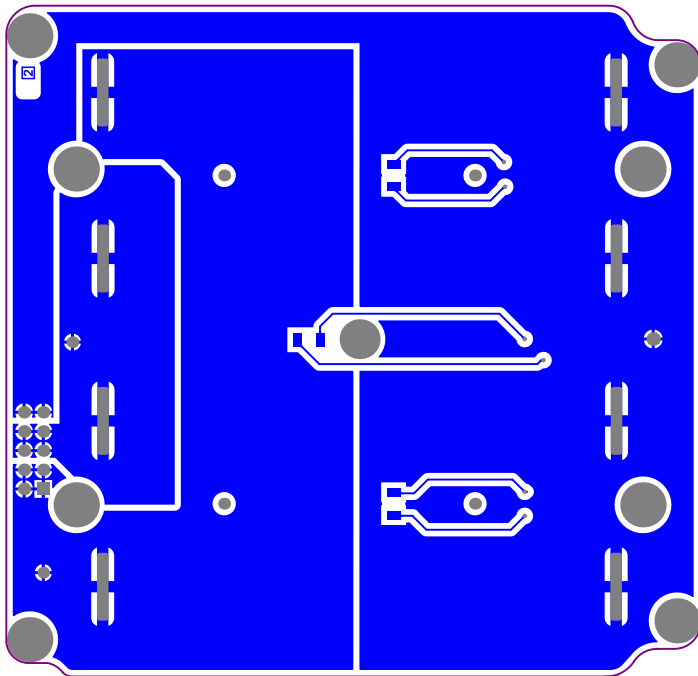
SpaceLab - Federal University of Santa Catarina		
Project: Battery Board 4 cells		
Layer: Top Layer Board Edge		
Designed by: Amanda B. Medeiros (based on FSat-I Bat)		Project Code: BAT4C
Date: 6/16/2021	Version: v0.2	Size: A4

1

2

3

4




Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.010mm	3.5	
3	Top Layer	Copper	0.035mm		
4	Dielectric Core	FR-4	1.500mm	4.2	
5	Bottom Layer	Copper	0.035mm		
6	Bottom Solder	Solder Resist	0.010mm	3.5	
7	Bottom Overlay				

Fabrication specifications:

- Copper base 10Z:
 - PCB Material: Prepeg FR4—Standard
 - PCB Thickness: 1.6mm
 - PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
 - Soldermask Color: Green
 - Vias: Force Complete Tenting
 - Stack-up (herein included)

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

SpaceLab - Federal University of Santa Catarina		
Project: Battery Board 4 cells		
Layer: Bottom Layer Board Edge		
Designed by: Amanda B. Medeiros (based on FSat-I Bat)		Project Code: BAT4C
Date: 6/16/2021	Version: v0.2	Size: A4

1

2

3

4

A

A

B

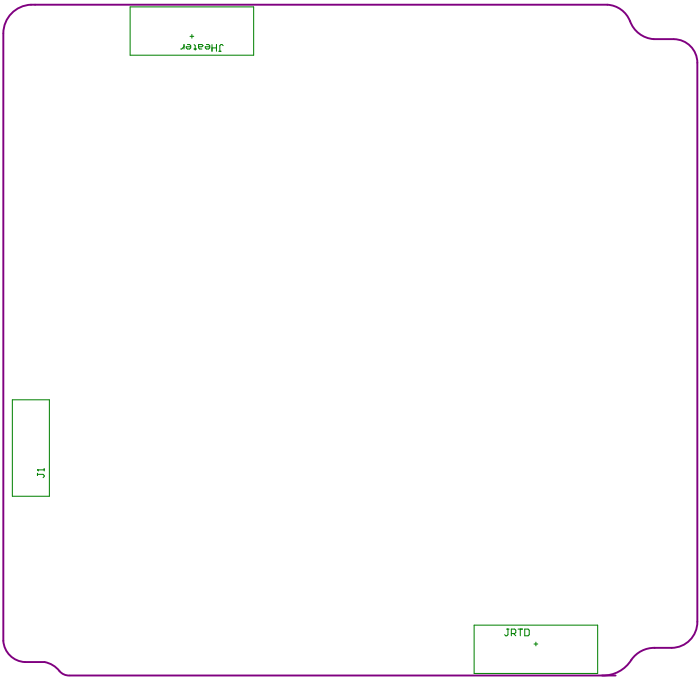
B

C

C

D

D




Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.010mm	3.5	
3	Top Layer	Copper	0.035mm		
4	Dielectric Core	FR-4	1.500mm	4.2	
5	Bottom Layer	Copper	0.035mm		
6	Bottom Solder	Solder Resist	0.010mm	3.5	
7	Bottom Overlay				

Fabrication specifications:

- Copper base 10Z:
 - PCB Material: Prepeg FR4—Standard
 - PCB Thickness: 1.6mm
 - PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
 - Soldermask Color: Green
 - Vias: Force Complete Tenting
 - Stack-up (herein included)

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

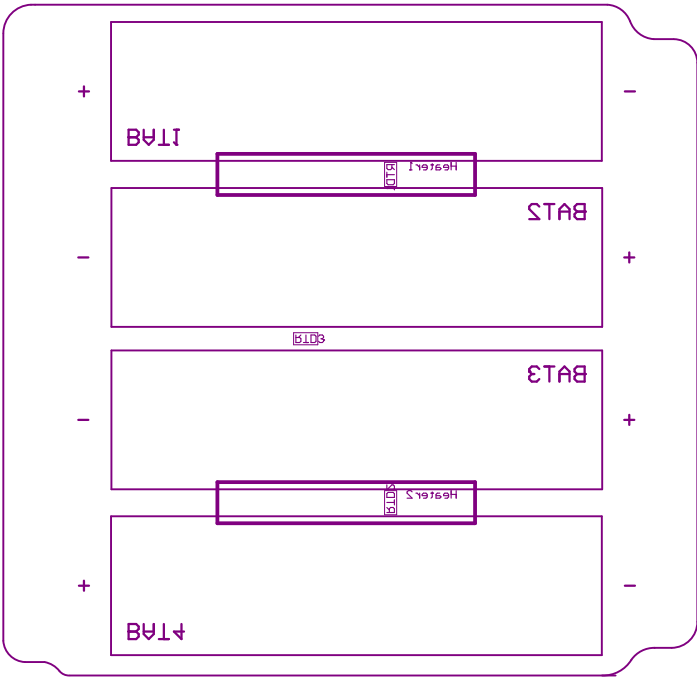
SpaceLab - Federal University of Santa Catarina		
Project: Battery Board 4 cells		
Layer: ASM Top Board Edge		
Designed by: Amanda B. Medeiros (based on FSat-I Bat)		Project Code: BAT4C
Date: 6/16/2021	Version: v0.2	Size: A4

1

2

3

4




Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.010mm	3.5	
3	Top Layer	Copper	0.035mm		
4	Dielectric Core	FR-4	1.500mm	4.2	
5	Bottom Layer	Copper	0.035mm		
6	Bottom Solder	Solder Resist	0.010mm	3.5	
7	Bottom Overlay				

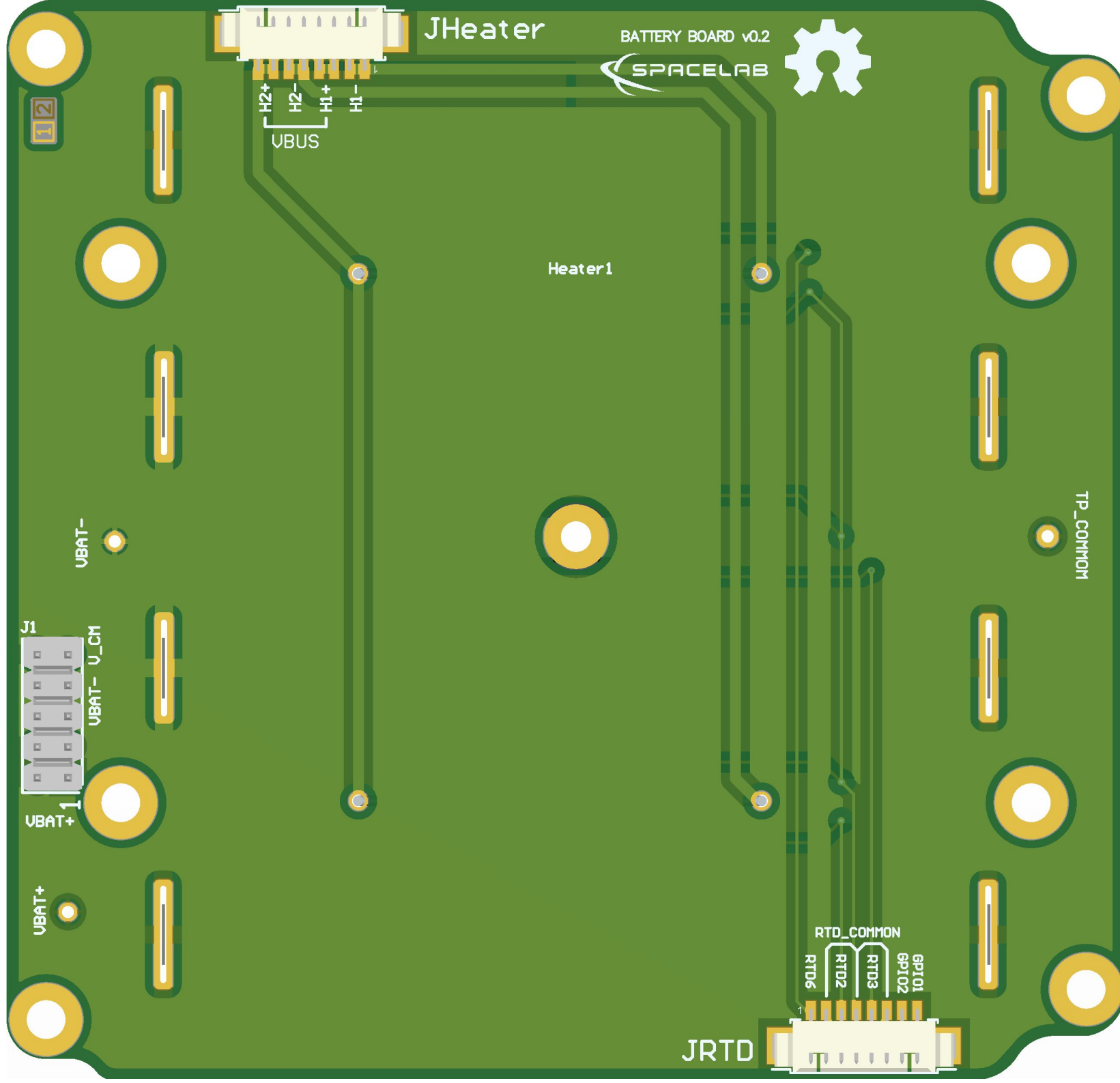
Fabrication specifications:

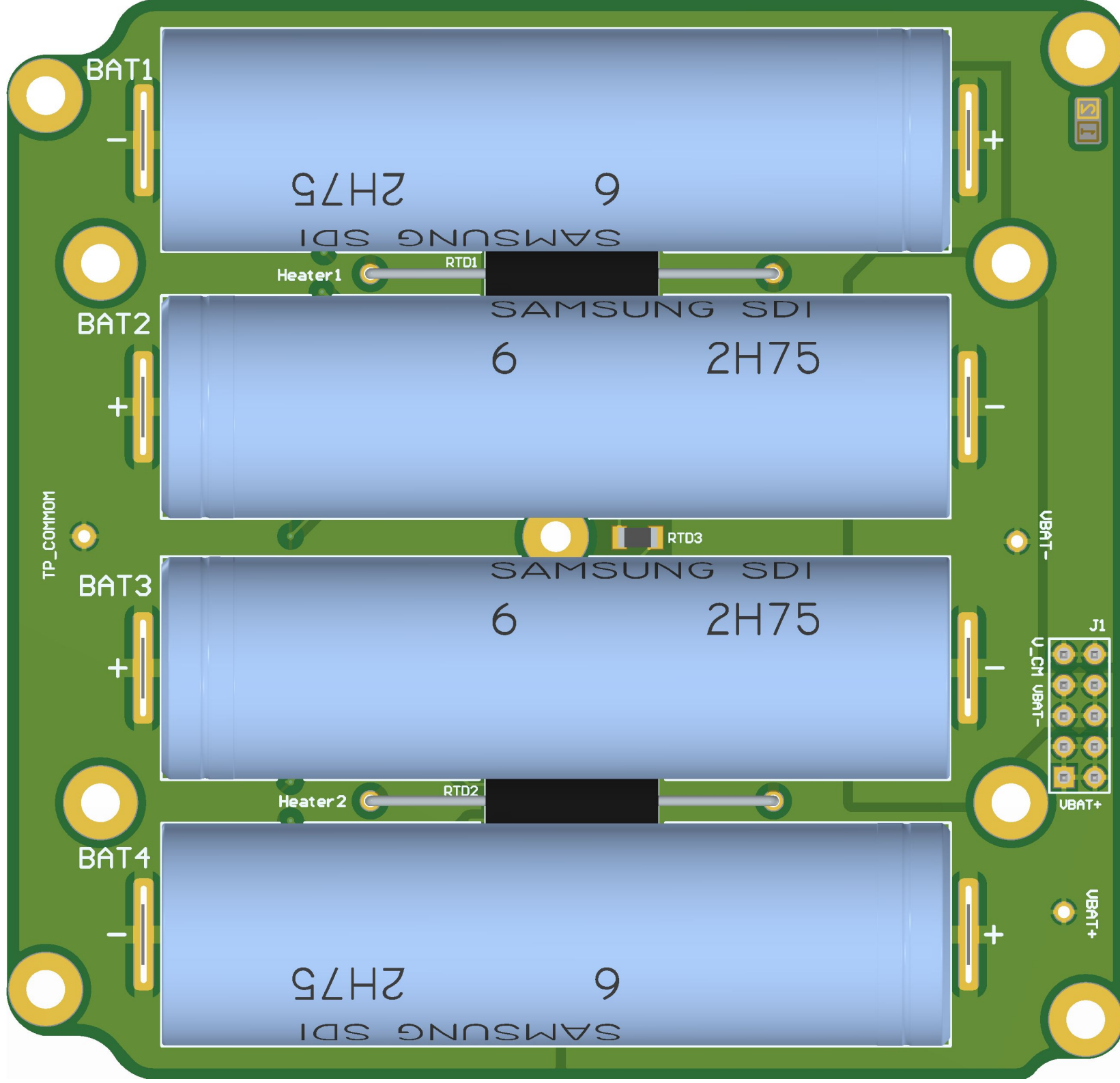
- Copper base 10Z:
 - PCB Material: Prepeg FR4—Standard
 - PCB Thickness: 1.6mm
 - PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
 - Soldermask Color: Green
 - Vias: Force Complete Tenting
 - Stack-up (herein included)

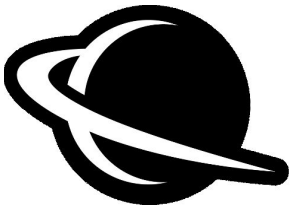
Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

SpaceLab - Federal University of Santa Catarina		
Project: Battery Board 4 cells		
Layer: ASM Bottom Board Edge		
Designed by: Amanda B. Medeiros (based on FSat-I Bat)		Project Code: BAT4C
Date: 6/16/2021	Version: v0.2	Size: A4







Bill of Materials

Source Data From:	bat2_project.prjpcb	
Project:	bat2_project.prjpcb	
Variant:	None	
Project Code:	BAT4C	
Report Date:	6/16/2021	4:50:41 PM
Print Date:	16/06/2021	16:50:46

#	Designator	Quantity	mn Name Error:Manufa	mn Name Error:Manufacturer Part Nu	Partnumber	Description	olumn Name Error:Pa	olumn Name Error:Foc	olumn Name Error	Fitted
1	RTD1, RTD2, RTD3	3			32207595	1 kOhms RTD Platinum (Pt) ±0.3% 3850ppm/°C 1206 (3216 Metric)				Fitted
2	JHeater, JRTD	2			53261-0871	PicoBlade 8 Position Right Angle Connector Header Surface Mount 0.049" (1.25mm)				Fitted
3	Heater1, Heater2	2			RS02B24R00FE12	Wirewound Resistors - Through Hole 3watts 24ohms 1%				Fitted
4	J1	1			67996-110HLF	Headers & Wire Housings 2X5P UNSHRD HDR 30 microinch gold				Fitted