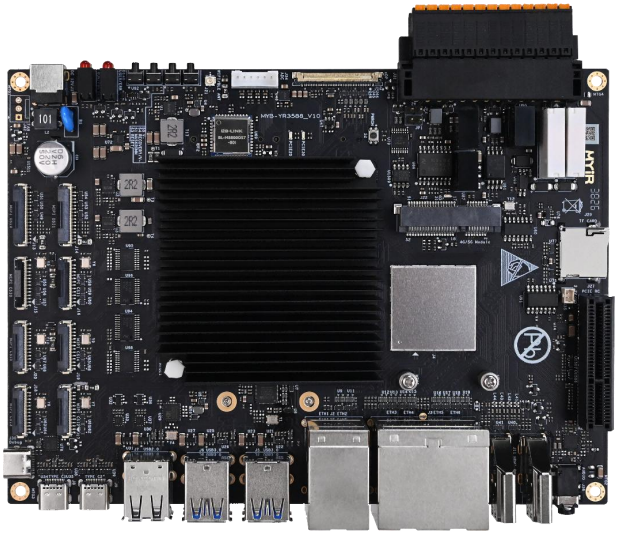
MYiR 米尔电子
Make Your Idea Real

# MYD-YR3588
# Development Board
# Overview

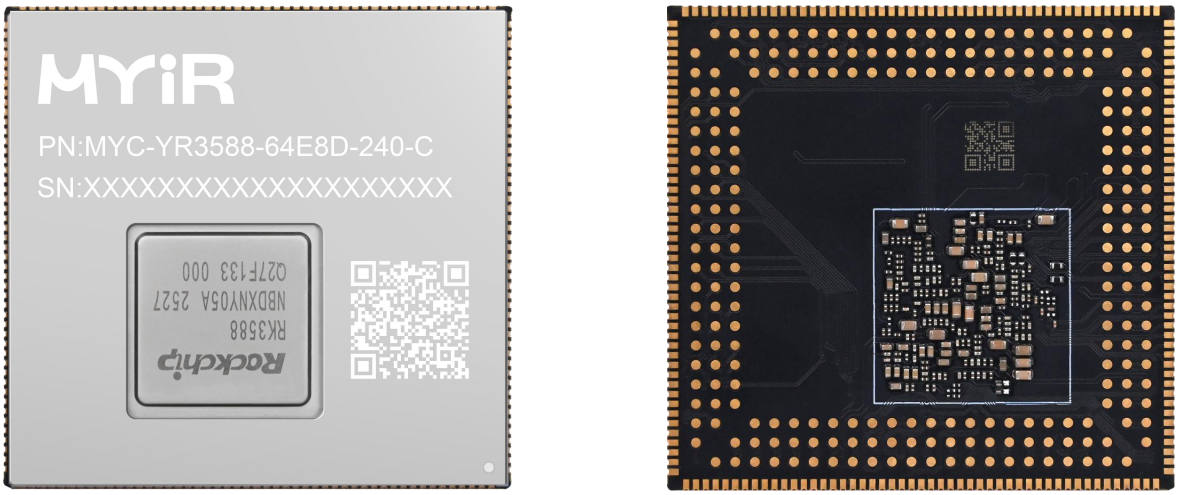


- ✓ *Powered by MYC-YR3588 System-On-Module*
- ✓ *Rockchip RK3588 octa-core (4x A76@2.4GHz + 4x A55@1.8GHz) with 6 TOPS NPU, Mali-G610 MP4 GPU, and 3× Cortex-M0; RK3588J industrial version available*
- ✓ *8GB/16GB LPDDR5, 64GB/128GB eMMC, 32Kbit EEPROM*
- ✓ *4x USB 3.0 Host, 2x USB 2.0 Host, 2x USB 3.0 OTG, 2x RS232, 2x RS485, 2x CAN FD*
- ✓ *6x Gigabit Ethernet, onboard Wi-Fi/Bluetooth Module, 1x Mini PCIe Socket for 4G/5G Module*
- ✓ *2x M.2 M-Key Sockets for NVMe SSD and PCIe Extension, 1x Micro SD Card Slot*
- ✓ *Supports HDMI, eDP, DP, and MIPI-DSI Display, 6x MIPI-CSI, 1x HDMI Input, Audio*
- ✓ *Ready to Run Linux*
- ✓ *Supports Optional Camera and Display Modules*

The MYD-YR3588 development board provides a complete evaluation and prototyping solution for embedded designs based on the Rockchip RK3588 processor. It features an octa-core CPU (4x Cortex-A76 + 4x Cortex-A55), an integrated 6 TOPS NPU, and an Arm Mali-G610 MP4 quad-core GPU.

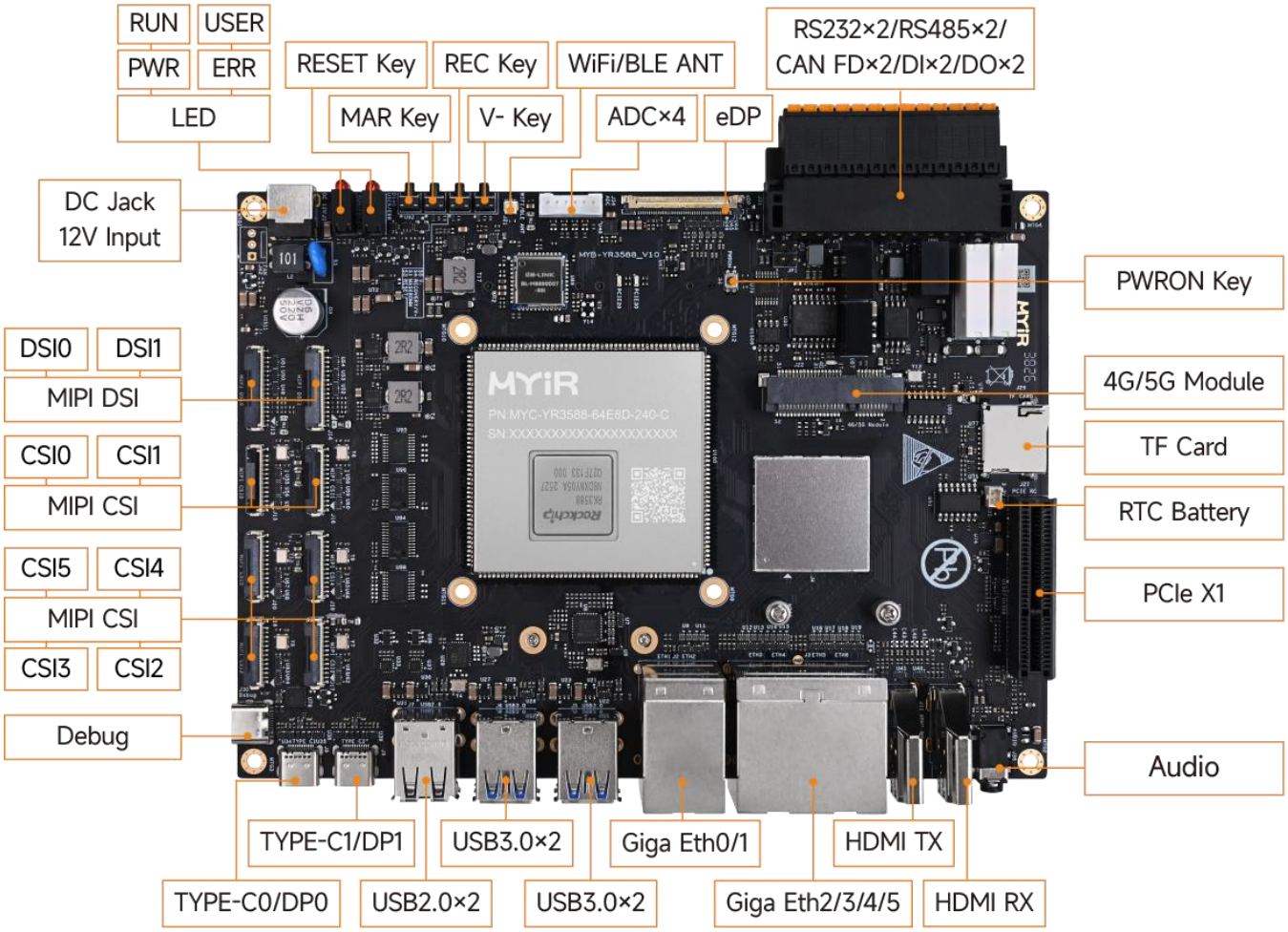
The MYD-YR3588 board combines the MYC-YR3588 SOM with a carrier board via a 426-pin LCC+LGA hybrid expansion interface (192 LCC + 234 LGA pads), with the SOM soldered down onto the carrier board. The SOM integrates the RK3588 processor, LPDDR5, eMMC, PMIC, and EEPROM to form a complete minimum system, while the base board provides extensive I/O for application development. For networking and USB, it offers 6x Gigabit Ethernet, 4x USB 3.0 and 2x USB 2.0 hosts, and 2x USB 3.0 OTG ports with DP support. Industrial interfaces include 2x RS232, 2x RS485, 2x CAN FD, 2x isolated DI and 2x isolated DO channels via Phoenix terminal blocks, and 4x ADC inputs. For storage and expansion, there is a Micro SD slot, 2× M.2 M-Key sockets (one PCIe Gen3 x4 and one PCIe 2.1 x1, for NVMe SSD), and a mini PCIe socket (USB 2.0, for 4G/5G modules). Multimedia capabilities cover HDMI, eDP, DP, and MIPI-DSI display outputs, 6x MIPI-CSI video inputs, 1x HDMI input, and a 3.5mm audio jack. With these capabilities, the MYD-YR3588 is a feature-rich platform for robotics, machine vision, medical imaging, and industrial prototyping.



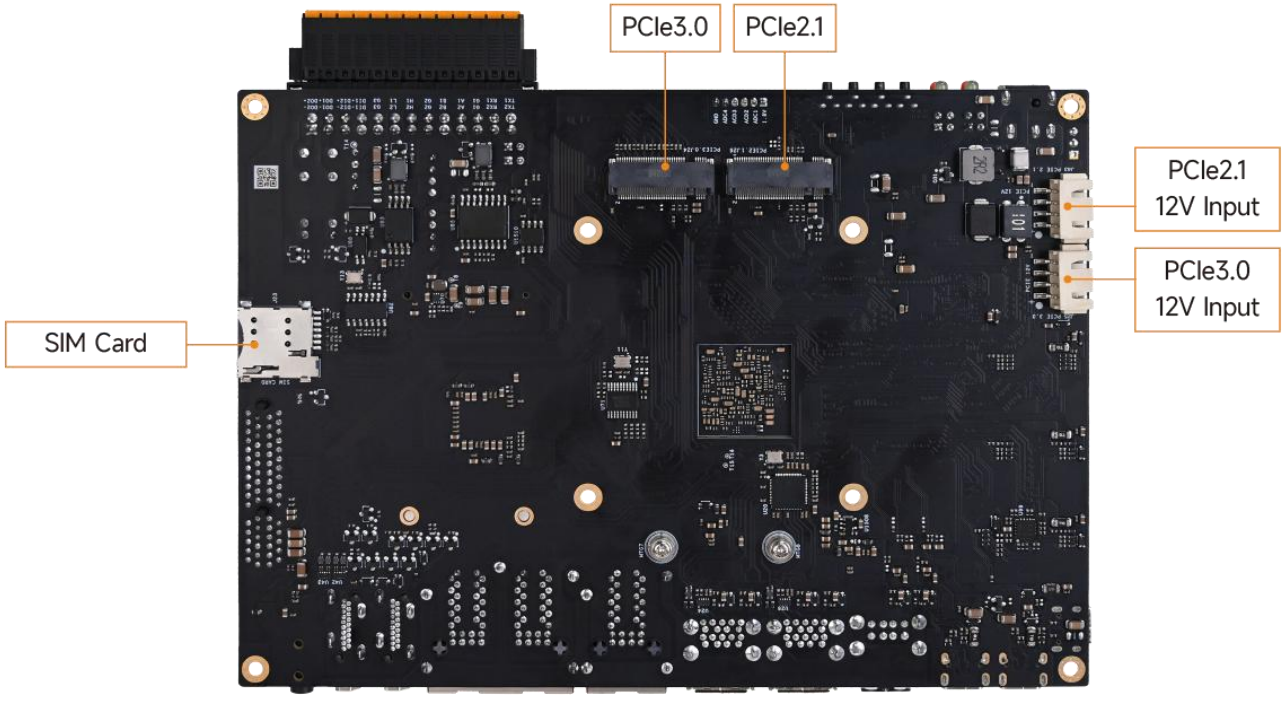

*MYC-YR3588 System-On-Module (Top-view and Bottom-view)*

To accelerate time-to-market, MYIR provides a comprehensive software package that includes U-Boot, Linux kernel 6.1.141, peripheral drivers, and complete development tools. This is complemented by thorough documentation: product manual, hardware user manual, hardware design guide, base board schematics (PDF), and software evaluation and development guide. 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.

To enhance development flexibility, MYIR offers optional display and camera modules for the MYD-YR3588: the MY-MIPI101C-V2 10.1-inch MIPI display, and the MY-CAM003M, MY-CAM005M, and MY-CAM006M MIPI-CSI camera modules — delivering a ready-to-use development experience.




*MYD-YR3588 Development Board (Top-view, delivered with pre-installed heatsink)*

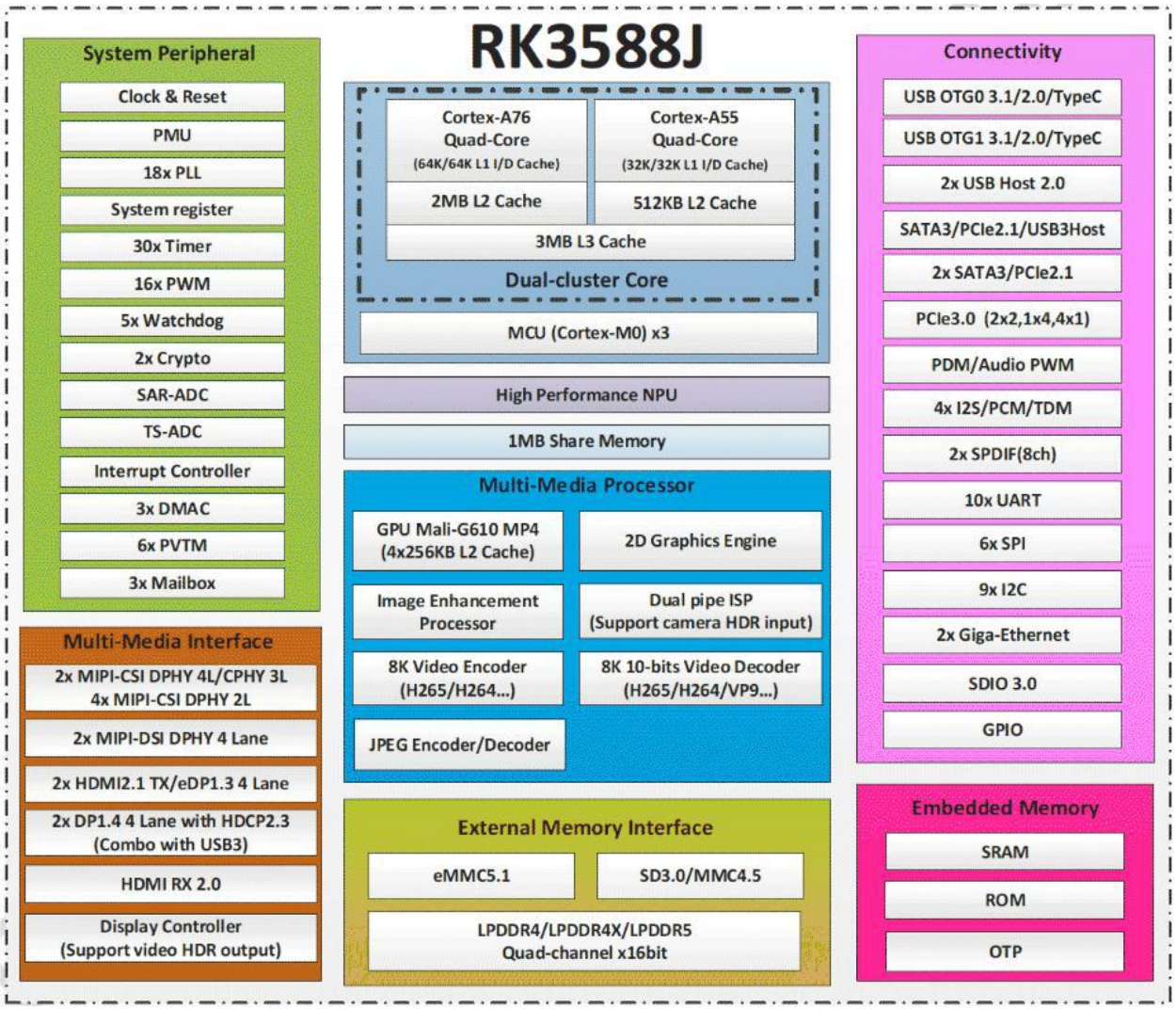



*MYD-YR3588 Development Board (Bottom-view)*

**Hardware Specification**

The MYC-YR3588 System-on-Module (SOM) is powered by the Rockchip RK3588 applications processor, and is built with a high-density, high-speed PCB design that integrates the RK3588, LPDDR5, eMMC, PMIC and EEPROM circuits onto a 50mm x 52mm module in an LCC+LGA hybrid package (192 stamp holes + 234 LGA pads, 426 pins in total), designed for solder-down mounting onto the carrier board. The MYC-YR3588 SOM is characterized by the strictest quality standards, ultra-high performance, rich peripheral resources, high cost-effectiveness and long supply availability, making it well suited as the core module for high-performance intelligent devices.

The RK3588 also integrates advanced graphics and video cores and a 6 TOPS NPU accelerator, with support for mixed-precision computing (INT4/INT8/INT16/FP16/BF16/TF32) and mainstream AI frameworks such as TensorFlow, Caffe, PyTorch and ONNX, meeting the high-performance computing requirements of edge AI inference, machine vision and voice recognition. It provides a rich set of peripherals including dual Gigabit Ethernet, PCIe 3.0, USB 3.1, SATA 3.0, SDIO and UART, making the RK3588 well suited for a broad range of high-end industrial, robotics, medical and AIoT applications.



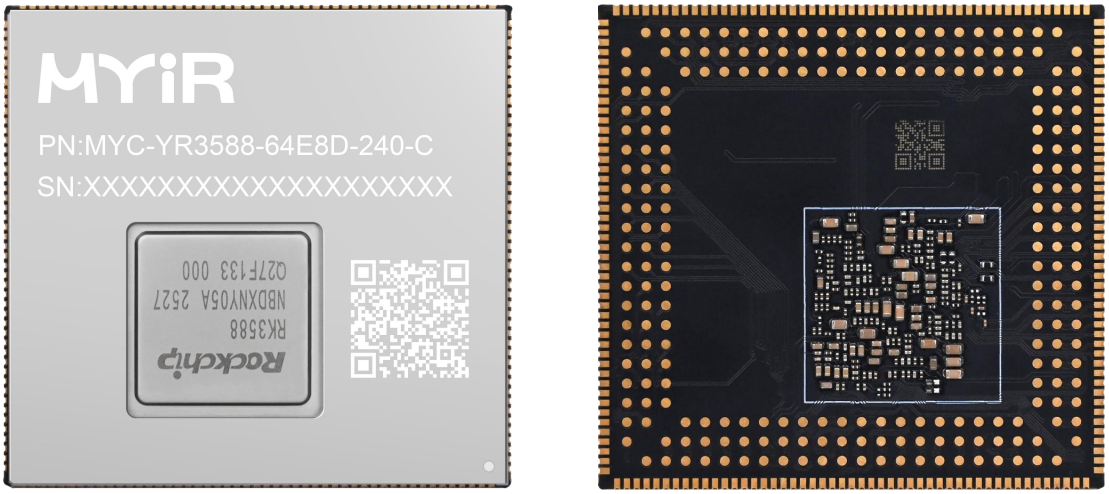

*RK3588 Series Processor Block Diagram*

The MYD-YR3588 Development Board is using the MYC-YR3588 SOM as core controller board. It takes full features of Rockchip RK3588 processor and the main features are characterized as below:

**Mechanical Parameters**

- Dimensions: 130mm x 180mm (base board), 50mm x 52mm (SOM)
- PCB Layers: 6-layer design (base board), 12-layer design (SOM)
- Power supply: +12V/5A DC input (base board), +5V/2A (SOM)
- Working temperature: 0~+70 Celsius (commercial grade), -40~+85 Celsius (industrial grade)

**The MYD-YR3588 Controller Board (MYC-YR3588)**




*MYC-YR3588 System-On-Module (Top-view and Bottom-view)*

**Processor**

- Rockchip RK3588 processor (RK3588 / RK3588J)
  - 4x Cortex-A76 @2.4GHz + 4x Cortex-A55 @1.8GHz (RK3588, commercial grade)
  - 4x Cortex-A76 @1.6GHz + 4x Cortex-A55 @1.3GHz (RK3588J, industrial grade)
  - 3x Cortex-M0 real-time core @200MHz
  - Integrated 6 TOPS NPU (INT8) for edge AI inference
  - Arm Mali-G610 MP4 3D GPU
  - Supports up to 8K@60fps video decoding (H.265 and VP9,) and video encoder up to 8K@30fps video encoding (H.265 and H.264)

**Memory**

- 8GB16GB LPDDR5
- 64GB/128GB eMMC
- 32Kbit EEPROM

**Peripherals and Signals Routed to Pins**

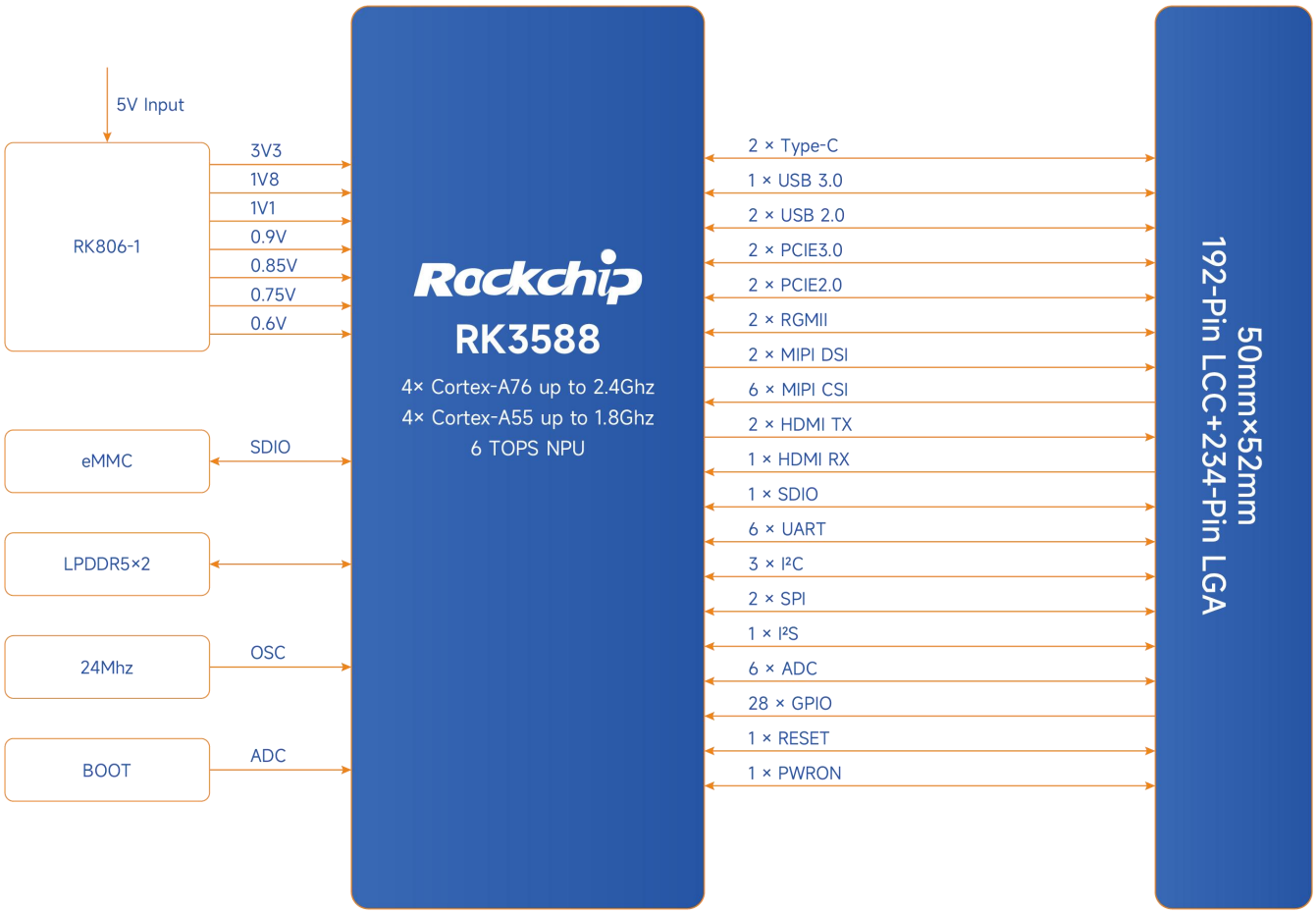
- 426-pin LCC+LGA Expansion Interface
  - 2x GMAC, 10/100/1000Mbps auto-negotiation
  - 2x USB 3.1 OTG (Type-C, multiplexed with DP TX)
  - 1x USB 3.1 Host
  - 2x USB 2.0 Host

- 1x PCIe 3.0 (RC/EP mode, supporting 1x4/2x2/4x1 configurations)
- 3x PCIe 2.1
- 3x SATA 3.0
- 2x SDIO
- 10x UART
- 9x I2C
- 16x PWM
- 5x SPI
- 8-channel SAR ADC, 12-bit
- Video Input: 2x MIPI D-PHY (4-lane D-PHY / 3-lane C-PHY), 4x MIPI CSI D-PHY (2-lane), 1x HDMI IN, 1x DVP (BT.601/BT.656)
- Video Output: 2x HDMI/eDP, 2x DP, 2x MIPI DSI, 1x Parallel port (RGB/BT.656/BT.1120)
- Audio: 2x I2S/TDM/PCM (8-channel), 2x I2S/PCM (2-channel), 2x SPDIF, 2x PDM (8-channel)

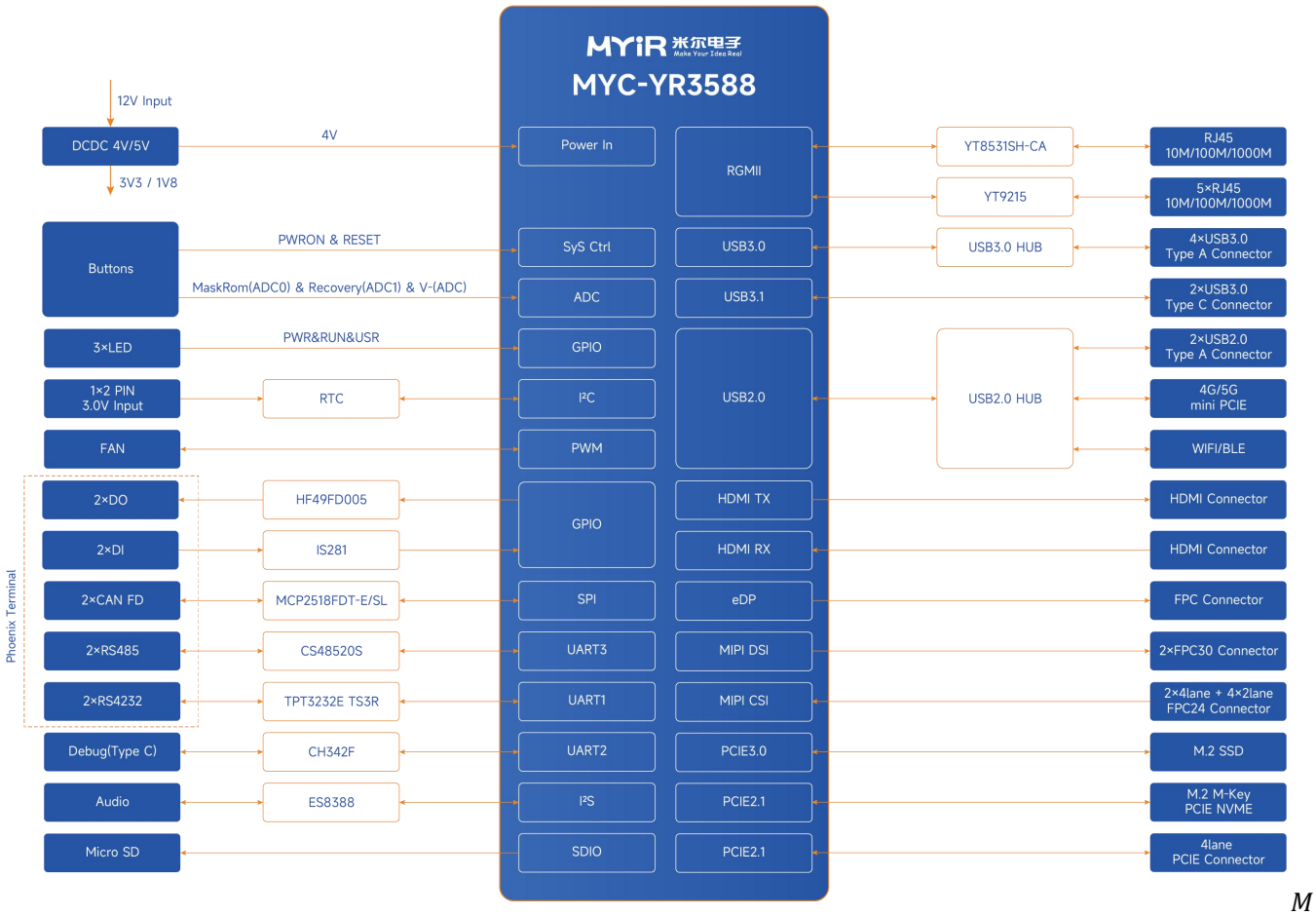
*Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet and the SOM pinout description file.*

**The MYD-YR3588 Development Board Base Board**

- 1x Power Jack (DC 12V/5A)
- Buttons: MaskRom, Reset (RST), Power (PWR), Recovery (RECOVERY/V+), V-
- LEDs: PWR (power), RUN (system running), ERR (error), USR (user-defined)
- 1x Micro SD Card Slot
- 1x RTC Interface
- 2x M.2 M-Key sockets for NVMe SSD (1x PCIe Gen3 x4 + 1x PCIe 2.1 x1)
- 1x Mini PCIe socket for USB 2.0 based 4G/5G module
- 1x PCIe connector (PCIe 2.1 x1)
- 1x Debug Interface (USB Type-C)
- 2x RS232
- 2x RS485
- 2x CAN FD
- 2x DI + 2x DO (isolated)
- 4x ADC inputs
- 4x USB 3.0 Type-A Host ports
- 2x USB 2.0 Type-A Host ports
- 2x USB 3.0 Type-C OTG ports (supporting DP)
- Onboard Wi-Fi/Bluetooth module
- Wi-Fi PCB antenna (IPEX connector)
- 6x 10/100/1000Mbps Ethernet interfaces (RJ45)
- 1x HDMI
- 1x eDP
- 2x MIPI-DSI (FPC connectors)
- 6x MIPI-CSI (FPC connectors, 2x 4-lane + 4x 2-lane)
- 1x HDMI RX input
- 1x Audio Interface (3.5mm headphone/microphone jack)




*MYC-YR3588 Function Block Diagram*




*M*

*YD-YR3588 Function Block Diagram*

**Software Features**

The MYD-YR3588 development board runs Linux and comes with a comprehensive full-stack software package. 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_2017.09 | YES |
| Linux kernel | Linux kernel | Customized based on official kernel_6.1 version | YES |
| Device driver | EEPROM | BL24C32F driver | YES |
| | USB OTG | USB OTG driver | YES |
| | USB HOST | USB HOST driver | YES |
| | I2C | I2C bus driver | YES |
| | SPI | SPI bus driver | YES |
| | Ethernet | YT8531SH-CA driver | YES |
| | SWITCH | YT9215RBH driver | YES |
| | HDMI | HDMI driver | YES |
| | eDP | eDP driver | YES |
| | MIPI DSI | MIPI DSI driver | YES |
| | Audio | ES8390 audio driver | YES |
| | MIPI CSI | MIPI CSI driver | YES |
| | RTC | INS5T8025 driver | YES |
| | GPIO | GPIO driver | YES |
| | CAN | MCP2518FDT driver | YES |
| | RS485 | RS485 driver | YES |
| | RS232 | RS232 driver | YES |
| | WIFI/BT | BL-M8800DS7 driver | YES |
| File system | myir-image-yr3588-yocto | Yocto-based Linux image | YES |
| | myir-image-yr3588-buildroot | Buildroot-based Linux image | YES |

*MYD-YR3588 Software Features*

**Order Information**

| Product Item | Part No | Packing List |
|---|---|---|
| MYD-YR3588 Development Board | MYD-YR3588-64E8D-240-C | ✓ MYD-YR3588 board (includes MYC-YR3588 SOM, with pre-installed heatsink)<br>✓ One Quick Start Guide<br>✓ One USB Type-A to Type-C cable<br>✓ One Wi-Fi PCB antenna (IPEX connector)<br>✓ One 12V/5A Power adapter |
| | MYD-YR3588-128E16D-240-C | |
| | MYD-YR3588J-64E8D-160-I | |
| | MYD-YR3588J-128E16D-160-I | |
| MYC-YR3588 System-On-Module | MYC-YR3588-64E8D-240-C | ✓ One MYC-YR3588 SOM (Heatsink not included) |
| | MYC-YR3588-128E16D-240-C | |
| | MYC-YR3588J-64E8D-160-I | |
| | MYC-YR3588J-128E16D-160-I | |
| MY-MIPI101C-V2 10.1-inch MIPI LCD Module | MY-MIPI101C-V2 | ✓ MY-MIPI101C-V2 10.1-inch MIPI LCD Module with Capacitive Touch Screen |
| MY-CAM003M MIPI Camera Module | MY-CAM003M | ✓ MY-CAM003M Camera Module |
| MY-CAM005M MIPI Camera Module | MY-CAM005M | ✓ MY-CAM005M Camera Module |
| MY-CAM006M MIPI Camera Module | MY-CAM006M | ✓ MY-CAM006M Camera Module |

*Note:*

*1. One MYD-YR3588 Development Board comprises one MYC-YR3588 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-YR3588, whether reducing, adding or modifying the existing hardware according to customer's requirement.*

**MYIR Electronics Limited**

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