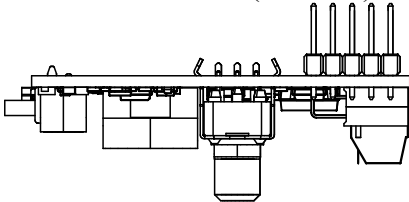
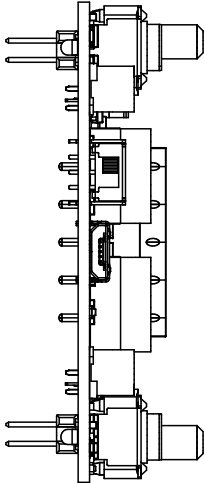


RELEASE HISTORY		
REVISION	DESCRIPTION	DATE
v1.0	Initial Prototype	02/04/2021
-	-----	--/--/----
-	-----	--/--/----
-	-----	--/--/----

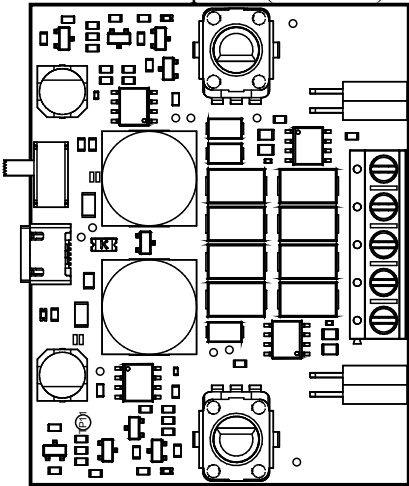
View from Back side (Scale 1:1)



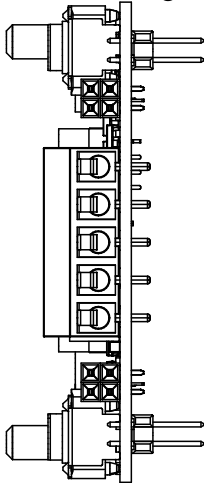
View from Left side (Scale 1:1)



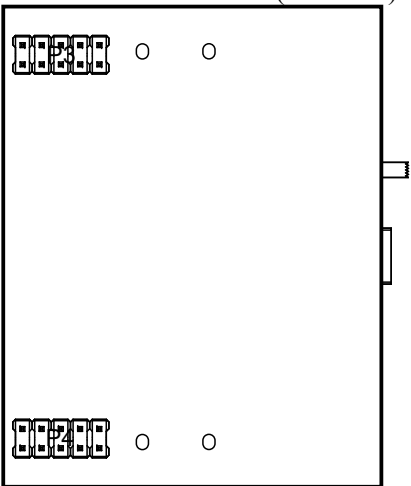
View from Top side (Scale 1:1)



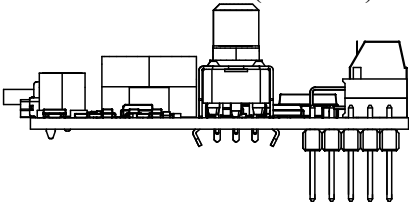
View from Right side (Scale 1:1)


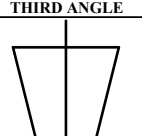


View from Bottom side (Scale 1:1)



View from Front side (Scale 1:1)



THIRD ANGLE	APPROVALS		DATE		UNIVERSITY OF CAPE TOWN DEPARTMENT OF ELECTRICAL ENGINEERING CAPE TOWN SOUTH AFRICA	CONTACT: LAWRENCE STANTON STNLAW003@myuct.ac.za	ALTERNATIVE: JUSTIN PEAD justin.pead@uct.ac.za
	ENGINEER: LD STANTON		02/04/2021		PROJECT: SIO2MKR.PrjPcb	REVISION: v1.1	
	CHECKER: J PEAD		--/--/----				
	REFERENCE DOCUMENTS				TITLE: SIO2MKR USB SPLIT RAIL POWER SUPPLY		
	BOM DOC: Bill of Materials.csv						
	CPL DOC: Pick and Place.csv						
	FAB DOC: Fabrication.PCBDwf						
SCH DOC: Main.SchDoc							
PCB DOC: PCB.PcbDoc			SCALE: 1:1	FILE: Assembly.PCBDwf	SHEET 1 OF 6		

A

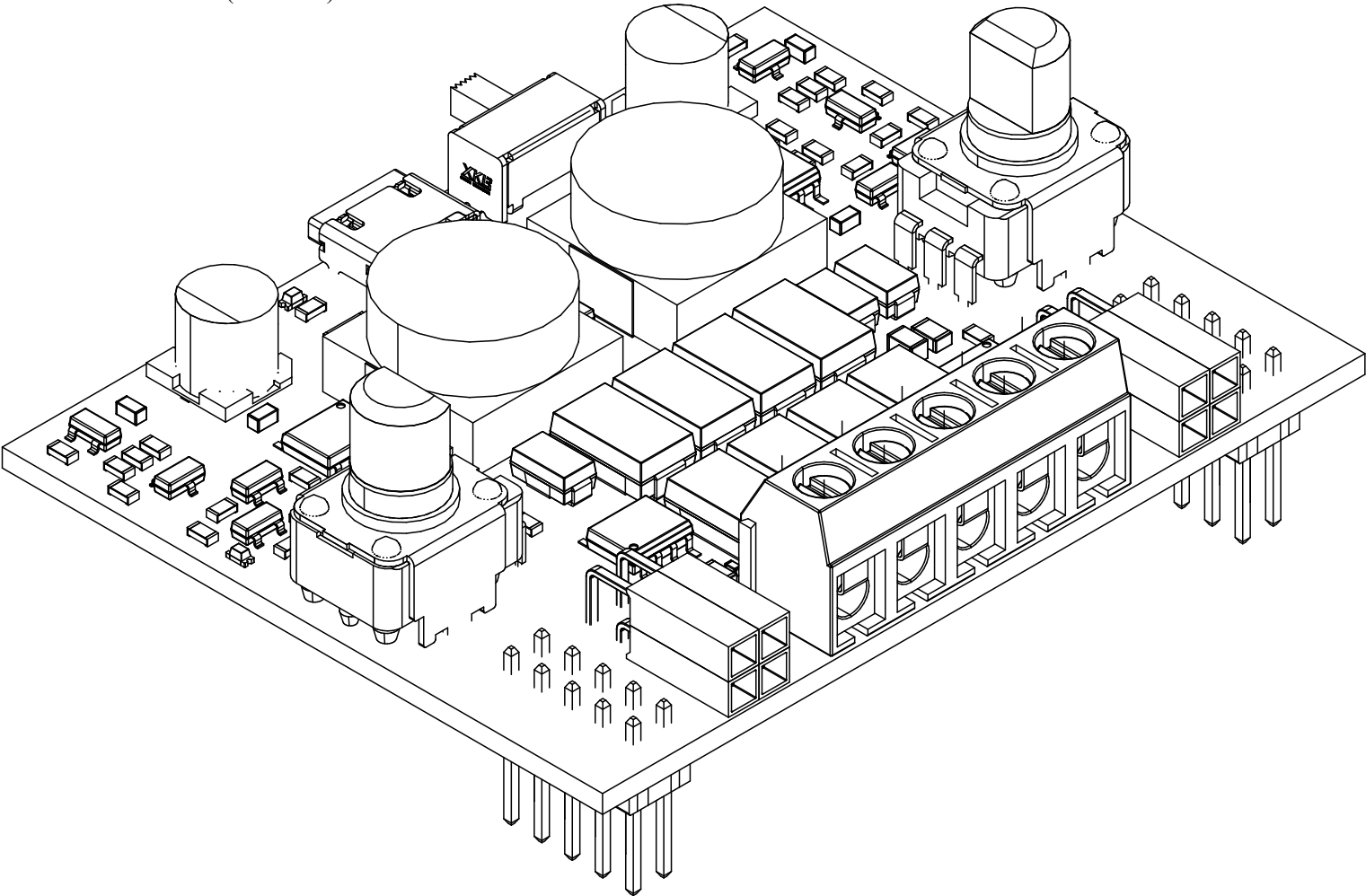
B

C

D

E

View from Front side (Scale 5:2)



SIZE:	A4		DWG:	ASSEMBLY	
SCALE:	1:1		FILE:	Assembly.PCBDwf	SHEET 2 OF 6

A

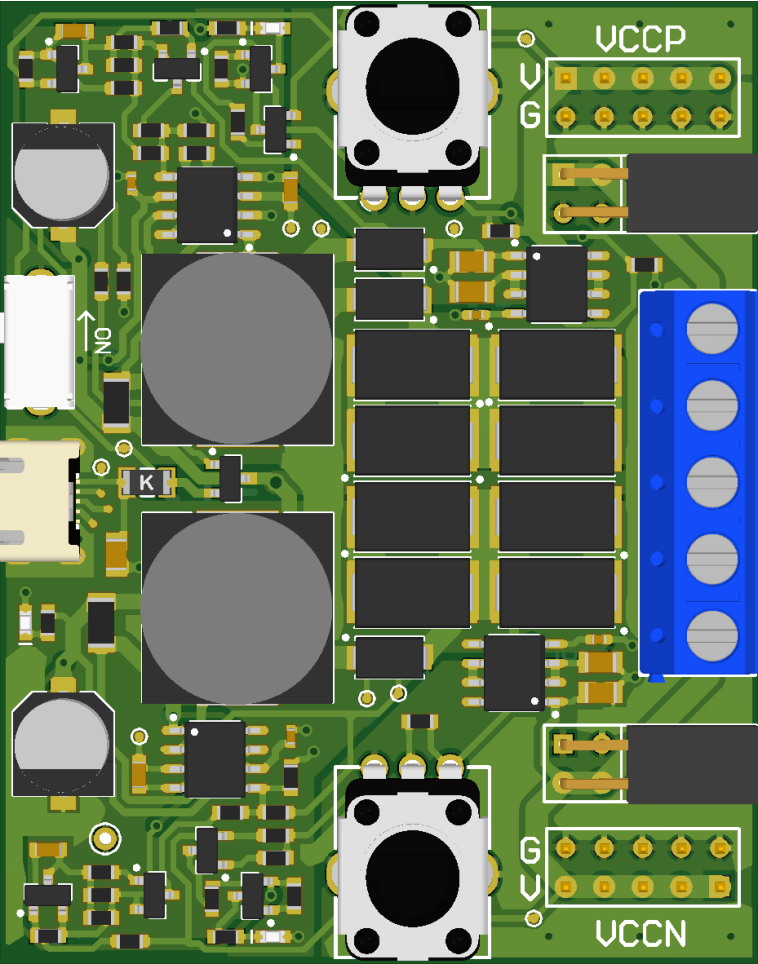
B

C

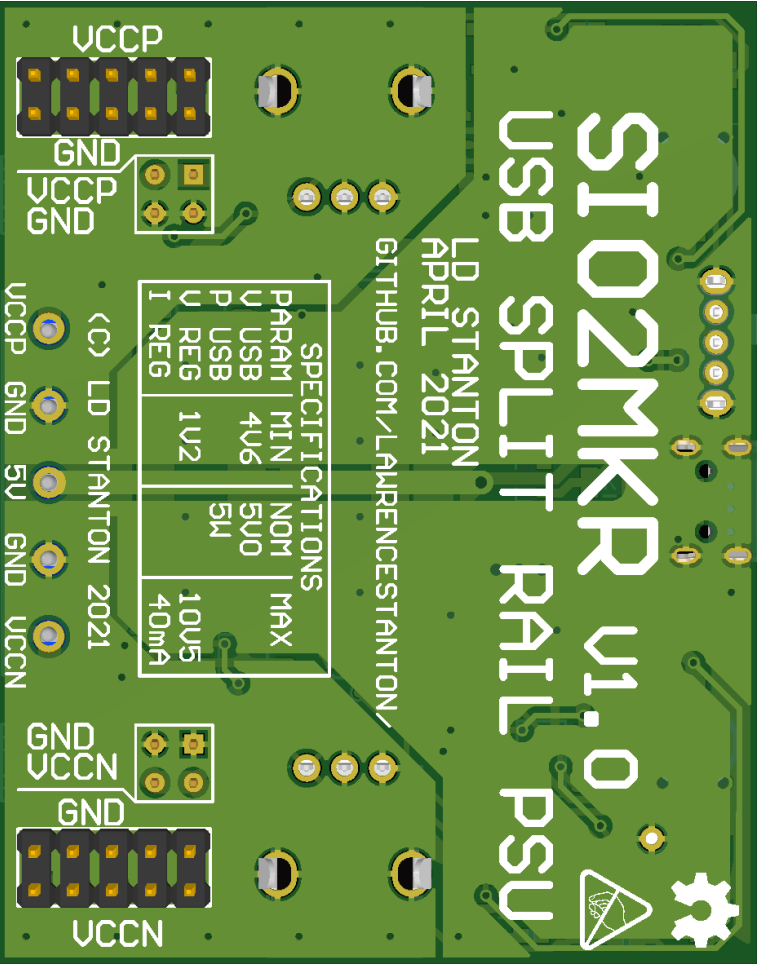
D

E

Realistic View

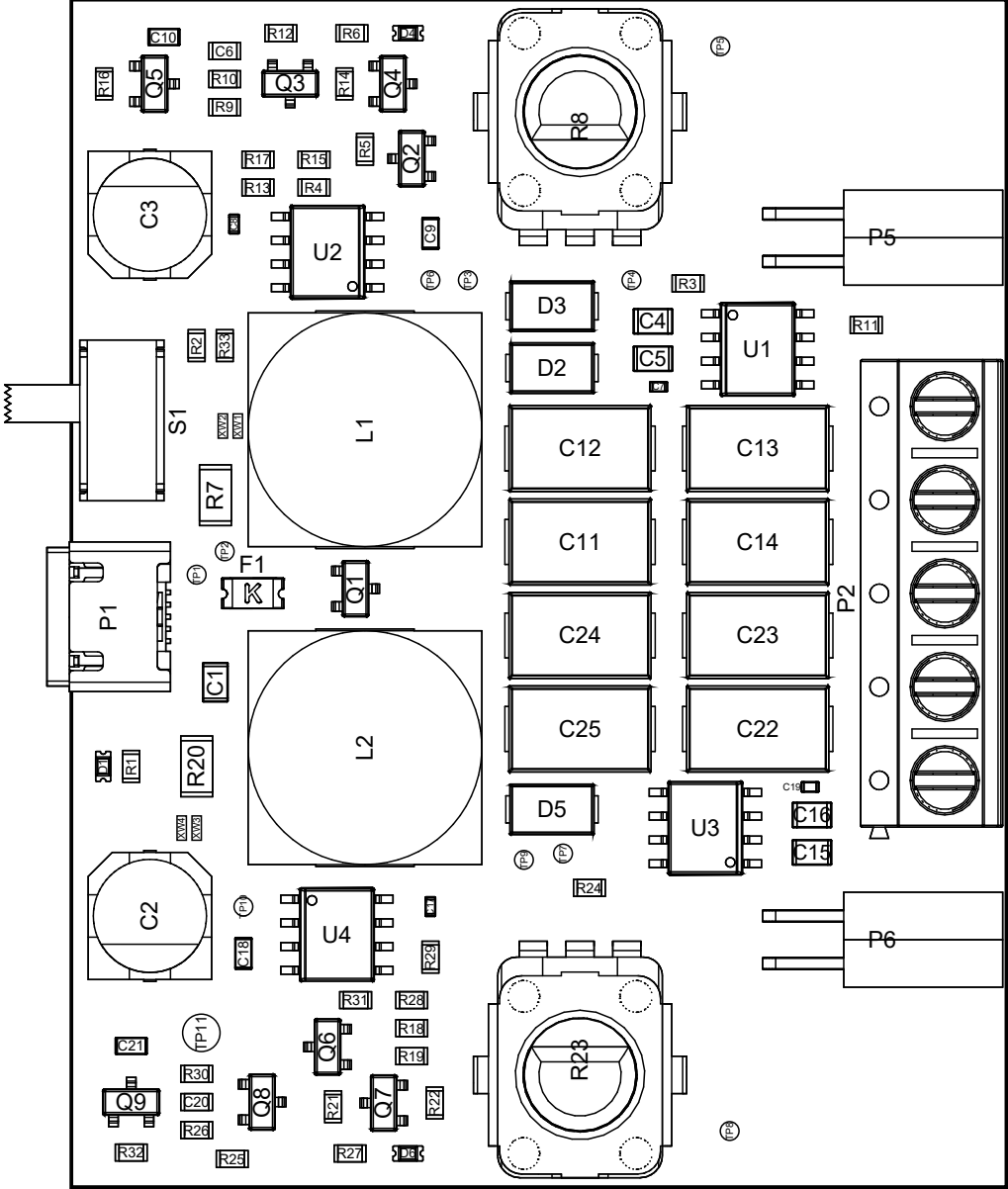


Realistic View



SIZE:	A4		DWG:	ASSEMBLY	
SCALE:	1:1		FILE:	Assembly.PCBDwf	SHEET 3 OF 6

View from Top side (Scale 5:2)



SIZE:	A4		DWG:	ASSEMBLEY	
SCALE:	1:1		FILE:	Assembly.PCBDwf	SHEET 4 OF 6

A

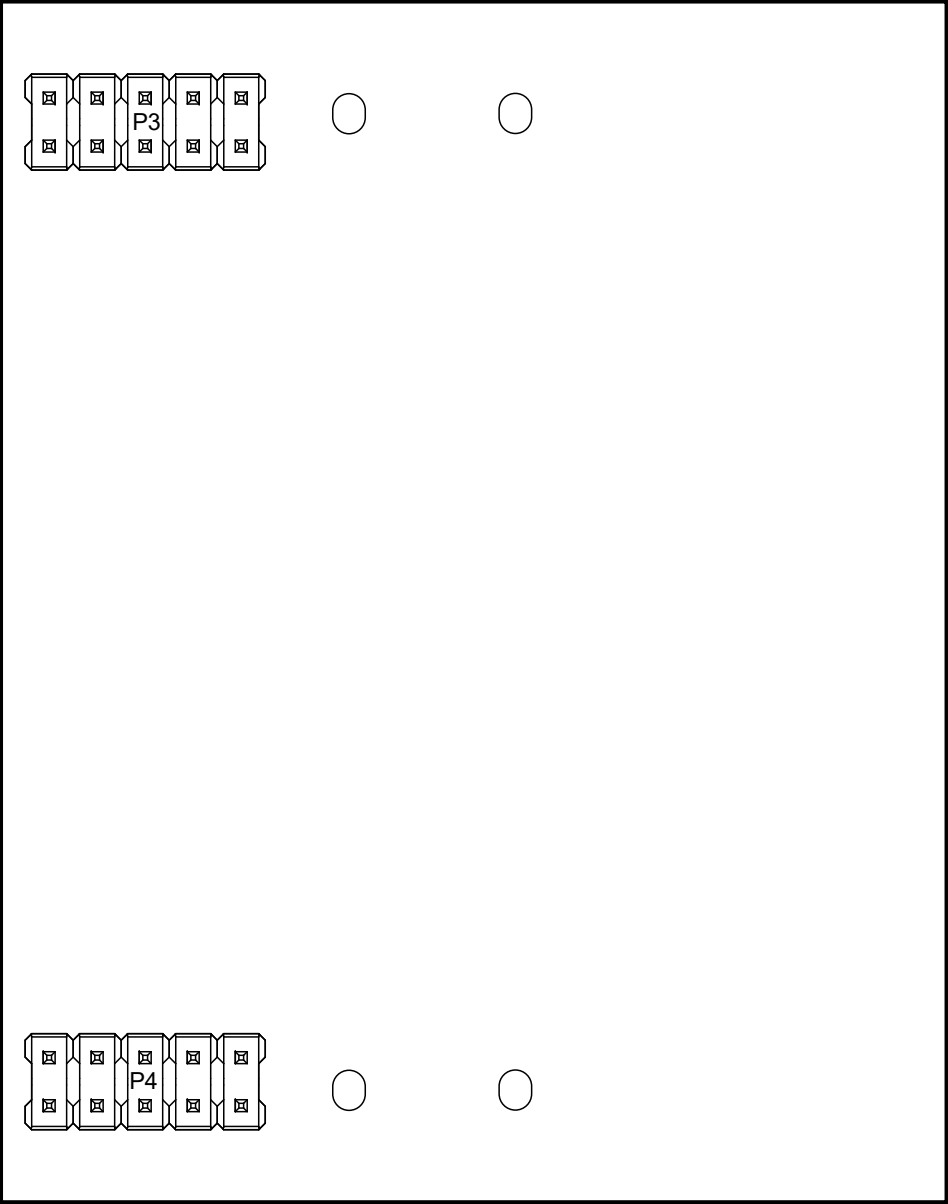
B

C

D

E

View from Bottom side (Scale 5:2)



SIZE:	A4		DWG:	ASSEMBLY	
SCALE:	1:1		FILE:	Assembly.PCBDwf	SHEET 5 OF 6

A

B

C

D

E

A		B		C		D		E	
Bill Of Materials									
Line #	Designator	Comment	Quantity						
1	C1	CL21B103KBANNNC	1						
2	C2, C3	RVT1A221M0605	2						
3	C4, C16	CC0805KRX7R9BB104	2						
4	C5, C15	CL21B105KBFNNNE	2						
5	C6, C20	CC0603KRX7R9BB104	2						
6	C7, C19	0402CG3R3C500NT	2						
7	C8, C17	CL05B104KO5NNNC	2						
8	C9, C18	CL10A105KB8NNNC	2						
9	C10, C21	CL10C100JB8NNNC	2						
10	C11, C12, C13, C14, C22, C23, C24, C25	293D107X9016D2TE3	8						
11	D1, D4, D6	19-217/GHC-YR1S2/3T	3						
12	D2, D3, D5	SS34	3						
13	F1	12H1300C	1						
14	L1, L2	SWRB1207S-331MT	2						
15	P1	MICRO 4P DIP	1						
16	P2	CZM5,08-4E	1						
17	P3, P4	A2541WV-2x5P	2						
18	P5, P6	A2541HWR-2x2P	2						
19	Q1	AO3401A	1						
20	Q2, Q3, Q7	LBSS84LT1G	3						
21	Q4, Q6, Q8	2N7002	3						
22	Q5, Q9	SS8050	2						
23	R1, R6, R27	0603WAF3300T5E	3						
24	R2, R12, R21, R30	0603WAF1002T5E	4						
25	R3, R18	0603WAF2400T5E	2						
26	R4, R5, R19, R33	0603WAF1200T5E	4						
27	R7, R20	1206W4F680LT5E	2						
28	R8, R23	RK09K1130AU2	2						
29	R9, R10, R25, R26	0603WAF2702T5E	4						
30	R11, R24	0603WAF2701T5E	2						
31	R13, R17, R28, R31	0603WAF5601T5E	4						
32	R14, R22	0603WAF1003T5E	2						
33	R15, R29	0603WAF5602T5E	2						
34	R16, R32	0603WAF8201T5E	2						
35	S1	SK12D07L4B	1						
36	U1	LM317LBDR2G	1						
37	U2, U4	MC34063ADR2G	2						
38	U3	LM337LMX	1						
				SIZE: A4		DWG: ASSEMBLEY			
				SCALE: 1:1		FILE: Assembly.PCBDwf		SHEET 6 OF 6	
A		B		C		D		E	

A

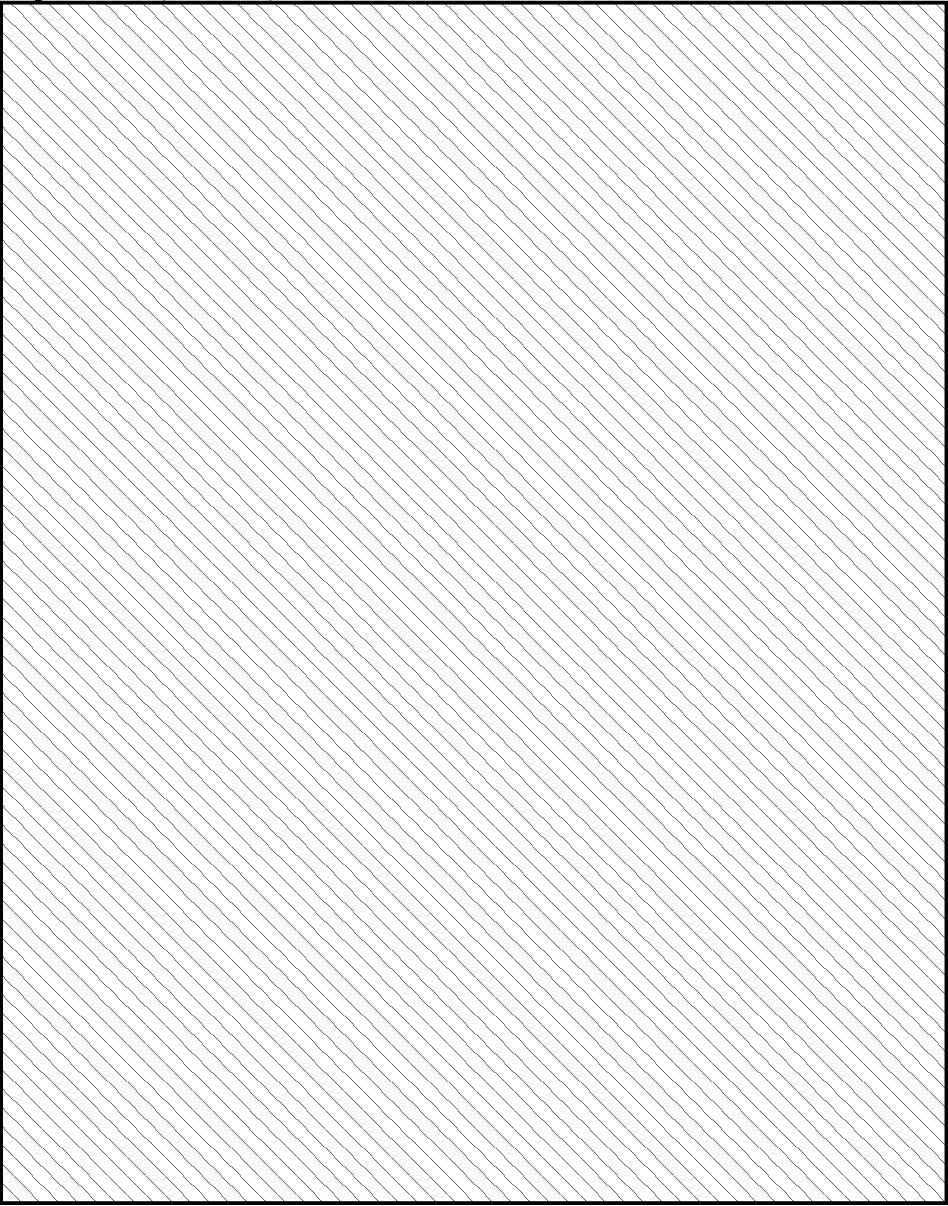
B

C

D

E

Region View (Scale 5:2)



SIZE:	A4	DWG:	FABRICATION	
SCALE:	1:1	FILE:	Fabrication.PCBDwf	SHEET 2 OF 10

A

B

C

D

E

Transmission Line Structure Table

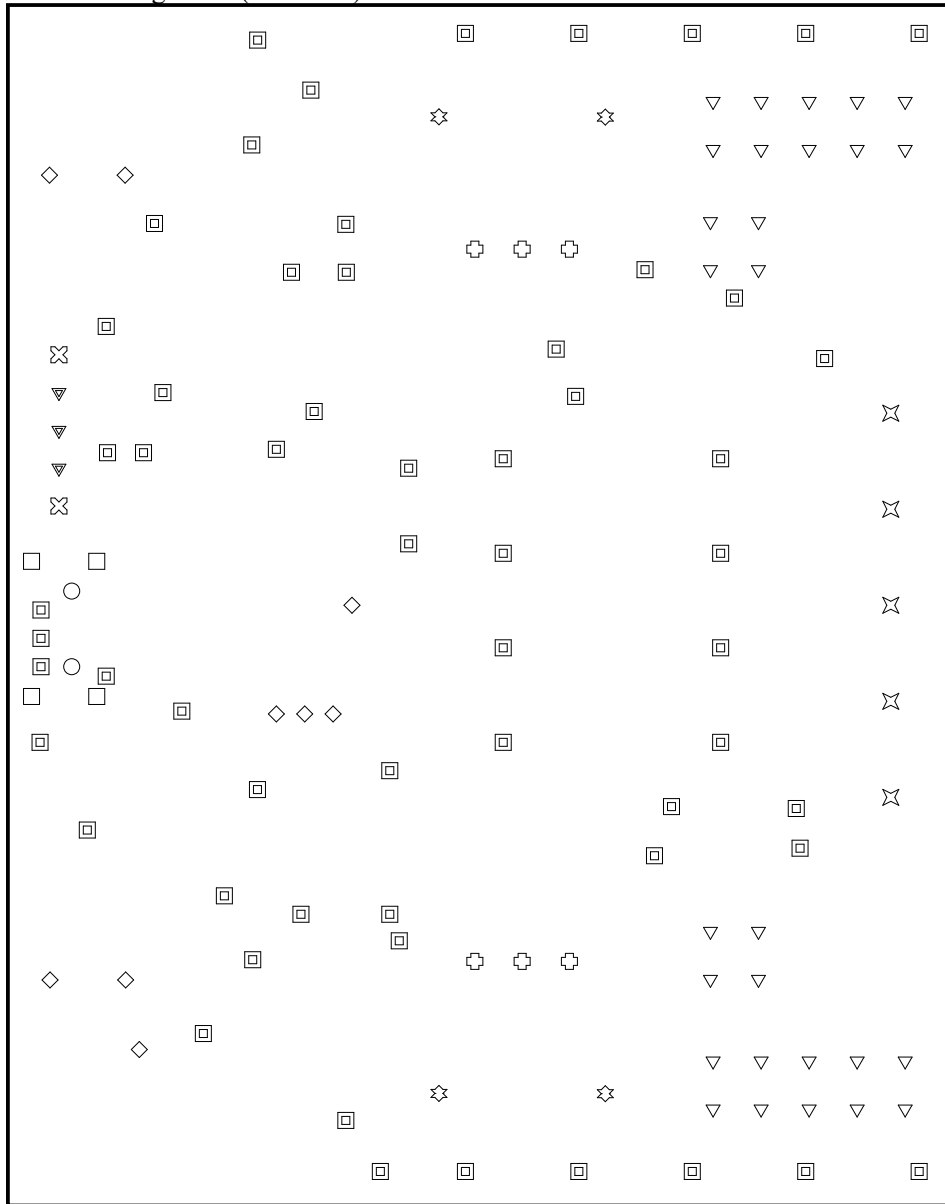
Impedance Id	Transmission Line	Target Impedance	Calculated Impedance	Trace layer	Wide Trace Width	Narrow Trace Width	Gap	Reference layers	Substack
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Drill Table

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via / Pad	Pad Shape	Hole Tolerance	Hole Length
⊞	59	0.50mm(20mil)	Plated	Round	Top Layer - Bottom Layer	Via		+0.13mm(5mil)/-0.08mm(3mil)	
□	4	0.60mm(24mil)	Plated	Slot	Top Layer - Bottom Layer	Pad	Rounded	+0.13mm(5mil)/-0.08mm(3mil)	1.30mm(51mil)
▽	28	0.64mm(25mil)	Plated	Round	Top Layer - Bottom Layer	Pad	(Mixed)	+0.13mm(5mil)/-0.08mm(3mil)	
○	2	0.70mm(28mil)	Non-Plated	Round	Top Layer - Bottom Layer	Pad	Rounded	+0.13mm(5mil)/-0.08mm(3mil)	
◇	9	0.80mm(31mil)	Plated	Round	Top Layer - Bottom Layer	(Mixed)	(Mixed)	+0.13mm(5mil)/-0.08mm(3mil)	
⊞	2	0.90mm(35mil)	Plated	Slot	Top Layer - Bottom Layer	Pad	Rounded	+0.13mm(5mil)/-0.08mm(3mil)	1.40mm(55mil)
▼	3	0.91mm(36mil)	Plated	Round	Top Layer - Bottom Layer	Pad	Rounded	+0.13mm(5mil)/-0.08mm(3mil)	
⊞	6	1.10mm(43mil)	Plated	Round	Top Layer - Bottom Layer	Pad	Rounded		
⊞	5	1.20mm(47mil)	Plated	Round	Top Layer - Bottom Layer	Pad	Rounded	+0.13mm(5mil)/-0.08mm(3mil)	
⊞	4	1.80mm(71mil)	Plated	Slot	Top Layer - Bottom Layer	Pad	Rounded		2.20mm(87mil)
	122 Total								

SIZE: A4	DWG: FABRICATION	
SCALE: 1:1	FILE: Fabrication.PCBDwf	SHEET 3 OF 10

A Drill Drawing View (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 4 OF 10

A

B

C

D

E

A

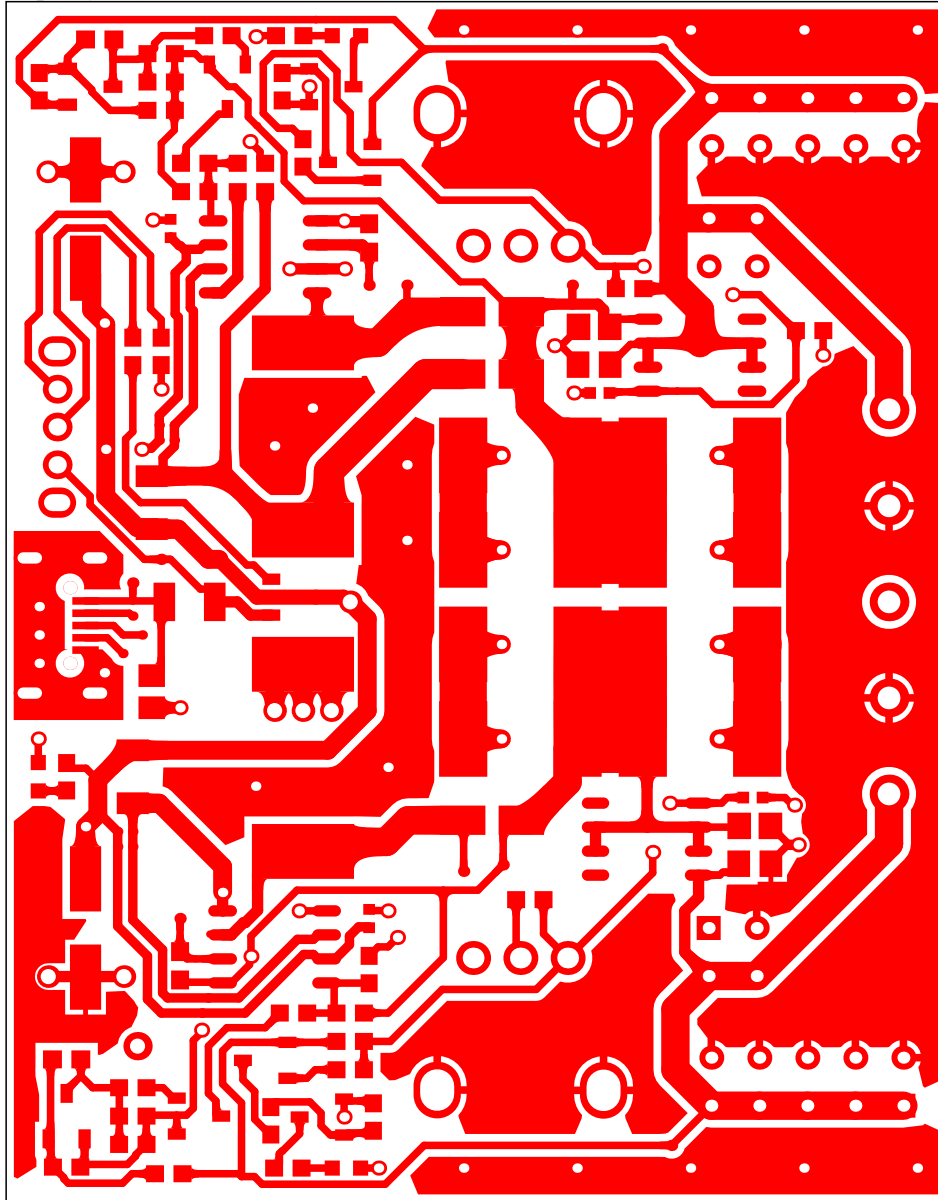
B

C

D

E

Top Layer (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 5 OF 10

A

B

C

D

E

A

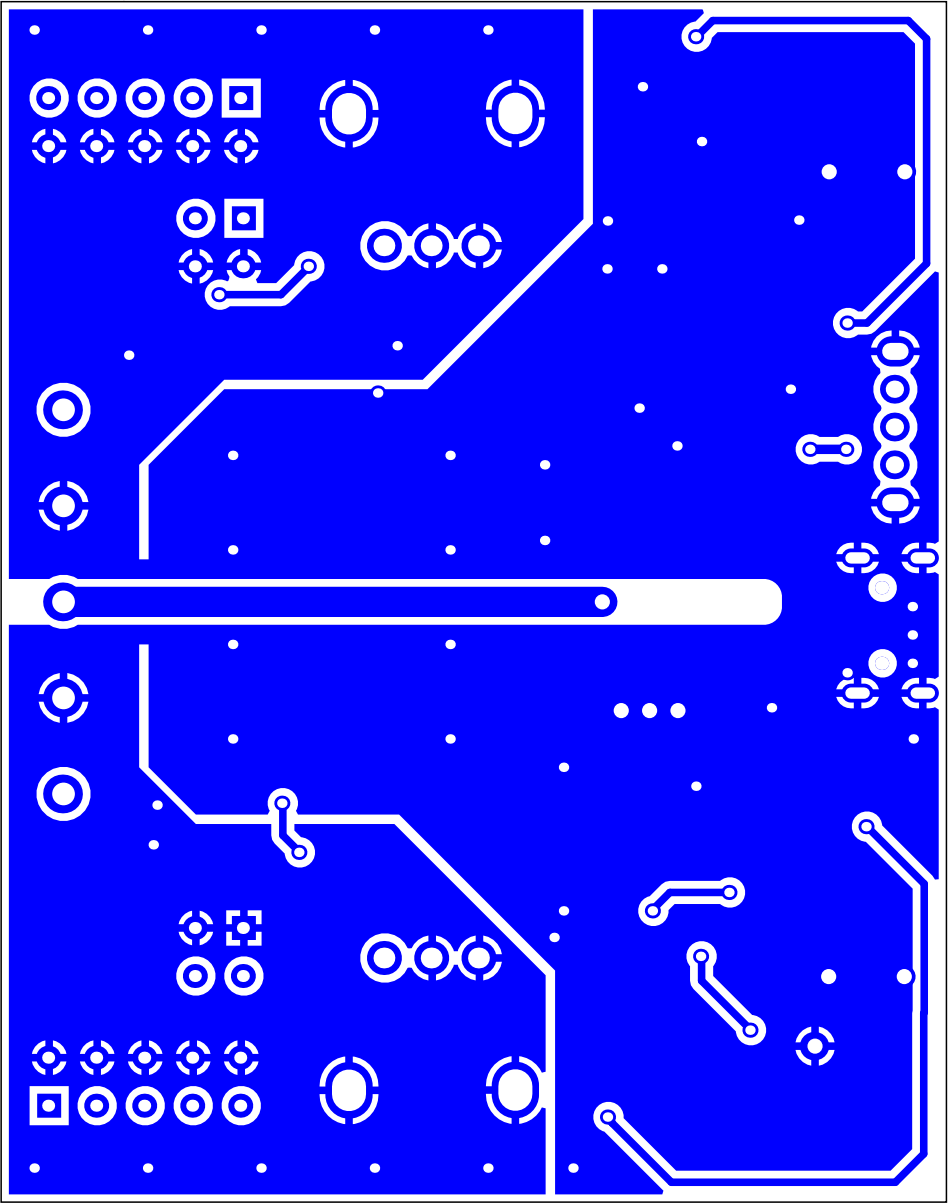
B

C

D

E

Bottom Layer (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 6 OF 10

A

B

C

D

E

A

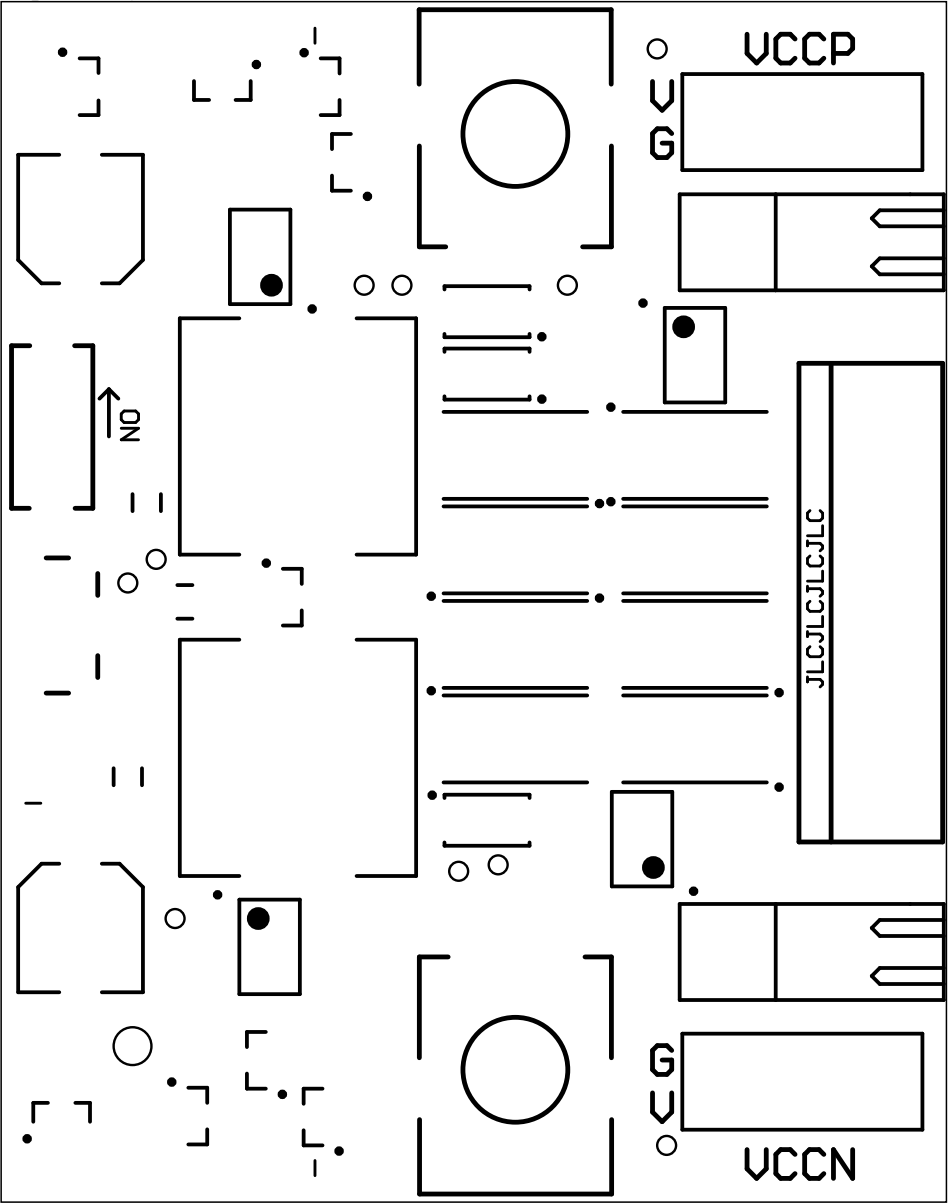
B

C

D

E

Top Overlay (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 7 OF 10

A

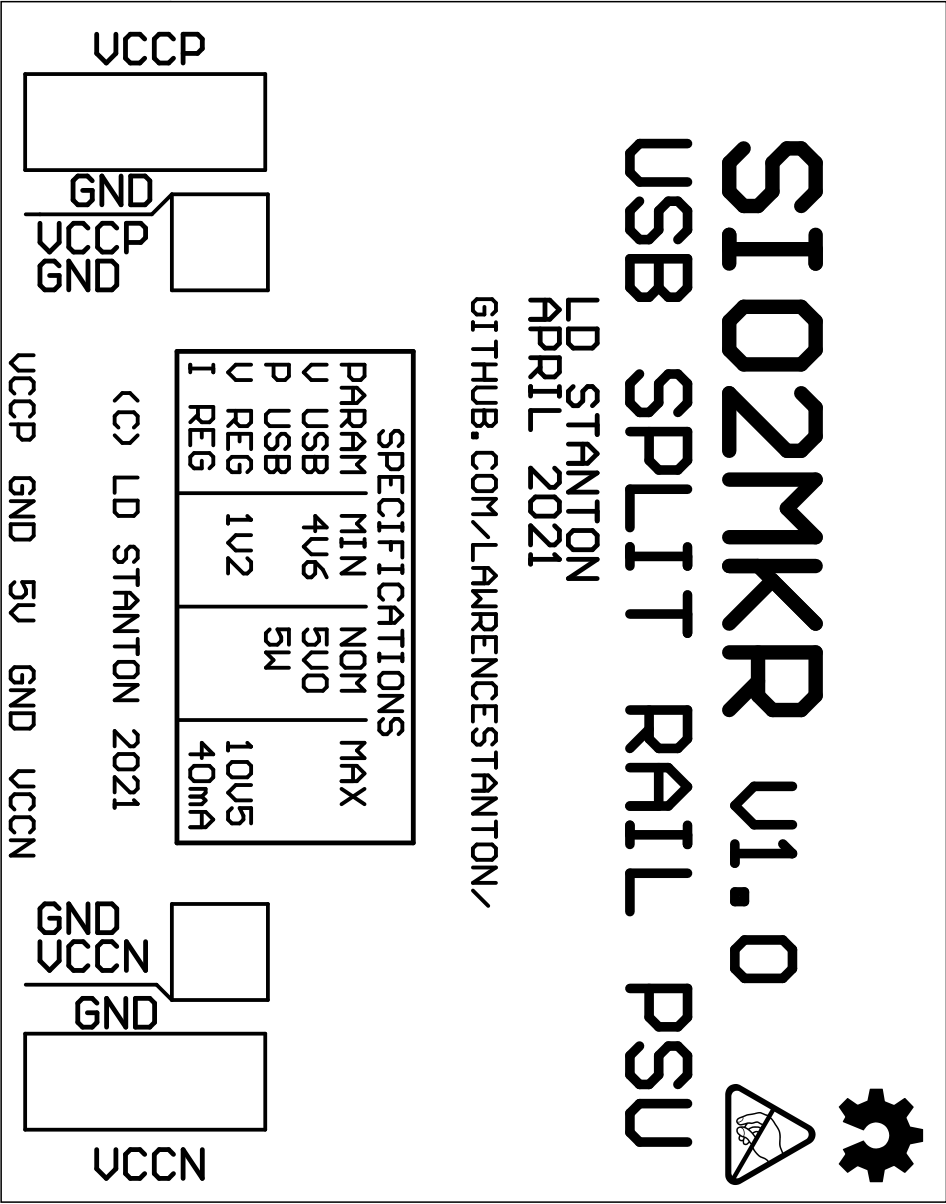
B

C

D

E

Bottom Overlay (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 8 OF 10

A

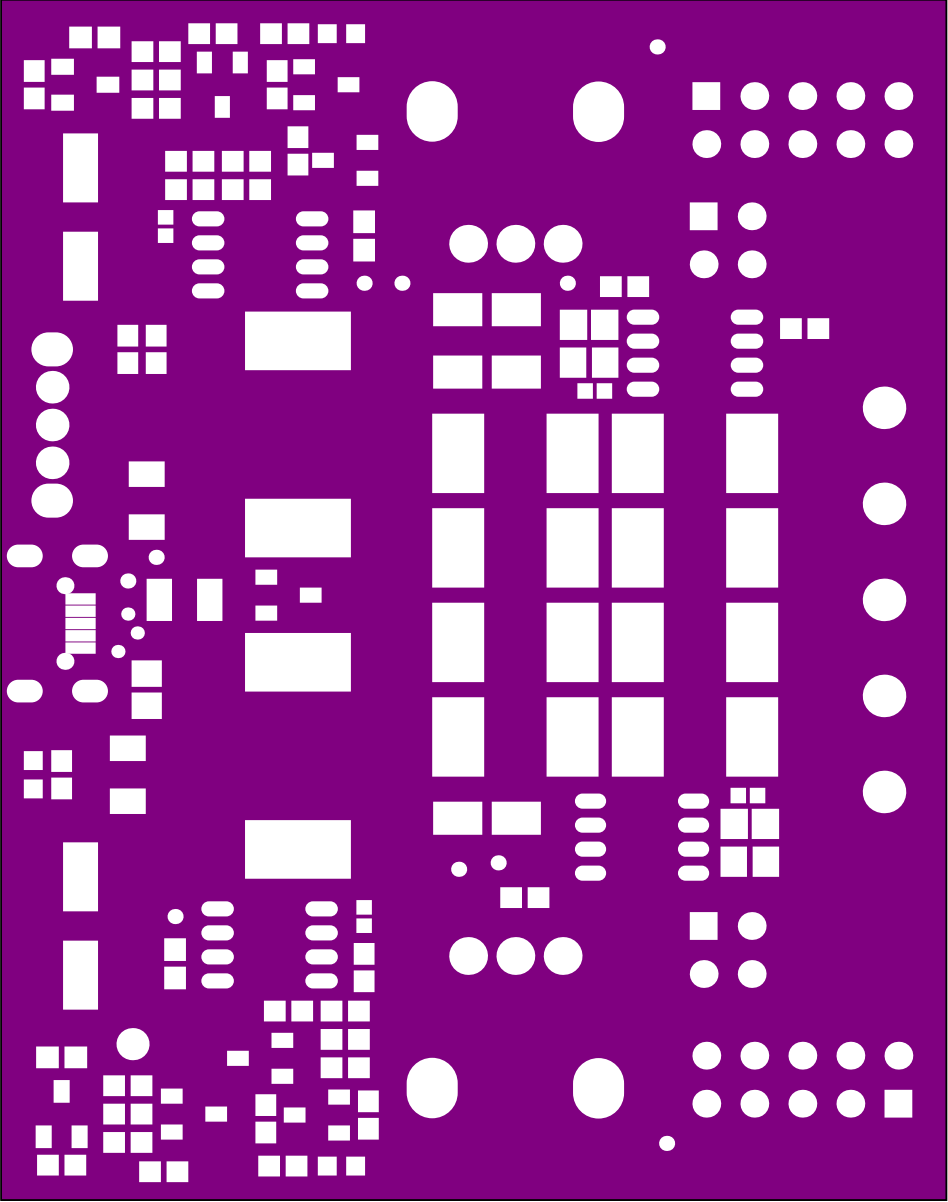
B

C

D

E

Top Solder (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 9 OF 10

A

B

C

D

E

A

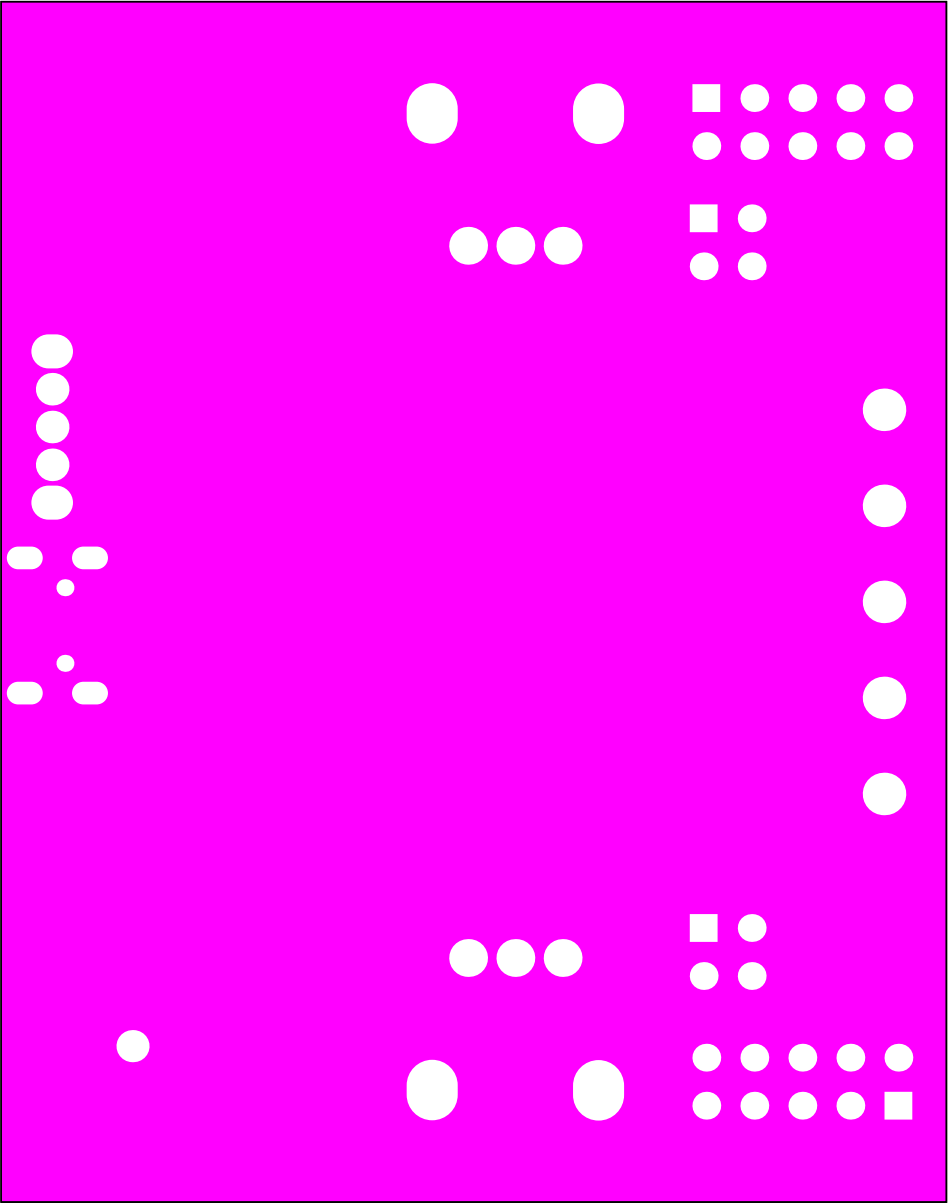
B

C

D

E

Bottom Solder (Scale 5:2)



SIZE:	A4		DWG:	FABRICATION	
SCALE:	1:1		FILE:	Fabrication.PCBDwf	SHEET 10 OF 10

A

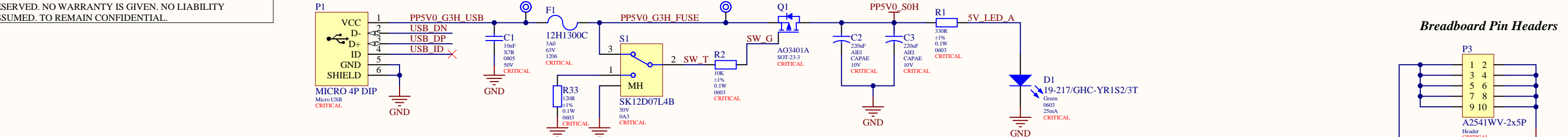
B

C

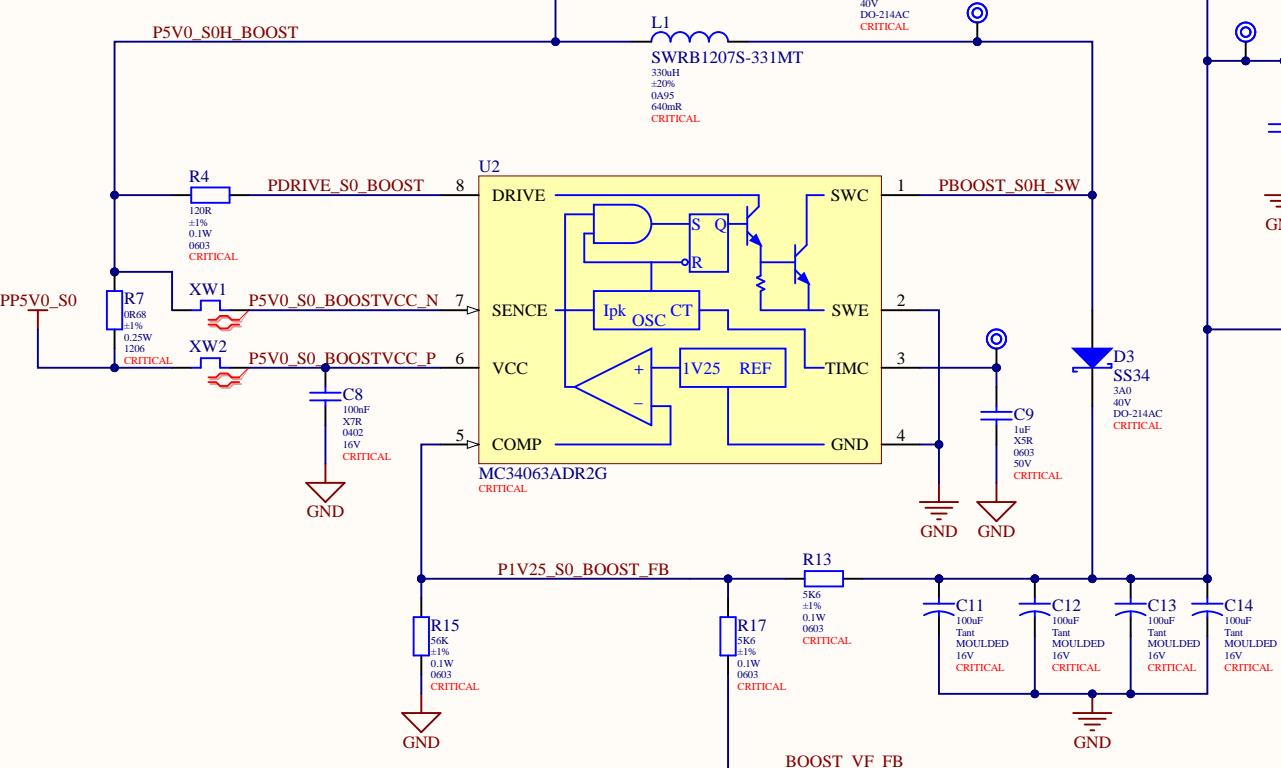
D

E

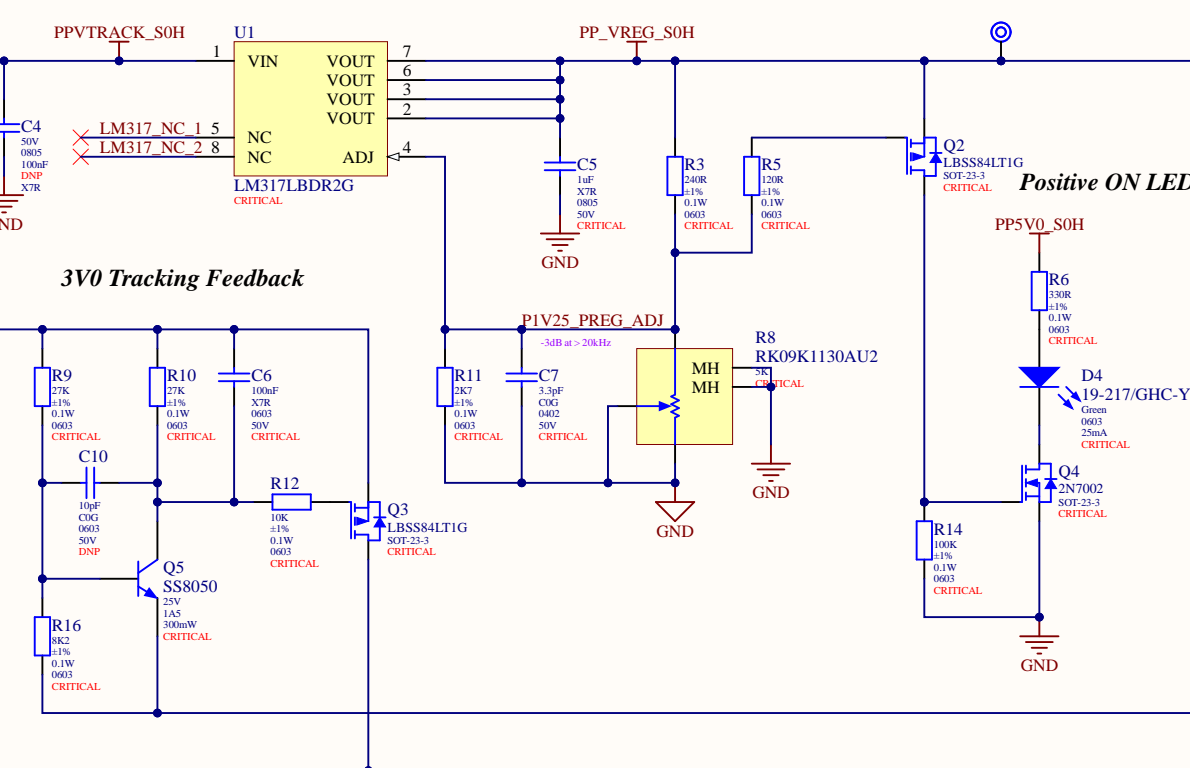
5W USB DC In and Power Switch



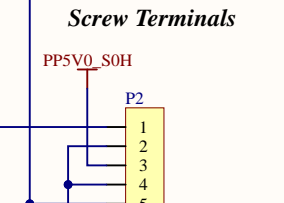
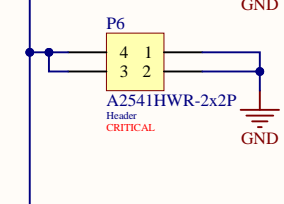
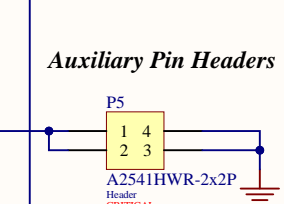
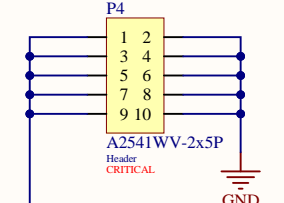
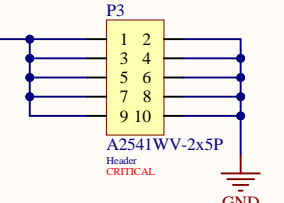
14V Bosting Supply



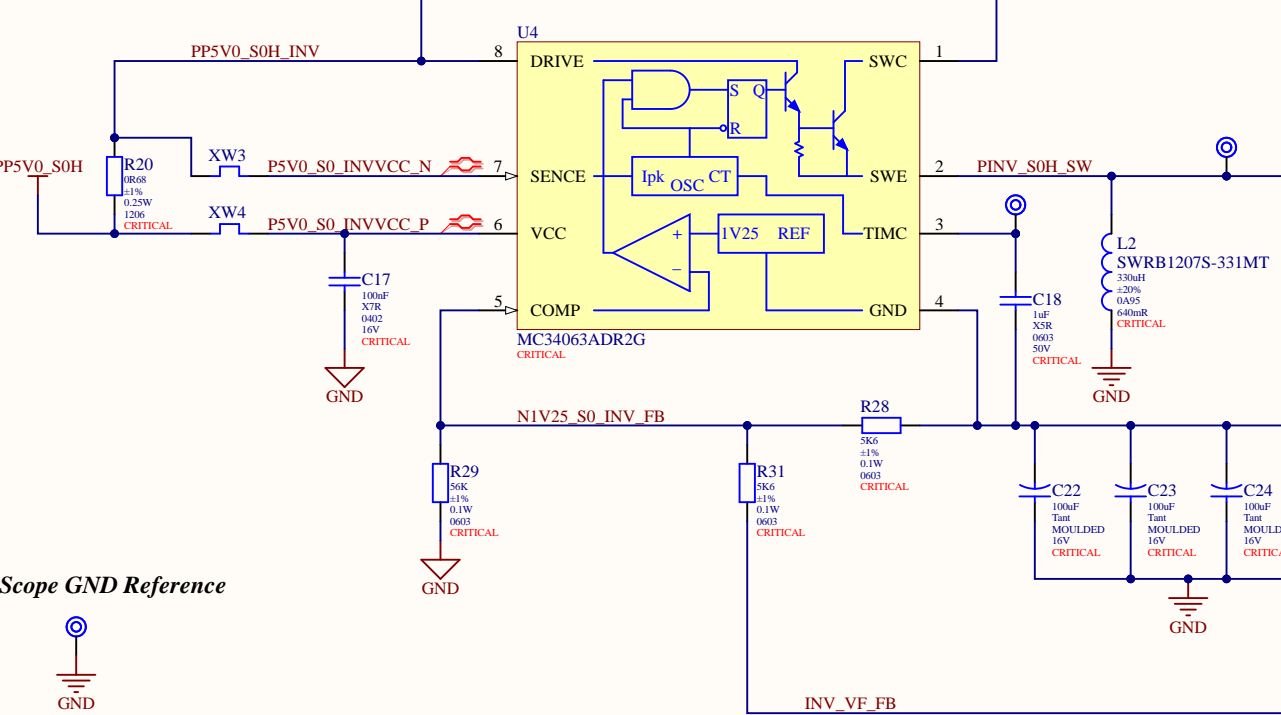
Adjustable Positive Linear Regulator



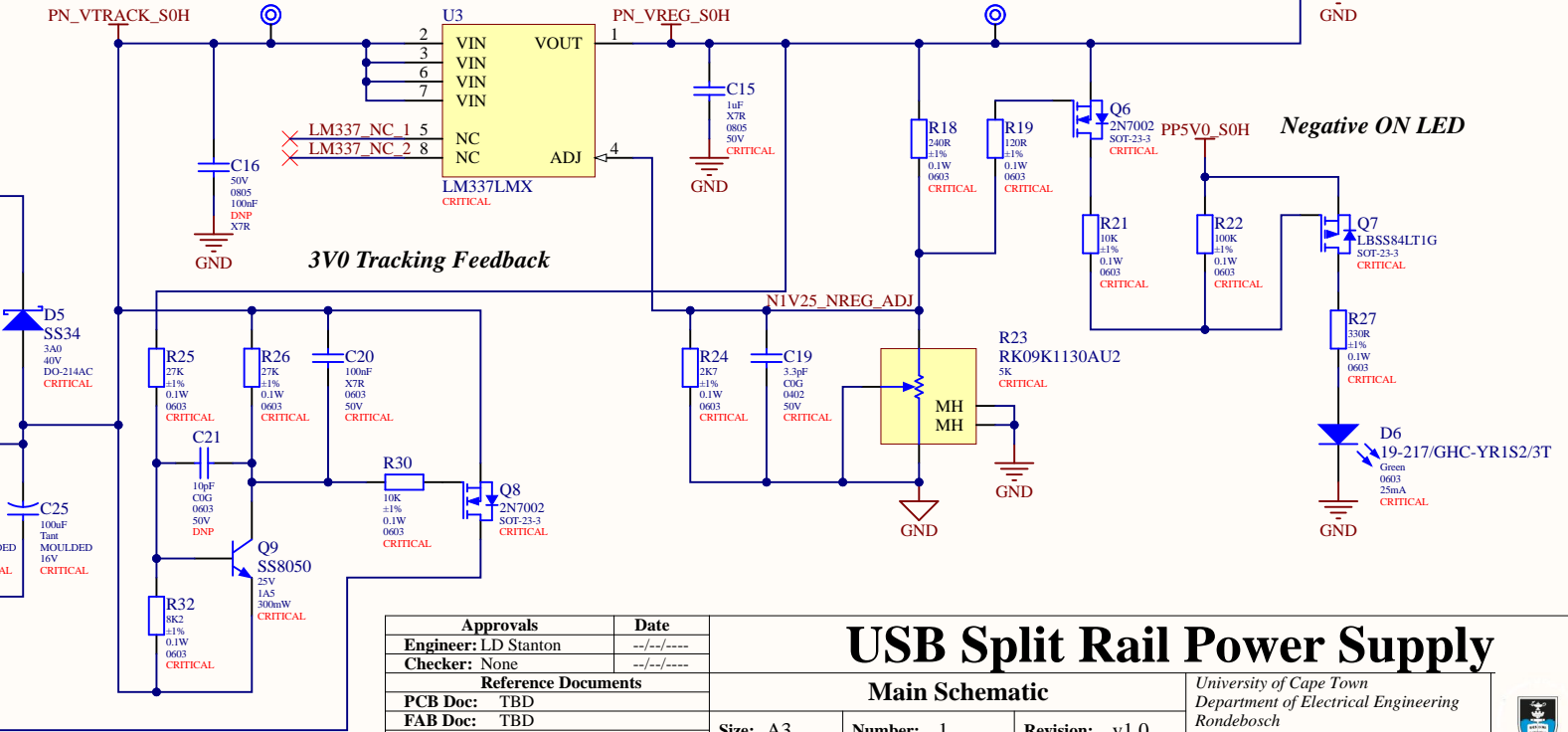
Breadboard Pin Headers



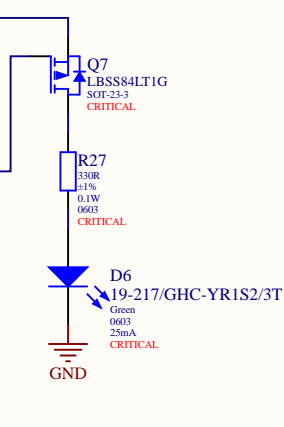
14V Inverting Supply



Adjustable Negative Linear Regulator



Negative ON LED




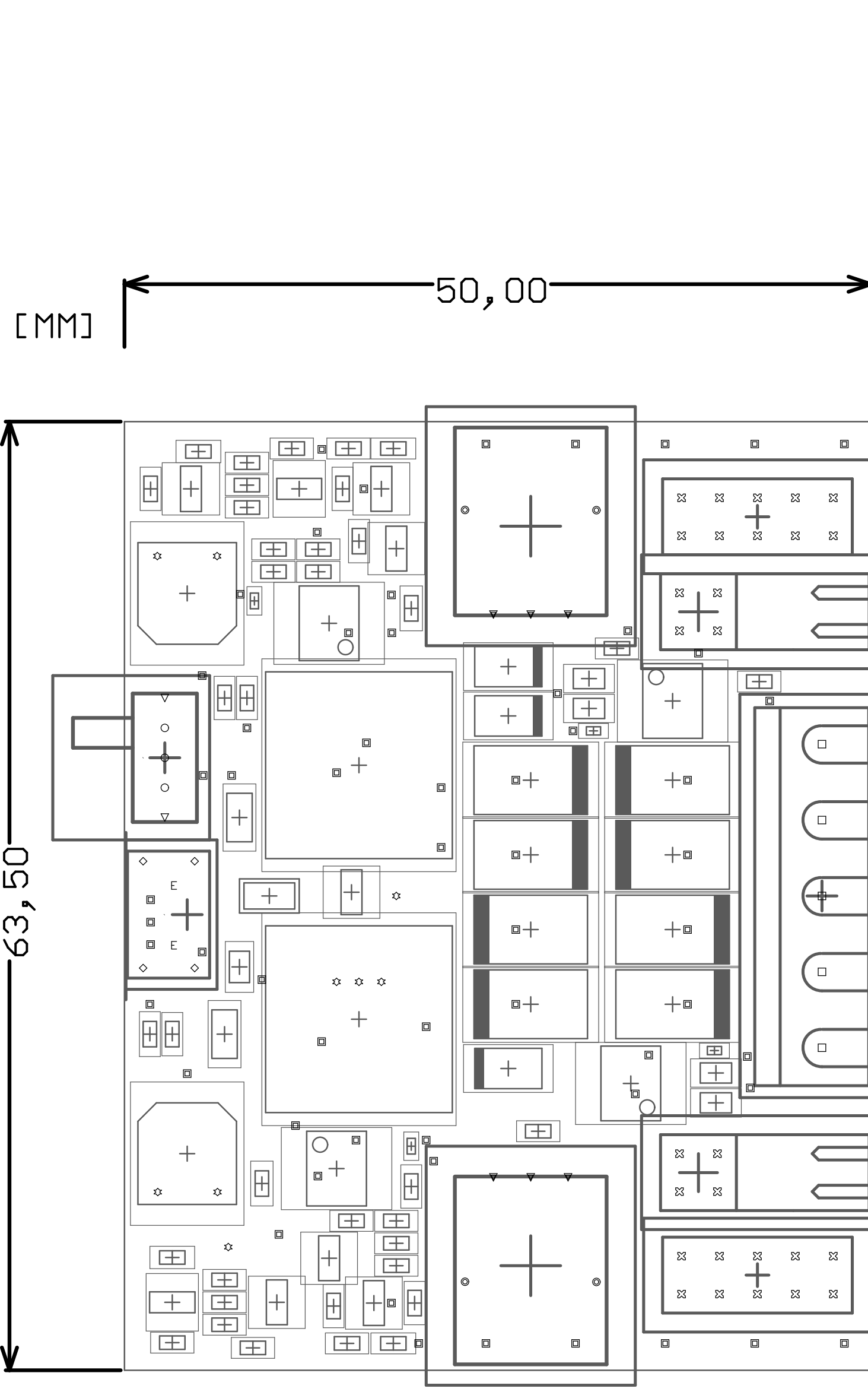
Scope GND Reference



Approvals		Date			
Engineer: LD Stanton		--/--/----			
Checker: None		--/--/----			
Reference Documents		Main Schematic			
PCB Doc: TBD		Size: A3	Number: 1	Revision: v1.0	University of Cape Town Department of Electrical Engineering Rondebosch Cape Town South Africa 7701
FAB Doc: TBD					
ASM Doc: TBD					
CPL Doc: TBD					
BOM Doc: TBD					
		Date: 2021/04/09		Time: 22:27:49	
		File: Main.SchDoc		Sheet 1 of 1	
				Author: LD Stanton	

USB Split Rail Power Supply





Layer	Name	Material	Thickness	Constant
	Top Overlay			
	Top Solder	SM-001	0,025mm	4
	Top Surface Finish	Lead-Free	0,020mm	
1	Top Layer	CF-004	0,035mm	
	Dielectric 1	FR-4	1,439mm	4.5
2	Bottom Layer	CF-004	0,035mm	
	Bottom Surface Finish	Lead-Free	0,020mm	
	Bottom Solder	SM-001	0,025mm	4
	Bottom Overlay			

Total board thickness: 1,600mm

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad	Pad Shape	Template	Hole Tolerance (+)	Hole Tolerance (-)
⊞	59	0,500mm (19,69mil)	PTH	Round	Top Layer - Bottom Layer	Via	Rounded	v80h50m0mx0(Tol13-8)	0,130mm (5,12mil)	0,080mm (3,15mil)
◇	4	0,600mm (23,62mil)	PTH	Slot	Top Layer - Bottom Layer	Pad	Rounded	r100_170h60_130r100(Tol13-8)	0,130mm (5,12mil)	0,080mm (3,15mil)
⊞	28	0,635mm (25,00mil)	PTH	Round	Top Layer - Bottom Layer	Pad	(Mixed)	(Mixed)	0,130mm (5,12mil)	0,080mm (3,15mil)
E	2	0,700mm (27,56mil)	NPTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c70hn70(Tol13-8)	0,130mm (5,12mil)	0,080mm (3,15mil)
☆	9	0,800mm (31,50mil)	PTH	Round	Top Layer - Bottom Layer	(Mixed)	Rounded	(Mixed)	0,130mm (5,12mil)	0,080mm (3,15mil)
▽	2	0,900mm (35,43mil)	PTH	Slot	Top Layer - Bottom Layer	Pad	Rounded	r160_200h90_140r100(Tol13-8)	0,130mm (5,12mil)	0,080mm (3,15mil)
○	3	0,914mm (36,00mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c152h91(Tol13-8)	0,130mm (5,12mil)	0,080mm (3,15mil)
▽	6	1,100mm (43,31mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c180h110		
□	5	1,200mm (47,24mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c205h120(Tol13-8)	0,130mm (5,12mil)	0,080mm (3,15mil)
◎	4	1,800mm (70,87mil)	PTH	Slot	Top Layer - Bottom Layer	Pad	Rounded	r250_300h180_220r100		
	122 Total									

Slot definitions : Routed Path Length = Calculated from tool start centre position to tool end centre position.
Hole Length = Routed Path Length + Tool Size = Slot length as defined in the PCB layout

