About This Document

This purpose of this document is to provide steps on how to setup the evaluation (EV) board.

Revision History

Date	Revision	Description
08-Jul-2018	PCB V1.1	Initial release
21-Nov-2018	Bottom PCB V2	Update bottom PCB V2
22-Nov-2018	Document Preview A	Initial release

Convention

WARNING	Indicates a hazard with a medium or low level of risk that, if not avoided, could result in minor or moderate injury.
TIP	Indicates a tip that may help you solve a problem or save time.
NOTE	Provides additional information to emphasize or supplement important points of the main text.

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1 Overview

The evaluation board of the SNC7320 Series consists of:

- SNC7320_EV_Board_Top-V*x.x*[1]: Top board
- SNC7320_EV_Board_Bottom-V*x.x*: Bottom board
- SNC7320_Debug_Board_V*x.x*: Debug board

Top view of each board and the names of the components are provided below.

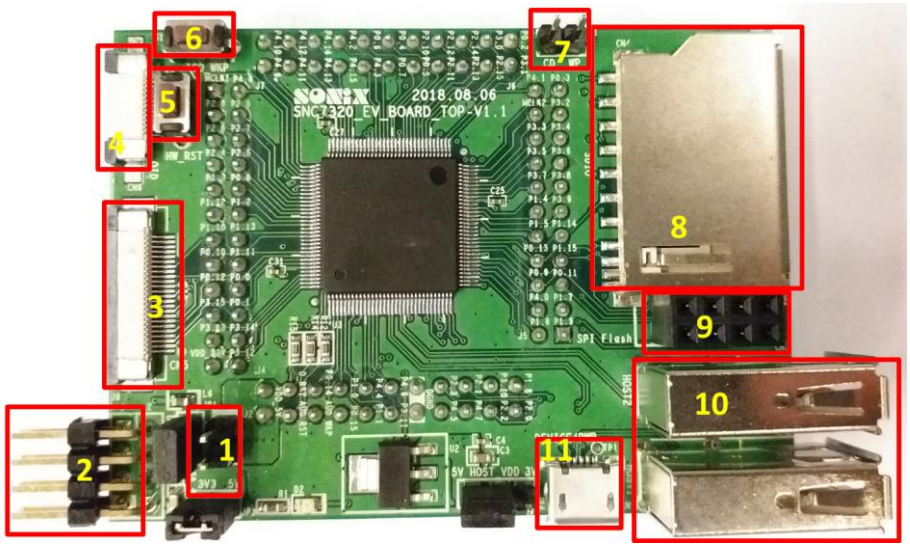

Figure 1–1 Top View of SNC7320_EV_Board_Top-V*x.x*

Names of the components corresponding to the numbers on the figure above are:

1. Battery Connector
2. Debug IF Connector
3. CMOS Image Sensor (CIS)
4. Y Sensor
5. Hardware Reset Key
6. SD Card CD/WP Pin
7. ISO Wakeup Key
8. SDIO/SD Connector
9. SPI F Flash Connector
10. USB Host (EHCI) Connector
11. Micro-USB Device Connector

[1] *x* = a variable number; may change as the version gets updated.

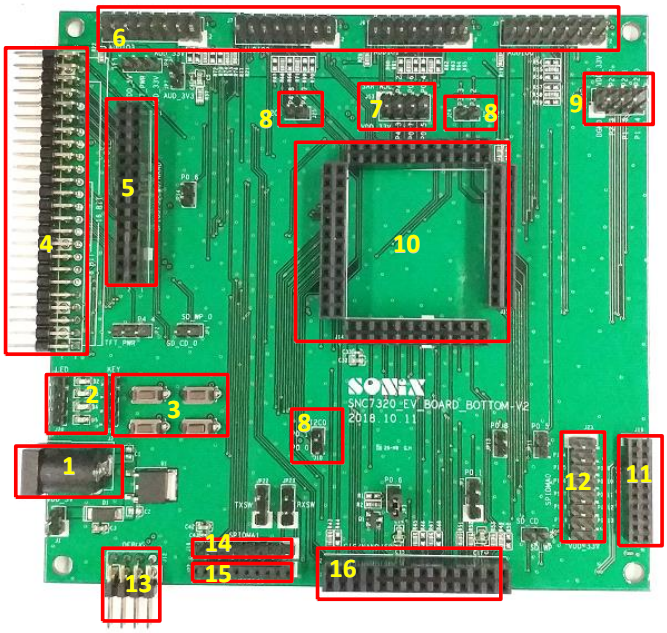

Figure 1–2 Top View of SNC7320_EV_Board_Bottom-V*x.x*

Names of the components corresponding to the numbers on the figure above are:

1. Power-7.5V AC adapter
2. LED x4
3. Key x4
4. TFT/8080 Connector
5. SD Card/NAND Flash/GPIO3 Connector
6. Audio Connectors: I^2S 0–3, I^2C 1–2
7. SAR0/PWM Interface
8. I^2C Interface Connector
9. I^2S4 Interface
10. SNC7320_EV_Board_Top-V*x.x* Connector
11. RF Board Interface
12. SPI0 Interface Connector
13. Debug IF Connector
14. SPI1 Interface Connector
15. RF Board Interface
16. SD Card/NAND Flash/TFT Connector

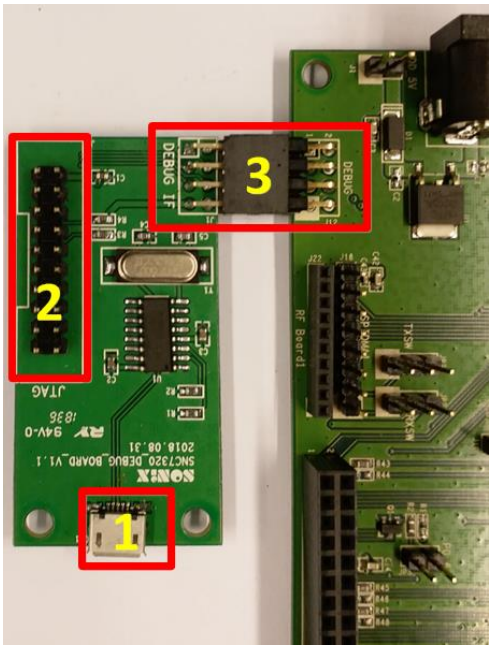

Figure 1–3 Top View of SNC7320_Debug_Board_V*x.x*

Names of the components corresponding to the numbers on the figure above are:

1. UART Interface Connector
2. JTAG Emulator Connector
3. Debug IF to connect the Debug IF pin of SNC7320_EV_Board_Bottom-V*x.x* and SNC7320_EV_Board_Top-V*x.x*

2 Interface Connectors

2.1 Introduction

The SNC7320_EV_Board_Top-V*x.x* and the SNC7320_EV_Board_Bottom-V*x.x* are a full function development system. They provide various interfaces such as CIS, SD card, NOR/NAND flash, SRAM, 8080 LCM, TFT LCD, Audio (I^2S), USB (device or host), SAR ADC, SPI, I^2C, UART, and …etc. for development of wide range of applications. The subsections below explain how to use each connector and provide circuit diagrams thereof.

2.2 AC Adapter Connector and BAT Connector

There are two power processes on SNC7320 EVB. Their relative of power domain on SNC7320_EV_Board_Bottom-V*x.x* and SNC7320_EV_Board_Top-V*x.x* can depart into two cases below.

Case 1: Use the AC adapter connector (J2) of the bottom board to supply power to the EVB. The bottom board converts the voltage from 7.5V to 5V with a 7805 regulator, and supplies 5V power to the top board. The top board converts the 5V power to 3.3V and provides 3.3V power to the bottom board and the peripherals connected to it.

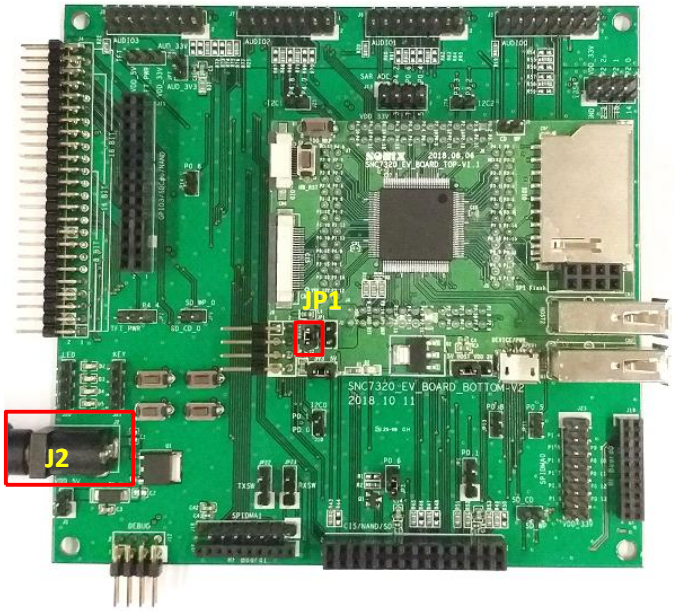

Figure 2–1 AC Adapter Connector of Bottom Board

Case 2: Use a battery to supply power to the EVB via connector J2 of the bottom board. The supplies 3.3V power to the peripherals connected to the bottom board after the top board converting power from 5V to 3.3V.

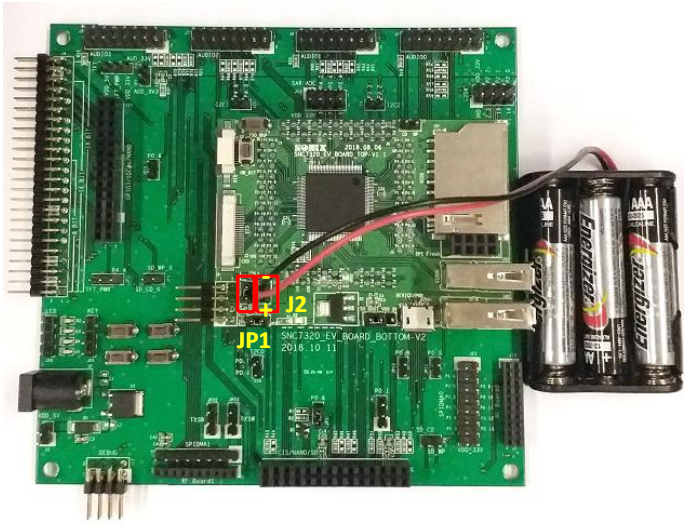

Figure 2–2 Battery Connector of Top Board

2.2.1 Circuit Diagrams

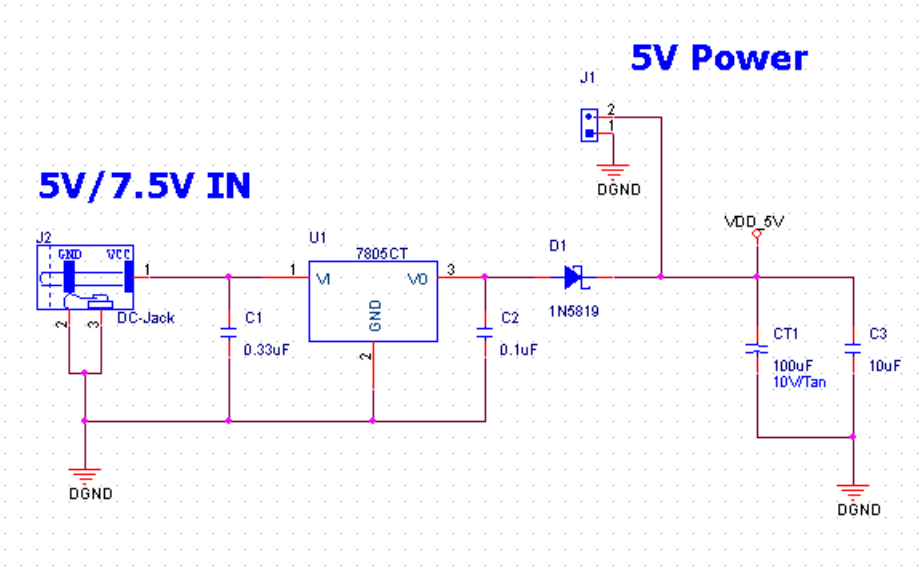

Figure 2–3 Circuit Diagram of AC Adapter Connector

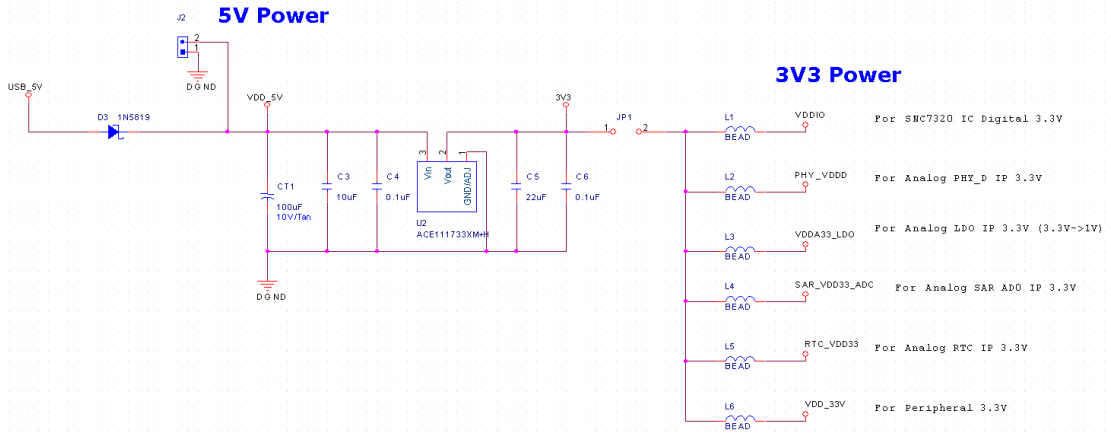

Figure 2–4 Circuit Diagram of Battery Connector

NOTE

When using the SNC7320 EV Board, remember to short JP1 for the power supply of the IC and peripherals.

2.3 J-Link Connector

Case 1: When the bottom board is not attached, connect the debug board to the top board with connector J9. The connector J2 is the connector for J-Link.

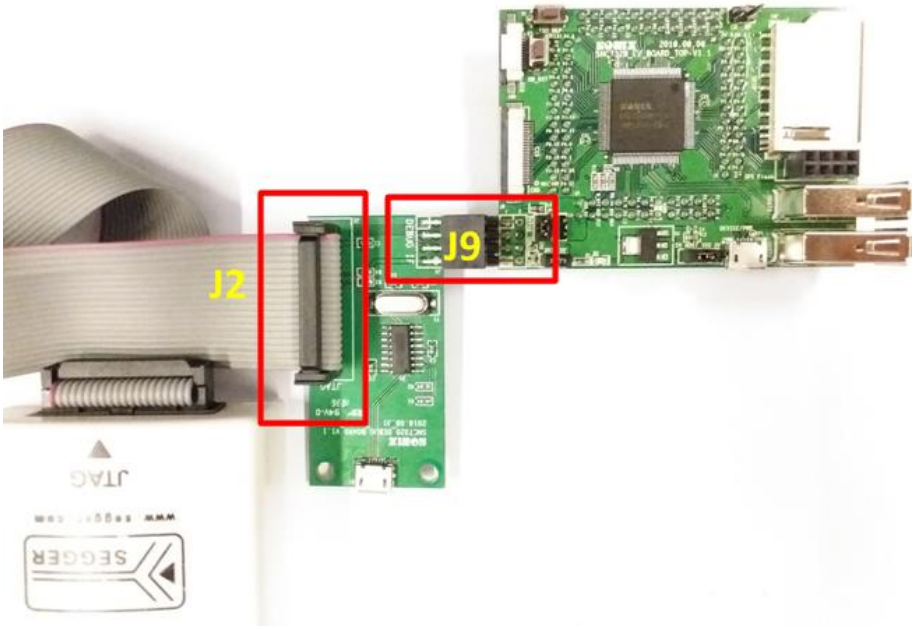

Figure 2–5 J-Link Connector of Top Board

Case 2: When the top and bottom boards are both attached, connect the debug board to the bottom board with connector J12. The connector J2 is the connector for the J-Link.

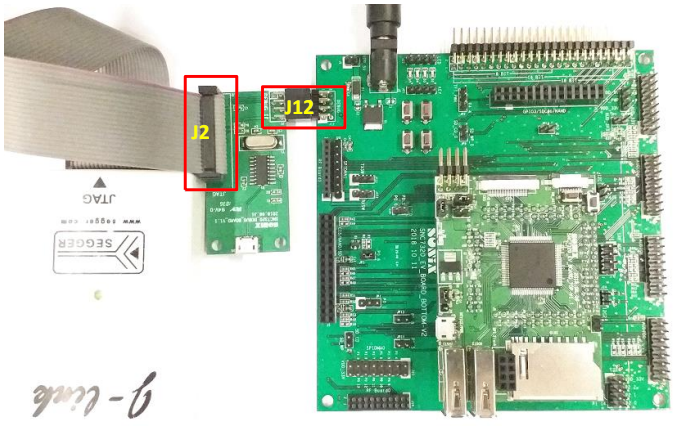

Figure 2–6 J-Link Connector of Bottom Board

2.3.1 Circuit Diagram

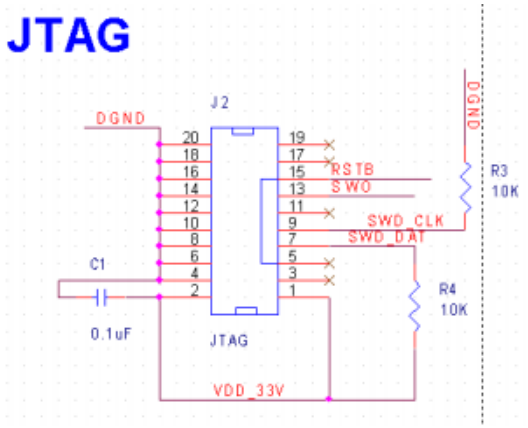

Figure 2–7 Circuit Diagram of JTAG

2.4 CIS/Y Sensor Connector

Connector CN5 of the top board connects the CIS interface. Since the CIS uses I^2C to initialize the CIS sensor, the connector CN5 includes an I^2C interface.

Figure 2–8 CIS Connector

The connector CN6 of the top board connects the Y sensor interface.

Figure 2–9 Y Sensor Connector

2.4.1 Circuit Diagram

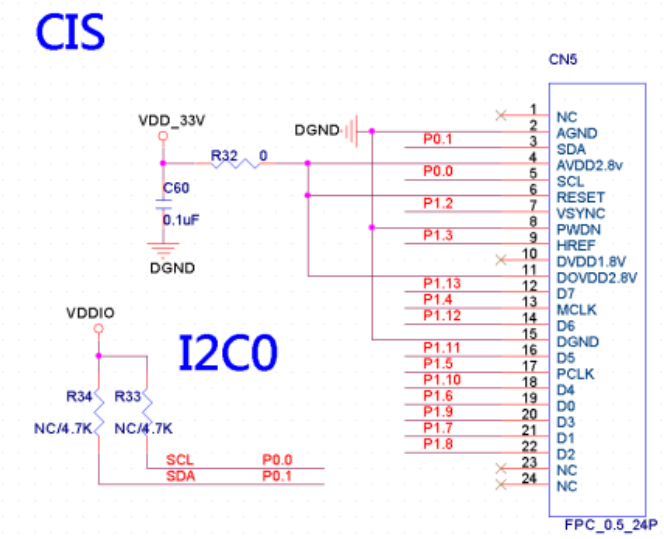

Figure 2–10 Circuit Diagram of the CIS Connector

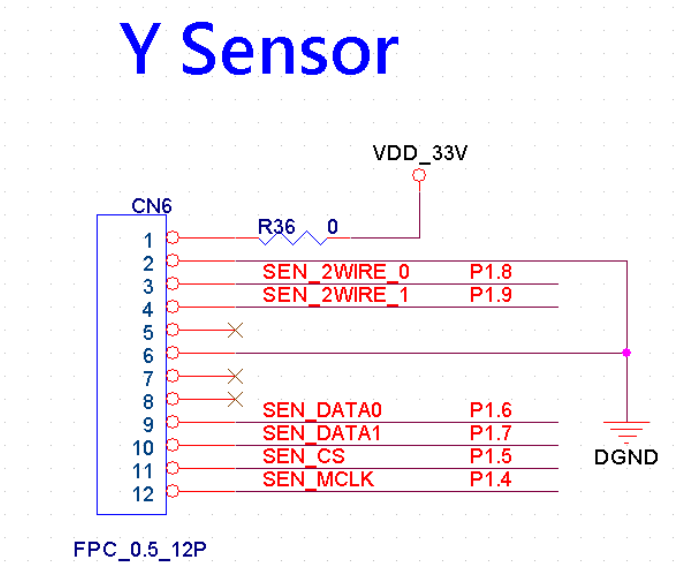

Figure 2–11 Circuit Diagram of the Y Sensor Connector

2.5 NAND Flash/SD Card Connector

Connector J5 is for the NAND flash/SD card interface.

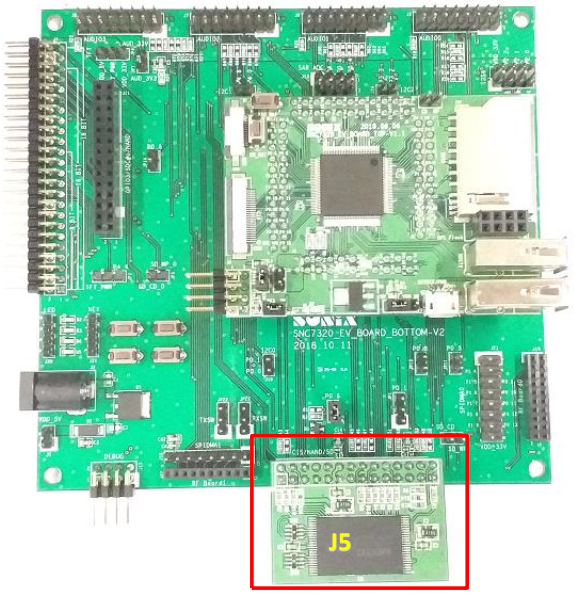

Figure 2–12 NAND Flash Connector

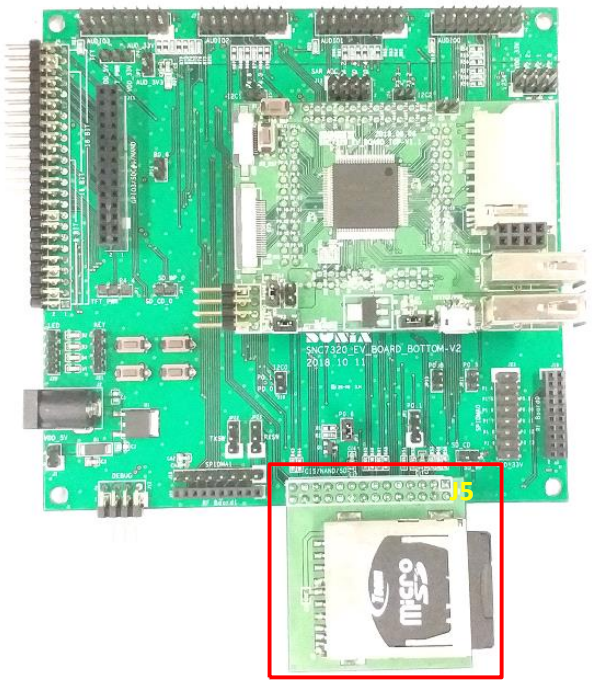

Figure 2–13 SD Card Connector

🕮 NOTE	When using the SD card, remember to shorten J6 to SDC mode for proper functioning.

2.5.1 Circuit Diagram

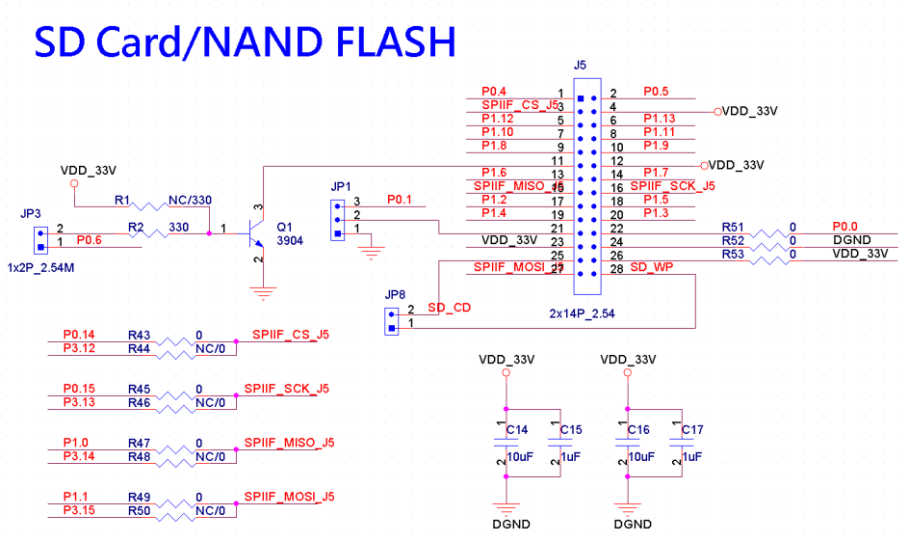

Figure 2–14 Circuit Diagram of the NAND Flash/SD Card Connector

2.6 SDIO/SD Slot

The slot shown in the figure below is the slot of the SDIO/SD (CN4) on the top board. J1 is the SD CD/WP pin.

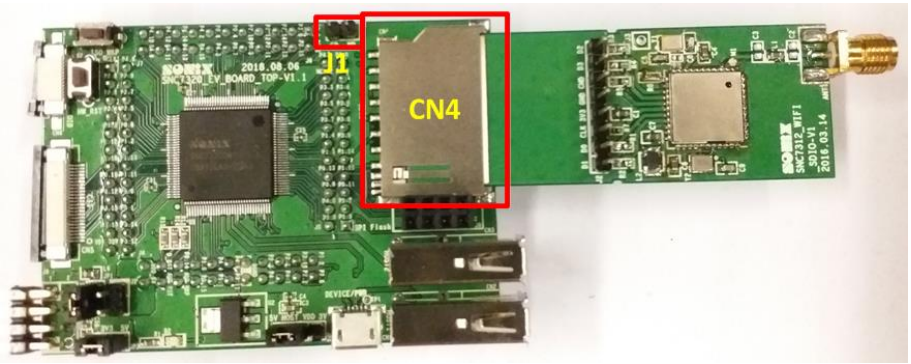

Figure 2–15 SDIO/SD Slot and SD CS/WP Pin

2.6.1 Circuit Diagram

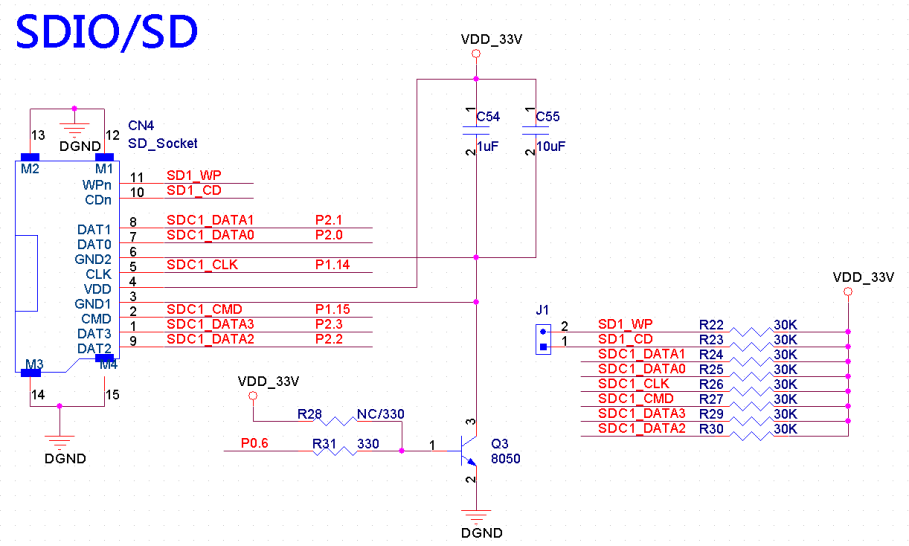

Figure 2–16 Circuit Diagram of the SDIO/SD Connector

2.7 EHCI Host Connector (USB_H)

The connectors Host 1 (CN2) and Host 2 (CN3) are for the USB EHCI, also known as USB_H.

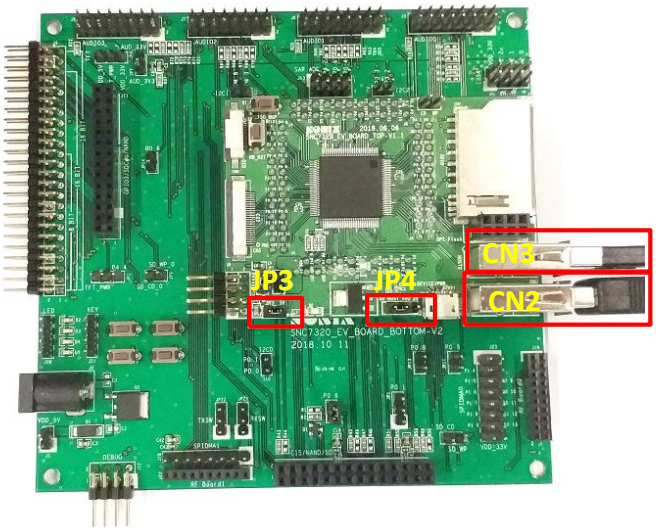

Figure 2–17 EHCI Host Connectors

NOTE

When using the USB host module, remember to short JP3 for proper functioning. Connect JP4 to 5V.

2.7.1 Circuit Diagram

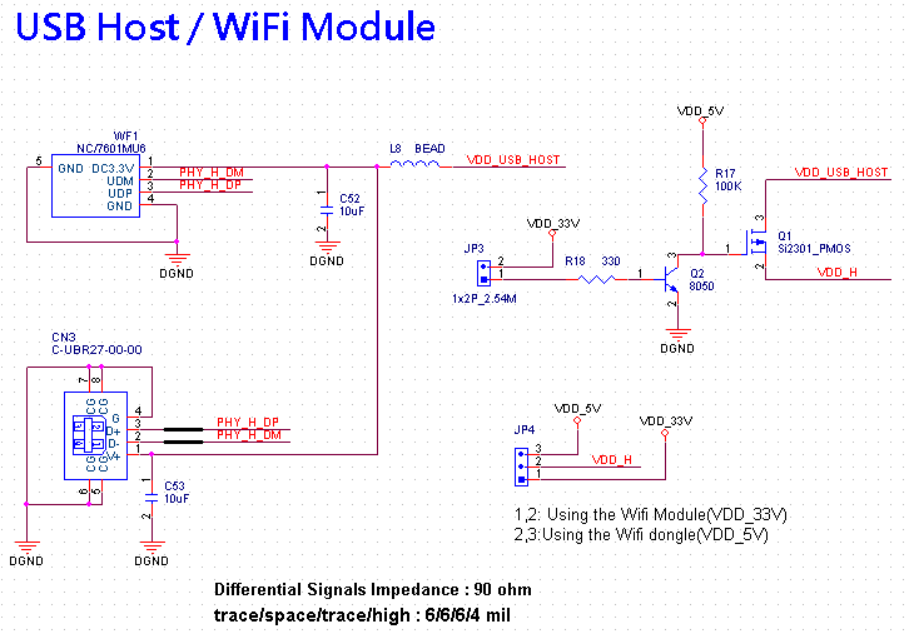

Figure 2–18 Circuit Diagram of the USB Host and WiFi Module

2.8 USB Device Connector (USB_D)

The connector (CN1) is the plug in for a USB device, also known as USB_D.

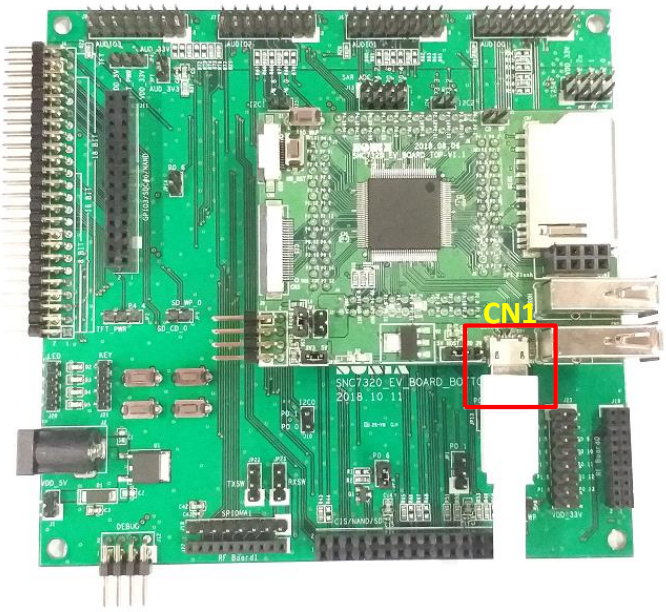

Figure 2–19 USB Device Connector

2.8.1 Circuit Diagram

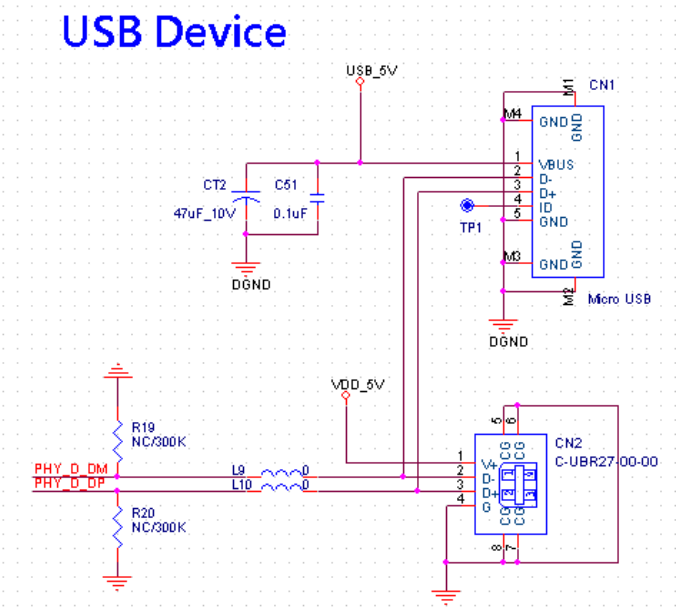

Figure 2–20 Circuit Diagram of a USB Device

2.9 Reset Key/ISO WKP Key

The reset key of the top board is an external hardware reset of the chip. The ISO WKP key is the external hardware wake up of the chip.

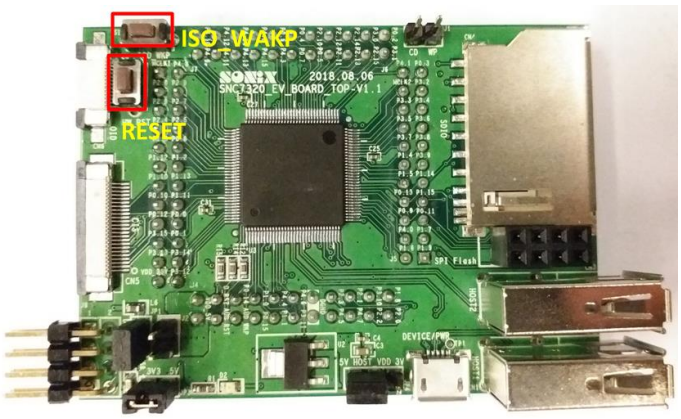

Figure 2–21 RESET and ISO WKP

2.9.1 Circuit Diagram

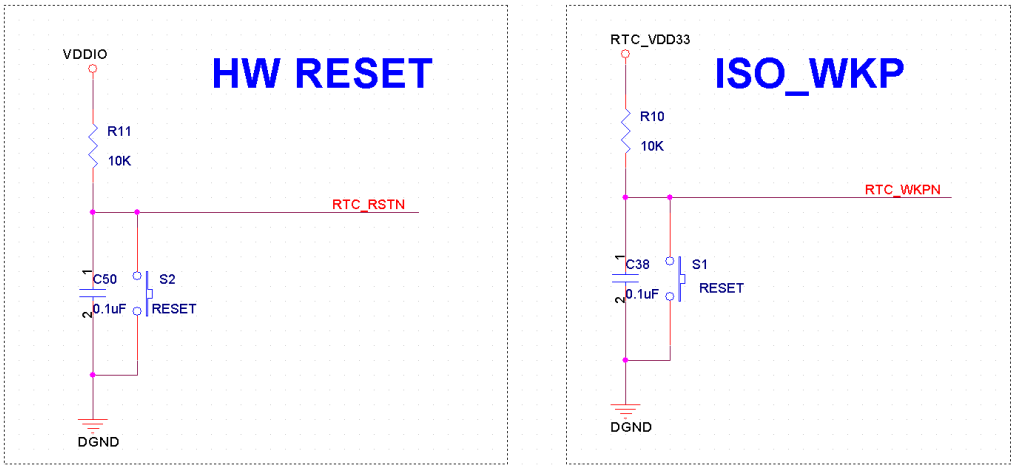

Figure 2–22 Circuit Diagram of RESET and ISO WKP

2.10 UART/Debug Connector

Connector J9 of the top board and connector J12 of the bottom board connects the debug board. CN1 is for the UART.

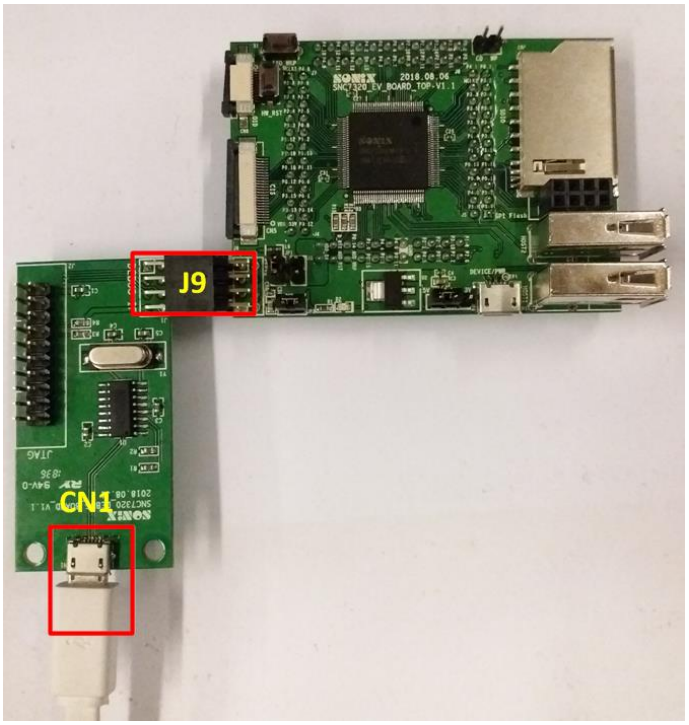

Figure 2–23 UART Connector of Top Board

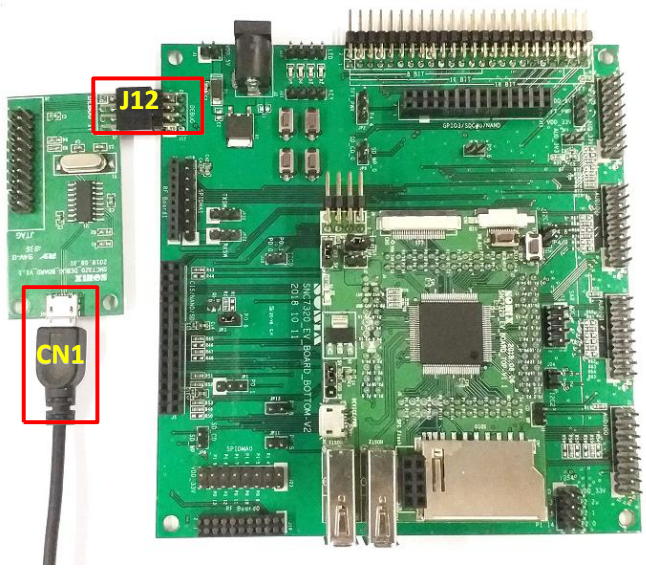

Figure 2–24 UART Connector of Bottom Board

2.10.1 Circuit Diagram

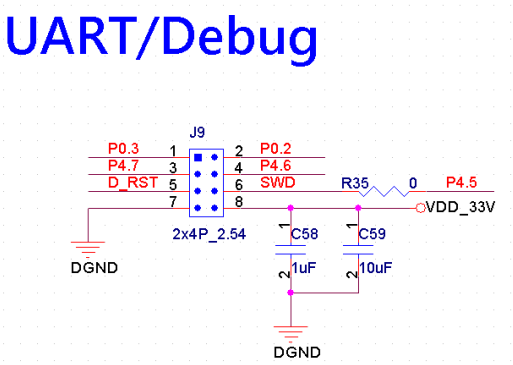

Figure 2–25 Circuit Diagram of UART/Debug

2.11 SPI Flash Connector

Connector J8 of the top board is the SPI flash connector as shown in the figure below.

Figure 2–26 SPI Flash Connector

2.11.1 Circuit Diagram

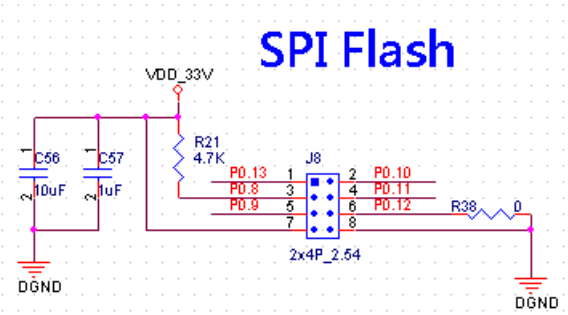

Figure 2–27 Circuit Diagram of SPI Flash Connector

2.12 TFT/8080 Connector

Connector J4 is the TFT/8080 connector as shown in the figure below.

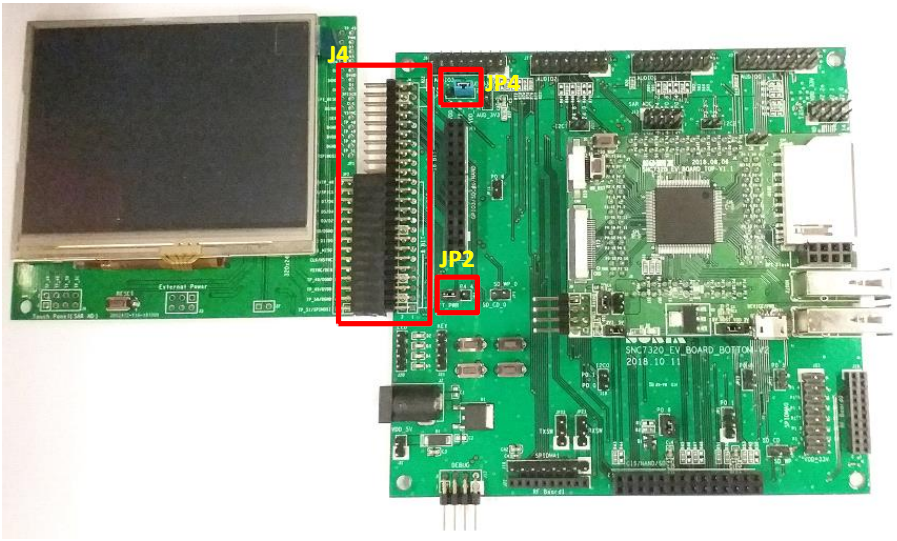

Figure 2–28 TFT/8080 Connector

NOTE	When using the TFT module, remember to Connect JP4 to 3.3V and JP2 to TFT_PWR.

2.12.1 Circuit Diagram

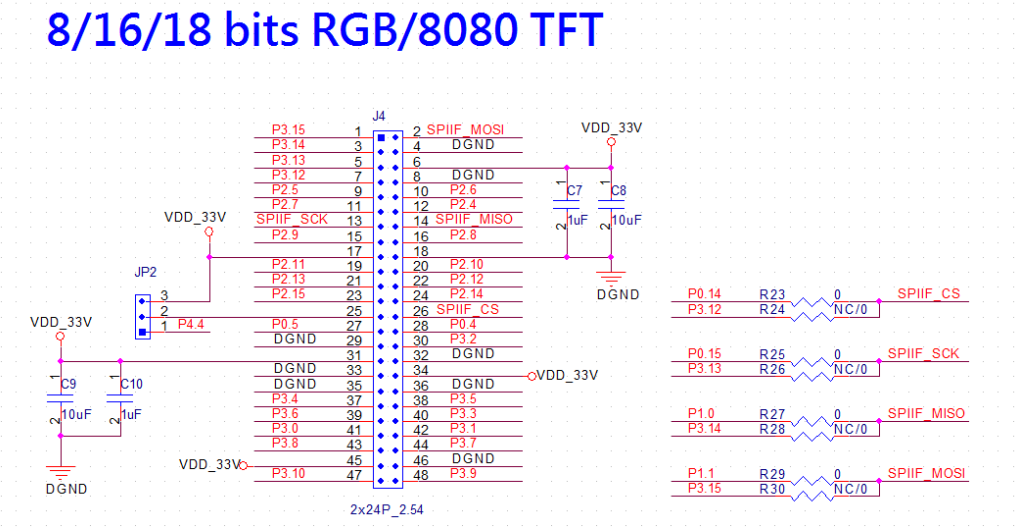

Figure 2–29 Circuit Diagram of the 8/16/18-bit RGB and 8080 TFT

2.13 I²S Connector

Connector J9 is the I²S connector as shown in the figure below.

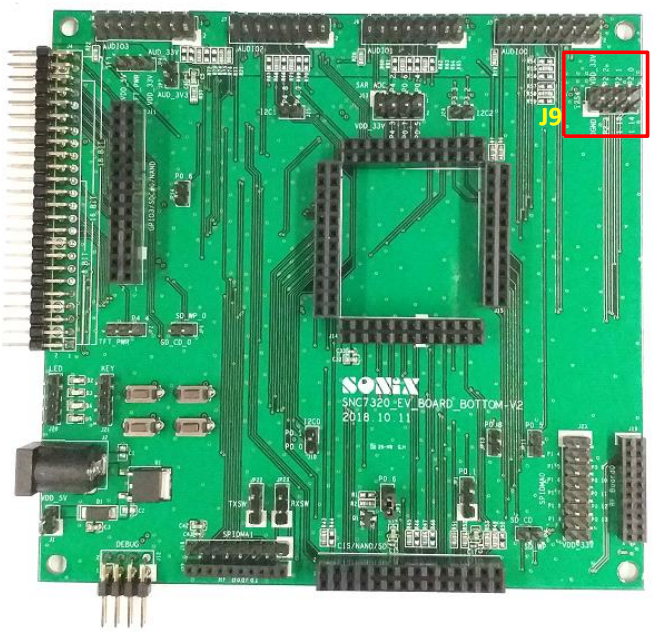

Figure 2–30 I²S Connector

2.13.1 Circuit Diagram

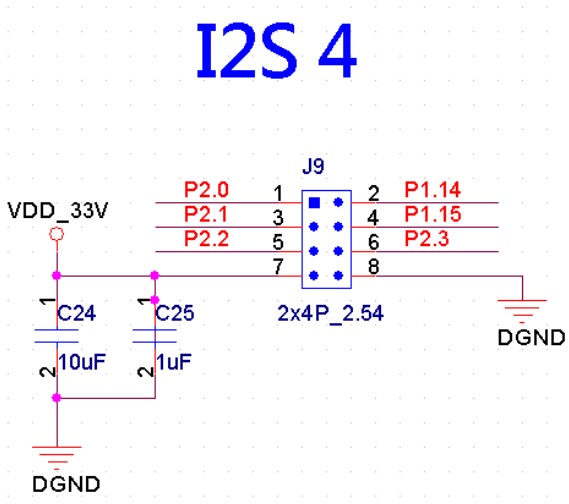

Figure 2–31 Circuit Diagram of the I²S Connector

2.14 SAR ADC/PWM Connector

Connector J13 is SAR ADC/PWM connector as shown in the figure below.

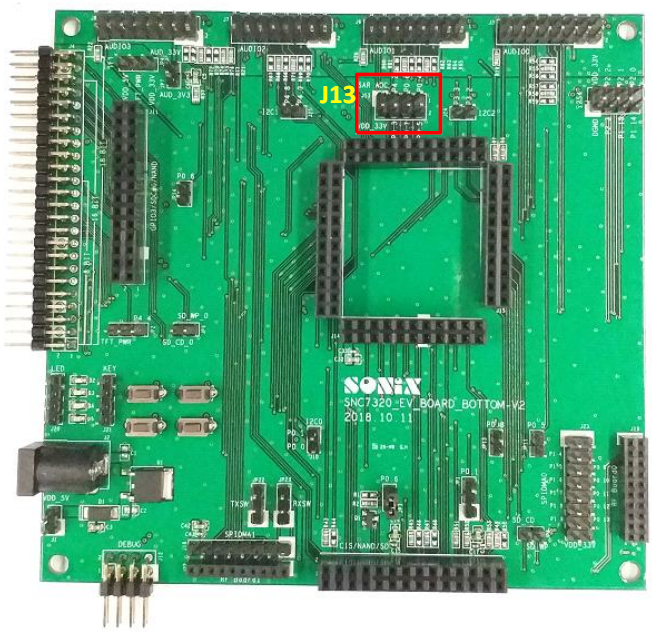

Figure 2–32 SAR ADC/PWM Connector

2.14.1 Circuit Diagram

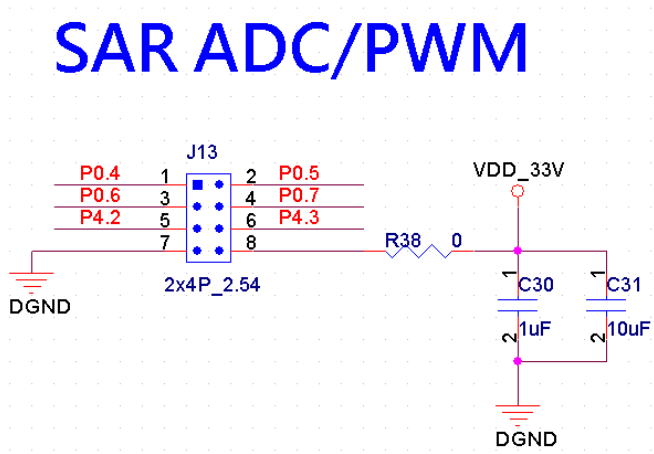

Figure 2–33 Circuit Diagram of the SAR ADC/PWM Connector

3 Connector Pin Assignments

3.1 J-Link Connector (J2)

Pin No.	Pin Name
1	VDD_33V
2	VDD_33V
3	NC
4	NC
5	NC
6	DGND
7	SWD_DT
8	DGND
9	SWD_CK
10	DGND
11	NC

Pin No.	Pin Name
12	DGND
13	SWO
14	DGND
15	RTSB
16	DGND
17	NC
18	DGND
19	NC
20	DGND

3.2 CIS Connector (CN5)

Pin No.	Pin Name
1	NC
2	GND
3	P0.1
4	3.3V
5	P0.0
6	3.3V
7	P1.2
8	GND
9	P1.3
10	NC
11	3.3V
12	P1.13

Pin No.	Pin Name
13	P1.4
14	P1.12
15	GND
16	P1.11
17	P1.5
18	P1.10
19	P1.6
20	P1.9
21	P1.7
22	P1.8
23	NC
24	NC

Pin	CIS	SD Card	I2C	NF
P0_0	I2C_SCK	–	I2C_SCK	–
P0_1	I2C_SDA	–	I2C_SDA	–
P0_15	–	–	–	NF_CS
P1_0	–	–	–	NF_RB
P1_1	–	–	–	NF_ALE
P1_2	CIS_VSYNC	–	–	NF_WE
P1_3	CIS_HSYNC	–	–	NF_RE
P1_4	CIS_MCLK	SD_CLK#0	–	NF_WP
P1_5	CSI_PLCK	SD_CMD#0	–	NF_CLE
P1_6	D0	SD_D0#0	–	NF_D0

Pin	CIS	SD Card	I²C	NF
P1_7	D1	SD_D1#0	–	NF_D1
P1_8	D2	SD_D2#0	–	NF_D2
P1_9	D3	SD_D3#0	–	NF_D3
P1_10	D4	–	–	NF_D4
P1_11	D5	–	–	NF_D5
P1_12	D6	–	–	NF_D6
P1_13	D7	–	–	NF_D7

3.3 SD Card0/I²C Connector (J5)

Pin No.	Pin Name
1	P0_4
2	P0_5
3	SPIIF_CS
4	VDD_33V
5	P1_12
6	P1_13
7	P1_10
8	P1_11
9	P1_8
10	P1_9
11	VDD_33V
12	VDD_33V
13	P1_6
14	P1_7

Pin No.	Pin Name
15	SPIIF_MISO
16	SPIIF_SCK
17	P1_2
18	P1_5
19	P1_4
20	P1_3
21	P0_1/GND
22	P0_0
23	VDD_33V
24	GND
25	SD_CD/GND
26	VDD_33V
27	SPIIF_MOSI
28	SD_WP

Pin	CIS	SD Card	I²C	NF
P0_0	I2C_SCK	–	I2C_SCK	–
P0_1	I2C_SDA	–	I2C_SDA	–
P0_15	–	–	–	NF_CS
P1_0	–	–	–	NF_RB
P1_1	–	–	–	NF_ALE
P1_2	CIS_VSYNC	–	–	NF_WE
P1_3	CIS_HSYNC	–	–	NF_RE
P1_4	CIS_MCLK	SD_CLK#0	–	NF_WP
P1_5	CSI_PLCK	SD_CMD#0	–	NF_CLE
P1_6	D0	SD_D0#0	–	NF_D0
P1_7	D1	SD_D1#0	–	NF_D1
P1_8	D2	SD_D2#0	–	NF_D2
P1_9	D3	SD_D3#0	–	NF_D3
P1_10	D4	–	–	NF_D4
P1_11	D5	–	–	NF_D5
P1_12	D6	–	–	NF_D6
P1_13	D7	–	–	NF_D7

3.4 SPI Flash Connector (J8)

Pin No.	Pin	SPI Flash
1	P0_13	ED3/HOLD
2	P0_10	MISO
3	P0_8	CS
4	P0_11	MOSI
5	P0_9	SCK
6	P0_12	ED2/WP
7	VDD_33V	VDD
8	DGND	GND

3.5 TFT/8080 Connector (J4)

Pin No.	Pin Name
1	P3_15
2	SPIIF_MOSI
3	P3_14
4	GND
5	P3_13
6	VDD_33V
7	P3_12
8	GND
9	P2_5
10	P2_6
11	P2_7
12	P2_4
13	SPIIF_SCK
14	SPIIF_MISO
15	P2_9
16	P2_8
17	VDD_33V
18	VDD_33V
19	P2_11
20	P2_10
21	P2_13
22	P2_12
23	P2_15
24	P2_14

Pin No.	Pin Name
25	VDD_33V/P4_4
26	SPIIF_CS
27	P0_5
28	P0_4
29	GND
30	P3_2
31	VDD_33V
32	GND
33	GND
34	VDD_33V
35	GND
36	GND
37	P3_4
38	P3_5
39	P3_6
40	P3_3
41	P3_0
42	P3_1
43	P3_8
44	P3_7
45	VDD_33V
46	GND
47	P3_10
48	P3_9

Pin	TFT/8080	SPI
P0_4	AIN0_1	–
P0_5	AIN0_2	–
P0_6	–	–
P0_7	–	–
P0_9	–	–
P0_10	–	–
P0_13	–	–
P0_14	–	SPI_CS
P0_15	–	SPI_CLK
P1_0	–	SPI_MISO
P1_1	–	SPI_MOSI
P2_4	HSYNC/LCM_RE	–
P2_5	VSYNC/LCM_WE	–
P2_6	DE/LCM_CS	–
P2_7	DCLK/EA0	–
P2_8	ED0	–
P2_9	ED1	–
P2_10	ED2	–
P2_11	ED3	–
P2_12	ED4	–
P2_13	ED5	–
P2_14	ED6	–
P2_15	ED7	–
P3_0	ED8	–
P3_1	ED9	–
P3_2	ED10	–
P3_3	ED11	–
P3_4	ED12	–
P3_5	ED13	–
P3_6	ED14	–
P3_7	ED15	–

Pin	TFT/8080	SPI
P3_8	ED16	–
P3_9	ED17	–

3.6 I²S Connector (J9)

Pin No.	Pin Name	I²S
1	P2_0	SDOUT
2	P1_14	MCLK
3	P2_1	BCLK
4	P1_15	SDIN
5	P2_2	WS
6	P2_3	P2_3
7	VDD_33V	VDD
8	GND	GND

3.7 SAR ADC/PWM Connector (J13)

Pin No.	Pin Name	SAR_ADC	
1	P0_4	AINO_0 (SAR0)	(CT32B0_PWMIO#21)
2	P0_5	AINO_1 (SAR0)	(CT32B0_PWMIO#20)
3	P0_6	AINO_2 (SAR0)	(CT32B0_PWMIO#19)
4	P0_7	AINO_3 (SAR0)	(CT32B0_PWMIO#18)
5	P4_2	AINO_4 (SAR0)	CT32B0_PWMIO#5
6	P4_3	AINO_5 (SAR0)	CT32B0_PWMIO#4
7	GND	GND	
8	VDD_33V	VDD	

3.8 GPIO Pin Assignments

Pin No.	Pin Name
P0_0	J5_Pin22, J10_Pin1, CN5_Pin5
P0_1	JP1_Pin3, J10_Pin2, CN5_Pin3
P0_2	J9_Pin2, J12_Pin2
P0_3	J9_Pin3, J12_Pin3
P0_4	J4_Pin28, J5_Pin1, J13_Pin1
P0_5	J4_Pin27, J5_Pin2, J13_Pin2
P0_6	JP3_Pin1, JP14_Pin1, J13_Pin3
P0_7	J13_Pin4
P0_8	J8_Pin3, J19_Pin13, J23_Pin13
P0_9	J8_Pin5, J19_Pin11, J23_Pin11
P0_10	J8_Pin2, J19_Pin9, J23_Pin9
P0_11	J8_Pin4, J19_Pin7, J23_Pin7
P0_12	J8_Pin6, J19_Pin5, J23_Pin5
P0_13	J8_Pin1, J19_Pin3, J23_Pin3
P0_14	J4_Pin26, J5_Pin3
P0_15	J4_Pin12, J5_Pin16
P1_0	J4_Pin14, J5_Pin15
P1_1	J4_Pin2, J5_Pin27
P1_2	J5_Pin17
P1_3	J5_Pin20
P1_4	J5_Pin19, J23_Pin14
P1_5	J5_Pin18, J19_Pin12, J23_Pin12
P1_6	J5_Pin13, J19_Pin10, J23_Pin10
P1_7	J5_Pin14, J19_Pin8, J23_Pin8
P1_8	J5_Pin9, J19_Pin6, J23_Pin6
P1_9	J5_Pin10, J19_Pin4, J23_Pin4
P1_10	J5_Pin7, J19_Pin2, J23_Pin2

Pin No.	Pin Name
P1_11	J5_Pin8
P1_12	J5_Pin5
P1_13	J5_Pin6
P1_14	J9_Pin2
P1_15	J9_Pin4
P2_0	J9_Pin1
P2_1	J9_Pin3
P2_2	J9_Pin5
P2_3	J9_Pin6
P2_4	J4_Pin12
P2_5	J4_Pin9
P2_6	J4_Pin10
P2_7	J4_Pin11
P2_8	J4_Pin16
P2_9	J4_Pin15
P2_10	J4_Pin20
P2_11	J4_Pin19
P2_12	J4_Pin22
P2_13	J4_Pin21
P2_14	J4_Pin24
P2_15	J4_Pin23
P3_0	J4_Pin41, J11_Pin13
P3_1	J4_Pin42, J11_Pin14
P3_2	J4_Pin30, J11_Pin2
P3_3	J4_Pin40, J11_Pin12
P3_4	J4_Pin37, J11_Pin9
P3_5	J4_Pin38, J11_Pin10

Pin No.	Pin Name
P3_6	J4_Pin39, J11_Pin11
P3_7	J4_Pin44, J11_Pin16
P3_8	J4_Pin43, J11_Pin15
P3_9	J4_Pin48, J11_Pin20
P3_10	J4_Pin47, J11_Pin19
P3_11	J11_Pin22
P3_12	J11_Pin21, J18_Pin7, J22_Pin7
P3_13	J11_Pin24, J18_Pin6, J22_Pin6
P3_14	J11_Pin23, J18_Pin5, J22_Pin5
P3_15	J4_Pin1, J11_Pin26, J18_Pin4, J22_Pin4
P4_0	J11_Pin27, J18_Pin3, J22_Pin3
P4_1	J11_Pin28, J18_Pin2, J22_Pin2
P4_2	J13_Pin5

Pin No.	Pin Name
P4_3	J13_Pin6
P4_4	JP2_Pin1
P4_5	J12_Pin6
P4_6	J12_Pin4
P4_7	J12_Pin3
P4_8	J7_Pin7, J8_Pin7, J25 Pin1
P4_9	J7_Pin8, J8_Pin8, J25 Pin2
P4_10	J7_Pin9, J8_Pin9
P4_11	J7_Pin10, J8_Pin10
P4_12	J7_Pin11, J8_Pin11
P4_13	J7_Pin12, J8_Pin12
P4_14	J7_Pin13, J8_Pin13
P4_15	J7_Pin14, J8_Pin14

4 Layout Overview

Figure 4–1 to Figure 4–2 show top and bottom view of the top EVB.

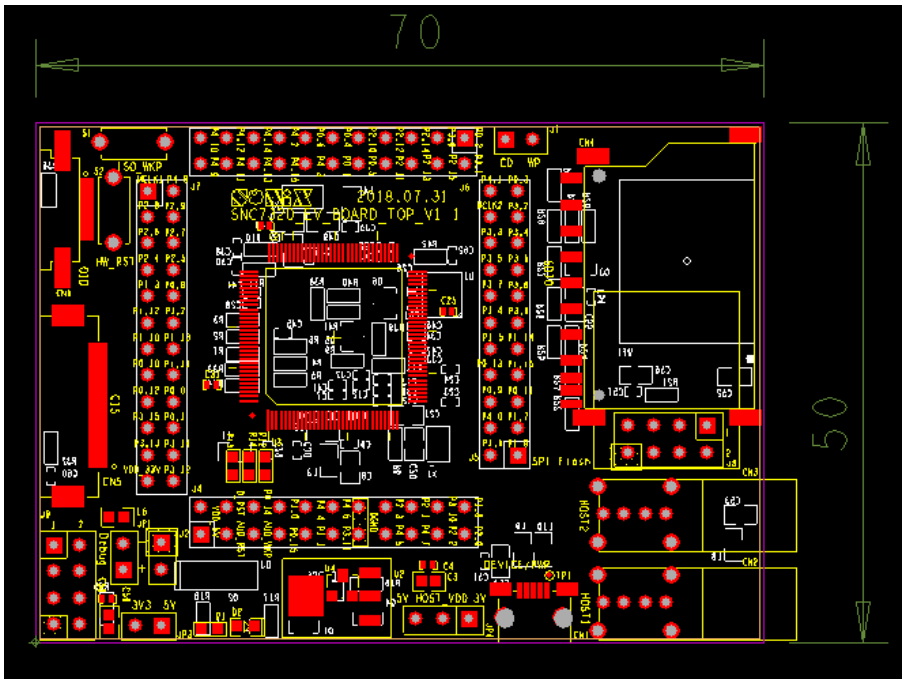

Figure 4–1 Top View of the 7320_EV_Board_Top-V*x.x*

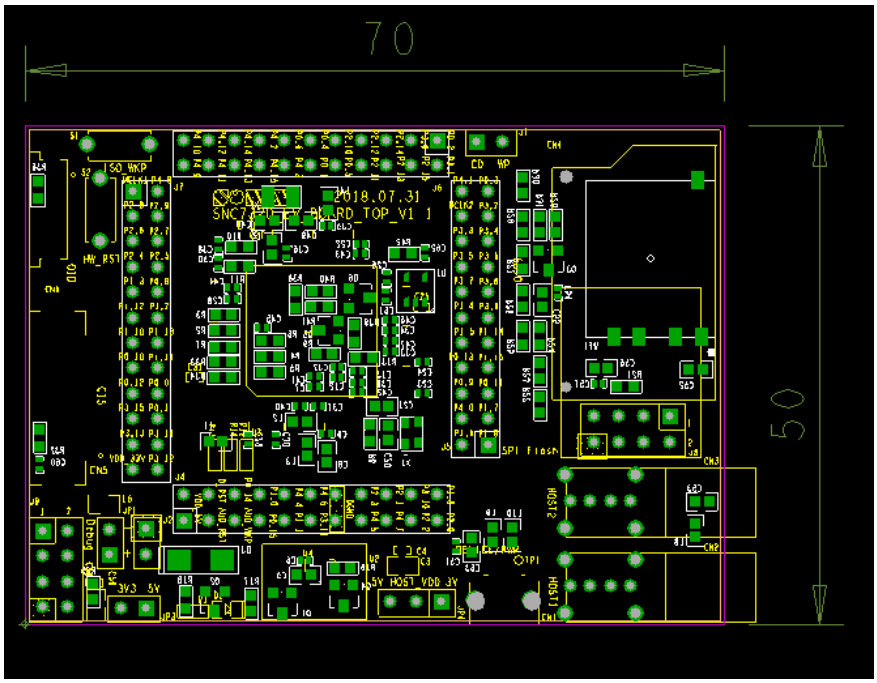

Figure 4–2 Bottom View of the 7320_EV_Board_Top-V*x.x*

Figure 4–3 to Figure 4–4 show top and bottom view of the bottom EVB.

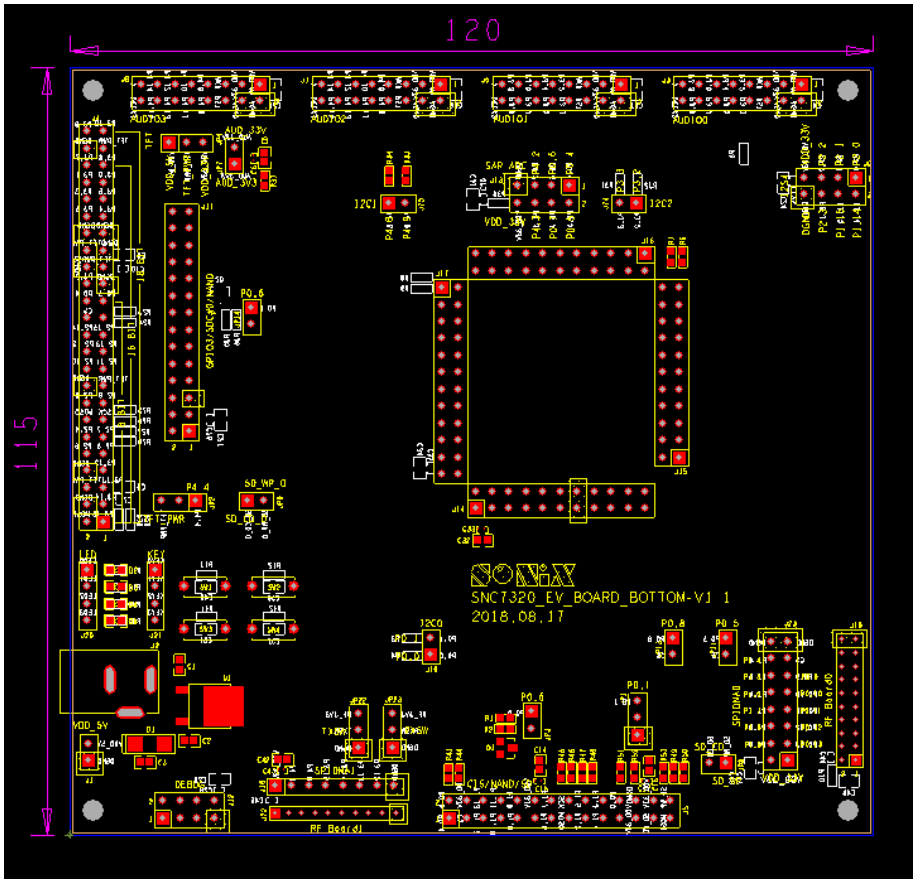

Figure 4–3 Top View of the 7320_EV_Board_ Bottom-V*x.x*

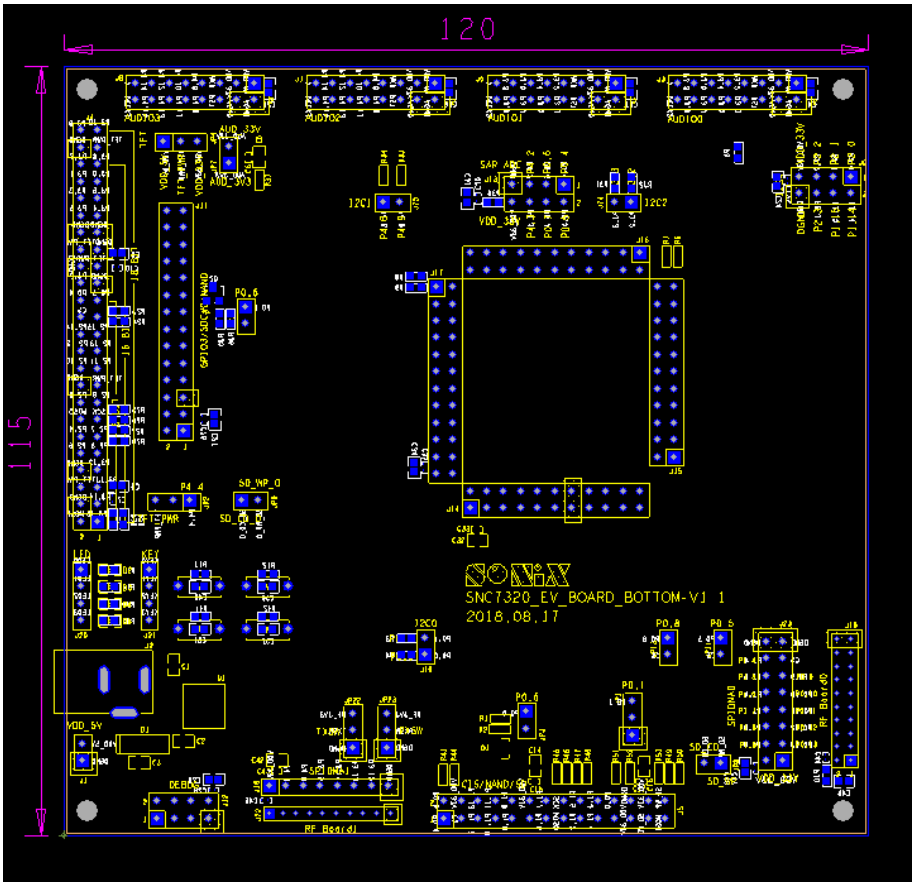

Figure 4–4 Top View of the 7320_EV_Board_ Bottom-V*x.x*

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