Sound

The board maps SAI3 and ENET1 pins to SAI5 input and output with a full 4 channels. The Master clock pin is available, but is not used. The signals are immediately mapped to 1.8V, which is then routed to the Camera Modules, the M.2 connector and Sound Connectors.

Camera Connector mapping (SAI5)

pin	code		signal	
14	BCLK / SCK	I2S	Bit clock line – P1.32 SAI5_RXC	1.8V
15	WS / LRCLK	I2S	Word clock line – P1.34 SAI5_RX_SYNC	1.8V
16	SDATA1	I2S	Input data 1 – P1.38 SAI5_RX_DATA1	1.8V
17	SDATA2	I2S	Input data 2 (NC)	1.8V

Supervisor Connector mapping (SAI5)

This has been revised

Pin id.	Upper	Lower	Description	Counterpoint	Voltage Level	Spec Feature
10		LED_1	GPIO9 / WWAN LED_1 / BCLK / SCK	SAI5_TXC/P2.55	3.3V	
20		M2_I2S_TXFS	GPIO5 / SPK I2S LRC	SAI5_TXFS/P2.53	1.8V	
22		M2_I2S_TXD0	GPIO6 / SPK I2S DAT	SAI5_TXD0/P2.60	1.8V	
24		M2_I2S_RXFS	GPIO7 / MIC I2S LRC	SAI5_RXFS/P1.34	1.8V	
26		GPIO10	SOUND_INT?	INT pin?	1.8V	
28		M2_I2S_RXD0	GPIO8 / MIC I2S DAT	SAI5_RXD0/P1.28	1.8V	

The GPIO10 / SOUND_INT is not yet confirmed.

I2S (SAI5) 4 channel microphone input mapping

One lane goes to the 34 pins camera connectors The microphones on the 34 pins connector use SAI5_RX_DATA0.

The full 4 lanes are available on the sound connector and M.2 Key B.

Microphone I2S mapping (SAI5)

The microphone I2S mapping is done by using AL2 mode for the SAI3 pads to get SAI5 signals. Multiplexed Signal Pins. This provides the 4 microphone lines on the Sound Connector.

Misc pin	SoM pin	i.MX pad	Functionality	ALT	I2S
11	P1.26	SAI3_TXD	SAI5_RX_DATA3	ALT2	
17	P1.28	SAI3_RXD	SAI5_RX_DATA0	ALT2	DATA0
15	P1.30	SAI3_MCLK	SAI5_MCLK	ALT2	
19	P1.32	SAI3_RXC	SAI5_RXC	ALT2	BCLK
23	P1.34	SAI3_RXFS	SAI5_RX_SYNC	ALT2	LRCLK
13	P1.36	SAI3_TXC	SAI5_RX_DATA2	ALT2	
21	P1.38	SAI3_TXFS	SAI5_RX_DATA1	ALT2	

Speaker I2S mapping (SAI5)

ENET1 are mapped as SAI5 and brought out as speaker on 20 pins Sound connector. Multiplexed Signal Pins.

Misc pin	SoM pin	i.MX pad	Functionality	I2S
15	P1.30	SAI3_MCLK	SAI5_MCLK	ALT2
	P2.53	ENET1_RX_CTL	SAI5_TXFS	ALT
	P2.55	ENET1_RXC	SAI5_TXC / BCLK	ALT
	P2.60	ENET1_TD0	SAI5_TXD0	ALT
	P2.63	ENET1_TD2	SAI5_TXD2	ALT
	P2.65	ENET1_TD3	SAI5_TXD3	ALT
	P2.76	ENET1_nRST IO24	SAI5_TXD1	ALT

Sound connector 20 pins

The sound connector is new, it replaces the 6 pin

The sound connector provides 4 lines input and 4 lines output. They connect directly to the System Module, so they are not level shifted. It is not yet defined if the signal level is 1.8V or 3.3V. It will depend on NVCC_SAI5 The pin layout wraps around aligning 1 and 20 close, but on opposite sides.

Two Connector components used are DF40HC(3.5)-20DS-0.4V(51). Socket @ Mouser

The Sensors on these expansion triggers interrupt via EX_OH_nINT / SOUND_INT (GPIO1_IO0). The pins connect directly to the i.MX module.

Pin	Code	Function	Description
1	GND		
2	SAI5_MCLK	SAI5_MCLK	Master Clock

Pin	Code	Function	Description
3	SPK_BCLK	SAI5_TXC	I2S BCLK / SCK
4	SPK_LRCLK	SAI5_TXFS	I2S LRCLK
5	SPK_DATA0	SAI5_TXD0	I2S DATA
6	SPK_DATA1	SAI5_TXD1	I2S DATA
7	SPK_DATA2	SAI5_TXD2	I2S DATA
8	SPK_DATA3	SAI5_TXD3	I2S DATA
9	VIN	1V8 / 3V3	Power at signal level
10	3V3	3V3	Power
11	MIC_BCLK	SAI5_RXC	I2S BCLK / SCK
12	MIC_LRCLK	SAI5_RXFS	I2S LRCLK
13	MIC_DATA0	SAI5_RXD0	I2S DATA
14	MIC_DATA1	SAI5_RXD1	I2S DATA
15	MIC_DATA2	SAI5_RXD2	I2S DATA
16	MIC_DATA3	SAI5_RXD3	I2S DATA
17	SCL	I2C6_SCL	I2C
18	SDA	I2C6_SDA	I2C
19	GPIO1_IO0	EX_OH_nINT / SOUND_INT	Interrupt pin GPIO1_IO0
20	GND	GND	Power

(?) Rename EX_OH_nINT

A future bigger/alternate connector would include:

- SCLK
- MISO
- MOSI
- ECSPI2_SS0
- CAN1_RX / CAN1_TX
- CAN2_RX / CAN2_TX
- PWM1..3
- VCC_RTC / Suspended Power
- 5 * GPIO