MYiR 米尔电子
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MYC-YR3588
System-On-Module
Overview



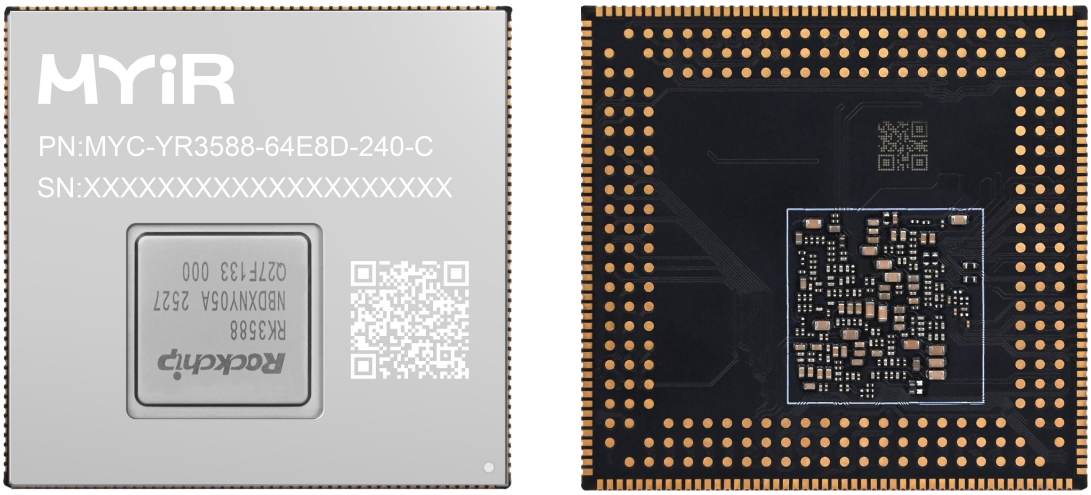


- ✓ *Rockchip RK3588(J) Octa-core Arm processor with 4x Cortex-A76 cores@2.4GHz and 4x Cortex-A55 cores@1.8GHz, plus 3x Cortex-M0*
- ✓ *Neural Processing Unit (NPU) Operating at Up to 6 TOPS, ARM Mali-G610 MP4 3D GPU*
- ✓ *Supports Up to 8K@60fps High Frame Rate Video Decoding*
- ✓ *8GB/16GB LPDDR5, 64GB/128GB eMMC, 32Kbit EEPROM*
- ✓ *426-pin Expansion Interface with LCC+LGA Hybrid Package*
- ✓ *Supports Working Temperature Ranging from 0 ~ +70 Celsius and -40 ~ +85 Celsius*
- ✓ *Ready to Run Linux*

Measuring 50mm x 52mm, the MYC-YR3588 is a high-performance Edge AI System-on-Module (SOM) powered by the Rockchip RK3588/RK3588J processor. It features an octa-core 64-bit CPU combining 4x Cortex-A76 cores (up to 2.4GHz) and 4x Cortex-A55 cores (up to 1.8GHz) for application processing, 3x Cortex-M0 cores for real-time control, and a 6 TOPS NPU plus Arm Mali-G610 MP4 3D GPU for edge AI inference and graphics.

The MYC-YR3588 SOM integrates LPDDR5 (8GB/16GB), eMMC (64GB/128GB), and a 32Kbit EEPROM for flexible storage, while the onboard PMIC delivers efficient power management. Housed in an LCC+LGA hybrid package (192 stamp holes + 234 LGA pads, 426 pins in total) and designed for solder-down mounting onto a carrier board, it offers versatile expansion options: dual Gigabit Ethernet; multi-display outputs (HDMI, eDP, DP, MIPI-DSI, Parallel RGB) and video inputs (MIPI-CSI, HDMI input, DVP); PCIe 3.0, PCIe 2.1, SATA 3.0, USB 3.1, and USB 2.0; plus a full suite of UART, SPI, I2C, PWM, SDIO, and ADC interfaces for peripheral integration.

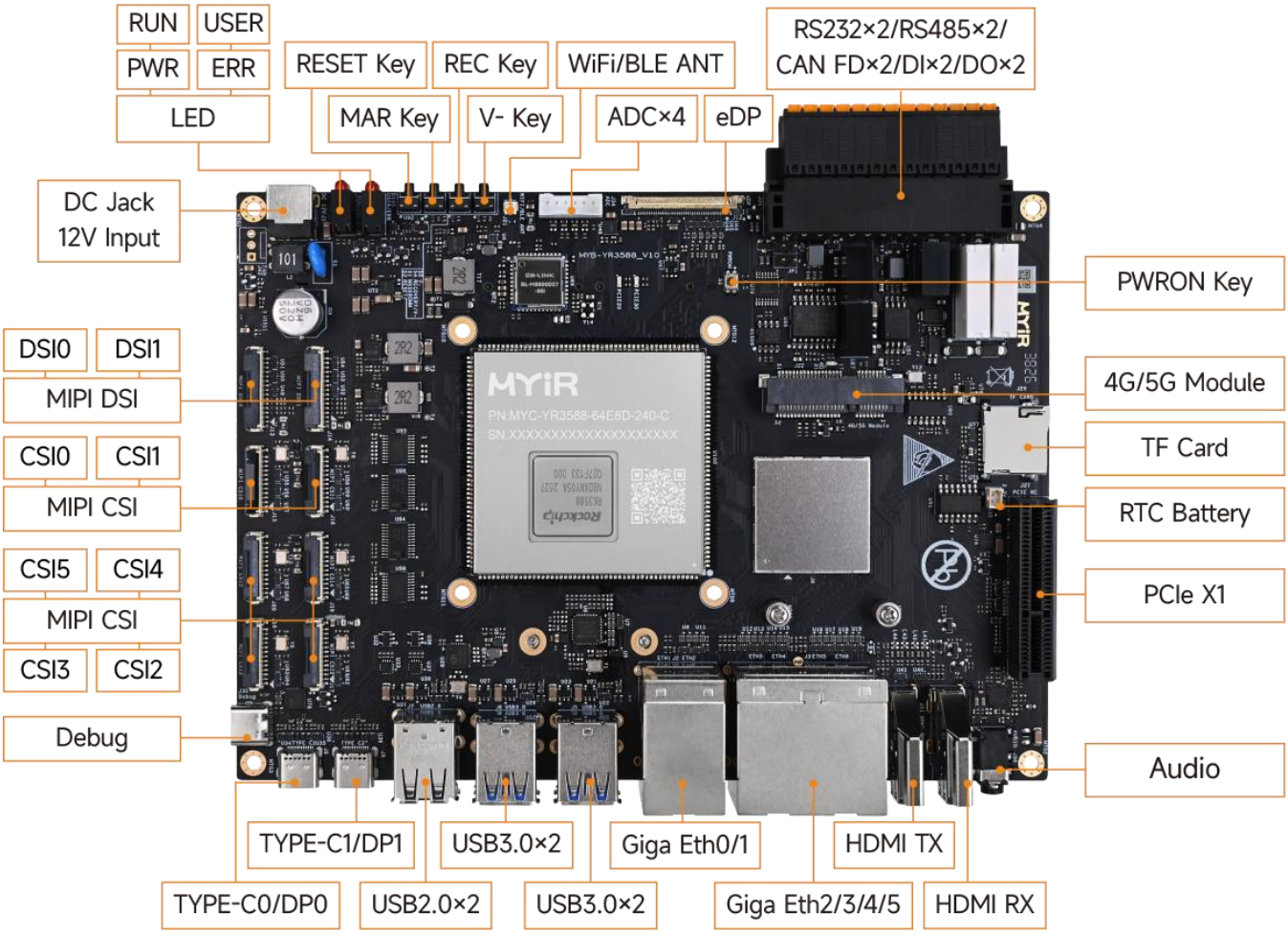
MYIR provides a complete software package including Yocto and Buildroot BSP images (kernel 6.1), open-source drivers, and documentation to accelerate time-to-market. The module is available in commercial (0 to +70°C) and industrial (-40 to +85°C) temperature grades, making it ideal for edge computing, robotics, industrial control, medical endoscopy, construction machinery, and commercial/industrial energy storage.



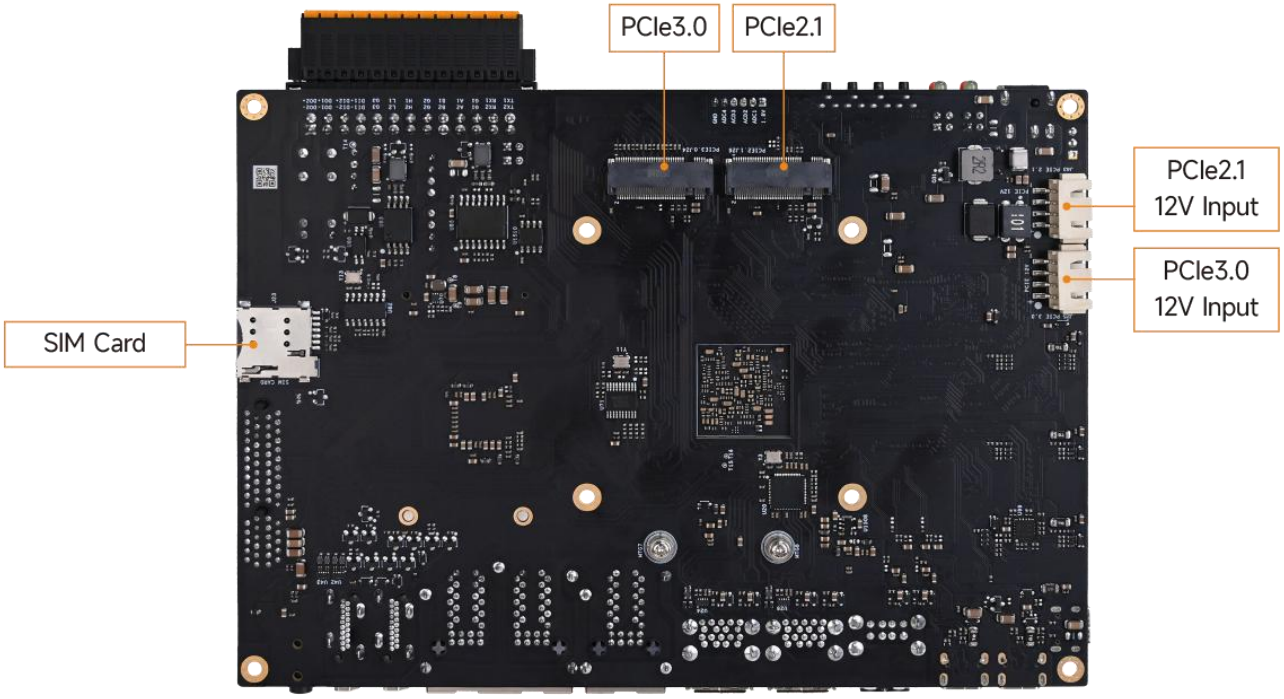
MYC-YR3588 System-On-Module (Top-view and Bottom-view)

The MYD-YR3588 development board combines the MYC-YR3588 SOM with a carrier board via a 426-pin LCC+LGA expansion interface. The carrier board provides extensive I/O for application development, including 6x Gigabit Ethernet; 4x USB 3.0 and 2x USB 2.0 host ports, as well as 2x USB 3.0 OTG ports (with DP support); 2x RS232, 2x RS485, 2x CAN FD, 2x isolated DI and 2x isolated DO channels via Phoenix terminal blocks; 4x ADC inputs; a Micro SD card slot; 2x 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 include 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 solid reference platform for evaluating and prototyping RK3588-based solutions.

To enhance development flexibility, MYIR offers optional display and camera accessories 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 — providing a streamlined, ready-to-use development experience.



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

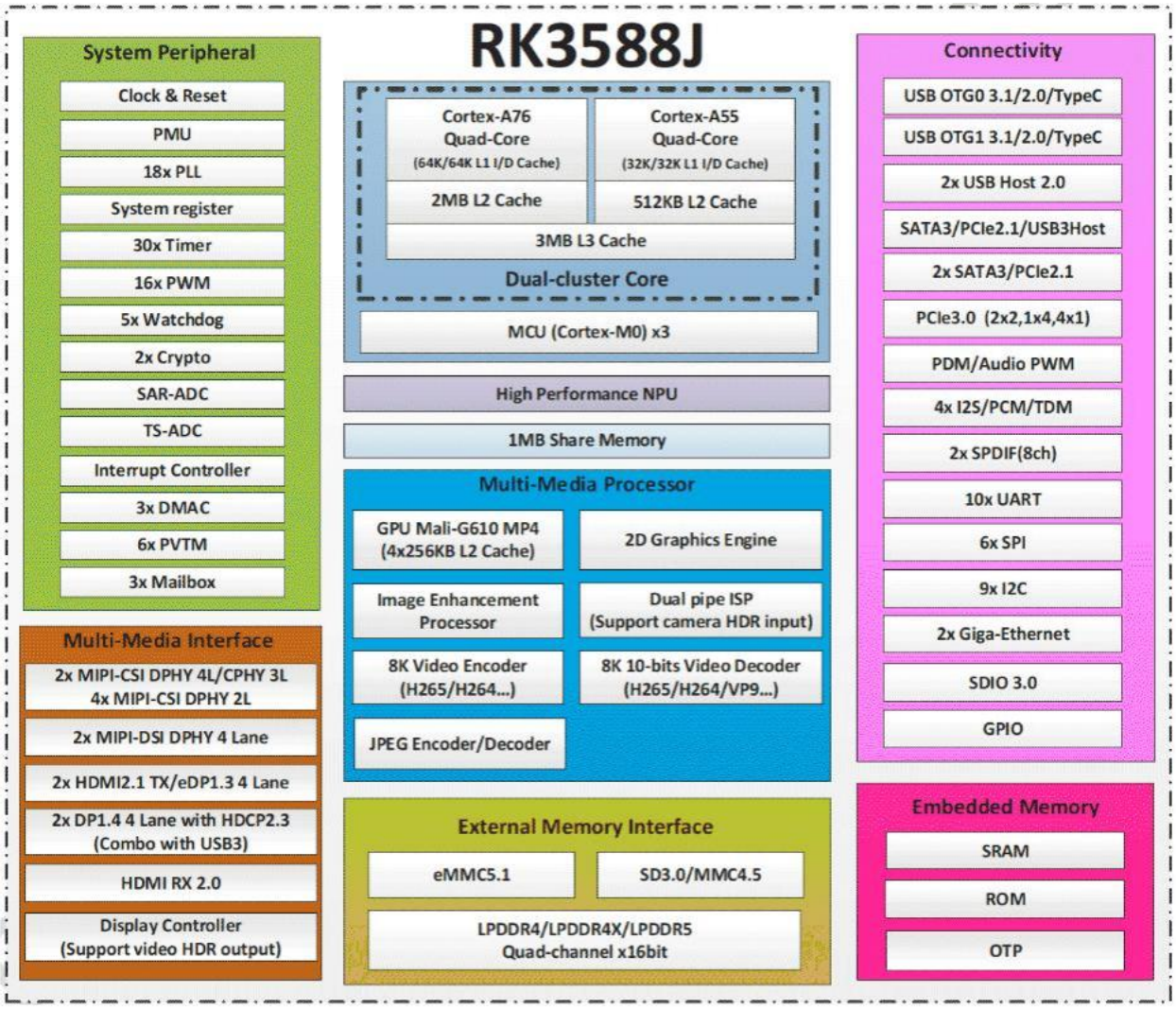


MYD-YR3588 Development Board (Bottom-view)

Hardware Specification

The MYC-YR3588 System-on-Module (SOM) is powered by the Rockchip RK3588 applications processor, which is offered in two grades: the commercial RK3588 and the industrial RK3588J. The processor is built on an octa-core 64-bit CPU combining 4x Cortex-A76 and 4x Cortex-A55 cores with 3 Cortex-M0 real-time cores, and integrates a 6 TOPS NPU for edge AI inference and an ARM Mali-G610 MP4 3D GPU. Its multimedia engine supports 8K@60fps video decoding (H.265, VP9) and 8K@30fps encoding (H.265, H.264), together with a rich set of display and camera interfaces including HDMI, eDP, DP, MIPI-DSI, Parallel RGB, MIPI-CSI ,48M ISP

The processor also provides a comprehensive peripheral set covering dual Gigabit Ethernet, PCIe 3.0, USB 3.1, SATA 3.0, SDIO, UART, making the RK3588 well-suited for a broad range of high-end industrial, robotics, medical and AIoT applications requiring intelligent edge-AI features with optimized power consumption.



RK3588 Series Processor Block Diagram

The MYC-YR3588 takes full features of the Rockchip RK3588 processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 52mm x 50mm
- PCB Layers: 12-layer design
- Power Supply: +5V/2A
- Working temperature: 0~+70 Celsius (commercial grade) / -40~+85 Celsius (industrial grade)

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 @200 MHz
  - 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)

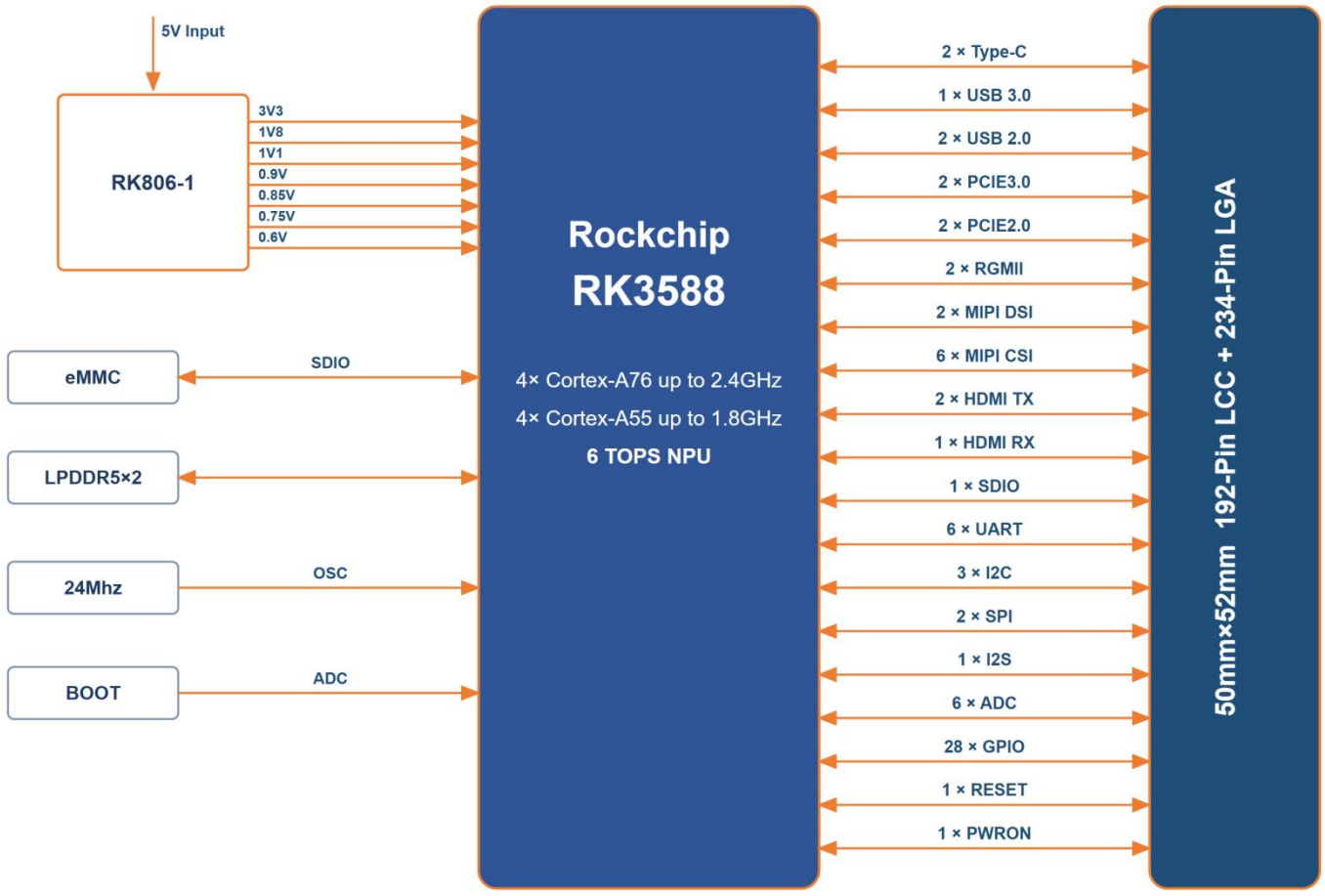
Memory

- 8GB/16GB LPDDR5
- 64GB/128GB eMMC
- 32Kbit EEPROM

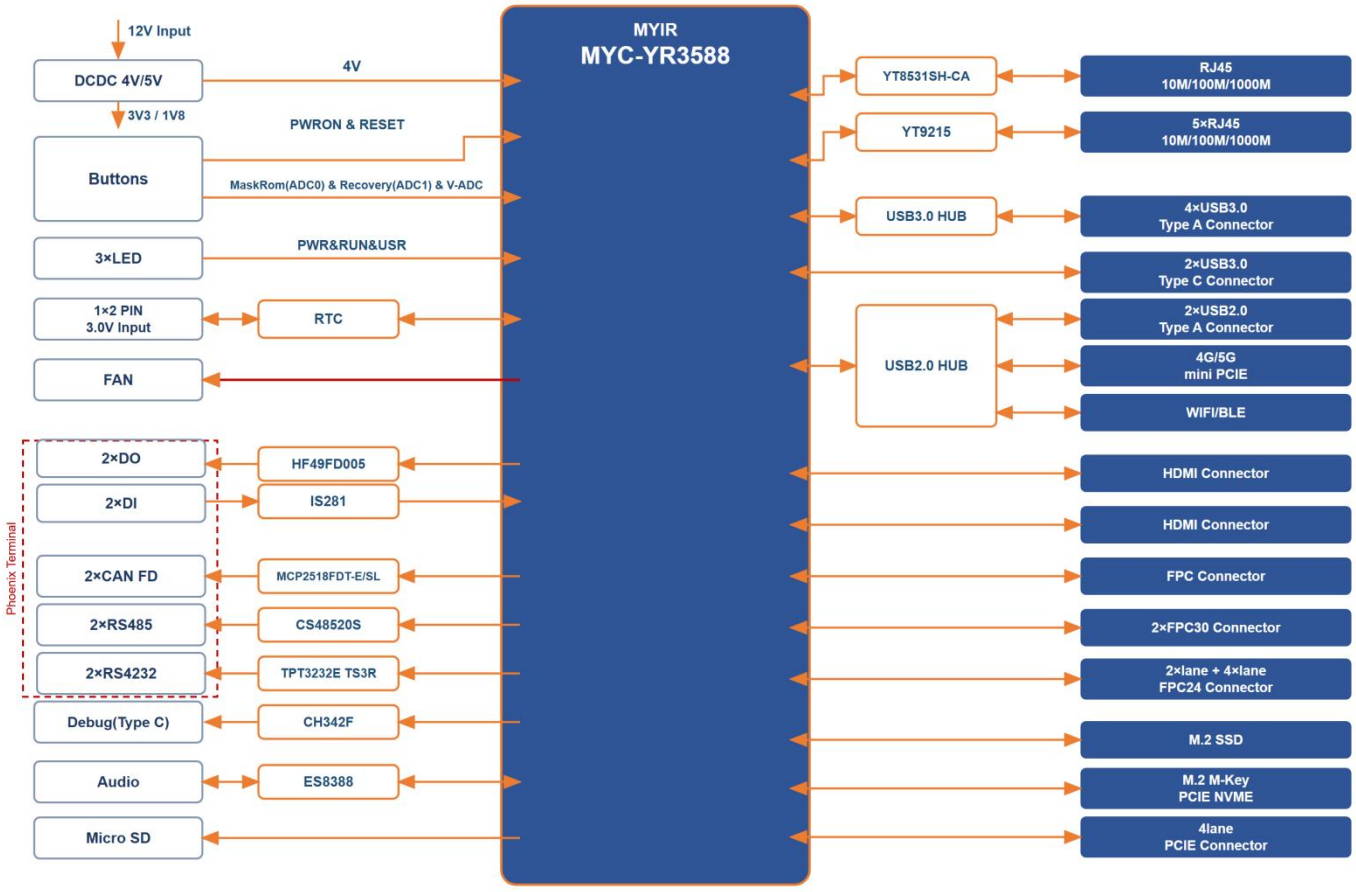
Peripherals and Signals Routed to Pins

- 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
  - 3x PCIe 2.1
  - 3x SATA 3.0
  - 10x UART
  - 5x SPI
  - 9x I2C
  - 2x SDIO
  - 16x PWM
  - 8-channel SARADC, 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.



MYC-YR3588 Function Block Diagram



MYD-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

MYC-YR3588 Software Features

Order Information

Product Item	Part No.	Packing List
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	
MYD-YR3588 Development Board	MYD-YR3588-64E8D-240-C	✓ MYD-YR3588 board (includes MYC-YR3588 SOM, with pre-installed heatsink) ✓ One Quick Start Guide ✓ One USB Type-A to Type-C cable ✓ One Wi-Fi PCB antenna (IPEX connector) ✓ One 12V/5A Power adapter
	MYD-YR3588-128E16D-240-C	
	MYD-YR3588J-64E8D-160-I	
	MYD-YR3588J-128E16D-160-I	
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-CAM003M MIPI Camera Module	MY-CAM003M	✓ MY-CAM003M MIPI Camera Module
MY-CAM005M MIPI Camera Module	MY-CAM005M	✓ MY-CAM005M MIPI Camera Module
MY-CAM006M MIPI Camera Module	MY-CAM006M	✓ MY-CAM006M MIPI 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.

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