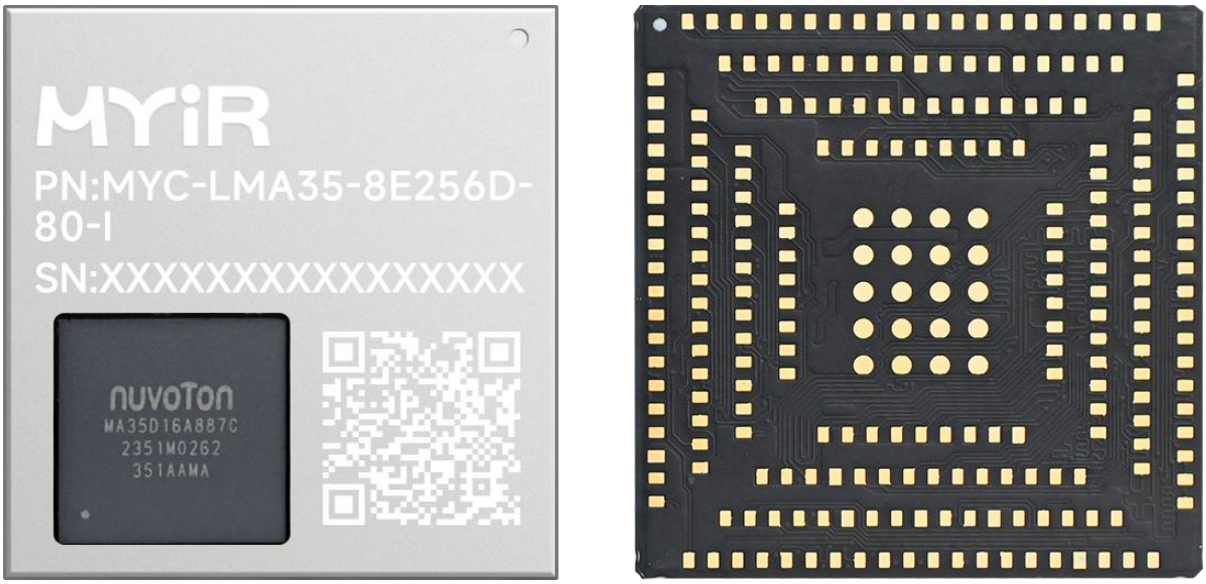
MYiR 米尔电子
Make Your Idea Real

MYC-LMA35 System-On-Module Overview

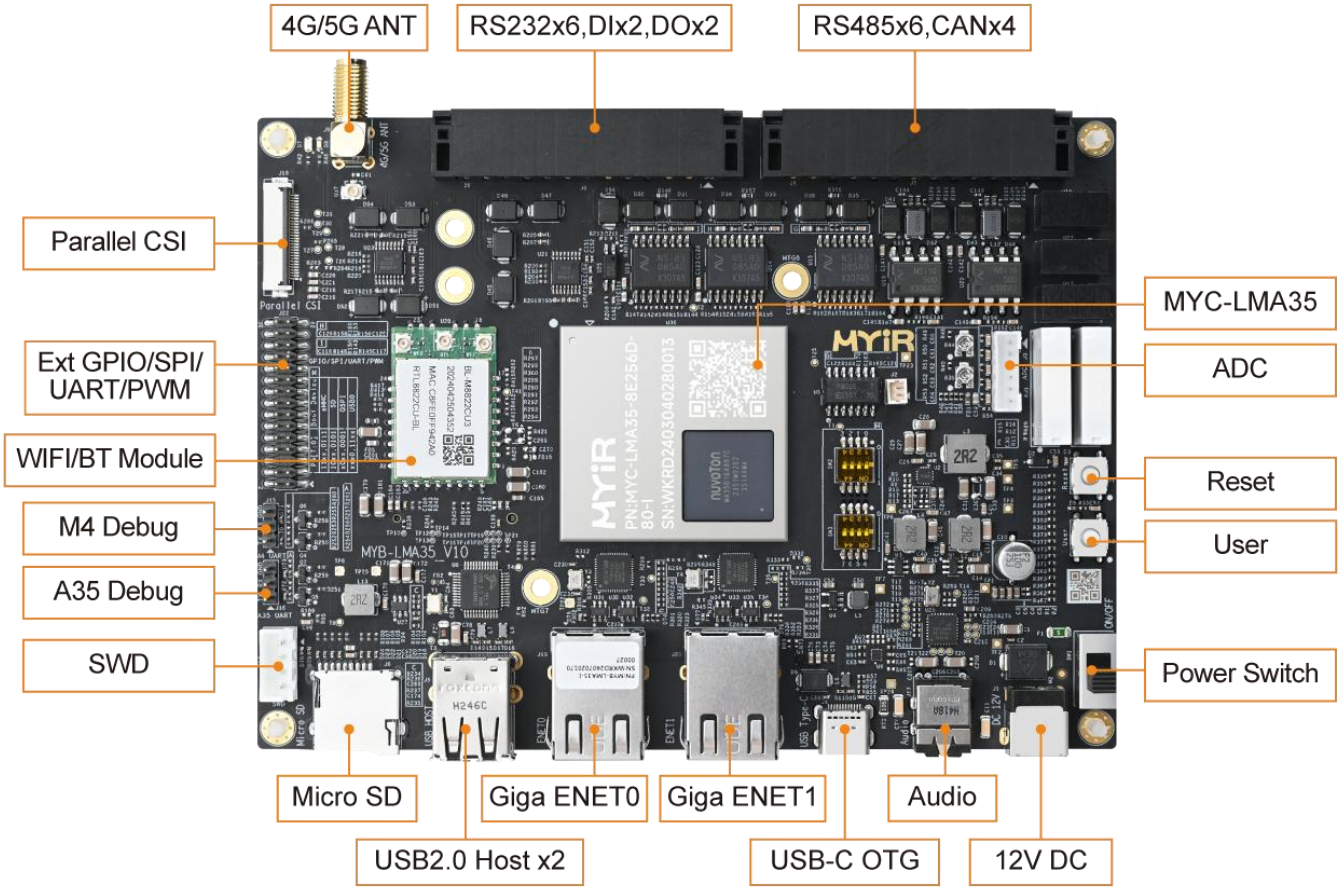
- ✓ *Nuvoton NuMicro® MA35D1 Processor (MA35D16A887C/MA35D16AJ87C) in BGA Package with Stacked 256MB/512MB DDR3L*
- ✓ *800MHz Dual ARM Cortex-A35 and 180MHz Cortex-M4 Cores*
- ✓ *256MB Nand Flash/8GB eMMC, 32Kbit EEPROM*
- ✓ *252-pin Expansion Interface with LGA Package*
- ✓ *Supports for Linux and Debian OS*

The MYC-LMA35 System-On-Module (SoM), a compact device measuring 37mm x 39mm, offers exceptional reliability for your upcoming embedded design projects. It's driven by the robust Nuvoton NuMicro® MA35D1 processor (MA35D16A887C/MA35D16AJ87C), which boasts dual 64-bit Arm Cortex-A35 cores with speed up to 800 MHz, alongside a 180 MHz Arm Cortex-M4 core. This processor comes equipped with a BGA package incorporating DDR3L memory. The MYC-LMA35 SOM comes standard with either 256MB NAND Flash or 8GB eMMC storage, both of which be customized to suit your specific needs. A versatile 252-pin LGA expansion interface enables a wide range of peripheral and IO signals, maximizing the potential of the MA35D1 processor. With advanced and high-speed connectivity interfaces such as Gigabit Ethernet, SDIO3.0, USB 2.0 HS, and CAN FD, it is ideally suited for edge gateway and new energy applications. Additionally, the inclusion of an LCD display controller, a 2D graphics engine, and JPEG and H.264 decoders make it an excellent choice for HMI applications.
The MYC-LMA35 is ready to run the Linux or Debian Operating System. MYIR provides an extensive software package which includes kernel and driver source codes, as well as compilation tools, enabling users to start their development quickly and easily.

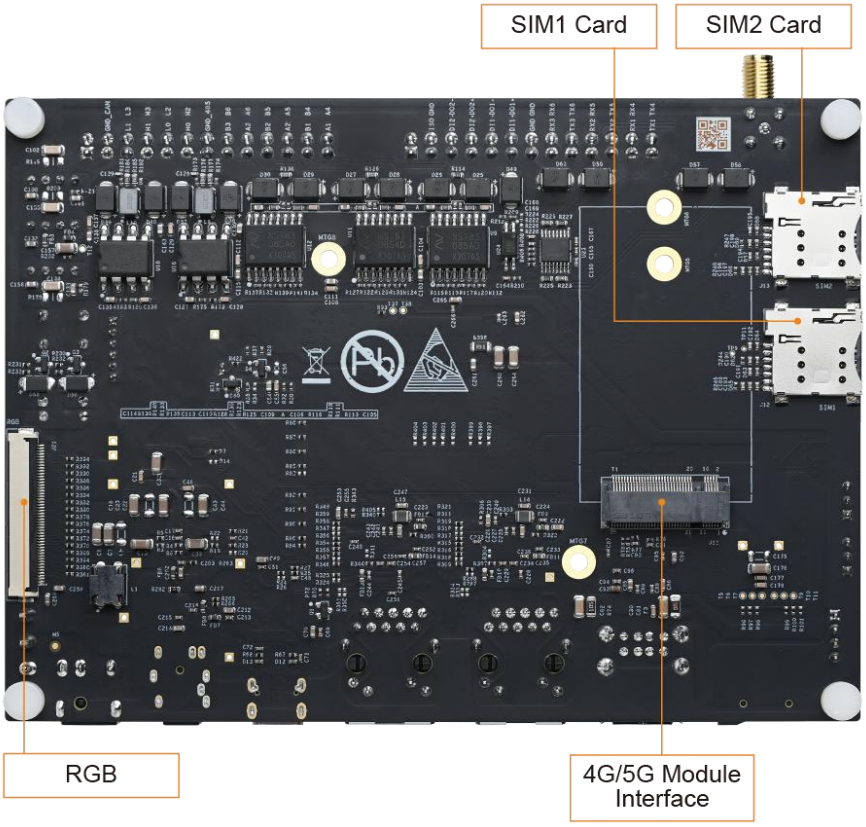


MYC-LMA35 System-On-Module (Top-view and Bottom-view)

The MYD-LMA35 Development Board is a comprehensive evaluation platform specially designed for using the Nuvoton MA35D1 solutions. Centered around the MYC-LMA35 SOM, it features a wide variety of peripherals and interfaces on its baseboard, including 6x RS232, 6x RS485, 2x USB 2.0 Host, 1x USB 2.0 OTG, 2x Gigabit Ethernet, 4x CAN, 1x Micro SD card slot, and an integrated WiFi/Bluetooth module. Additionally, it incorporates an M.2 Socket for USB-based 4G/5G LTE Modules, along with two SIM card holders. It also boasts an RGB display interface compatible with MYIR's MY-LVDS070C 7-inch LCD Module, a Parallel CSI interface, and an audio interface. Furthermore, the board provides a 30-pin extension interface, granting access to additional resources like GPIO, UART, SPI, and PWM, enabling users to customize and enhance their development endeavors.



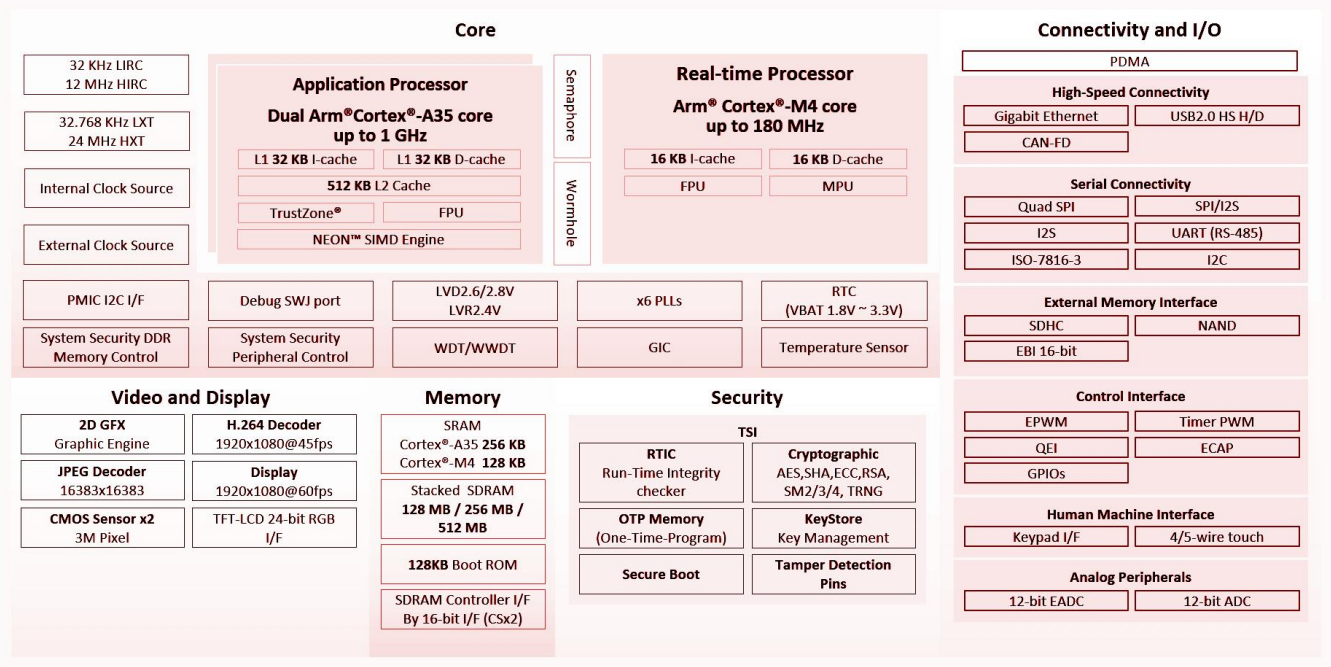
Top-view of MYD-LMA35 Development Board (delivered with a pre-installed heatsink by default)



Bottom-view of MYD-LMA35 Development Board

Hardware Specification

The MYC-LMA35 is using 15 x 15mm, 312-LFBGA package NuMicro MA35D16A887C/MA35D16AJ87C MPU from Nuvoton, which is a heterogeneous multi-core microprocessor among the MA35D1 series targeted to high-end edge IIoT gateway. It is based on dual 64-bit Arm Cortex-A35 cores with speed up to 800 MHz, and one 180 MHz Arm Cortex-M4 core. Based on the high-performance cores, the MA35D1 series facilitates the tiny AI/ML for edge computing.



MA35D1 Series Processors Block Diagram

✓ Target Applications
- Edge Gateway/Industrial Gateway
- Tiny AI (Artificial Intelligent) / ML (Machine Learning)
- HMI (Human Machine Interface) & Industrial Control
- Construction Machinery Controller/ Motion Controller
- OBD (On-Board Diagnostics) Automotive Diagnostic Tool
- New Energy Applications

✓ Ecosystem
- The NuMicro® MA35D1 platform is a simple and easy-to-use ecosystem with complete software and hardware development tools to shorten the customer's development time in the embedded Linux.
- For graphics library, MA35D1 could support emWin, LVGL, and Qt for users to create stunning GUI.

✓ Packages
- LQFP216 (24 x 24 x 1.4 mm, Pitch 0.4 mm)
- BGA312 (15 x 15 x 1.4 mm, Pitch 0.8 mm)
- BGA364 (14 x 14 x 1.4 mm, Pitch 0.65 mm)

✓ Operating temperature (Tj)
- -40°C ~ +105°C (Industry Grade)

The MYC-LMA35 System-On-Module leverages the full capabilities of the NuMicro MA35D1 processor, showcasing the following key features:

Mechanical Parameters

- Dimensions: 37mm x 39mm
- PCB Layers: 10-layer design
- Power supply: +5V/1A
- Working temperature: -40~85 Celsius (industrial grade)

Processor

- Nuvoton NuMicro® MA35D1 Processor (MA35D16A887C/MA35D16AJ87C)
  - Dual Arm Cortex-A35 cores running up to 800 MHz
  - Arm Cortex-M4 processor core running up to 180 MHz
  - On-chip SRAM 384 KB (Cortex-A35 256 KB + Cortex-M4 128 KB)
  - DDR3L (MA35D16A887C with 256MB, MA35D16AJ87C with 512MB)
  - 2D Graphic Engine (GFX), LCD display controller with the resolution up to 1080p@60 FPS
  - H.264 Video Decoder and JPEG Image Decoder

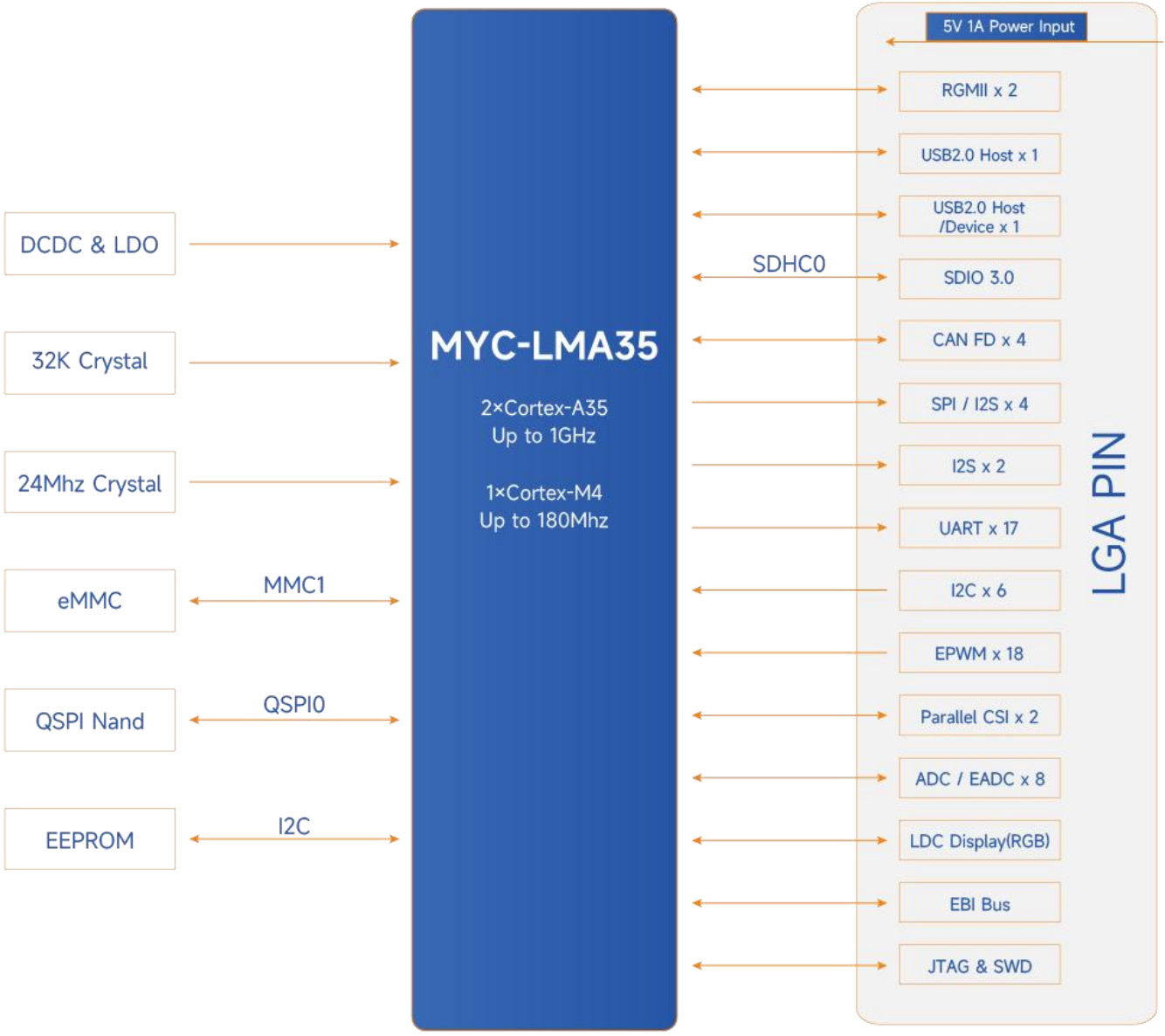
Storage

- 256MB Nand Flash/8GB eMMC
- 32Kbit EEPROM

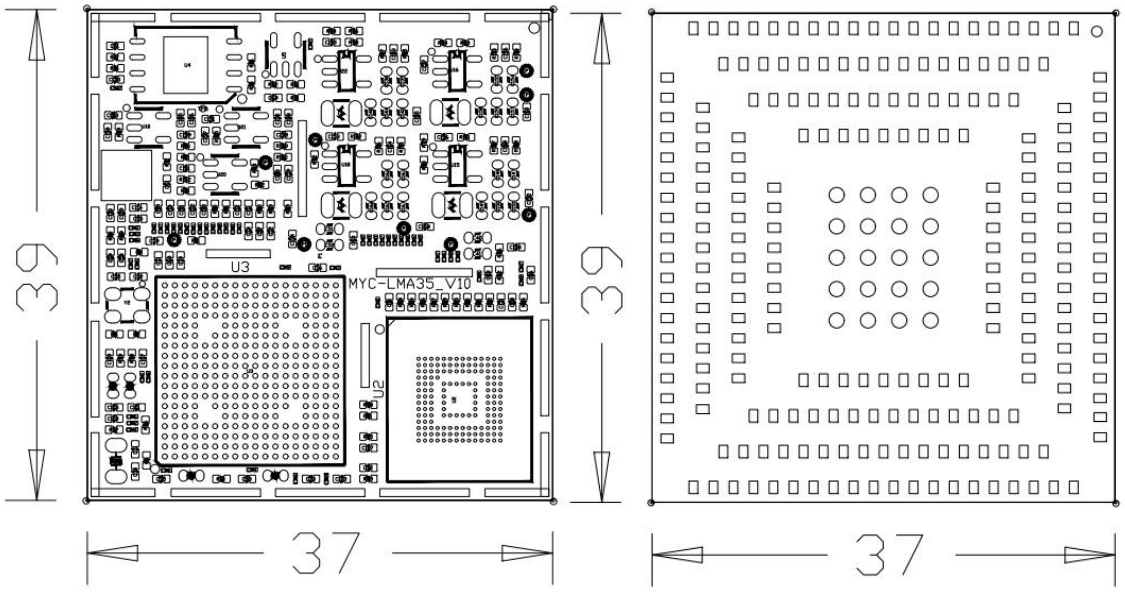
Peripherals and Signals Routed to Pins

- 252-pin LGA Expansion Interface
  - 2x USB2.0
  - 2x RGMII
  - 1x SDIO 3.0
  - 4x CAN FD
  - 2x I2S
  - 17x UART
  - 6x I2C
  - 8x EADC
  - 1x JTAG
  - 1x RGB
  - 2x Parallel CSI
  - 18x EPWM
  - 4x SPI
  - Up to 190 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.



MYC-LMA35 Function Block Diagram



MYC-LMA35 Dimensions Chart (Top-layer and Bottom-layer, Unit:MM)

Software Features

The MYC-LMA35 comes with a comprehensive software development kit (SDK) for running the Linux or Debian Operating System. The SDK encompasses u-boot, the kernel, and drivers, all provided in source code form, enabling rapid project development for our clients. The key features of the software are as follows:

Item	Features	Description	Source Code
Bootloader	ATF	First bootstrap ATF2.3	YES
	SPL	Second bootstrap SPL	YES
	U-boot	Third bootstrap uboot_2020.07	YES
Kernel	Linux Kernel	Customized based on official kernel_5.10.140 version	YES
Device driver	EEPROM	BL24C32FF 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 driver	YES
	SDHI	eMMC/SD card storage driver	YES
	RGB	RGB display driver	YES
	Audio	SGTL5000 Audio Driver	YES
	4G/5G	4G/5G driver	YES
	ADC	ADC driver	YES
	RTC	rx8025t driver	YES
	GPIO	GPIO driver	YES
	UART	RS485/RS232/TTL drivers	YES
	CAN	CAN driver	YES
	WiFi/Bluetooth	BL-M8822CU3-A driver	YES
File system	myir-image-core	Image built with Yocto, excluding GUI interface, and supports rt-Linux	YES
	myir-image-full	A fully functional image built with Yocto, including QT and HMI	YES
	myir-image-debian	Compiled and constructed based on Debian 12 SDK	YES

MYC-LMA35 Software Features

Order Information

Product Item	Part No.	Packing List
MYC-LMA35 System-On-Module	MYC-LMA35-256N256D-80-I	✓ One MYC-LMA35 System-On-Module
	MYC-LMA35-8E256D-80-I	
	MYC-LMA35-8E512D-80-I	
MYD-LMA35 Development Board	MYD-LMA35-256N256D-80-I	✓ One MYD-LMA35 Development Board (including MYC-LMA35 SOM) ✓ One USB-to-TTL cable ✓ One 12V/2A Power adapter ✓ One Quick Start Guide
	MYD-LMA35-8E256D-80-I	
	MYD-LMA35-8E512D-80-I	
MY-LCD70TP-C 7-inch LCD Module	MY-TFT070CV2	**Add-on Options** ✓ MY-LCD70TP-C 7-inch LCD Module ✓ MY-CAM012B BUS Camera Module

Note:

1. One MYD-LMA35 Development Board comprises one MYC-LMA35 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-LMA35, whether it involves reducing, adding or modifying the existing hardware components to suit the customers' specific needs.

MYIR Electronics Limited

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