MYiR 米尔电子
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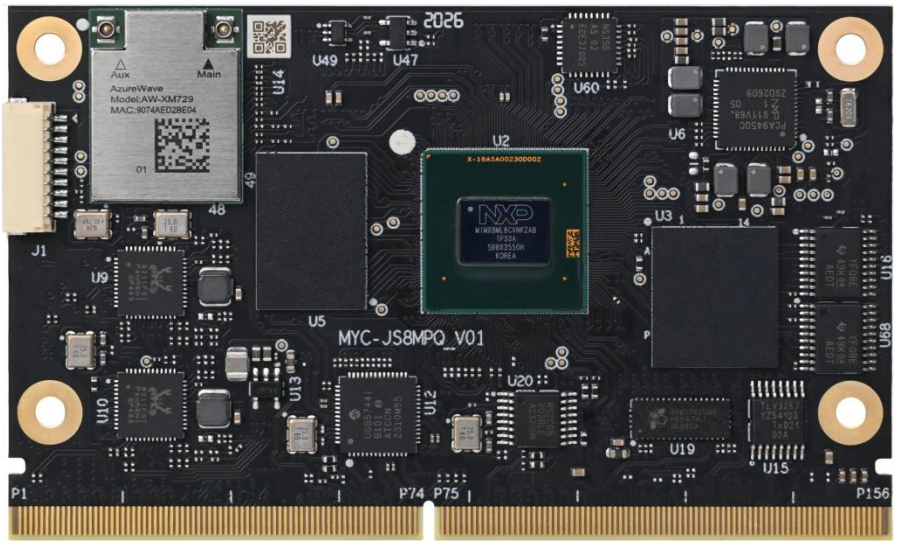
MYC-JS8MPQ
System-On-Module
Overview





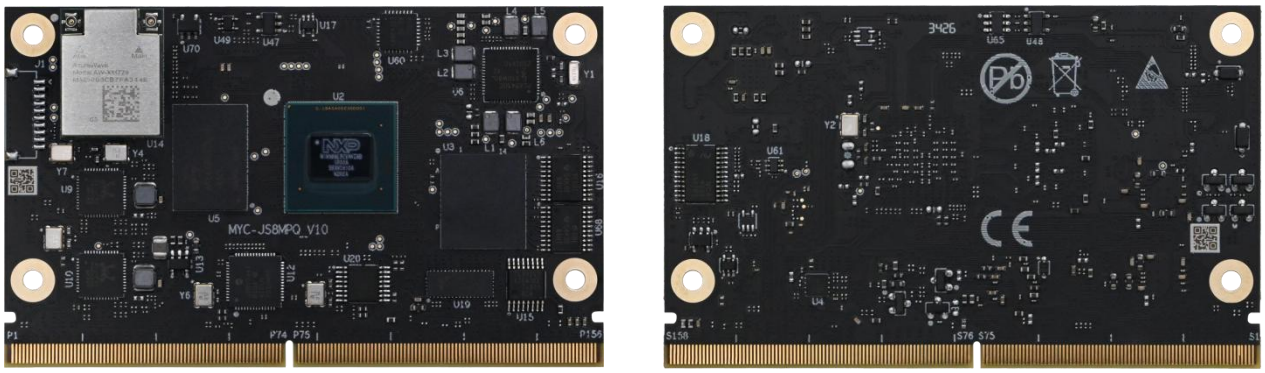
- ✓ *NXP i.MX8MPlus Quad Application Processor based on 1.6 GHz Arm Cortex-A53 and 800MHz Cortex-M7 Cores*
- ✓ *A Neural Processing Unit (NPU) up to 2.3 TOPS, 3D GPU*
- ✓ *2GB/4GB LPDDR4, 16GB/32GB eMMC Flash, 32Kbit EEPROM*
- ✓ *Power Management IC (PMIC)*
- ✓ *Onboard Wi-Fi 6 & BT 5.4 Module*
- ✓ *314-pin SMARC 2.2 Expansion Connector*
- ✓ *Supports Working Temperature Ranging from -40 ° C to 85 ° C*
- ✓ *Supports Running Linux 6.12.49*

Measuring 82mm x 50mm, the MYC-JS8MPQ is a high-performance Edge AI SMARC System-on-Module (SOM) powered by the NXP i.MX 8M Plus processor. It features four Cortex-A53 cores (up to 1.6 GHz) and a Cortex-M7 core for real-time control, and a 2.3 TOPS NPU along with a 3D GPU for edge AI inference and graphics.

The MYC-JS8MPQ SOM integrates LPDDR4 (2GB/4GB), eMMC (16GB/32GB), and 32Kbit EEPROM for flexible storage options, along with onboard Wi-Fi 6 and BT 5.4 module, a Gigabit Ethernet PHY, and a USB 3.0 HUB. Security is reinforced by an independent TPM 2.0 chip and the built-in NXP i.MX 8M Plus security subsystem, while the onboard PMIC delivers efficient power management.

The 314-pin SMARC 2.2 connector offers versatile expansion options, including dual Gigabit Ethernet, multi-display outputs (HDMI, MIPI-DSI or 2x LVDS), dual MIPI-CSI camera inputs, PCIe, USB 3.0/USB 2.0 and CAN FD , as well as a full suite of UART, SPI, I2C, PWM, SDIO, and SAI interfaces for peripheral integration.

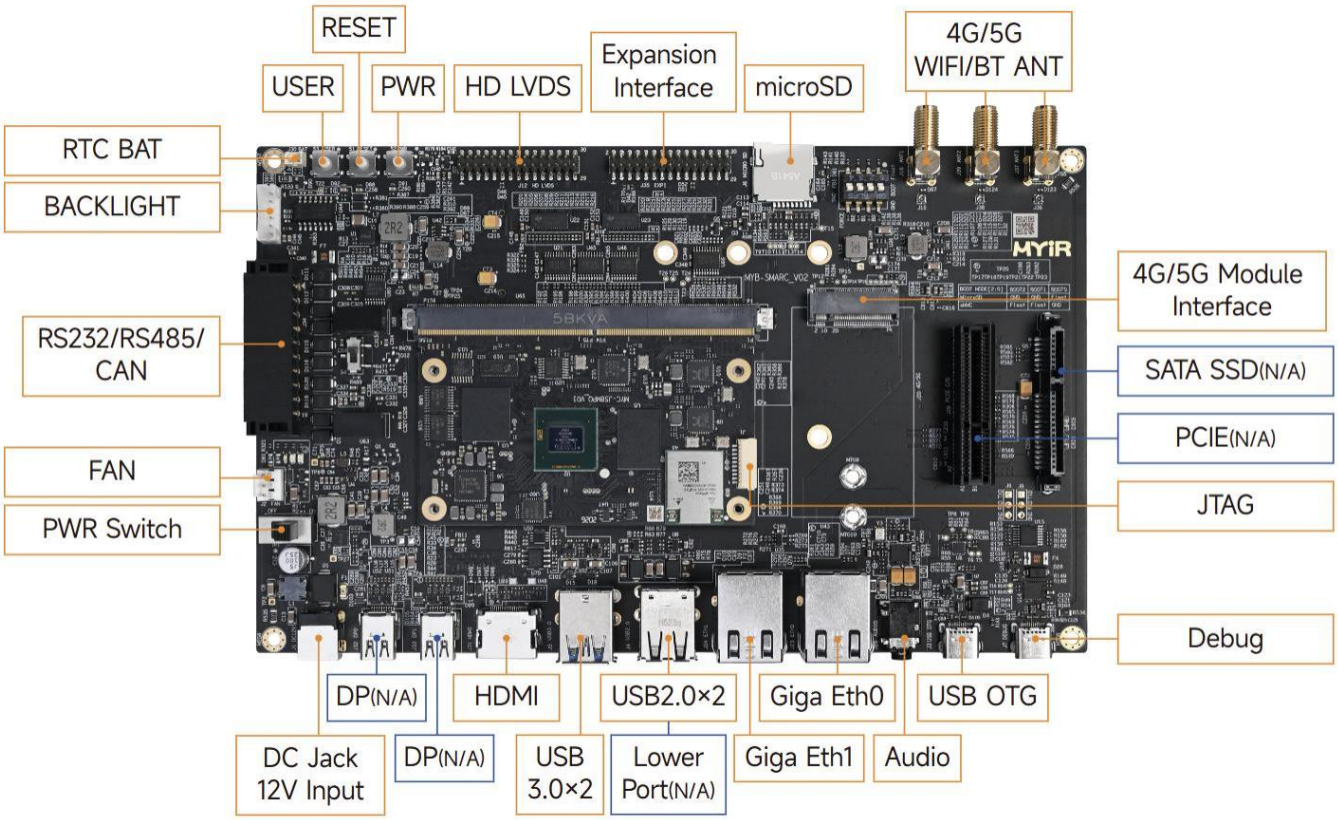
MYIR provides a complete software package including a Yocto Linux (kernel 6.12.49) BSP, open-source drivers, and documentation to accelerate time-to-market. The module is available in industrial (-40 to +85 ℃) temperature grades, making it ideal for edge AI gateways, industrial automation, and machine vision, intelligent HMI systems, medical devices and power system applications.



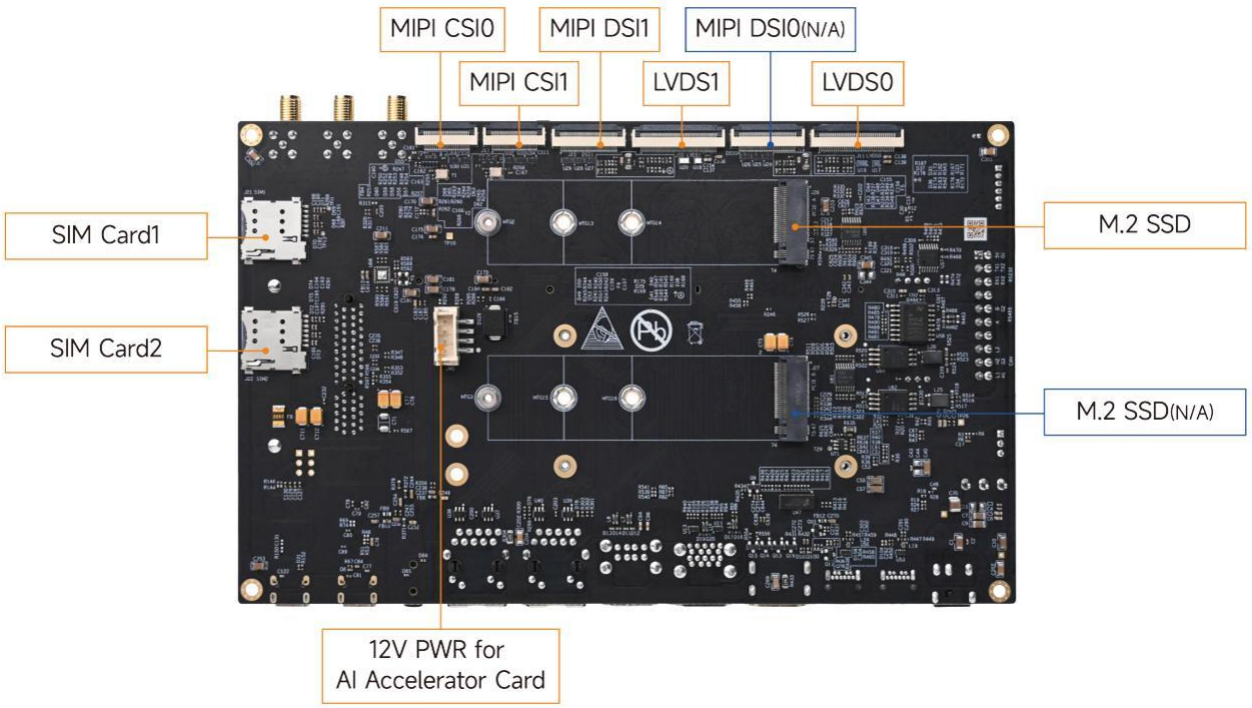
MYC-JS8MPQ System-On-Module (Top-view and Bottom-view)

The MYD-JS8MPQ development board combines the MYC-JS8MPQ SOM with a carrier board via a 314-pin SMARC connector. The carrier board is universal and compatible with all MYIR SMARC SOMs. It delivers extensive evaluation interfaces, including dual Gigabit Ethernet, a Mini PCIe socket with dual Micro SIM support for 4G/5G modules, a PCIe slot for NVMe SSD, a Micro SD slot, 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, and LVDS, plus two MIPI-CSI camera inputs and audio I/O. This rich I/O portfolio makes it a solid reference platform for rapid prototyping with i.MX 8M Plus solutions.

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.



MYD-JS8MPQ Development Board (Top-view)



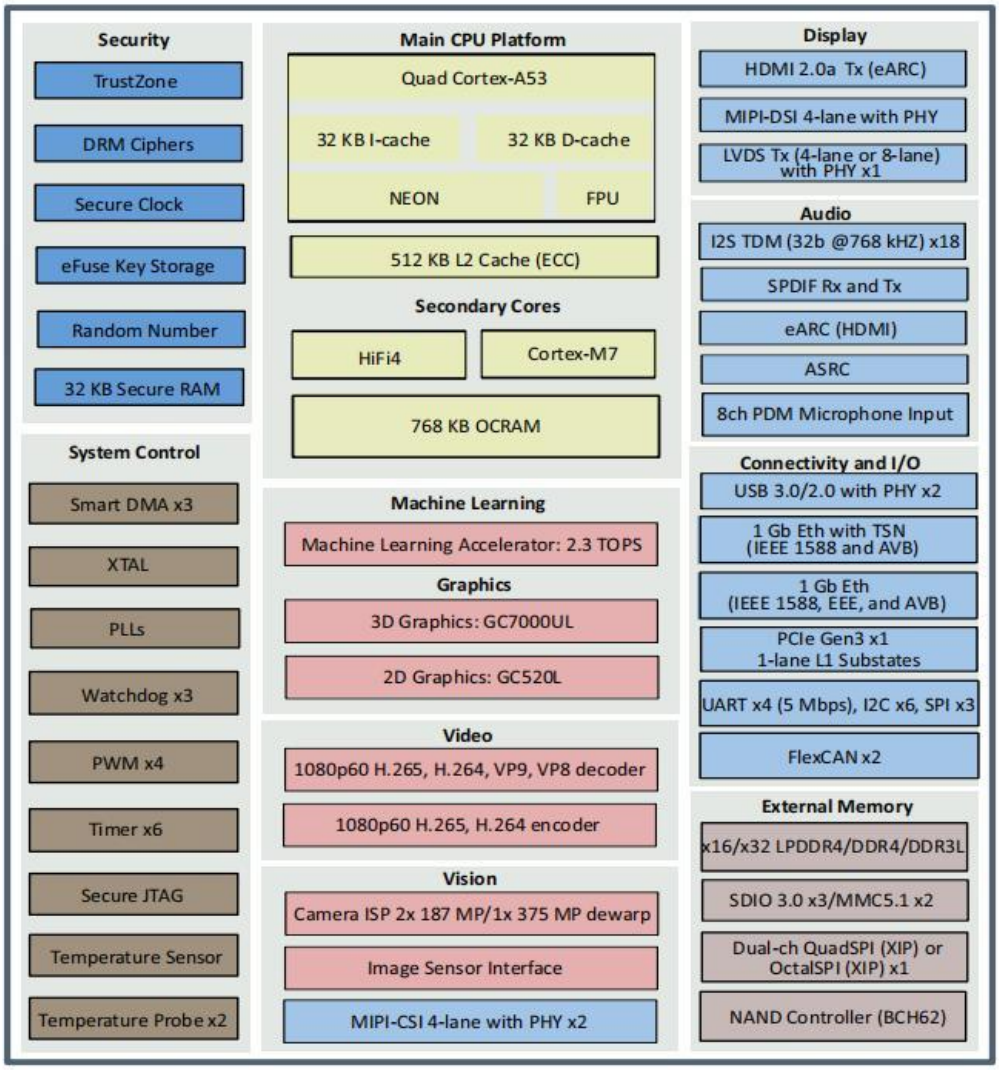
MYD-JS8MPQ Development Board (Bottom-view)

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 MYC-JS8MPQ takes full features of the NXP i.MX 8M Plus processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 82 mm × 50 mm
- PCB Layers: 10-layer design
- Power Supply: +5V/2A
- Working temperature: -40~+85 Celsius (industrial grade)

Processor

- NXP i.MX 8M Plus processor
  - 4x Cortex-A53 @1.6GHz(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

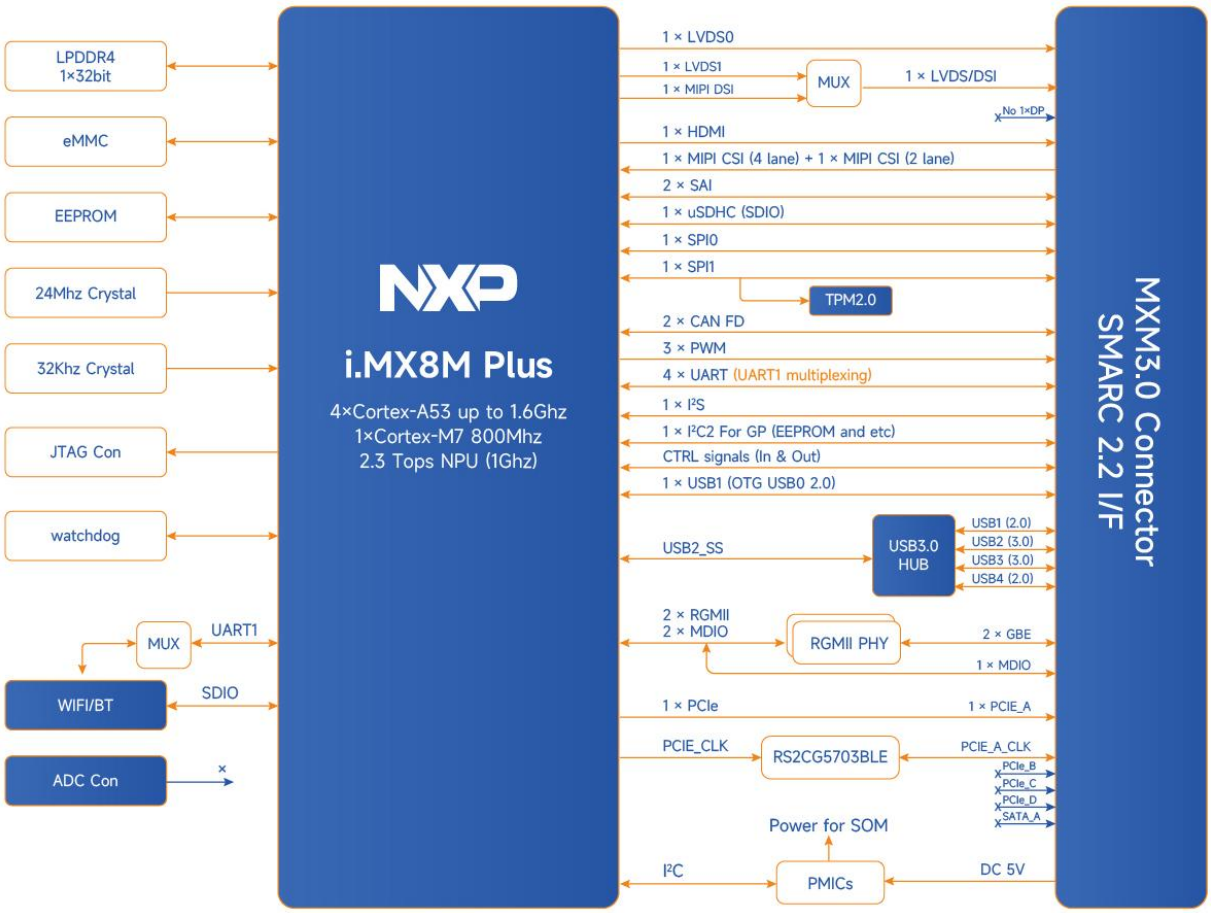
  Ethernet & High-Speed Interfaces

  - 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

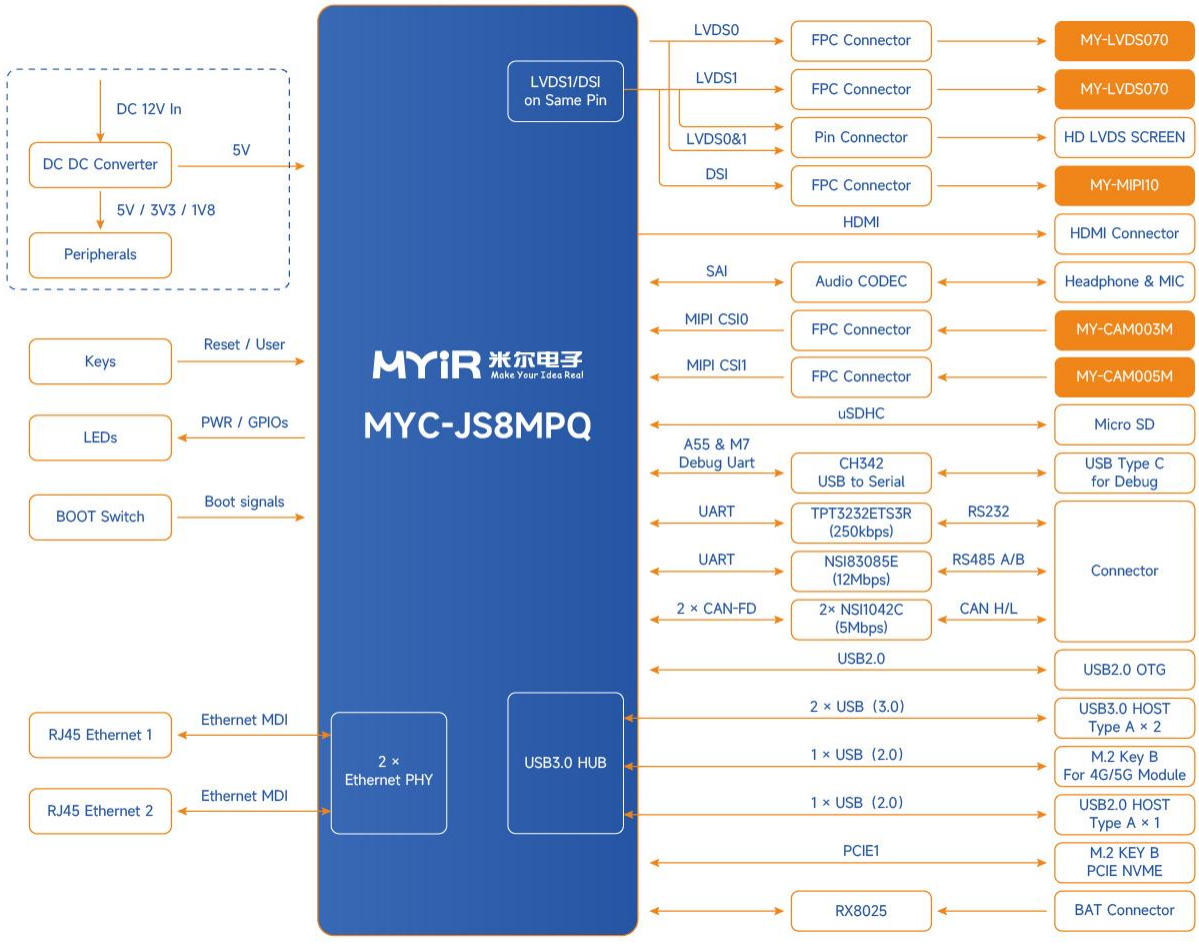
  Industrial & Peripheral Interfaces

  - 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.



MYC-JS8MPQ Function Block Diagram



MYD-JS8MPQ Function Block Diagram

Software Features

The MYC-JS8MPQ System-On-Module is fully compatible with Linux OS and comes with a complete set of software packages. To help clients accelerate their projects, the source code for the kernel and various peripheral drivers is included. The main software features are summarized below:

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
MYC-JS8MPQ System-On-Module	MYC-JS8MPQ-16E2D-160-I MYC-JS8MPQ-32E4D-160-I	✓ One MYC-JS8MPQ SOM (Heatsink not included)
MYD-JS8MPQ Development Board	MYD-JS8MPQ-16E2D-160-I MYD-JS8MPQ-32E4D-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
MY-MIPI101C-V2 10.1-inch LCD Module	MY-MIPI101C-V2	✓ MY-MIPI101C-V2 10.1-inch MIPI LCD Module with Capacitive Touch Screen
MY-LVDS070C 7-inch LCD Module	MY-LVDS070C	✓ MY-LVDS070C 7-inch LVDS Display Module with Capacitive Touch Screen
MY-CAM003M MIPI Camera Module	MY-CAM003M	✓ MY-CAM003M MIPI Camera Module
MY-CAM005M MIPI Camera Module	MY-CAM005M	✓ MY-CAM005M MIPI Camera Module

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.

3. 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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