UM11612

IMX8MMINI-IARD interposer board

Rev. 1.0 — 22 June 2021 **User manual**

Document information

Information	Content
Keywords	I^2C-bus, SPI, RX, TX, PWM, GPIO, Arduino port, EVK
Abstract	IMX8MMINI-IARD is an interposer board dedicated for the conversion of i.MX 8M Mini LPDDR4 EVK expansion connector (J1003) into an Arduino port. The IMX8MMINI-IARD interposer board transforms the i.MX 8M Mini LPDDR4 EVK into an Arduino compatible evaluation board.

Revision history

Rev	Date	Description
v.1.0	20210622	Initial version

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1 Introduction

This user manual describes the IMX8MMINI-IARD interposer board and details how to operate it along with an i.MX 8M Mini LPDDR4 EVK board. The i.MX 8M Mini LPDDR4 EVK is an evaluation board used mainly to test and operate the i.MX Mini Applications Processor, designed and manufactured by NXP Semiconductors.

Among the several peripherals, the EVK contains a general-purpose expansion connector, allowing flexible interconnections between EVK and other devices. However, the EVK board doesn't contain an Arduino port. The IMX8MMINI-IARD interposer board is intended to bridge this gap. Connecting the interposer board to expansion connector J1003, the i.MX 8M Mini LPDDR4 EVK allows for direct connection with Arduino compatible boards and devices.

2 Finding kit resources and information on the NXP web site

NXP Semiconductors provides online resources for this evaluation board and its supported device(s) on http://www.nxp.com.

The information page for IMX8MMINI-IARD interposer board is at https://www.nxp.com/IMX8MMINI-IARD. The information page provides overview information, documentation, parametrics, ordering information and a Getting Started tab. The Getting Started tab provides quick-reference information applicable to using the IMX8MMINI-IARD interposer board.

2.1 Collaborate in the NXP community

The NXP community is for sharing ideas and tips, ask and answer technical questions, and receive input on just about any embedded design topic.

The NXP community is at http://community.nxp.com.

3 Getting ready

Working with the IMX8MMINI-IARD interposer board requires the kit contents and an i.MX 8M Mini LPDDR4 EVK board.

3.1 Kit contents

- Assembled and tested interposer board in an anti-static bag
- Quick Start Guide

4 Getting to know the hardware

4.1 Board features

- Operates in conjunction with i.MX 8M Mini LPDDR4 EVK board
- Direct connection (as mezzanine card to i.MX Mini LPDDR4 EVK – J1003)
- Direct connection with Arduino cards and devices

4.2 Board description

The IMX8MMINI-IARD interposer board is designed to be used along with an i.MX 8M Mini LPDDR4 EVK board. The interposer board can be attached to the EVK by plugging the J1 connector (located on the bottom side of the interposer board) into J1003 expansion connector (located on the top side of the EVK), as illustrated in Figure 1 and Figure 2. The assembly allows the user to connect any daughter card or external device equipped with an Arduino interface to the i.MX 8M Mini LPDDR4 evaluation board. Table 1 depicts the pin chart of the Arduino connectors (located on the top side of the interposer board) and J1003 expansion connector, so that the user can easily identify the allocated digital lines.

Important notice:

The “I2C3_SDA_3V3” and ”I2C3_SCL_3V3” digital lines (pin 2, 3, J1003) are shared with the control input of U201 IO expander on the EVK mother board (see the schematic of i.MX8M Mini LPDDR4 EVK board, available at URL: https://www.nxp.com/IMX8MMINI-IARD). Some IOs of U201 go to the same expansion connector (“EXP_IO8” to “EXP_IO12”, see Table 1), therefore the I^2C bus lines cannot be used as general IOs. If the I^2C lines are programmed as GPIOs, U201 will not be controlled anymore, and “EXP_IO” lines are not available.

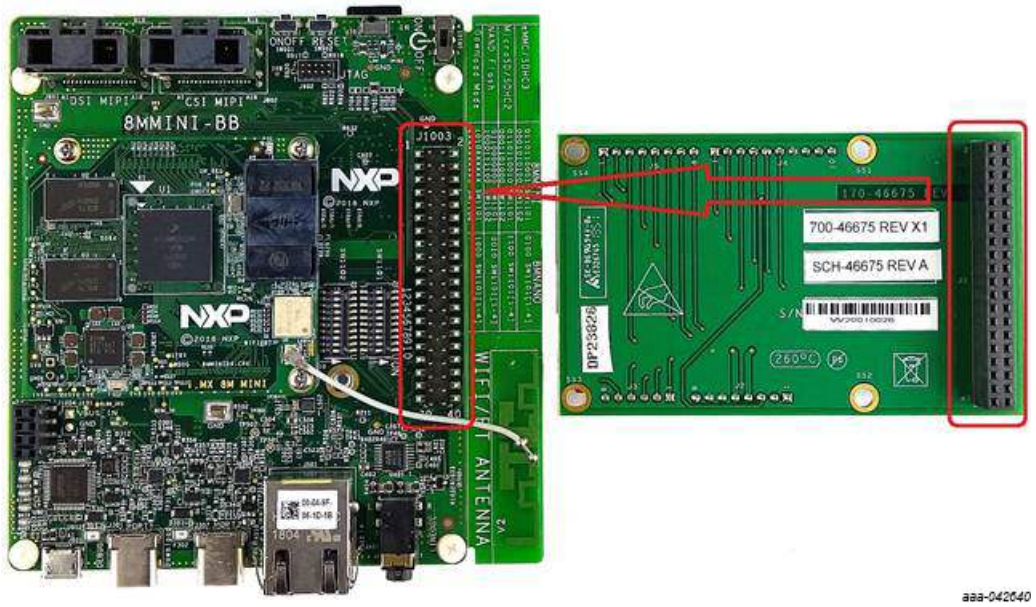

Figure 1. i.MX 8M Mini LPDDR4 EVK (left), IMX8MMINI-IARD (right)

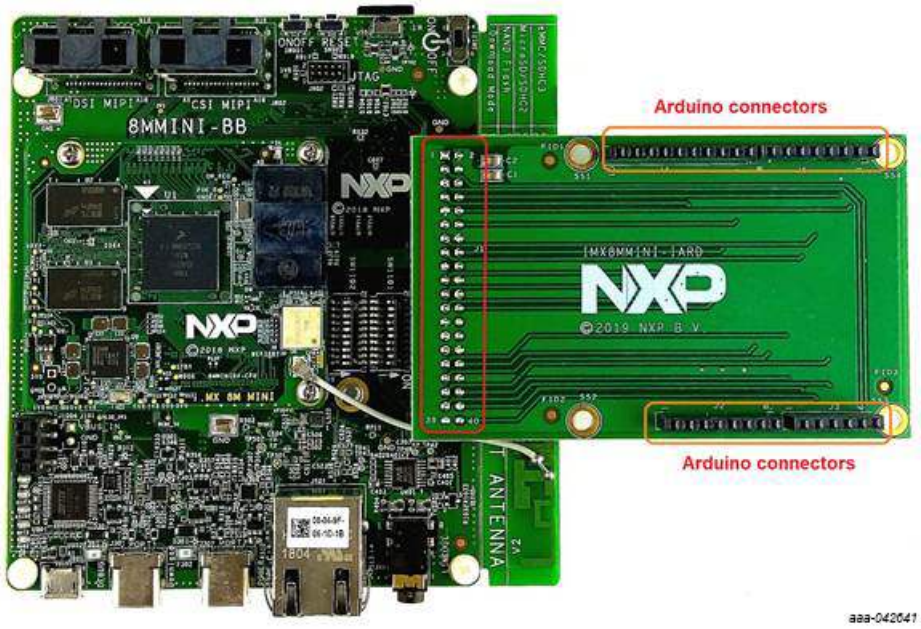

Figure 2. The IMX8MMINI-IARD interposer board attached to the EVK

Table 1. J1003 / Arduino pin chart

Pin chart of J1003 (EVK) / J1 and Arduino connectors (interposer board).

Net name -IMX8MMINI-IARD (Arduino connectors)	Net name - i.MX8M Mini LPDDR4	J1003 / J1 Pin number		Net name - i.MX8M Mini LPDDR4	Net name -IMX8MMINI-IARD (Arduino connectors)
3V3 (J2-4)	VEXT_3V3	1	2	VDD_5V	5V (J2-5)
D18_SDA (J3-5)	I2C3_SDA_3V3	3	4	VDD_5V	5V (J2-5)
D19_SCL (J3-6)	I2C3_SCL_3V3	5	6	GND	GND (J2-6,7 / J4-7)
D20_RST (J2-3)	UART3_CTS	7	8	UART3_TXD	D1_TX (J5-2)
GND (J2-6,7 / J4-7)	GND	9	10	UART3_RXD	D0_RX (J5-1)
–	UART3_RTS	11	12	EXP_IO8	D8 (J4-1)
D3_PWM1 (J5-4)	EXP_IO9	13	14	GND	GND (J2-6,7 / J4-7)
D4 (J5-5)	EXP_IO10	15	16	EXP_IO11	D9 (J4-2)
3V3	VEXT_3V3	17	18	–	–
D11_MOSI (J4-4)	ECSPI2_MOSI	19	20	GND	GND (J2-6,7 / J4-7)
D12_MISO (J4-5)	ECSPI2_MISO	21	22	–	–
D13_SCK (J4-6)	ECSPI2_SCLK	23	24	ECSPI2_SS0	D10_SS (J4-3)
GND (J2-6,7 / J4-7)	GND	25	26	–	–
–	–	27	28	–	–
–	–	29	30	GND	GND (J2-6,7 / J4-7)
D5_PWM2 (J5-6)	EXP_IO14	31	32	EXP_IO12	D7 (J5-8)
D6 (J5-7)	EXP_IO13	33	34	GND	GND (J2-6,7 / J4-7)

Table 1. J1003 / Arduino pin chart...*continued*

Pin chart of J1003 (EVK) / J1 and Arduino connectors (interposer board).

Net name -IMX8MMINI-IARD (Arduino connectors)	Net name - i.MX8M Mini LPDDR4	J1003 / J1 Pin number		Net name - i.MX8M Mini LPDDR4	Net name -IMX8MMINI-IARD (Arduino connectors)
D2 (J5-3)	SAI5_RXD3	35	36	SAI5_RXD2	D14 (J3-1)
D17 (J3-4)	SAI5_RXD1	37	38	SAI5_RXD0	D15 (J3-2)
GND (J2-6,7 / J4-7)	GND	39	40	SAI5_RXC	D16 (J3-3)

4.3 Board connection

Figure 3 shows how the IMX8MMINI-IARD interposer board can be used to connect an Arduino compatible daughter board to an i.MX 8M Mini LPDDR4 EVK.

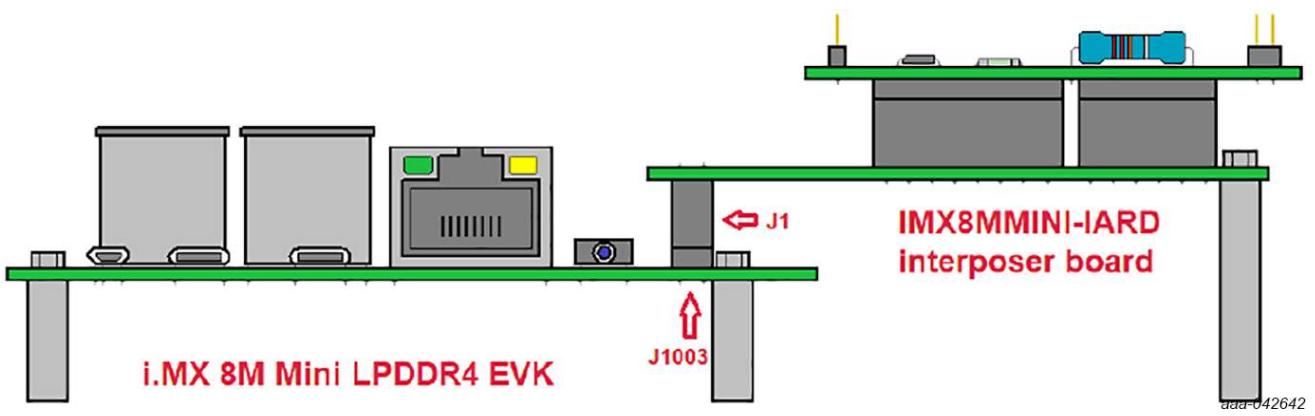

Figure 3. The IMX8MMINI-IARD interposer board attached to the EVK

4.4 Schematic, board layout and bill of materials

The schematic, board layout and bill of materials for the IMX8MMINI-IARD interposer board are available at https://www.nxp.com/IMX8MMINI-IARD.

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