

# UOE BLDC Driver Board - 2020

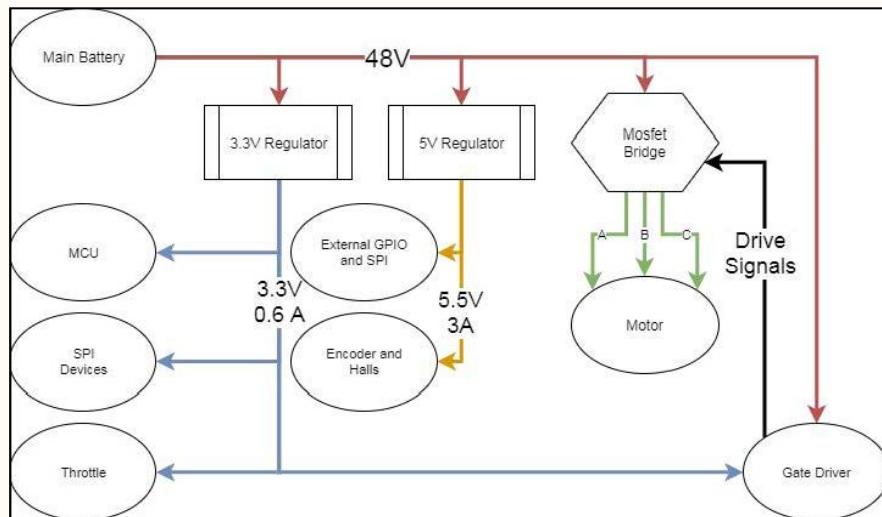
A

A

## Power Block Diagram

B

B



C

C

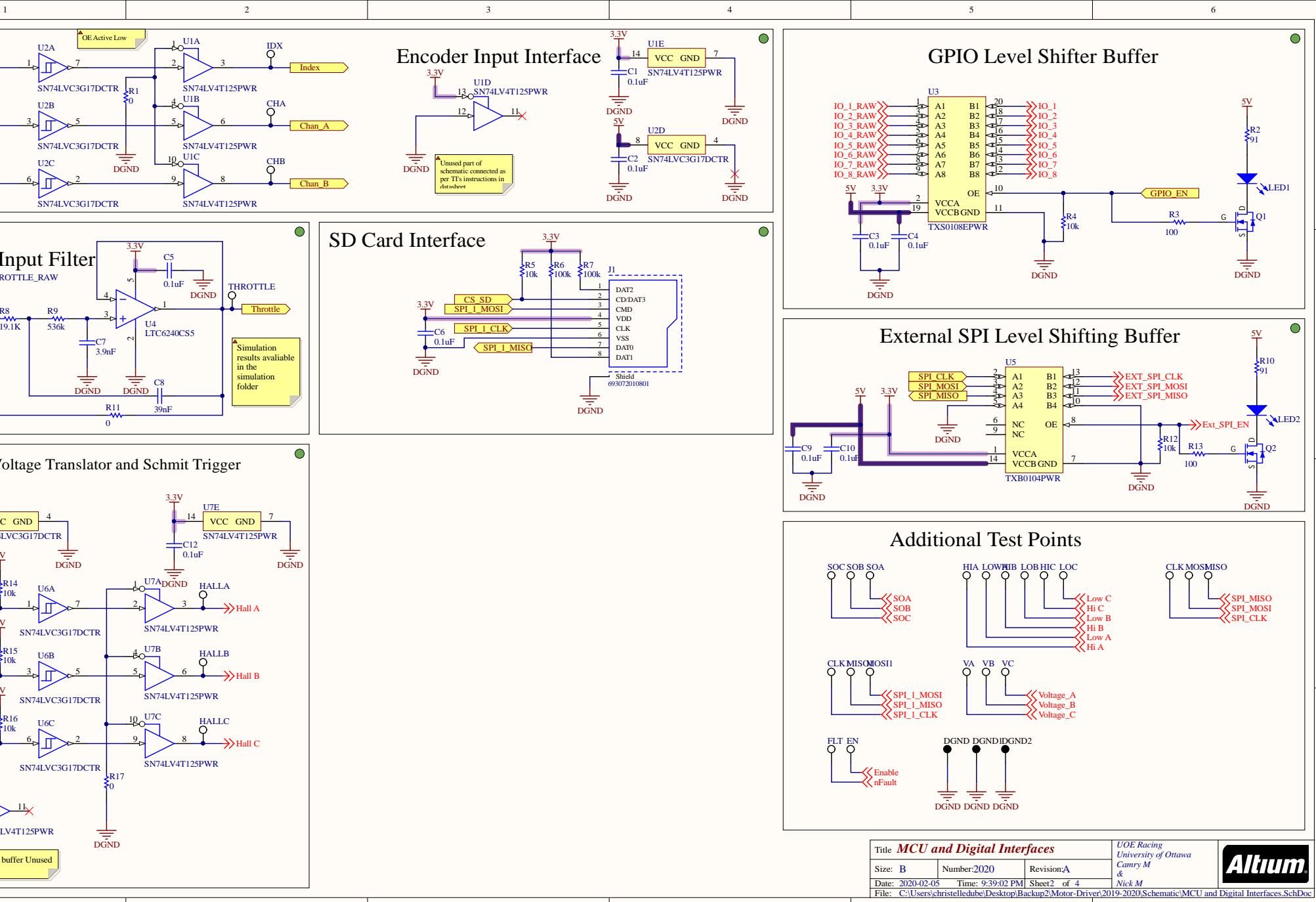
## Architecture Block Diagram

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D

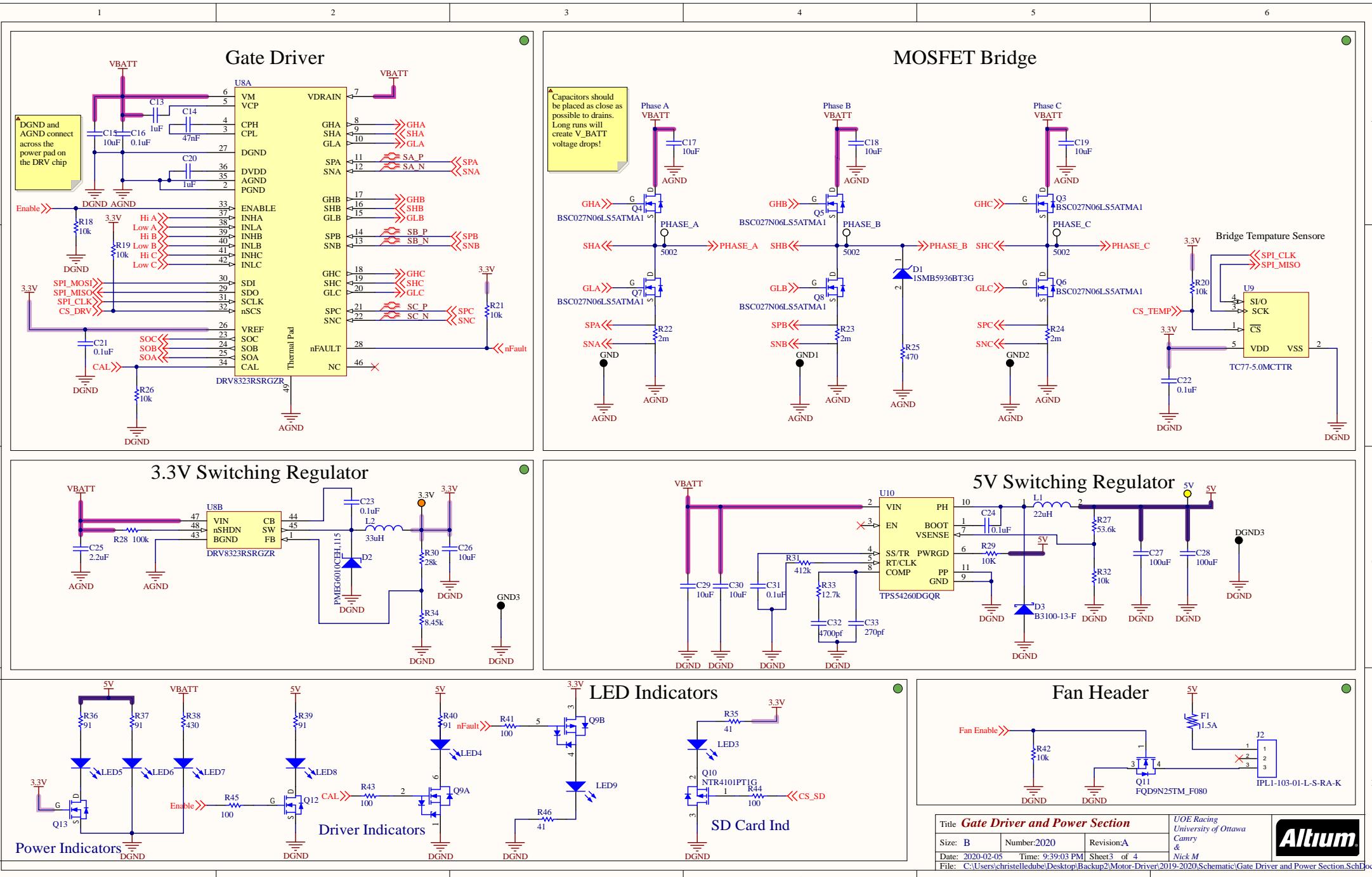
D

Title <b>Title Page</b>	Size: <b>A</b>	Number: <b>2020</b>	Revision: <b>A</b>	<i>UOE Racing University of Ottawa Camry M &amp; Nick M</i>	<b>Altium®</b>
Date: <b>2020-02-05</b>	Time: <b>9:39:02 PM</b>	Sheet <b>1</b> of <b>4</b>			
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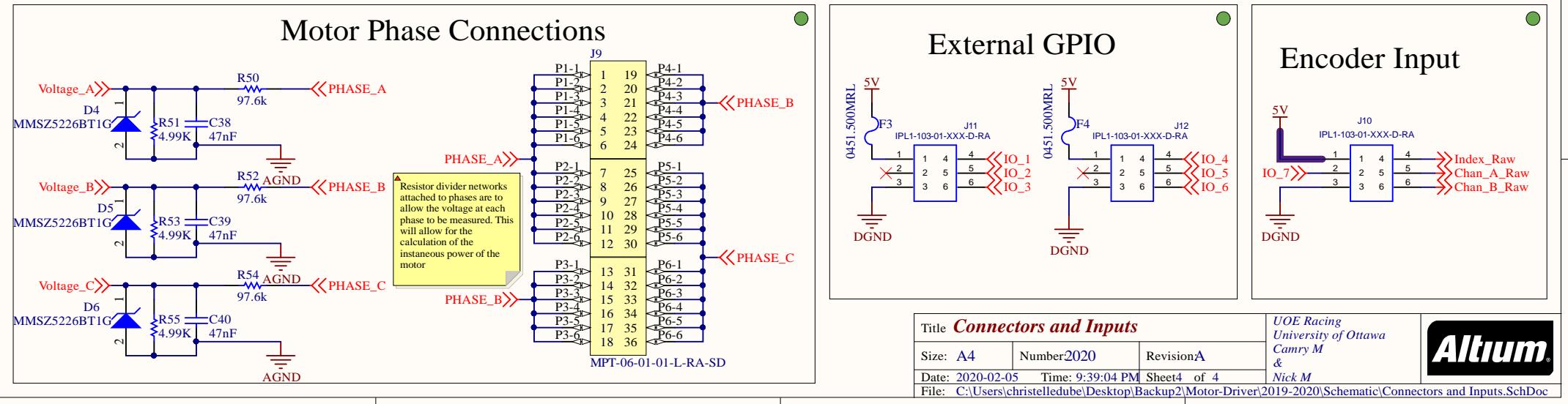
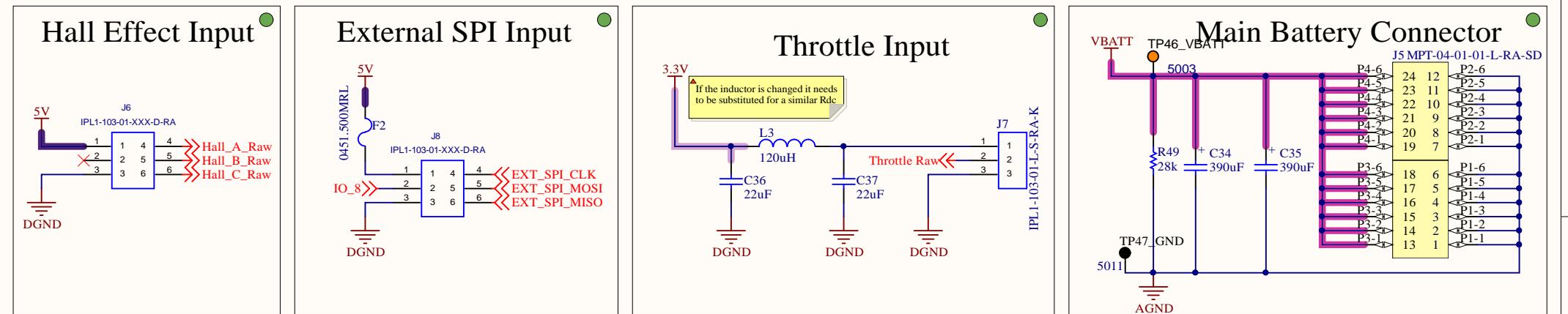
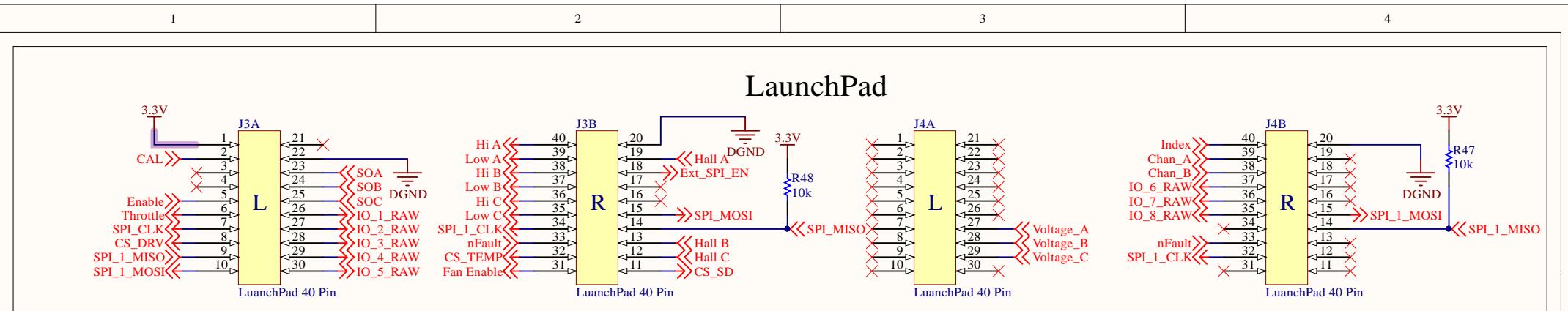


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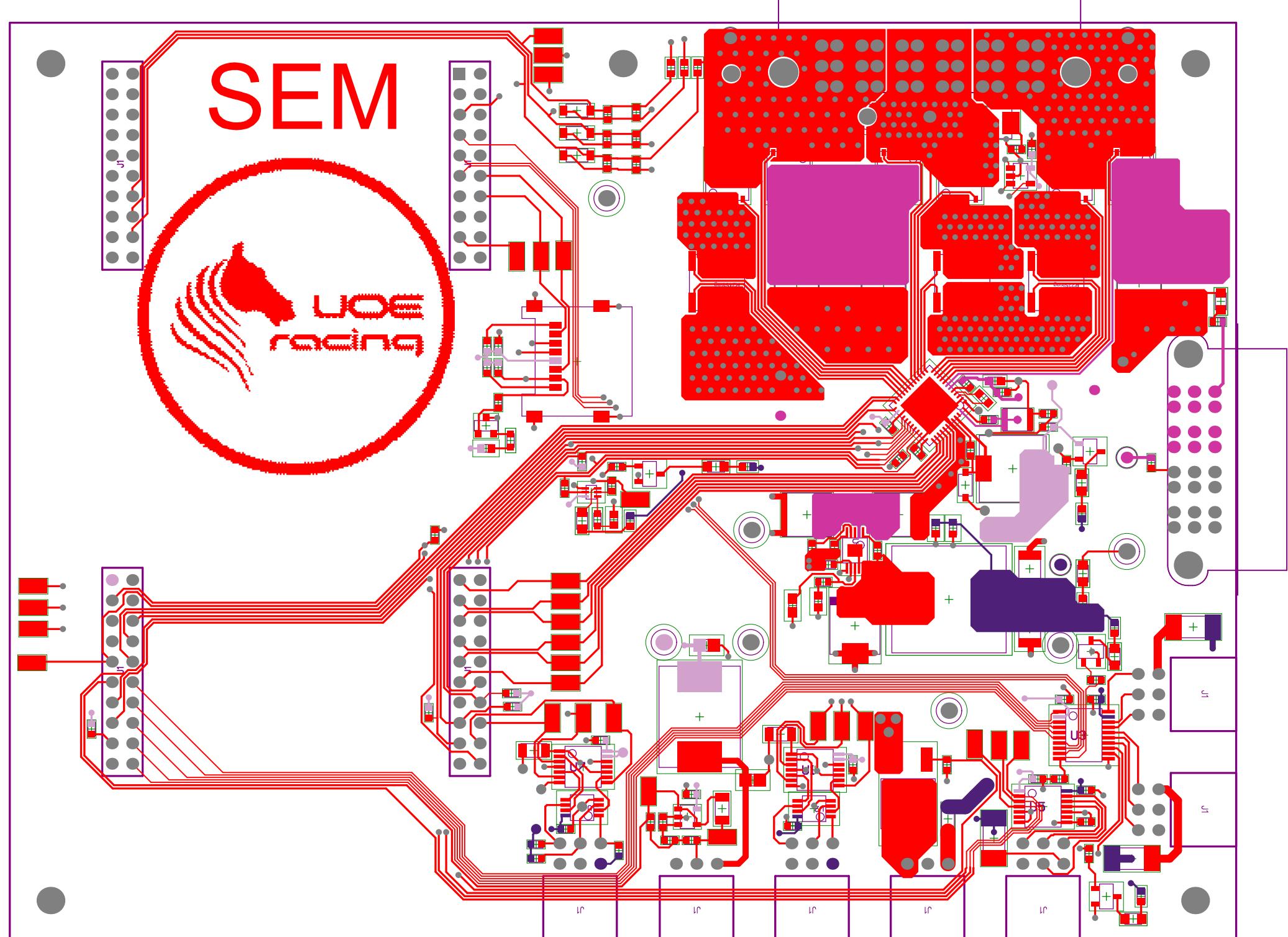
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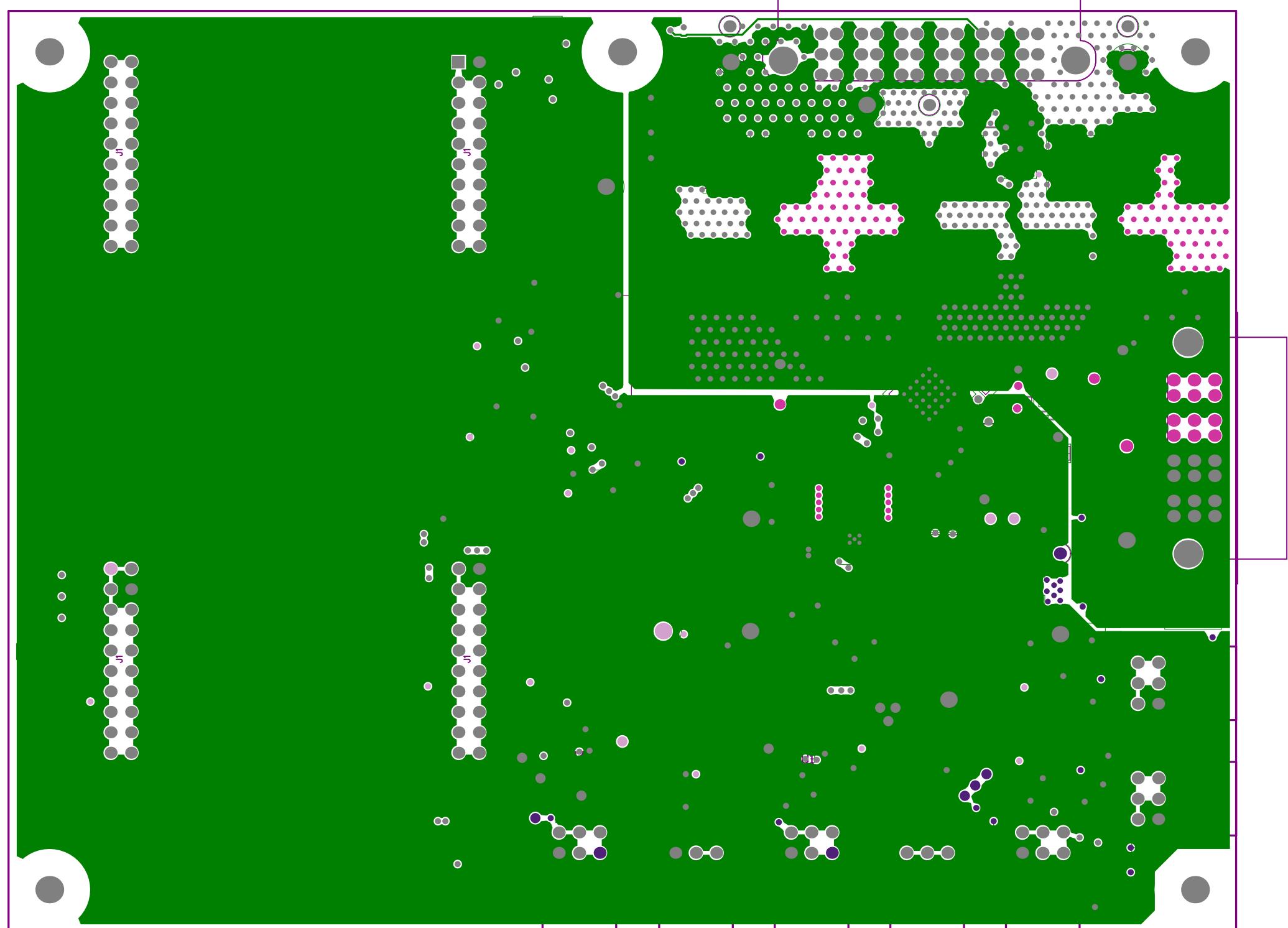


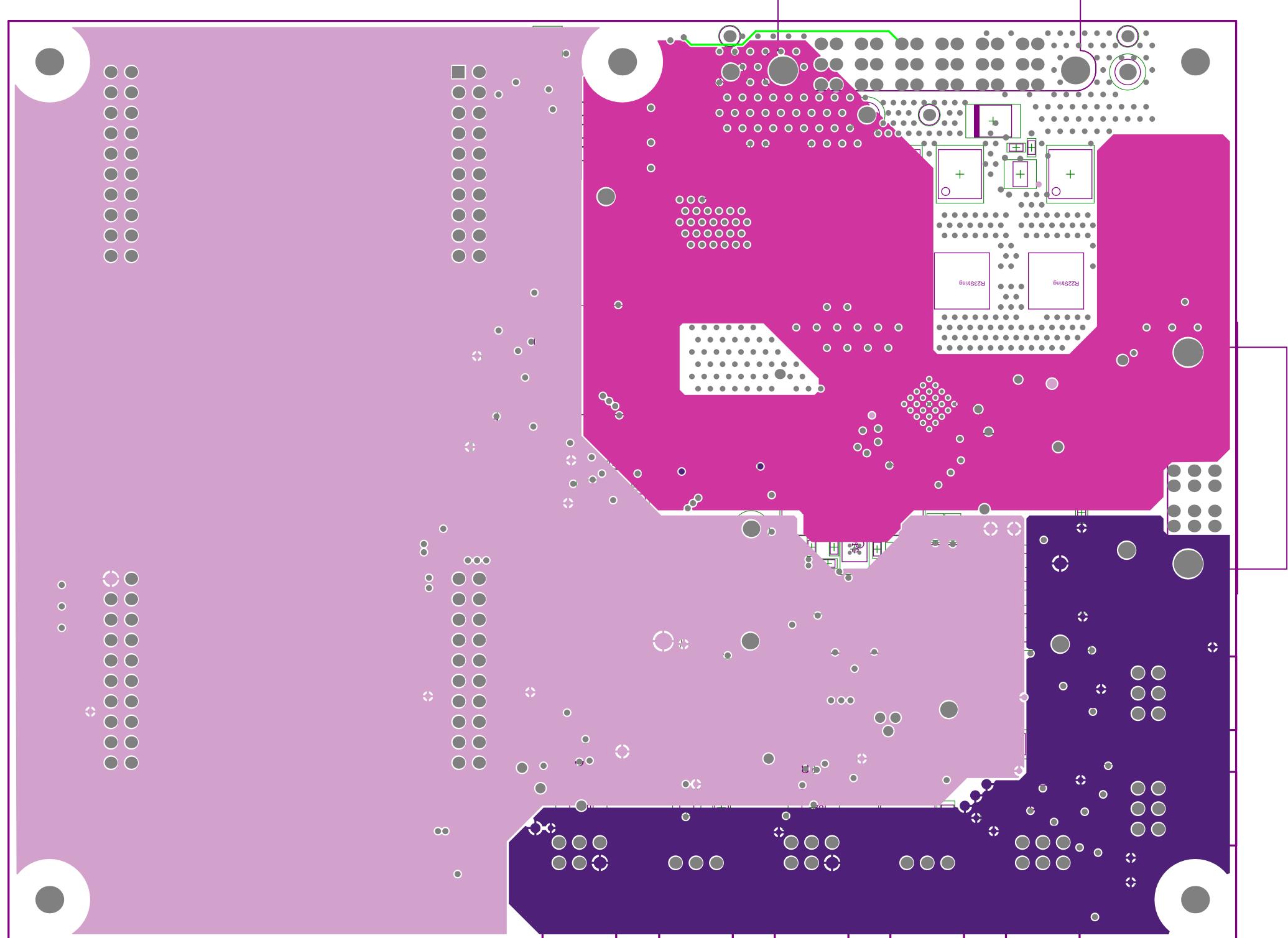
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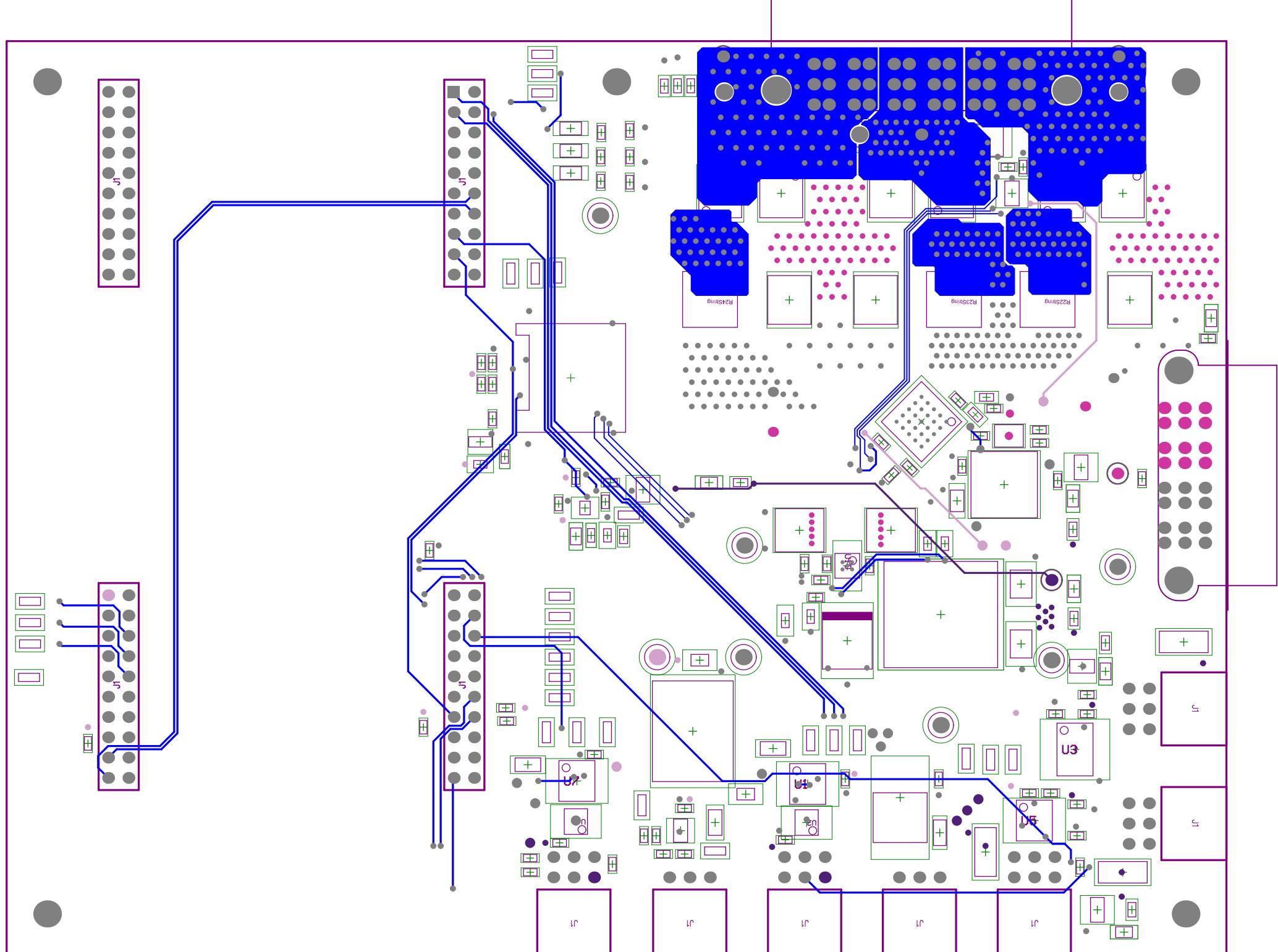


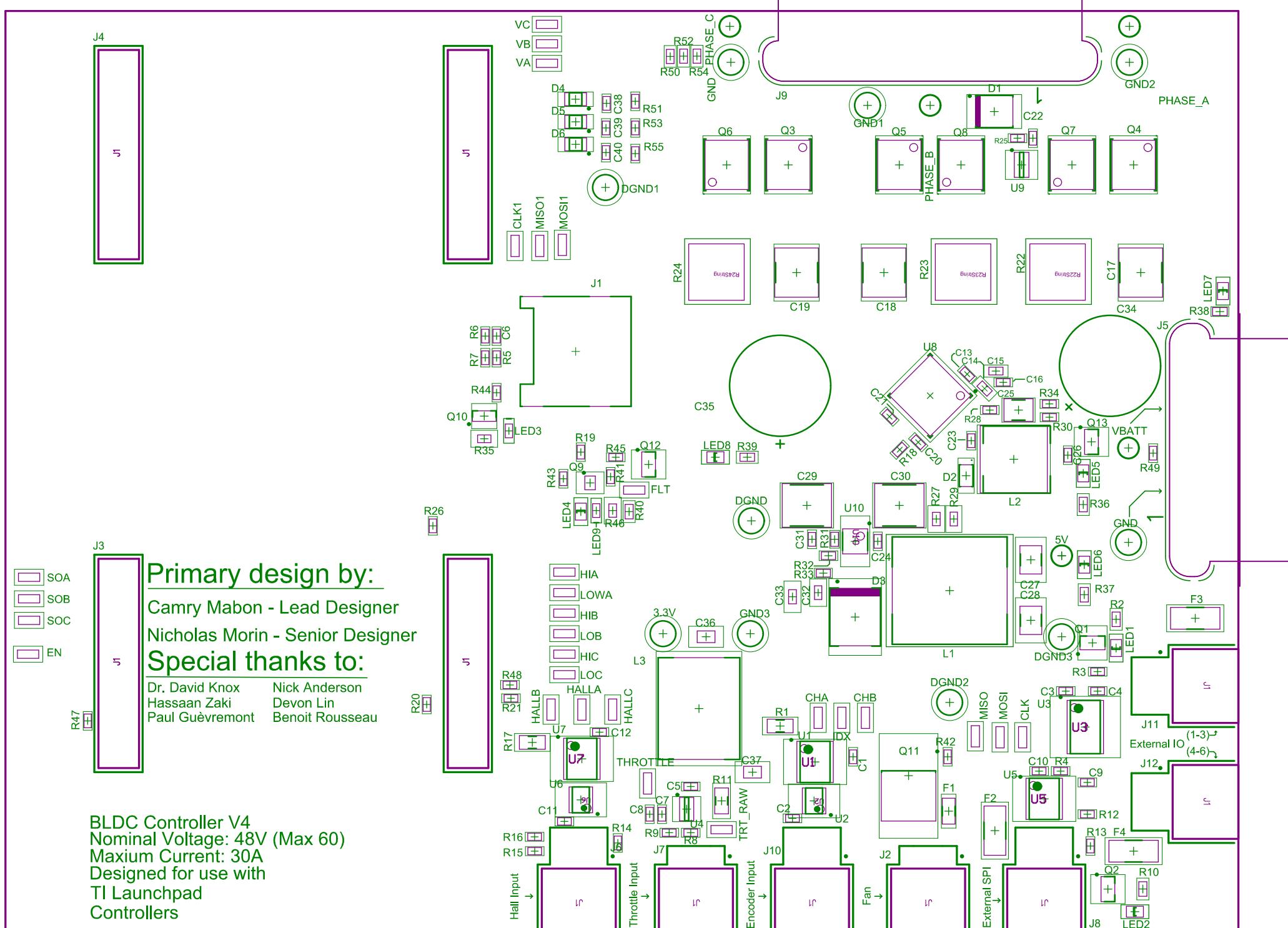
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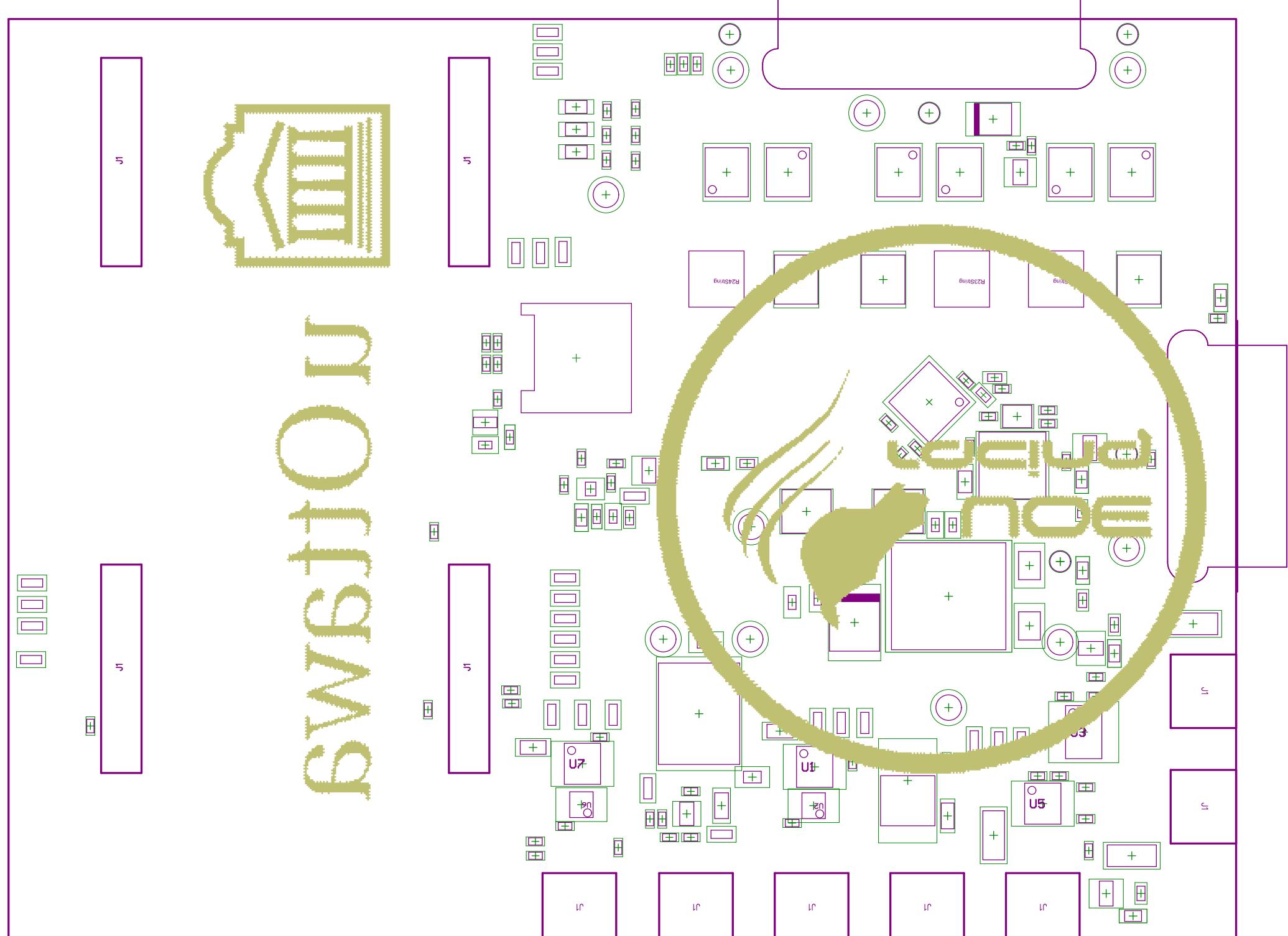


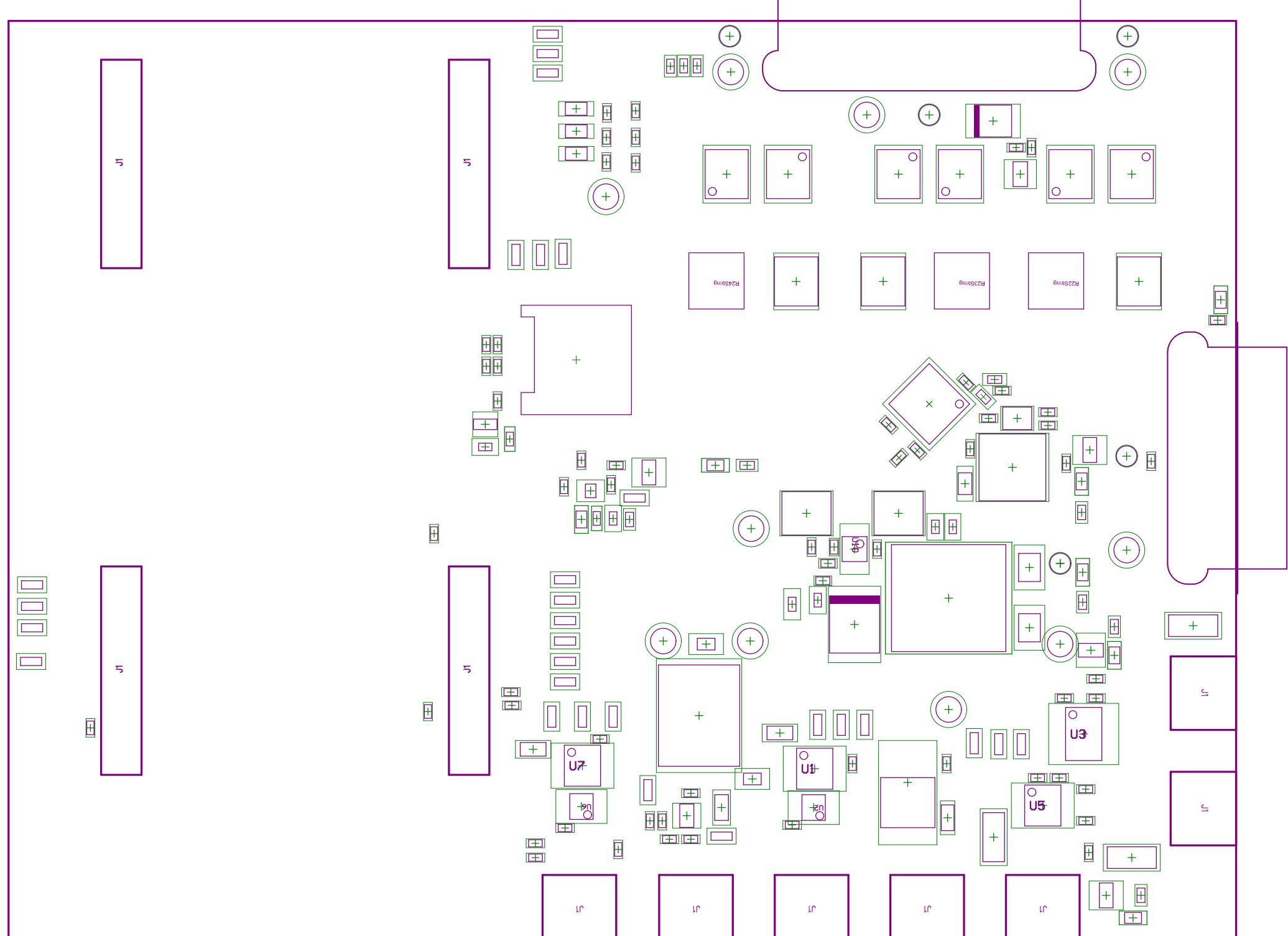


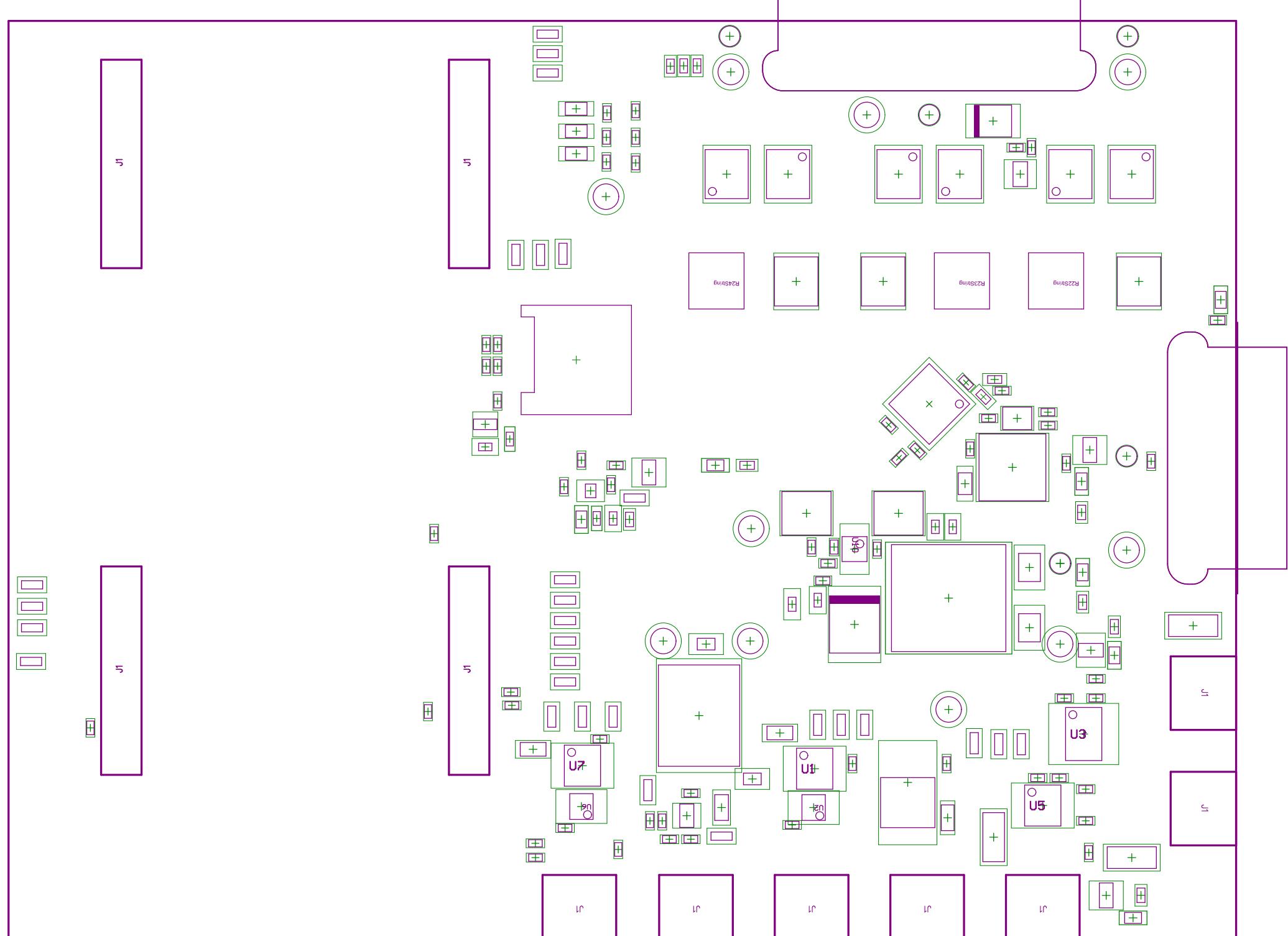


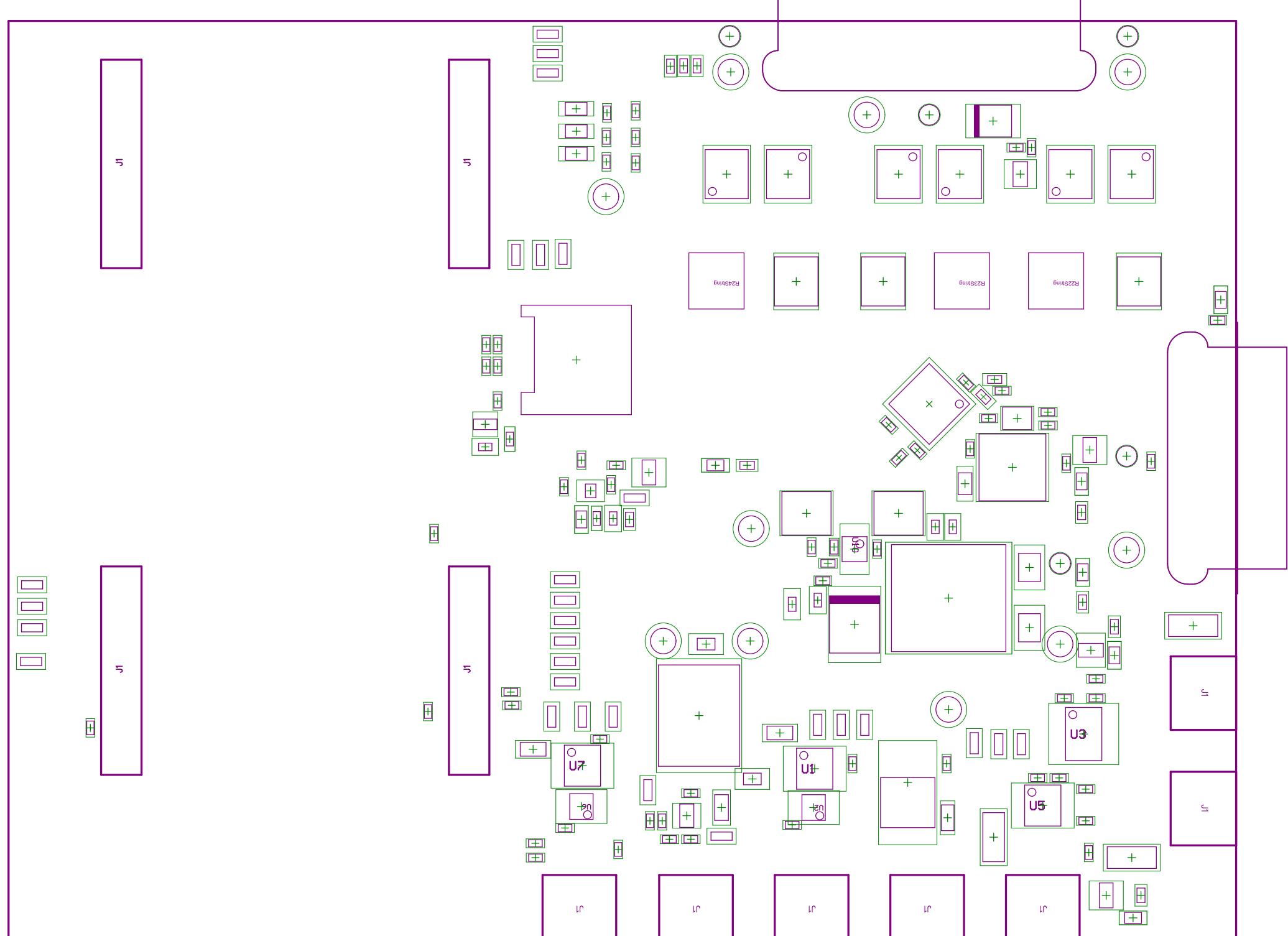


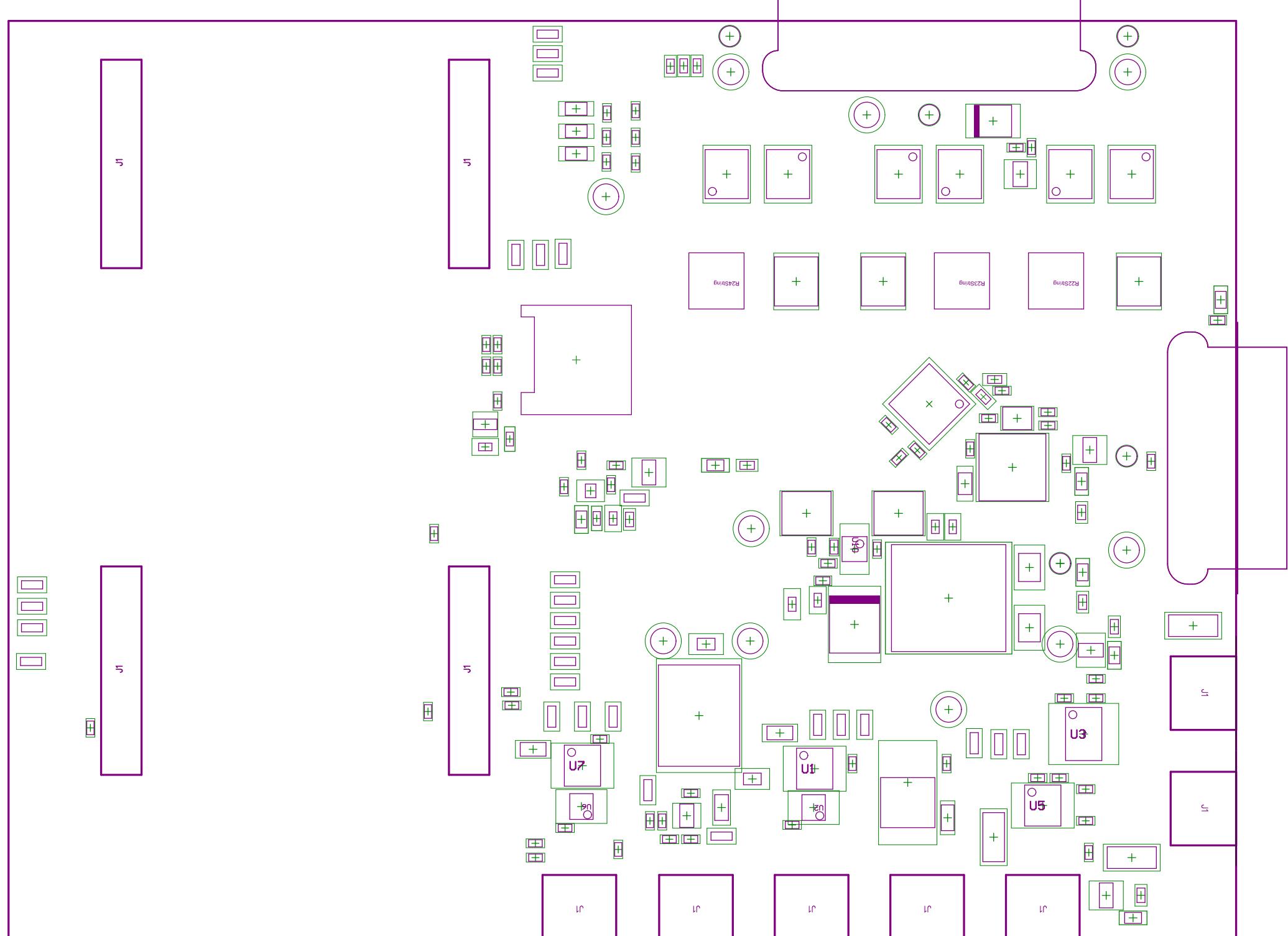


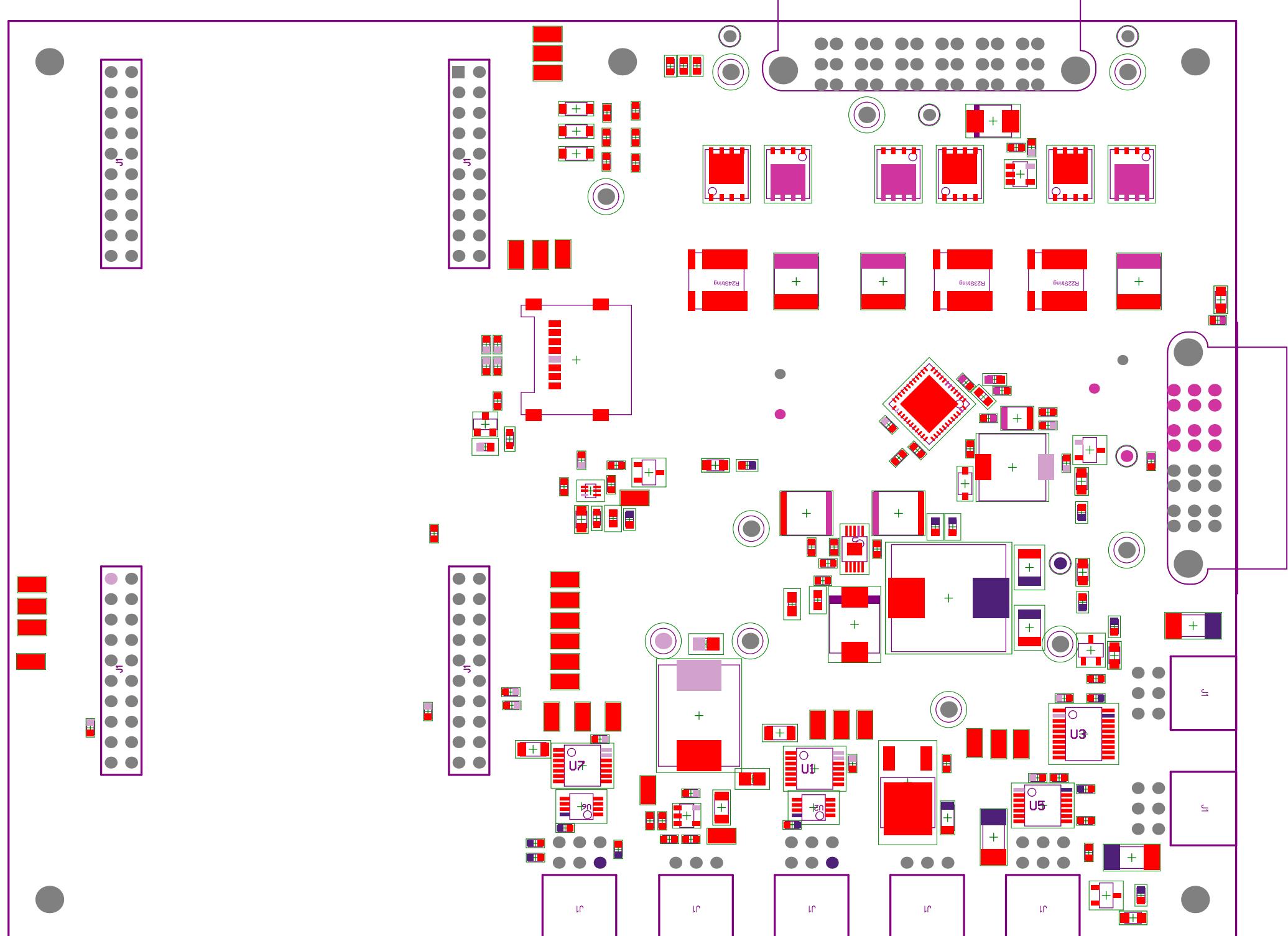


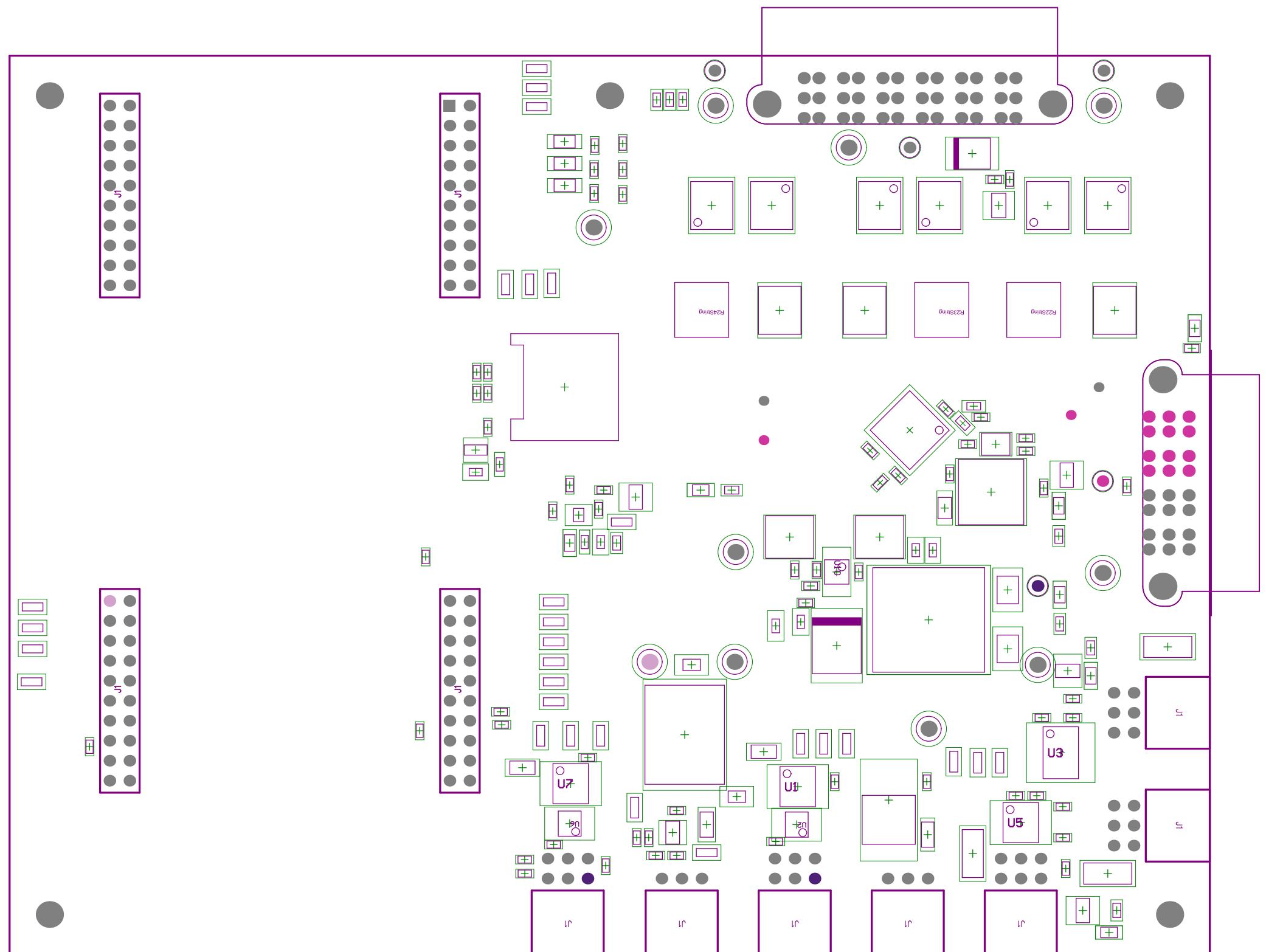


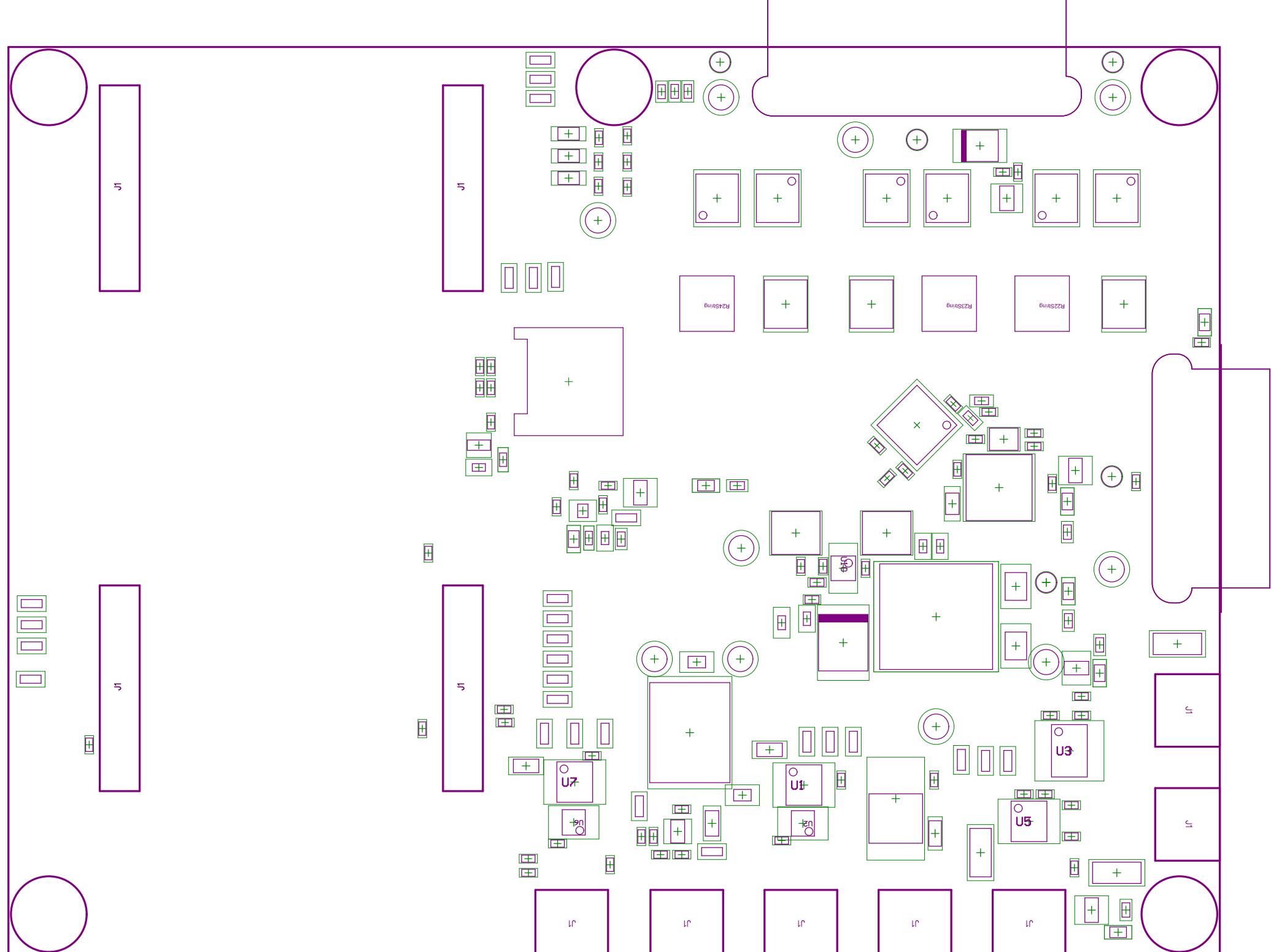


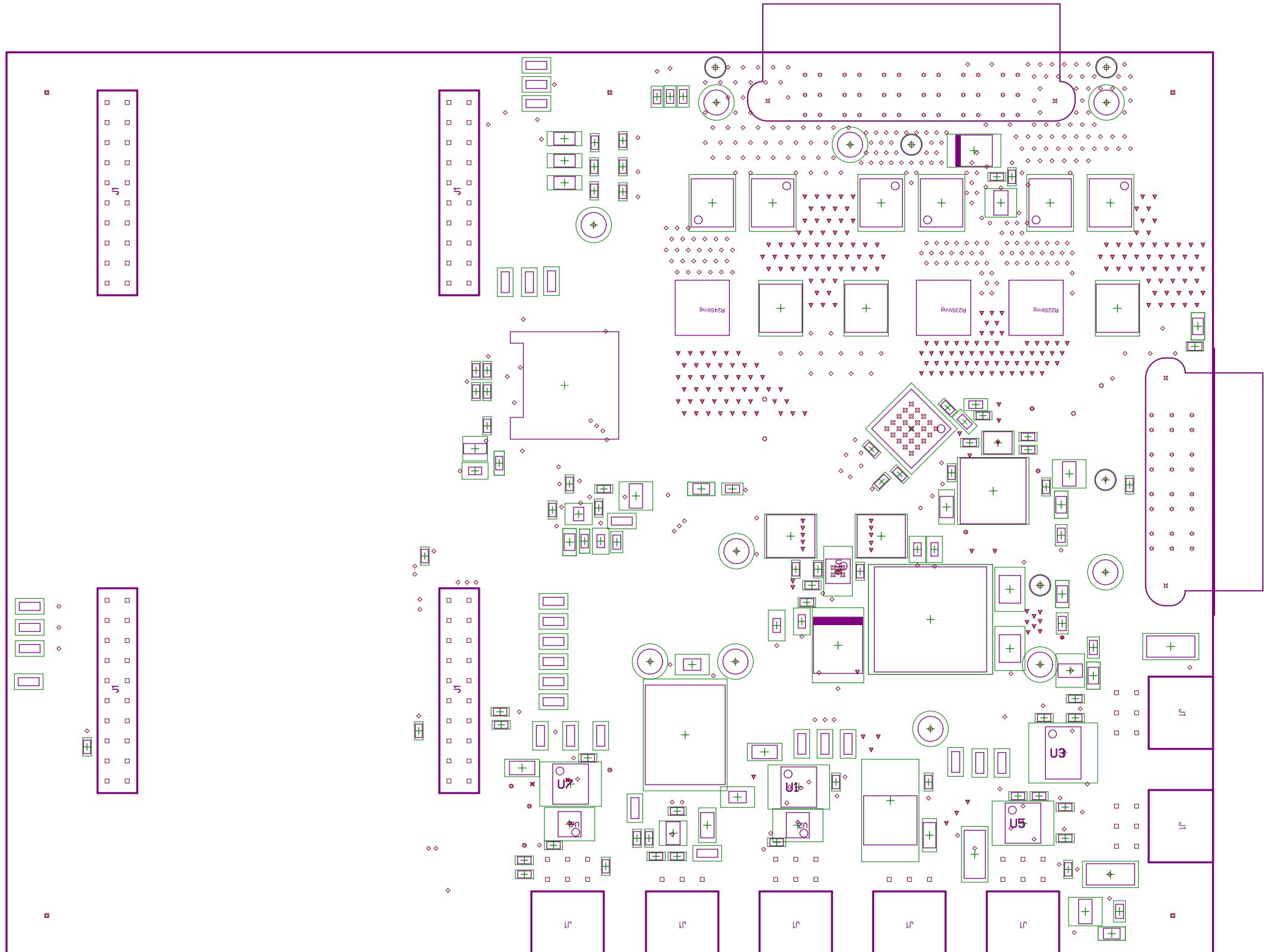


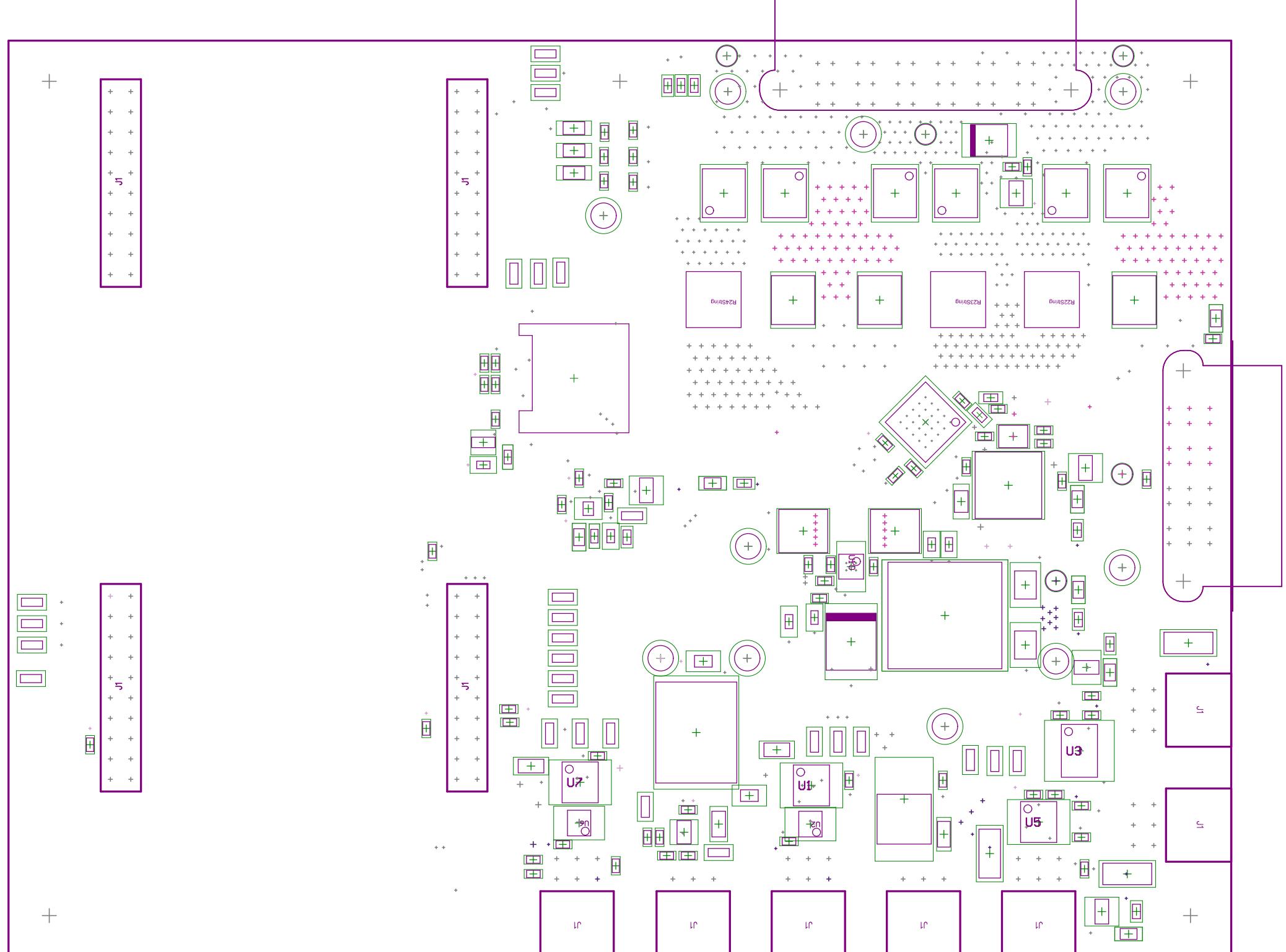












Item #	Designator	Description	Comment	Quantity	Manufacturer 1	Manufacturer Part Number 1	Footprint
1	3.3V	Test Point, Orange, Through Hole	5013	1		KSTN-5013_V	
2	5V	Test Point, Yellow, 1-Pin THD, RoHS004		1		KSTN-5004	
3	C10, C11, C12, C1	Cap Ceramic 0.1uF 50V X7R 5% S 0.1uF		16		CAPC1608X05L	
4	C7	Multilayer Ceramic Capacitors ML3.9nF		1	KEMET	C0603C392J5RACTU	CAPC1608X05L
5	C8	Ceramic Capacitor 0.039uF 50v, X739nF		1	Kyocera AVX	06035C393JAT2A	CAPC1608X05L
6	C13, C20	CAP CER 1uF 50V X7R 0603	1uF	2			CAPC1608X05L
7	C14	CAP 47nF 100V ±10% 0603 (1608) 47nF		1			CAPC0603(1608)100_N
8	C15		10uF	1			CAPC1608X90X35NL15T15
9	C17, C18, C19	Chip Capacitor, 10 uF, +/- 20%, 1010uF		3		CAPC5750X279X64N140T39	
10	C25	Chip Capacitor, 2.2 uF, +/- 10%, 522.2uF		1			CAPC3225X250X20L40
11	C26	Cap Ceramic 10uF 6.3V X5R 20% 10uF		1			CAPC1608X05L
12	C27, C28	CAP, Ceramic, 100 uF, 20%, 6.3 V 100uF		2			MURA-1210_H_2.7_M
13	C29, C30	Chip Capacitor, 10 uF, +/- 20%, 1010uF		2			TDK-C57502_L
14	C32		4700pf	1			CAPC1608X90X35ML10T15
15	C33		270pf	1			CAPC1608X90X35ML15T15
16	C34, C35	CAP ALUM 390uF 20% 80V RADIAL390uF		2	United Chemi-Con	EGPD800ELL391MK25H	EGPD800ELL391MK25H
17	C36, C37		22uF	2			CAPC2013X145X50ML20T25
18	C38, C39, C40	Multilayer Ceramic Capacitor, CS47nF		3	KEMET	C0603C473K5RACTU	CAPC1608X05L
19	LOC, LOWA, MISO	Test Point, White, SMT	5015	28			KSTN-5015_V
20	D1	3W Zener Voltage Regulator, 2-Pin	SMB5936BT3G	1			ONSC-SMB-2-403A-03_H_V
21	D2	NEXPERIA - PMEG6010CEH_115	PMEG6010CEH115	1	Nexperia	PMEG6010CEH115	SODFL350X120-2N
22	D3	High Voltage Schottky Barrier Rect.	B3100-13-F	1			DIOD-SMC-2_V
23	D4, D5, D6	Zener Voltage Regulator, 500 mW	MMSZ5226BT1G	3			ONSC-SOD-123-2-425-04_V
24	DGND3, GND, GND1	Test Point, Black, Through Hole,	R5011	9			KSTN-5011_V
25	F1	PolySwitch Resettable Device, 6 V, 1.5A		1			TECO-NANOSMDC150F2_V
26	F2, F3, F4	Fuse, 125 V, 500 mA, -55 to 125 deg	0451_500MRL	3			LFUS-45V_X
27	J1	WR-CRD Micro SD Card Connector	693072010801	1			693072010801
28	J2, J7	CONN HEADER R/A3POS 2.54MMIPL1-103-01-L-S-R-A		2	Samtec	IPL1-103-01-L-S-RA-K	IPL1-103-01-XXX-SRA
29	J3, J4	Designed to fit a TI luanchpad board	LuanchPad 40 Pin	2			TI_LaunchPad
30	J5	SAMTEC - MPT-04-01-01L-RA-SMPPT-04-01-01-L-R-A		1	Samtec	MPT-04-01-01-L-RA-SD	*MPT-04-01-XX-X-RA-SD
31	J6, J8, J10, J11, J12	Terminal Assembly, Double Row, RIPL1-103-01-XXX-D		5			IPL1-103-01-XXX-DRA
32	J9	Conn Mini-Power Terminal Strip	HMPPT-06-01-01-L-R-A	1	Samtec	MPT-06-01-01-L-RA-SD	*MPT-06-01-XX-X-RA-SD
33	L1	SMD Flat Wire High Current Induct.	22uH	1			WE-HCI-1365
34	L2	Fixed Inductors 33uH 30% SMD 8033uH		1	Bourns	SRU8043-330Y	INDP8080X46L
35	L3	Fixed Inductors 12000uH 0.069A 120uH		1	Eaton Bussmann	DR125-124-R	INDM125100X60N
36	LED4, LED5, LED6	SMD mono-color Chip LED, WL-S150080GS75000		7			0805_A
37	LED3, LED9	SMD mono-color Chip LED, WL-S150060VS75000		2			0603_A
38	E_A, PHASE_B, PH	Test Point, White, 1-Pin THD, RoHS002		3			KSTN-5002
39	Q1, Q2, Q12, Q13	MOSFET N-CH 12V 9.3A SC59	DMN1019USN7	4	Diodes	DMN1019USN7	SOT95P285X140-3N
40	Q3, Q4, Q5, Q6, Q7, Q	MOSFET N-CH 60V 100A 8TDSN BSC027N06LS5AT		6	Infineon	BSC027N06LS5ATMA1	PG-TDSN-87
41	Q9	N/P-Channel Trench MOSFET, 30V3008CBKV115		1			NXP-SOT666_M
42	Q10	Trench Power MOSFET, -20_V, SiNTR410PT1G		1			ONSC-SOT-23-3-3180_V
43	Q11	TransMOSFET N-CH 250V 7.4A3-FOD9N25TM_F080		1			DPAK229P991X239-3N
44	R1, R11, R17	Chip Resistor, 0 Ohm, +/- 5%, -55t00		3			RESC3116X65X40NL10T20
45	R10, R36, R37, R39, R40		91	6			RESC1608X50X30NL20T20

46	R13, R41, R43, R44,	RES SMD 100 OHM 0.5% 1/16W	0100	6			CAPC1608X05L
47	R16, R18, R19, R20,	RES SMD 10K OHM 0.5% 1/16W	010k	14			CAPC1608X05L
48	R6, R7, R28	BOURNS - CR0603-JW-104ELF - R100k		3	Bourns	CR0603-JW-104ELF	CAPC1608X05L
49	R8	RES SMD 19.1K OHM 1% 1/10W	019.1K	1	Bourns	CR0603-FX-1912ELF	CAPC1608X05L
50	R9	RES SMD 536K OHM 1% 1/10W	0536k	1	Yageo	RC0603FR-07536KL	CAPC1608X05L
51	R22, R23, R24	RES SMD 2 MOHM 1% 3W	2726 2m	3	Vishay Dale	WSL27262L000FEB	WSL27262L000FEB
52	R25	RES SMD 470 OHM 5% 1/10W	060470	1			CAPC1608X05L
53	R27		53.6k	1			RESC1609X50X30ML10T20
54	R29	Resistor, 10 KOhm, +/- 5%, 100 mW	10K	1			RESC1608X55X25ML10T15
55	R30, R49	RES SMD 28K OHM 1% 1/10W	0628k	2	Stackpole Electronics	RMCF0603FT28K0	CAPC1608X05L
56	R31		412k	1			RESC1608X55X30LL15T15
57	R32	Chip Resistor, 10 KOhm, +/- 1%, 0.1W	10k	1			RESC1609X55X30LL15T15
58	R33		12.7k	1			RESC1608X55X30LL15T15
59	R34	RES SMD 8.45K OHM 1% 1/10W	08.45k	1	Yageo	RC0603FR-078K45L	CAPC1608X05L
60	R35, R46		41	2			RESC1609X50X30ML10T20
61	R38		430	1			RESC1608X55X30NL20T10
62	R50, R52, R54		97.6k	3			RESC1608X55X30NL15T15
63	R51, R53, R55	RES SMD 4.99K OHM 0.1% 1/10W	4.99K	3	Yageo	RT0603BRD074K99L	CAPC1608X05L
64	TP46 VBATT	Test Point, Orange, 1-Pin THD	RoHS5003	1			KSTN-5003
65	U1, U7	Single Power Supply Quadruple Buffer	SN74LV4T125PWR	2			PW0014A_N
66	U2, U6	TRIPLE SCHMITT-TRIGGER BUFFER	SN74LVC3G17DCT	2			DCT0008A_M
67	U3	Bidirectional Voltage-Level Trans.	TXS0108EPWR	1			PW0020A_M
68	U4	Single Channel, Low Noise, CMOS	LTC6240CS5	1			LT-S5-5-TSOT-23_L
69	U5	4-Bit Bidirectional Voltage-Level	TXB0104PWR	1			PW0014A_N
70	U8	IC3PHASE GATE DRIVER 48VQFN	DRV8323RSRGZR	1			QFN50P700X700X100 HS-49N
71	U9	Thermal Sensor with SPI Interface	TC77-5.0MCTR	1			SOT-23-CT5_N
72	U10	Buck Inverting Buck-Boost Step Down	TPS54260DGQR	1			DGQ0010D_N