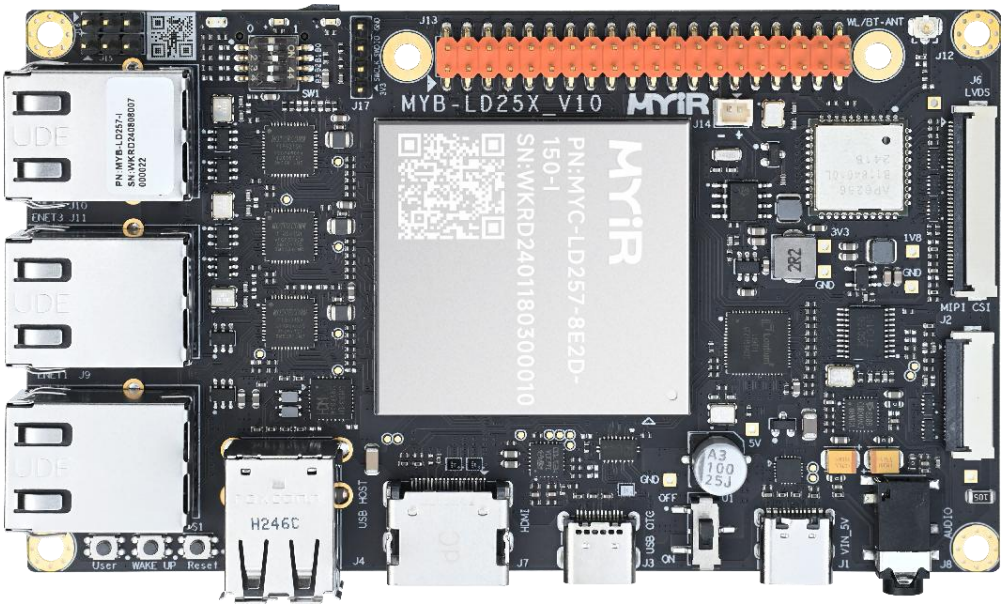
MYiR 米尔电子
Make Your Idea Real

MYD-LD25X Development Board Overview



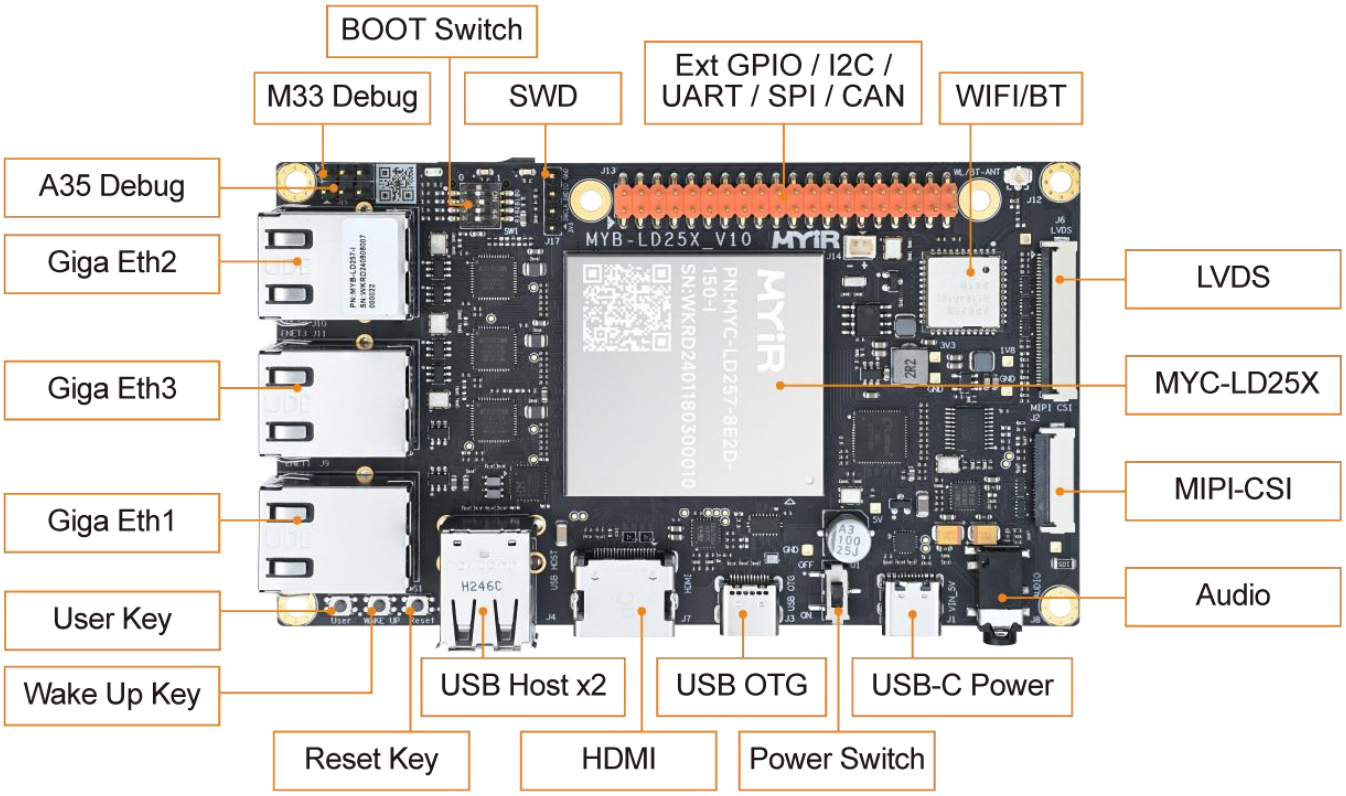
- ✓ *MYC-LD25X SOM as Controller Board*
- ✓ *ST STM32MP257D Processor (STM32MP257DAK3)*
- ✓ *1.5GHz Dual ARM Cortex-A35 and 400MHz Cortex-M33 Cores*
- ✓ *Neural Processing Unit (NPU) with 1.35 TOPS and 3D Graphics Processing Unit (GPU)*
- ✓ *1GB/2GB LPDDR4, 8GB eMMC, 256Kbit EEPROM*
- ✓ *1x USB2.0 OTG, 2x USB2.0 HOST, 3x Gigabit Ethernet, WiFi/Bluetooth, 1x Micro SD Card Slot*
- ✓ *LVDS, HDMI, MIPI-CSI, Audio Input/Output*
- ✓ *Supports for Linux and Debian OS*
- ✓ *Optional 7-inch LCD Module, Camera Module and RPI Module (RS232/RS485/CAN)*

The MYD-LD25X Development Board is a comprehensive evaluation platform tailored for the ST STM32MP257D processor. This processor is based on dual Arm Cortex-A35 cores operating at up to 1.5 GHz and a Cortex-M33 core running at 400 MHz. It features 3 Ethernet ports, 3 FDCAN interfaces, a 1.35TOPs NPU, a 3D GPU, LVDS/DSI display interfaces, and H.264 encoding/decoding capabilities, making it ideal for Industry 4.0 and advanced edge computing applications that require high-end multimedia capabilities.

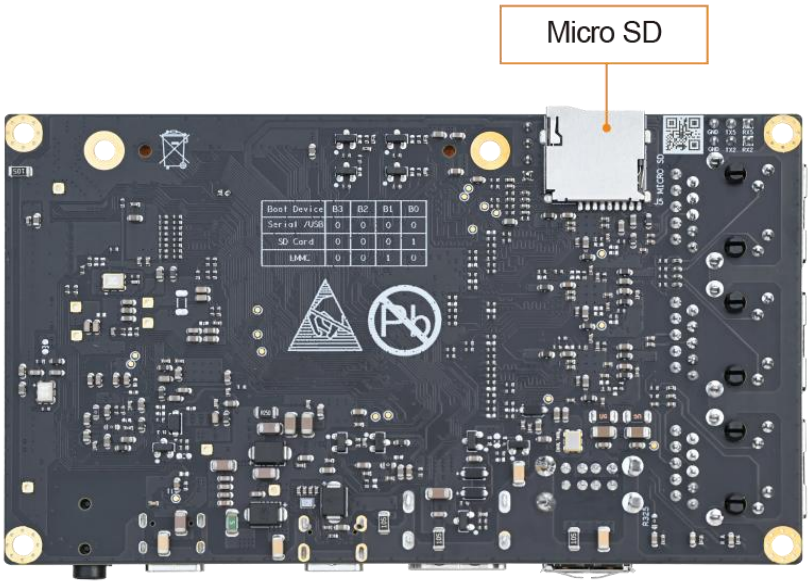
The MYD-LD25X Development Board is built around the MYC-LD25X System-On-Module (SOM), leveraging the 252-pin LGA expansion interface to to expose the extensive features of the STM32MP257D Processor to its base board. Operating on a 5V/3A USB power supply, the board boasts a rich set of peripherals, including 2x USB 2.0 Host ports, 1x USB 2.0 OTG, 3x Gigabit Ethernet interfaces, a Micro SD card slot, and an integrated WiFi/Bluetooth module. Additionally, it supports LVDS and HDMI display outputs, incorporates a MIPI-CSI interface, and provides an audio interface. Furthermore, the inclusion of a 2*20-pin Raspberry Pi (RPI) extension interface provides access to additional resources such as GPIO, I2C, UART, SPI, and CAN, enabling users to customize and enhance their development endeavors.

The MYD-LD25X Development Board is capable of supporting both Linux and Debian12 Operating Systems, ensuring stable and efficient performance. MYIR provides abundant software resources, including kernel and driver source code, as well as detailed documentation and tools that facilitate rapid and easy development for users. These resources provide the necessary support to developers, enabling them to focus on creating innovative and exciting applications. It is suitable for a wide range of applications, including high-end industrial HMI, edge computing gateways, new energy charging stations, energy storage EMS systems, industrial automation PLCs, motion controllers, and more.

The MYD-LD25X Development Board comes with a Quick Start Guide and one USB to TTL cable. MYIR also offers MY-LVDS070C 7-inch LCD Module, MY-CAM003M Camera Module and MY-WIREDCOM RPI Module as add-on options for the board.



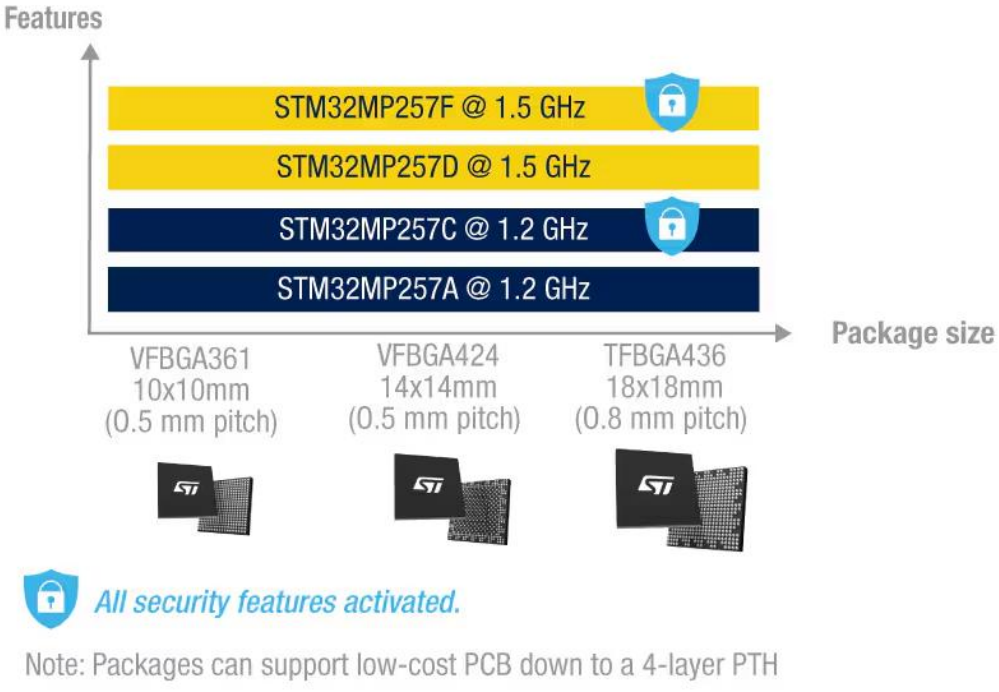
Top-view of MYD-LD25X Development Board



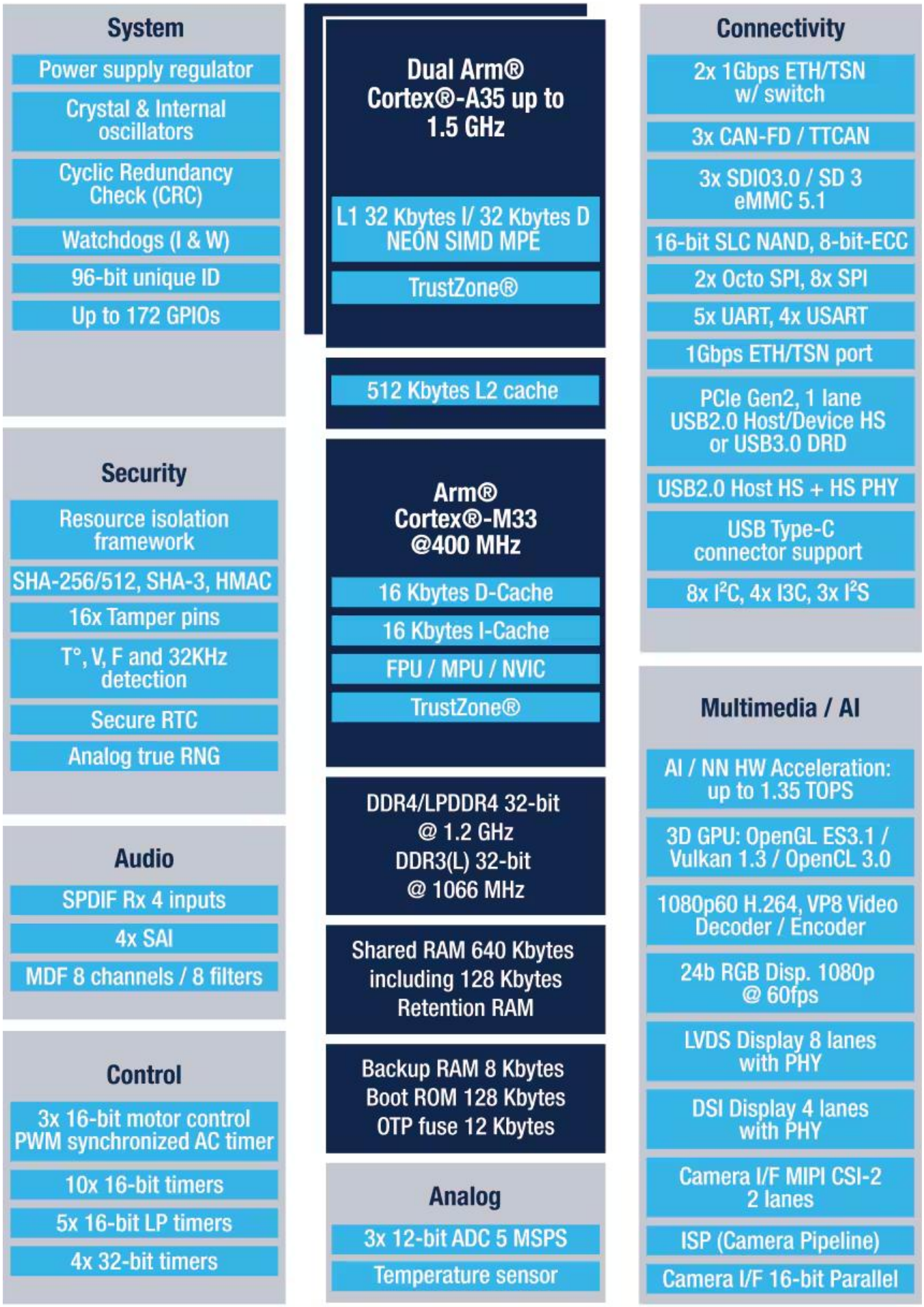
Bottom-view of MYD-LD25X Development Board

Hardware Specification

The MYC-LD25X System-on-Module (SOM) mounted on the MYD-LD25X Development Board uses the 14 x 14mm, 0.5mm ball pitch, 424-ball VFBGA packaged 1.5 GHz ST STM32MP257D microprocessor (STM32MP257DAK3). This processor belongs to the ST STM32MP25xA/D product line, which features a dual-core Arm Cortex-A35 (operating at up to 1.5 GHz) and a single-core Arm Cortex-M33 (running at up to 400 MHz). Additionally, it includes a neural processing unit (NPU) with 1.35 TOPS and a 3D graphics processing unit (GPU). The processor is further enhanced with an integrated video encoder and decoder. A rich set of interfaces is supported by the processor, such as three Ethernet ports with switch and TSN capabilities, FD-CAN, PCIe/USB3.0, and others. It also supports Parallel and MIPI CSI-2 for camera connections and Parallel, LVDS, and MIPI DSI for display connectivity. These features make STM32MP25xA/D devices well-suited for a wide range of consumer, industrial, white goods and medical applications.



STM32MP257 Application Processors



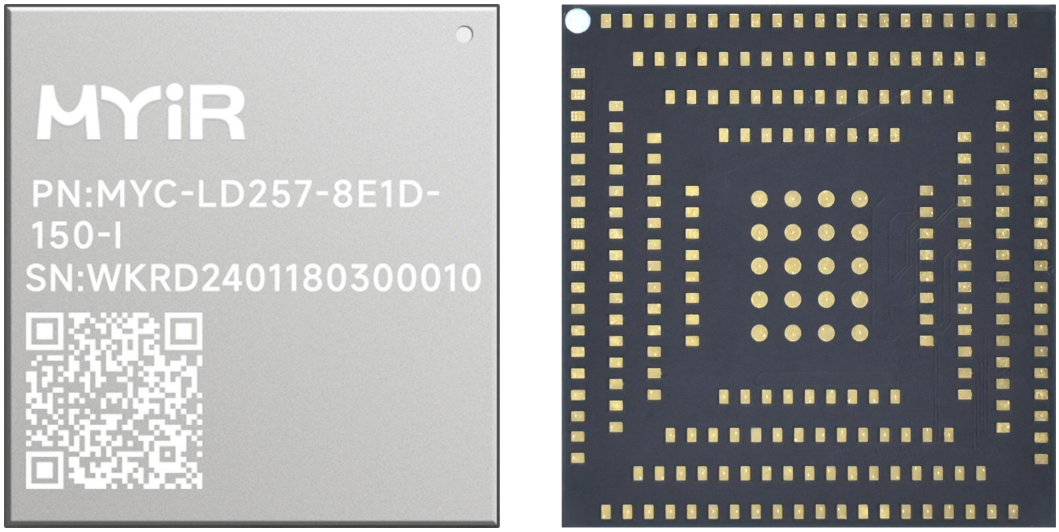
STM32MP257 Circuit Diagram

The MYD-LD25X Development Board is using the MYC-LD25X SOM as core controller board. It takes full features of ST STM32MP257D processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 120mm x 70mm (base board), 37mm x 39mm (SOM)
- PCB Layers: 6-layer design (base board), 12-layer design (SOM)
- Power supply: +5V/3A (base board), +5V/3A (SOM)
- Working temperature: -40~85 Celsius (industrial grade)
  (WiFi/BT Module: -30~85 Celsius)

The MYD-LD25X Controller Board (MYC-LD25X SOM)



MYC-LD25X Top-view and Bottom-view

Processor

- ST STM32MP257D Processor (STM32MP257DAK3)
  - Dual-core Arm Cortex-A35 64-bit RISC core operating at up to 1.5 GHz
  - A Cortex-M33 32-bit RISC core operating at up to 400 MHz
  - Neural Processing Unit (NPU) operating at up to 1.35 TOPS, 3D GPU
  - H.264 encoding/decoding

Storage

- 1GB/2GB LPDDR4
- 8GB eMMC
- 256Kbit EEPROM

PMIC

- Power Management IC: STPMIC25APQR

Peripherals and Signals Routed to Pins

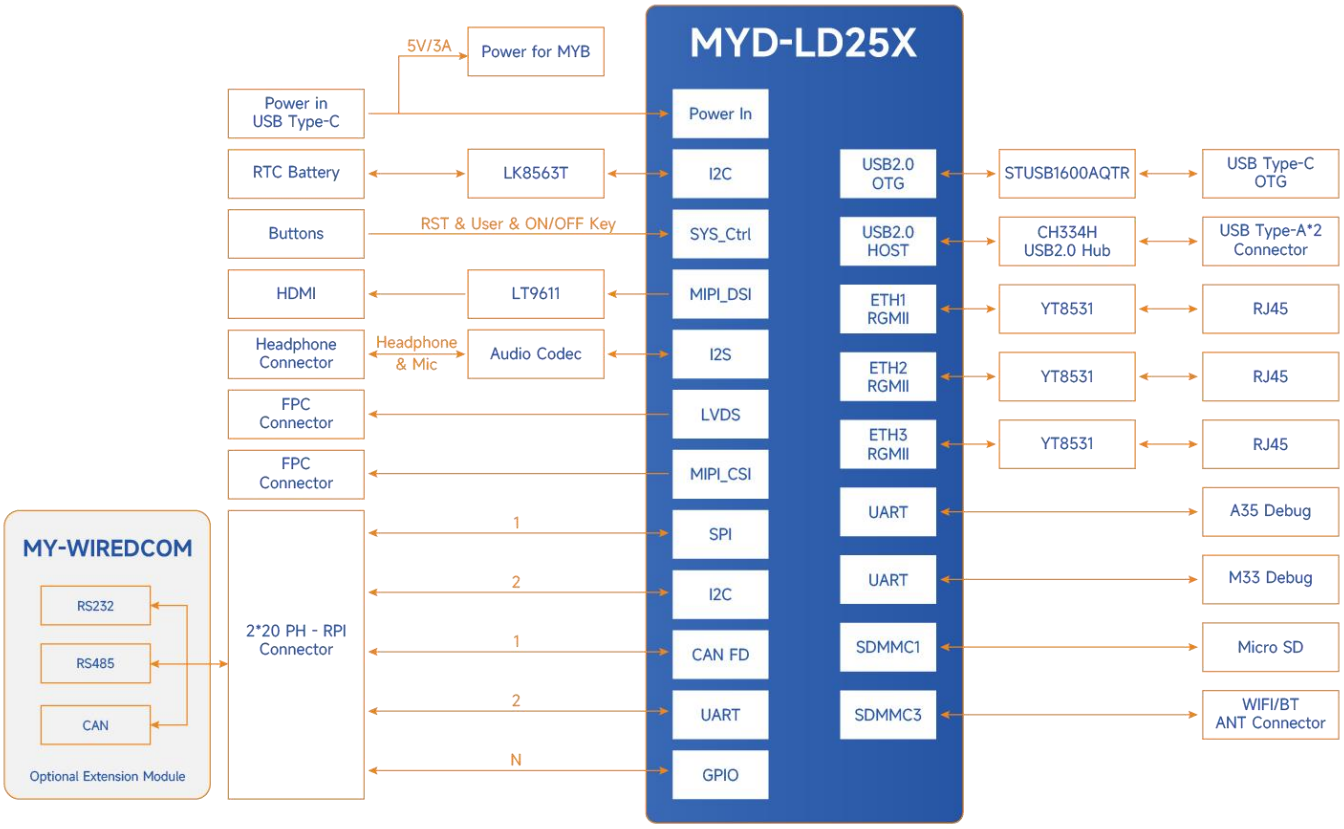
- 252-pin LGA Expansion Interface
  - 3x RGMII
  - 1x USB 2.0 HOST

- 1x USB 3.0 OTG
- 4x USART
- 5x UART
- 8x SPI
- 7x I2C
- 4x I3C
- 3x CAN FD
- 2x SD/MCC
- 4x SAI
- 1x Parallel RGB
- 1x MIPI DSI
- 2x LVDS
- 1x MIPI CSI
- 1x DCMI
- 1x JTAG
- 1x SWD
- Up to 128x GPIOs

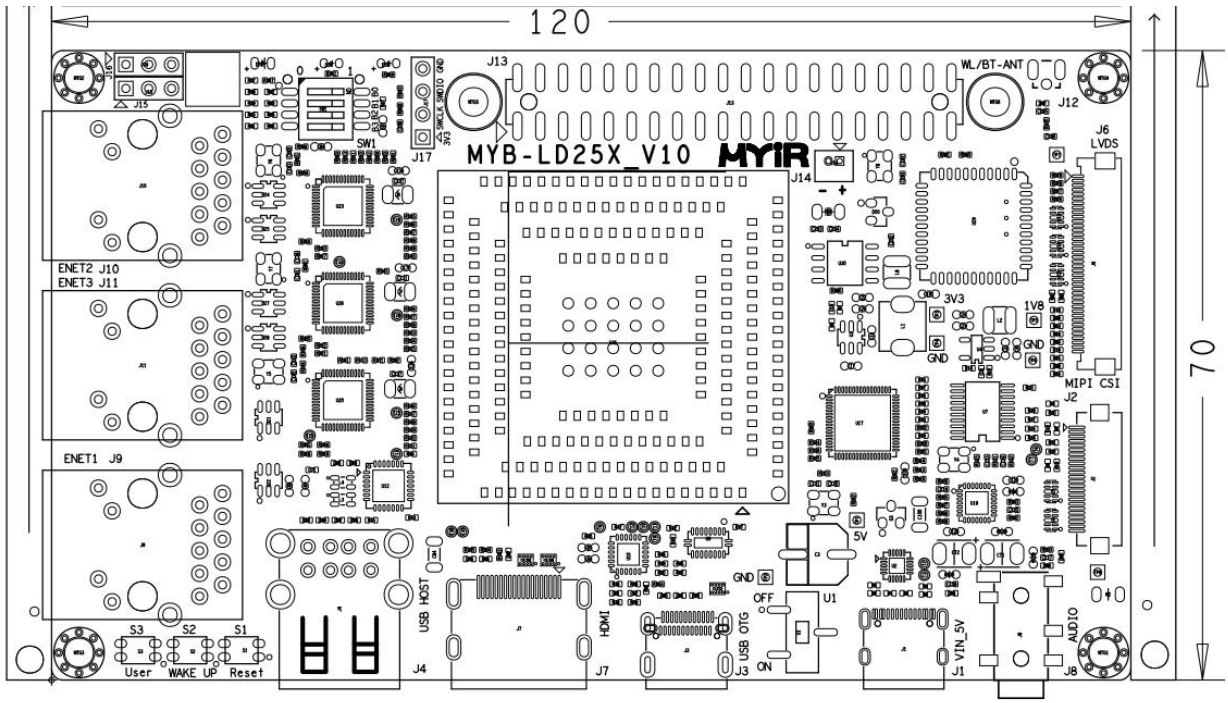
Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet and the SOM pinout description file.

The MYD-LD25X Development Board Base Board

- 5V/3A USB Power Supply (Type-C)
- 1x Power Switch
- 1x BOOT Switch
- 3x Buttons (1x USER, 1x Wake Up, 1x Reset)
- 3x Debug Serial Ports (one for Cortex-A35, one for Cortex-M33 and one for SWD)
- 2x USB 2.0 Host ports
- 1x USB 2.0 OTG port
- 3x 10/100/1000Mbps Ethernet interfaces
- 1x WiFi/BT Module (complies with IEEE 802.11 a/b/g/n/ac standard and supports Bluetooth V5.2)
- 1x Micro SD Card Slot
- 1x LVDS Display Interface
- 1x HDMI Display Interface
- 1x MIPI-CSI Camera Interface
- 1x Audio Input and Output Interface
- 1x 2.54mm 2 x 20-pin male expansion header
  (RPI interface, GPIO/I2C/UART/SPI/CAN, compatible with Raspberry PI standard 40-pin extension interface)
  Supports MYIR's MY-WIREDCOM RPI Module to extend RS485, RS232 and CAN functions



MYD-LD25X Function Block Diagram



MYD-LD25X Dimensions Chart (Unit: MM)

Software Features

The MYD-LD25X development board supports Linux 6.1 and Debian 12 OS, and comes with comprehensive software packages. To assist clients in accelerating 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	Features	Source Code
Bootloader	TFA	First bootloader 2.8.15	YES
	U-boot	The second boot program uboot_2022.10	YES
Linux kernel	Linux kernel	Customized based on official kernel_6.1.82 version	YES
Device driver	EEPROM	BL24C256A 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	YT8531SH-CA driver	YES
	LVDS	LVDS display driver	YES
	HDMI	LT9611 driver	YES
	Audio	ES8388 Audio Driver	YES
	MIPI CSI	OV5640	YES
	RTC	LK8563T driver	YES
	GPIO	General purpose GPIO driver	YES
	UART	RS232/RS485 driver	YES
	CAN	CAN driver	YES
	WiFi	AP6256 driver	YES
	BT	AP6256 driver	YES
File system	myir-image-core	Image without GUI interface built with Yocto that supports rt Linux	YES
	myir-image-full	A fully functional QT and HMI image built with Yocto	YES
	myir-image-debian	Image built with debian system	YES

MYD-LD25X Software Features

Order Information

<table>
<tr><th>Product Item</th><th>Part No.</th><th>Packing List</th></tr>
<tr><td rowspan="2">MYD-LD25X
Development Board</td><td>MYD-LD257-8E1D-150-I</td><td rowspan="2">✓ One MYD-LD25X Development Board (including MYC-LD25X SOM)
✓ One USB-to-TTL cable
✓ One Quick Start Guide</td></tr>
<tr><td>MYD-LD257-8E2D-150-I</td></tr>
<tr><td rowspan="2">MYC-LD25X
System-On-Module</td><td>MYC-LD257-8E1D-150-I</td><td rowspan="2">✓ One MYC-LD25X SOM</td></tr>
<tr><td>MYC-LD257-8E2D-150-I</td></tr>
<tr><td>MY-LVDS070C
LCD Module</td><td>MY-LVDS070C</td><td rowspan="3">Add-on Options
✓ MY-LVDS070C LCD Module
✓ MY-CAM003M Camera Module
✓ MY-WIREDCOM RPI Module</td></tr>
<tr><td>MY-CAM003M
Camera Module</td><td>MY-CAM003M</td></tr>
<tr><td>MY-WIREDCOM
RPI Module</td><td>MY-WIREDCOM</td></tr>
<tr><td colspan="3">Note:

1. One MYD-LD25X Development Board comprises one MYC-LD25X SOM mounted onto the base board. If you require additional SOMs, you may place order for extras.

2. Bulk discounts are available. For inquiries, kindly contact MYIR.

3. We cater to custom design requests based on the MYD-LD25X, whether it involves reducing, adding or modifying the existing hardware components to suit the customers' specific needs.</td></tr>
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