

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 Linux and Android OS*

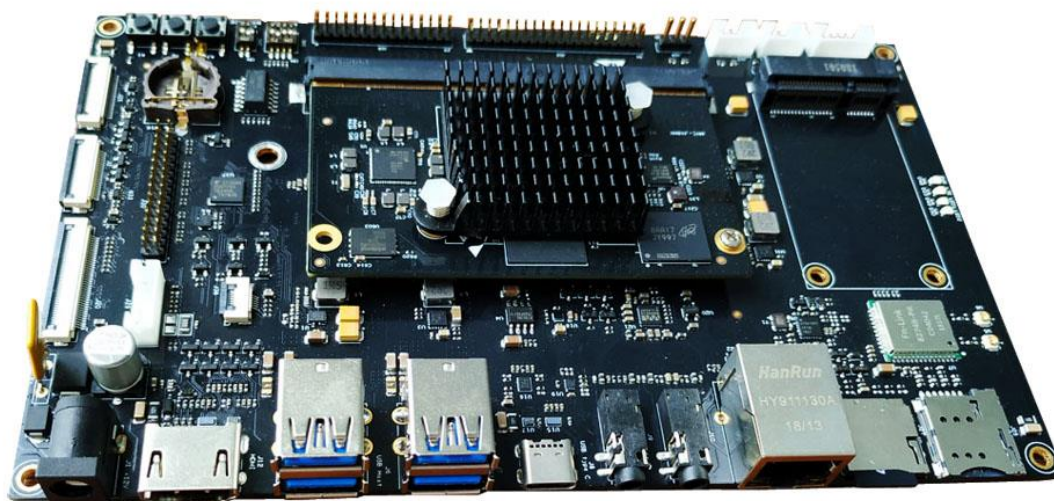


Figure 1-1 MYD-JX8MX Development Board

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.

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.

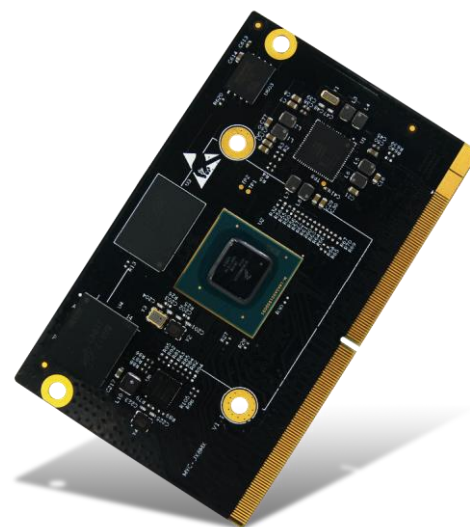


Figure 1-2 MYC-JX8MX CPU Module

MYiR offers [MY-CAM003 MIPI Camera Module](#) and LCD Modules as options for the board.

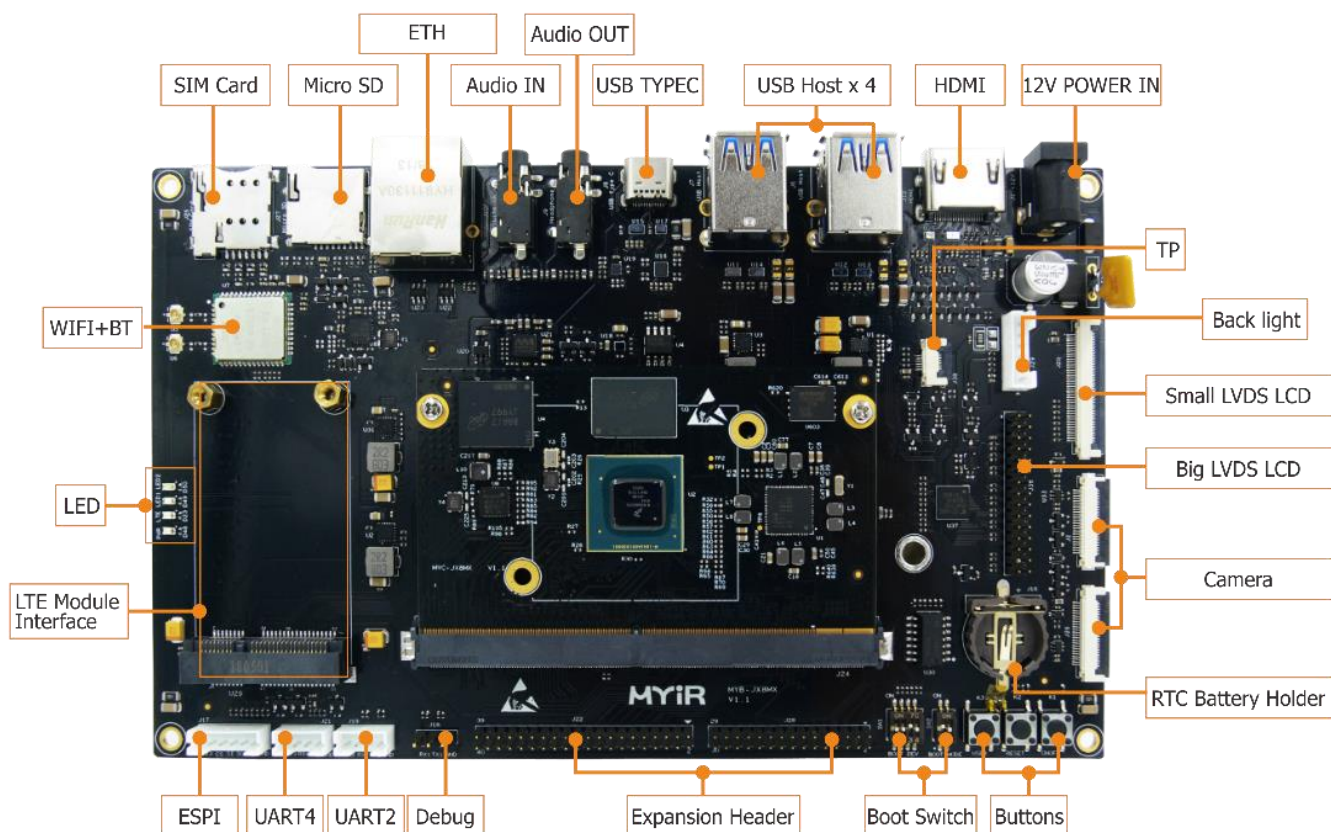


Figure 1-3 MYD-JX8MX Development Board Top-view

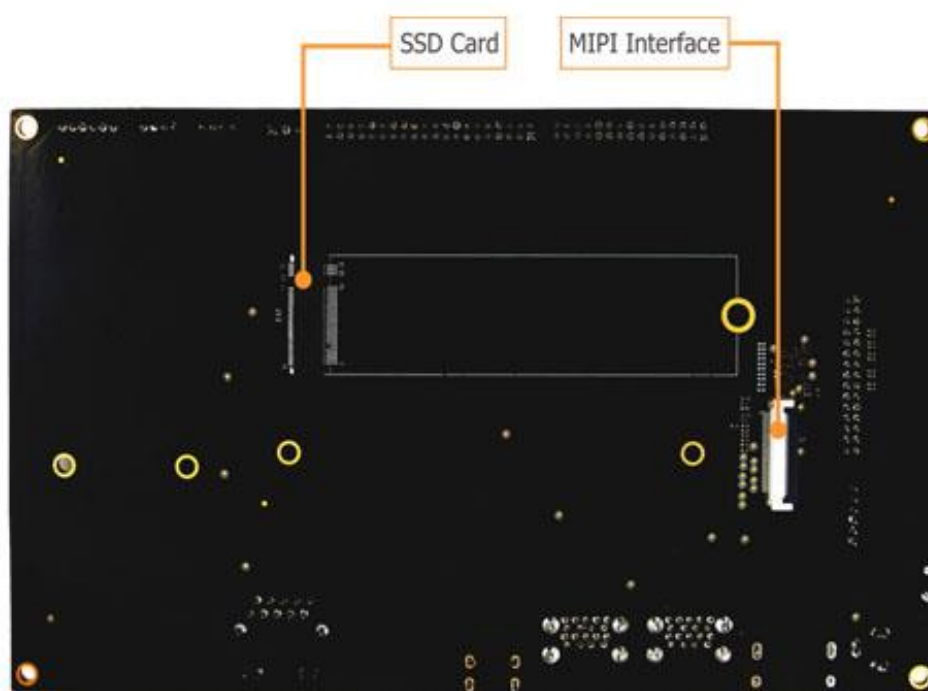


Figure 1-4 MYD-JX8MX Development Board Bottom-view

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.

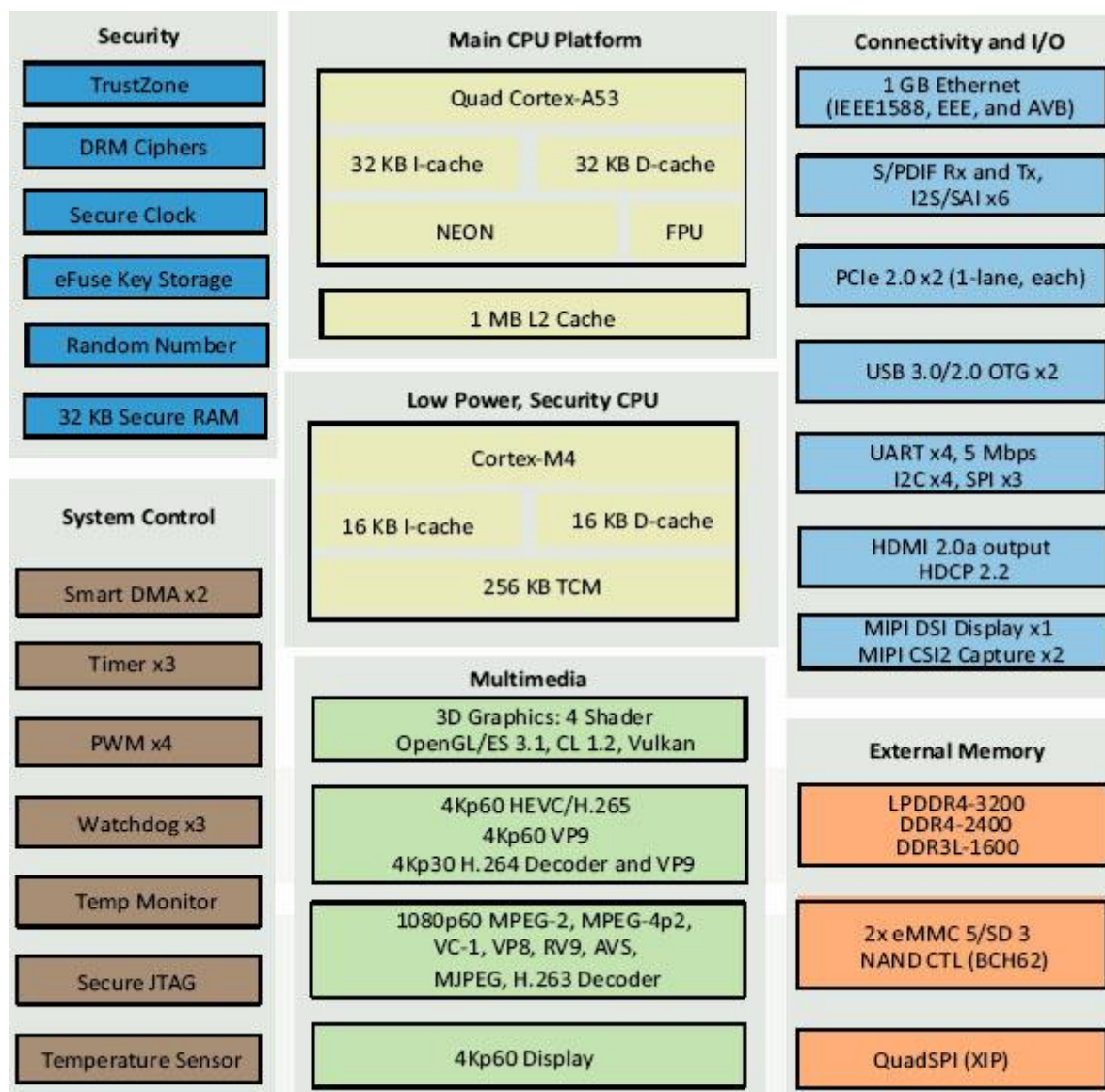


Figure 1-5 i.MX 8M System Block Diagram

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: 0~70 Celsius

The MYD-JX8MX Controller Board ([MYC-JX8MX CPU Module](#))

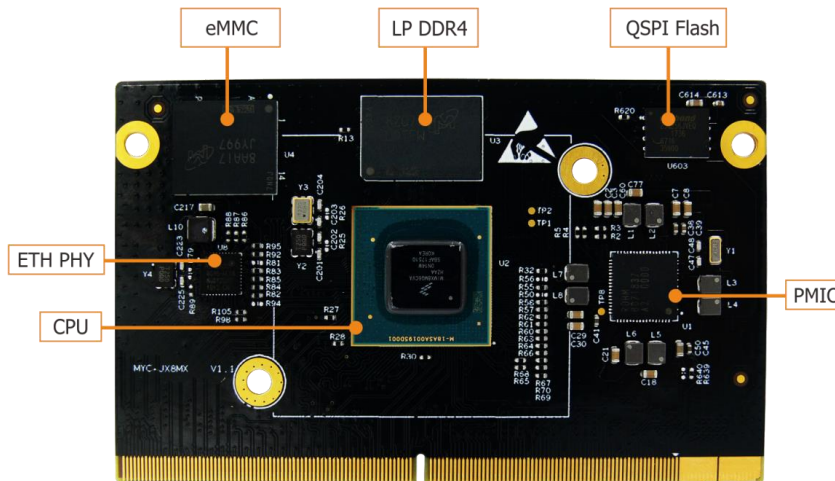


Figure 1-6 MYC-JX8MX CPU Module (delivered with installed heatsink by default)

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

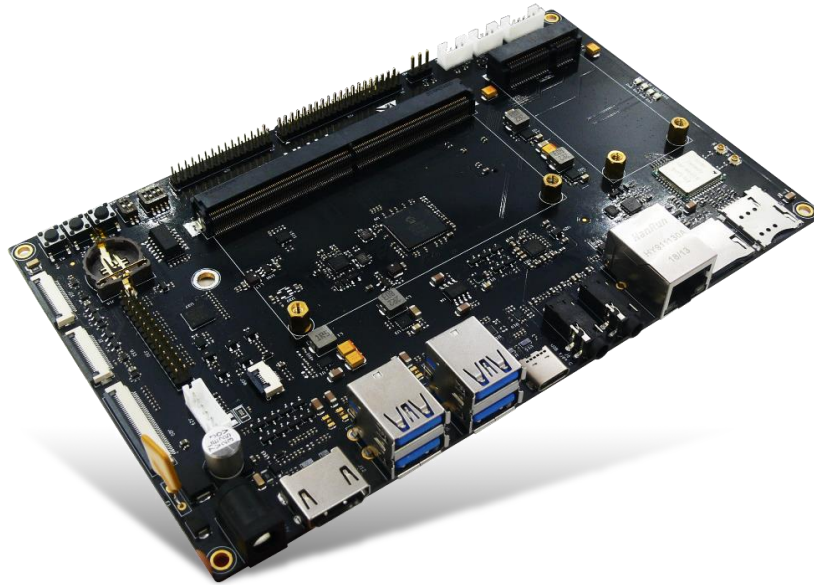


Figure 1-7 MYD-JX8MX Development Board Base Board

- 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

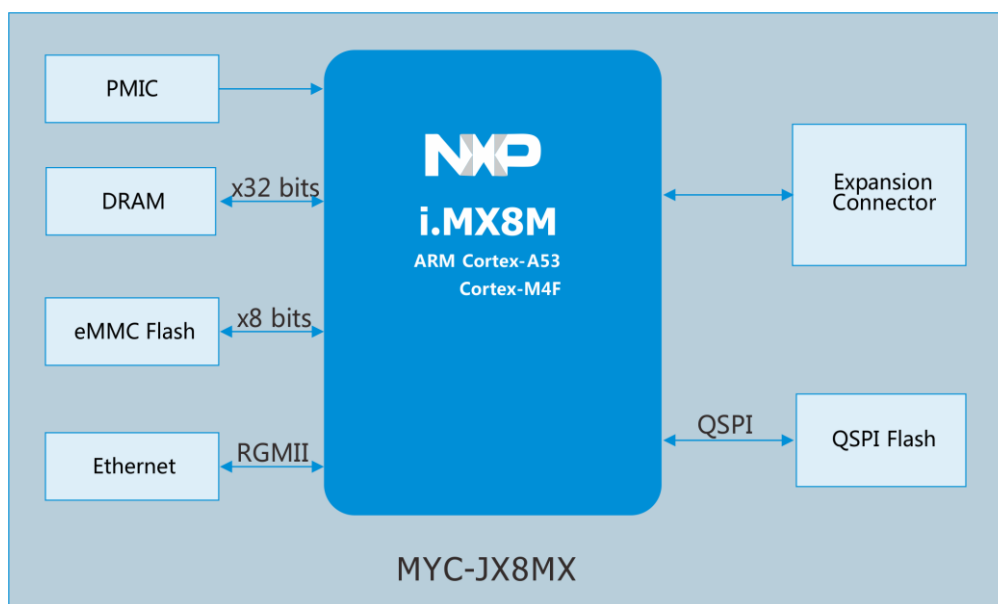


Figure 1-8 MYC-JX8MX CPU Module Function Block Diagram

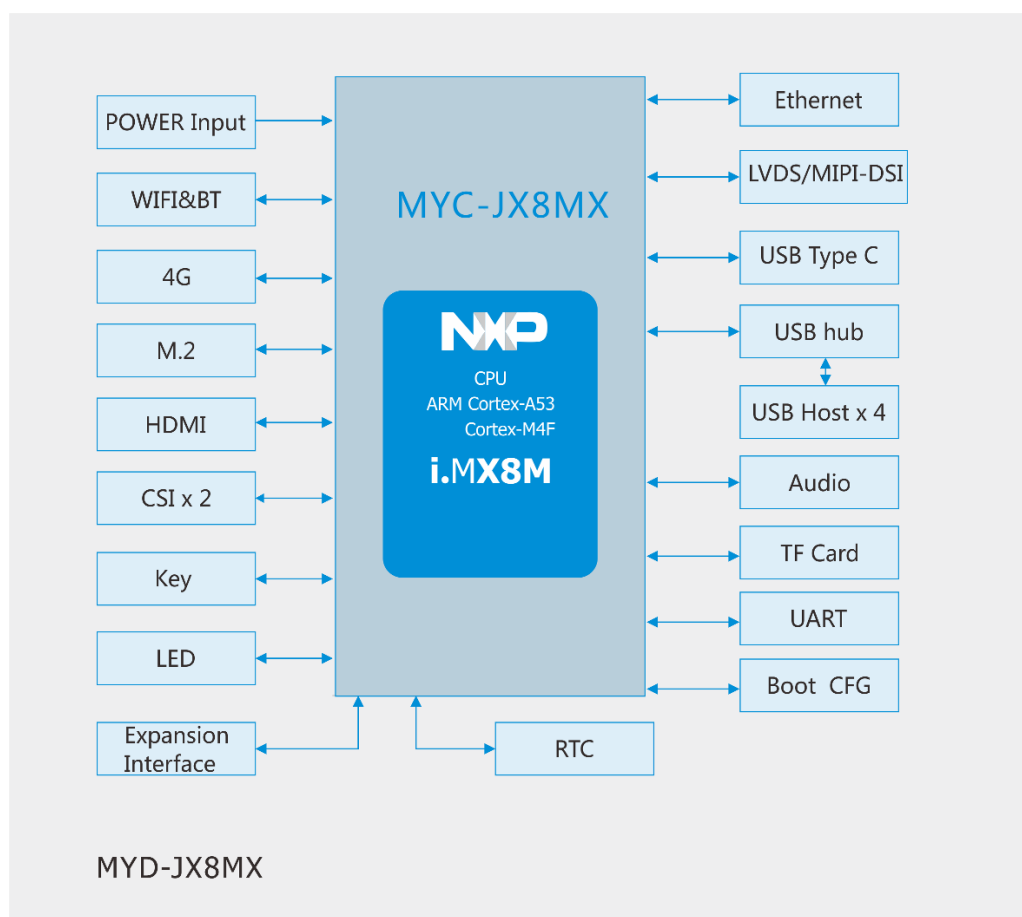


Figure 1-9 MYD-JX8MX Development Board Function Block Diagram

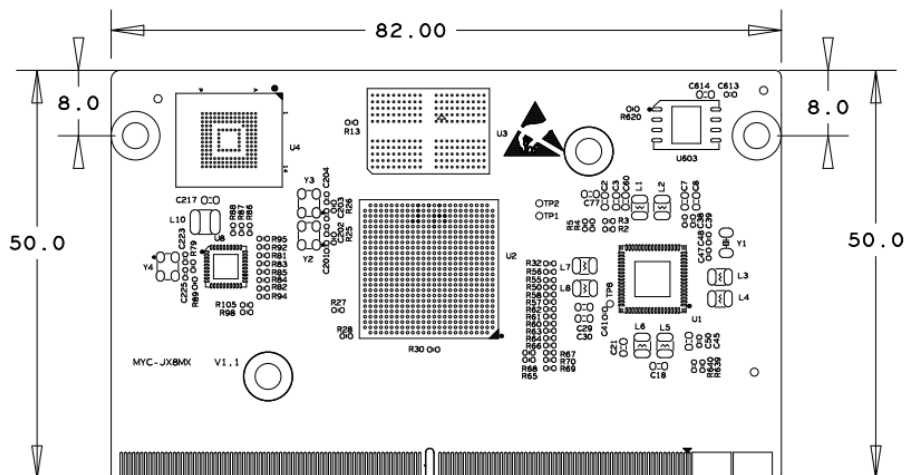


Figure 1-10 MYC-JX8MX Dimensions Chart

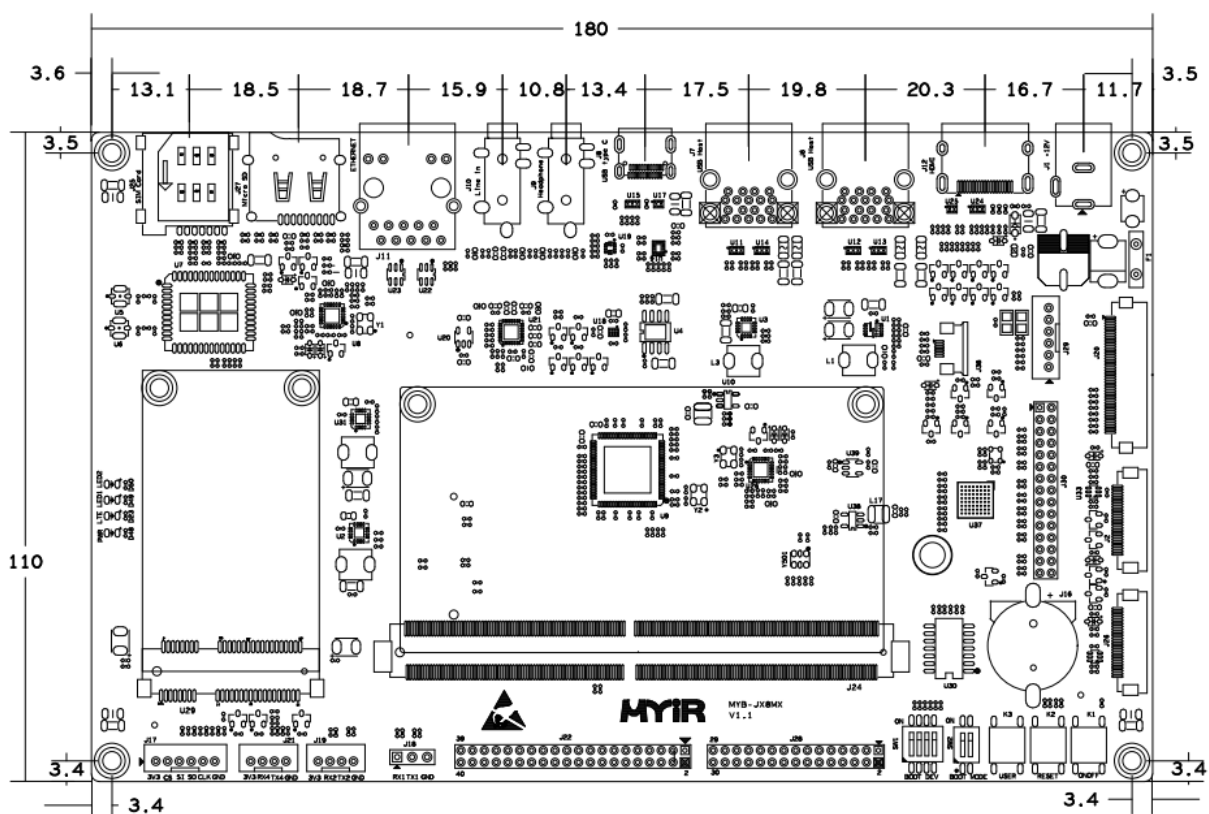


Figure 1-11 MYD-JX8MX Dimensions Chart

Software Features

The MYD-JX8MX supports running Linux and Android Operation Systems 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 imx_4.9.88_2.0.0_ga 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 | QCA6174/RTK8822 driver | NO |
| | 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 QT5.9 | YES |
| | | Common file system for terminal | YES |
| Application Programs | GPIO KEY | Key example | YES |
| | GPIO LED | LED example | YES |
| | NET | TCP/IP Socket 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 7.3.0 Hardfloat | BINARY |

Table 1-1 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 |
| | PWM | PWM driver | YES |
| | RTC | RTC driver | YES |
| | IO | GPIO driver | YES |
| | Audio | WM8904 driver | YES |
| | Camera | Ov5640 driver | YES |
| | WiFi & BT | QCA6174/RTK8822 driver | NO |
| | 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 Socket 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

Order Information

| Product Item | Part No. | Packing List |
|-----------------------------|-----------------------|--|
| MYD-JX8MX Development Board | MYD-JX8MQ6-8E1D-130-E | <ul style="list-style-type: none"> ➤ One MYD-JX8MX Development Board ➤ One 12V/2A Power adapter ➤ One WiFi Antenna ➤ One 4G LTE Antenna ➤ One HDMI Cable ➤ One Quick Start Guide <p>(Product resources provided include user manual, datasheet, base board schematic pdf format, CPU Module pinout description and software packages.)</p> <p>Add-on Options</p> <ul style="list-style-type: none"> ➤ MYC-JX8MX CPU Module ➤ MY-CAM003M Camera 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 | |



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