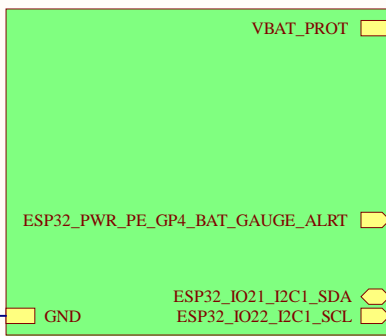


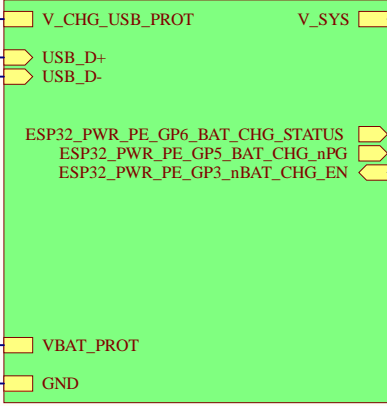
U_MIXR Power - Connectors
MIXR Power - Connectors.SchDoc



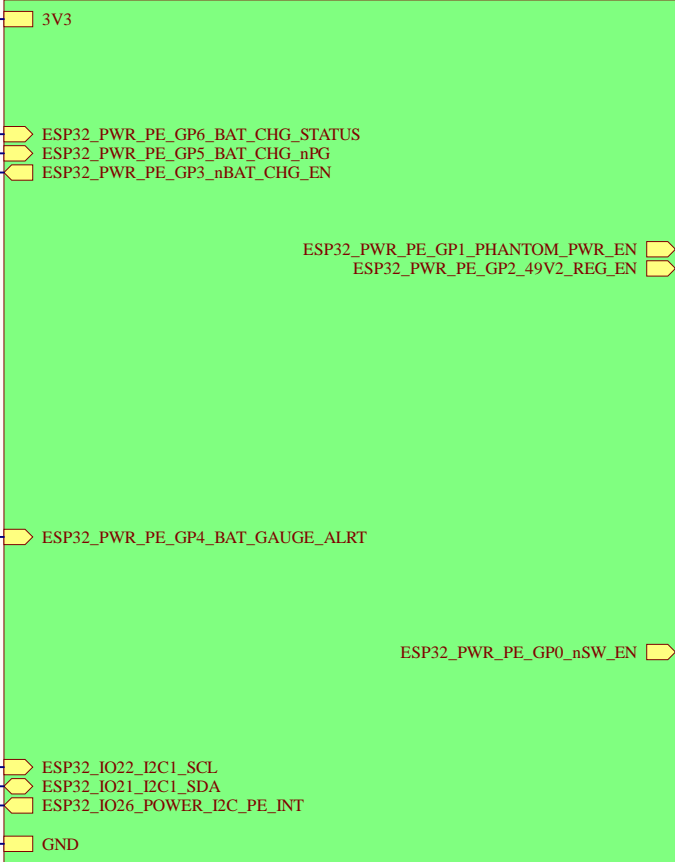
U_MIXR Power - Battery Management
MIXR Power - Battery Management.SchDoc



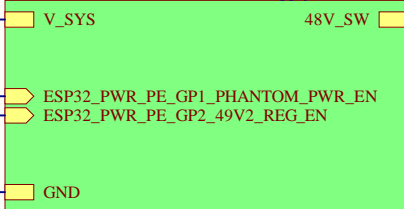
U_MIXR Power - Battery Charging
MIXR Power - Battery Charging.SchDoc



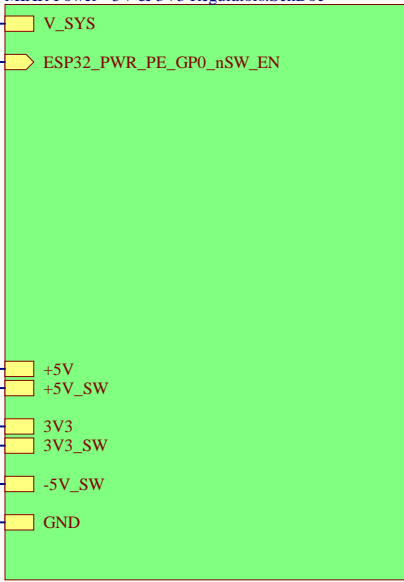
U_MIXR Power - Port Expander
MIXR Power - Port Expander.SchDoc



U_MIXR Power - 48V Phantom Power Supply
MIXR Power - 48V Phantom Power Supply.SchDoc



U_MIXR Power - 5V & 3V3 Regulators
MIXR Power - 5V & 3V3 Regulators.SchDoc

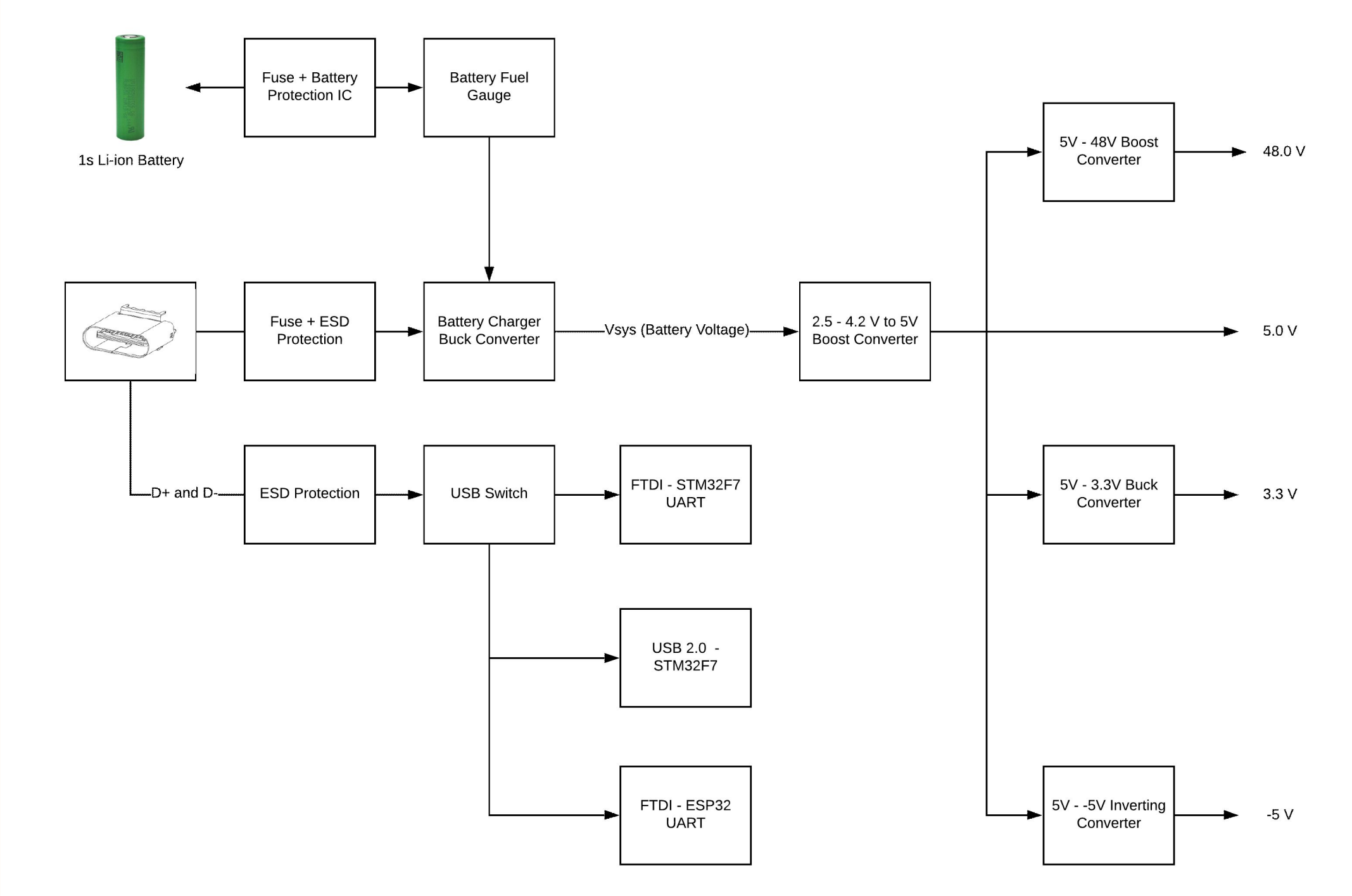


Designator
MIXR Power - Block Diagram.SchDoc



PROJECT	MIXR Power.PrjPcb		
DOCUMENT	Title		
PART NUMBER	MIXR-001-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-08	SHEET	1 OF 8

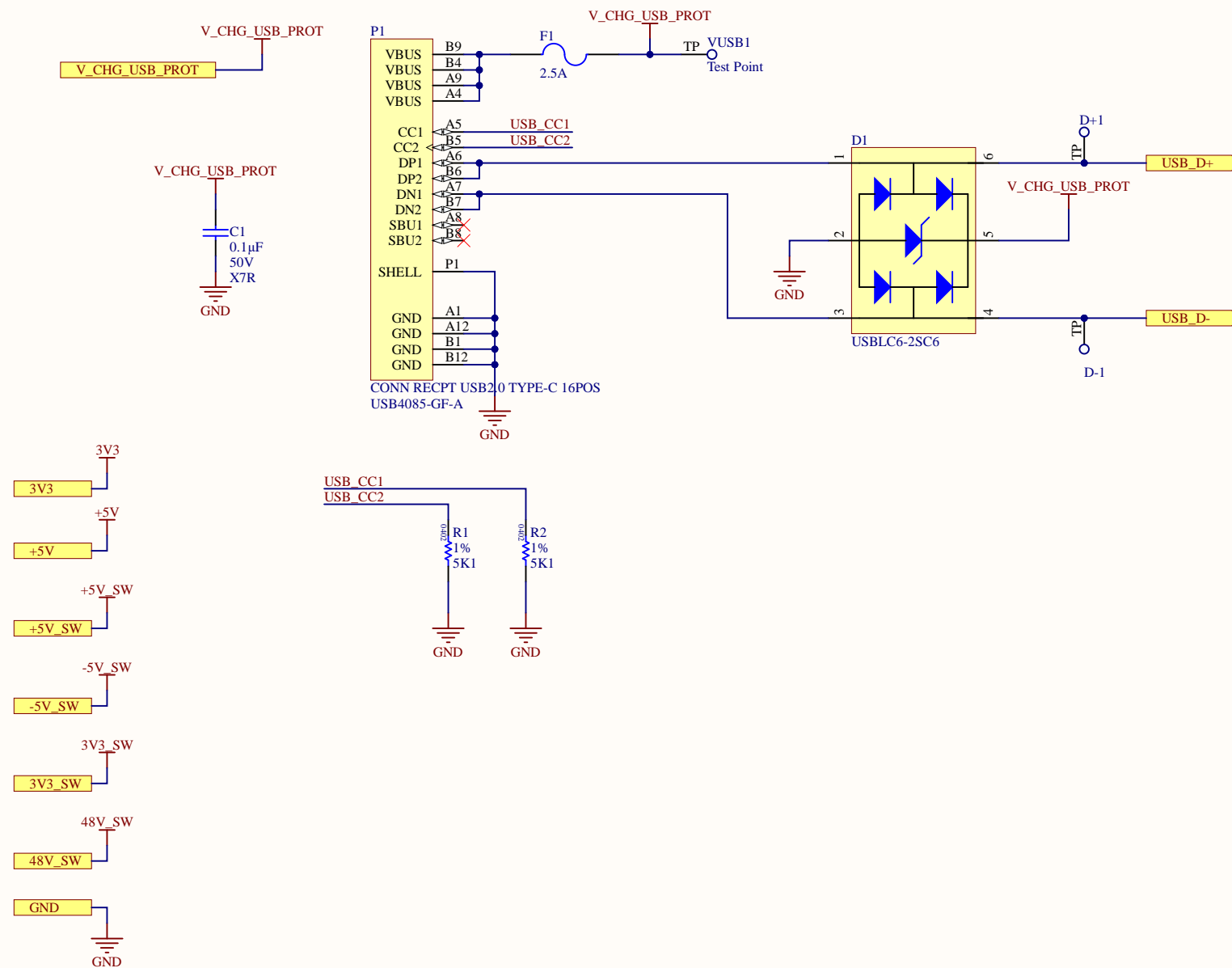




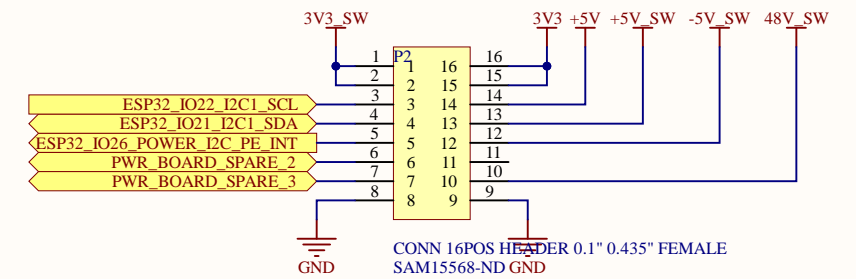
PROJECT		MIXR Power.PrjPcb	
DOCUMENT		MIXR Power - Block Diagram	
PART NUMBER	MIXR-001-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-08	SHEET	2 OF 8

MIXR

Charging USB-C Connector



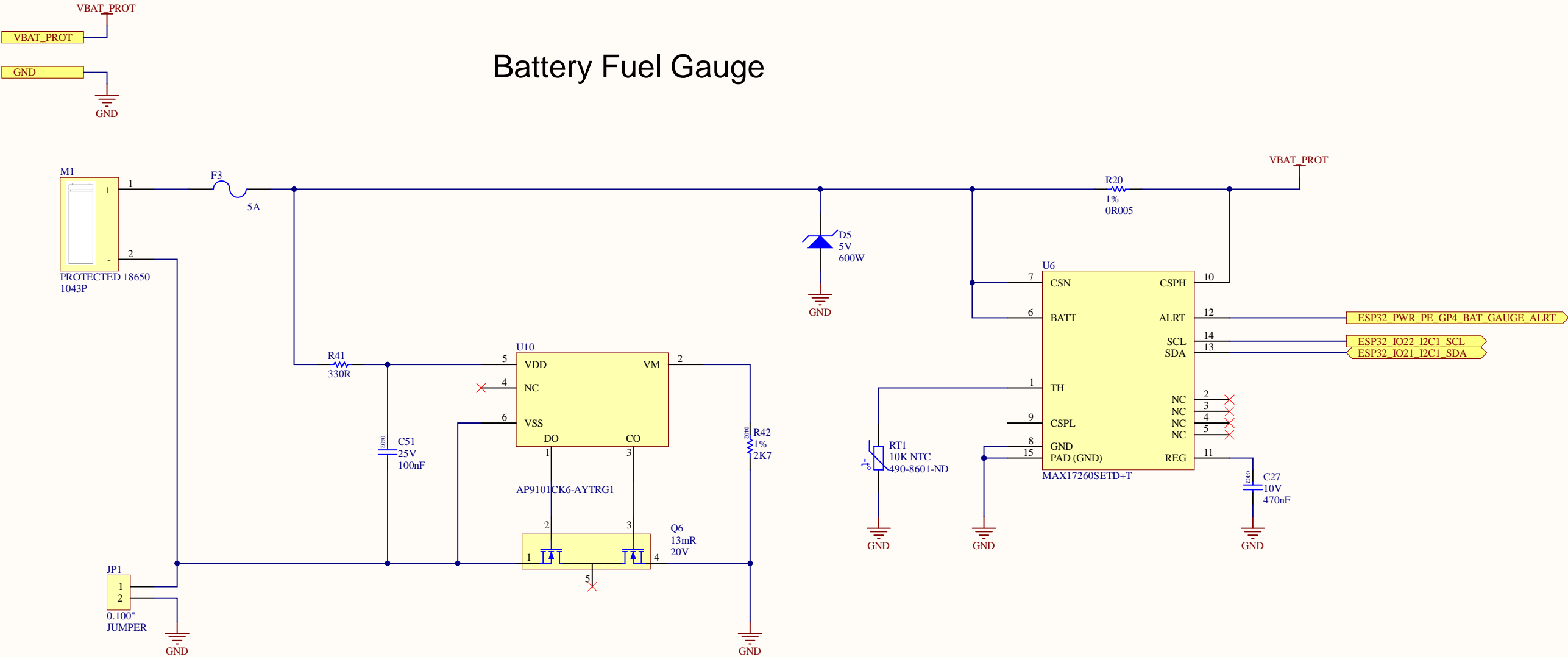
Connection to Processing Board



PROJECT	MIXR Power.PrjPcb		
DOCUMENT	MIXR Power - Connectors		
PART NUMBER	MIXR-001-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-08	SHEET	3 OF 8

MIXR

Battery Fuel Gauge



PROJECT	MIXR Power.PrjPcb		
DOCUMENT	MIXR Power - Battery Management		
PART NUMBER	MIXR-001-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-08	SHEET	4 OF 8



A

B

C

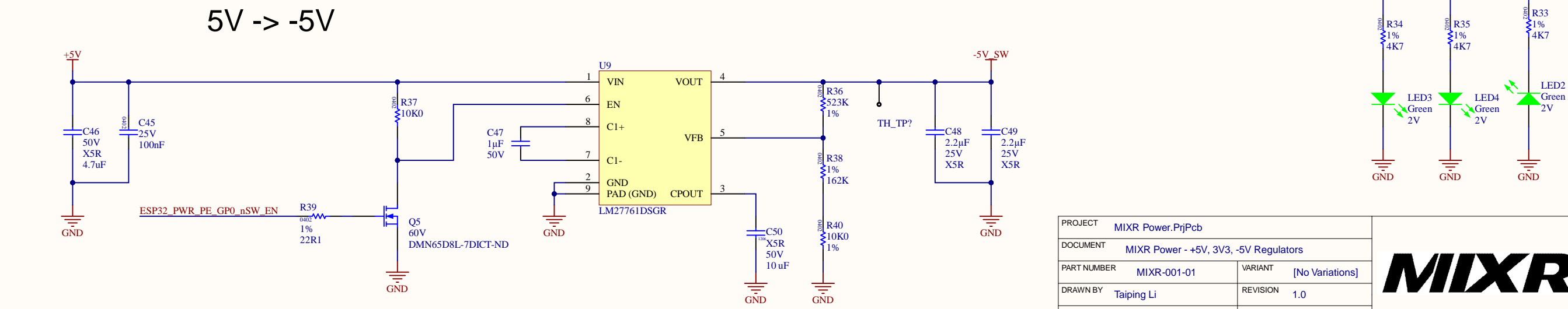
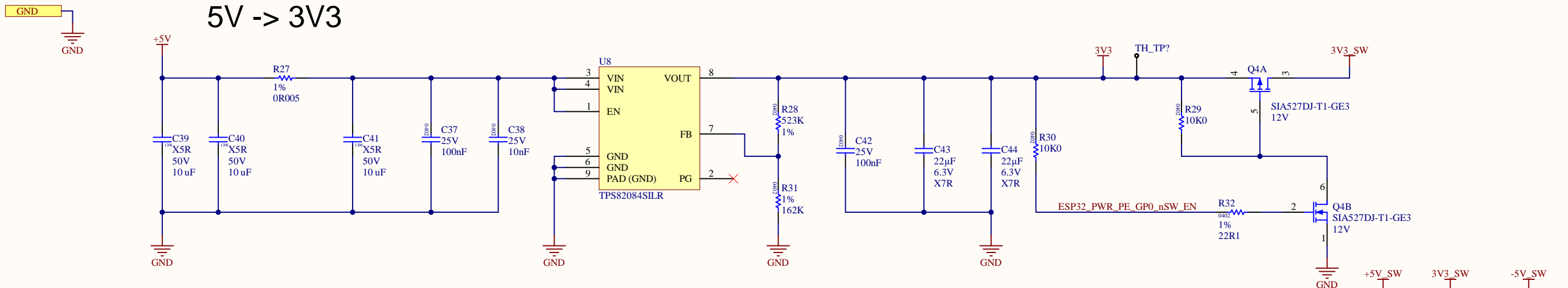
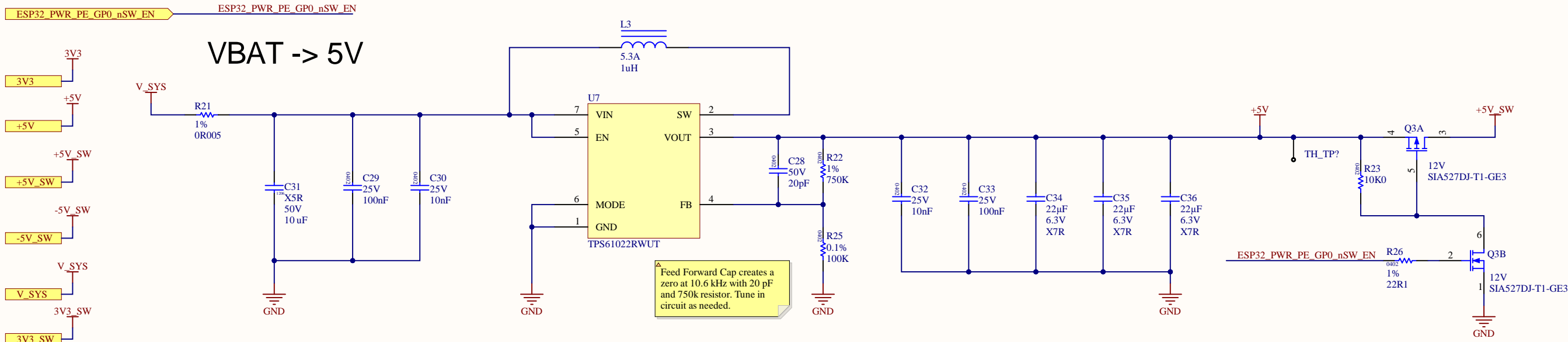
D

A

B

C

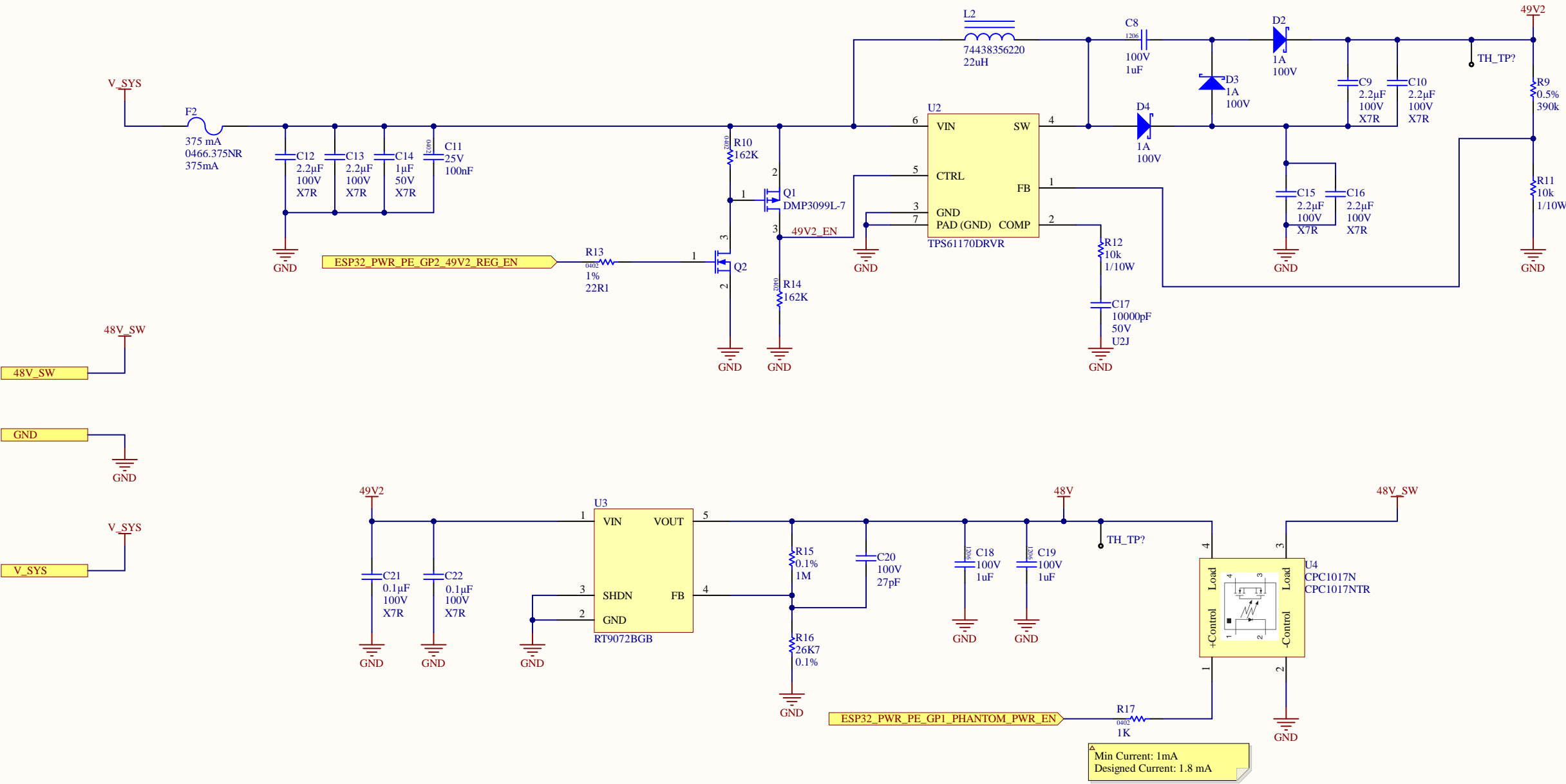
D



PROJECT	MIXR Power.PrjPcb		
DOCUMENT	MIXR Power - +5V, 3V3, -5V Regulators		
PART NUMBER	MIXR-001-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-08	SHEET	6 OF 8



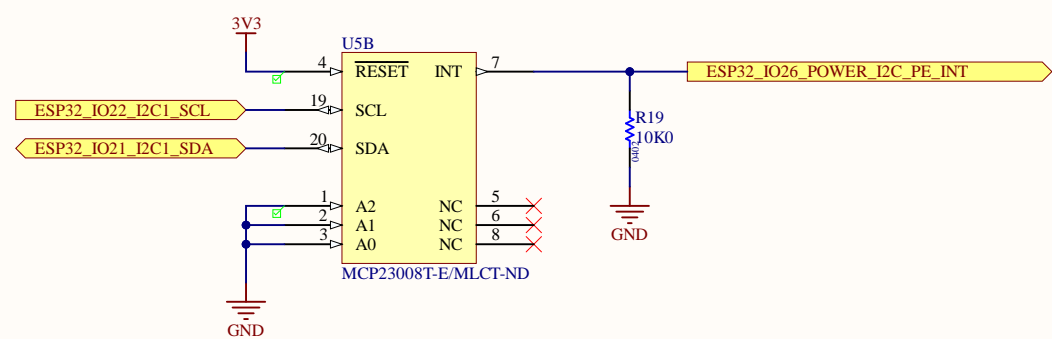
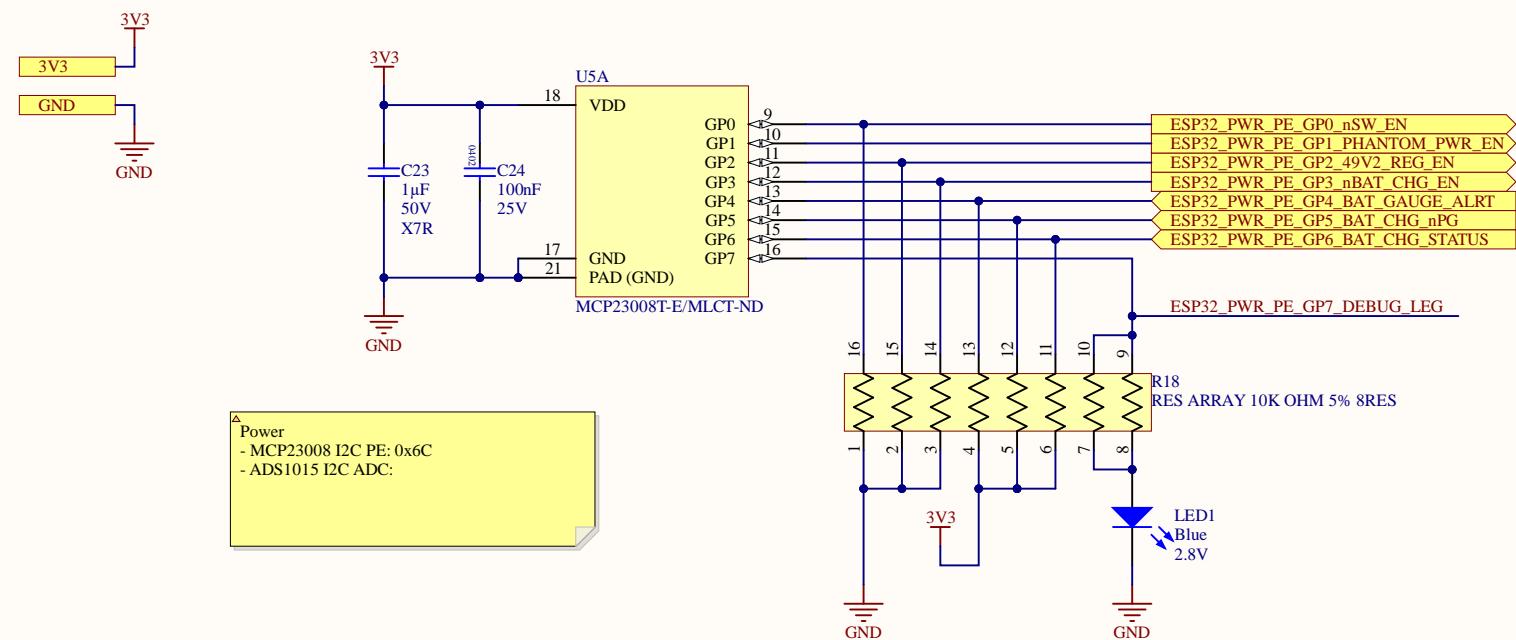
48V Phantom Power Regulator



PROJECT	MIXR Power.PrjPcb		
DOCUMENT	MIXR Power - 48V Phantom Power		
PART NUMBER	MIXR-001-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-08	SHEET	7 OF 8

MIXR

I2C Port Expander



PROJECT	MIXR Power.PrjPcb	
DOCUMENT	MIXR Power - I2C Port Expander	
PART NUMBER	MIXR-001-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-08	SHEET 8 OF 8



Bill of Materials	
Project:	MIXR Power.PrjPcb
Revision:	1.0
Project Lead:	Taiping Li
Generated On:	2020-02-08 7:17 PM
Production Quantity:	1
Currency	CAD
Total Parts Count:	132

MIXR

LibRef	Designator	Manufacturer 1	Manufacturer Part Number 1	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Quantity	Supplier Subtotal 1
CAP CER 0.1UF 50V 10% X7R 0603	C1	Kyocera AVX	06035C104KT2A	Digi-Key	478-5052-1-ND	0.13307	1	\$ 0.13
CAP CER 1UF 50V 10% X7R 0603	C2, C14, C23, C47	Taiyo Yuden	UMK107AB7105KA-T	Digi-Key	587-3247-1-ND	0.33267	1	\$ 0.33
CAP CER 0.047UF 10% 25V X7R 0603	C3	KEMET	C0603C473K3RACTU	Digi-Key	399-7931-1-ND	0.14638	1	\$ 0.15
CAP CER 10uF 50V 20% X5R 1206	C4, C6, C7, C31, C39, C40, C41, C50	Murata	GRT31CR61H106ME01L	Digi-Key	490-12457-1-ND	0.66534	8	\$ 5.32
CAP CER 4.7UF 50V 10% X5R 0805	C5, C46	Murata	GRT21BR61H475ME13L	Digi-Key	490-12395-1-ND	0.5855	2	\$ 1.17
CAP CER 1UF 100V X7R 1206	C8, C18, C19	Samsung	CL31B105KCHNNNE	Digi-Key	1276-1838-1-ND	0.42582	3	\$ 1.28
CAP CER 2.2UF 100V ±20% X7R 1206	C9, C10, C12, C13, C15, C16	Murata	GRM31CR72A225MA73L	Digi-Key	490-12773-1-ND		6	
CAP CER 0.1UF 16V X7R 0402	C11, C24, C29, C33, C37, C42, C45, C51	Murata	GRM155R71E104KE14D	Digi-Key	490-10698-1-ND	0.13307	8	\$ 1.06
CAP CER 10nF 50V 5% X7R 0603	C17	KEMET	C0603C103J5JACTU	Digi-Key	399-13384-1-ND	0.43913	1	\$ 0.44
CAP CER 27PF 100V 5% C0G/NP0 0603	C20	Yageo	CC0603JRNPO00BN270	Digi-Key	311-1757-1-ND	0.13307	1	\$ 0.13
CAP CER 0.1UF 100V 10% X7R 0805	C21, C22	Murata	GCM21BR72A104KA37L	Digi-Key	490-4789-1-ND	0.42582	2	\$ 0.85
CAP CER 0.47UF 10V X7R 0402	C27	Taiyo Yuden	LMK105B7474K-V-F	Digi-Key	587-5912-1-ND	0.33267	1	\$ 0.33
CAP CER 20PF 50V C0G/NP0 0402	C28	Samsung	CL05C200JB5NNNC	Digi-Key	1276-1661-1-ND	0.13307	1	\$ 0.13
CAP CER 10nF 25V X7R 0402	C30, C32, C38	Murata	GCM155R71E103KA37D	Digi-Key	490-6043-1-ND	0.13307	3	\$ 0.40
CAP CER 22UF 6.3V ±10% X7R 1206	C34, C35, C36, C43, C44	Murata	GRM31CR70J226KE19L	Digi-Key	490-6515-1-ND	1.57	5	\$ 7.85
CAP CER 2.2UF 25V 10% X5R 0603	C38, C49	Murata	GRM188R61E225KA12D	Digi-Key	490-10731-1-ND	0.25283	2	\$ 0.51
DIODE TVS 5.25V 17V SOT23-6	D1	STMicroelectronics	USBLC6-2SC6	Digi-Key	497-5235-1-ND	0.62542	1	\$ 0.63
DIODE SCHOTTKY 100V 1A SOD123FL	D2, D3, D4	MCC	SL110PL-TP	Digi-Key	SL110PL-TPM5CT-ND	0.55889	3	\$ 1.68
DIODE TVS 5VWM 9.1VC DO-214AA (SMB)	D5	Vishay Semiconductors	SMBJ5.0D-M3/H	Digi-Key	SMBJ5.0D-M3/HG1CT-ND	0.46574	1	\$ 0.47
FUSE 2.5A 32VDC 1206	F1	Littelfuse	046602.5NRHF	Digi-Key	F6143CT-ND	1.12	1	\$ 1.12
FUSE 375MA 125VDC 1206	F2	Littelfuse	0466.375NR	Digi-Key	F1453CT-ND	1.12	1	\$ 1.12
FUSE 5A 32VDC 1206	F3	Bel TRP	C1F5	Digi-Key	507-1886-1-ND	0.3859	1	\$ 0.39
CONN 2POS JUMPER 0.1"	JP1	Omron	XG8T-0231	Digi-Key	XG8T-0231-ND	0.27944	1	\$ 0.28
IND 1UH 5.3A 20 MOHM SMD	L1, L3	Würth Electronics	74437334010	Digi-Key	732-6149-1-ND	3.18	2	\$ 6.36
IND 22UH 1.7A 280 MOHM SMD	L2	Würth Electronics	74438356220	Digi-Key	732-11664-1-ND	2.65	1	\$ 2.65
LED BLUE CLEAR 2.8V 0603	LED1	Vishay Lite-On	LTST-C193TBKT-5A	Digi-Key	160-1827-1-ND	0.59881	1	\$ 0.60
LED GREEN CLEAR 2V 0603	LED2, LED3, LED4	Würth Electronics	150060VS75000	Digi-Key	732-4980-1-ND	0.1863	3	\$ 0.56
BATTERY HOLDER 18650	M1	Keystone Electronics	1043P	Digi-Key	36-1043P-ND	3.43	1	\$ 3.43
CONN RECPT USB2.0 TYPE-C 16POS	P1	Global Connector Technology	USB4085-GF-A	Digi-Key	073-USB4085-GF-ACT-ND		1	
CONN 16POS HEADER 0.1" 0.435" FEMALE	P2	Samtec	ESQ-108-12-T-D	Digi-Key	SAM15568-ND	2.45	1	\$ 2.45
MOSFET P-CH 30V 3.8A SOT-23	Q1	Diodes	DMP3099L-7	Digi-Key	DMP3099L-7DICT-ND	0.45243	1	\$ 0.45
MOSFET N-CH 30V 6.2A 0.9W SOT-23	Q2	Diodes	DMN3023L-7	Digi-Key	DMN3023L-7DICT-ND	0.49236	1	\$ 0.49
MOSFET N/P-CH 12V 4.5A SC-70-6	Q3, Q4	Vishay Semiconductors	SIA527DJ-T1-GE3	Digi-Key	SIA527DJ-T1-GE3CT-ND	0.71857	2	\$ 1.44
MOSFET N-CH 60V 310MA SOT23	Q5	Diodes	DMN65D8L-7	Digi-Key	DMN65D8L-7DICT-ND	0.22622	1	\$ 0.23
MOSFET 2N-CH 20V 9A 6-UDFN	Q6	Diodes	DMN2014LHAB-7	Digi-Key	DMN2014LHAB-7DICT-ND	0.67865	1	\$ 0.68
RES 5.1K OHM 1% 1/16W 0402	R1, R2	Stackpole Electronics	RMCF0402FT5K10	Digi-Key	RMCF0402FT5K10CT-ND	0.13307	2	\$ 0.27
RES 10K OHM 1% 1/16W 0402	R3, R19, R23, R29, R30, R37, R40	Yageo	RC0402FR-0710KL	Digi-Key	311-10.0KLRCCT-ND	0.13307	7	\$ 0.93
RES 10K OHM 1% 1/10W 0603	R4, R5, R11, R12	Yageo Phycomp	RC0603FR-0710KL	Digi-Key	311-10.0KHRCCT-ND	0.13307	4	\$ 0.53
RES 220 OHM 1% 1/10W 0603	R6	Yageo Phycomp	RC0603FR-07220RL	Digi-Key	311-220HRCCT-ND	0.13307	1	\$ 0.13
RES 330 OHM 1% 1/10W 0603	R7, R41	TE Connectivity	CRCCQ0603F330R	Digi-Key	A129682CT-ND	0.13307	2	\$ 0.27
RES 40.2 OHM 0.5% 1/10W 0603	R8	Yageo	RT0603DRE0740R2L	Digi-Key	311-2576-1-ND	0.15968	1	\$ 0.16
RES 390K OHM 1% 1/10W 0603	R9	Yageo	RT0603DRE07390KL	Digi-Key	311-2555-1-ND	0.17299	1	\$ 0.17
RES 162K OHM 1% 1/16W 0402	R10, R14, R31, R38	Yageo	RC0402FR-07162KL	Digi-Key	YAG2370CT-ND	0.13307	4	\$ 0.53
RES 22.1 OHM 1% 1/16W 0402	R13, R26, R32, R39	Yageo	RC0402FR-0722R1L	Digi-Key	311-22.1LRCT-ND	0.13307	4	\$ 0.53
RES 1M OHM 0.1% 1/10W 0603	R15	Yageo	RT0603BRD071ML	Digi-Key	YAG4498CT-ND	0.43913	1	\$ 0.44
RES 26.7K OHM 0.1% 1/10W 0603	R16	Panasonic	ERJ-PB3B2672V	Digi-Key	P20132CT-ND	0.33267	1	\$ 0.33
RES 1K OHM 0.1% 1/16W 0402	R17	Yageo	RT0402BRE071KL	Digi-Key	YAG2306CT-ND	0.51897	1	\$ 0.52
RES ARRAY 10K OHM 5% 8RES EXB-2HV103JV	R18	Panasonic	EXB-2HV103JV	Digi-Key	Y1103CT-ND	0.3859	1	\$ 0.39
RES 0.005 OHM 1% 1/2W 0805	R20, R21, R27	Bourns	CRF0805-FZ-R005ELF	Digi-Key	RF0805-FZ-R005ELFCT-N	0.71857	3	\$ 2.16
RES 750K OHM 1% 1/16W 0402	R22	Yageo	RC0402FR-07750KL	Digi-Key	YAG3228CT-ND	0.13307	1	\$ 0.13
RES 100K OHM 0.1% 1/16W 0402	R25	Yageo	RT0402BRD07100KL	Digi-Key	YAG1343CT-ND	0.54558	1	\$ 0.55
RES 523K OHM 1% 1/16W 0402	R28, R36	Yageo	RC0402FR-07523KL	Digi-Key	YAG3177CT-ND	0.13307	2	\$ 0.27
RES 4.7K OHM 1% 1/10W 0402	R33, R34, R35	Yageo	RC0402FR-074K7L	Digi-Key	311-4.7KLRCCT-ND	0.13307	3	\$ 0.40
RES 2.7K OHM 1% 1/16W 0402	R42	Panasonic	ERJ-2RKf2701X	Digi-Key	P2.70KLCT-ND	0.13307	1	\$ 0.13
NTC THERMISTOR 10K 1% BEAD	RT1	Murata	NXR15X4103FA1B030	Digi-Key	490-8601-ND	0.93148	1	\$ 0.93
Thru Test Point	TH_TP?, VBAT_PROT1						6	
IC BATT CHG LHON 1 CELL 24-VQFN	U1	Texas Instruments	BQ25606RGER	Digi-Key	296-47743-1-ND	3.83	1	\$ 3.83
IC REG BOOST 38V 1.2A 6-WDFN	U2	Texas Instruments	TPS61170DRV	Digi-Key	296-22945-1-ND	2.85	1	\$ 2.85
IC REG LDO 80V ADJ 20MA SOT23-5	U3	Richtek	RT9072BGB	Digi-Key	RT9072BGBCT-ND	1.78	1	\$ 1.78
RELAY SOLID STATE CPC1017N SPST 100mA	U4	kyys Clare	CPC1017NTR	Digi-Key	CLA233CT-ND	1.05	1	\$ 1.05
IC I/O EXPANDER I2C 8CH 20 QFN	U5	Microchip	MCP23008T-E/ML	Digi-Key	MCP23008T-E/MLCT-ND	1.46	1	\$ 1.46
IC BATT FUEL GAUGE LHON 14-DFN	U6	Maxim	MAX17260SETD+T	Mouser	700-MAX17260SETD+T	3.18	1	\$ 3.18
IC REG BOOST 8A VQFN	U7	Texas Instruments	TPS61022RWUT	Digi-Key	96-TPS61022RWUTCT-N	2.66	1	\$ 2.66
IC DCDC 0.8-6V 2A 8-USIP	U8	Texas Instruments	TPS82084SILR	Digi-Key	296-46279-1-ND	3.74	1	\$ 3.74
IC REG INV CHARGE PUMP ADJ 8-WSON	U9	Texas Instruments	LM27761DSGR	Digi-Key	296-44379-1-ND	2.17	1	\$ 2.17
IC BATT PROT LHON 1-CELL SOT26	U10	Diodes	AP9101CK6-AYTRG1	Digi-Key	9101CK6-AYTRG1DICT-4	0.59881	1	\$ 0.60
							Total:	\$ 79.19



P1

D+

D-

VBUS

V_SYS

C7

FL5N14

LED1

M1

RT1

P2

R35

LED4

LED3

R34

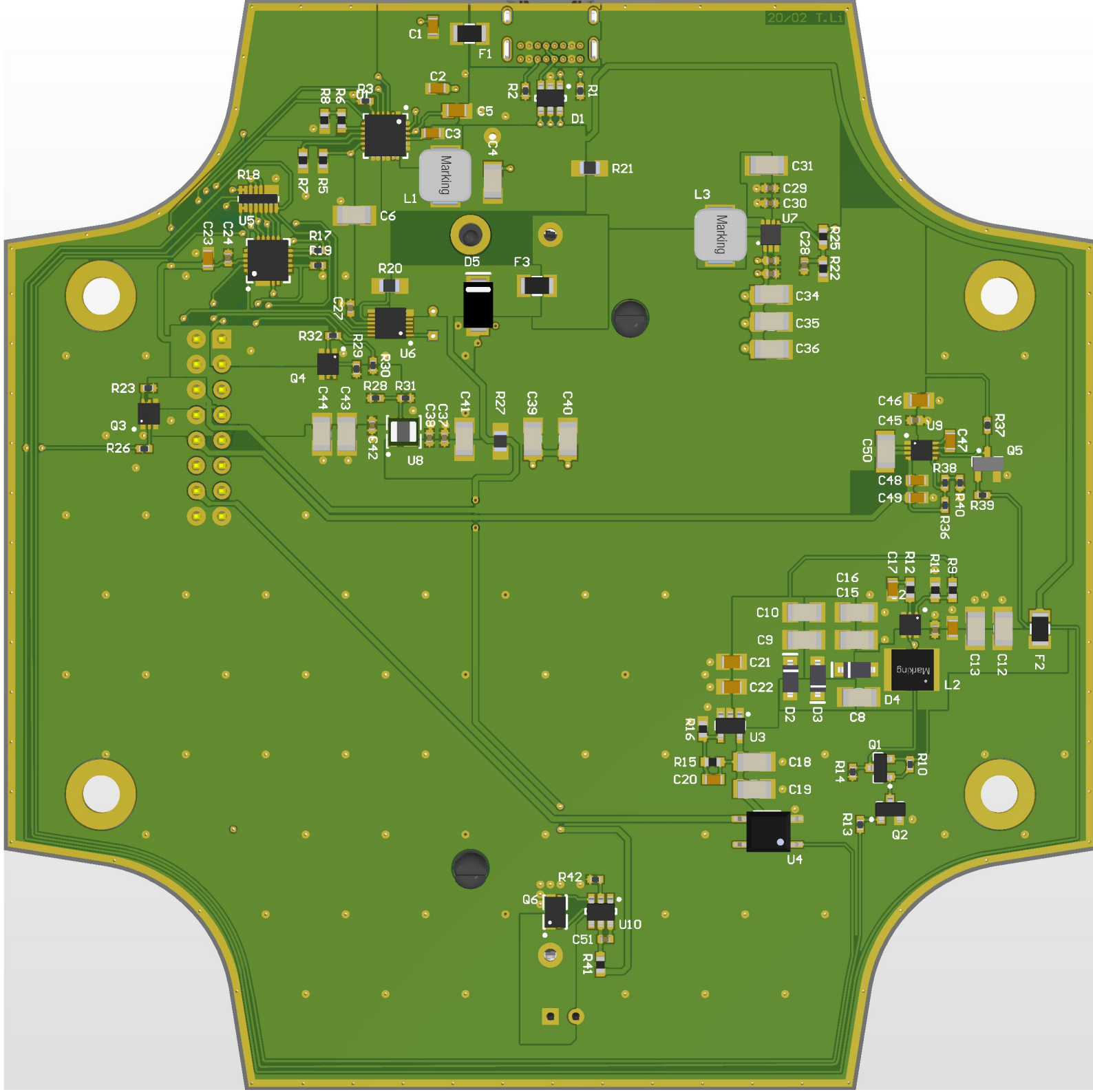
LED2

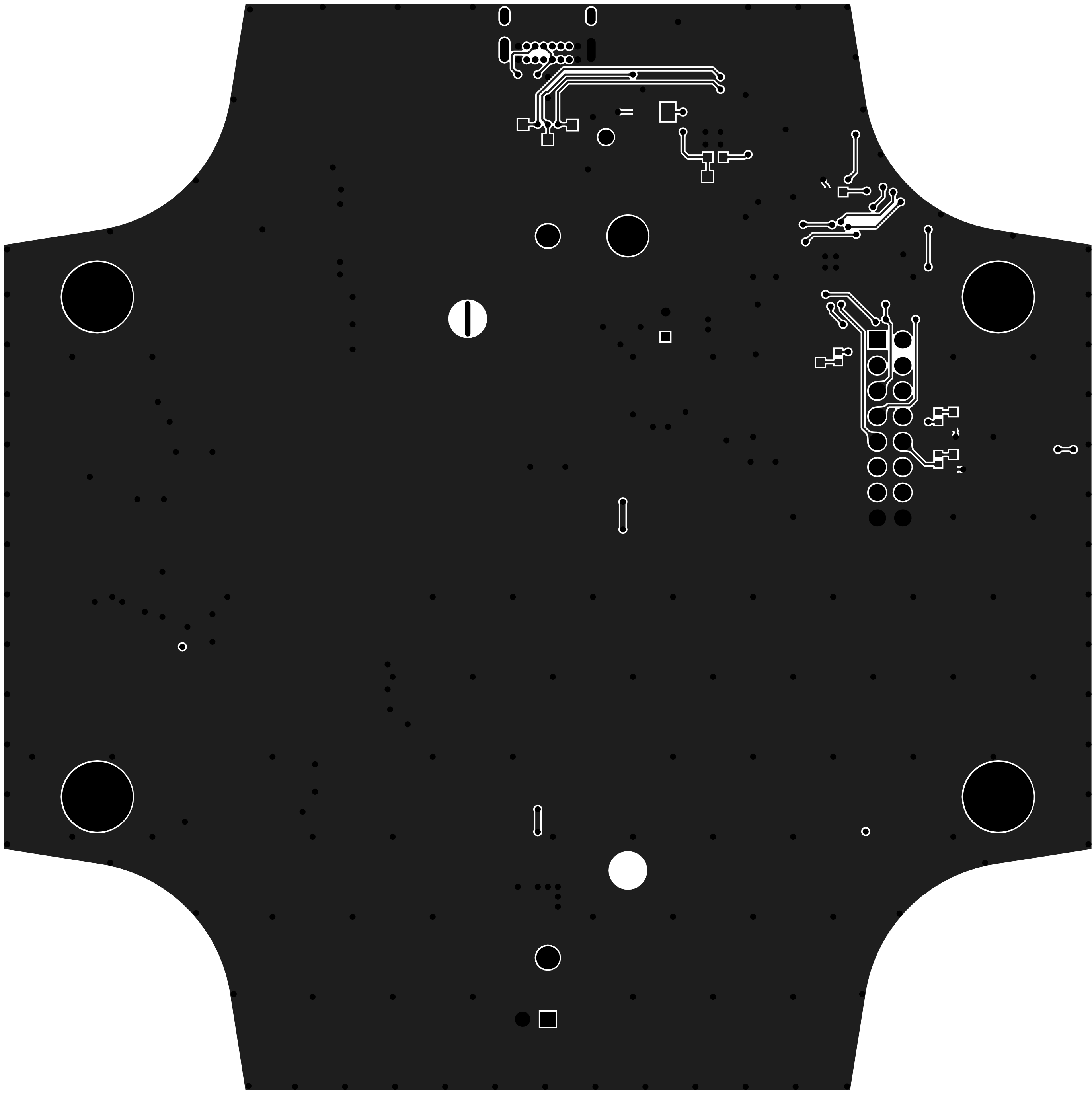
R33

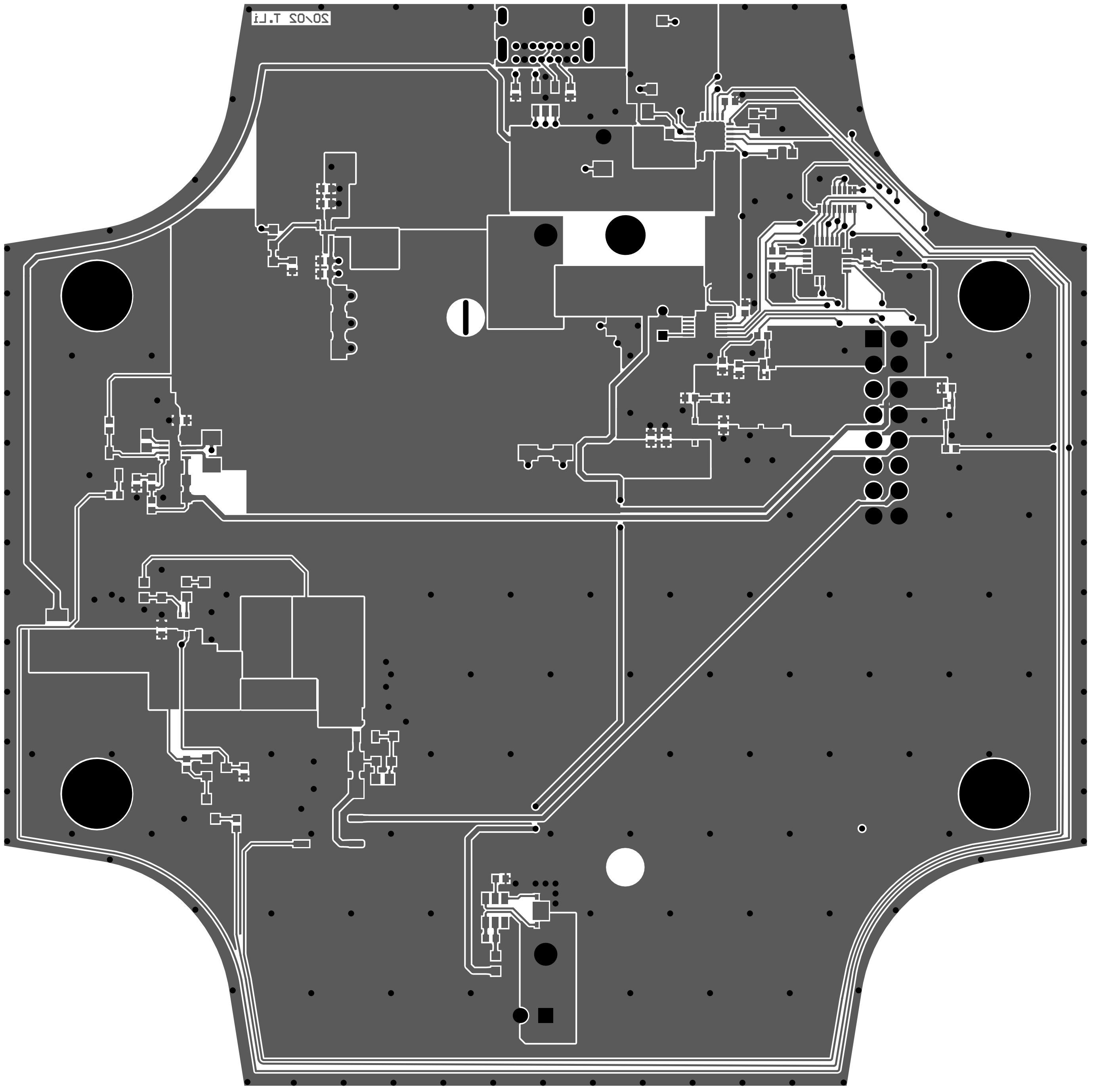
MIXR

POWER BOARD
REV 1.0

JP1







Design Rules Verification Report

Filename : C:\Users\Taiping\Documents\FYDP\mixr-hardware\MIXR Power\Layout\MIXR - Po

Warnings 0
Rule Violations 3

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=0.152mm) (All),(All)	0
Short-Circuit Constraint (Allowed=No) (All),(All)	0
Un-Routed Net Constraint ((All))	0
Modified Polygon (Allow modified: No), (Allow shelved: No)	0
Width Constraint (Min=0.154mm) (Max=2.54mm) (Preferred=0.2mm) (All)	0
Power Plane Connect Rule(Direct Connect)(Expansion=0.508mm) (Conductor Width=0.254mm) (Air Gap=0.254mm)	0
Power Plane Connect Rule(Relief Connect)(Expansion=0.5mm) (Conductor Width=0.2mm) (Air Gap=0.2mm)	0
Minimum Annular Ring (Minimum=0.12mm) (All)	0
Hole Size Constraint (Min=0.3mm) (Max=6.3mm) (All)	0
Hole To Hole Clearance (Gap=0.254mm) (All),(All)	0
Minimum Solder Mask Sliver (Gap=0.1mm) (Disabled)(All),(All)	0
Net Antennae (Tolerance=0mm) (All)	0
Board Clearance Constraint (Gap=0mm) (All)	3
Height Constraint (Min=0mm) (Max=30mm) (Preferred=12.7mm) (All)	0
Total	3

Board Clearance Constraint (Gap=0mm) (All)	
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (40.525mm,79.475mm)(40.525mm,79.825mm) on Top	
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (40.525mm,79.825mm)(49.475mm,79.825mm) on Top	
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (49.475mm,79.475mm)(49.475mm,79.825mm) on Top	