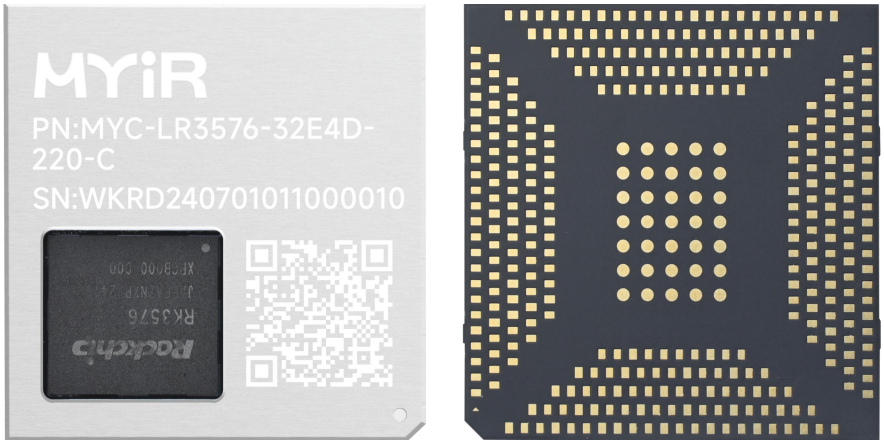
MYiR 米尔电子
Make Your Idea Real

MYC-LR3576
System-On-Module
Overview

- ✓ *Rockchip RK3576 (J) Octa-core Arm Processor with Quad Cortex-A72 Cores at 2.2 GHz and Quad Cortex-A53 Cores at 1.8 GHz*
- ✓ *Neural Processing Unit (NPU) Operating at Up to 6 TOPS, 3D GPU*
- ✓ *Supports Up to 4K@120fps High Frame Rate Video Decoding*
- ✓ *4GB/8GB LPDDR4X, 32GB/64GB eMMC, 32Kbit EEPROM*
- ✓ *381-pin Expansion Interface with LGA Package*
- ✓ *Supports Linux 6.1, Debian 12, Ubuntu 22.04 and Android 15 OS*

The MYC-LR3576 System-On-Module (SOM), with its compact size of 43mm x 45mm, delivers exceptional reliability for your upcoming embedded design projects. Powered by the robust Rockchip RK3576 / RK3576J application processor, it boasts a quad-core Cortex-A72 and a quad-core Cortex-A53, an integrated 6 TOPS NPU, and a 3D GPU. The RK3576 supports various video codecs, including up to 8K@30fps or 4K@120fps decoding (H.265/VP9/AVS2/AV1) and up to 4K@60fps encoding (H.265/H.264), ensuring users can experience high-quality video playback and recording. In addition to the RK3576 CPU, the MYC-LR3576 SOM integrates 4GB/8GB LPDDR4X and 32GB/64GB eMMC on board. It provides a range of peripherals and IO signals via a 381-pin expansion interface with an LGA package. It also supports for Linux, Debian, Ubuntu and Android OS. With its high-performance and low-power design, this feature-packed SOM is suitable for scenarios such as industrial, AIoT, edge computing, smart mobile terminals, and many other digital multimedia applications.

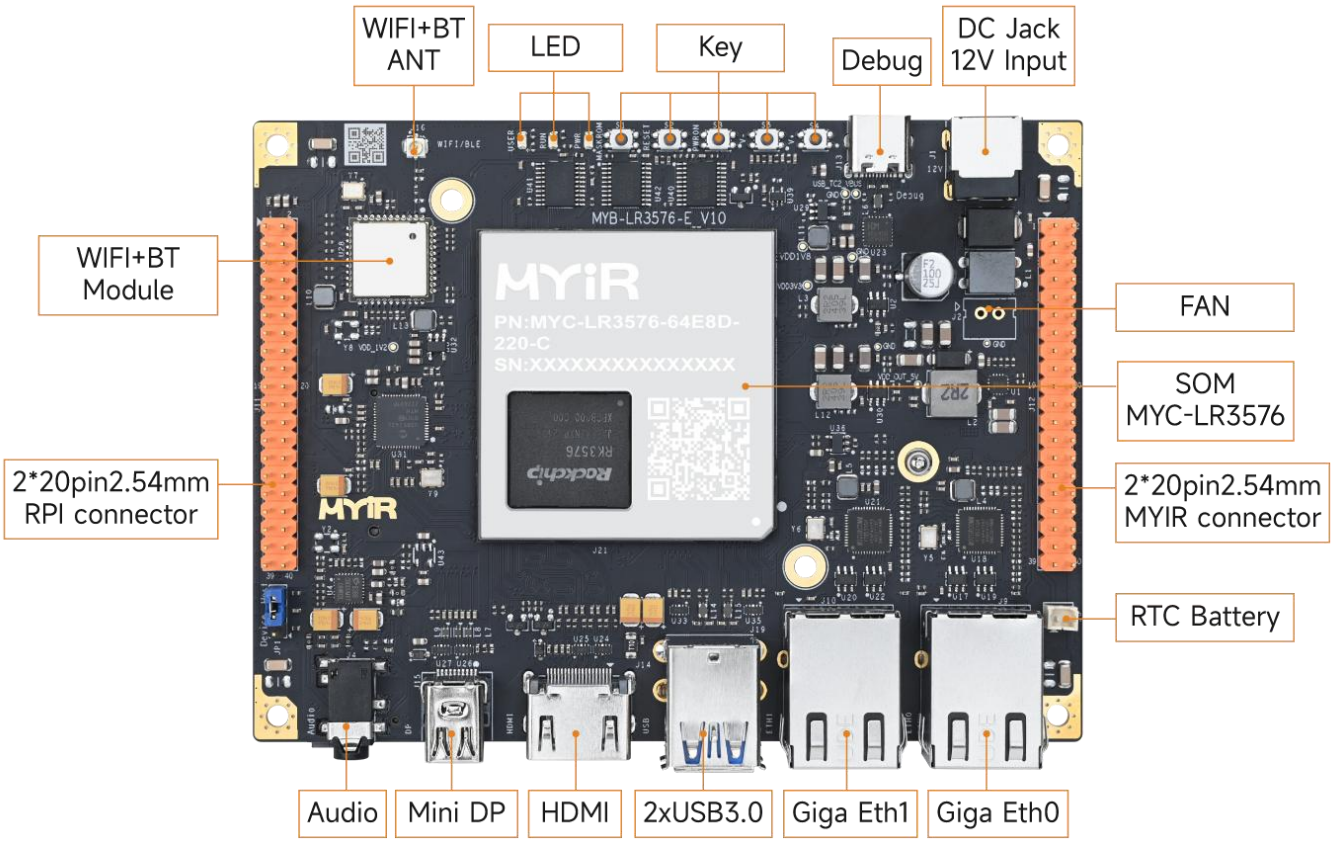


MYC-LR3576 System-On-Module (Top-view and Bottom-view)

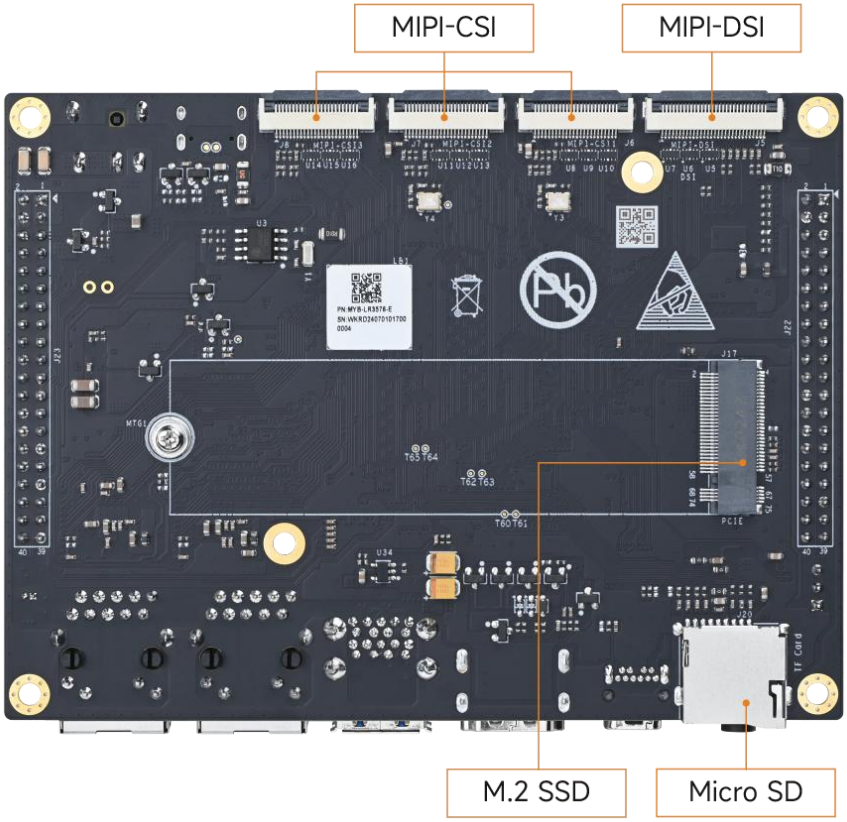
The MYC-LR3576 supports Linux 6.1, Debian 12, Ubuntu 22.04 and Android 14 operating systems, ensuring flexibility and adaptability for various project requirements. MYIR provides a comprehensive software bundle, including kernel and driver source codes, along with compilation tools, to facilitate a smooth development process from initial design to final implementation.

The MYD-LR3576 Development Board serves as a comprehensive evaluation platform specially designed for the RK3576. It features the MYC-LR3576 SOM at its core and offers a wide range of peripheral interfaces on its base board, including two USB 3.0 interfaces, one USB 2.0 interface, dual Gigabit Ethernet interfaces, two CAN interfaces, and one integrated WiFi/Bluetooth module. Furthermore, it incorporates a Micro SD card slot and an M.2 NVMe SSD-compatible PCIe slot. The board also features a diverse set of multimedia interfaces, such as HDMI, DP, and MIPI-DSI display interfaces, along with three MIPI-CSI video input interface and audio capabilities. Moreover, the board offers flexibility for expansion through various peripheral signals accessible via the RPI Interface (GPIO/I2C/UART/SPI/CAN-FD) and the MiFAN Interface (GPIO/I2C/UART/SPI/USB), allowing users to customize and enhance their development experience.

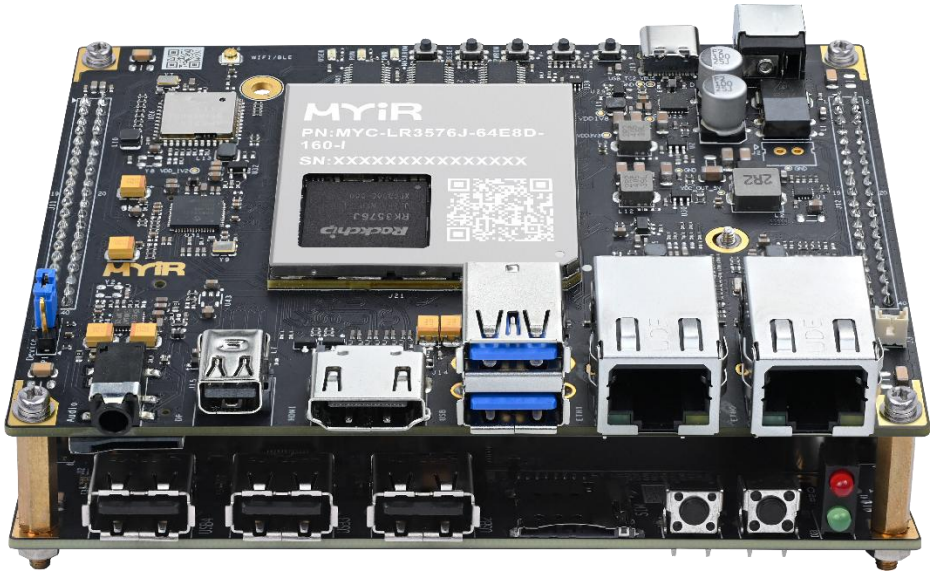
The MYD-LR3576 comes bundled with one 12V/3A power adapter, one USB Type-C cable, one WiFi/Bluetooth antenna and one quick start guide. Additionally, MYIR offers optional add-on modules for this product, such as the MY-CAM003M MIPI Camera Module, MY-CAM004M 4AHD-to-MIPI Camera Module, MY-CAM005M MIPI Camera Module, and MY-MIPI101C 10.1-inch LCD Module. The MYD-LR3576 offers a kit MYD-LR3576J-GK with the RK3576J CPU version includes an expansion board MY-ICEB001 that extends three USB2.0 ports, one RS232 port, two RS485 port, two CAN interfaces and one M.2 Socket for a USB-based 4G/5G LTE Module with a SIM card holder. These additions significantly expand the board's functionality, providing users with versatile capabilities to cater to their unique project needs.



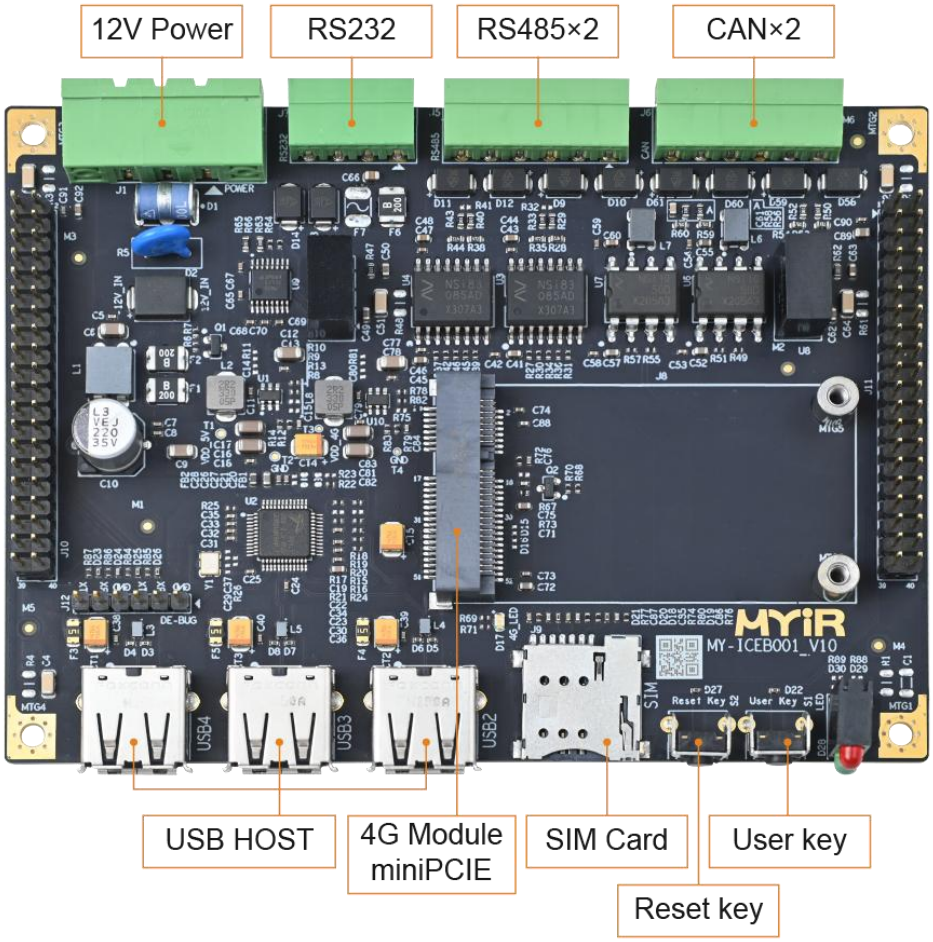
MYD-LR3576 Development Board (Top- view)



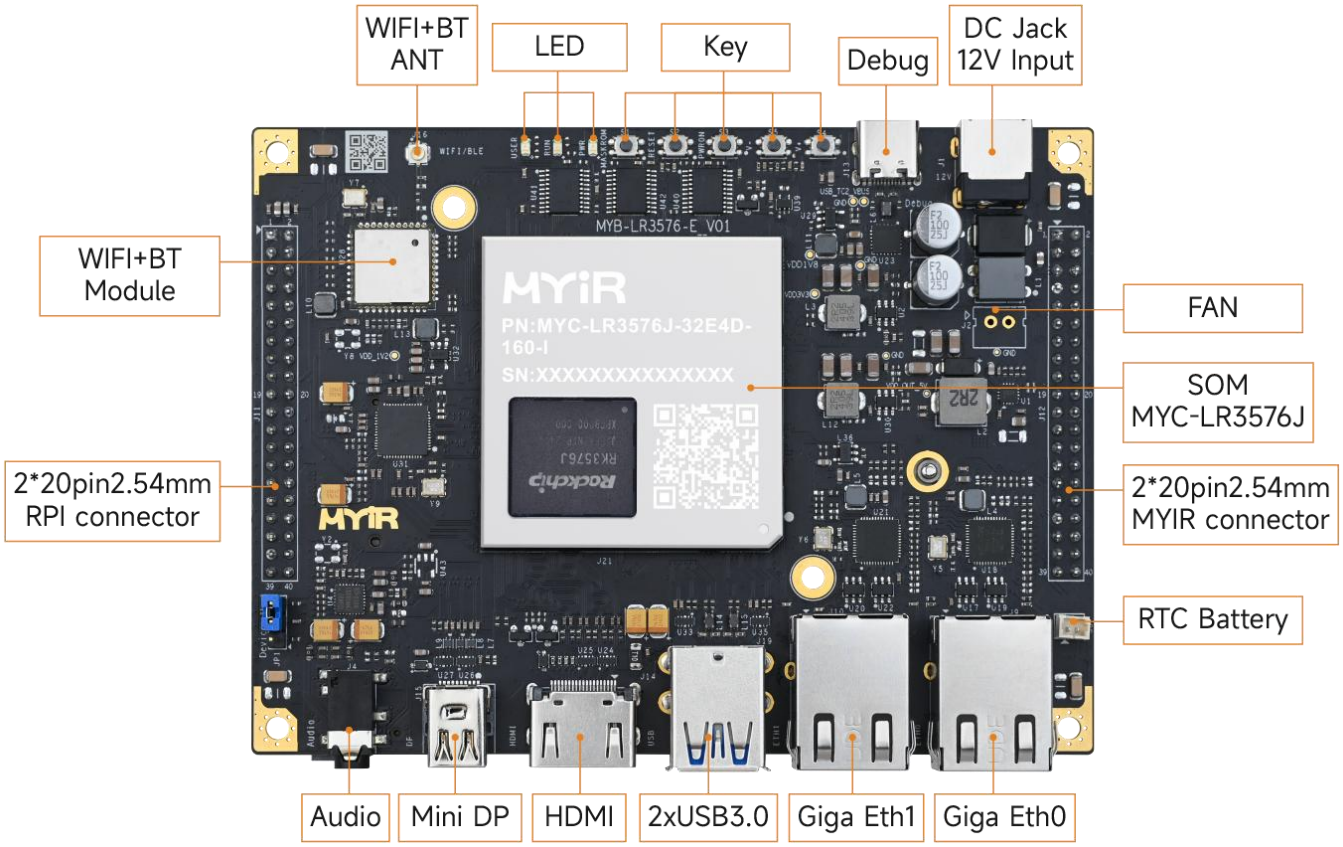
MYD-LR3576 Development Board (Bottom-view)



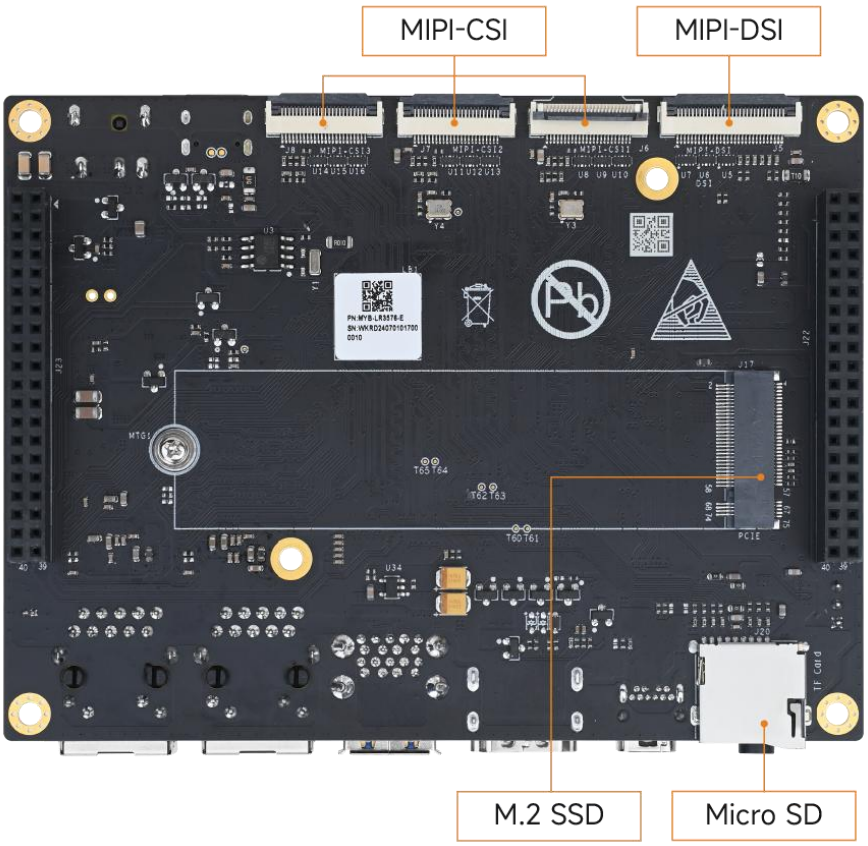
MYD-LR3576 Development Board (RK3576J version) Integrates with the MY-ICEB001 Expansion Board



MY-ICEB001 Expansion Board



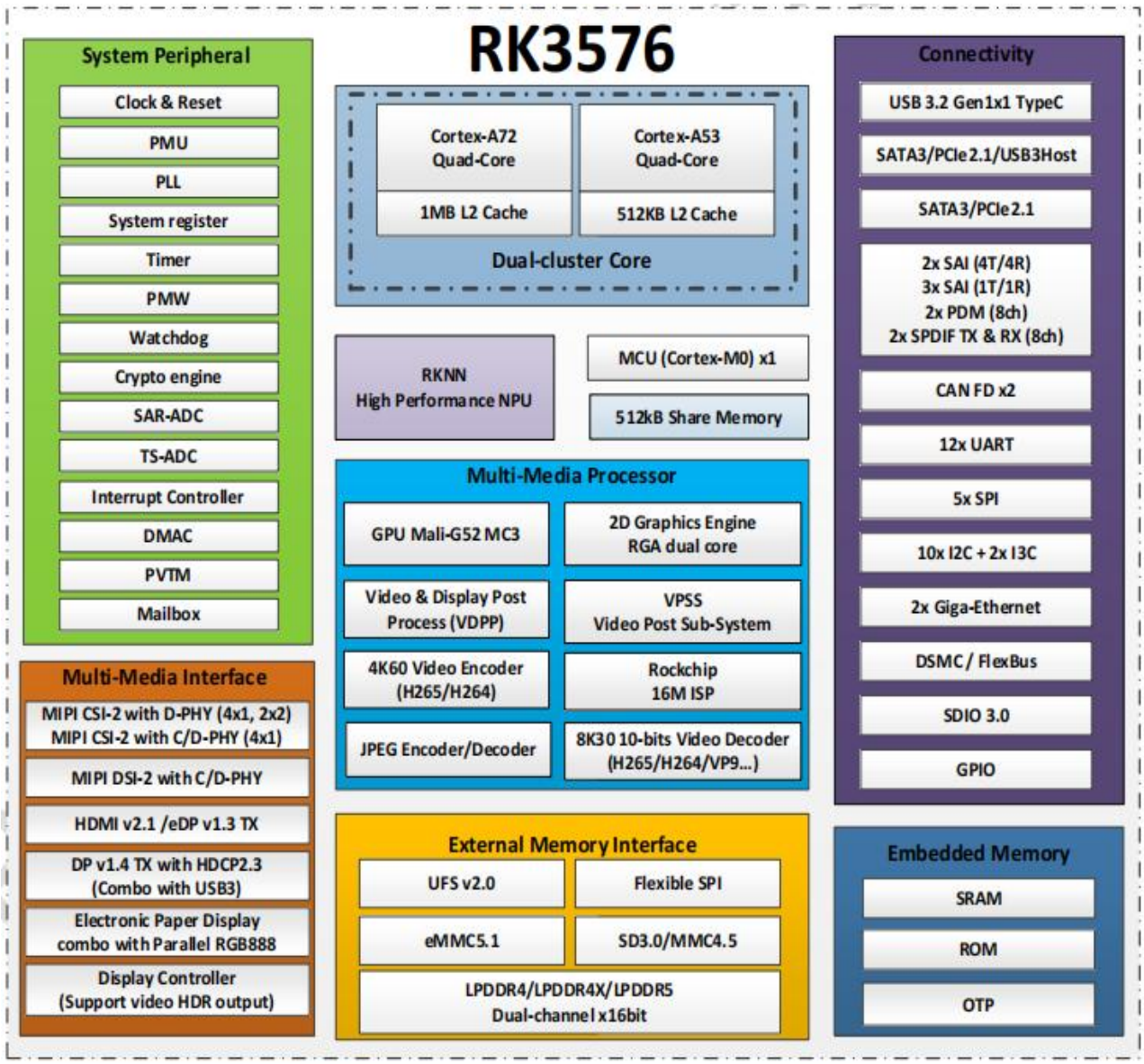
MYD-LR3576 Development Board (RK3576J version) Top-view



MYD-LR3576 Development Board (RK3576J version) Bottom-view

Hardware Specification

The RK3576 (J) is designed as a low-power, high-performance processor for ARM-based PCs and edge computing devices, personal mobile Internet devices, and a range of digital multimedia applications. It features an integrated quad-core Cortex-A72 and quad-core Cortex-A53 architecture. The RK3576's video decoder is capable of supporting H.264, H.265, VP9, AV1, and AVS2 at up to 8K@30fps or 4K@120fps, while its video encoder can handle H.264 and H.265 formats at up to 4K@60fps. The embedded 3D GPU ensures compatibility with a range of graphics standards, including OpenGL ES 1.1, 2.0, and 3.2, OpenCL 2.0, and Vulkan 1.1. A dedicated 2D hardware engine, equipped with an MMU, optimizes display performance and ensures exceptionally smooth operation. In addition, this processor offers extensive peripheral extension support, such as dual Gigabit Ethernet interfaces, PCIE2.1, USB3.2, SATA3, DSMC/Flexbus, CANFD, UART, and more.



RK3576 Processor Block Diagram

The MYC-LR3576 System-On-Module leverages the full capabilities of the RK3576/RK3576J processor, showcasing the following key features:

Mechanical Parameters

- Dimensions: 43mm x 45mm
- PCB Layers: 12-layer design
- Power supply: +5V/3A
- Working temperature: 0~70 Celsius (commercial grade, with RK3576 CPU)
  or -40~85 Celsius (industrial grade, with RK3576J CPU)

Processor

- Rockchip RK3576 (J) processor
  - Octa-core Arm processor with 4x Cortex-A72 cores at 2.2 GHz, 4x Cortex-A53 cores at 1.8 GHz
  - Arm Cortex-M0 MCU at 400MHz for user application
  - Arm Mali-G52 MC3 GPU
  - 6 TOPS NPU supports INT4/8/16/FP16/BF16/TF32
  - Supports up to 8K@30fps or 4K@120fps video decoding (H.265/HEVC, VP9, AVS2, and AV1) and video encoder up to 4K@60fps video encoding (H.265 and H.264)

Memory

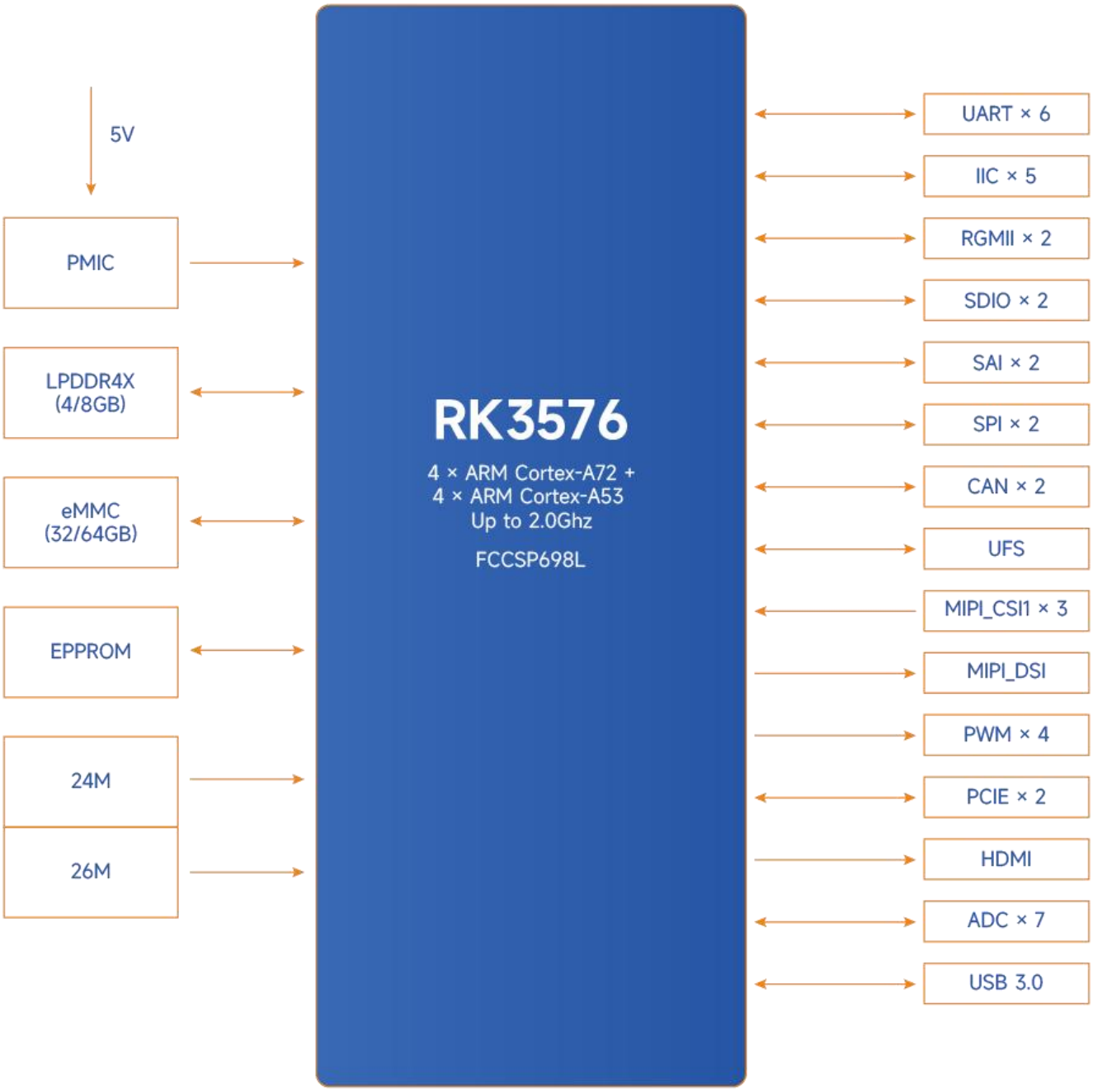
- 4GB/8GB LPDDR4X
- 32GB/64GB eMMC
- 32Kbit EEPROM

Peripherals and Signals Routed to Pins

- 381-pin LGA Expansion Interface
  - 2x RGMII/RMII
  - 1x USB/DP combo, USB3.2 OTG
  - Multi-PHY (1-lane PCIe2.1 or SATA3.1, 1-lane PCIe2.1/SATA3.1/USB3.2)
  - SD v3.0/MMC v4.5.1, 4-bit
  - SDIO v3.0, 4-bit
  - 1x FSPI, 1/2/4-bit data width
  - DSMC/FlexBus, 8/16-bit data width
  - 12x UART, up to 8Mbps, auto flow control (except UART0)
  - 2x CAN/CANFD
  - 10x I2C
  - 2x I3C
  - 16x PWM
  - 5x SPI
  - 6x SARADC, 12-bit
  - 1x MIPI-CSI D-PHY v2.0, 4-lane, 4.5Gbps/ C-PHY v1.1, 3 trios, 2.5Gbps
  - 1x MIPI-CSI D-PHY v1.2, 2*4-lane/4*2-lane/4+2*2, 2.5Gbps
  - 1x DVP, 8/10/12/16-bit, BT.601/BT.656 and BT.1120
  - 1x ISP, 16M pixels
  - 1x HDMI/eDP Combo interface (supports 4K@120fps/4K@60fps)
  - 1x USB/DP Combo interface (supports 4K@120fps)
  - 1x MIPI-DSI, up to 2560x1600@60Hz

- 1x Parallel output interface, supports RGB/BT.656/BT.1120, 1080p@60fps
- 2x I2S/TDM/PCM, 4-channel
- 3x I2S/TDM/PCM, 1-channel
- 2x SPDIF TX, 2x SPDIF RX
- 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-LR3576 Function Block Diagram

Software Features

The MYD-LR3576 development board offers supports for Linux, Debian and Android operating systems. To assist clients in speeding up their projects, the kernel and numerous peripheral drivers are provided in source code format. Below is a brief overview of the key software feature:

Item	Features	Description	Source Code
Bootloader	TFA	First bootloader 2.8.15	YES
	U-boot	Second bootloader uboot_2017.09	YES
Kernel	Linux kernel	Base on official kernel_6.1.118/6.1.141 version	YES
Drivers	EEPROM	BL24C32F driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C bus driver	YES
	SPI	SPI bus driver	YES
	Ethernet	YT8531SH-CA driver	YES
	HDMI	HD119F driver	YES
	DP	A512001 driver	YES
	MIPI DSI	MIPI DSI driver	YES
	Audio	ES8388 driver	YES
	MIPI CSI	MIPI CSI driver	YES
	RTC	LK8563T driver	YES
	GPIO	Generic GPIO driver	YES
	CAN	CAN driver	YES
	WiFi	AP6256 driver	YES
	BT	AP6256 driver	YES
File system	myir-image-lr3576-buildroot	Full-featured image built as Buildroot, weston desktop environment	YES
	myir-image-lr3576-debian	Images built on Debian 12 system	YES
	myir-image-lr3576-android	Images built on Android 15 system	YES
	myir-image-lr3576-ubuntu	Image with built with Ubuntu 22.04 system	YES
	myir-image-lr3576-yocto	Full-featured image built as Yocto	YES
	myir-image-lr3576-robot	Images built on Debian 11 system, integrating the ROS2 framework with various SLAM algorithms	YES

MYC-LR3576 Software Features

Order Information

Product Item	Part No.	Packing List
MYC-LR3576 System-On-Module	MYC-LR3576-32E4D-220-C	✓ One MYD-LR3576 SOM
	MYC-LR3576-64E8D-220-C	
	MYC-LR3576J-32E4D-160-I	
	MYC-LR3576J-64E8D-160-I	
MYD-LR3576 Development Board	MYD-LR3576-32E4D-220-C	✓ One MYD-LR3576 Board ✓ One USB Type-C cable ✓ One WiFi/BT PCB antenna (with ipex connector) ✓ One 12V/3A Power adapter ✓ One Quick Start Guide
	MYD-LR3576-64E8D-220-C	
MYD-LR3576J-GK Development Kit	MYD-LR3576J-32E4D-160-I-GK	✓ One MYD-LR3576 Board ✓ One MY-ICEB001 Expansion Board ✓ One USB Type-C cable ✓ One WiFi/BT PCB antenna (with ipex connector) ✓ One 12V/3A Power adapter ✓ One Quick Start Guide
	MYD-LR3576J-64E8D-160-I-GK	
MY-MIPI101C 10.1-inch LCD Module	MY-MIPI101C	Add-on Options ✓ MY-MIPI101C 10.1-inch LCD Module ✓ MY-CAM003M Camera Module ✓ MY-CAM005M Camera Module
MY-CAM003M Camera Module	MY-CAM003M	
MY-CAM005M Camera Module	MY-CAM005M	

Note:
1. One MYD-LR3576 Development Board comprises one MYC-LR3576 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-LR3576, whether reducing, adding or modifying the existing hardware according to customer's requirement.

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