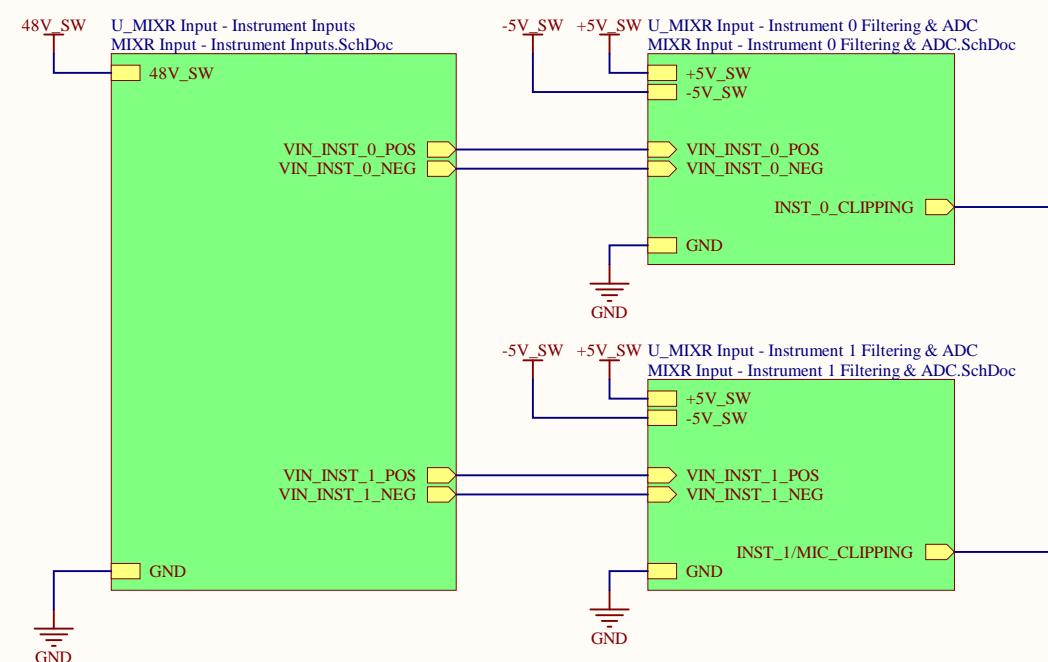
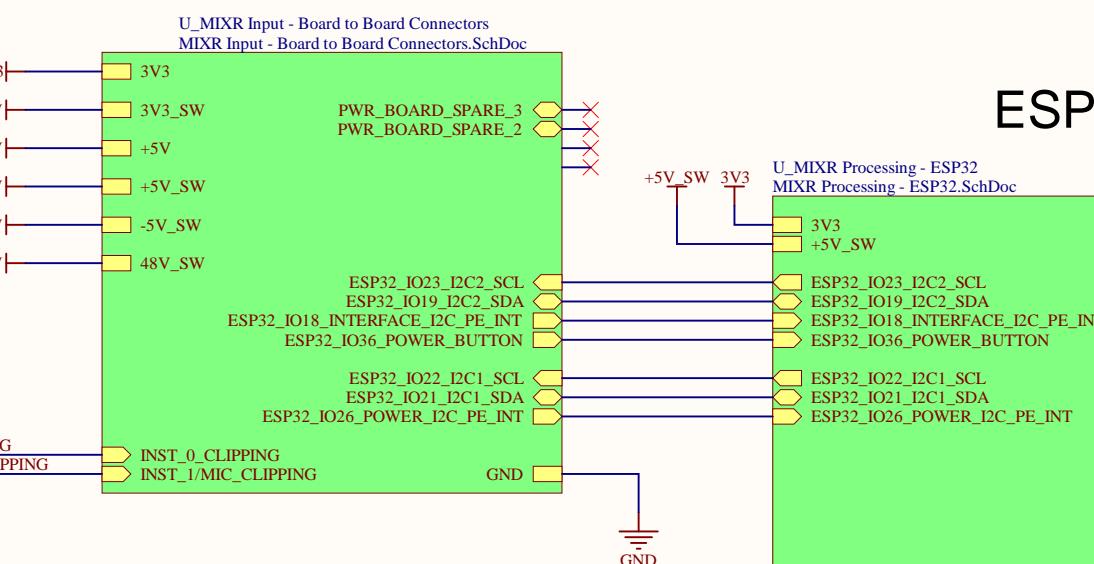


## Instrument Input & ADC

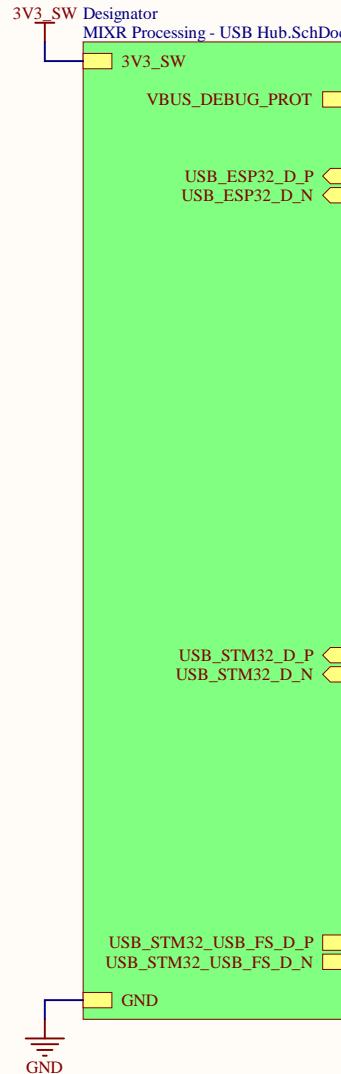


## Board to Board Connectors

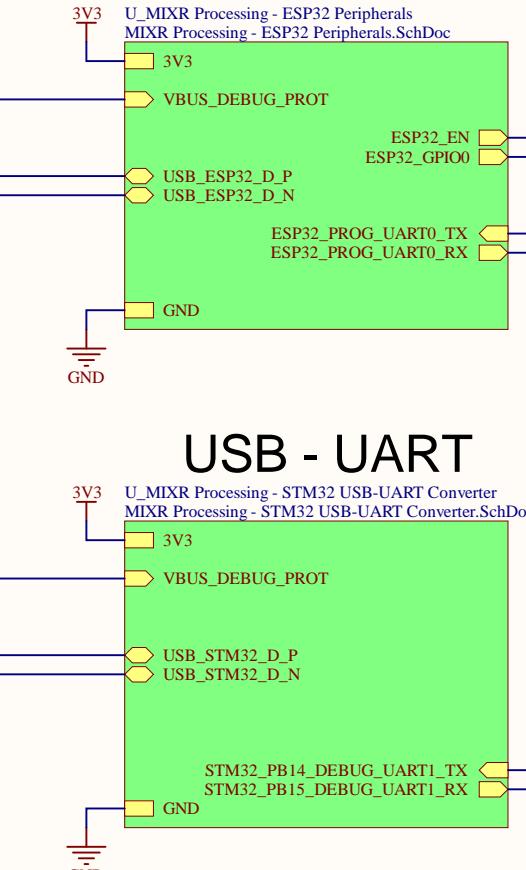


ESP32

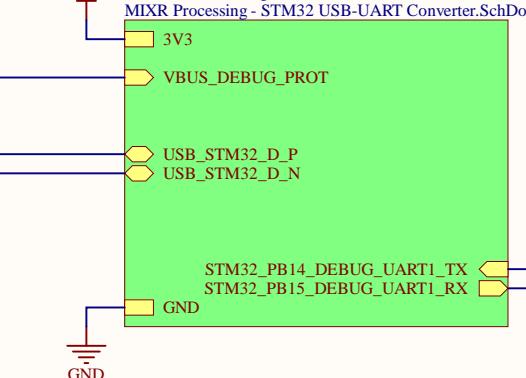
## USB 1:4 Hub



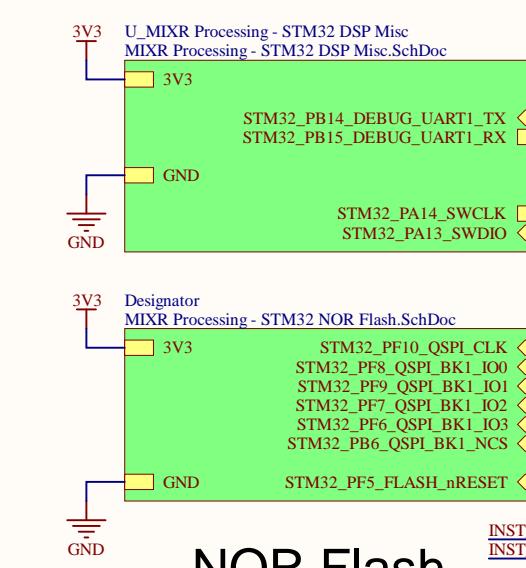
## USB - UART



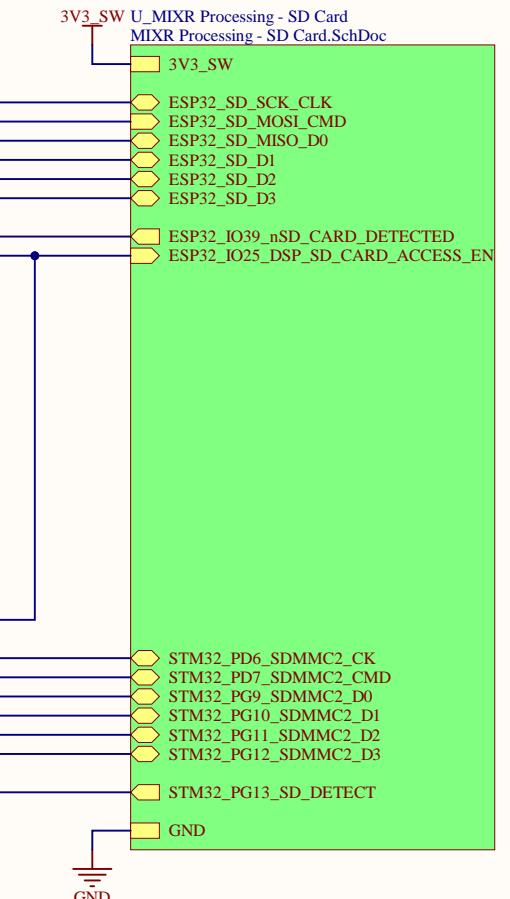
## USB - UART



## Debug Connector



## Micro SD Card



Designator  
MIXR Input and Processing - Block Diagram.SchDoc

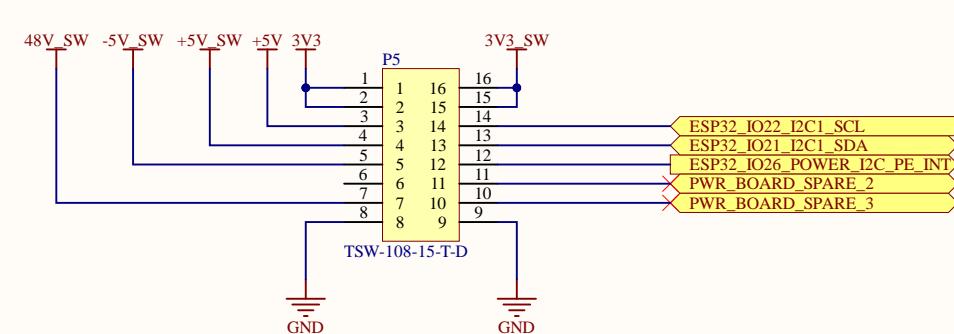
## NOR Flash

STM32F769

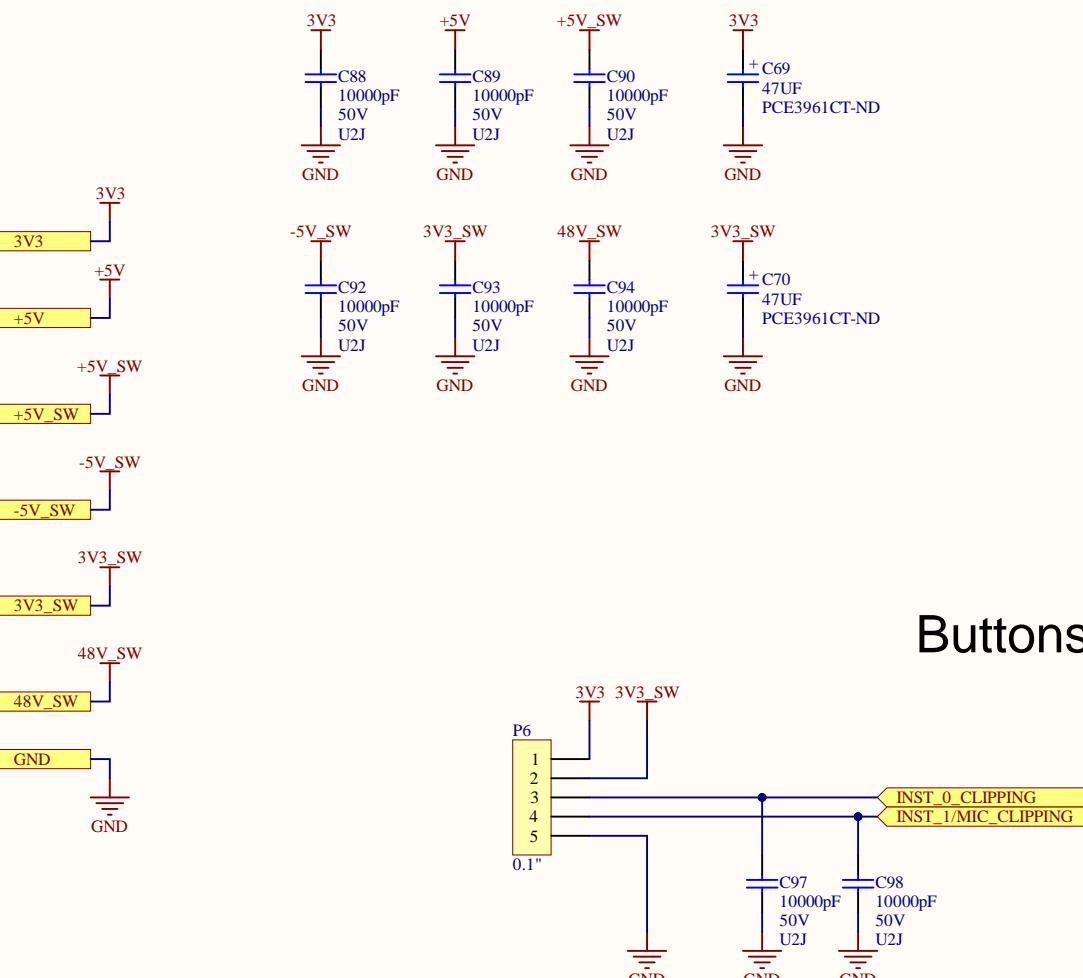
PROJECT	MIXR Input and Processing.PrjPcb
DOCUMENT	MIXR Input & Processing - Top Sheet
PART NUMBER	MIXR-002-01
VARIANT	[No Variations]
DRAWN BY	Taiping Li
REVISION	4.0
LAST MODIFIED	2020-02-09
SHEET	2 OF 15

**MIXR**

## Power Board



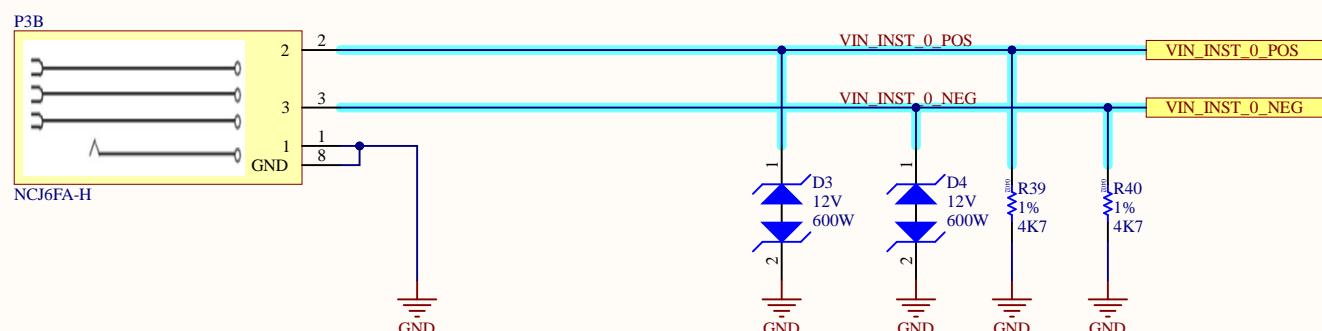
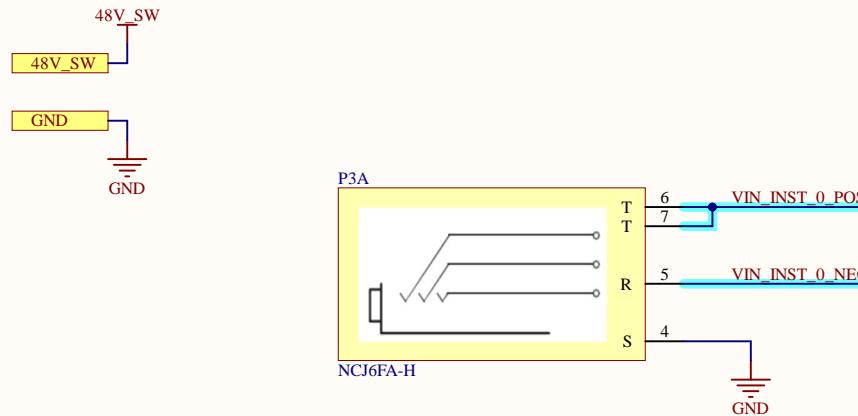
## Buttons/Interface Board



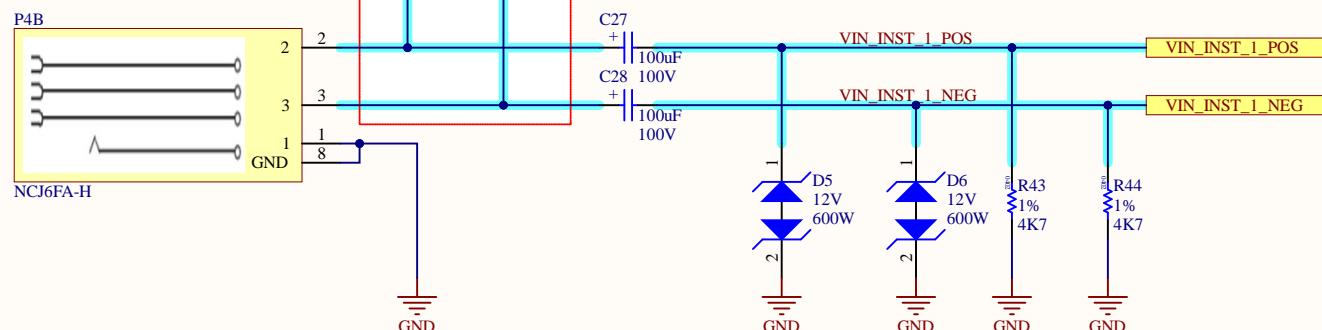
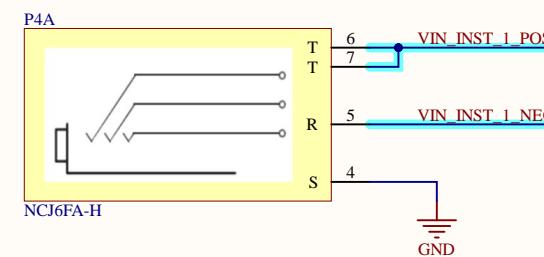
PROJECT	MIXR Input and Processing.PjPcb	
DOCUMENT	Processing & Power Board Connector	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 3 OF 15

**MIXR**

## Instrument 0 Input



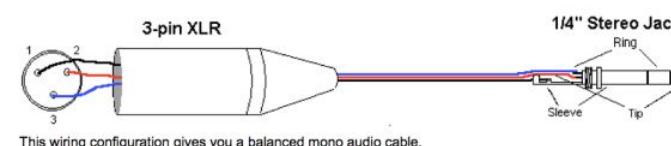
## Instrument 1/Microphone Input



### XLR to 1/4" Stereo Jack (wired for balanced mono)

The usual way to connect a 3-pin XLR to a 1/4" stereo jack is to use the following pin allocation:

- XLR pin 1 to jack sleeve
- XLR pin 2 to jack tip
- XLR pin 3 to jack ring

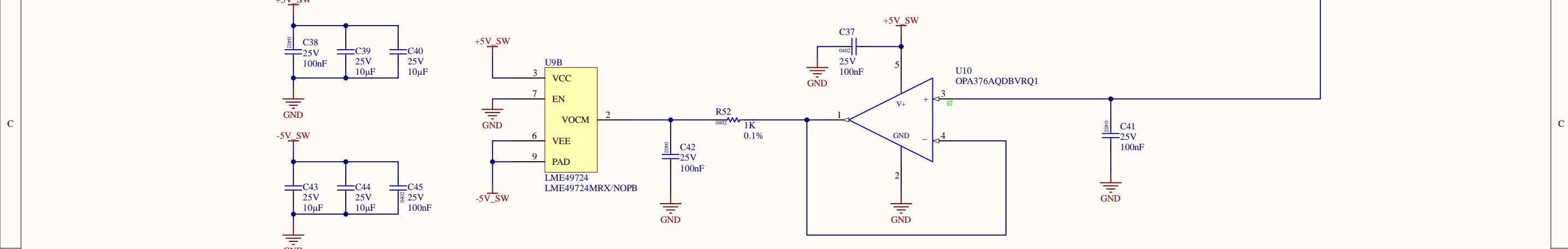
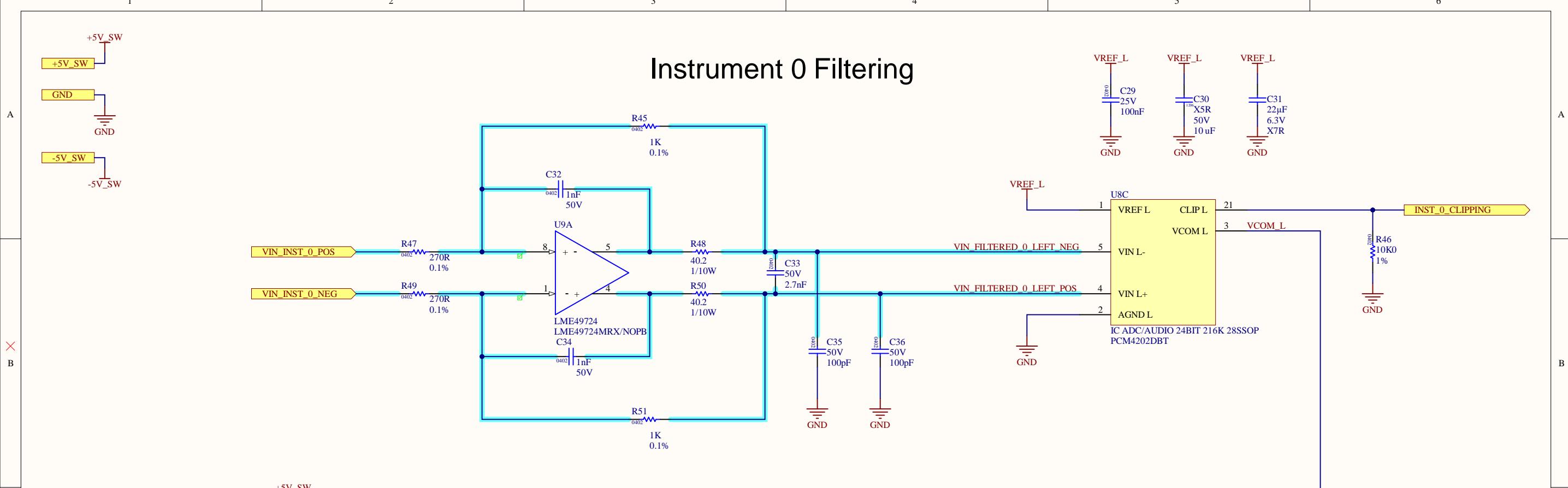


This wiring configuration gives you a balanced mono audio cable.

PROJECT	MIXR Input and Processing.PjPcb	
DOCUMENT	Instrument Inputs	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 4 OF 15

**MIXR**

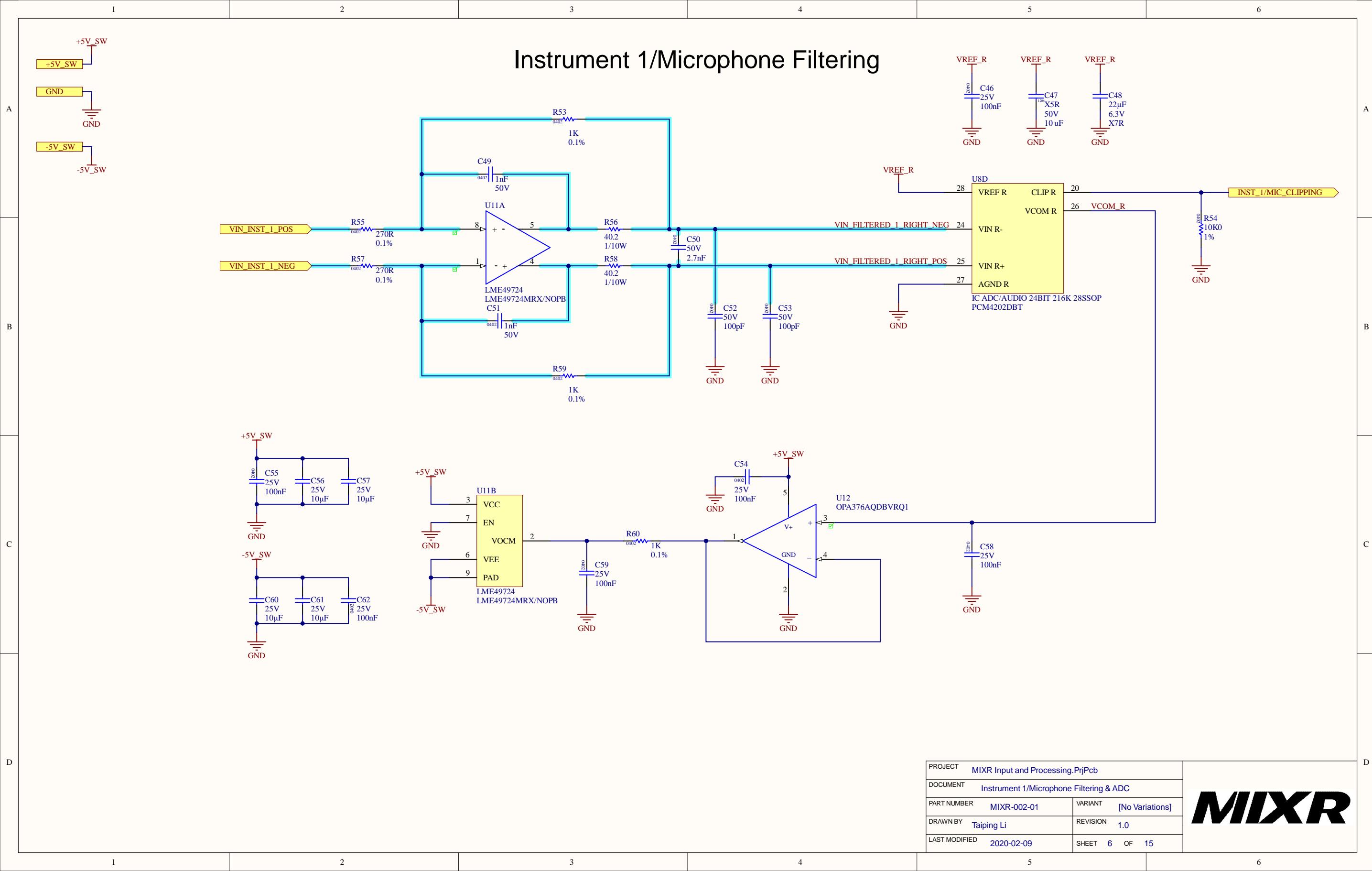
# Instrument 0 Filtering

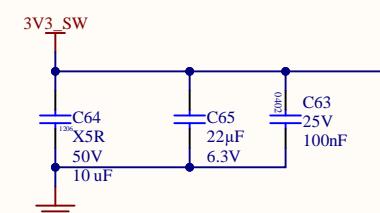
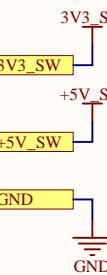


PROJECT	MIXR Input and Processing.PjPcb	
DOCUMENT	Instrument 0 Filtering & ADC	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 5 OF 15

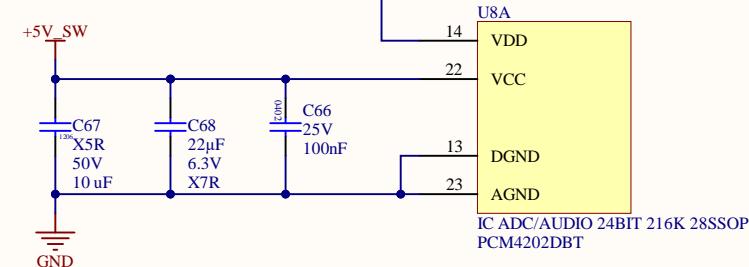
**MIXR**

# Instrument 1/Microphone Filtering



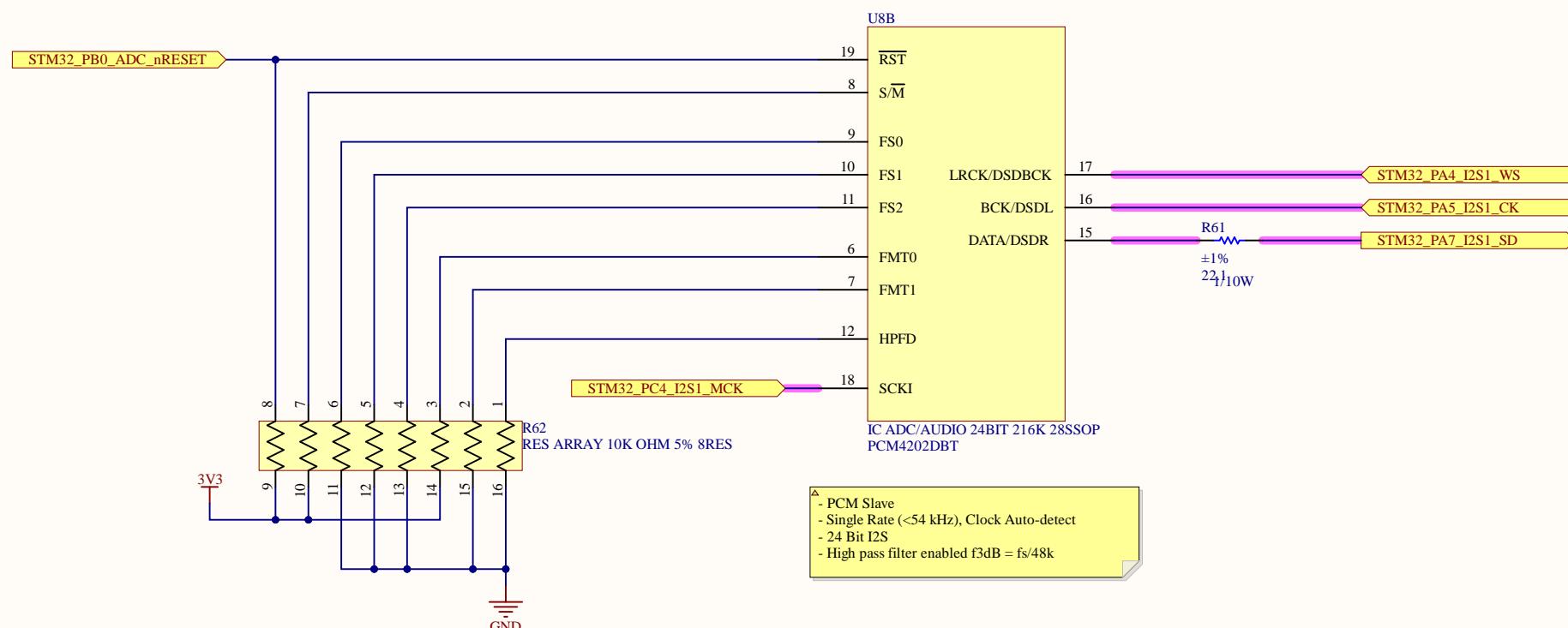


## ADC Power



IC ADC/AUDIO 24BIT 216K 28SSOP  
PCM4202DBT

## ADC Communications

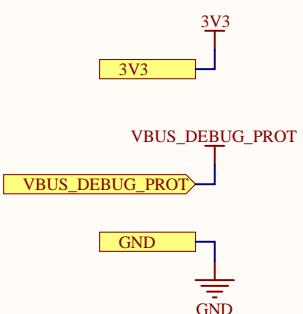
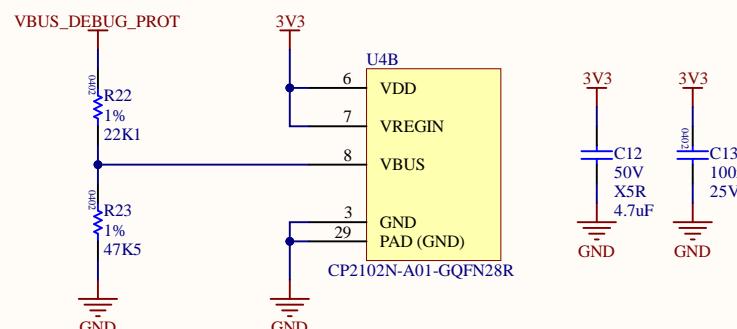
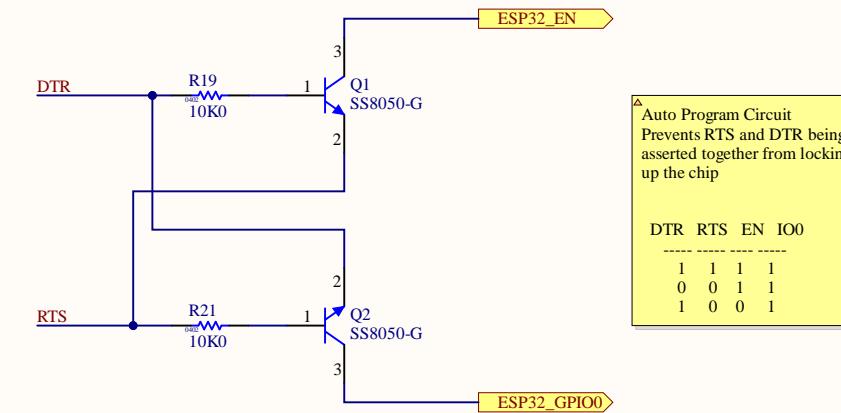
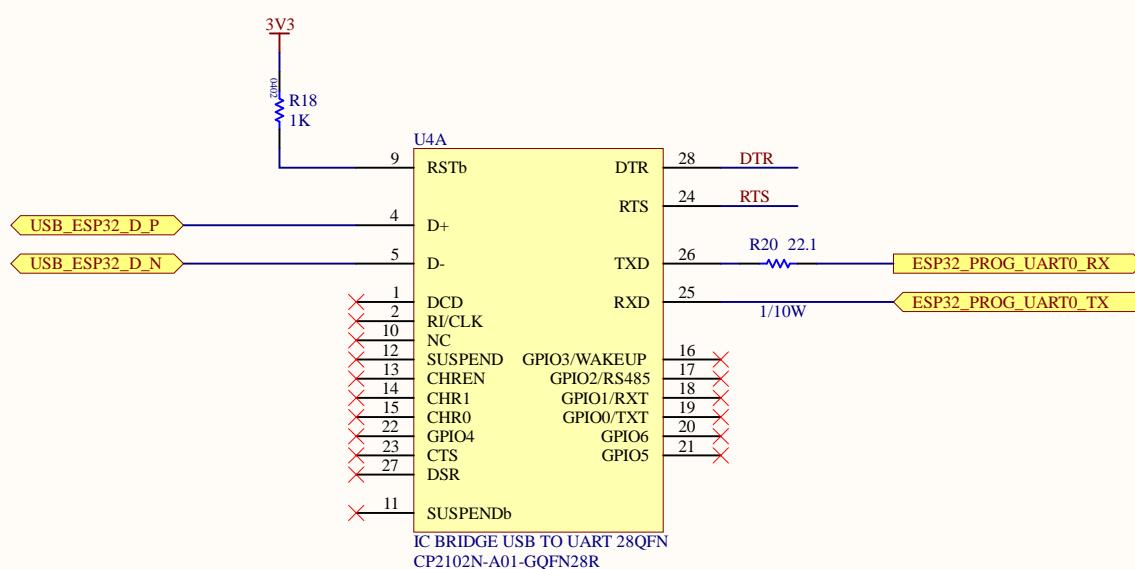


PROJECT	MIXR Input and Processing.PjPcb	
DOCUMENT	ADC Power & I2S Communication	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 7 OF 15

**MIXR**

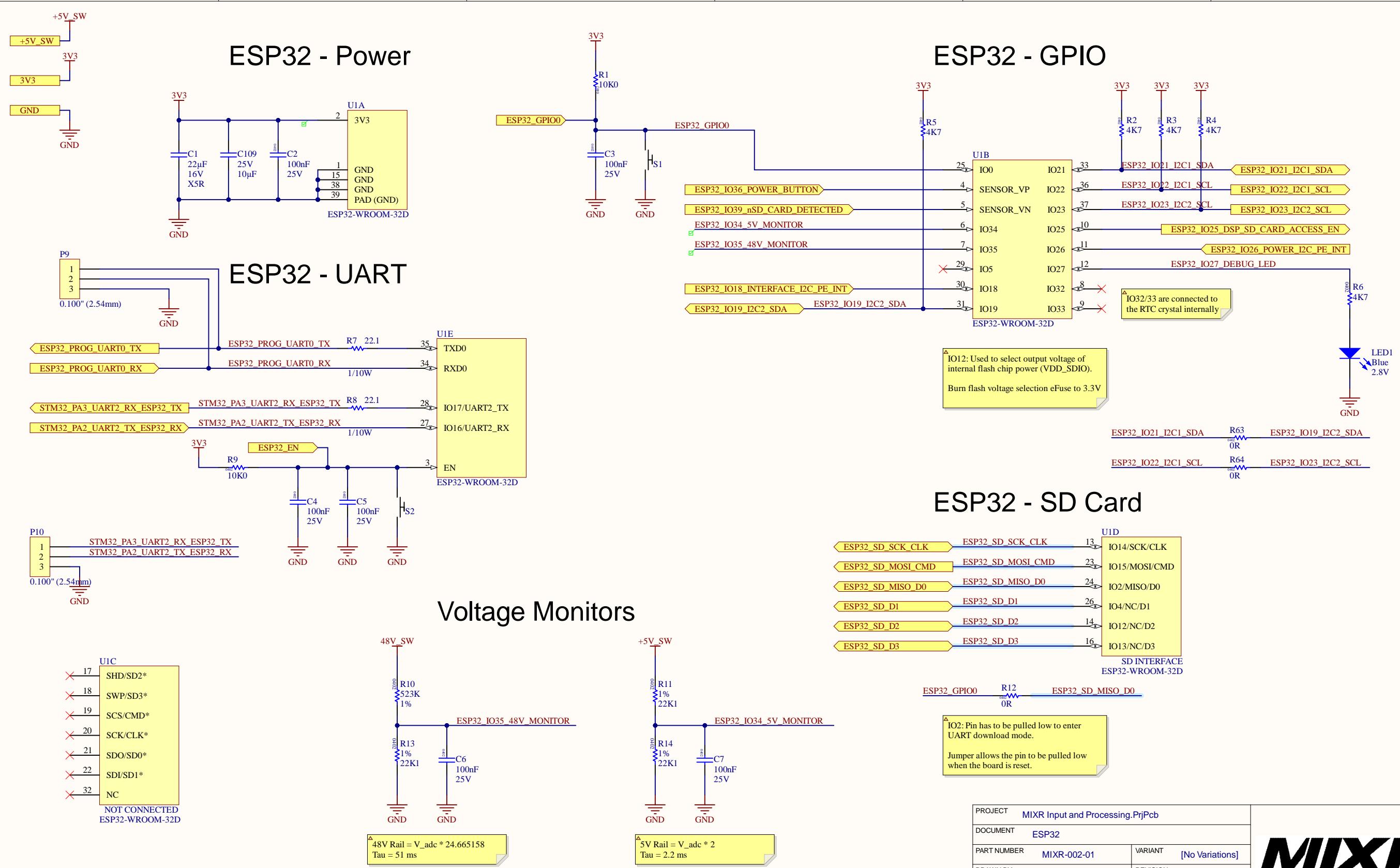
# ESP32 - USB to Serial Converter

# MCP23008 - I2C Port Expander

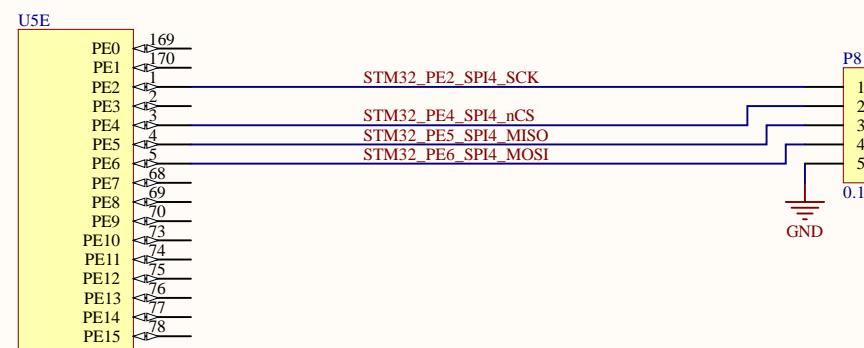
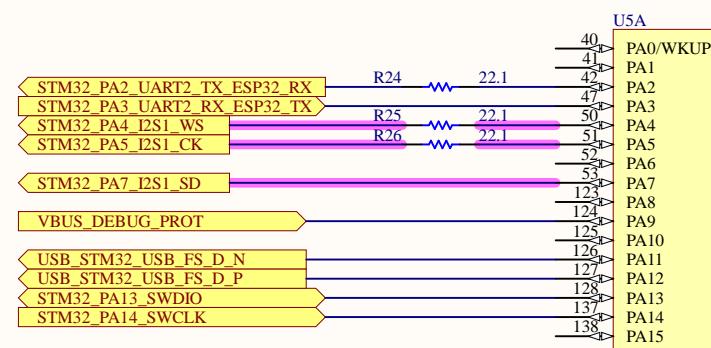


PROJECT	MIXR Input and Processing.PjPcb	
DOCUMENT	ESP32 USB-UART & Auto-Reset	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 8 OF 15

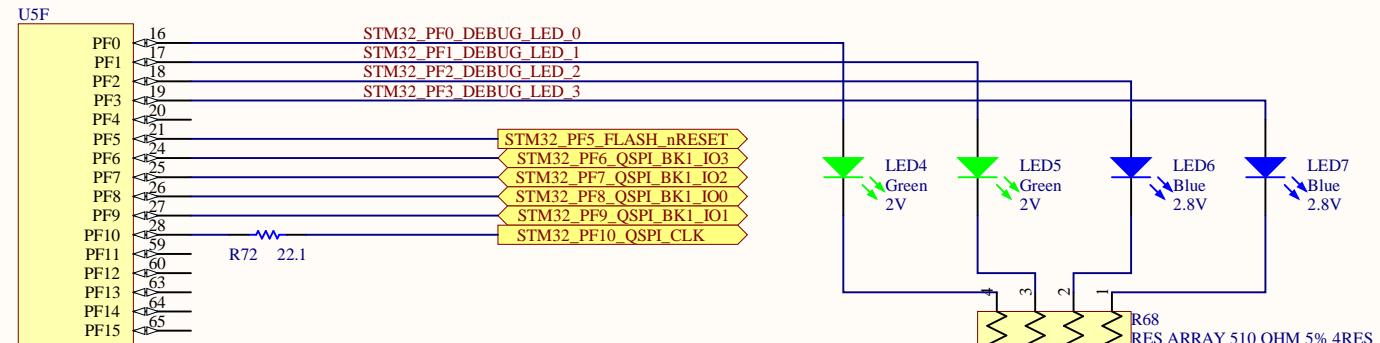
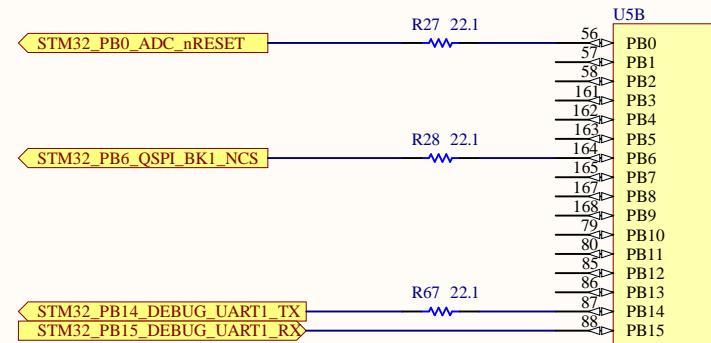
**MIXR**



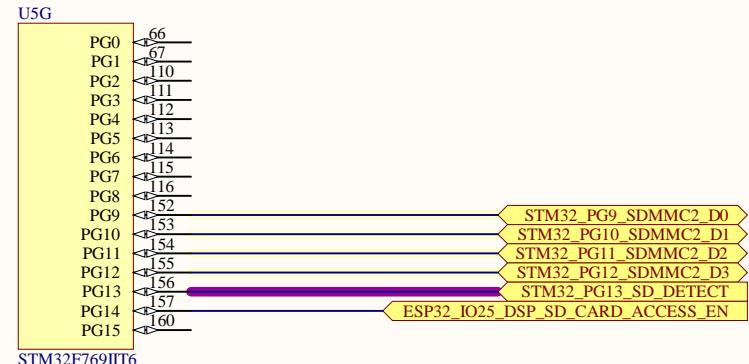
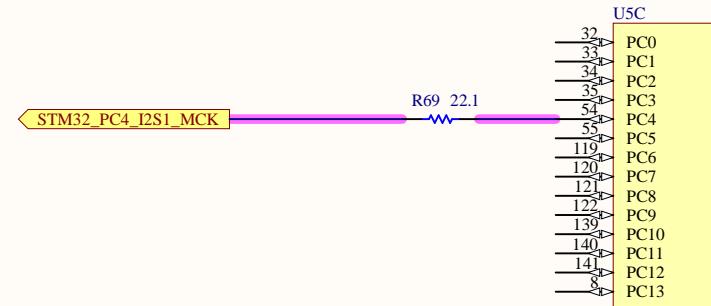
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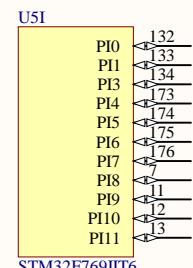
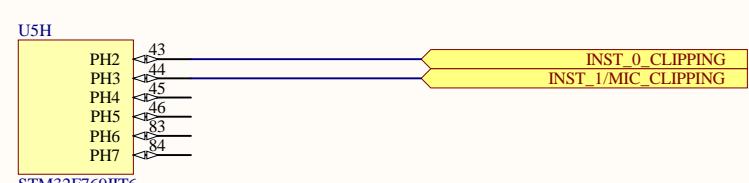
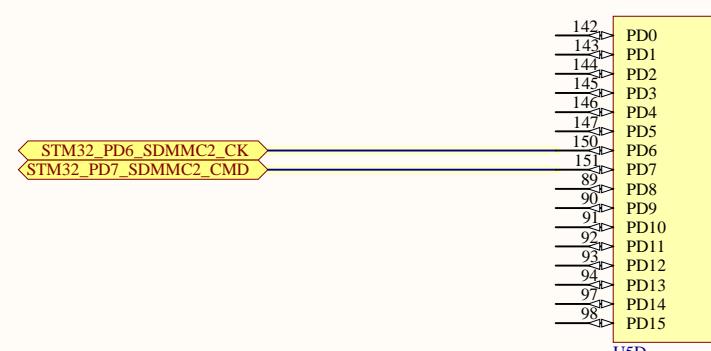
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C

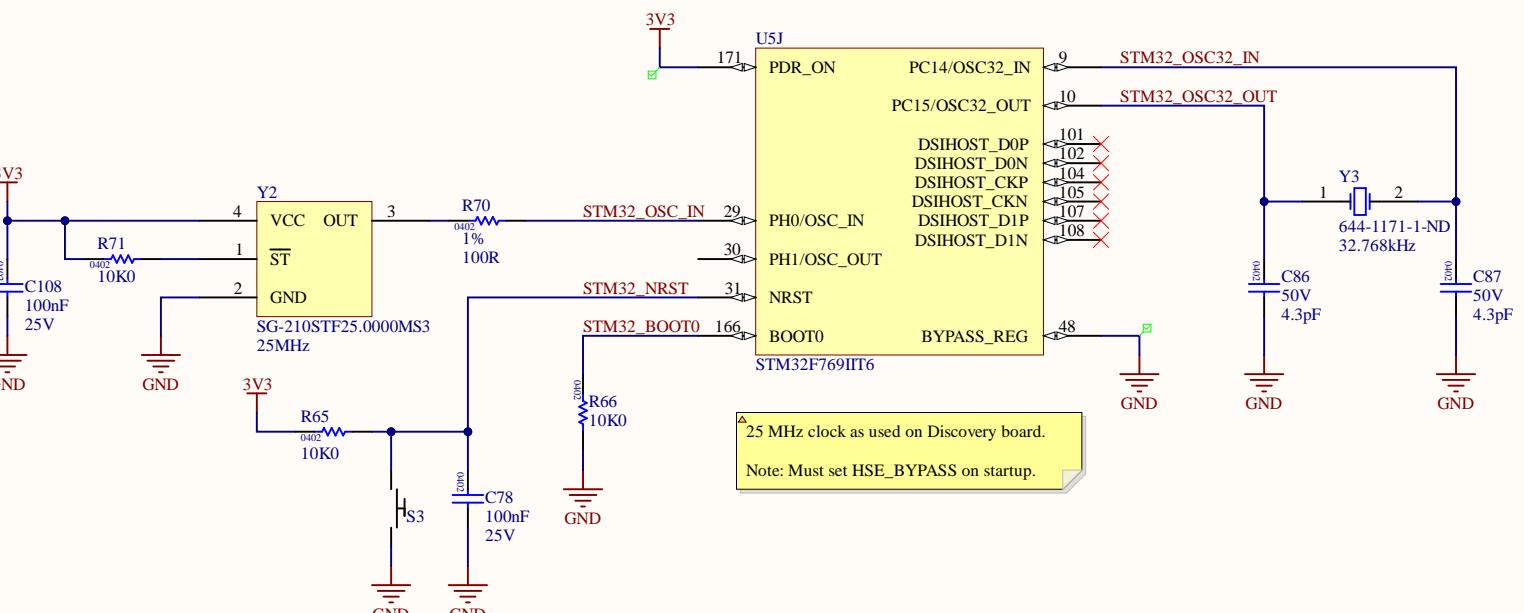
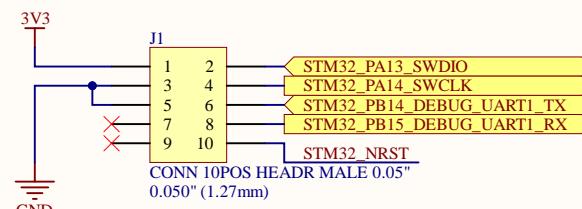
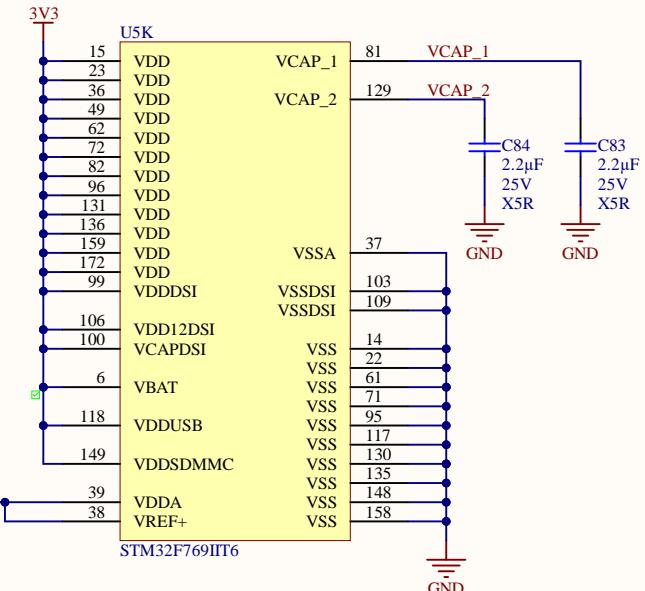
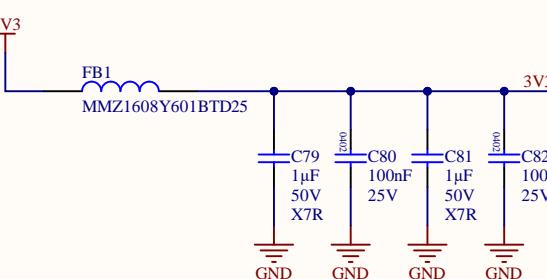
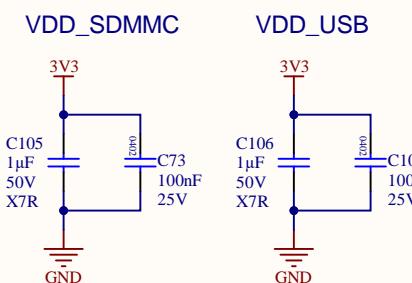
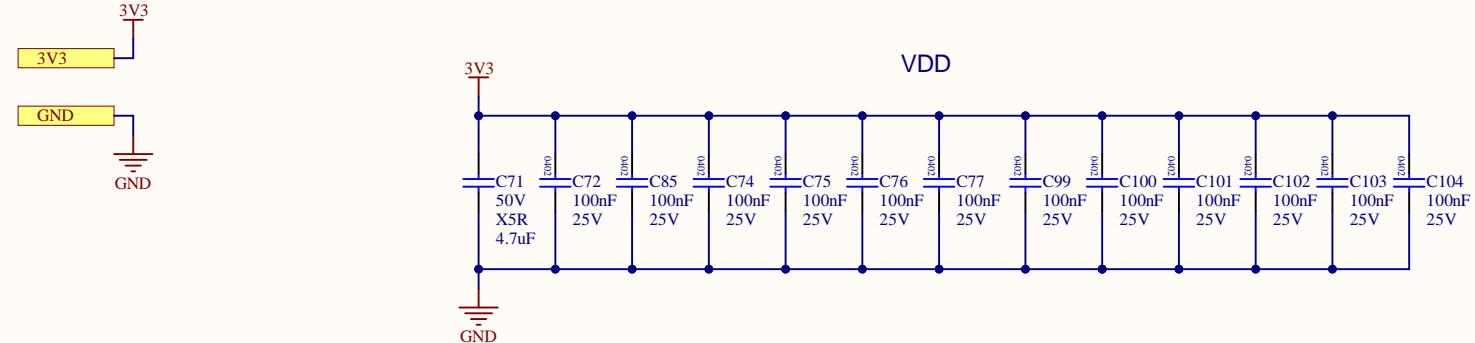


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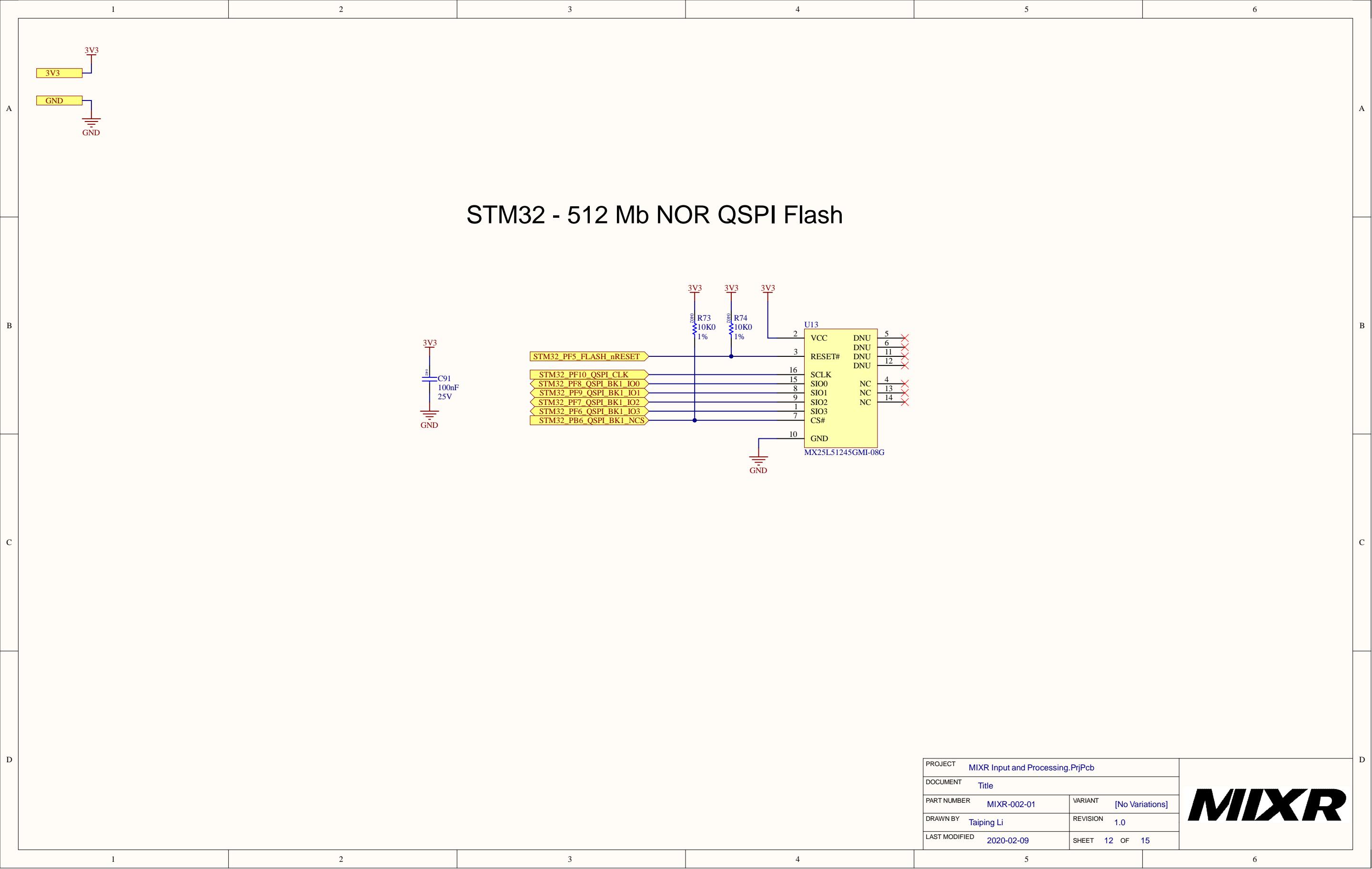
PROJECT	MIXR Input and Processing.PjPcb	
DOCUMENT	STM32F767 DSP Microcontroller - GPIOs	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 10 OF 15

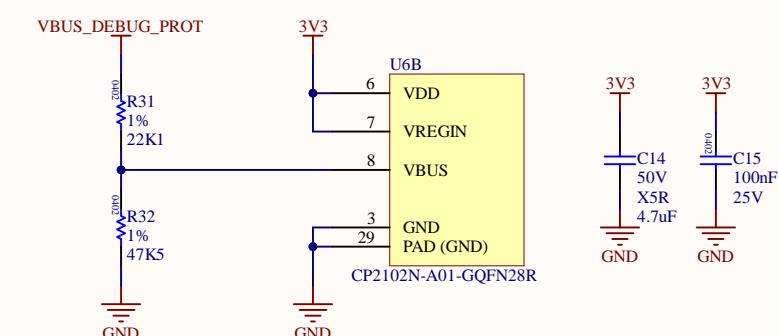
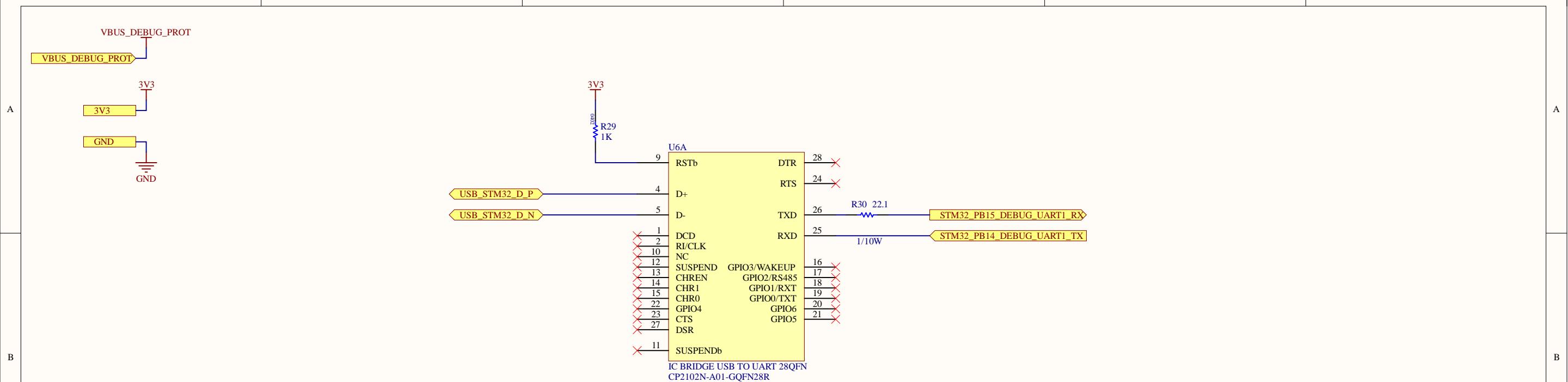
**MIXR**



PROJECT	MIXR Input and Processing.PsjPcb		
DOCUMENT	STM32F767 DSP Microcontroller - Clock & Power		
PART NUMBER	MIXR-002-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-09	SHEET	11 OF 15

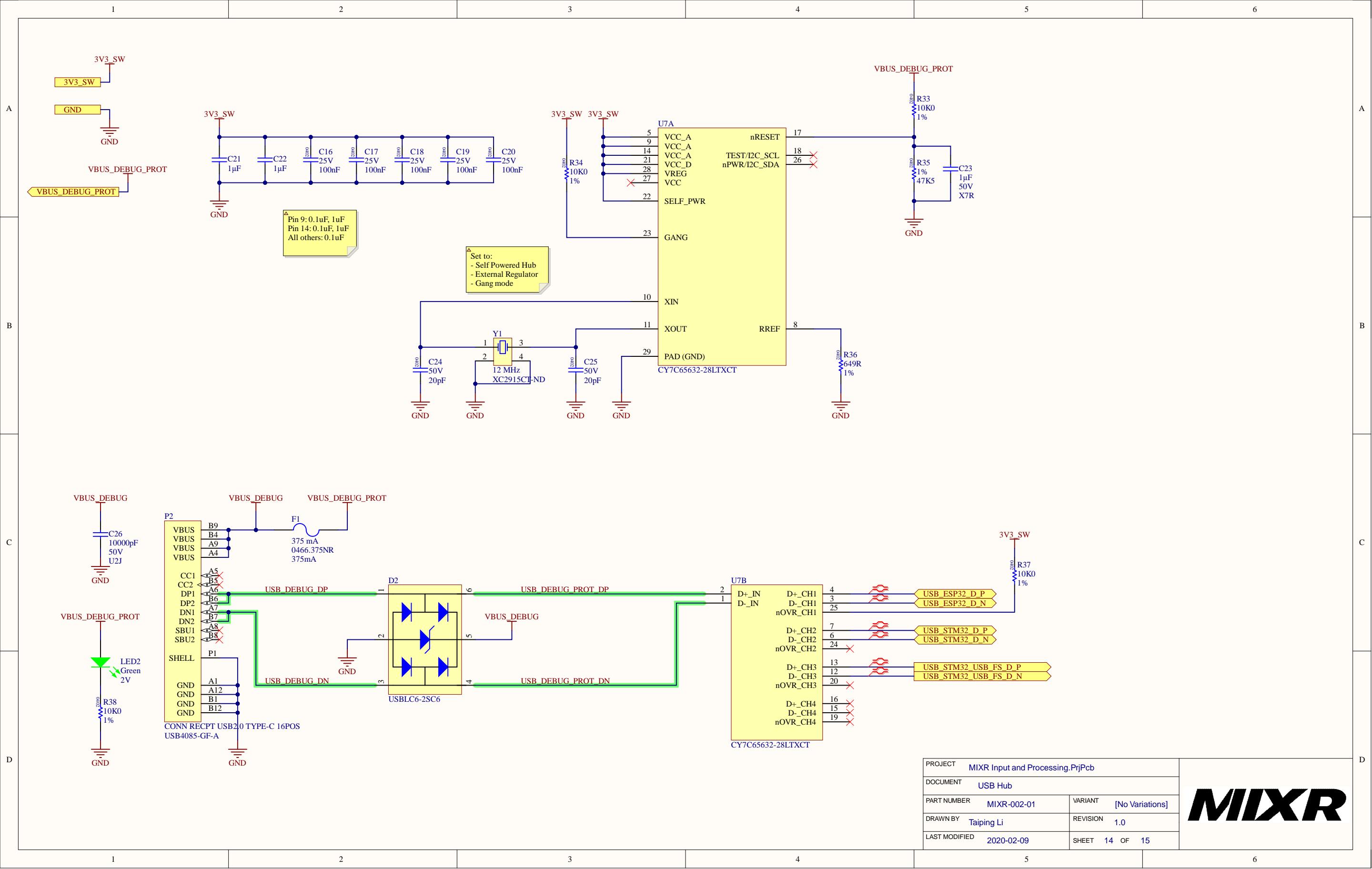
**MIXR**



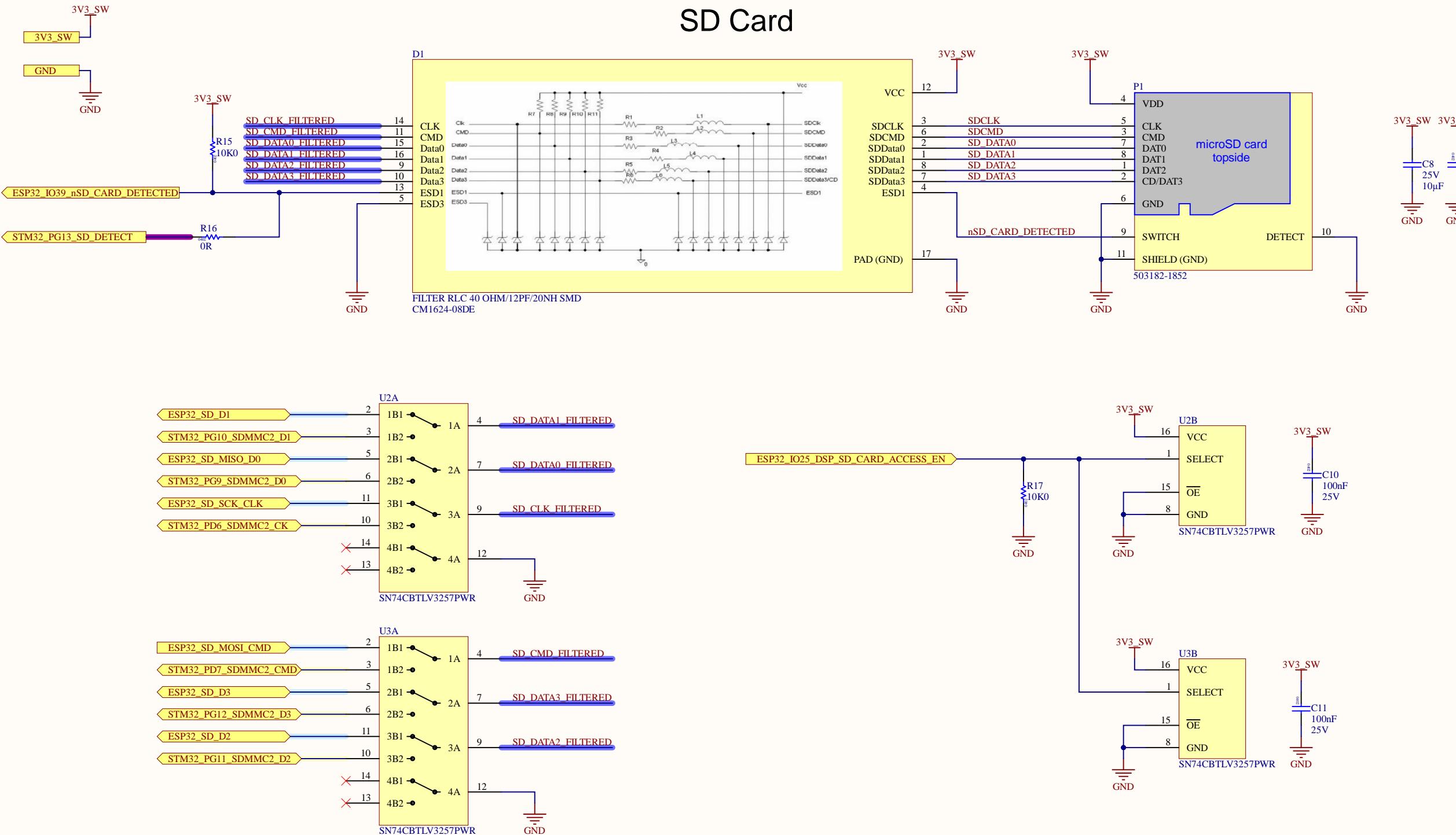


PROJECT	MIXR Input and Processing.PrjPcb	
DOCUMENT	STM32F767 DSP Microcontroller - USB - UART	
PART NUMBER	MIXR-002-01	VARIANT [No Variations]
DRAWN BY	Taiping Li	REVISION 1.0
LAST MODIFIED	2020-02-09	SHEET 13 OF 15

**MIXR**



SD Card



PROJECT	MIXR Input and Processing.PjrPcb		
DOCUMENT	Micro SD Card & Mux		
PART NUMBER	MIXR-002-01	VARIANT	[No Variations]
DRAWN BY	Taiping Li	REVISION	1.0
LAST MODIFIED	2020-02-09	SHEET	15 OF 15

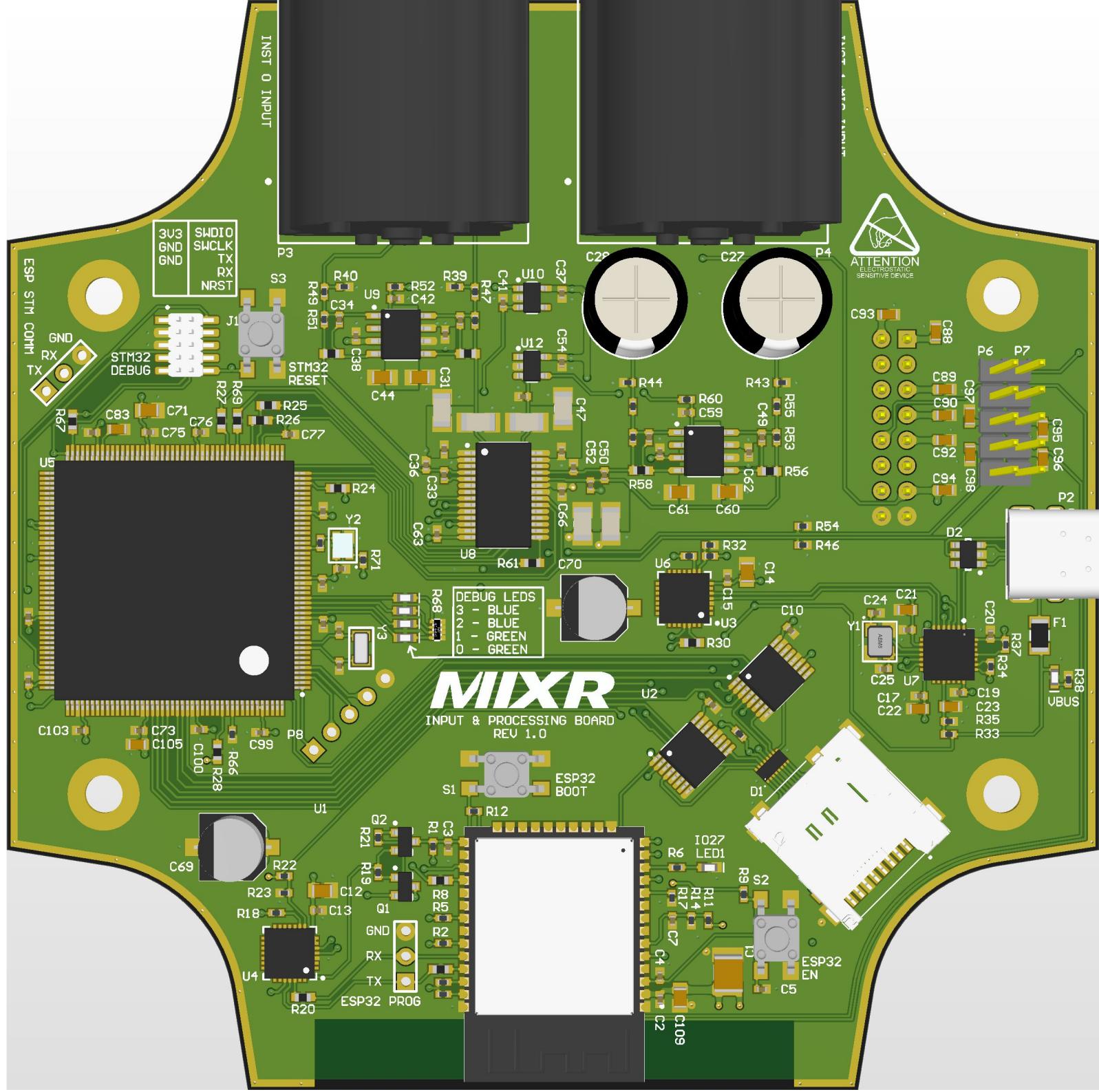
**MIXR**

# Bill of Materials

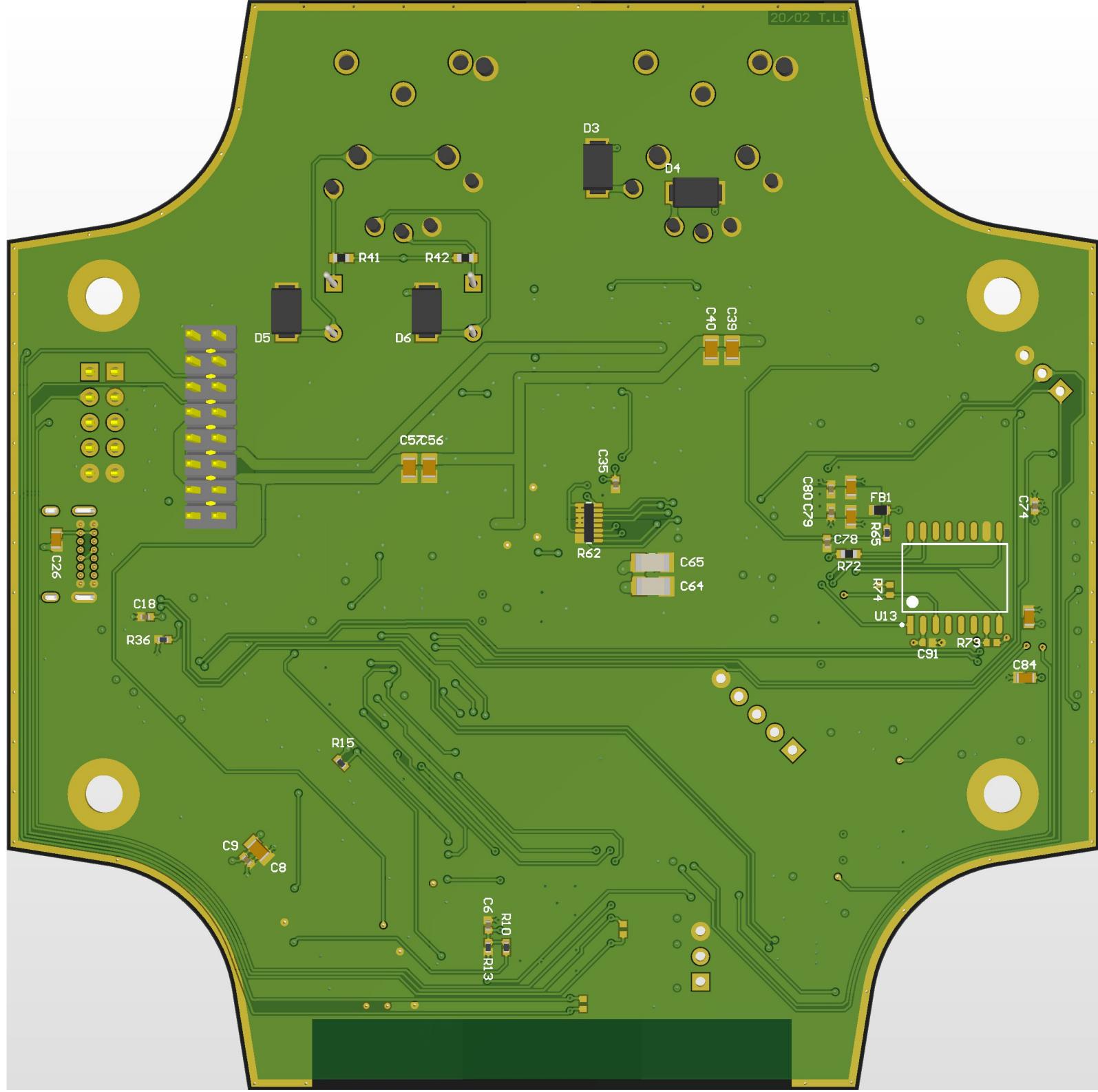
Project:	MIXR Input and Processing.PjPcb
Revision:	1.0
Project Lead:	Taiping Li
Generated On:	2020-02-09 8:49 PM
Production Quantity:	1
Currency	CAD
Total Parts Count:	220

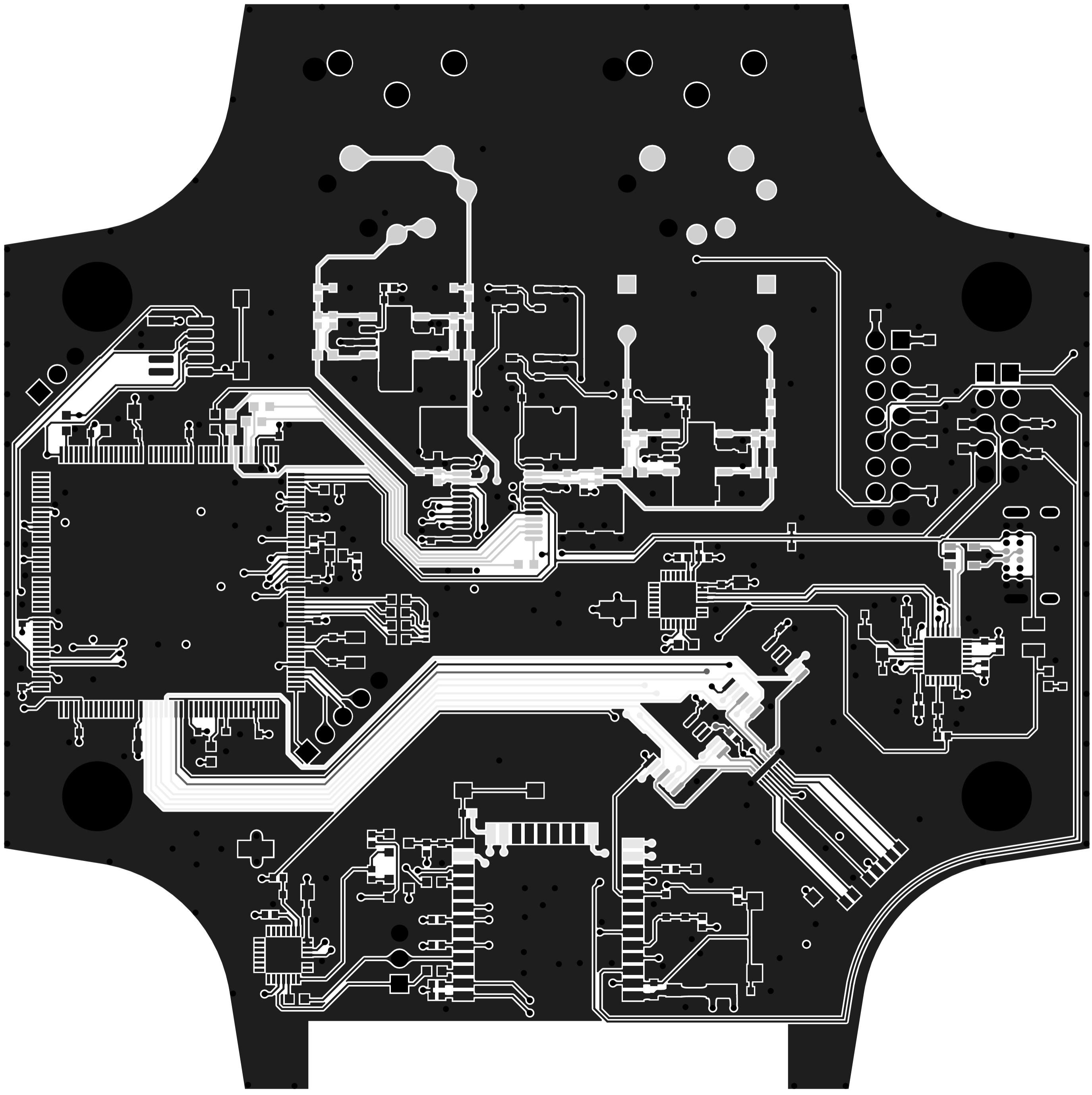


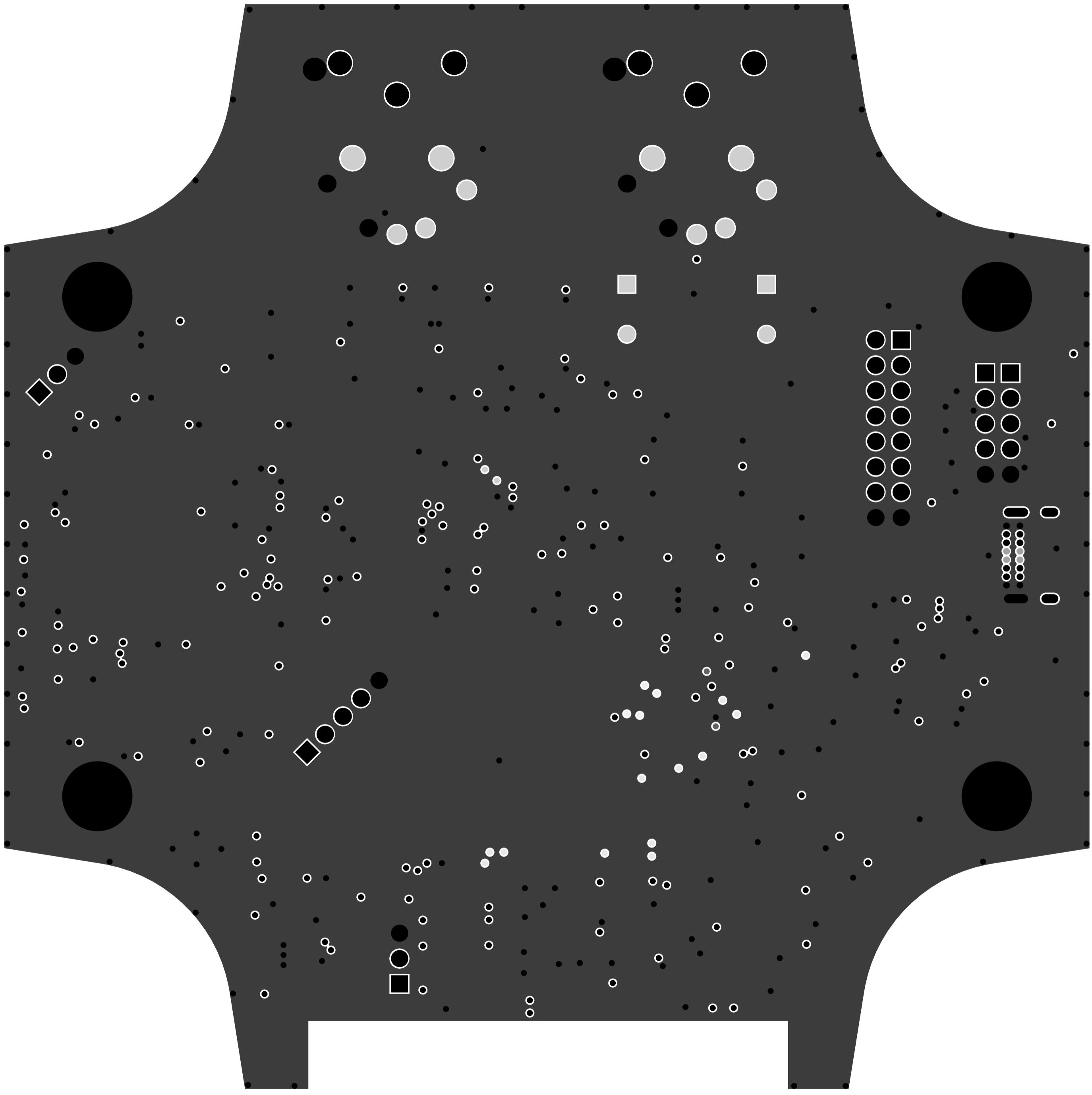
LibRef	Designator	Manufacturer 1	Manufacturer Part Number 1	Supplier 1	Supplier Part Number 1	Supplier Unit Price 1	Quantity	Supplier Subtotal 1
CAP CER 22UF 16V ±20% X6R 1210	C1	Murata	GRM32ER61C226ME20L	Digi-Key	490-1881-1-ND	2.59	1	\$ 2.59
CAP CER 0.1UF 16V X7R 0402	C45, C46, C54, C55, C58, C59, C62, C63, C66	Murata	GRM155R71E104KE14D	Digi-Key	490-10698-1-ND	0.05057	48	\$ 2.43
CAP CER 10uF 25V 10% X6R 0805	C39, C40, C43, C44, C56, C57, C60, C61, C62	Murata	GRM21BR61E106KA73L	Digi-Key	490-5523-1-ND	0.42848	10	\$ 4.28
CAP CER 4.7uF 50V 10% X6R 0805	C12, C14, C71	Murata	GRT21BR61H475ME13L	Digi-Key	490-12395-1-ND	0.5855	3	\$ 1.76
CAP CER 1UF 50V 10% X7R 0603	C21, C22, C23, C79, C81, C105, C106	Taiyo Yuden	UMK10TAB7105KA-T	Digi-Key	587-3247-1-ND	0.33267	7	\$ 2.33
CAP CER 20PF 50V C0G/NPO 0402	C24, C25	Samsung	CL05C200JB5NNNC	Digi-Key	1276-1661-1-ND	0.13307	2	\$ 0.27
CAP CER 10nF 50V 5% X7R 0603	C88, C89, C90, C92, C93, C94, C95, C96, C97	KEMET	C0603C103J5JACTU	Digi-Key	399-13384-1-ND	0.29807	11	\$ 3.28
CAP ALUM 100uF 20% 100V RADIAL	C27, C28	Nichicon	UFW2A101MPD1TD	Digi-Key	493-11050-1-ND	0.9581	2	\$ 1.92
CAP CER 10uF 50V 20% X6R 1206	C30, C47, C64, C67	Murata	GRT31CR61H106ME01L	Digi-Key	490-12457-1-ND	0.66534	4	\$ 2.66
CAP CER 22uF 6.3V ±10% X7R 1206	C31, C48, C65, C68	Murata	GRM31CR70J226KE19L	Digi-Key	490-6515-1-ND	1.57	4	\$ 6.28
CAP CER 1nF 50V C0G 0402	C32, C34, C49, C51	Murata	GRM1555C1H102JA01D	Digi-Key	490-3244-1-ND	0.15968	4	\$ 0.64
CAP CER 2700PF 50V X7R 0402	C33, C50	Yageo	CC0402KRX7R9BB272	Digi-Key	311-1033-1-ND	0.13307	2	\$ 0.27
CAP CER 100PF 50V C0G/NPO 0402	C35, C36, C52, C53	Murata	GCM1555C1H101JA16D	Digi-Key	490-10669-1-ND	0.13307	4	\$ 0.53
CAP ALUM 47uF 20% 35V SMD	C69, C70	Panasonic	EEE-1VA470WP	Digi-Key	PCE3961CT-ND	0.54458	2	\$ 1.09
CAP CER 2.2uF 25V 10% X6R 0603	C83, C84	Murata	GRM188R61E225KA12D	Digi-Key	490-10731-1-ND	0.25283	2	\$ 0.51
CAP CER 4.3PF 50V C0G/NPO 0402	C86, C87	Murata	GJM1555C1H4R3BB01D	Digi-Key	490-8582-1-ND	0.25283	2	\$ 0.51
FILTER RLC 40 OHM/12PF/20NH SMD	D1	ON Semiconductor	CM1624-08DE	Digi-Key	CM1624-08DEOSCT-ND	0.69196	1	\$ 0.69
DIODE TVS 5.25V 17V SOT23-6	D2	STMicroelectronics	USBL6C-2SC6	Digi-Key	497-5235-1-ND	0.62542	1	\$ 0.63
DIODE TVS 12VWMM 19.6V DO-214AA (SMB)	D3, D4, D5, D6	Vishay Semiconductors	SMBJ12CD-M3/H	Digi-Key	SMBJ12CD-M3/HGICLT-ND	0.63873	4	\$ 2.55
FUSE 375MA 125VDC 1206	F1	Littlefuse	0466-375NRF	Digi-Key	F1453CT-ND	1.12	1	\$ 1.12
FB 600 OHM 1LN 0603	FB1	TDK	MMZ1608Y601BTD25	Digi-Key	445-172850-1-ND	0.13307	1	\$ 0.13
CONN 10POS HEADR MALE 0.05"	J1	Amphenol FCI	2002121-00010C4LF	Digi-Key	609-3695-1-ND	1.16	1	\$ 1.16
LED BLUE CLEAR 2.8V 0603	LED1, LED6, LED7	Vishay Lite-On	LTST-C193TBKT-5A	Digi-Key	160-1827-1-ND	0.59881	3	\$ 1.80
LED GREEN CLEAR 2V 0603	LED2, LED4, LED5	Wurth Electronics	150060V575000	Digi-Key	732-4980-1-ND	0.1863	3	\$ 0.56
CONN MICRO-SD ULTRA-LOW 8CKT	P1	Molex	503182-1852	Digi-Key	WM12834CT-ND	3.26	1	\$ 3.26
CONN RECEPT USB2.0 TYPE-C 16POS	P2	Global Connector Technology	USB4085-GF-A	Digi-Key	073-USBA4085-GF-ACT-ND	1		
CONN XLR-TRS COMBO 3 POLE	P3, P4	Neutrik	NCJ6FA-H	Mouser	568-NCJ6FA-H	2.95	2	\$ 5.91
CONN 16POS HEADER 0.1" 0.73" MALE	P5	Samtec	TSW-108-15-T-D	Digi-Key	SAM12336-ND	1.36	1	\$ 1.36
CONN 5POS 0.1" 1" MALE HEADER	P6, P7	Samtec	TSW-105-20-T-S	Digi-Key	SAM9000-ND	0.59881	2	\$ 1.20
BJT NPN 40V 1.5A SOT-23	Q1, Q2	Comchip	SS8050-G	Digi-Key	641-1790-1-ND	0.29275	2	\$ 0.59
RES 10K OHM 1% 1/16W 0402	R17, R19, R21, R33, R34, R37, R38, R46, R54,	Yageo	RC0402FR-0710KL	Digi-Key	311-10.0KLRCT-ND	0.02129	15	\$ 0.32
RES 4.7K OHM 1% 1/10W 0402	R2, R3, R4, R5, R6, R39, R40, R43, R44	Yageo	RC0402FR-074K7L	Digi-Key	311-4.7KLRCT-ND	0.13307	9	\$ 1.20
RES 22.1 OHM 1% 1/10W 0603	R20, R24, R25, R26, R27, R28, R30, R61, R67,	Yageo	RC0603FR-0722R1L	Digi-Key	311-22.1HRCT-ND	0.03061	13	\$ 0.40
RES 523K OHM 1% 1/16W 0402	R10	Yageo	RC0402FR-07523KL	Digi-Key	YAG3177CT-ND	0.13307	1	\$ 0.13
RES 22.1K OHM 1% 1/16W 0402	R11, R13, R14, R22, R31	Stackpole Electronics	RMCF0402FT22K1	Digi-Key	RMCF0402FT22K1CT-ND	0.13307	5	\$ 0.67
RES 0.0 OHM 1% 1/16W 0402	R12, R16	Yageo	RC0402JR-070RL	Digi-Key	311-0.0JRCT-ND	0.13307	2	\$ 0.27
RES 1K OHM 0.1% 1/16W 0402	R18, R29, R45, R51, R52, R53, R59, R60	Yageo	RT0402BRE0701KL	Digi-Key	YAG2306CT-ND	0.51897	8	\$ 4.15
RES 47.5K OHM 1% 1/16W 0402	R23, R32, R35	Yageo	RC0402FR-0747K5L	Digi-Key	311-47.5KLRCT-ND	0.13307	3	\$ 0.40
RES 649 OHM 1% 1/16W 0402	R36	Stackpole Electronics	RMCF0402FT649R	Digi-Key	RMCF0402FT649RCT-ND	0.13307	1	\$ 0.13
RES 6.81K OHM 0.1% 1/10W 0603	R41, R42	Panasonic	ERJ-PB3B6811V	Digi-Key	P20068CT-ND	0.33267	2	\$ 0.67
RES 270 OHM 0.1% 1/16W 0402	R47, R49, R55, R57	Yageo	RT0402BRD07270RL	Digi-Key	YAG1396CT-ND	0.54458	2	\$ 2.18
RES 40.2 OHM 0.5% 1/10W 0603	R48, R50, R56, R58	Yageo	RT0603DRE0740R2L	Digi-Key	311-2576-1-ND	0.15968	4	\$ 0.64
RES ARRAY 10K OHM 5% 8RES EXB-2HV103JV	R62	Panasonic	EXB-2HV103JV	Digi-Key	Y1103CT-ND	0.3859	1	\$ 0.39
RES ARRAY 510 OHM 5% 4RES EXB-N8V511JX	R68	Panasonic	EXB-N8V511JX	Digi-Key	Y10511CT-ND	0.14638	1	\$ 0.15
RES 100 OHM 1% 1/16W 0402	R70	Yageo	RC0402FR-07100RL	Digi-Key	311-100LRCT-ND	0.13307	1	\$ 0.13
SW SPST-NO 0.05A 12V	S1, S2, S3	E-Switch	TL3305AF260QG	Digi-Key	EG5353CT-ND	0.26614	3	\$ 0.80
IC WIFI MODULE 32MBITS SPI FLASH	U1	Espressif Systems	ESP32-WROOM-32D	Digi-Key	1904-1023-1-ND	5.06	1	\$ 5.06
IC MUX/DEMUX 4-BIT 1-OF-2 16-TSSOP	U2, U3	Texas Instruments	SN74CBTLV3257PWR	Digi-Key	296-9138-1-ND	0.94479	2	\$ 1.89
IC BRIDGE USB TO UART 28QFN	U4, U6	Silicon Labs	CP2102N-A01-QQFN28R	Digi-Key	336-4738-1-ND	1.86	2	\$ 3.73
IC MCU STM32F769II 176-LQFP	U5	STMicroelectronics	STM32F769IIT6	Digi-Key	497-16649-ND	16.89	1	\$ 16.89
IC USB 2.0 HUB CONTROLLER 28QFN	U7	Cypress	CY7C65632-28LTCT	Digi-Key	428-3156-1-ND	4.43	1	\$ 4.43
IC ADC 24 BIT AUDIO 216KHZ SSOP-28	U8	Texas Instruments	PCM4202DBT	Digi-Key	296-17438-1-ND	13.11	1	\$ 13.11
IC OP AMP AUDIO LME49724 8-SOIC	U9, U11	TI National Semiconductor	LME49724MRXNOPB	Digi-Key	296-37390-1-ND	3.55	2	\$ 7.11
COP AMP GEN PURPOSE RR 5.5MHz SOT-23	U10, U12	Texas Instruments	OPA376AQDBVRQ1	Digi-Key	296-36701-1-ND	2.85	2	\$ 5.70
CRYSTAL 12 MHz 12PF SMD	Y1	ECS International	ECS-120-12-33-AEN-TR	Digi-Key	XC2915CT-ND	0.74519	1	\$ 0.75
CRYSTAL 25 MHz OSC XO CMOS SMD	Y2	Epson	SG-210STF25.0000MS3	Digi-Key	SER3804CT-ND	1.61	1	\$ 1.61
CRYSTAL 32.7680 KHz 6PF 2-SMD	Y3	NDK	X3215SA-32.768K-STD-MUA-1	Digi-Key	644-1171-1-ND	0.90487	1	\$ 0.90
					Total:			\$ 126.08

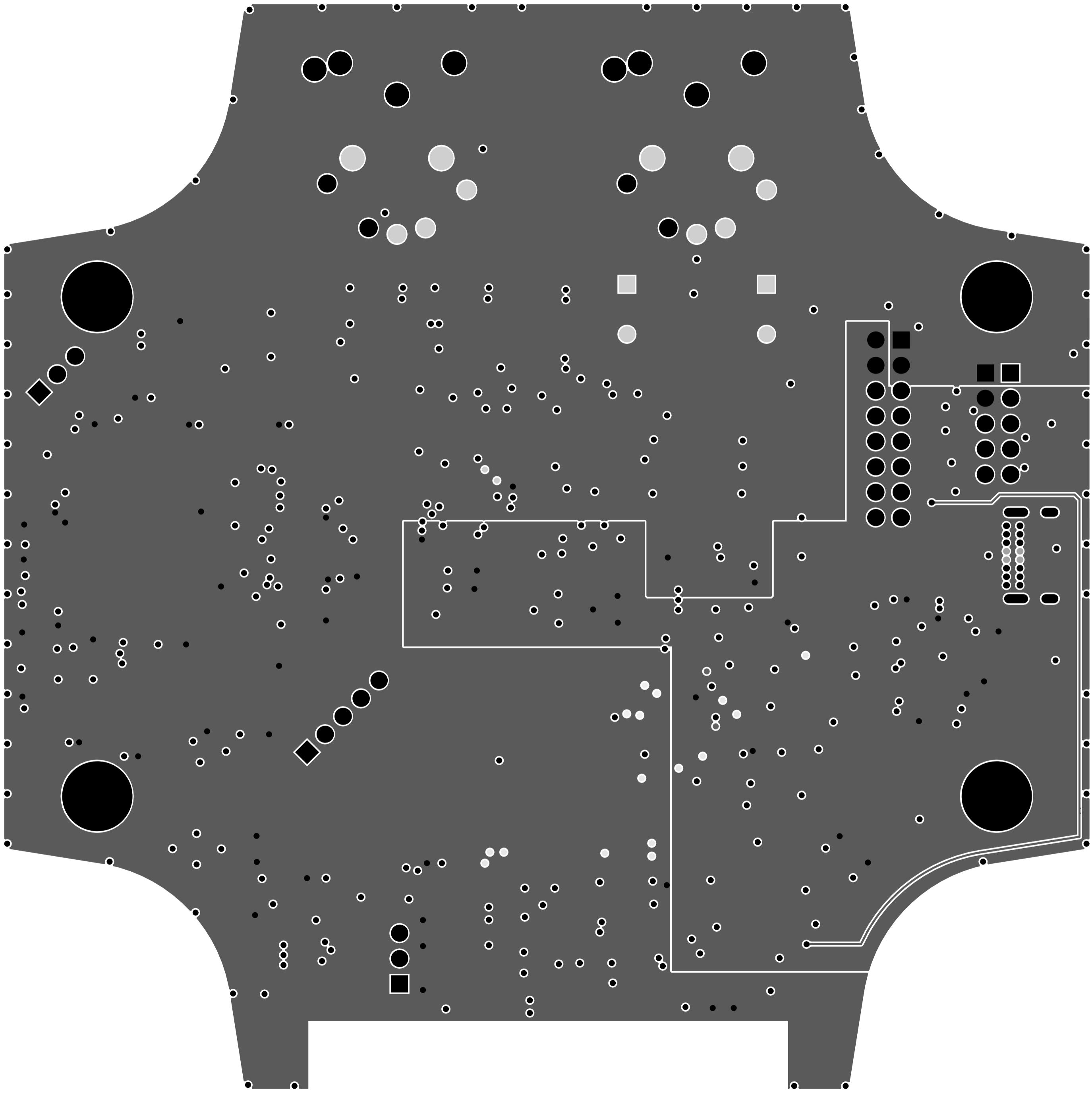


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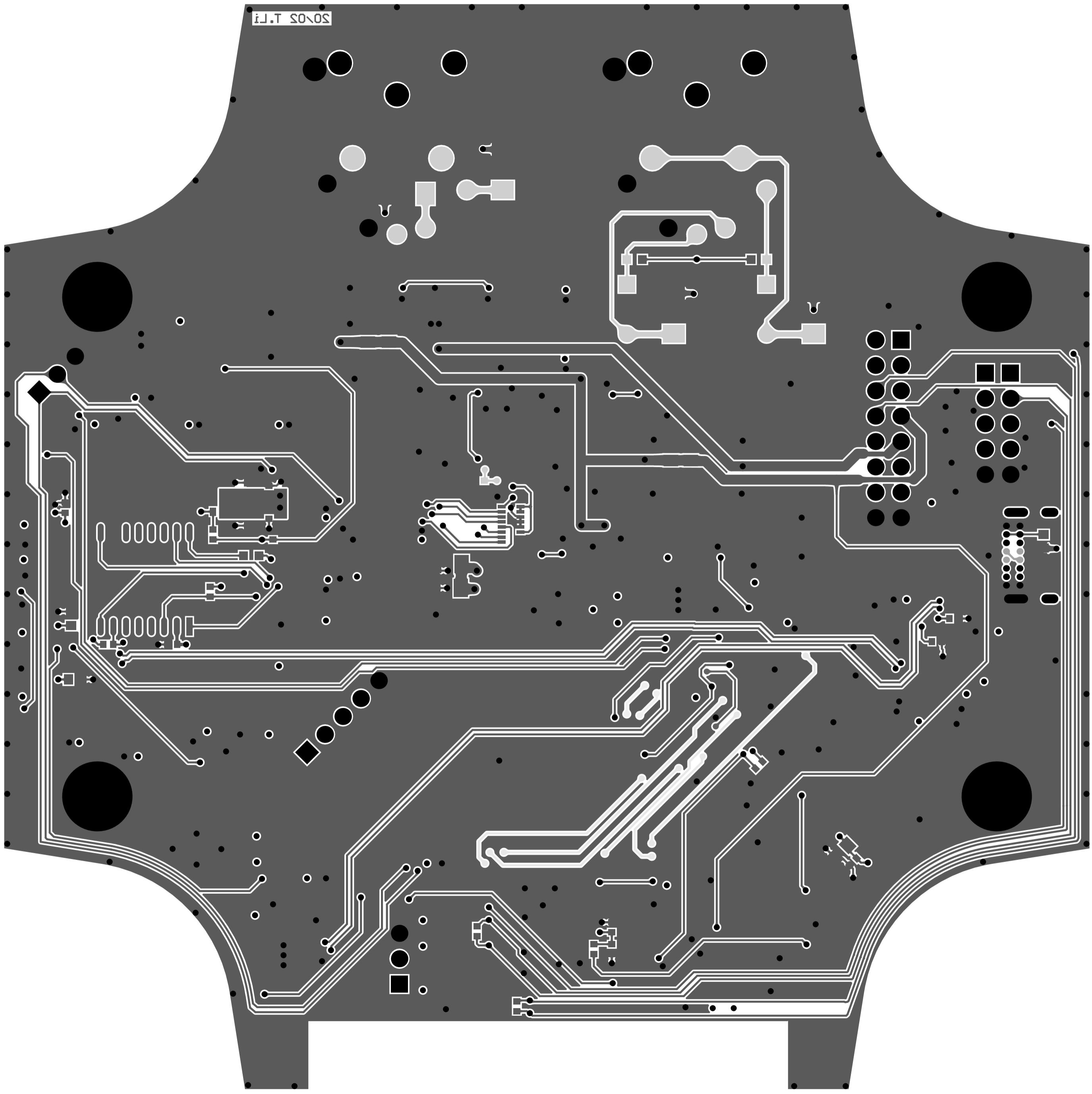








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# Design Rules Verification Report

Filename : C:\Users\Taiping\Documents\FYDP\mixr-hardware\MIXR Input and Processing\Layout\MIXR Input and Processing.PcbDoc

Warnings 0  
Rule Violations 9

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=0.152mm) (All), (All)	2
Short-Circuit Constraint (Allowed=No) (All), (All)	1
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(Expansion=0.5mm) (Conductor Width=0.2mm) (Air Gap=0.2mm)	0
Power Plane Connect Rule(Expansion=0.508mm) (Conductor Width=0.254mm) (Air Gap=0.254mm)	0
Hole Size Constraint (Min=0.3mm) (Max =6.3mm) (All)	0
Hole To Hole Clearance (Gap=0.254mm) (All), (All)	0
Net Antennae (Tolerance=0mm) (All)	0
Board Clearance Constraint (Gap=0mm) (All)	6
Height Constraint (Min=0mm) (Max =30mm) (Preferred=12.7mm) (All)	0
Total	9

Clearance Constraint (Gap=0.152mm) (All), (All)
Clearance Constraint: (0.102mm < 0.152mm) Between Track (39.2mm,-14.91mm)(44.285mm,-19.995mm) on Bottom Layer And Via (42.7mm,-17.7mm)
Clearance Constraint: (Collision < 0.152mm) Between Track (39.5mm,-9.7mm)(48.5mm,-18.7mm) on Bottom Layer And Via (46.2mm,-16.8mm) from Top

Short-Circuit Constraint (Allowed=No) (All), (All)
Short-Circuit Constraint: Between Track (39.5mm,-9.7mm)(48.5mm,-18.7mm) on Bottom Layer And Via (46.2mm,-16.8mm) from Top Layer to Bottom Layer

Board Clearance Constraint (Gap=0mm) (All)
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (17.5mm,55.25mm)(17.5mm,79.75mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (17.5mm,79.75mm)(42.5mm,79.75mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (42.5mm,55.25mm)(42.5mm,79.75mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (47.5mm,55.25mm)(47.5mm,79.75mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (47.5mm,79.75mm)(72.5mm,79.75mm) on Top Overlay
Board Outline Clearance(Outline Edge): (Collision < 0.406mm) Between Board Edge And Track (72.5mm,55.25mm)(72.5mm,79.75mm) on Top Overlay