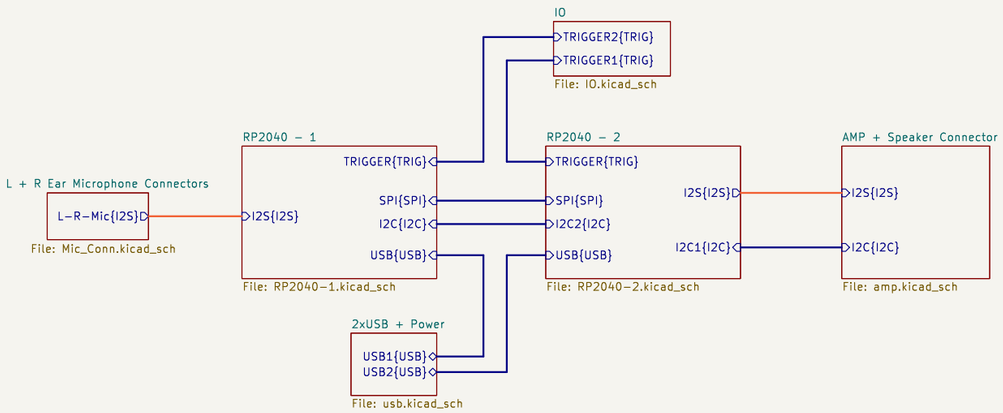
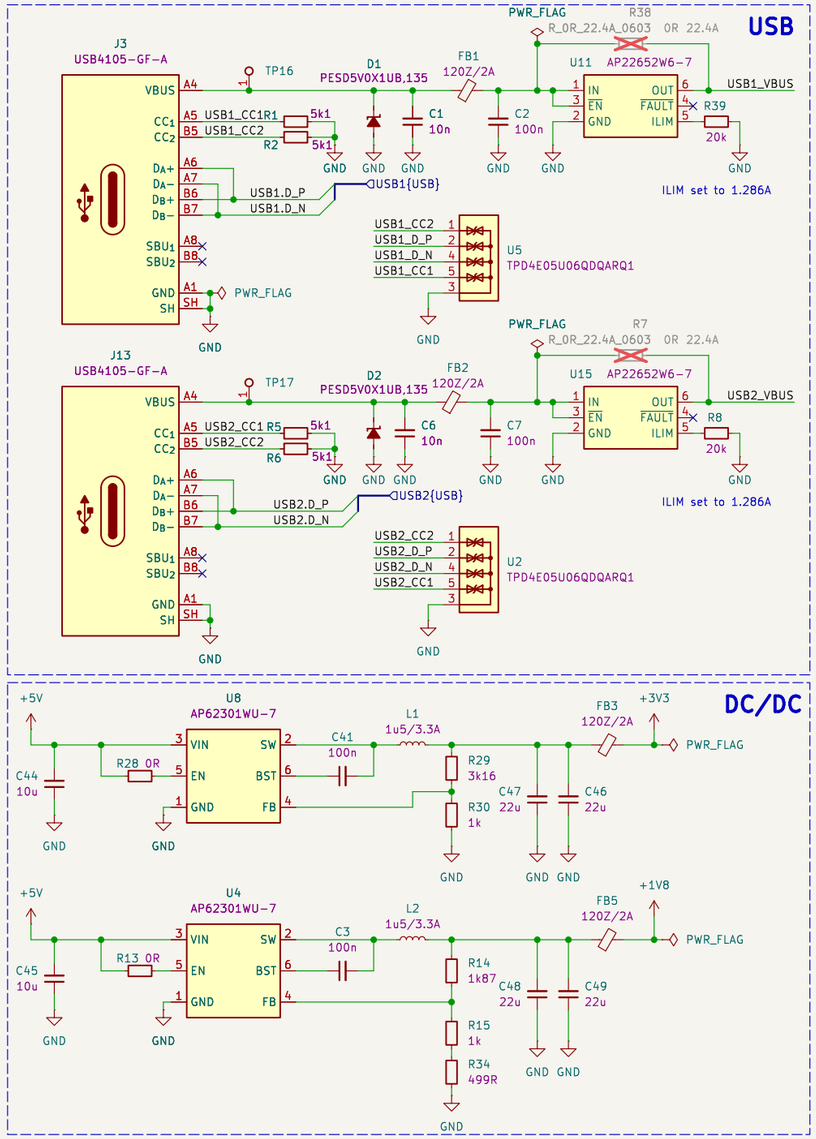


Sheet: /
File: audio–latency–processing–board.kicad_sch

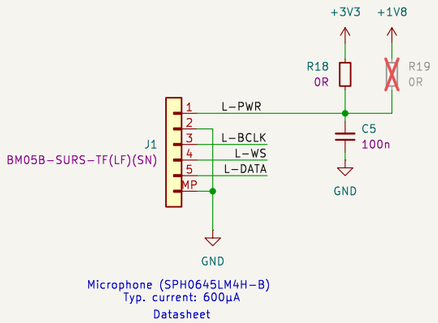
Title: audio–latency–processing–board

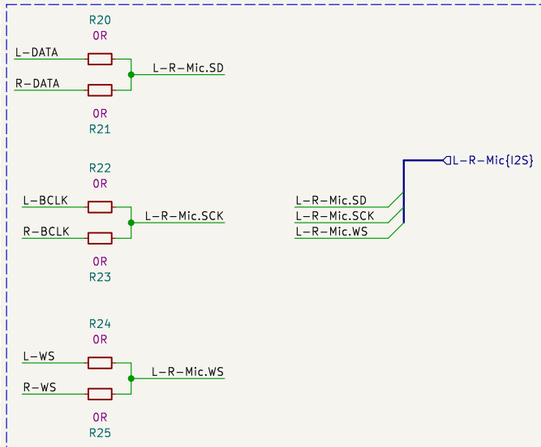
Size: A3	Date: 2025–01–07	**Rev: 1.1.0**
KiCad E.D.A. 8.0.7		Id: 1/7



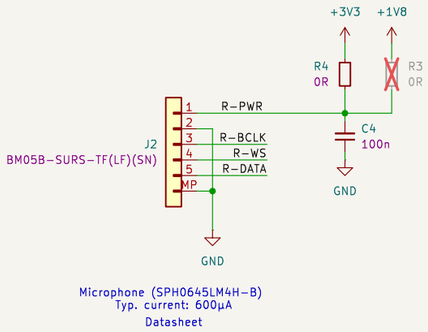
Sheet: /2xUSB + Power/		
File: usb.kicad_sch		
Title: audio-latency-processing-board		
Size: A3	Date: 2025-01-07	**Rev: 1.1.0**
KiCad E.D.A. 8.0.7		Id: 2/7

L_MIC

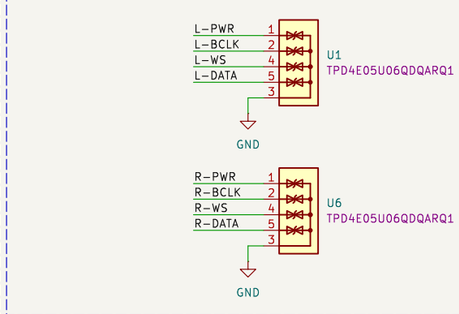




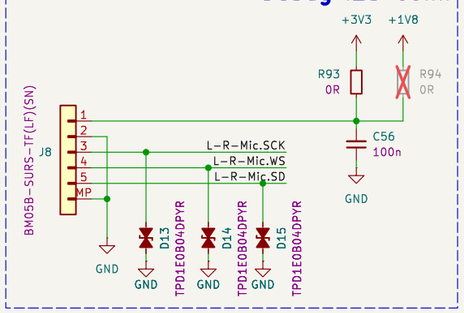
R_MIC



ESD



Debug I2S Conn



Sheet: /L + R Ear Microphone Connectors/		
File: Mic_Conn.kicad_sch		
Title: audio-latency-processing-board		
Size: A3	Date: 2025-01-07	**Rev: 1.1.0**
KiCad E.D.A. 8.0.7		Id: 3/7

MCU

C26 close to MCU pin 44

C10 1u, C13 100n, C15 100n, C28 100n — +3V3 — GND
C11 100n, C14 100n, C16 100n, C29 100n — GND
C17 GND, C30 GND — +1V1

U9
RP2040

44	VREG_VIN	VREG_VOUT	45
48	USB_VDD	GPIO0	2
43	ADC_AVDD	GPIO1	3
1	IOVDD	GPIO2	4
23	DVDD	GPIO3	5
		GPIO4	6
		GPIO5	7
		GPIO6	8
		GPIO7	9
		GPIO8	11
		GPIO9	12
		GPIO10	13
		GPIO11	14
		GPIO12	15
		GPIO13	16
		GPIO14	17
		GPIO15	18
		GPIO16	27
		GPIO17	28
		GPIO18	29
		GPIO19	30
		GPIO20	31
		GPIO21	32
		GPIO22	34
		GPIO23	35
		GPIO24	36
		GPIO25	37
		GPIO26	38
		GPIO27	39
		GPIO28	40
		GPIO29	41
26	RUN		
25	SWDIO		
24	SWCLK		
47	USB_DP		
46	USB_DM		
53	QSPI_SD0		
55	QSPI_SD1		
54	QSPI_SD2		
51	QSPI_SD3		
52	QSPI_SCLK		
56	QSPI_CSn		
20	XIN		
21	XOUT		
19	TESTEN		
57	GND		

TP15 — +1V1 — C35 1u — GND
R57 100k — Q3 Q7 PJE138K_R1_00001 — GND
+3V3 — D6 Green — R58 20k

R54 0R SPI.MISO
R59 0R SPI.CS1
R67 0R SPI.CS2
→ SPI{SPI}

R60 0R SPI.SCK
R61 0R SPI.MOSI
R66 0R I2S.SD
R65 51R I2S.SCK
R64 51R I2S.WS
→ I2S{I2S}

R62 0R I2C.SDA
R63 0R I2C.SCL
→ I2C{I2C}

R68 0R TRIGGER.TRIG1
R69 0R TRIGGER.TRIG2
R70 0R TRIGGER.TRIG3
→ TRIGGER{TRIG}

TP10 RUN, TP11 SWDIO, TP12 SWCLK

USB{USB} → USB.D_N R46 27R → USB_DM; USB.D_P R47 27R → USB_DP

Y1 12 MHz — C9 18p — GND; XOUT_R — R48 1k — XOUT; C12 18p — GND

RESET
SW1 B3U-3000PM — +3V3 — R40 10k — GND

SPI FLASH
U7 W25Q128JVSIQ — +3V3
C8 100n — GND
R43 10k (NC) — +3V3
R44 1k

8	VCC	
5	SI(D0)	QSPI_SD0
2	SO(D1)	QSPI_SD1
3	WP(D2)	QSPI_SD2
7	HOLD(D3)	QSPI_SD3
6	SCK	QSPI_SCLK
1	CS	QSPI_CSn
4	GND	

BOOTSEL
SW2 B3U-3000PM — BOOTSEL — GND

NC - Boot from SPI Flash
Press - USB bootloader

Sheet: /RP2040 - 1/			
File: RP2040-1.kicad_sch			
Title: audio-latency-processing-board			
Size: A3	Date: 2025-01-07		**Rev: 1.1.0**
KiCad E.D.A. 8.0.7			Id: 4/7

MCU

C26 close to MCU pin 44

C33 1u, C37 100n, C39 100n, C43 100n, C34 100n, C38 100n, C40 100n, C50 100n, C42, C51

U12 RP2040

VREG_VIN, VREG_VOUT, USB_VDD, ADC_AVDD, IOVDD, DVDD, RUN, SWDIO, SWCLK, USB_DP, USB_DM, QSPI_SD0, QSPI_SD1, QSPI_SD2, QSPI_SD3, QSPI_SCLK, QSPI_CSn, XIN, XOUT, TESTEN, GND

TP14

GPIO0, GPIO1, GPIO2 R84 0R, GPIO3 R85 0R, GPIO4, GPIO5, GPIO6, GPIO7, GPIO8 R71 0R SPI.MISO, GPIO9 R72 0R SPI.CS1, GPIO10 R73 0R SPI.CS2, GPIO11, GPIO12, GPIO13, GPIO14 R74 0R SPI.SCK, GPIO15 R75 0R SPI.MOSI, GPIO16 R76 0R I2S.SD, GPIO17 R77 51R I2S.SCK, GPIO18 R78 51R I2S.WS, GPIO19, GPIO20, GPIO21, GPIO22 R79 0R I2C1.SDA, GPIO23 R80 0R I2C1.SCL, GPIO24, GPIO25, GPIO26 R81 0R TRIGGER.TRIG1, GPIO27 R82 0R TRIGGER.TRIG2, GPIO28 R83 0R TRIGGER.TRIG3, GPIO29

R91 2k7, R92 2k7

I2C2.SDA, I2C2.SDA, I2C2.SCL, I2C2.SCL, I2C2{I2C}

SPI{SPI}

I2S{I2S}

I2C1{I2C}

TRIGGER{TRIG}

+1V1: C52 1u, GND

R52 100k

+3V3: D7 Green, R53 20k

Q6 PJE138K_R1_00001

RESET

SW3 B3U-3000PM, R41 10k

TP8 RUN, TP9 SWDIO, TP13 SWCLK

SPI FLASH

U10 W25Q128JVSIQ

VCC, SI(D0), SO(D1), WP(D2), HOLD(D3), SCK, GND, CS

C31 100n

R42 10k (DNP)

R45 1k

USB{USB}

USB.D_N R49 27R USB_DM

USB.D_P R50 27R USB_DP

QSPI_SD0, QSPI_SD1, QSPI_SD2, QSPI_SD3, QSPI_SCLK, QSPI_CSn

BOOTSEL

SW4 B3U-3000PM

BOOTSEL

NC - Boot from SPI Flash
Press - USB bootloader

Y3 12 MHz

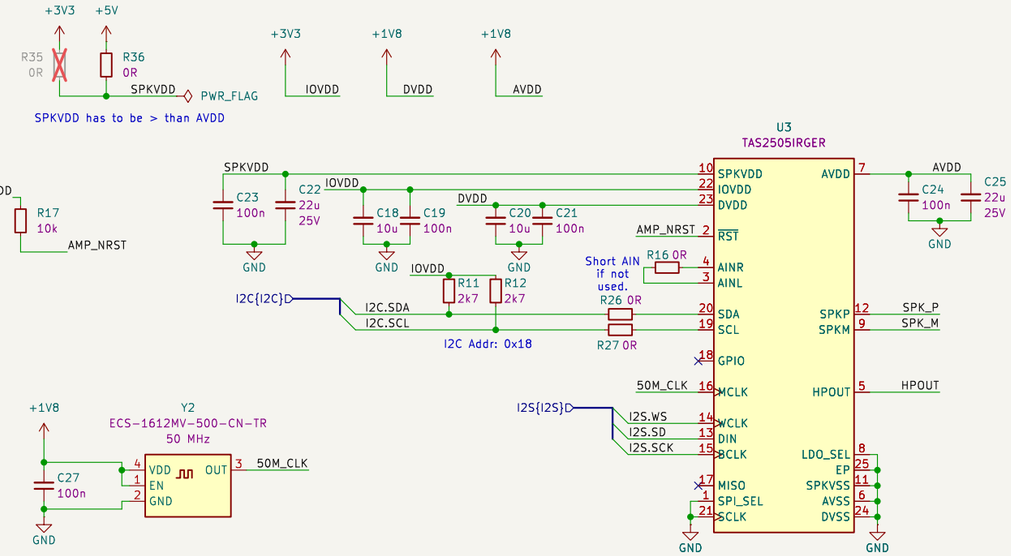
C32 18p, C36 18p

R51 1k

XOUT_R

Sheet:	/RP2040 – 2/
File:	RP2040-2.kicad_sch
Title:	audio-latency-processing-board
Size:	A3
Date:	2025-01-07
Rev:	1.1.0
KiCad E.D.A.	8.0.7
Id:	5/7

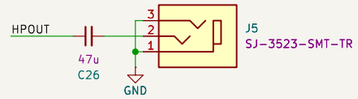
AMP



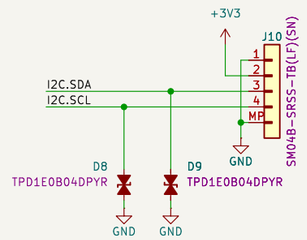
Speaker conn

2.6 W (4Ω, 5.5 V)
1.7 W (8 Ω, 5.5 V)

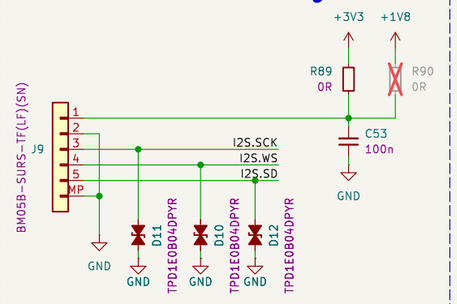
Headphones 3.5mm Jack



Debug I2C Conn



Debug I2S Conn

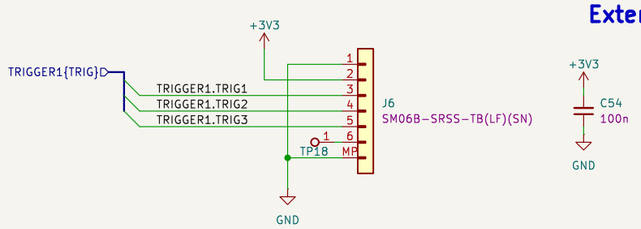


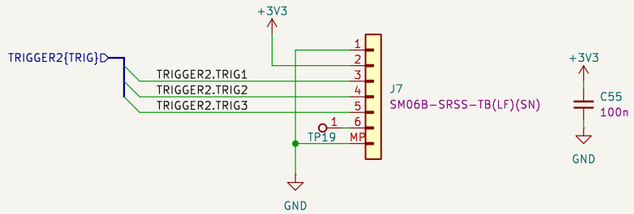
Sheet: /AMP + Speaker Connector/
File: amp.kicad_sch

Title: audio-latency-processing-board

Size: A3	Date: 2025-01-07	**Rev: 1.1.0**
KiCad E.D.A. 8.0.7		Id: 6/7

External Triggers





Trigger

Sheet: /IO/		
File: IO.kicad_sch		
Title: audio-latency-processing-board		
Size: A3	Date: 2025-01-07	**Rev: 1.1.0**
KiCad E.D.A. 8.0.7		Id: 7/7