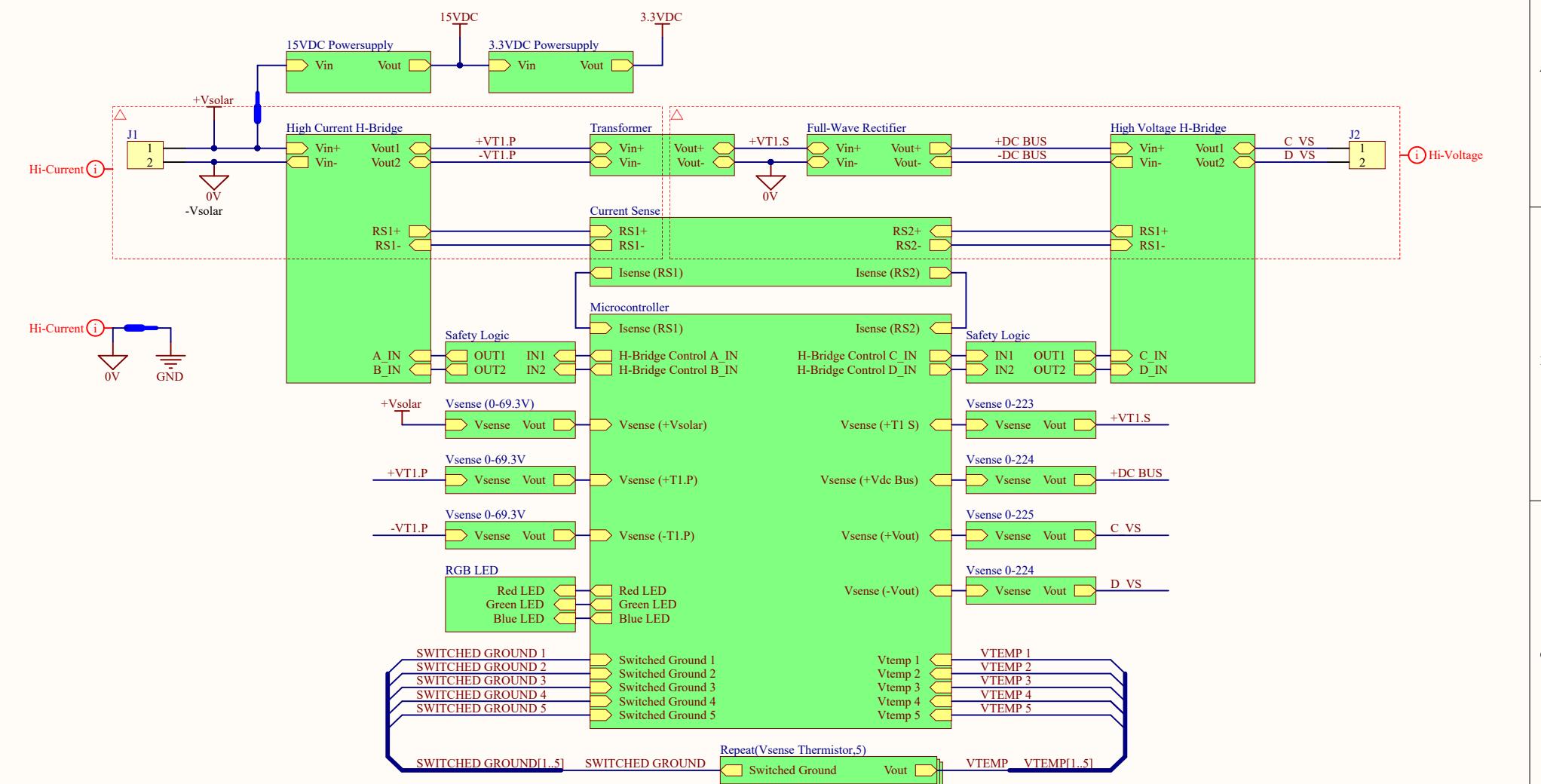
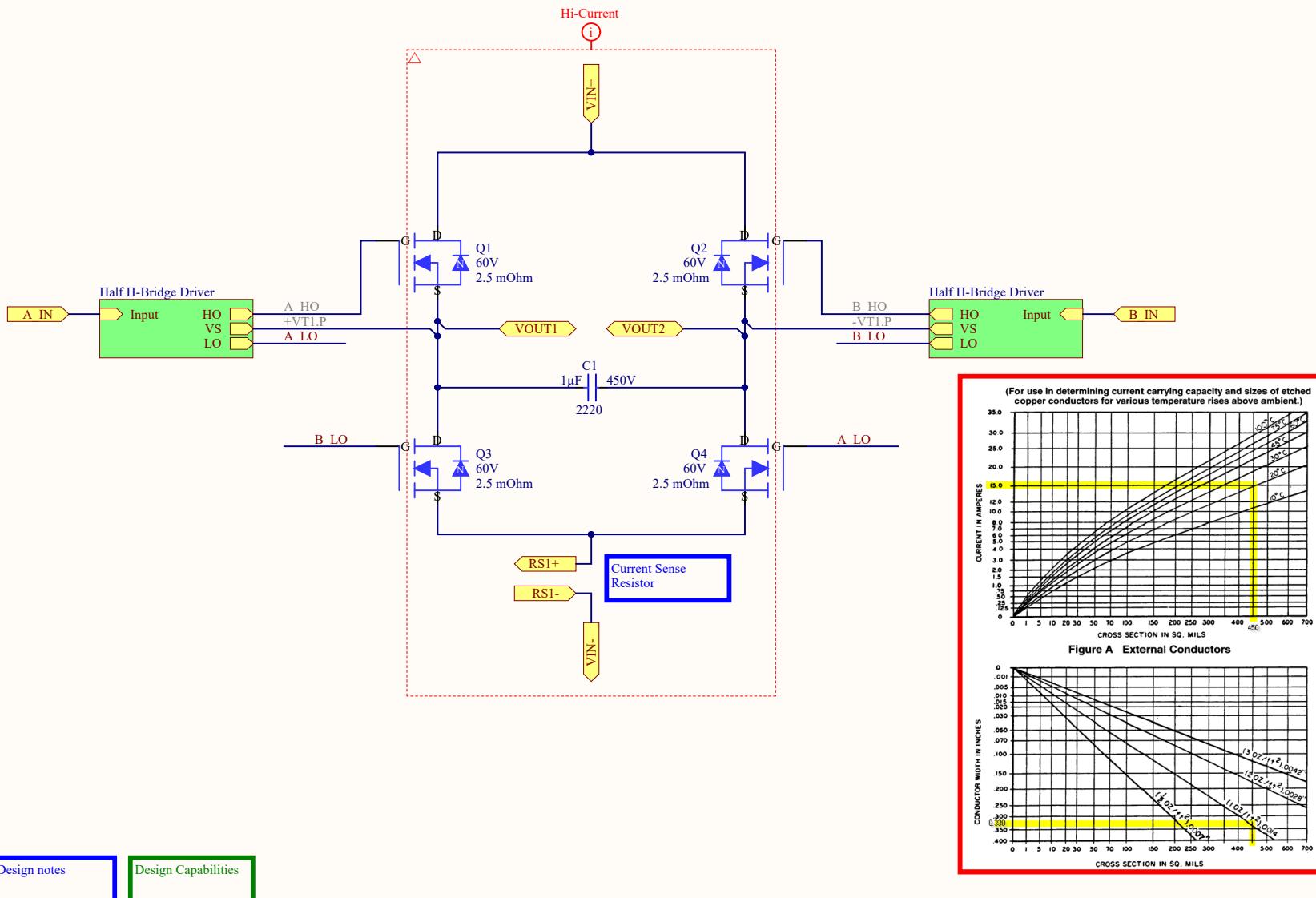


Power Connectors are wires soldered to a board

I need a 15VDC Power supply





PCB design/layout
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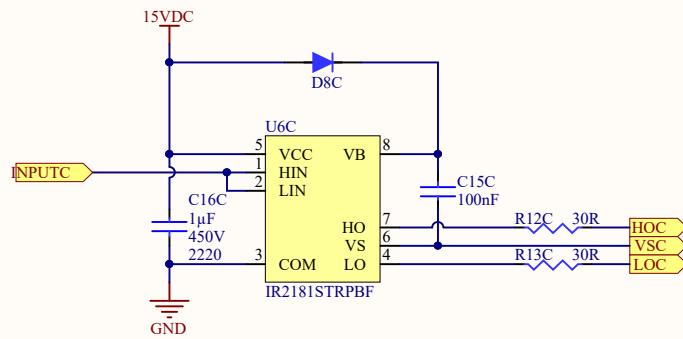
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PCB design/layout
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Design Capabilities

PV Refrigerator v0.1.0		
A FRI JI	N-FET Driver	
Cct	Designed by Mike MacKay	
Rev A	Date 2017-02-04	Sheet 3 of 25

A

A

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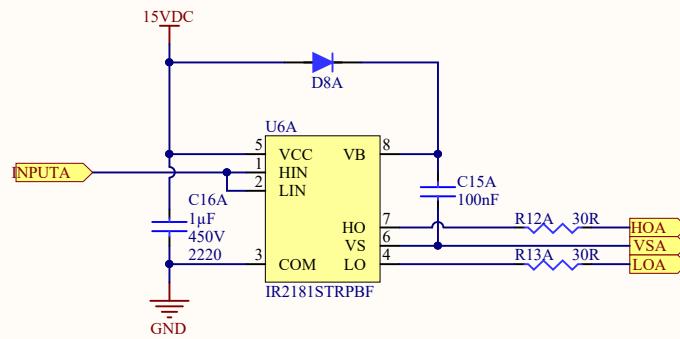
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PCB design/layout
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Design Capabilities

PV Refrigerator v0.1.0		
A FRI JI	N-FET Driver	
Cct	Designed by	Mike MacKay
Rev A	Date	2017-02-04
		Sheet 3, of 25

A

A

B

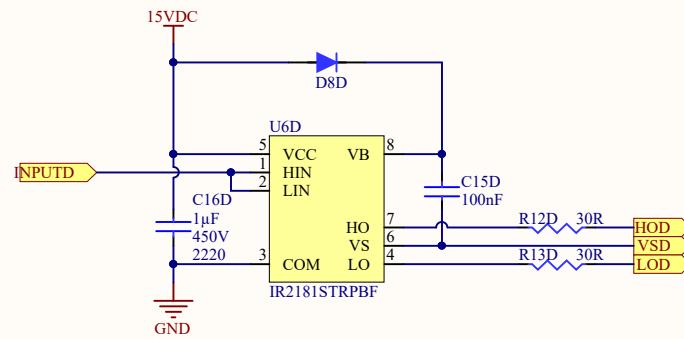
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PV Refrigerator v0.1.0		
A FRI JI	N-FET Driver	
Cct	Designed by Mike MacKay	
Rev A	Date 2017-02-04	Sheet 3.2 of 25

A

A

B

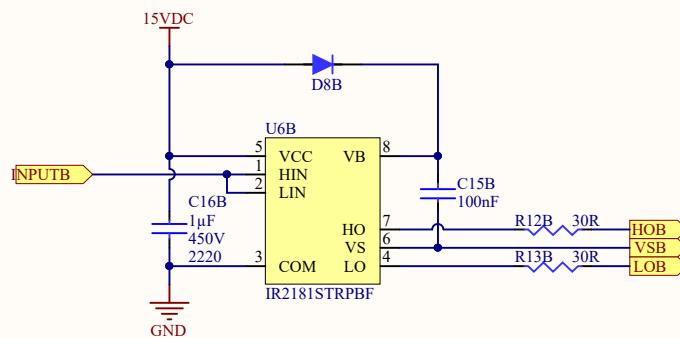
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PV Refrigerator v0.1.0		
A FRI JI	N-FET Driver	
Cct	Designed by Mike MacKay	
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A

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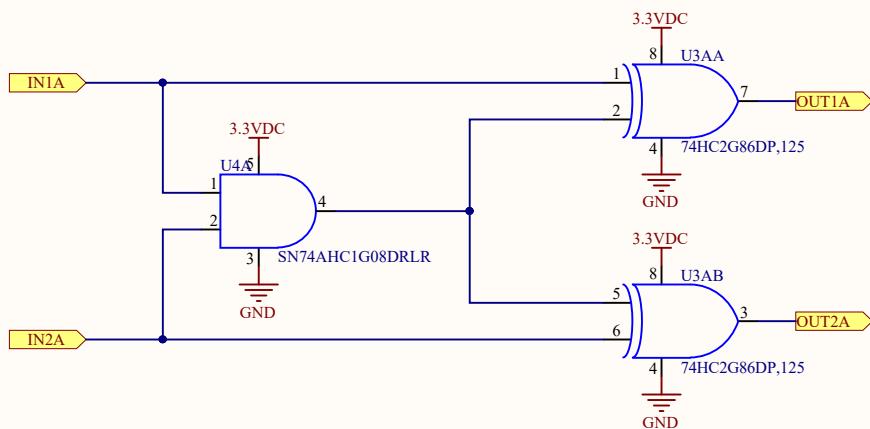
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PV Refrigerator v0.1.0		
Safety Logic		
A	Cct	Designed by Mike MacKay
Rev A	Date 2017-02-10	Sheet 4 of 25

A

A

B

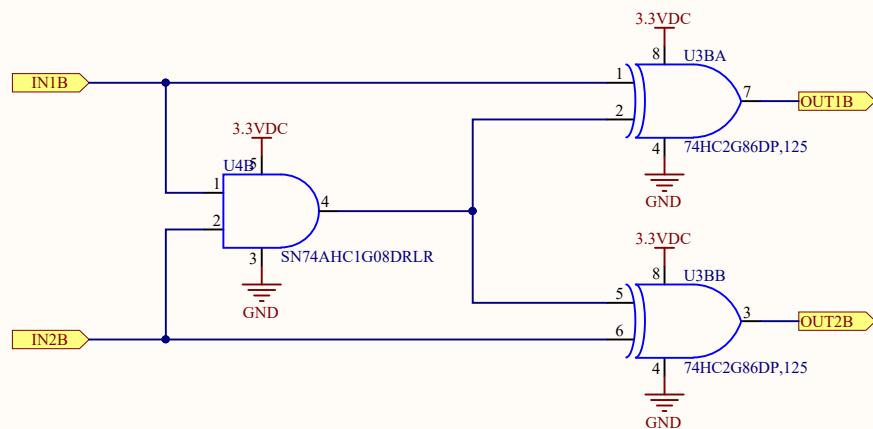
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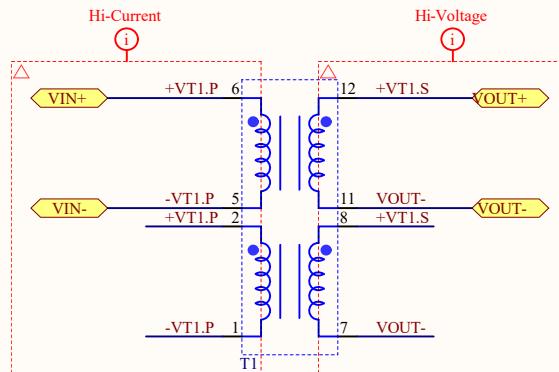
PCB design/layout
notes &
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PV Refrigerator v0.1.0		
Safety Logic		
A FRI JI	Cct Rev A	Designed by Mike MacKay Date 2017-02-10
		Sheet 4.2 of 25

Done



VPS24-5400

- 1. Maximum Power: 130.0VA
- 2. Primary – Series: 230VAC, 50/60Hz; Parallel: 115VAC, 50/60Hz
- 3. Secondary: Series: 24.0V CT@ 5.4A; Parallel: 12.0V @ 10.8A

Input: Series – 6 and 1, Jumper 5 to 2
Parallel – 6 and 1, Jumper 6 to 2 and 5 to 1

Output: Series – 12 and 7, Jumper 11 to 8
Parallel – 12 and 7, Jumper 12 to 8 and 11 to 7

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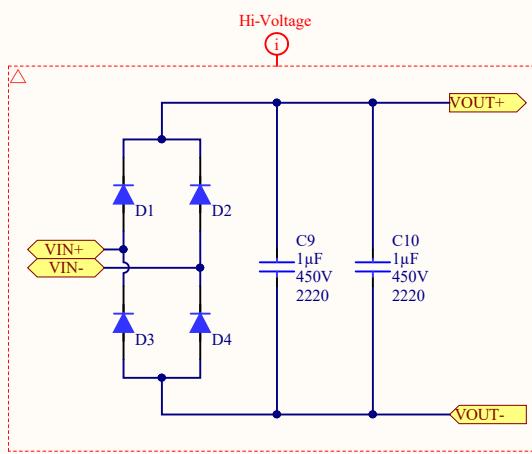
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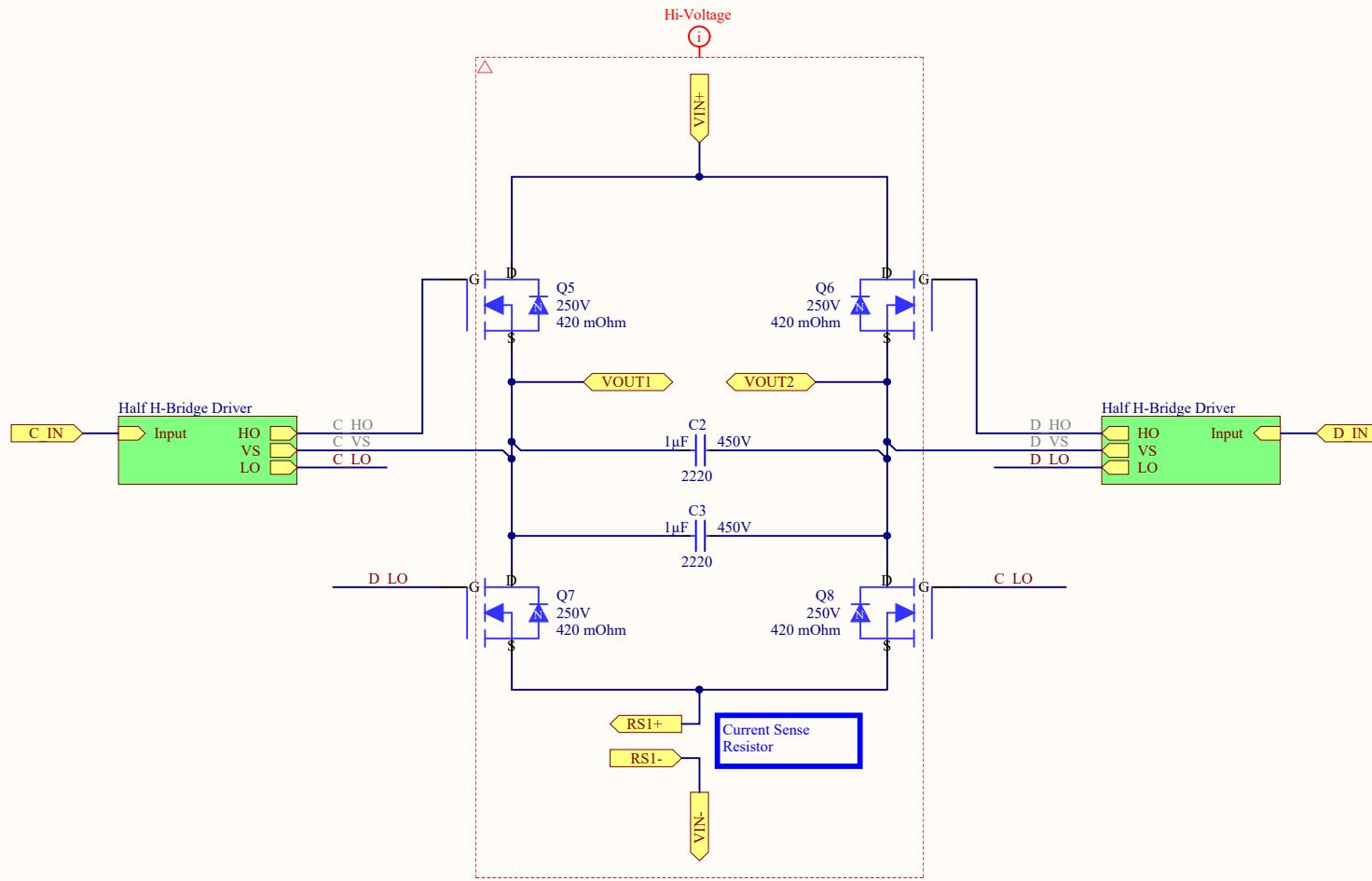
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Voltage Between Conductors (DC or AC Peaks)	Minimum Spacing						
	Bare Board				Assembly		
	B1	B2	B3	B4	A5	A6	A7
0-15	0.05 mm	0.1 mm	0.1 mm	0.05 mm	0.13 mm	0.13 mm	0.13 mm
16-30	0.05 mm	0.1 mm	0.1 mm	0.05 mm	0.13 mm	0.25 mm	0.13 mm
31-50	0.1 mm	0.6 mm	0.6 mm	0.13 mm	0.13 mm	0.4 mm	0.13 mm
51-100	0.1 mm	0.6 mm	1.5 mm	0.13 mm	0.13 mm	0.5 mm	0.13 mm
101-150	0.2 mm	0.6 mm	3.2 mm	0.4 mm	0.4 mm	0.8 mm	0.4 mm
151-170	0.2 mm	1.25 mm	3.2 mm	0.4 mm	0.4 mm	0.8 mm	0.4 mm
171-250	0.2 mm	1.25 mm	6.4 mm	0.4 mm	0.4 mm	0.8 mm	0.4 mm
251-300	0.2 mm	1.25 mm	12.5 mm	0.4 mm	0.4 mm	0.8 mm	0.8 mm
301-500	0.25 mm	2.5 mm	12.5 mm	0.8 mm	0.8 mm	1.5 mm	0.8 mm
> 500 See para. 6.3 for calc.	0.0025 mm /volt	0.005 mm /volt	0.025 mm /volt	0.00305 mm /volt	0.00305 mm /volt	0.00305 mm /volt	0.00305 mm /volt

B1 - Internal Conductors
 B2 - External Conductors, uncoated, sea level to 3050 m
 B3 - External Conductors, uncoated, over 3050 m
 B4 - External Conductors, with permanent polymer coating (any elevation)
 A5 - External Conductors, with conformal coating over assembly (any elevation)
 A6 - External Component lead termination, uncoated
 A7 - External Component lead termination, with conformal coating (any elevation)

A

A

B

B

C

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D

D

VIN

VOUT



GND

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PV Refrigerator v0.1.0		
3.3VDC Powersupply		
A FRI JI	Cct Rev A	Designed by Craig Comberbach
	Date 2017-02-04	Sheet 8 of 25

A

A

B

B

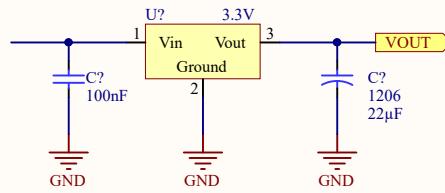
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VIN ➔

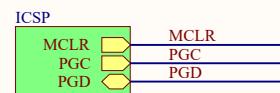
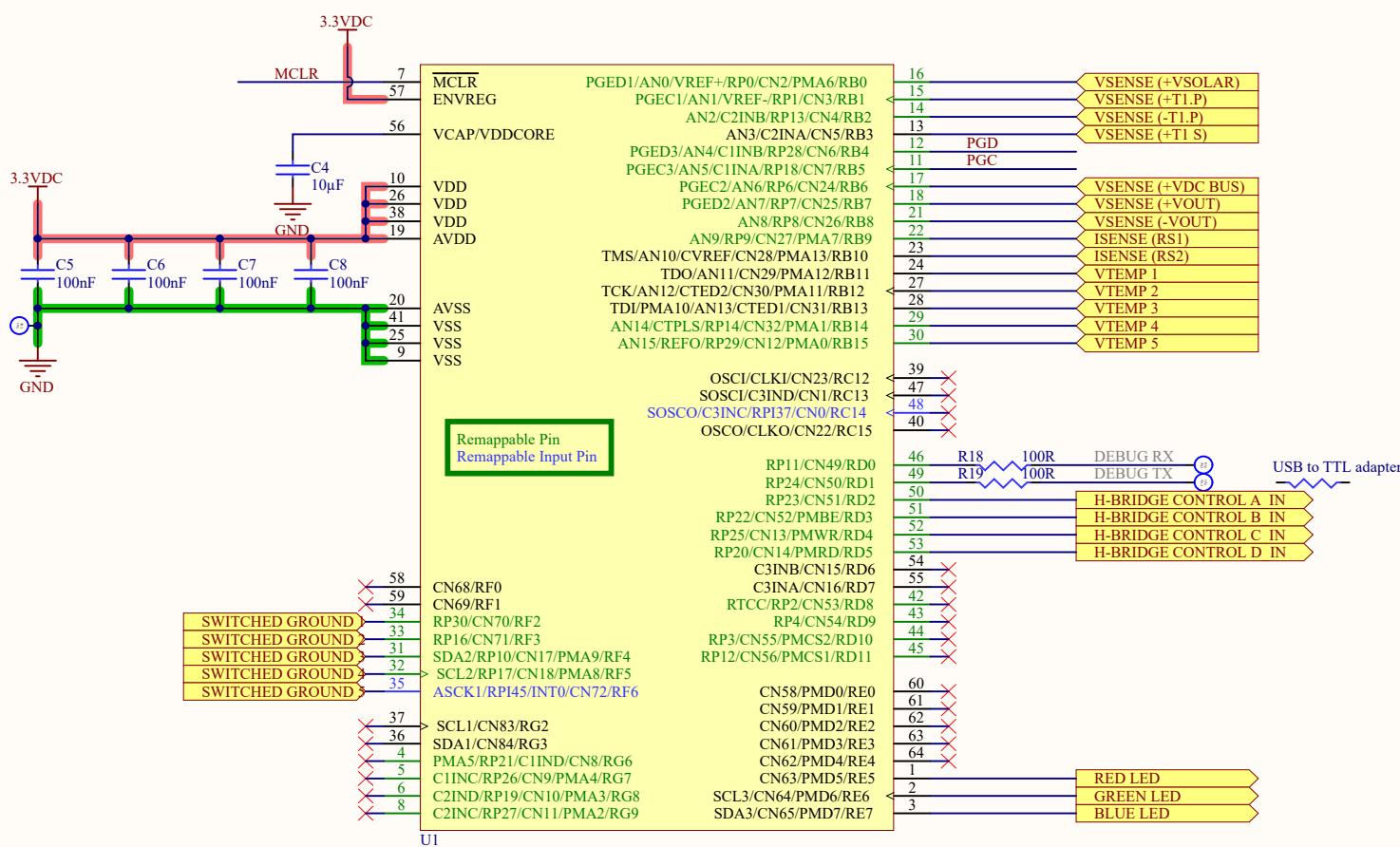


PCB design/layout
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PCB design/layout
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PV Refrigerator v0.1.0
Microcontroller



Cct
Rev A

Designed by Craig Comberbach
Date 2017-02-04

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A

A

B

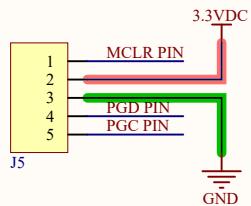
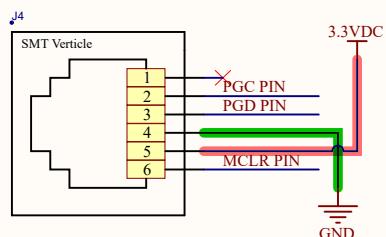
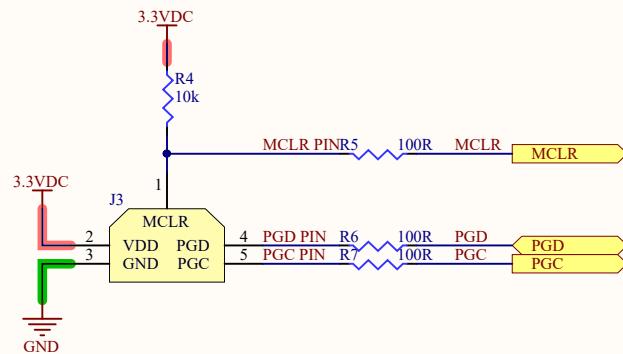
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PV Refrigerator v0.1.0			
ICSP	Cct Rev A	Designed by Craig Comberbach	Date 2017-02-06
AFRIDI			Sheet 11 of 25

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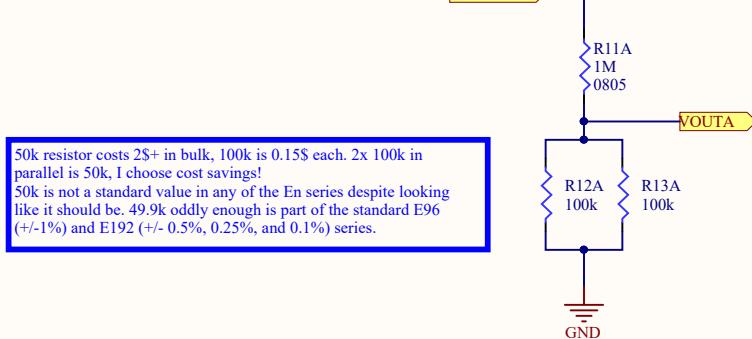
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PCB design/layout
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PV Refrigerator v0.1.0			
A FRI JI	Cct Rev A	Designed by Mike MacKay	Date 2017-02-08
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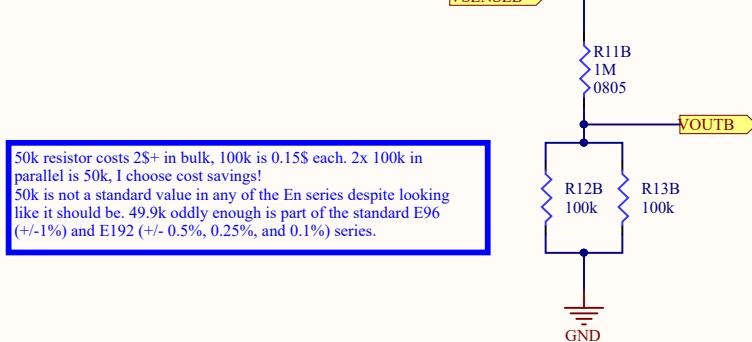
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50k resistor costs 2\$+ in bulk, 100k is 0.15\$ each. 2x 100k in parallel is 50k, I choose cost savings!
 50k is not a standard value in any of the E_n series despite looking like it should be. 49.9k oddly enough is part of the standard E96 (+/-1%) and E192 (+/- 0.5%, 0.25%, and 0.1%) series.

PCB design/layout
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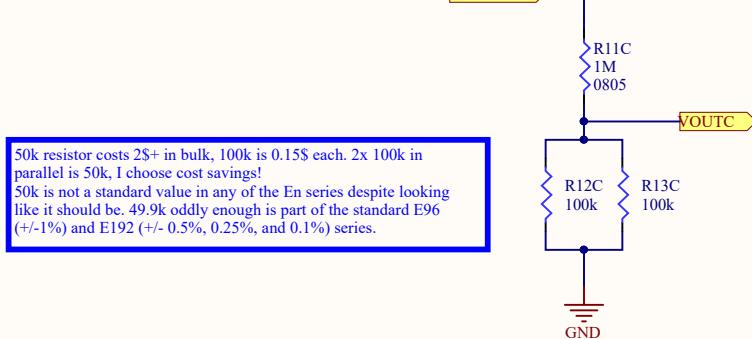
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50k resistor costs 2\$+ in bulk, 100k is 0.15\$ each. 2x 100k in parallel is 50k, I choose cost savings!
 50k is not a standard value in any of the E_n series despite looking like it should be. 49.9k oddly enough is part of the standard E96 (+/-1%) and E192 (+/- 0.5%, 0.25%, and 0.1%) series.

PCB design/layout
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PV Refrigerator v0.1.0		
A FRI JI	Cct Rev A	Designed by Mike MacKay
Vsense from 0 to 69.3V	Date 2017-02-08	Sheet 12 of 25

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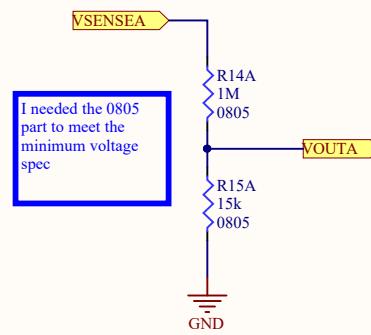
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PCB design/layout
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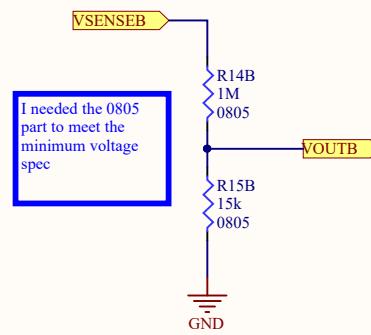
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PCB design/layout
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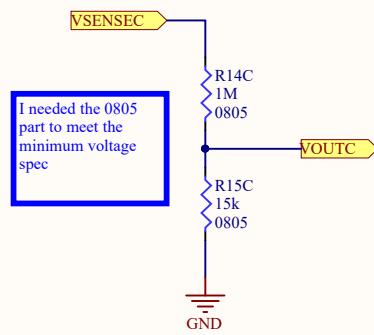
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PCB design/layout
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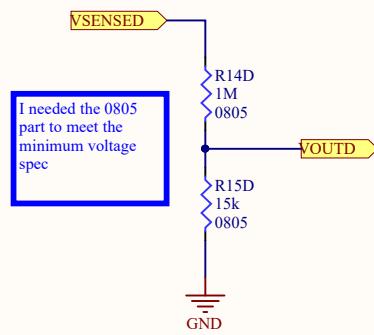
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PCB design/layout
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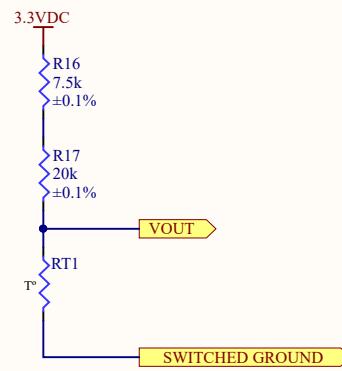
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PCB design/layout
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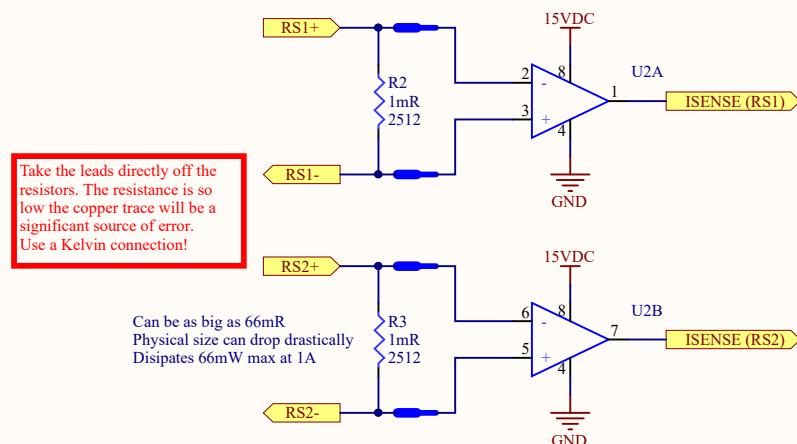
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PV Refrigerator v0.1.0			
A FRI JI	Cct Rev A	Designed by Mike MacKay	Date 2017-02-08
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