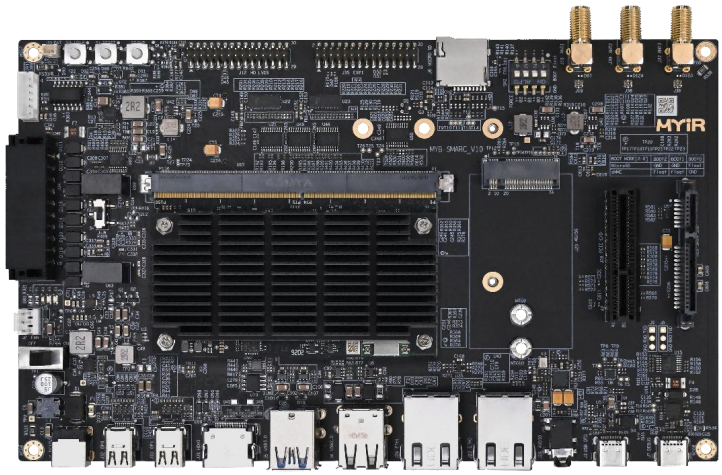
MYiR 米尔电子
Make Your Idea Real

MYD-JS8MPQ
Development Board
Overview

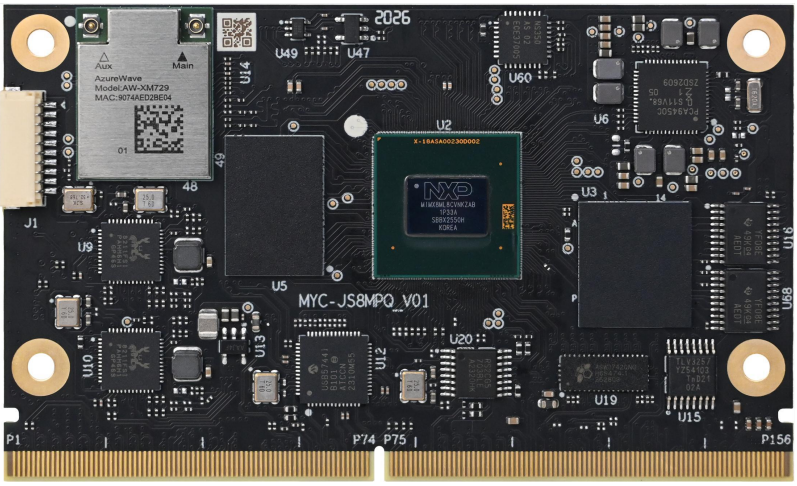




- ✓ *Powered by the MYC-JS8MPQ SMARC SOM*
- ✓ *NXP i.MX 8M Plus Quad Application Processor Featuring 1.6GHz Arm Cortex-A53 and 800MHz Cortex-M7 Cores*
- ✓ *Neural Processing Unit (NPU) up to 2.3 TOPS*
- ✓ *2GB/4GB LPDDR4, 16GB/32GB eMMC Flash, 32Kbit EEPROM*
- ✓ *2x USB 3.0 Host, 1x USB 2.0 Host, 1x USB 2.0 OTG, 1x RS485, 1x RS232, 2x CAN FD*
- ✓ *Dual Gigabit Ethernet, Wi-Fi 6/BT 5.4 Module, 4G/5G via Mini PCIe Socket with Dual Micro SIM Card Slots*
- ✓ *1x M.2-2280 PCIe Slot (NVMe SSD), Micro SD Card Slot*
- ✓ *1x HDMI, 1x LVDS/MIPI-DSI or 2x LVDS, 2x MIPI-CSI, Audio I/O*
- ✓ *Ready-to-Run Linux BSP*
- ✓ *Universal Carrier Board Compatible with All MYIR SMARC SOMs*
- ✓ *Optional Camera and Display Modules*

The MYD-JS8MPQ development board delivers a complete evaluation and prototyping solution based on the NXP i.MX 8M Plus processor, NXP's first applications processor with an integrated NPU. It features a quad-core Cortex-A53 (up to 1.6GHz) with a Cortex-M7 real-time core, a 2.3 TOPS NPU, and a Vivante GC7000UL 3D GPU. With dual MIPI-CSI camera interfaces, dual ISP, and a 1080p60 H.265/H.264 codec, it is ideal for machine vision, intelligent HMI, and multimedia processing. The processor also provides industrial-grade reliability, supporting a -40~+105°C temperature range and NXP's 15-year long-term supply commitment.

The board consists of the MYC-JS8MPQ SOM and a carrier board, connected via a 314-pin SMARC connector. The MYC-JS8MPQ integrates the i.MX 8M Plus processor, LPDDR4, eMMC, PMIC, EEPROM, and an onboard Wi-Fi/Bluetooth module, forming a complete minimum system that brings out all I/O through the SMARC connector.

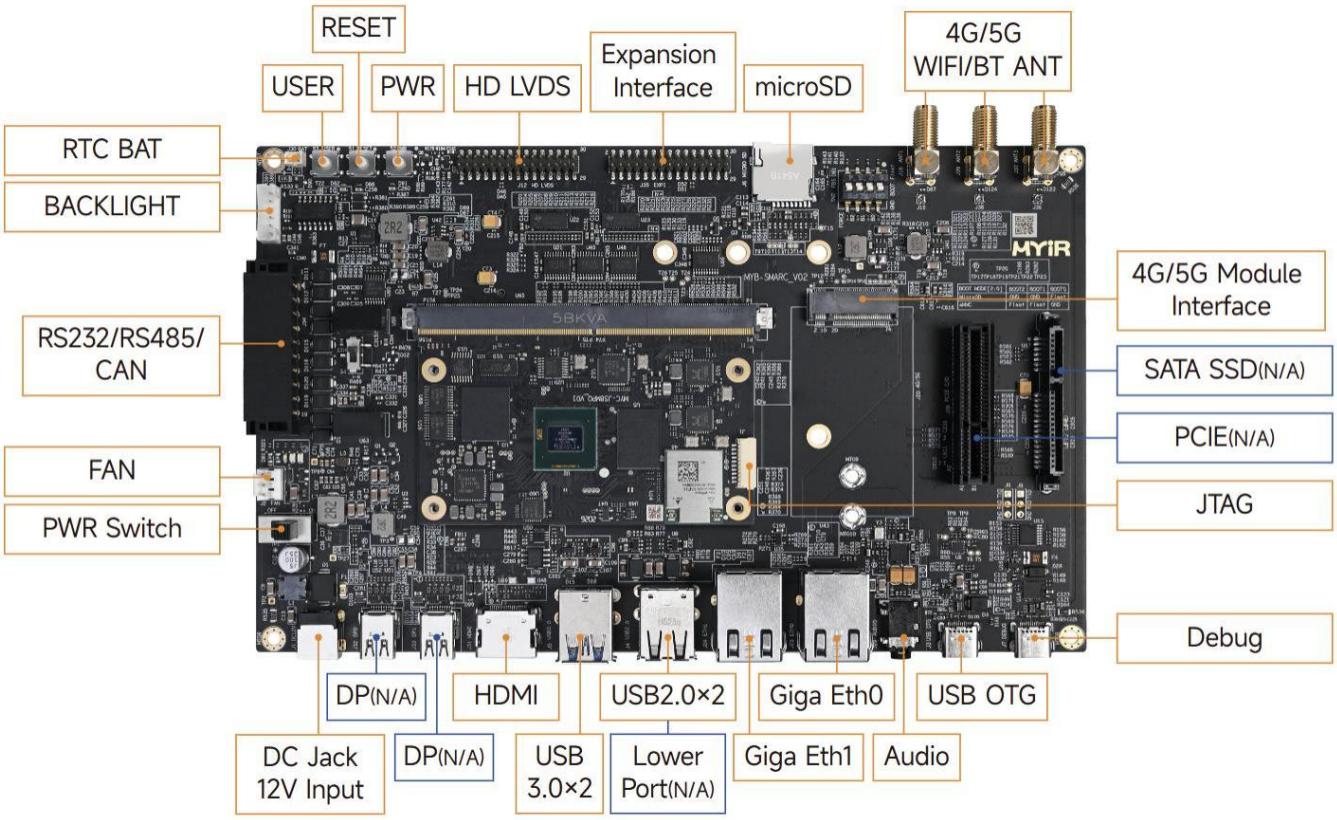


MYC-JS8MPQ System-On-Module

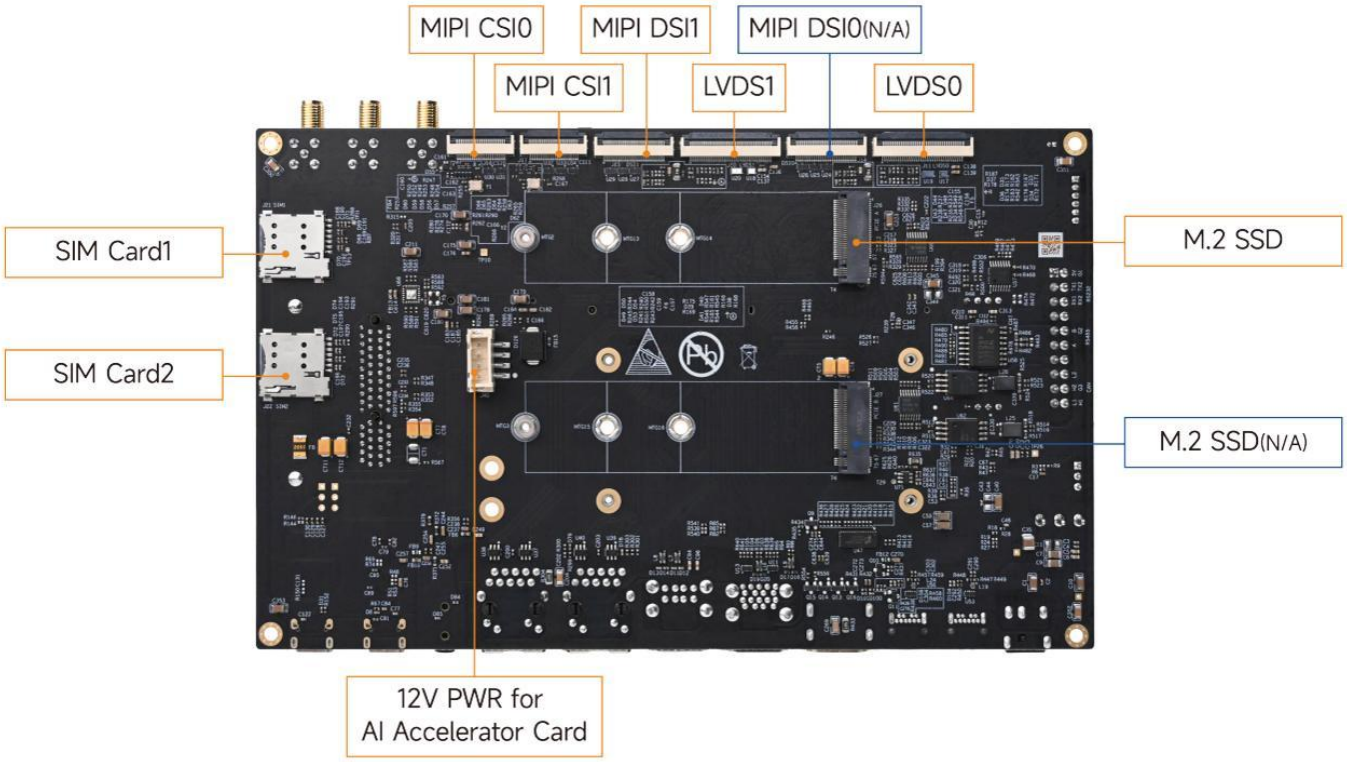
The carrier board is universal and compatible with all MYIR SMARC SOMs. It exposes a comprehensive set of interfaces for application development, including dual Gigabit Ethernet, a Mini PCIe socket (with dual Micro SIM support for 4G/5G modules), PCIe for NVMe SSD, a Micro SD slot, and multiple USB ports (2x USB 3.0 Host, 1x USB 2.0 Host, and 1x USB 2.0 OTG). It also features dual CAN FD, RS485, and RS232, all routed through a single Phoenix connector. For display and imaging, it supports HDMI, MIPI-DSI, dual LVDS, two MIPI-CSI camera inputs, and a 3.5mm audio jack. This rich I/O portfolio makes it a solid reference for rapid prototyping in industrial automation, edge AI gateways, and in-vehicle applications.

For greater development flexibility, MYIR offers optional display and camera accessories for the MYD-JS8MPQ, including the MY-MIPI101C-V2 10.1-inch MIPI display, the MY-LVDS070C 7-inch LVDS display, and the MY-CAM003M and MY-CAM005M MIPI-CSI camera modules, which provide a streamlined, ready-to-use development experience.

To accelerate time-to-market, MYIR provides a comprehensive software package, including U-Boot, Linux kernel 6.12.49, peripheral drivers, and complete development tools, along with detailed documentation. With stable reference designs and a ready-to-use software environment, MYIR enables developers to streamline prototyping, reduce development risks, and bring products to market faster.



MYD-JS8MPQ Development Board (Top-view)



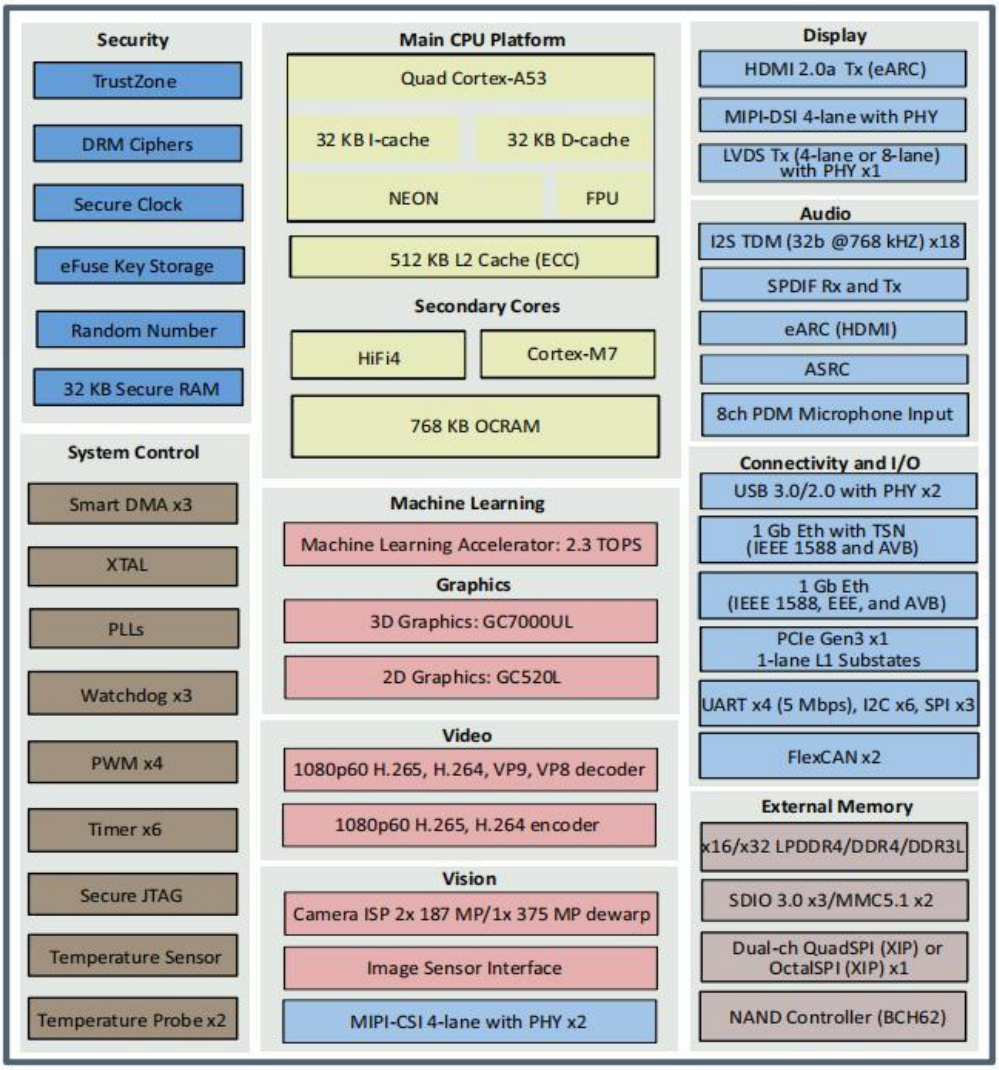
MYD-JS8MPQ Development Board (Bottom-view)

Hardware Specification

The **MYC-JS8MPQ SOM** is using NXP's 15 x 15 mm, 0.5 mm pitch, FCBGA bare die package i.MX 8M Plus Quad Application Processor (MIMX8ML8CVNKZAB) which is among the **i.MX 8M Plus family** and features as in below tables.

Family	Part Number	Configuration	Temperature
i.MX 8M Plus Quad	MIMX8ML8DVNLZAB	4x A53 (1.8Ghz), VPU, NPU, ISP	0°C - +95°C
i.MX 8M Plus Quad	MIMX8ML6DVNLZAB	4x A53 (1.8Ghz), VPU, ISP	0°C - +95°C
i.MX 8M Plus Quad Lite	MIMX8ML4DVNLZAB	4x A53 (1.8Ghz)	0°C - +95°C
i.MX 8M Plus Dual	MIMX8ML3DVNLZAB	2x A53 (1.8Ghz), VPU, NPU, ISP	0°C - +95°C
i.MX 8M Plus Quad	MIMX8ML8CVNKZAB	4x A53 (1.6Ghz), VPU, NPU, ISP, CAN-FD	-40°C - +105°C
i.MX 8M Plus Quad	MIMX8ML6CVNKZAB	4x A53 (1.6Ghz), VPU, ISP, CAN-FD	-40°C - +105°C
i.MX 8M Plus Quad Lite	MIMX8ML4CVNKZAB	4x A53 (1.6Ghz), CAN-FD	-40°C - +105°C
i.MX 8M Plus Dual	MIMX8ML3CVNKZAB	2x A53 (1.6Ghz), VPU, NPU, ISP, CAN-FD	-40°C - +105°C

i.MX 8M Plus Family Application Processors



i.MX8M Plus Series Processor Block Diagram

● ARM Cortex-A53, frequency up to 1.8Ghz; 800Mhz ARM Cortex-M7
● 16/32-bit DRAM interface, support LPDDR4-4000, DDR4-3200, DDR3L-1600
● x1, 8-bit NAND Flash
● x2, eMMC 5.1 Flash
● x3, SPI NOR FLASH
● x1, PCIe Gen3
● x2 USB 3.0 Type C controllers with integrated PHY (also supported USB 2.0) interfaces
● x3 uSDHC interface with eMMC 5.1 compliance
● x2 Gigabit Ethernet controller (1x TSN-capable via ENET_QOS)
● x4 UART, x6 I2C, x3 SPI
● Video Processing Unit 1080p60 HEVC/H.265 Main, Main 10 (up to level 5.1) 1080p60 VP9 Profile0,2 1080p60 AVC/H.264 Baseline, Main, High decoder 1080p60 AVC/H.264 encoder 1080p60 HEVC/H.265 encoder
● Graphic Processing Unit GC7000UL with OpenCL and Vulkan support 166 million triangles/sec Supports OpenGL ES 1.1, 2.0, 3.0, OpenCL 1.2, Vulkan GC520L for 2D acceleration
● LCDIF Display Controller Support up to 1080p60 display per LCDIF if no more than 2 instances used simultaneously, or 1x 1080p60 + 2x 720p60 if all 3 instances used simultaneously. One LCDIF drives MIPI DSI One LCDIF drives LVDS Tx One LCDIF drives HDMI Tx
● MIPI Interface 4-lane MIPI DSI interface Two instances of 4-lane MIPI CSI interface and HDR ISP
● Audio HiFi4 Audio DSP, SPDIF input and output， x6 SAI
● FCBGA, 0.5mm pitch, 15x15mm

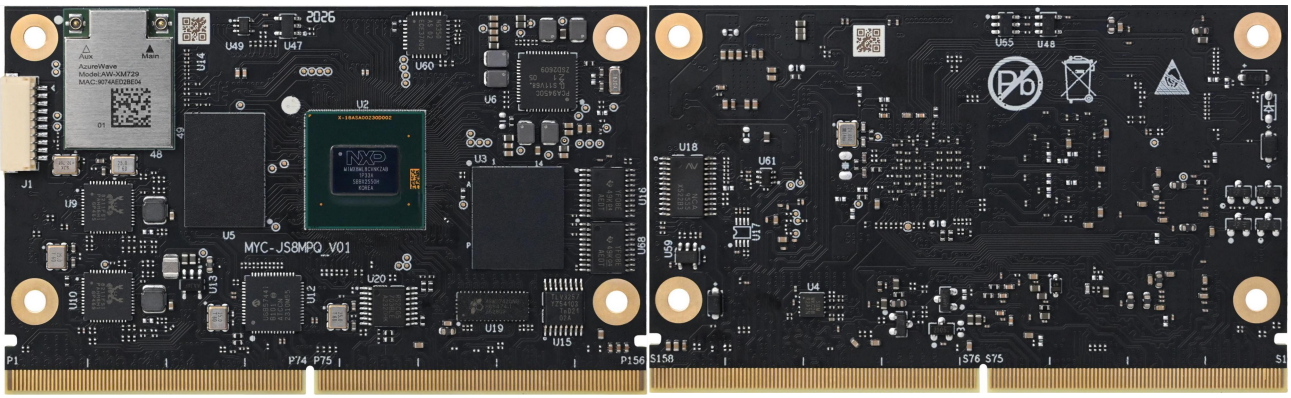
Features of i.MX 8M Plus Application Processor

The MYD-JS8MPQ Development Board is using the MYC-JS8MPQ SOM as core controller board. It takes full features of NXP i.MX 8M Plus processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 205mm x 126mm (base board), 82mm x 50mm (SOM)
- PCB Layers: 6-layer design (base board), 10-layer design (SOM)
- Power supply: +12V/2A (base board), +5V/2A (SOM)
- Working temperature: -40~+85 Celsius (industrial grade)

The MYD-JS8MPQ Controller Board (MYC-JS8MPQ)



MYC-JS8MPQ System-On-Module (Top-view and Bottom-view)

Processor

- NXP i.MX 8M Plus processor
  - 4x Cortex-A53 @2.4GHz(MIMX8ML8CVNKZAB, industrial grade)
  - 1x Cortex-M7 real-time core @800 MHz
  - Integrated 2.3 TOPS NPU for edge AI inference
  - Integrated 2D/3D GPU and 1080p VPU

Memory

- 2GB/4GB LPDDR4
- 16GB/32GB eMMC
- 32Kbit EEPROM

Peripherals and Signals Routed to Pins

- Onboard TPM 2.0 security chip (SPI interface)
- Onboard Wi-Fi 6 (802.11a/b/g/n/ac/ax) + Bluetooth 5.4 module (AzureWave AW-XM729)
- Power Management IC (PMIC)
- 314-pin SMARC 2.2 Expansion Connector

  Display & Camera

  - 1x HDMI, 1x MIPI-DSI (multiplexed with LVDS1), 2x LVDS
  - 2x MIPI-CSI

  Ethernet & High-Speed Interfaces

  - 2x GbE MDI, 10/100/1000Mbps auto-negotiation, ETH0 with TSN support
  - 1x USB 2.0 OTG + 2x USB 3.0 Host + 2x USB 2.0 Host (via USB5744 HUB)

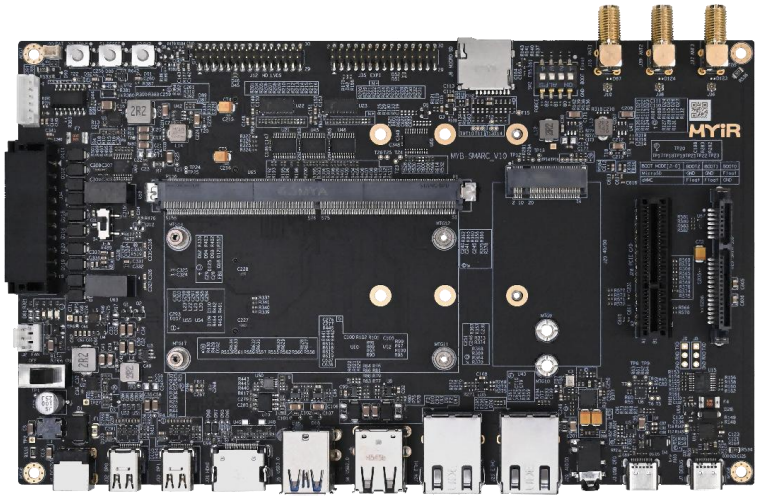
- 1x PCIe x1 Gen3.0

Industrial & Peripheral Interfaces

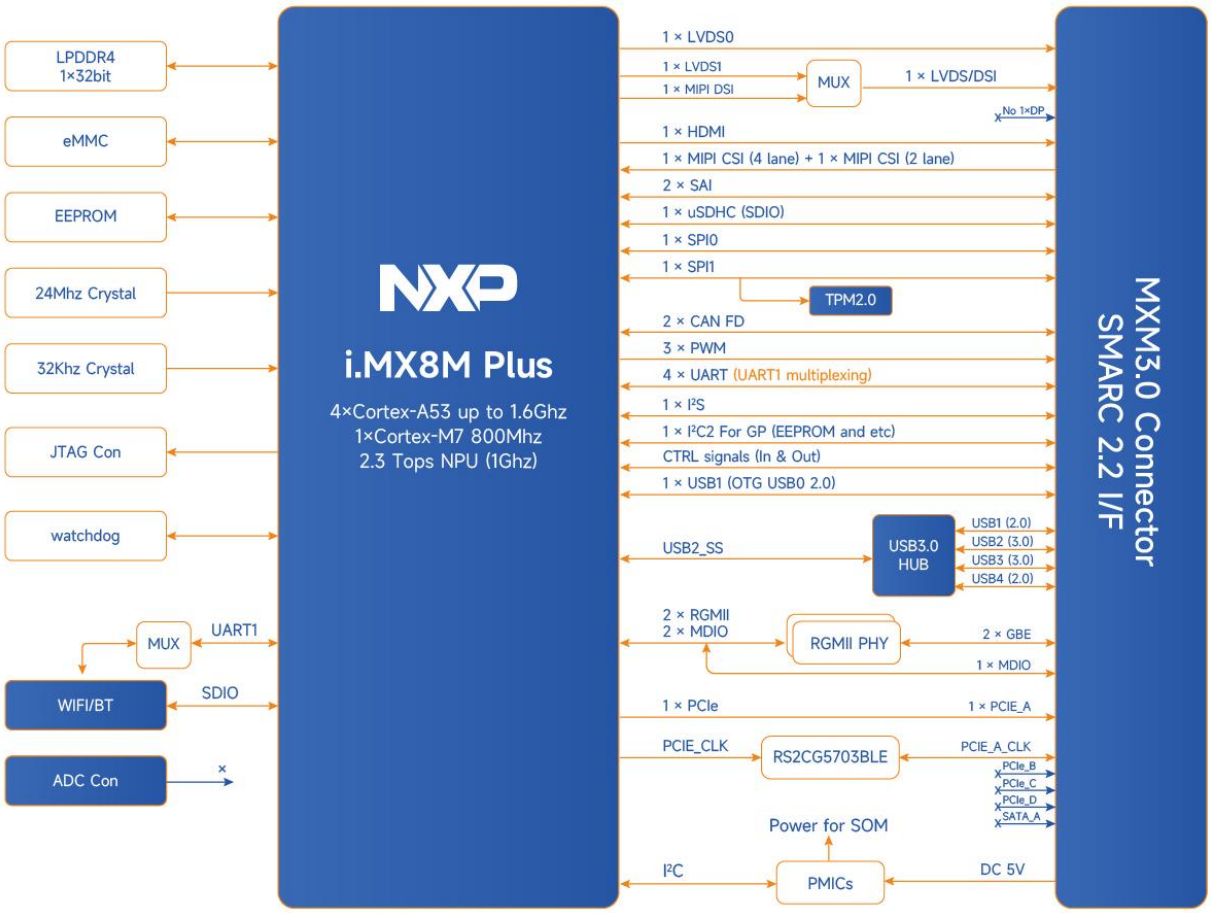
- 2x CAN FD
- 4x UART
- 2x SPI
- 5x I2C
- 1x SD/SDIO 3.0
- 3x PWM
- 2x SAI (audio)

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 and the SOM pinout description file.

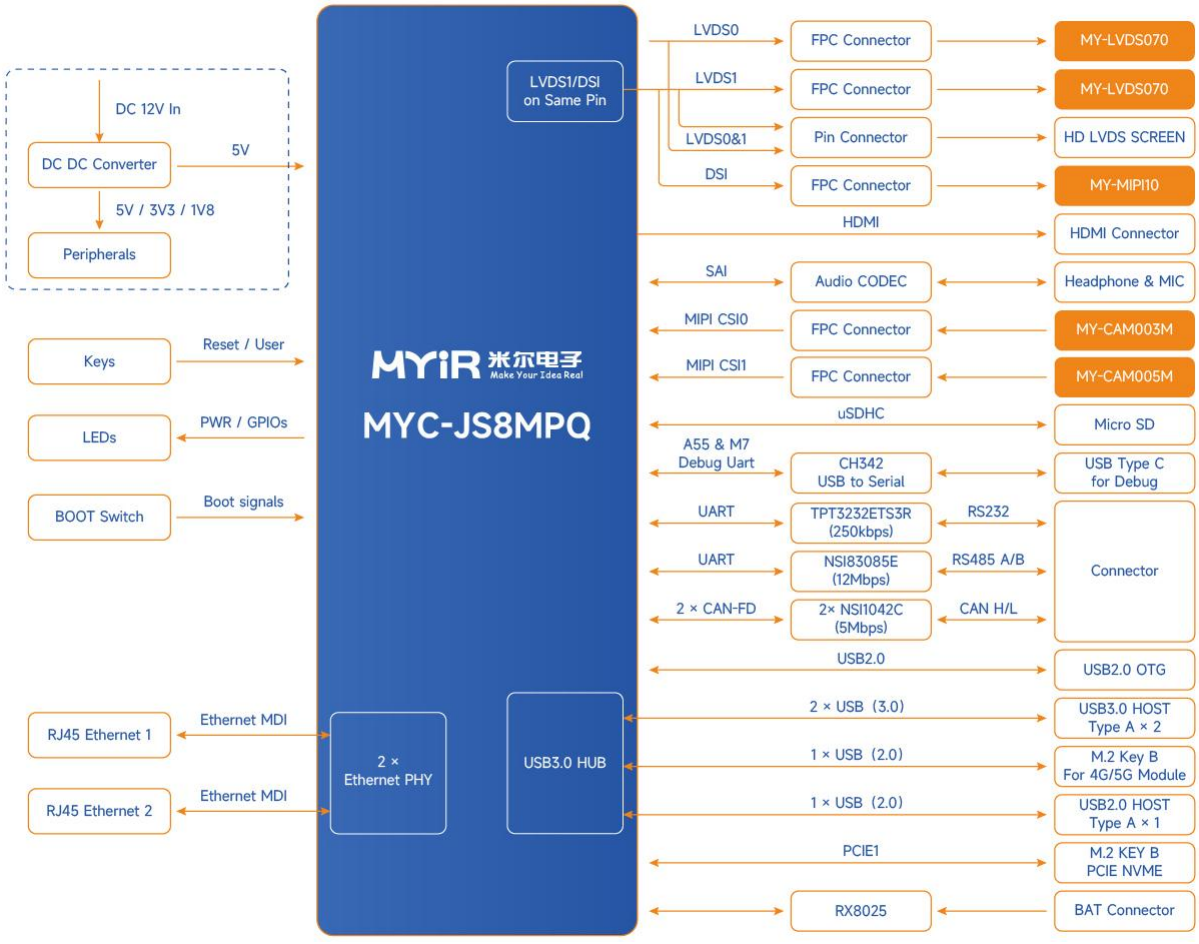
The MYD-JS8MPQ Development Board Base Board



- 1x Power Jack (DC 12V/2A)
- 1x Power Switch, 1x Reset Button, 1x User Button
- LEDs: PWR (power), RUN (system running), USER (user-defined)
- 1x Micro SD Card Slot
- 2x SIM Card Slots
- 1x RTC Battery Header (2-pin), 1x FAN Header (2-pin)
- 1x RS232 (via terminal block)
- 1x RS485 (via terminal block)
- 1x Debug Interface (USB Type-C)
- 2x CAN FD (supporting CAN 2.0B, via terminal block)
- 2x USB 3.0 Type-A Host ports
- 1x USB 2.0 Type-A Host port
- 1x USB 2.0 OTG Type-C port
- 2x 10/100/1000Mbps Ethernet interfaces
- 1x M.2 B-Key socket (USB 2.0, for 4G/5G module)
- 2x Antenna connectors (for WiFi and Bluetooth)
- 1x M.2 M-Key socket (PCIe Gen3x1, NVMe SSD)
- 1x HDMI Output
- 2x LVDS (up to 1920x1080@60Hz)
- 1x MIPI-DSI (multiplexed with LVDS1)
- 2x MIPI-CSI (1x 4-lane, 1x 2-lane)
- 1x Audio Interface (3.5mm headphone/microphone jack)



MYC-JS8MPQ Function Block Diagram



MYD-JS8MPQ Function Block Diagram

Software Features

The MYD-JS8MPQ development board supports Linux OS, and comes with comprehensive software packages. To help clients accelerate their projects, the kernel and various peripheral drivers are provided in source code format. Here is a brief overview of the key software features:

Item	Features	Description	Source Code
Bootloader	U-boot	Boot program uboot_2025.04	YES
Kernel	Linux kernel	Customized based on official kernel_6.12.49 version	YES
Drive	USB HOST/OTG	USB HOST/OTG drive	YES
	Ethernet	YT8531SH driver	YES
	RS232	RS232 driver	YES
	RS485	RS485 driver	YES
	CAN	CAN driver	YES
	RTC	RTC driver	YES
	GPIO	GPIO driver	YES
	WIFI	AW-XM729 driver	YES
	BT	AW-XM729 driver	YES
	4G	EM05-CE driver	YES
	5G	RM500Q-CN driver	YES
	LVDS	LT8912 driver	YES
	MIPI DSI	MIPI DSI driver	YES
	HDMI	HDMI driver	YES
	MIPI CSI	Camera driver	YES
	Audio	ES8388 driver	YES
	Micro SD	SD card storage driver	YES
	TPM2.0	TPM driver	-
File system	myir-image-full	Yocto-based image with GUI support	YES

MYC-JS8MPQ Software Features

Order Information

Product Item	Part No	Packing List
MYD-JS8MPQ Development Board	MYD-JS8MPQ-16E2D-160-I	✓ One MYD-JS8MPQ Board (Includes MYC-JS8MPQ SOM with pre-installed heatsink) ✓ One 12V/2A Power Adapter ✓ One USB Type-A to Type-C cable ✓ One Quick Start Guide ✓ One Wi-Fi IPEX antenna ✓ One Wi-Fi rod antenna
	MYD-JS8MPQ-32E4D-160-I	
MYC-JS8MPQ System-On-Module	MYC-JS8MPQ-16E2D-160-I	✓ One MYC-JS8MPQ SOM (Heatsink not included)
	MYC-JS8MPQ-32E4D-160-I	
MY-CAM003M MIPI Camera Module	MY-CAM003M	✓ MY-CAM003M MIPI Camera Module
MY-CAM005M MIPI Camera Module	MY-CAM005M	✓ MY-CAM005M MIPI Camera Module
MY-LVDS070C LCD Module	MY-LVDS070C	✓ MY-LVDS070C 7-inch LVDS Display Module with Capacitive Touch Screen
MY-MIPI101C-V2 LCD Module	MY-MIPI101C-V2	✓ MY-MIPI101C-V2 10.1-inch MIPI LCD Module with Capacitive Touch Screen

Note:

1. One MYD-JS8MPQ Development Board comprises one MYC-JS8MPQ SOM mounted onto the base board. If you require additional SOMs, you may place order for extras.

2. Bulk discounts are available. Please contact MYIR for inquiries.

We accept custom design based on the MYD-JS8MPQ, whether reducing, adding or modifying the existing hardware according to customer's requirement.

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