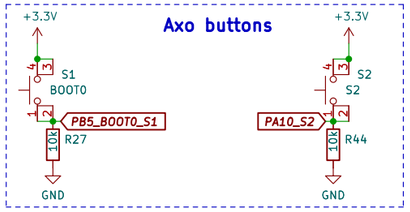
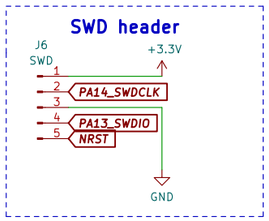
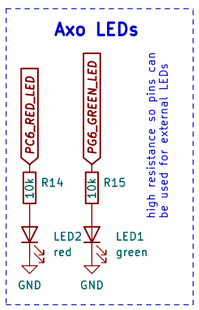
Axo buttons



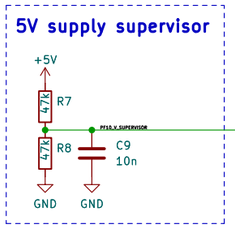
SWD header

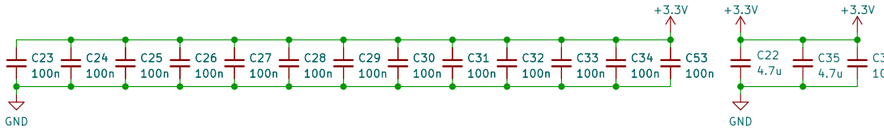


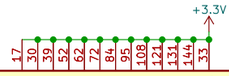
Axo LEDs

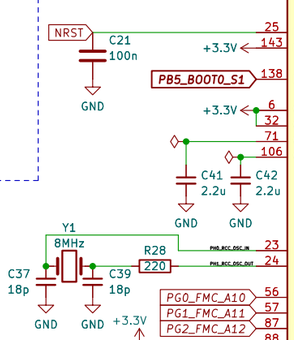


5V supply supervisor









MCU – STM32F42x

25	NRST	
143	PDR_ON	
138	BOOT0	
6	VBAT	
32	VREF+	
71	VCAP_1	
106	VCAP_2	
23	PH0 | RCC_OSC_IN	
24	PH1 | RCC_OSC_OUT	
56	PG0 | FMC_A10	
57	PG1 | FMC_A11	
87	PG2 | FMC_A12	
88	PG3 | FMC_A13	
89	PG4 | FMC_A14 | FMC_BA0	
90	PG5 | FMC_A15 | FMC_BA1	
91	PG6 | DCMI_D12 | FMC_INT2	
92	PG7 | DCMI_D13 | FMC_INT3 | USART6_CK	
93	PG8 | ETH_PPS_OUT | FMC_SDCLK | SPI6_NSS | USART6_RTS	
124	PG9 | DAC_EXTI9 | DCMI_VSYNC | FMC_NCE3 | FMC_NE2 | USART6_RX	
125	PG10 | DCMI_D2 | FMC_NCE4_1 | FMC_NE3	
126	PG11 | ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | DCMI_D3 | ETH_TX_EN | FMC_NCE4_2	
127	PG12 | FMC_NE4 | SPI6_MISO | USART6_RTS	
128	PG13 | ETH_TXD0 | FMC_A24 | SPI6_SCK | USART6_CTS	
129	PG14 | ETH_TXD1 | FMC_A25 | SPI6_MOSI | USART6_TX	
132	PG15 | ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | DCMI_D13 | FMC_SDNCAS | USART6_CTS	
10	PF0 | FMC_A0 | I2C2_SDA	
11	PF1 | FMC_A1 | I2C2_SCL	
12	PF2 | FMC_A2 | I2C2_SMBA	
13	PF3 | ADC3_IN9 | FMC_A3	
14	PF4 | ADC3_IN14 | FMC_A4	
15	PF5 | ADC3_IN15 | FMC_A5	
18	PF6 | ADC3_IN4 | FMC_NIORD | SAI1_SD_B | SPI5_NSS | TIM10_CH1 | UART7_RX	
19	PF7 | ADC3_IN5 | FMC_NREG | SAI1_MCLK_B | SPI5_SCK | TIM11_CH1 | UART7_TX	
20	PF8 | ADC3_IN6 | FMC_NIOWR | SAI1_SCK_B | SPI5_MISO | TIM13_CH1	
21	PF9 | ADC3_IN7 | DAC_EXTI9 | FMC_CD | SAI1_FS_B | SPI5_MOSI | TIM14_CH1	
22	PF10 | ADC3_IN8 | DCMI_D11 | FMC_INTR	
49	PF11 | ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | DCMI_D12 | FMC_SDNRAS | SPI5_MOSI	
50	PF12 | FMC_A6	
53	PF13 | FMC_A7	
54	PF14 | FMC_A8	
55	PF15 | ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | FMC_A9	
141	PE0 | DCMI_D2 | FMC_NBL0 | TIM4_ETR | UART8_RX	
142	PE1 | DCMI_D3 | FMC_NBL1 | UART8_TX	
1	PE2 | ETH_TXD3 | FMC_A23 | SAI1_MCLK_A | SPI4_SCK | SYS_TRACECLK	
2	PE3 | FMC_A19 | SAI1_SD_B | SYS_TRACED0	
3	PE4 | DCMI_D4 | FMC_A20 | SAI1_FS_A | SPI4_NSS | SYS_TRACED1	
4	PE5 | DCMI_D6 | FMC_A21 | SAI1_SCK_A | SPI4_MISO | SYS_TRACED2 | TIM9_CH1	
5	PE6 | DCMI_D7 | FMC_A22 | SAI1_SD_A | SPI4_MOSI | SYS_TRACED3 | TIM9_CH2	
58	PE7 | FMC_D4 | FMC_DA4 | TIM1_ETR | UART7_RX	
59	PE8 | FMC_D5 | FMC_DA5 | TIM1_CH1N | UART7_TX	
60	PE9 | DAC_EXTI9 | FMC_D6 | FMC_DA6 | TIM1_CH1	
63	PE10 | FMC_D7 | FMC_DA7 | TIM1_CH2N	
64	PE11 | ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | FMC_D8 | FMC_DA8 | SPI4_NSS | TIM1_CH2	
65	PE12 | FMC_D9 | FMC_DA9 | SPI4_SCK | TIM1_CH3N	
66	PE13 | FMC_D10 | FMC_DA10 | SPI4_MISO | TIM1_CH3	
67	PE14 | FMC_D11 | FMC_DA11 | SPI4_MOSI | TIM1_CH4	
68	PE15 | ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | FMC_D12 | FMC_DA12 | TIM1_BKIN	
34	PA0_ADC0	ADC1_IN0 | ADC2_IN0 | ADC3_IN0 | ETH_CRS | SYS_WKUP | TIM2_CH1 | TIM2_ETR | TIM5_CH1 | TIM8_ETR | UART4_TX | USART2_CTS | PA0
35	PA1_ADC1	ADC1_IN1 | ADC2_IN1 | ADC3_IN1 | ETH_REF_CLK | ETH_RX_CLK | TIM2_CH2 | TIM5_CH2 | UART4_RX | USART2_RTS | PA1
36	PA2_ADC2 / UART_TX	ADC1_IN2 | ADC2_IN2 | ADC3_IN2 | ETH_MDIO | TIM2_CH3 | TIM5_CH3 | TIM9_CH1 | USART2_TX | PA2
37	PA3_ADC3 / UART_RX	ADC1_IN3 | ADC2_IN3 | ADC3_IN3 | ETH_COL | TIM2_CH4 | TIM5_CH4 | TIM9_CH2 | USART2_RX | USB_OTG_HS_ULPI_D0 | PA3
40	PA4_ADC4 / DAC1 / SPI_NSS	ADC1_IN4 | ADC2_IN4 | DAC_OUT1 | DCMI_HSYNC | I2S3_WS | SPI1_NSS | SPI3_NSS | USART2_CK | USB_OTG_HS_SOF | PA4
41	PA5_ADC5 / DAC2 / SPI_SCK	ADC1_IN5 | ADC2_IN5 | DAC_OUT2 | SPI1_SCK | TIM2_CH1 | TIM2_ETR | TIM8_CH1N | USB_OTG_HS_ULPI_CK | PA5
42	PA6_ADC6 / SPI_MISO	ADC1_IN6 | ADC2_IN6 | DCMI_PIXCK | SPI1_MISO | TIM13_CH1 | TIM1_BKIN | TIM3_CH1 | TIM8_BKIN | PA6
43	PA7_ADC7 / SPI_MOSI	ADC1_IN7 | ADC2_IN7 | ETH_CRS_DV | ETH_RX_DV | SPI1_MOSI | TIM14_CH1 | TIM1_CH1N | TIM3_CH2 | TIM8_CH1N | PA7
100	PA8_I2S_MCLK	I2C3_SCL | RCC_MCO_1 | TIM1_CH1 | USART1_CK | USB_OTG_FS_SOF | PA8
101	PA9_GPDIO	DAC_EXTI9 | DCMI_D0 | I2C3_SMBA | TIM1_CH2 | USART1_TX | USB_OTG_FS_VBUS | PA9
102	PA10_S2	DCMI_D1 | TIM1_CH3 | USART1_RX | USB_OTG_FS_ID | PA10
103	PA11_OTG_FS_D-	ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | CAN1_RX | TIM1_CH4 | USART1_CTS | USB_OTG_FS_DM | PA11
104	PA12_OTG_FS_D+	CAN1_TX | TIM1_ETR | USART1_RTS | USB_OTG_FS_DP | PA12
105	PA13_SWDIO	SYS_JTMS-SWDIO | PA13
109	PA14_SWDCLK	SYS_JTCK-SWCLK | PA14
110	PA15_GPDIO	ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | I2S3_WS | SPI1_NSS | SPI3_NSS | SYS_JTDI | TIM2_CH1 | TIM2_ETR | PA15
46	PB0_ADC8	ADC1_IN8 | ADC2_IN8 | ETH_RXD2 | TIM1_CH2N | TIM3_CH3 | TIM8_CH2N | USB_OTG_HS_ULPI_D1 | PB0
47	PB1_ADC9	ADC1_IN9 | ADC2_IN9 | ETH_RXD3 | TIM1_CH3N | TIM3_CH4 | TIM8_CH3N | USB_OTG_HS_ULPI_D2 | PB1
48		BOOT1 | PB2
133	PB3_GPDIO	I2S3_CK | SPI1_SCK | SPI3_SCK | SYS_JTDO-SWO | TIM2_CH2 | PB3
134	PB4_GPDIO	I2S3_ext_SD | SPI1_MISO | SPI3_MISO | SYS_JTRST | TIM3_CH1 | PB4
135	PB5_BOOT0_S1	CAN2_RX | DCMI_D10 | ETH_PPS_OUT | FMC_SDCKE1 | I2C1_SMBA | I2S3_SD | SPI1_MOSI | SPI3_MOSI | TIM3_CH2 | USB_OTG_HS_ULPI_D7 | PB5
136	PB6_GPDIO	CAN2_TX | DCMI_D5 | FMC_SDNE1 | I2C1_SCL | TIM4_CH1 | USART1_TX | PB6
137	PB7_GPDIO	DCMI_VSYNC | FMC_NL | I2C1_SDA | TIM4_CH2 | USART1_RX | PB7
139	PB8_GPDIO	CAN1_RX | DCMI_D6 | ETH_TXD3 | I2C1_SCL | SDIO_D4 | TIM10_CH1 | TIM4_CH3 | PB8
140	PB9_GPDIO	CAN1_TX | DAC_EXTI9 | DCMI_D7 | I2C1_SDA | I2S2_WS | SDIO_D5 | SPI2_NSS | TIM11_CH1 | TIM4_CH4 | PB9
69	!!PH7->PB10_I2C3->I2C2_SCL	ETH_RX_ER | I2C2_SCL | I2S2_CK | SPI2_SCK | TIM2_CH3 | USART3_TX | USB_OTG_HS_ULPI_D3 | PB10
70	!!PH8->PB11_I2C3->I2C2_SDA	ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | ETH_TX_EN | I2C2_SDA | TIM2_CH4 | USART3_RX | USB_OTG_HS_ULPI_D4 | PB11
73	PB12_GPDIO	CAN2_RX | ETH_TXD0 | I2C2_SMBA | I2S2_WS | SPI2_NSS | TIM1_BKIN | USART3_CK | USB_OTG_HS_ID | USB_OTG_HS_ULPI_D5 | PB12
74	PB13_GPDIO	CAN2_TX | ETH_TXD1 | I2S2_CK | SPI2_SCK | TIM1_CH1N | USART3_CTS | USB_OTG_HS_ULPI_D6 | USB_OTG_HS_VBUS | PB13
75	PB14_OTG_HS_D-	I2S2_ext_SD | SPI2_MISO | TIM12_CH1 | TIM1_CH2N | TIM8_CH2N | USART3_RTS | USB_OTG_HS_DM | PB14
76	PB15_OTG_HS_D+	ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | I2S2_SD | RTC_REFIN | SPI2_MOSI | TIM12_CH2 | TIM1_CH3N | TIM8_CH3N | USB_OTG_HS_DP | PB15
26	!!PH5->PC0_FMC_SDNWE	ADC1_IN10 | ADC2_IN10 | ADC3_IN10 | FMC_SDNWE | USB_OTG_HS_ULPI_STP | PC0
27	PC1_ADC10	ADC1_IN11 | ADC2_IN11 | ADC3_IN11 | ETH_MDC | PC1
28	!!PH3->PC2_FMC_SDNE0	ADC1_IN12 | ADC2_IN12 | ADC3_IN12 | ETH_TXD2 | FMC_SDNE0 | I2S2_ext_SD | SPI2_MISO | USB_OTG_HS_ULPI_DIR | PC2
29	!!PH2->PC3_FMC_SDCKE0	ADC1_IN13 | ADC2_IN13 | ADC3_IN13 | ETH_TX_CLK | FMC_SDCKE0 | I2S2_SD | SPI2_MOSI | USB_OTG_HS_ULPI_NXT | PC3
44	PC4_ADC11	ADC1_IN14 | ADC2_IN14 | ETH_RXD0 | PC4
45	PC5_ADC12	ADC1_IN15 | ADC2_IN15 | ETH_RXD1 | PC5
96	PC6_RED_LED	DCMI_D0 | I2S2_MCK | SDIO_D6 | TIM3_CH1 | TIM8_CH1 | USART6_TX | PC6
97	PC7_GPDIO	DCMI_D1 | I2S3_MCK | SDIO_D7 | TIM3_CH2 | TIM8_CH2 | USART6_RX | PC7
98	PC8_SDIO_D0	DCMI_D2 | SDIO_D0 | TIM3_CH3 | TIM8_CH3 | USART6_CK | PC8
99	PC9_SDIO_D1	DAC_EXTI9 | DCMI_D3 | I2C3_SDA | I2S_CKIN | RCC_MCO_2 | SDIO_D1 | TIM3_CH4 | TIM8_CH4 | PC9
111	PC10_SDIO_D2	DCMI_D8 | I2S3_CK | SDIO_D2 | SPI3_SCK | UART4_TX | USART3_TX | PC10
112	PC11_SDIO_D3	ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | DCMI_D4 | I2S3_ext_SD | SDIO_D3 | SPI3_MISO | UART4_RX | USART3_RX | PC11
113	PC12_SDIO_CK	DCMI_D9 | I2S3_SD | SDIO_CK | SPI3_MOSI | UART5_TX | USART3_CK | PC12
7	~~RTC_AF1 | PC13~~	WEAK
8	~~RCC_OSC32_IN | PC14~~	
9	~~ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | RCC_OSC32_OUT | PC15~~	
114	PD0_FMC_D2	CAN1_RX | FMC_D2 | FMC_DA2 | PD0
115	PD1_FMC_D3	CAN1_TX | FMC_D3 | FMC_DA3 | PD1
116	PD2_SDIO_CMD	DCMI_D11 | SDIO_CMD | TIM3_ETR | UART5_RX | PD2
117	PD3_GPDIO	DCMI_D5 | FMC_CLK | I2S2_CK | SPI2_SCK | USART2_CTS | PD3
118	PD4_GPDIO	FMC_NOE | USART2_RTS | PD4
119	PD5_GPDIO	FMC_NWE | USART2_TX | PD5
122	PD6_GPDIO	DCMI_D10 | FMC_NWAIT | I2S3_SD | SAI1_SD_A | SPI3_MOSI | USART2_RX | PD6
123	PD7_2141_EN	FMC_NCE2 | FMC_NE1 | USART2_CK | PD7
77	PD8_FMC_D13	FMC_D13 | FMC_DA13 | USART3_TX | PD8
78	PD9_FMC_D14	DAC_EXTI9 | FMC_D14 | FMC_DA14 | USART3_RX | PD9
79	PD10_FMC_D15	FMC_D15 | FMC_DA15 | USART3_CK | PD10
80		ADC1_EXTI11 | ADC2_EXTI11 | ADC3_EXTI11 | FMC_A16 | FMC_CLE | USART3_CTS | PD11
81	PD12_SPILINK_SELECT	FMC_A17 | FMC_ALE | TIM4_CH1 | USART3_RTS | PD12
82	PD13_SD_DETECT	FMC_A18 | TIM4_CH2 | PD13
85	PD14_FMC_D0	FMC_D0 | FMC_DA0 | TIM4_CH3 | PD14
86	PD15_FMC_D1	ADC1_EXTI15 | ADC2_EXTI15 | ADC3_EXTI15 | FMC_D1 | FMC_DA1 | TIM4_CH4 | PD15

codec_adau1961

File: codec_adau1961.kicad_sch

headers

File: headers.kicad_sch

sdram

File: sdram.kicad_sch

power_midi

File: power.kicad_sch

usb

File: usb.kicad_sch

sdio

File: sdio.kicad_sch

CHANGELOG

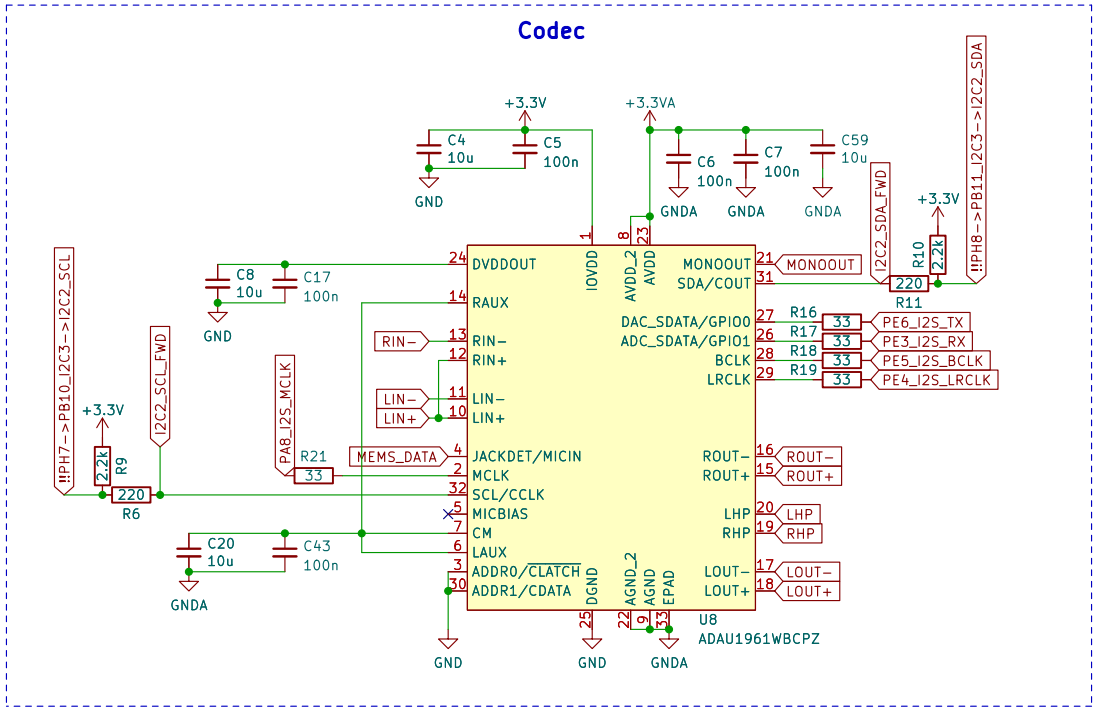
changelog

File: ~~changelog.kicad_sch~~

Sheet: /
File: ksoloti_core_v06.kicad_sch

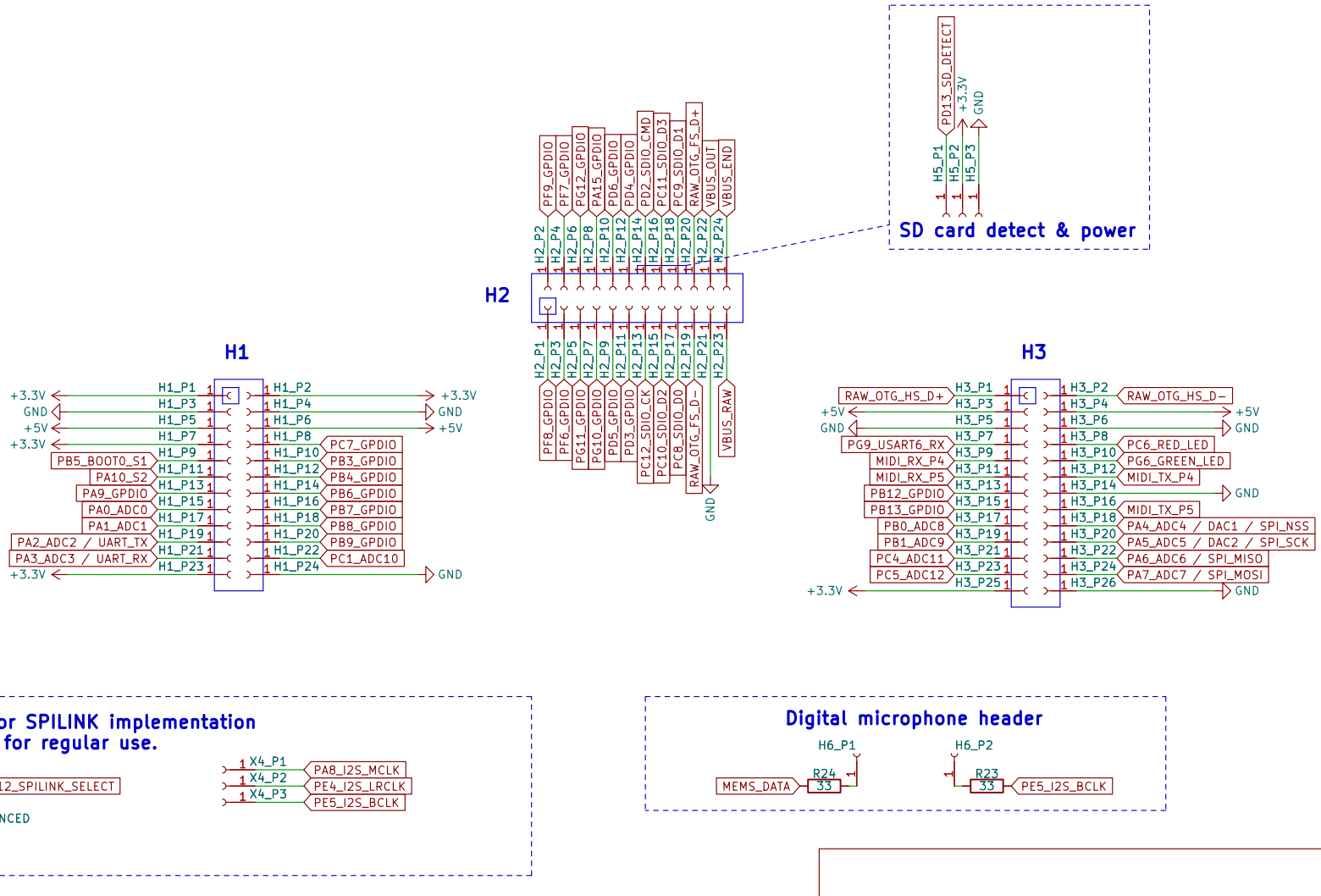
Title: Ksoloti Core

Size: A3	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 1/8



Sheet: /codec_adau1961/		
File: codec_adau1961.kicad_sch		
Title: Ksoloti Core		
Size: A4	Date: 2024−10−07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 2/8

GPIO and function headers (PCB component side view)



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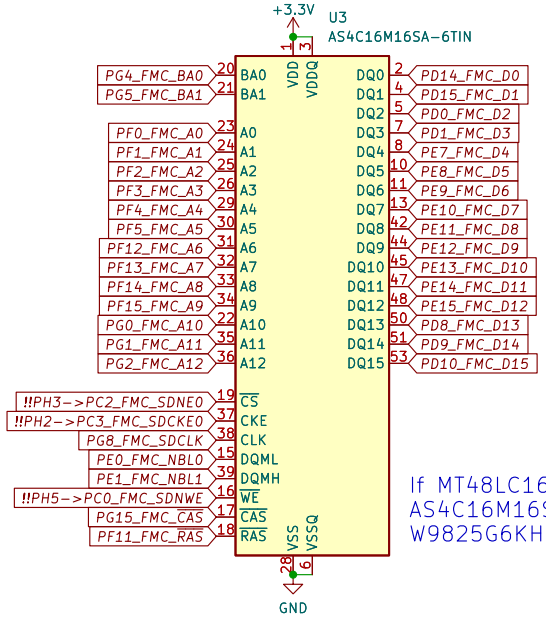
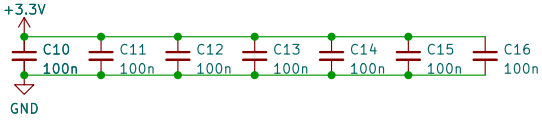
Title: Ksoloti Core		
Size: A4	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 3/8

SDRAM



If MT48LC16M16A2P unavailable:
AS4C16M16SA-6TIN,
W9825G6KH-6I as replacement



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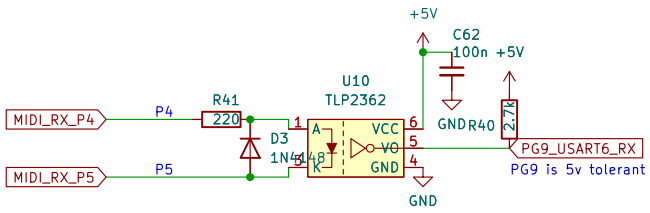
File: sdram.kicad_sch

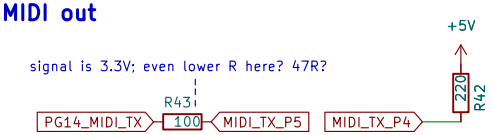
Title: Ksoloti Core

Size: A4	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 4/8

MIDI in (OPTIONAL footprints on the bottom side of the PCB — not placed by default)



MIDI out



GND = Shield
MO4 = Source
MO5 = Sink

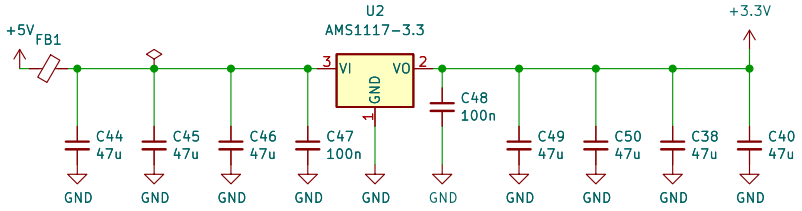
You can connect a DIN MIDI jack directly:

GND -> DIN pin 2
MO4 -> DIN pin 4
MO5 -> DIN pin 5

Or for TRS MIDI jacks:

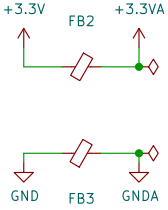
GND -> TRS sleeve
MO4 -> TRS ring
MO5 -> TRS tip

3.3V digital power supply



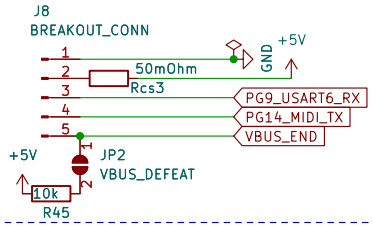
Analog power

(audio path only)



To optional power/MIDI board

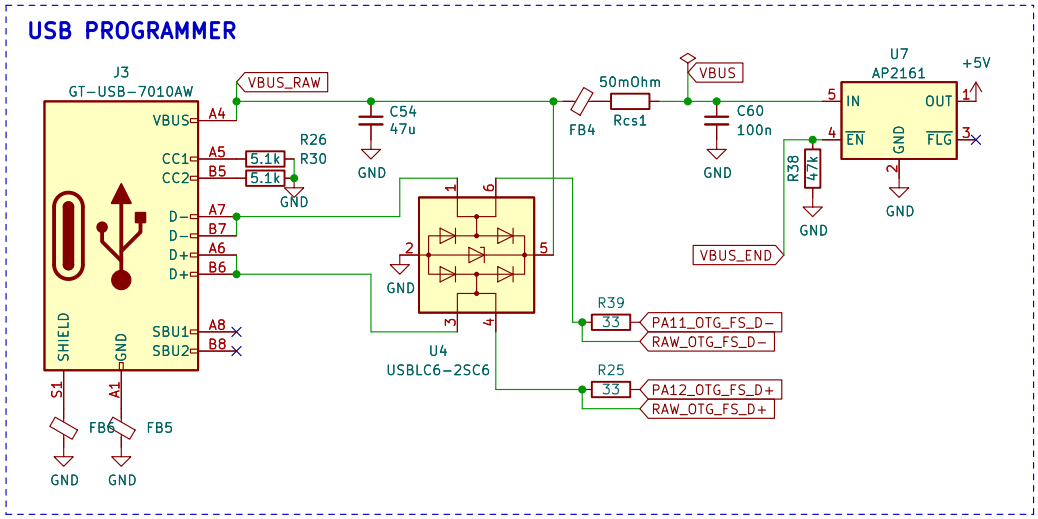
WARNING: J8 pinout inconsistent with Axoloti Core

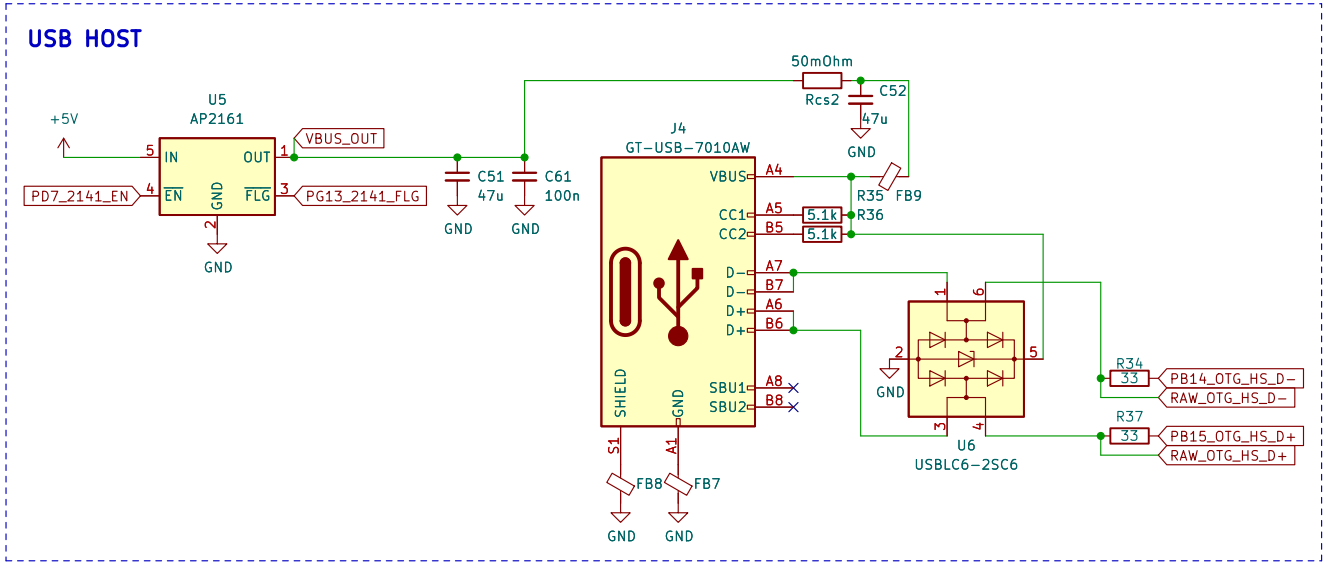


Sheet: /power_midi/
File: power.kicad_sch

Title: Ksoloti Core

Size: A4	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 5/8





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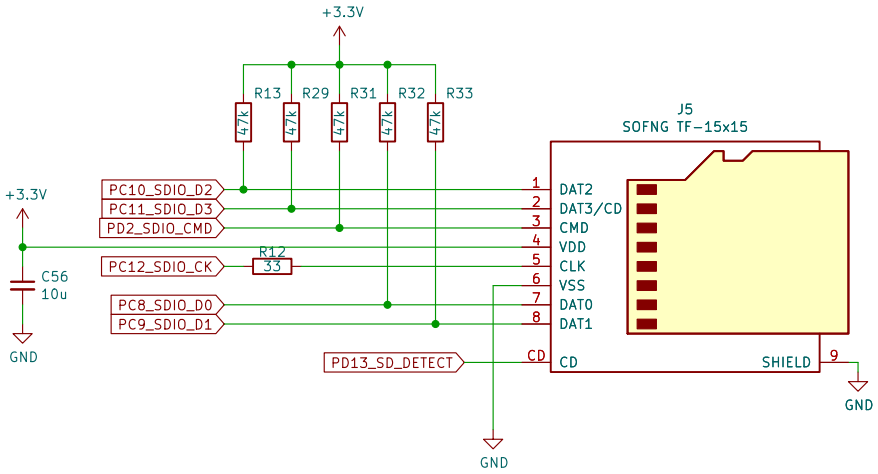
File: usb.kicad_sch

Title: Ksoloti Core

Size: A4	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 6/8

Micro SD card



Sheet: /sdio/		
File: sdio.kicad_sch		
Title: Ksoloti Core		
Size: A4	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 7/8

v0.5 done – production – 2023/09/22

Changes in v0.5:

- Remove PDM mic, add optional gyroscope/acceleroscope via I2C2.
- Rename MIDI pins to MIx, MOx.
- Fix swapped labeling of LED1 and LED2 to conform with Axo tradition. Rename LED pins to L1G and L2R to indicate color.
- Add 47uF caps C38, C40 to 3.3V rail for more stability when USB or external power is (accidentally) unplugged

v0.6 done – production – 2024/03/06

Changes in v0.6:

- In USB host port, use AP2161 instead of AP2141 to allow for up to 1A of current.
- MT48LC16M16A2P (SDRAM) part shortage. Use AS4C16M16SA-6TIN (W9825G6KH-6I; IS42S16160J-6TLI?)
- SRV05-4 price fluctuation. Use USBLC6-2SC6.
- Add jumper to disable VBUS power (useful if synced via spilink)
- Remove gyroscope (feature creep)
- Change layer sequence – SDRAM lines now run on inner layer.
- Realign R42, R43 (MIDI out circuit)
- Improve MI4, MI5, optional MIDI in circuit labeling
- Adjust USB Type-C connector footprint
- Use TLP2362 as optional optocoupler (smaller footprint)
- Add ferrites to USB GND

Sheet: /changelog/		
File: changelog.kicad_sch		
Title: Ksoloti Core		
Size: A4	Date: 2024-10-07	**Rev: v0.6**
KiCad E.D.A. kicad (6.0.11)		Id: 8/8