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NXP MCIMX93-QSB Applications Processor Platform User Guide

NXP MCIMX93-QSB Applications Processor Platform
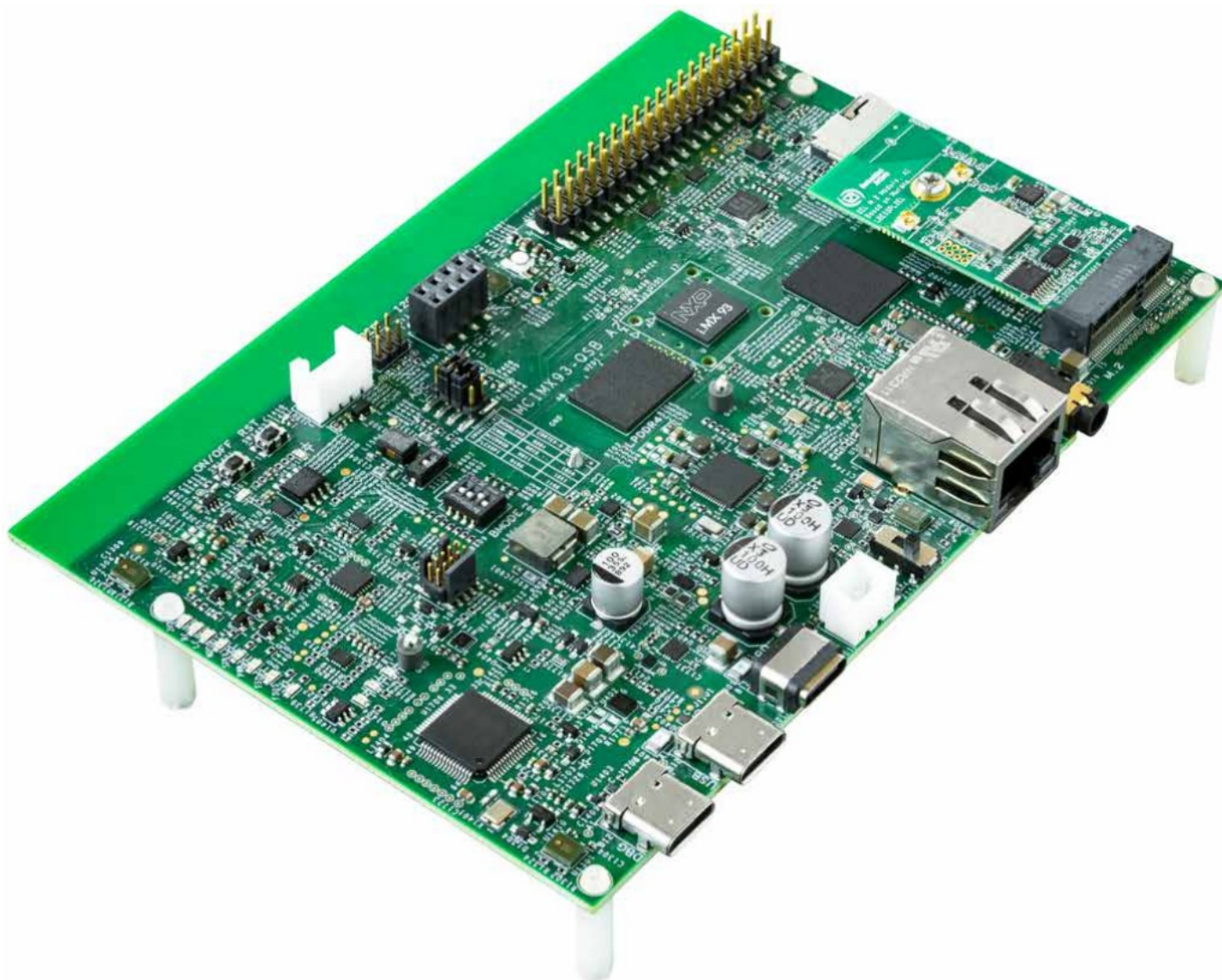
Contents

ABOUT THE i.MX 93 QSB

The i.MX 93 QSB (MCIMX93-QSB) is a platform designed to show the most commonly used features of the i.MX 93 Applications Processor in a small and low-cost package.

Features

- i.MX 93 applications processor with
    - 2x Arm® Cortex®-A55
    - 1× Arm® Cortex®-M33

- 0.5 TOPS NPU
- LPDDR4 16-bit 2GB
- eMMC 5.1, 32GB
- MicroSD 3.0 card slot
- One USB 2.0 C connector
- One USB 2.0 C for Debug
- One USB C PD only
- Power Management IC (PMIC)
- M.2 Key-E for Wi-Fi/BT/802.15.4
- One CAN port
- Two channels for ADC
- 6-axis IMU w/ I3C support
- I2C Expansion connector
- One 1 Gbps Ethernets
- Audio Codec Support
- PDM MIC array support
- External RTC w/ coin cell
- 2X20 Pin Expansion I/O

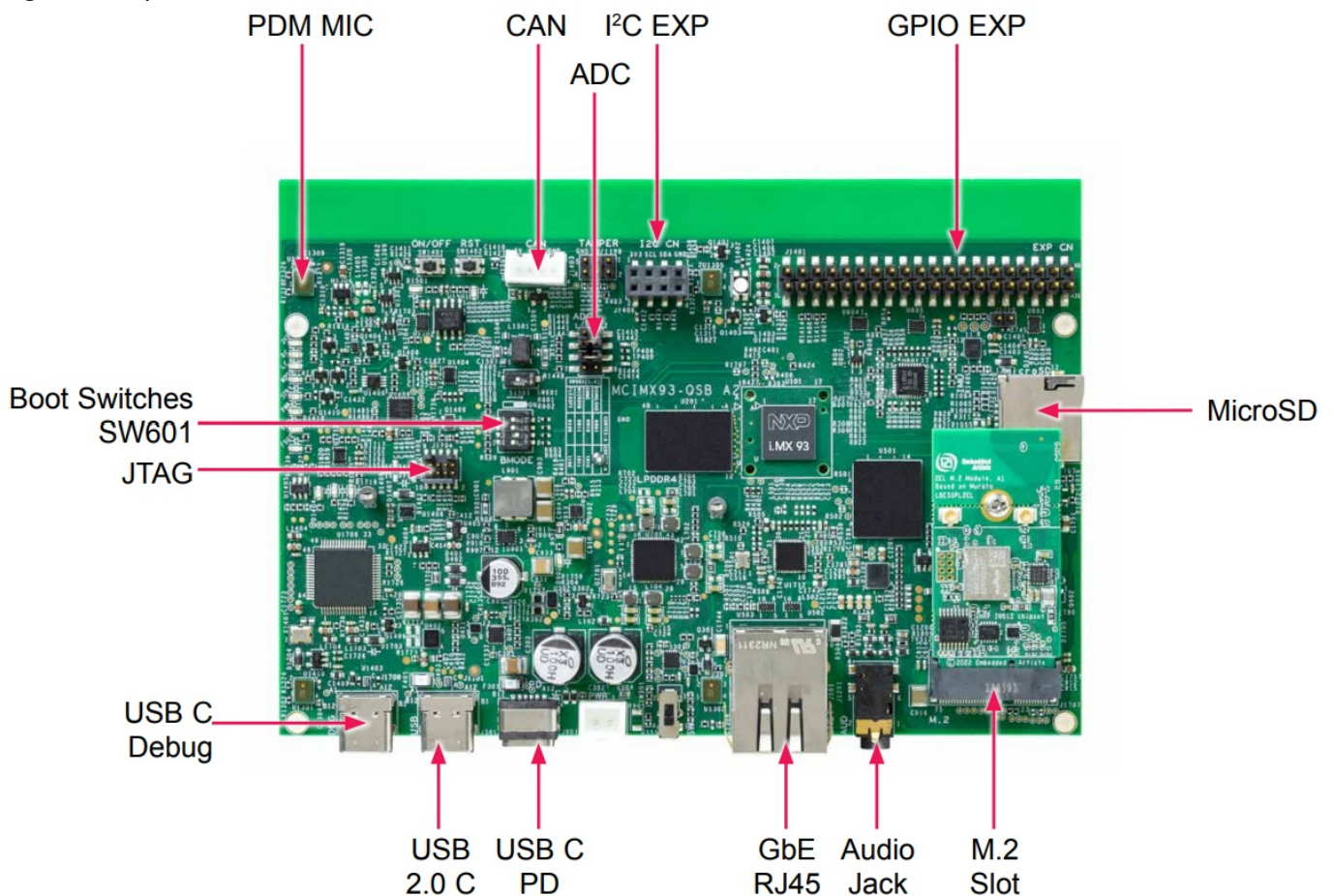## GET TO KNOW THE i.MX 93 QSB
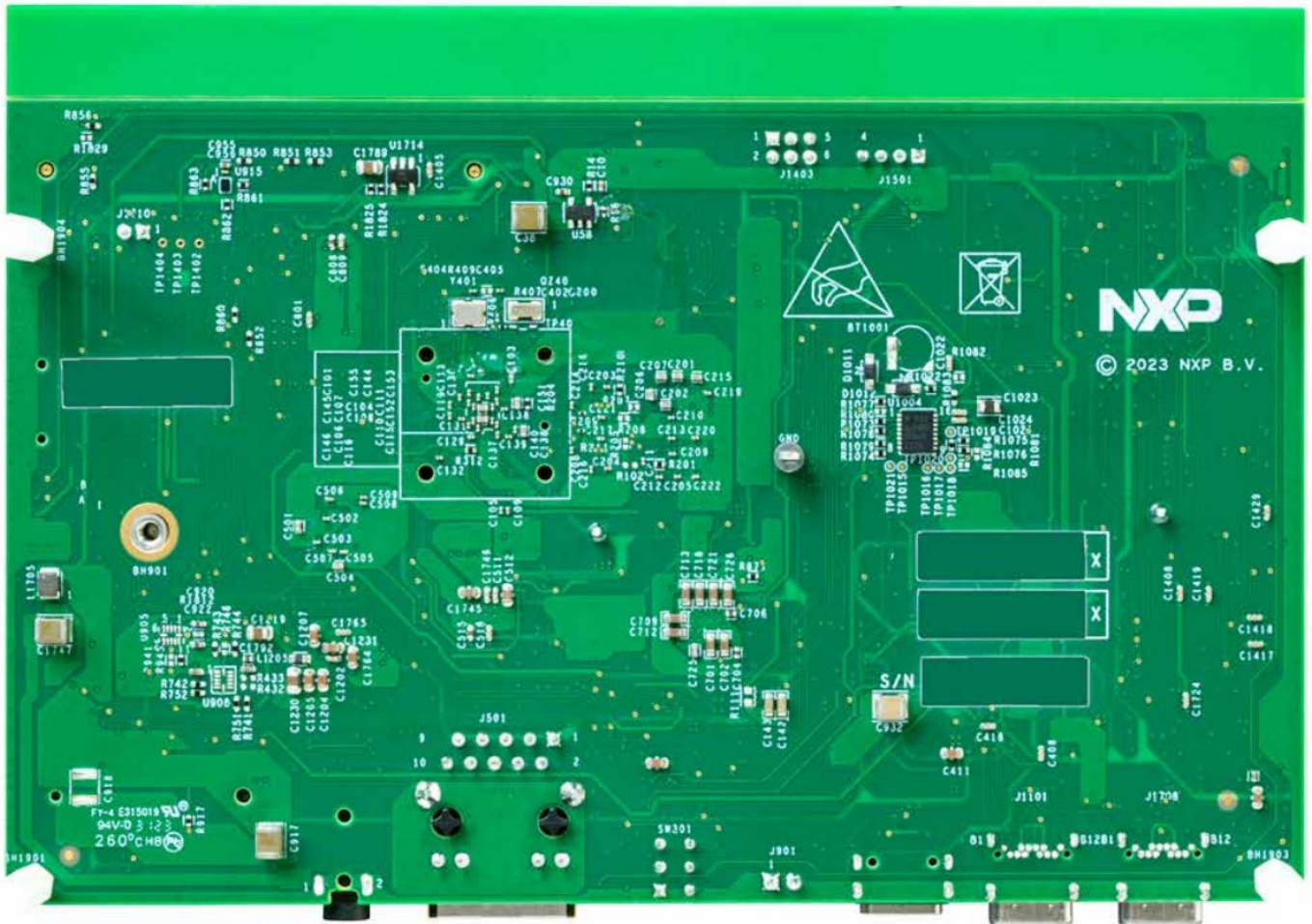
Figure 1: Top view i.MX 93 9×9 QSB board

Figure 2: Back view i.MX 93 9×9 QSB board

GETTING STARTED

1. **Unpacking the Kit**

   The MCIMX93-QSB is shipped with the items listed in Table 1.

   TABLE 1 KIT CONTENTS

ITEM	DESCRIPTION
MCIMX93-QSB	i.MX 93 9×9 QSB board
Power Supply	USB C PD 45W, 5V/3A; 9V/3A; 15V/3A; 20V/2.25A supported
USB Type-C Cable	USB 2.0 C Male to USB 2.0 A Male
Software	Linux BSP image programmed in eMMC
Documentation	Quick Start Guide
M.2 Module	PN: LBES5PL2EL; Wi-Fi 6 / BT 5.2 / 802.15.4 support

2. **Prepare Accessories**

   The following items in Table 2 are recommended to run the MCIMX93-QSB.

   TABLE 2 CUSTOMER SUPPLIED ACCESSORIES

ITEM	DESCRIPTION
Audio HAT	Audio expansion board with most of audio features

3. **Download Software and Tools**

Installation software and documentation are available at

www.nxp.com/imx93qsb. The following are available on the website:

TABLE 3 SOFTWARE AND TOOLS

ITEM	DESCRIPTION
Documentation	- Schematics, layout and Gerber files - Quick Start Guide - Hardware Design Guide - i.MX 93 QSB Board User Manual
Software Development	Linux BSPs
Demo Images	Copy of the latest Linux images that are available to program on to the eMMC. MCIMX93-QSB software can be found at **nxp.com/imxsw**

SETTING UP THE SYSTEM

The following will describe how to run the pre-loaded Linux image on the MCIMX93-QSB (i.MX 93).

1. **Confirm Boot Switches**

The boot switches should be set to boot from **"eMMC","SW601** [1-4] are used for boot, See table below:

| BOOT Device	SW601[1-4]
eMMC/uSDHC1	0010

Note: 1 = ON 0 = OFF

2. **Connect USB Debug Cable**

Connect the UART cable into the port **J1708.** Connect the other end of the cable to a PC acting as a host terminal. UART connections will appear on the PC, this will be used as A55 and M33 core system debugging. Open the terminal window (i.e., Hyper Terminal or Tera Term), choose the right COM port number and apply the following configuration.
- Baud rate: 115200bps
- Data bits: 8
- Parity: None
- Stop bits: 1

3. **Connect Power Supply**

Connect the USB C PD power supply to **J301,** then power up the board by **SW301** switch.
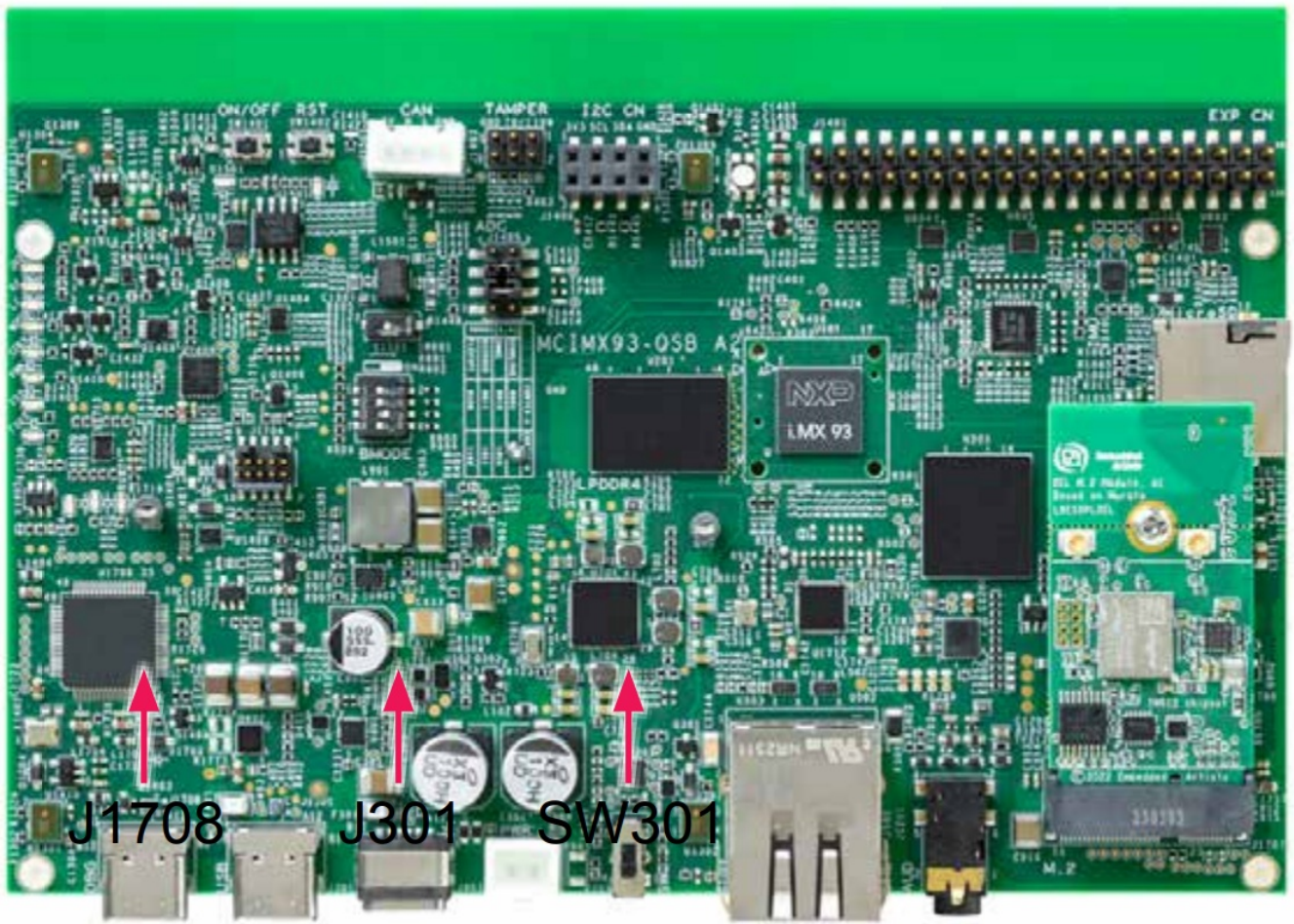
4. **Board Boot up**

As the board boots up, you will see log information on the terminal window. Congratulations, you are up and running.

ADDITIONAL INFORMATION

Boot Switches

SW601[1-4] is the boot configuration switch, the default boot device is eMMC/uSDHC1, as shown in Table 4. If you want to try other boot devices, you need to change the boot switches to corresponding values as listed in Table 4.
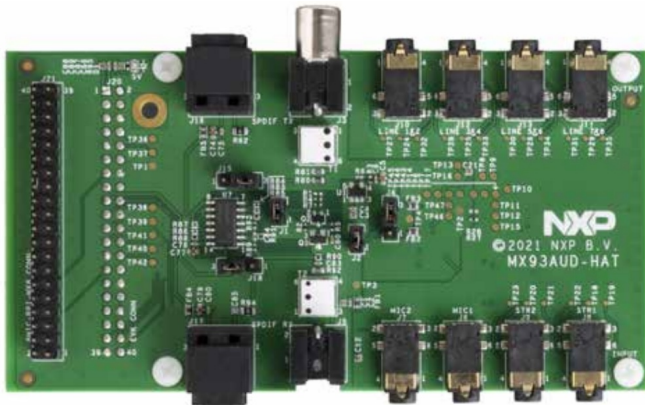**Note:** 1 = ON 0 = OFF

TABLE 4 BOOT DEVICE SETTINGS

BOOT MODE	BOOT CORE	SW601-1	SW601-2	SW601-3	SW601-4
From internal fuses	Cortex-A55	0	0	0	0
Serial Downloader	Cortex-A55	0	0	0	1
USDHC1 8-bit eMMC 5.1	Cortex-A55	0	0	1	0
USDHC2 4-bit SD3.0	Cortex-A55	0	0	1	1
Flex SPI Serial NOR	Cortex-A55	0	1	0	0
Flex SPI Serial NAND 2K page	Cortex-A55	0	1	0	1
Infinite Loop	Cortex-A55	0	1	1	0
Test Mode	Cortex-A55	0	1	1	1
From internal fuses	Cortex-M33	1	0	0	0
Serial Downloader	Cortex-M33	1	0	0	1
USDHC1 8-bit eMMC 5.1	Cortex-M33	1	0	1	0
USDHC2 4-bit SD3.0	Cortex-M33	1	0	1	1
Flex SPI Serial NOR	Cortex-M33	1	1	0	0
Flex SPI Serial NAND 2K page	Cortex-M33	1	1	0	1
Infinite Loop	Cortex-M33	1	1	1	0
Test Mode	Cortex-M33	1	1	1	1

DO MORE WITH ACCESSORY BOARDS

Audio Board (MX93AUD-HAT) Audio expansion board with most of audio features	WiFi/BT/IEEE802.15.4 M.2 Module (LBES5PL2EL) Wi-Fi 6, IEEE 802.11a/b/g/n/ ac + Bluetooth 5.2 BR/EDR/LE + IEEE802.15.4, NXP IW612 chipset

SUPPORT

Visit **www.nxp.com/support** for a list of phone numbers within your region.

WARRANTY

Visit **www.nxp.com/warranty** for complete warranty information.

www.nxp.com/iMX93QSB

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Documents / Resources

	NXP MCIMX93-QSB Applications Processor Platform [pdf] User Guide MCIMX93-QSB Applications Processor Platform, MCIMX93-QSB, Applications Processor Platform, Processor Platform

References

- **III i.MX Software and Development Tools | NXP Semiconductors**
- **III Support | NXP Semiconductors**
- **III Returns and Warranty Information | NXP Semiconductors**
- **User Manual**