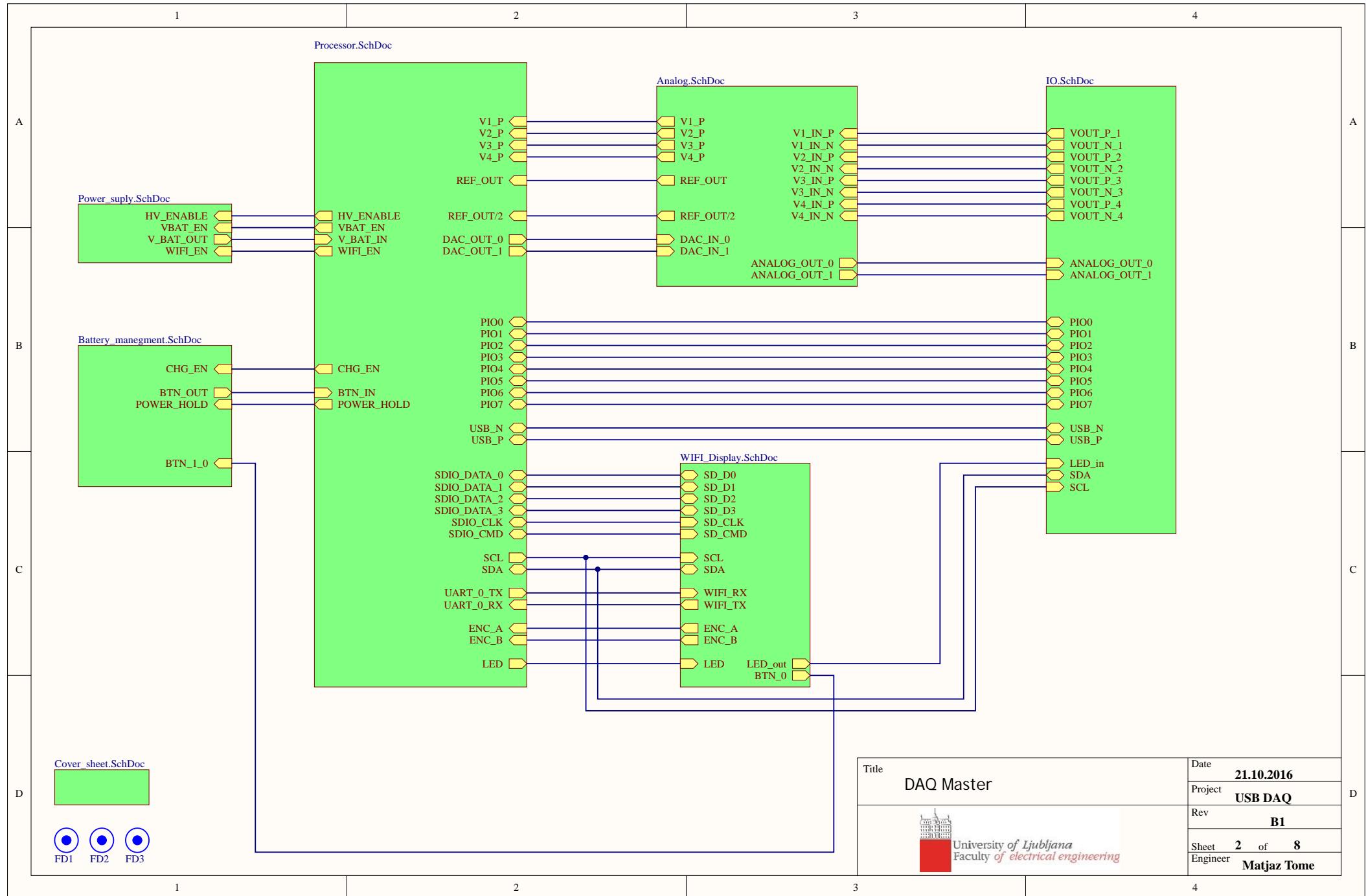
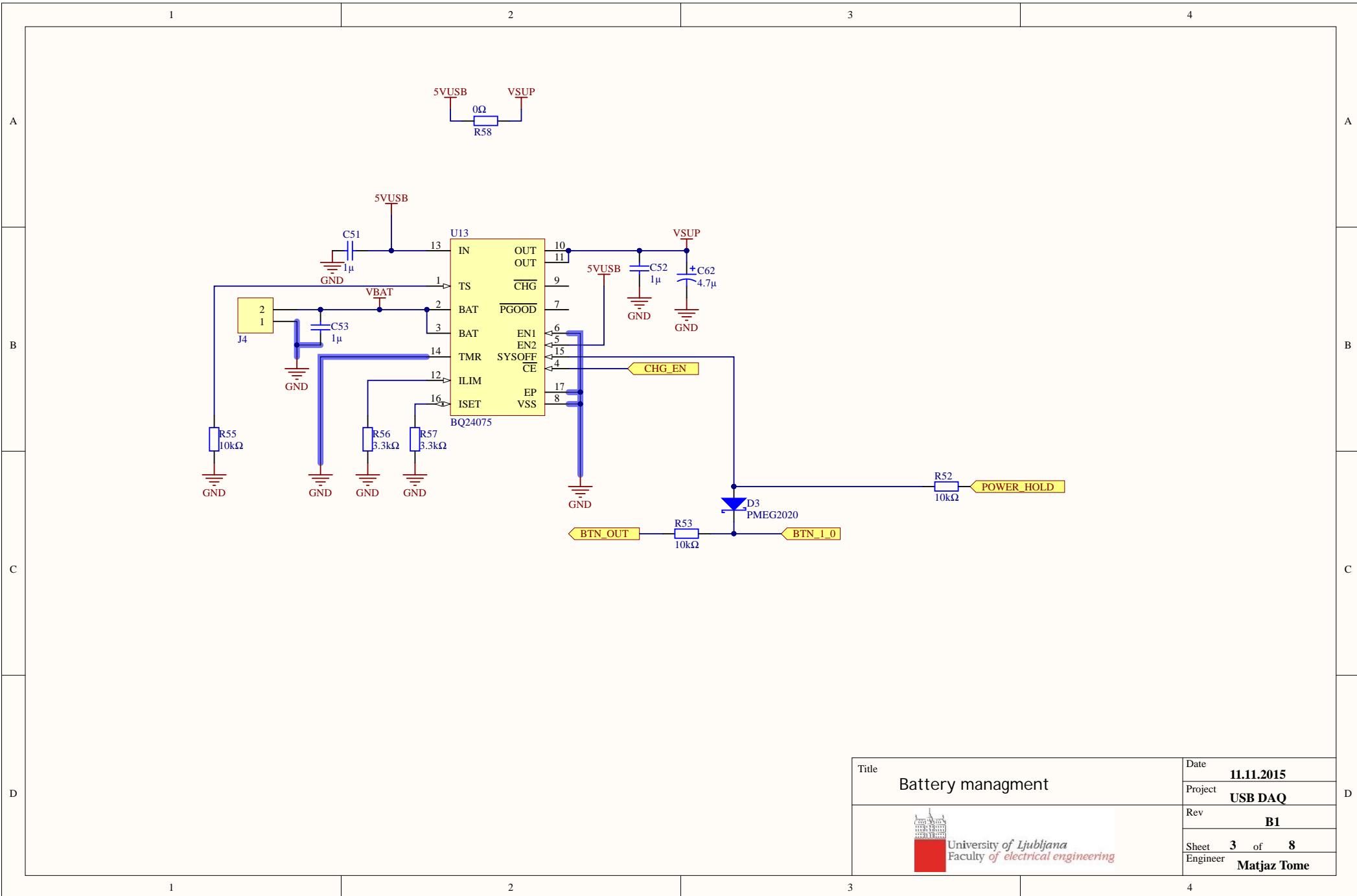


A	REV	Description	DATE	B
	A	Initial version	20.8.2015	A
	B	Added WiFi module, SD card Rotary encoder, LCD, Circuit for battery operation/charging Better power supply grounding	23.3.2016	
	B1	USB connector pin 5 is now connected to GND, pin 4 is NC Rotated Micro SD Socket Connected I/O connector to I2C, Fiducials fixed (now they are on both sides)	23.10.2016	
	B2	Component optimization for production	6.9.2017	
B	TESTPOINT	SIGNAL NAME	SHEET NAME	SHEET #
C	TP1	ANALOG IN CH2	Cover Sheet	1
	TP2	ANALOG IN CH4	Block Schematics	2
	TP3	ANALOG OUT CH0	Battery management	3
	TP4	ANALOG IN CH1	Power supply	4
	TP5	ANALOG IN CH3	Processor + JTAG	5
	TP6	ANALOG OUT CH1	Level shifters + Amplifiers	6
	TP7	REFOUT / 2	WIFI, Display, Encoder	7
	TP8	REFOUT	Digital I/O + ESD	8
D	TP9	+12V		
	TP10	VSUP		
	TP11	3V3		
	TP12	-12V		
	TP13	3V3W		
	TP14	GND		

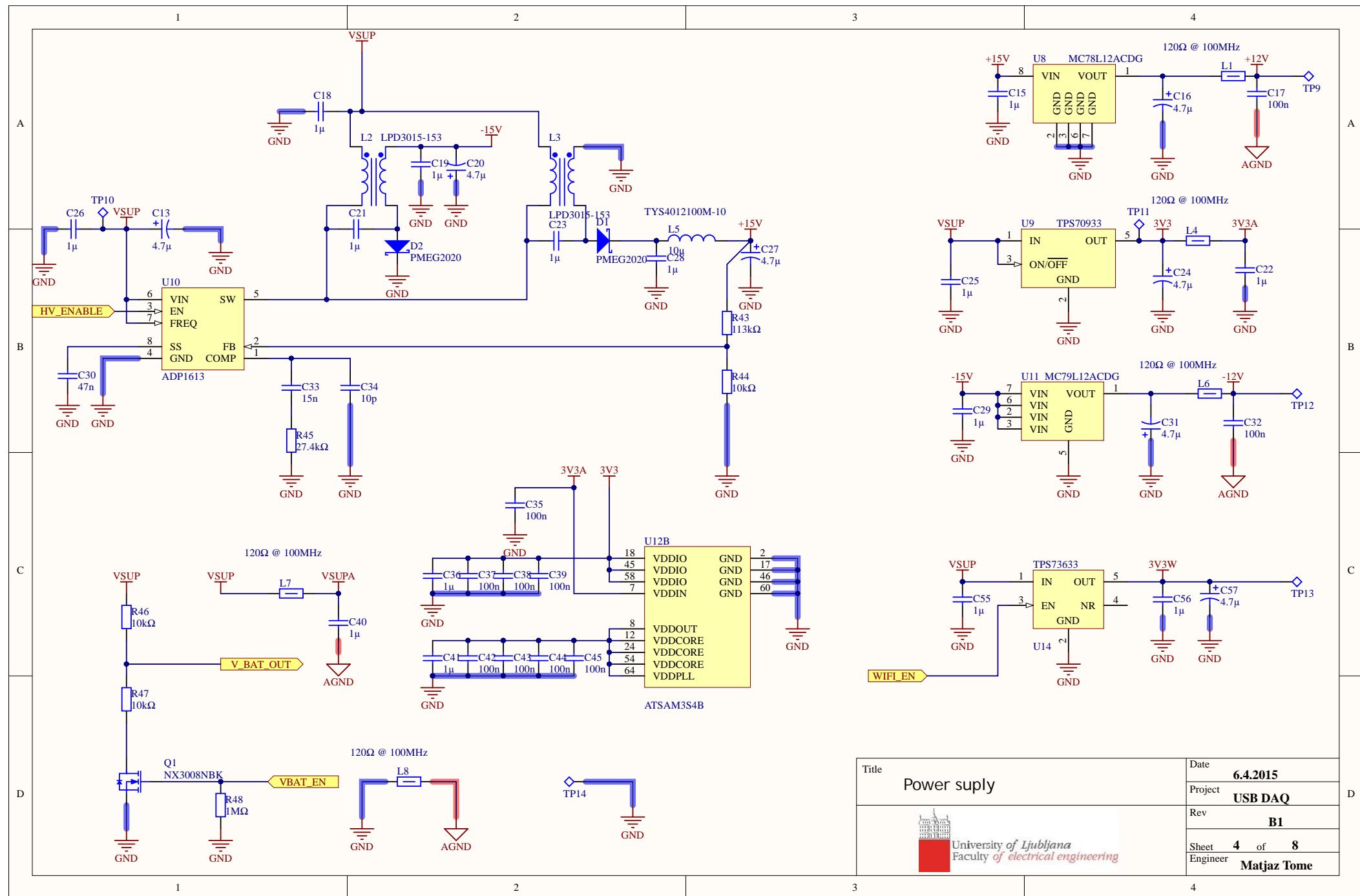
Title	Cover Sheet	Date	23.10.2016
Project	USB DAQ	Project	USB DAQ
Rev	B1	Rev	B1
Sheet	1 of 8	Sheet	1 of 8
Engineer	Matjaz Tome	Engineer	Matjaz Tome

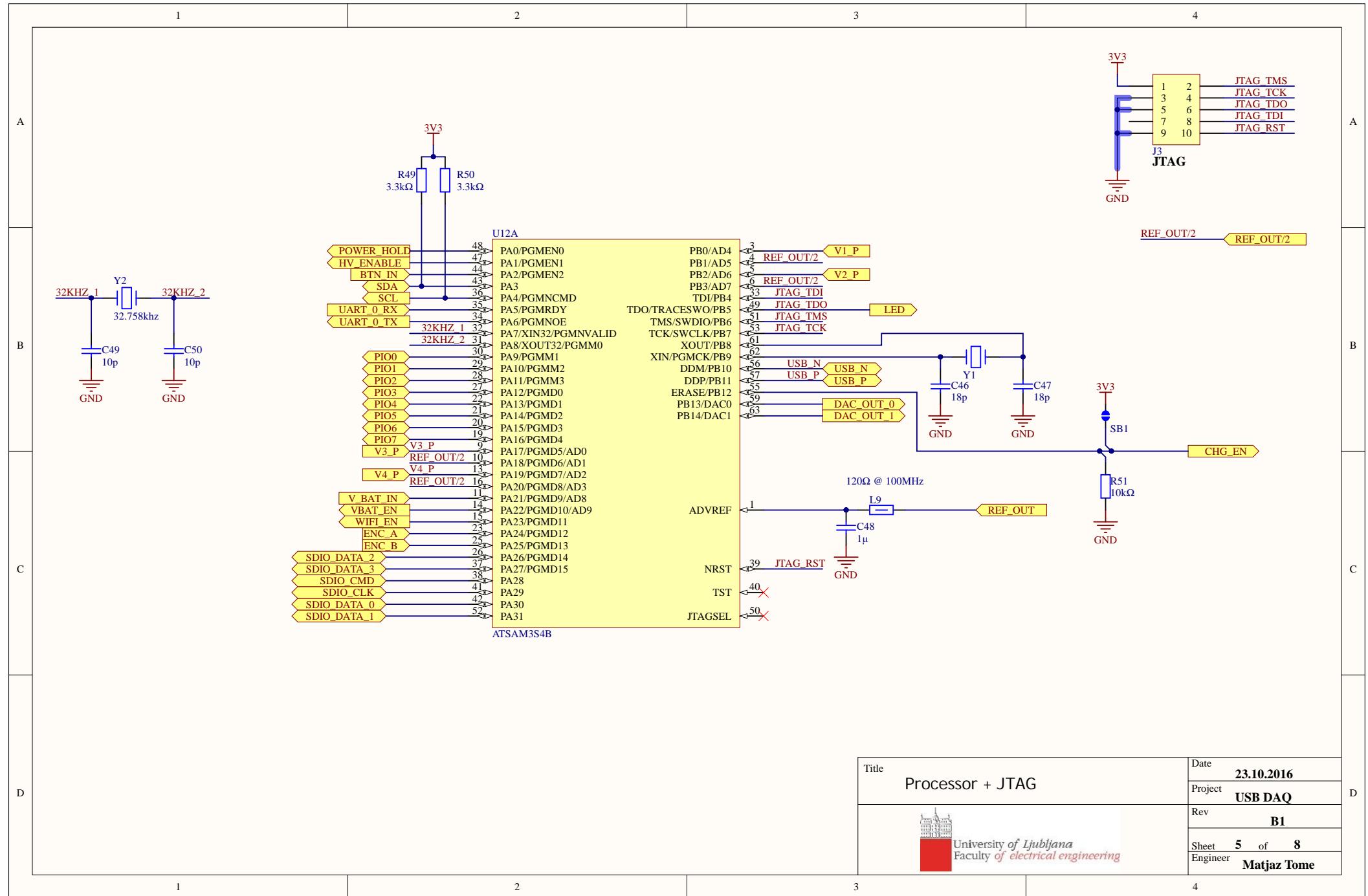

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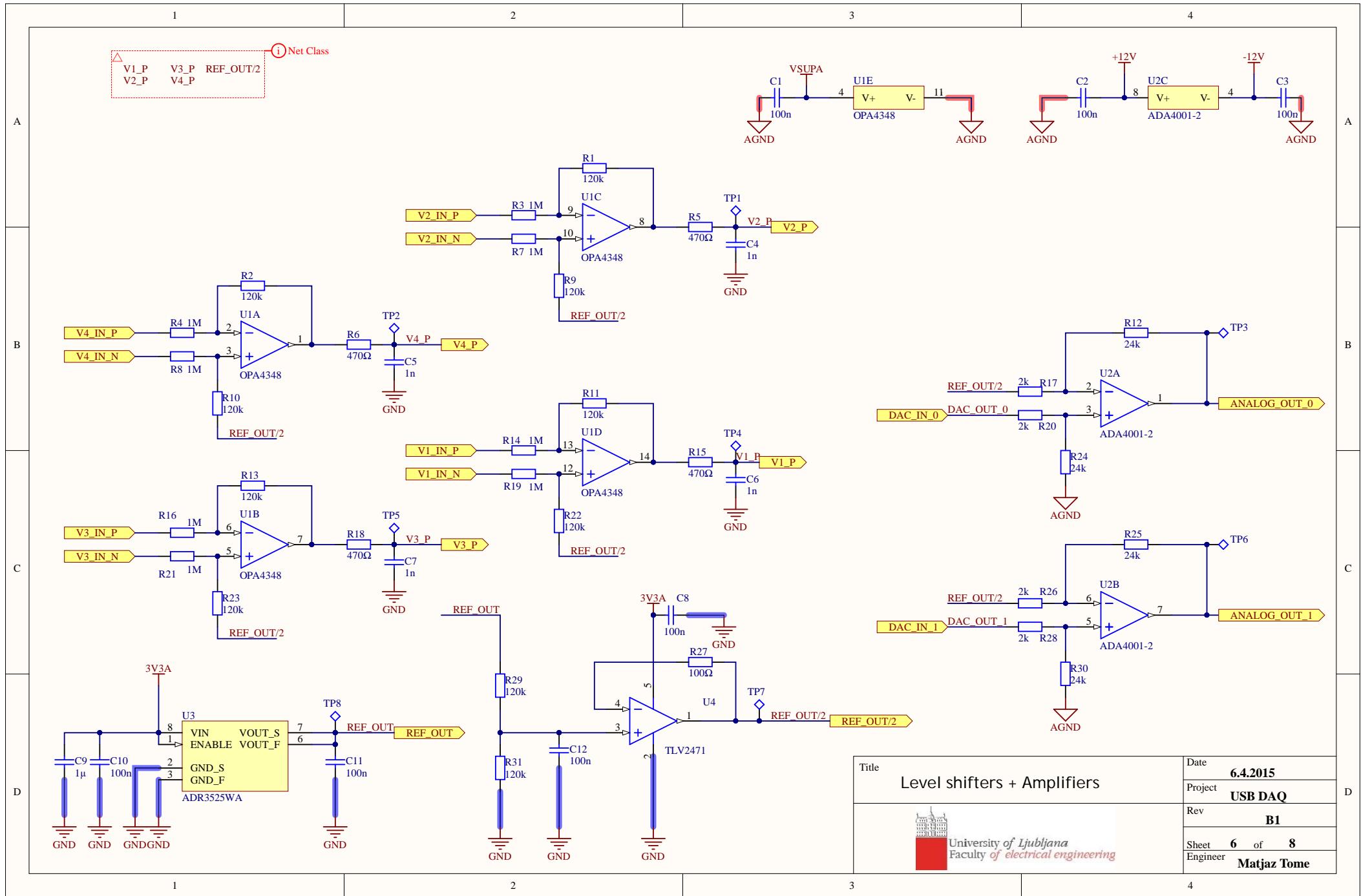


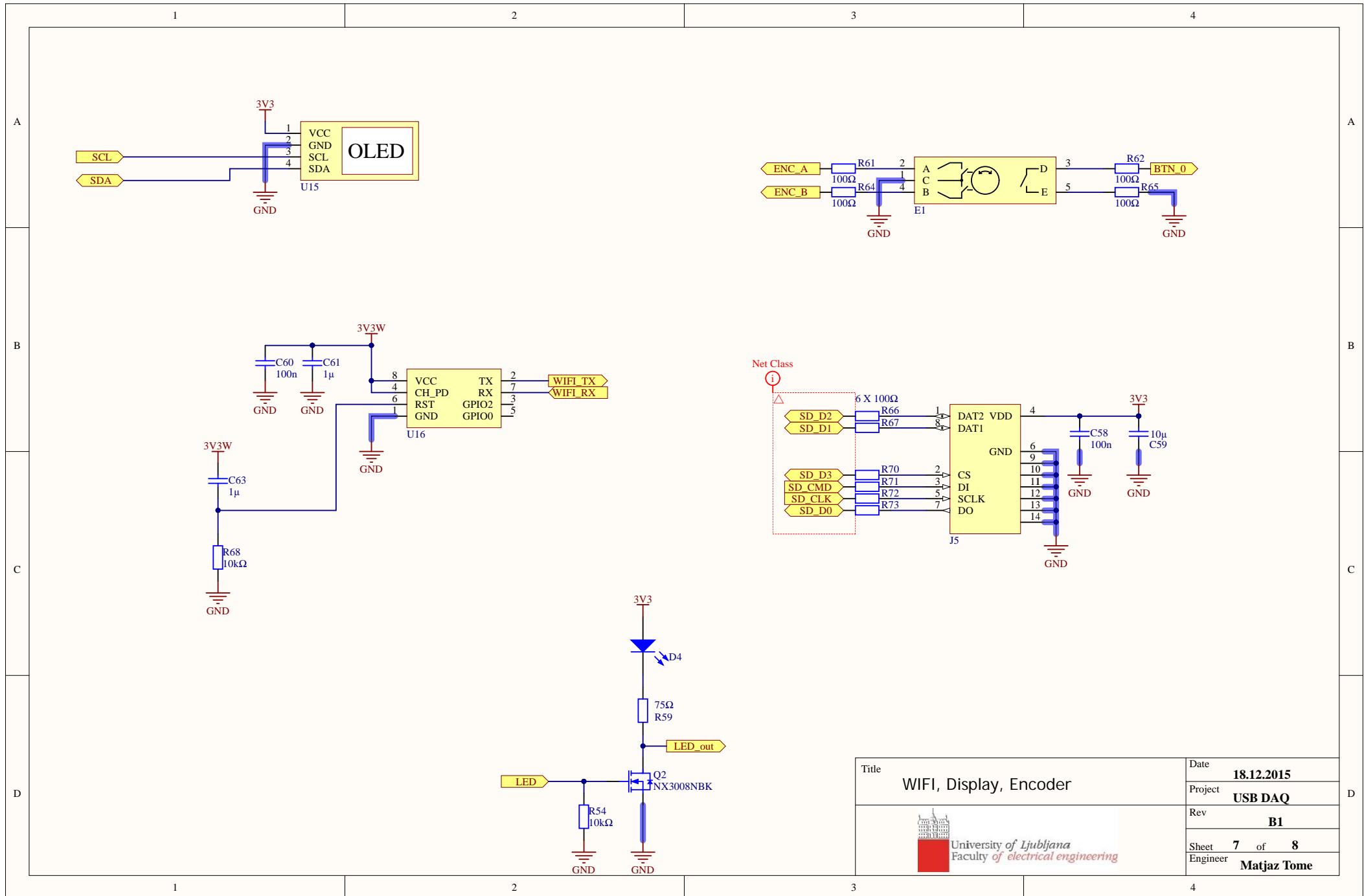


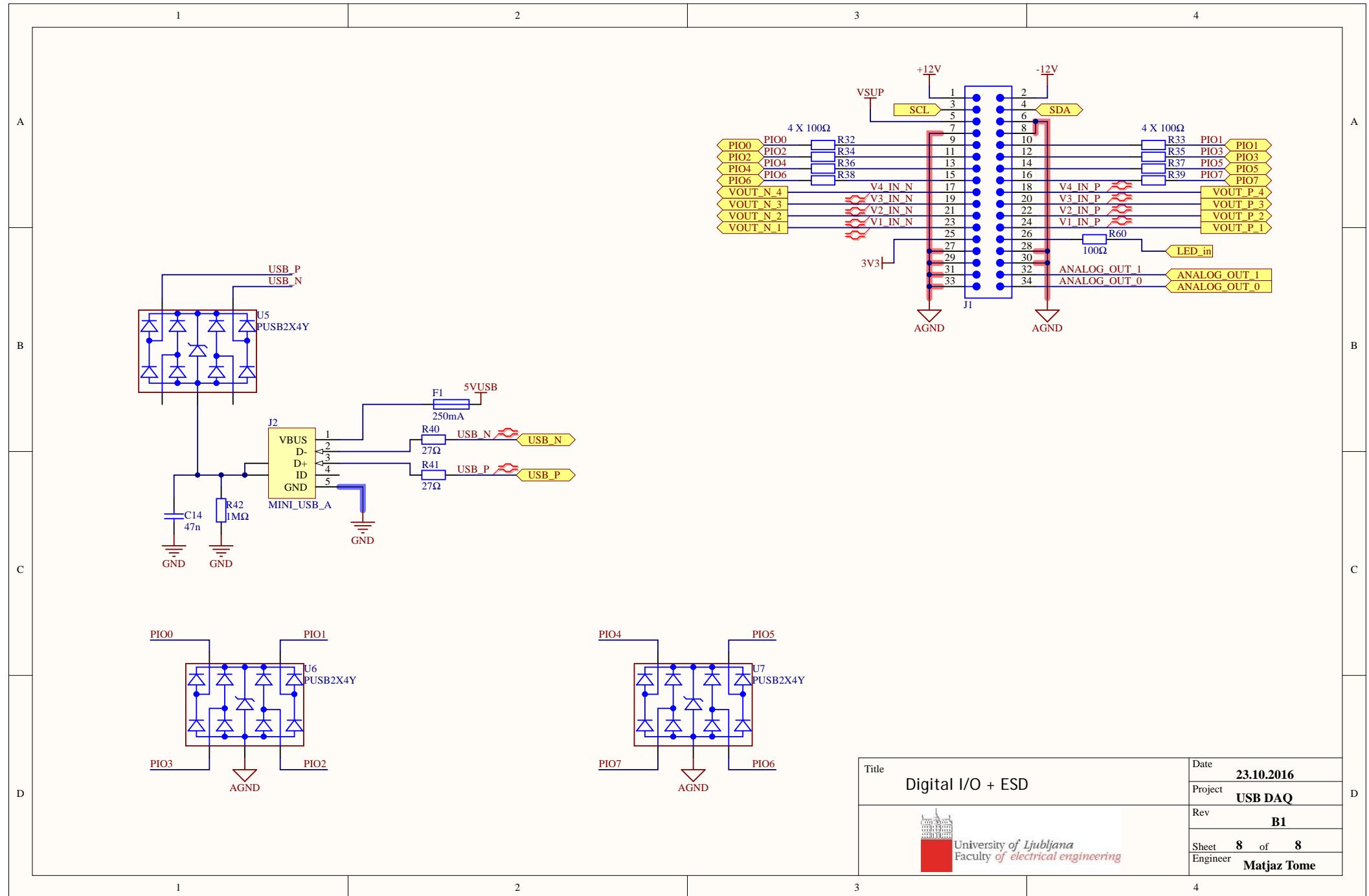
Title	Date	11.11.2015
Battery management	Project	USB DAQ
	Rev	B1
University of Ljubljana Faculty of electrical engineering	Sheet	3 of 8
	Engineer	Matjaz Tome

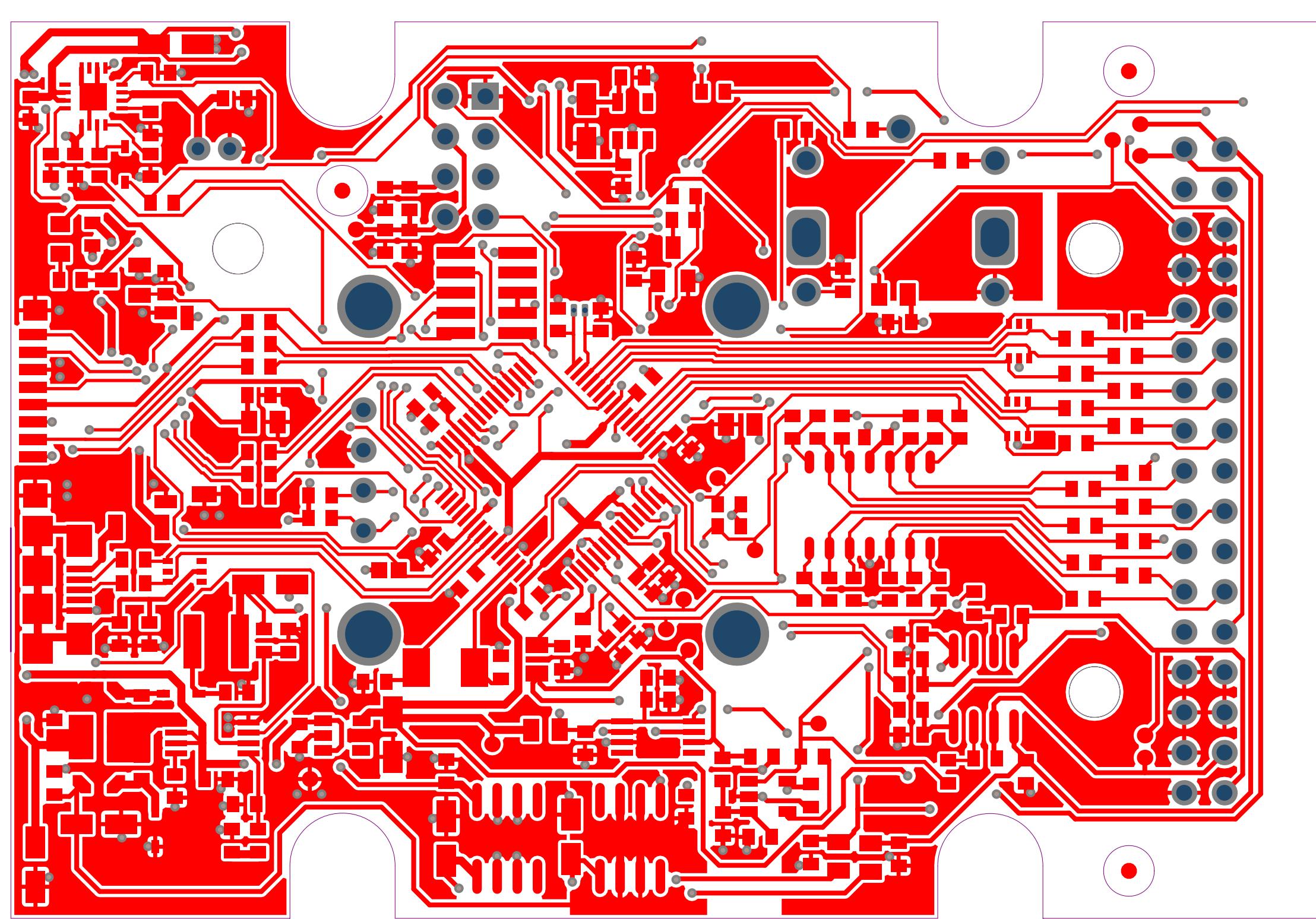


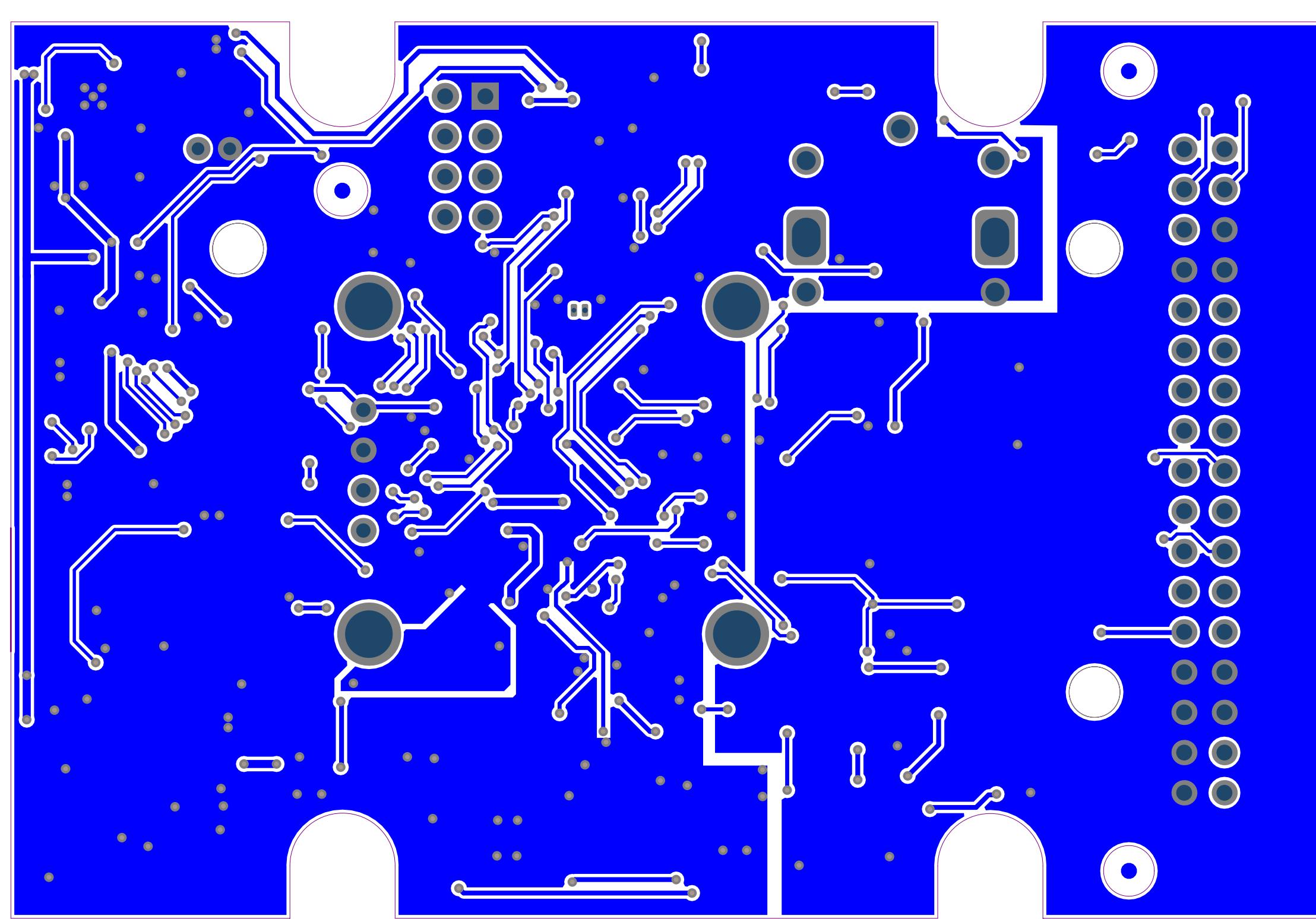


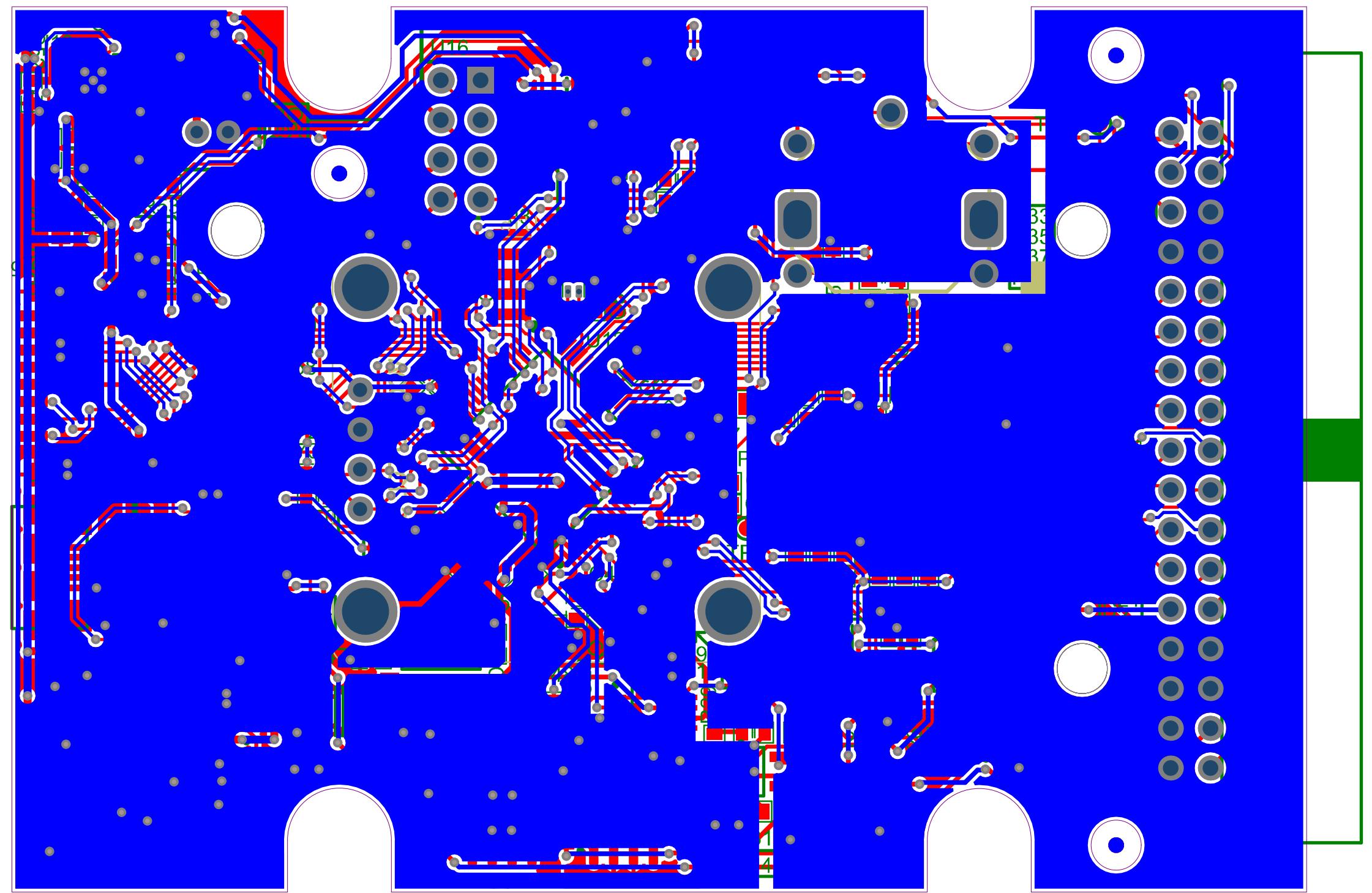


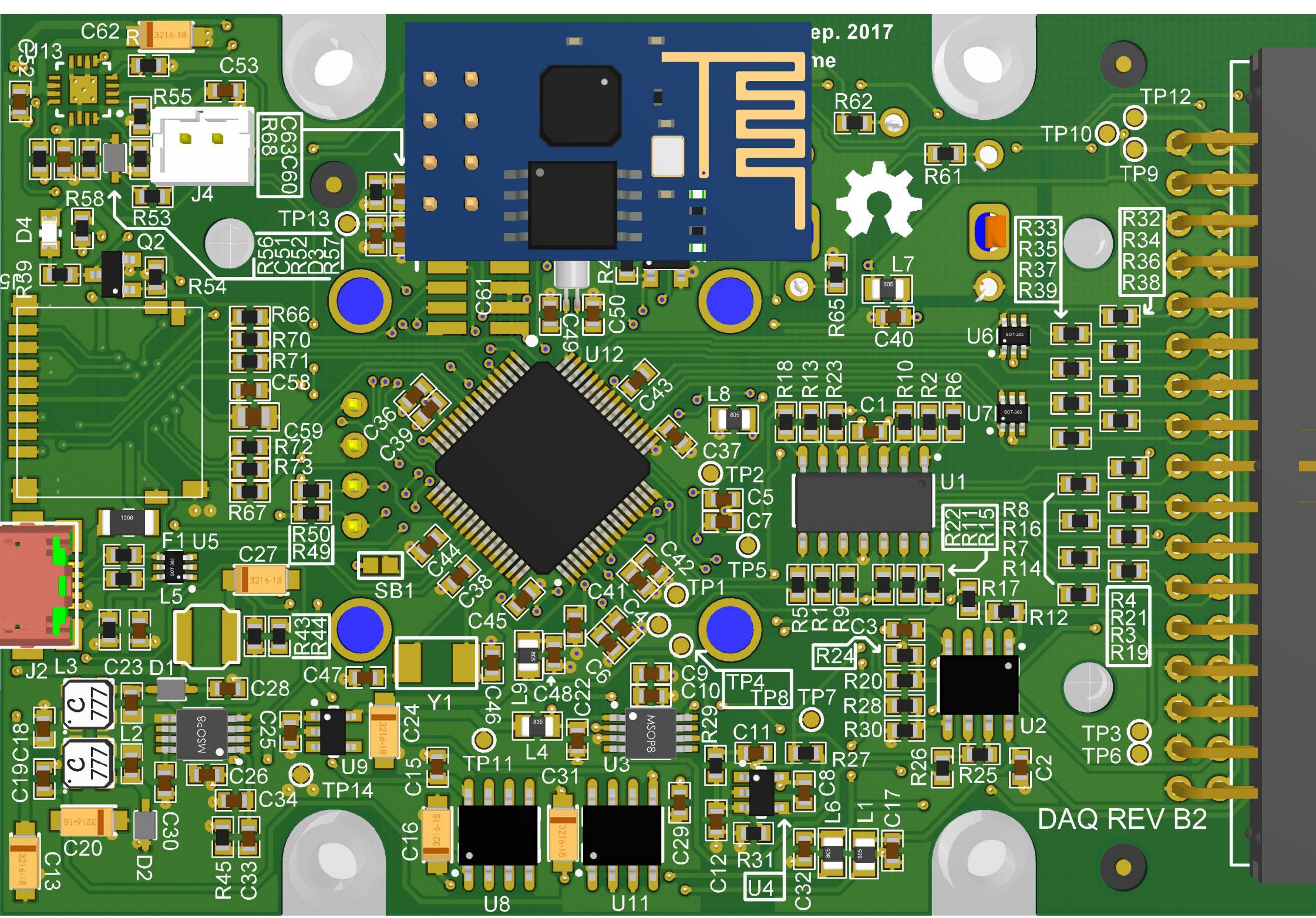


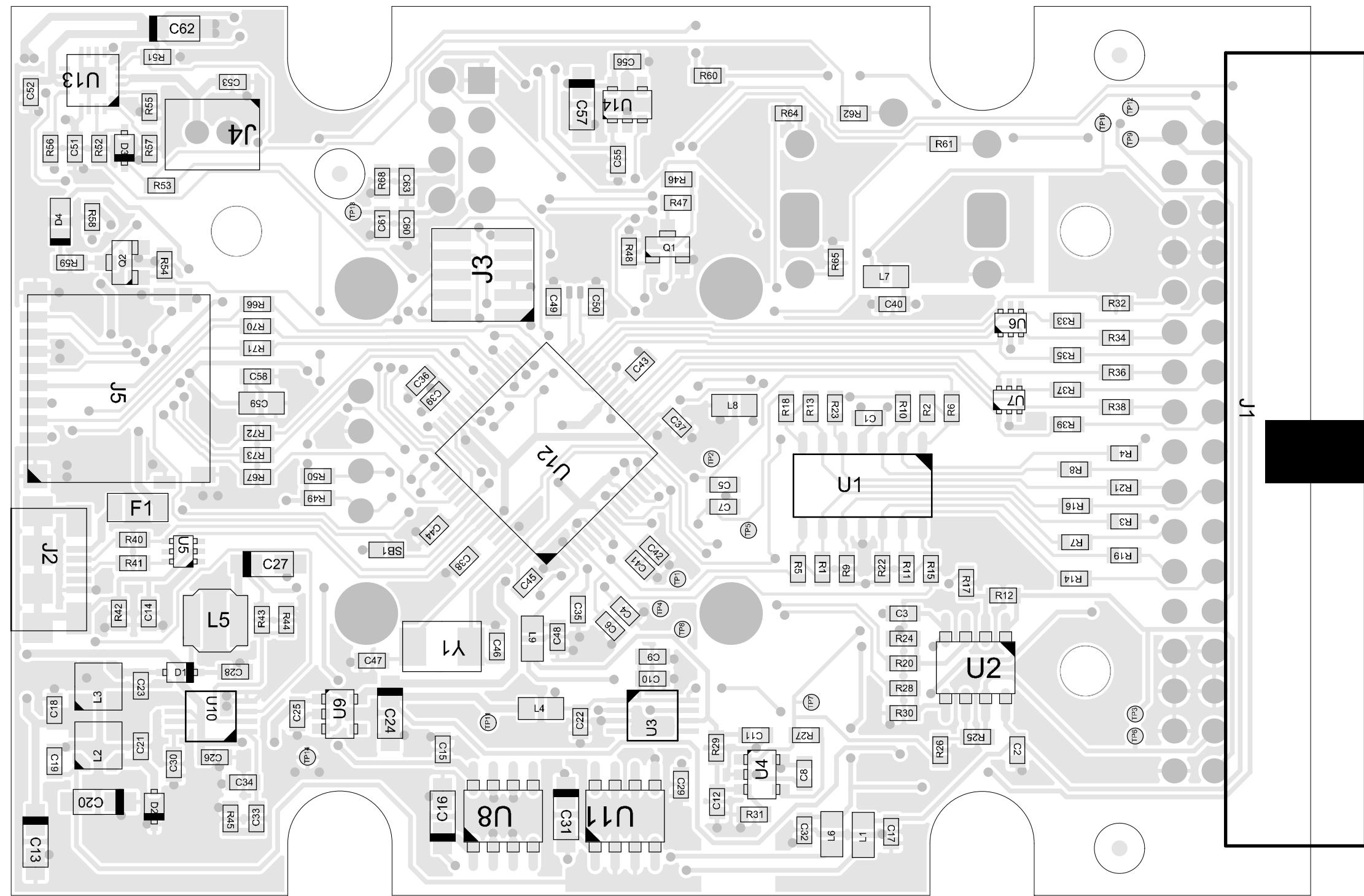












**U
5**

Bill of materials

Project	<u>DAQ_REV_B2.PrjPcb</u>	Created	<u>21.10.2016</u>
Part Number	<Parameter PartNb not found>		
Variant	<Parameter ProjectVariant not found>		

Description	Designator	Comment	Quantity	Supplier 1	Supplier Part Number 1	Manufacturer	Manufacturer Number
ceramic X7R SMD capacitor smd 0603 100nF 16V	C1, C2, C3, C8, C10, C11, C12, C17, C32, C35, C37, C38, C39, C42, C43, C44, C45, C58, C60	100n	19	Farnell	1828890	Murata	GRM188R71C104KA01D
ceramic X7R SMD capacitor smd 0603 1nF 100V	C4, C5, C6, C7	1n	4	Farnell	1414606	Kemet	C0603C102K1RACTU
ceramic X5R SMD capacitor smd 0603 1µF 50V	C9, C15, C18, C19, C21, C22, C23, C25, C26, C28, C29, C36, C40, C41, C48, C51, C52, C53, C55, C56, C61, C63	1µ	22	Farnell	1845736	Murata	GRM188R61H105KAALD
tantalum SMD capacitor 4.7µF 16V A case	C13, C16, C20, C24, C27, C31, C57, C62	4.7µ	8	Farnell	2462769	Kemet	T491A475M016AT
ceramic X7R SMD capacitor smd 0603 47nF 16V	C14, C30	47n	2	Farnell	1759011	Multicomp	MC0603B473K160CT
ceramic X7R SMD capacitor smd 0603 15nF 100V	C33	15n	1	Farnell	1865546	Kemet	C0603C153K1RACTU
ceramic COG SMD capacitor smd 0603 10pF 100V	C34, C49, C50	10p	3	Farnell	1414600	Kemet	C0603C100J1GACTU
ceramic COG SMD capacitor smd 0603 18pF 100V	C46, C47	18p	2	Farnell	1813428	Kemet	C0603C180J1GACTU
ceramic Y5V SMD capacitor smd 0805 10µF 6.3V	C59	10µ	1	Farnell	1759136	Multicomp	MC0805F106Z6R3CT
Shotkey diode 2A 20V	D1, D2, D3	PMEG2020	3	Farnell	8737940	Infineon	PMEG2020AEA
Green led SMD 0805	D4	KPT-2012SGC	1	Farnell	2099239	Kingbright	KPT-2012SGC
Rotary encoder with push button	E1	EC12D	1	Farnell	2065075	Alps	EC12D1564402
Polyfuse 250 mA holding current, 500 mA trip current	F1	250mA	1	Farnell	1596990	Littelfuse	1206L025YR 2920L030DR
Harting IDC connector 2x17	J1		1	Farnell	1106736	Harting	09 18 534 7323
CONNECTOR, MICRO USB B, SMD, 5WAY	J2		1	Farnell	2293755	FCI	10104111-0001LF
Header strait 1.27mm 5way X 2	J3		1	Farnell	1022310	Harwin	M50-3600542
JST PH connector 2 poles vertical	J4	B2B-PH-K-S(LF)(SN)	1	Farnell	9491856	JST	B2B-PH-K-S(LF)(SN)
Micro SD card connector	J5	SD card	1	Farnell	2293708	Amphenol	114-00841-68
Ferrite bead, 0.15Ω, 200mA, 0805, 120E @ 100MHz	L1, L4, L6, L7, L8, L9	120Ω @ 100MHz	6	Farnell	1515617	Murata	BLM21AG121SN1D
Coupled Inductors	L2, L3	LPD3015-153	2	Farnell	2407927	Coilcraft	LPD3015-153MRB
SMD inductor 10µH, 0.8A	L5	10µ	1	Farnell	2292514	Laird Technologies	TYS4012100M-10
30V 0.4A N-mosfet	Q1, Q2	NX3008NBK	2	Farnell	2069541	NXP	NX3008NBK

resistor smd 0603 120kΩ 0.1% 0.1w	R1, R2, R9, R10, R11, R13, R22, R23, R29, R31	120k	10	Farnell	1577634	Panasonic	ERA3AEB124V
resistor smd 0603 1MΩ 0.1% 0.1w	R3, R4, R7, R8, R14, R16, R19, R21	1M	8	Farnell	2331023	TE Connectivity	CPF0603B1M0E1
resistor smd 0603 470Ω 5% 0.1w	R5, R6, R15, R18	470Ω	4	Farnell	2073513	Multicomp	MCMR06X471 JTL
resistor smd 0603 24kΩ 0.1% 0.1w	R12, R24, R25, R30	24k	4	Farnell	1506034	Welwyn	PCF0603P-R-24K-BT1
resistor smd 0603 2kΩ 0.1% 0.1w	R17, R20, R26, R28	2k	4	Farnell	1653263	Susumu	RR0816P-202-B-T5
resistor smd 0603 100Ω 5% 0.1w	R27, R32, R33, R34, R35, R36, R37, R38, R39, R60, R61, R62, R64, R65, R66, R67, R70, R71, R72, R73	100Ω	20	Farnell	2073352	Multicomp	MCMR06X101 JTL
resistor smd 0603 27Ω 5% 0.1w	R40, R41	27Ω	2	Farnell	2059559	Panasonic	ERJ3GEYJ270V
resistor smd 0603 1MΩ 5% 0.1w	R42, R48	1MΩ	2	Farnell	2073358	Multicomp	MCMR06X105 JTL
resistor smd 0603 113kΩ 1% 0.1w	R43	113kΩ	1	Farnell	2138502	Vishay	CRCW0603113KFKEA
resistor smd 0603 10kΩ 1% 0.1w	R44, R46, R47, R51, R52, R53, R54, R55, R68	10kΩ	9	Farnell	1469748	Vishay	CRCW060310KOFKEA
resistor smd 0603 27.4kΩ 1% 0.1w	R45	27.4kΩ	1	Farnell	1652865	Vishay	CRCW060327K4FKEA
resistor smd 0603 3.3kΩ 5% 0.1w	R49, R50, R56, R57	3.3kΩ	4	Farnell	9233440	Yageo	RC0603JR-073K3L
resistor smd 0603 0Ω 5% 0.1w	R58	0Ω	1	Farnell	2059527	Panasonic	ERJ3GEY0R00V
resistor smd 0603 75Ω 5% 0.1w	R59	75Ω	1	Farnell	2073569	Multicomp	MCMR06X750 JTL
1MHz, 45µA, CMOS, Rail-to-Rail OPERATIONAL AMPLIFIERS Value Line Series	U1	OPA4348	1	Farnell	2323277	Texas Instruments	OPA4348AID
Low Noise, Low Input Bias Current, Rail-to-Rail Output, JFET Dual Operational Amplifier	U2	ADA4001-2	1	Farnell	2081044	Analog devices	ADA4001-2ARZ
Micropower, High Accuracy Voltage References	U3	ADR3525WA	1	Farnell	2077701	Analog devices	ADR3525WARMZ-R7
FAMILY OF 600µA/Ch 2.8MHz RAIL-TO-RAIL INPUT/OUTPUT HIGH-DRIVE OPERATIONAL AMPLIFIERS WITH SHUTDOWN	U4	TLV2471	1	Farnell	1102964	Texas Instruments	TLV2471IDBVT
ESD protection for high-speed interfaces	U5, U6, U7	PUSB2X4Y	3	Farnell	2400968	Multicomp	PUSB2X4Y
100 mA Positive Voltage Regulator	U8	MC78L12ACDG	1	Farnell	9666273	ON Semiconductors	MC78L12ACDG
1-µA IO Voltage Regulators with Enable	U9	TPS70933	1	Farnell	2382995	Texas Instruments	TPS70933DBVT
650 kHz / 1.3 MHz Step-Up PWM DC-to-DC Switching Converters REGULATORSSynchronous Step-Down DC-DC Converter	U10	ADP1613	1	Farnell	2102527	Analog devices	ADP1613ARMZ-R7
100 mA Negative Voltage Regulator	U11	MC79L12ACDG	1	Farnell	1652361	ON Semiconductors	MC79L12ACDG
Cortex M3 ARM microcontroller	U12	ATSAM3S4B	1	Farnell	1841656	Atmel	ATSAM3S4BA-AU
1.5-A USB-Friendly Li-Ion Battery Charger and Power-Path Management IC	U13	BO24075	1	Farnell	1754755	Texas Instruments	BO24075RGTT
Cap-Free, NMOS, 400-mA Low-Dropout Regulator with Reverse Current Protection	U14	TPS73633	1	Farnell	1207346	Texas instruments	TPS73633DBV
Oled display module	U15	SSD1306	1				
WIFI module	U16	ESP-01	1				
Crystal 16Mhz	Y1	16MHz	1	Farnell	1841946	TCX	7A-16.000MAAJ-T
Crystal 32.768khz	Y2	32.758khz	1	Farnell	1652573	RALTRON	R26-32.768-12.5