MYD-JX8MX Development Board

- *MYC-JX8MX CPU Module as Controller Board*
- *NXP i.MX 8M Quad Application Processor based on 1.3 GHz Arm Cortex-A53 and 266MHz Cortex-M4 Cores*
- *1GB / 2GB LPDDR4, 8GB eMMC Flash, 256Mbit QSPI Flash*
- *UARTs, 4 x USB 3.0 Host, 1 x USB 3.0 Host/Device, NVMe PCIe M.2 2280 SSD Interface, TF Card Slot*
- *Supports Gigabit Ethernet, WiFi/Bluetooth and 4G LTE Communications*
- *2 x Camera Interfaces (4 lane MIPI CSI), HDMI, LVDS, MIPI-DSI, Audio Input/Output*
- *Supports Running Yocto Linux, Ubuntu Linux, Android*

Figure 1-1 MYD-JX8MX Development Board

The MYD-JX8MX development board is using the i.MX 8M Quad processor which is among NXP i.MX 8M family (i.MX 8M Dual / 8M QuadLite / 8M Quad) of applications processors and includes a 1.3GHz quad Cortex-A53 core ARM Cortex-A53 plus a 266MHz Cortex-M4 core. The target applications scale from consumer home audio to industrial building automation and mobile computers requiring high-performance and low-power processors.

The MYD-JX8MX has a base board with installed MYC-JX8MX CPU Module through a 314-pin MXM 3.0 Expansion Connector. The MYC-JA8MX CPU Module is a highly-integrated SoM with the core components including i.MX 8M processor, 1GB or 2GB LPDDR4, 8GB eMMC Flash, 256Mbit QSPI Flash, Gigabit Ethernet PHY and ROHM PMIC. The base board has brought out rich peripherals through connectors and headers such as 4 x USB 3.0 Host ports and 1 x USB 3.0 Host/Device port, Gigabit Ethernet, MicroSD card slot, USB based Mini PCIe interface for 4G LTE Module, WiFi/Bluetooth, Audio In/Out, HDMI, 2 x MIPI-CSI, 2 x LVDS interfaces, NVMe PCIe M.2 2280 SSD Interface, etc.

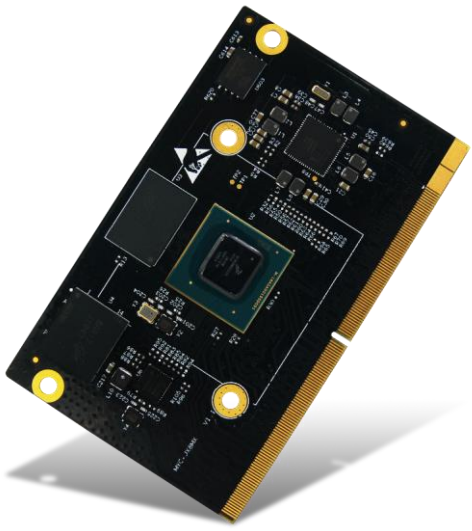

Figure 1-2 MYC-JX8MX CPU Module

The MYD-JX8MX development board is preloaded with Linux and provided with Linux and Android software package, documentations and delivered with necessary cable accessories for customer to easily start development as soon as getting it out-of-box. It would be a solid reference design for your development.

MYIR offers MY-CAM003 MIPI Camera Module and LCD Modules as options for the board.

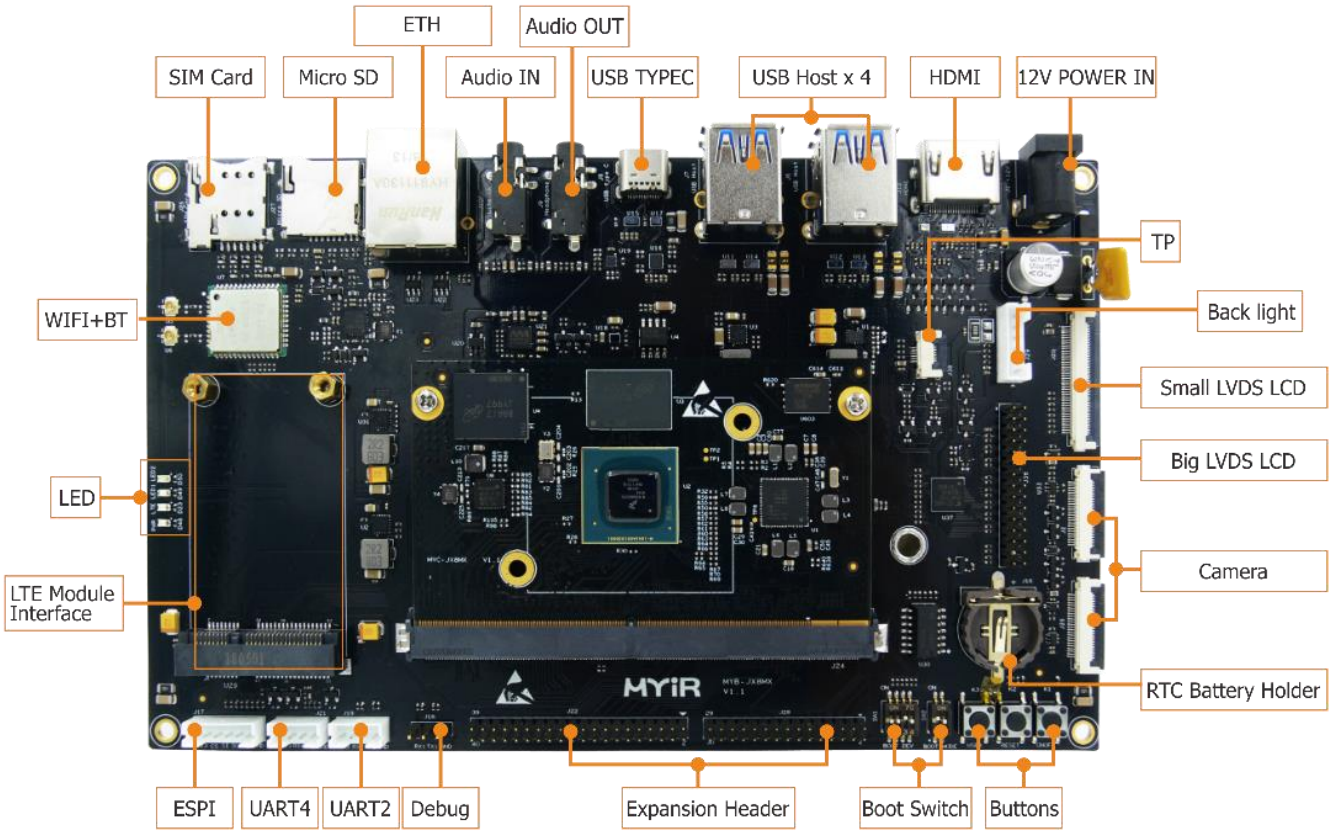

Figure 1-3 MYD-JX8MX Development Board Top-view

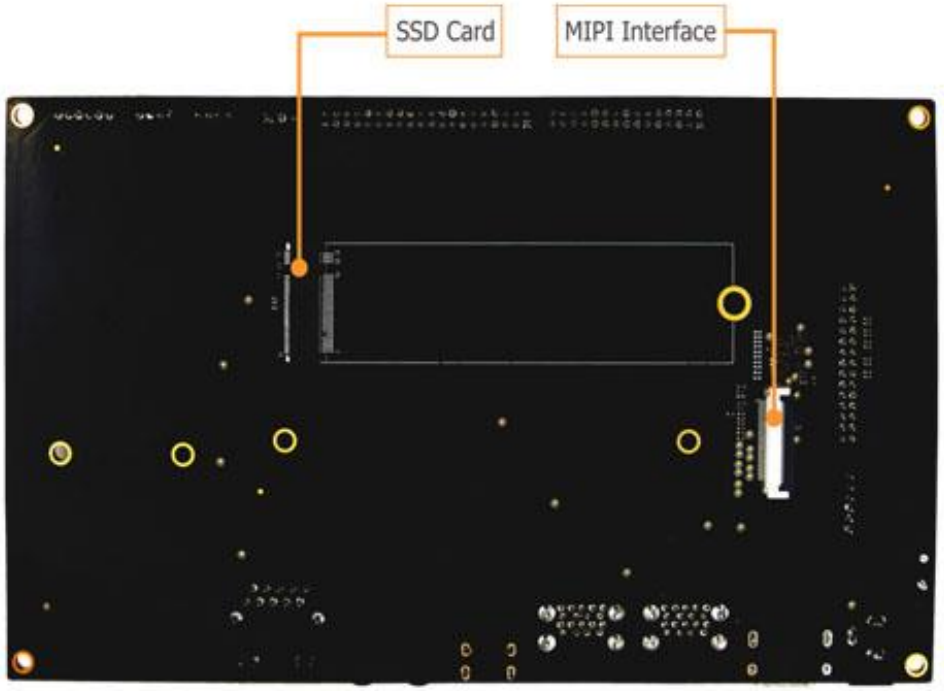

Figure 1-4 MYD-JX8MX Development Board Bottom-view

Hardware Specification

The MYC-JX8MX CPU Module on the MYD-JX8MX Development Board is using NXP's 17 x 17 mm, 0.65 mm pitch, FCBGA bare die package i.MX 8M Quad Application Processor (MIMX8MQ6CVAHZAB) which is based on 1.3GHz quad Arm Cortex-A53 and 266MHz Cortex-M4 cores.

The i.MX 8M family of applications processors (i.MX 8M Dual / 8M QuadLite / 8M Quad) represent NXP's latest market of connected streaming audio/video devices, scanning/imaging devices, and various devices requiring high-performance, low-power processors. The i.MX 8M processors feature advanced implementation of a dual/quad Arm® Cortex®-A53 core, which operates at speeds of up to 1.3 GHz. A general-purpose Cortex®-M4 core processor is for low-power processing. The DRAM controller supports 32-bit/16-bit LPDDR4, DDR4, and DDR3L memory. There are a number of other interfaces for connecting peripherals, such as WLAN, Bluetooth, GPS, displays, and camera sensors. The i.MX 8M Quad and i.MX 8M Dual processors have hardware acceleration for video playback up to 4K, and can drive the video outputs up to 60 fps. Although the i.MX 8M QuadLite processor does not have hardware acceleration for video decode, it allows for video playback with software decoders if needed.

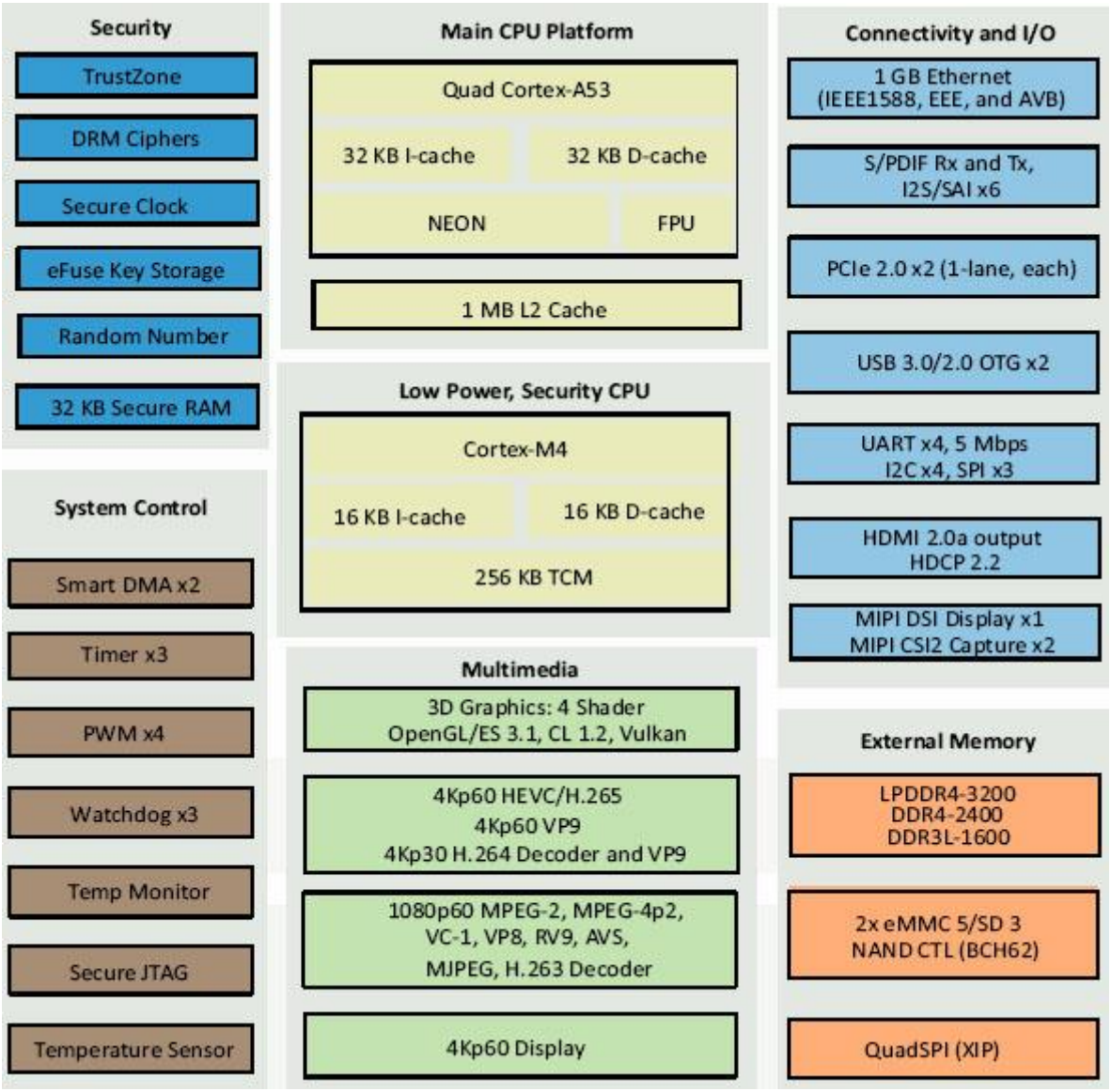

Figure 1-5 i.MX 8M System Block Diagram

The MYD-JX8MX Development Board is using MYC-JX8MX CPU Module as core controller board. It takes full features of i.MX 8M Quad processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 180mm x 110mm (base board), 50mm x 82mm (CPU Module)
- PCB Layers: 6-layer design (base board), 10-layer design (CPU Module)
- Power supply: +12V/3A (base board), 5V/0.5A (CPU Module)
- Working temperature: -25~80 Celsius (WiFi/BT Module: 0~70 Celsius)

The MYD-JX8MX Controller Board (MYC-JX8MX CPU Module)

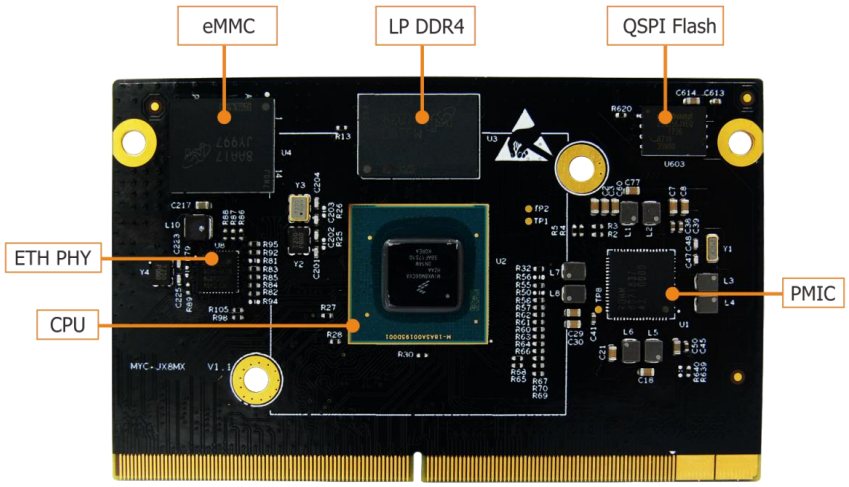

Figure 1-6 MYC-JX8MX CPU Module (delivered with installed heatsink by default)

Processor

- NXP i.MX 8M Quad Processor based on 1.3GHz Quad ARM Cortex-A53 and 266MHz Cortex-M4 cores (MIMX8MQ6CVAHZAB by default)

Memory

- 1GB / 2 GB LPDDR4 (supports up to 4GB LPDDR4)
- 8GB eMMC Flash (supports up to 64GB eMMC)
- 256Mbit QSPI Flash

Peripherals and Signals Routed to Pins

MYC-JX8MX Pinouts Description

- One 10/100/1000M Ethernet PHY
- Power Management IC (ROHM BD71837MWV)
- 0.5mm pitch 314-pin MXM 3.0 Expansion Connector
  - 1 x 10/100/1000Mbps Ethernet
  - 3 x Serial ports
  - 3 x I2C, 2 x SPI, 4 x PWM
  - 3 x USB 3.0
  - 2 x PCIe
  - 6 x I2S / SAI
  - 2 x MIPI Camera Sensor Interface
  - 1 x JTAG
  - 1 x HDMI 2.0a output
  - Up to 108 GPIOs

  Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet.

The MYD-JX8MX Development Board Base Board

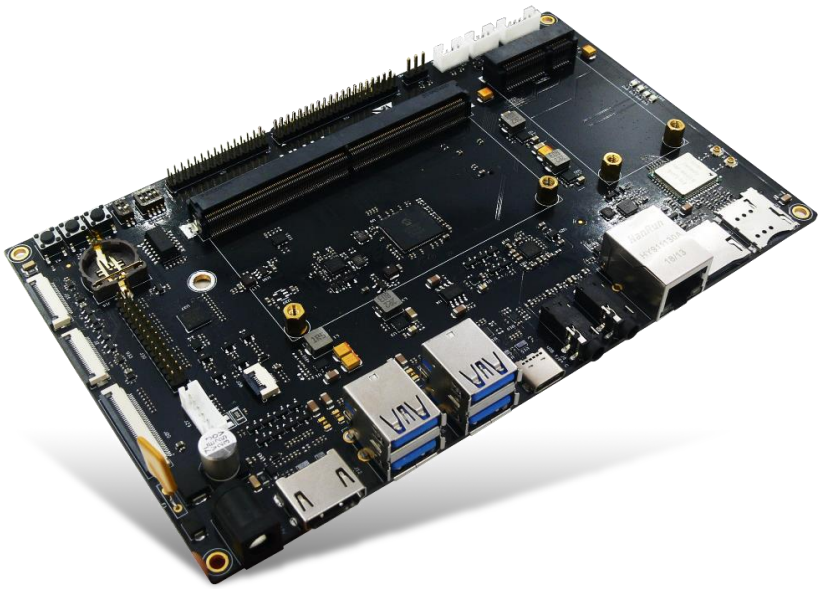

Figure 1-7 MYD-JX8MX Development Board Base Board

- Serial ports
  - Debug serial port (TTL)
  - 2 x Serial ports (TTL, UART2 and UART4)
- USB
  - 4 x USB3.0 Host ports (Type A)
  - 1 x USB3.0 Host/Device port (Type C)
  - 1 x Mini-PCIe interface (for 4G LTE Module)
- 1 x SIM card slot
- 1 x 10/100/1000 Mbps Ethernet interface (RJ45)
- WiFi/Bluetooth Module (complies with IEEE 802.11 a/b/g/n/ac 2x2 MIMO standard and supports Bluetooth V4.2+HS)
- 2 x external antenna connectors (one for WiFi and one for Bluetooth)
- 1 x NVMe PCIe M.2 2280 SSD Interface
- 1 x TF card slot
- 2 x MIPI-CSI Camera inputs (4-lane each, 24-pin FPC connector)
- 1 x MIPI-DSI Display Interface (supports display resolution up to 1920 x 1080 at 60 Hz)
- 1 x LVDS LCD interface (40-pin FPC connector)
- 1 x LVDS LCD interface (30-pin header connector)
- 1 x 6-pin capacitive touch screen interface
- 1 x 6-pin backlight interface
- 1 x HDMI 2.0a Display Interface (supports resolution up to 4096 x 2160 at 60 Hz)
- Audio Input/Output
- Battery backed RTC
- 3 x Buttons (one for RESET, one for ON/OFF and one for USER)
- 1 x 2.0mm 2*20-pin male expansion header
- 1 x 2.0mm 2*15-pin male expansion header

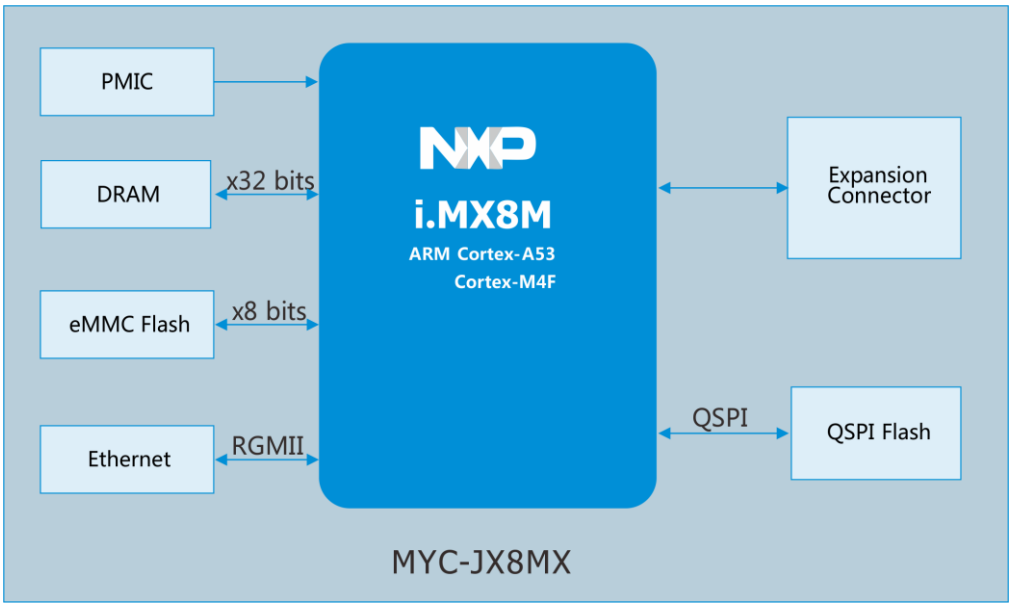

Figure 1-8 MYC-JX8MX CPU Module Function Block Diagram

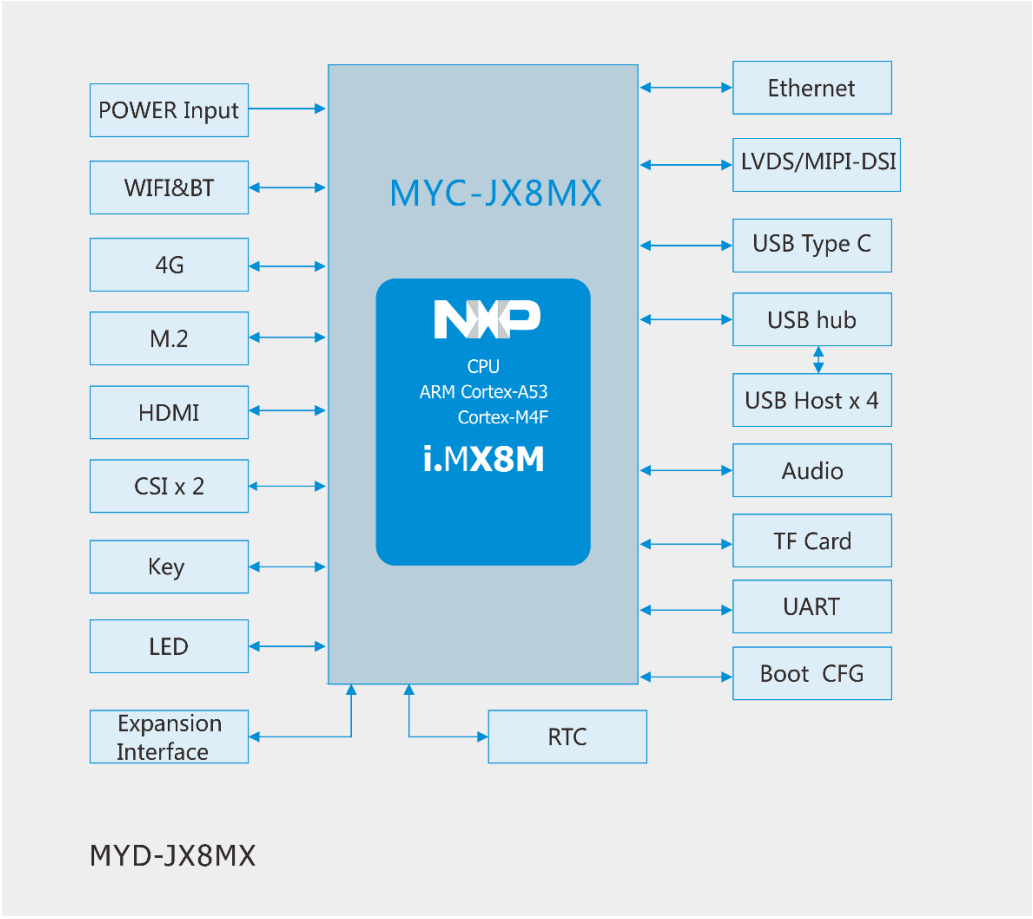

Figure 1-9 MYD-JX8MX Development Board Function Block Diagram

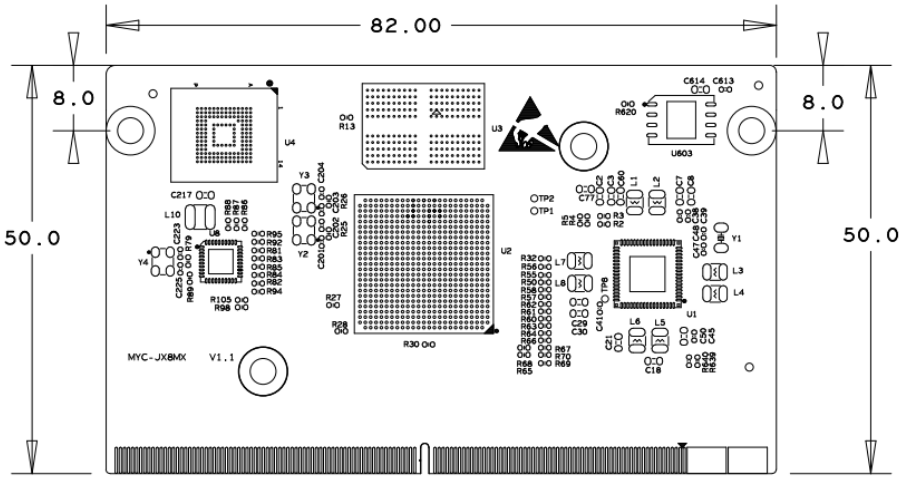

Figure 1-10 MYC-JX8MX Dimensions Chart

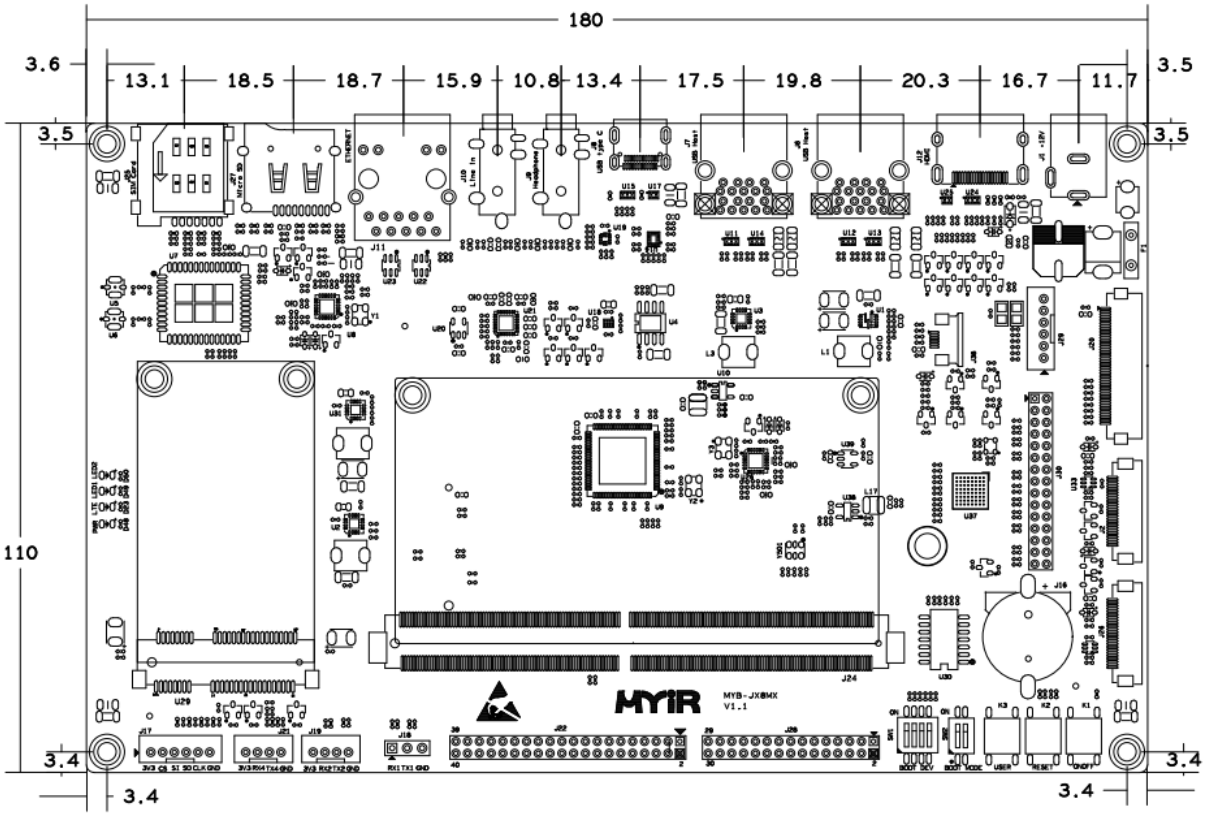

Figure 1-11 MYD-JX8MX Dimensions Chart

Software Features

The MYD-JX8MX supports running Yocto Linux, Ubuntu Linux, Android OS and is provided with software packages. Many peripheral drivers are in source code to help accelerate customers' designs. The software packages provided are characterized as following:

Item	Features	Description	Source Code Provided
Bootstrap program	U-boot	The primary bootstrap	YES
Linux kernel	Image	Based on NXP official 2019.04-4.19.35-1.1.0 version	YES
Drivers	PMIC	BD71873PMIC driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C Bus driver	YES
	SPI	SPI Bus driver	YES
	Ethernet	10/100/1000M Ethernet driver	YES
	MMC	MMC/eMMC/TF card driver	YES
	HDMI	HDMI Display driver	YES
	LCD	MIPI-LVDS driver	YES
	PWM	PWM driver	YES
	RTC	RTC driver	YES
	IO	GPIO driver	YES
	Touch	Capacitive touch screen driver	YES
	Audio	WM8904 driver	YES
	Camera	Ov5640 driver	YES
	WiFi & BT	6222B/QCA6174 driver	YES
	Watchdog	Watchdog driver	YES
	4G LTE Module	Supports Quectel's EC20 using USB driver	YES
	M.2	NVME driver	YES
File System	Yocto rootfs	Including QT5.12	YES
		Common file system for terminal	YES
Application Programs	GPIO KEY	Key example	YES
	GPIO LED	LED example	YES
	NET	TCP/IP Sokect C/S example	YES
	RTC	RTC example	YES
	UART	UART example	YES
	Audio	Audio example	YES
	LCD	LCD example	YES
	Camera	Dual camera display example	YES
Compiler Tool Chain	Cross compiler	Yocto GCC 8.3.0 Hardfloat	BINARY

Table 1-1 Yocto Linux Software Features

Item	Features	Description	Source Code Provided
Bootstrap program	U-boot	The primary bootstrap	YES
Linux kernel	Image	Based on NXP official Android 9.0.0 version	YES
Drivers	PMIC	BD71873PMIC driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C Bus driver	YES
	SPI	SPI Bus driver	YES
	Ethernet	10/100/1000M Ethernet driver	YES
	MMC	MMC/eMMC/TF card driver	YES
	HDMI	HDMI Display driver	YES
	LCD	MIPI-LVDS driver	YES
	PWM	PWM driver	YES
	RTC	RTC driver	YES
	IO	GPIO driver	YES
	Touch	Capacitive touch screen driver	YES
	Audio	WM8904 driver	YES
	Camera	Ov5640 driver	YES
	WiFi & BT	6222B/QCA6174 driver	YES
	Watchdog	Watchdog driver	YES
	4G LTE Module	Supports Quectel's EC20 using USB driver	YES
	M.2	NVME driver	YES
File System	Ramdisk	android ramdisk	YES
Application Programs	GPIO KEY	Key example	YES
	GPIO LED	LED example	YES
	NET	TCP/IP Sokect C/S example	YES
	RTC	RTC example	YES
	UART	UART example	YES
	Audio	Primary recorder apk based on Android	YES
	Camera	Primary camera apk based on Android	YES
	WiFi	Primary settings apk based on Android	YES
	BT	Primary settings apk based on Android	YES
	Video	Primary Cactus player based on Android	YES
Compiler Tool Chain	Cross compiler	4.9.x 20150123	BINARY

Table 1-2 Android Software Features

Ubuntu Linux has changed file system based on Yocto Linux and remains uboot, kenrel, dtb, ko and firmware.

Features	Description
Version	Ubuntu 18.04
Desktop	Xfce4
Wifi/bt/NET	Normal function, connman control
4G	Unable to add connman, open manually
CSI/USB camera	Normal function, need to co-operate with gstream
Audio	Can switch output with HDMI
LVDS	Support MYIR's 7-inch Display with 1024 x 600 pixels resolution
Kernel	Support docker configuration

Table 1-3 Ubuntu Linux Software Features

Order Information

Product Item	Part No.	Packing List
MYD-JX8MX Development Board	MYD-JX8MQ6-8E1D-130-E	➢ One MYD-JX8MX Development Board ➢ One 12V/2A Power adapter ➢ One WiFi Antenna ➢ One 4G LTE Antenna ➢ One HDMI Cable ➢ One Quick Start Guide (Product resources provided include user manual, datasheet, base board schematic pdf format, CPU Module pinout description and software packages.) **Add-on Options** ➢ MYC-JX8MX CPU Module ➢ MY-CAM003M Camera Module ➢ MY-LVDS070C 7-inch LCD Module
	MYD-JX8MQ6-8E2D-130-E	
MYC-JX8MX CPU Module	MYC-JX8MQ6-8E1D-130-E	
	MYC-JX8MQ6-8E2D-130-E	
MY-CAM003M Camera Module	MY-CAM003M	
MY-LVDS070C 7-inch LCD Module	MY-LVDS070C	

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