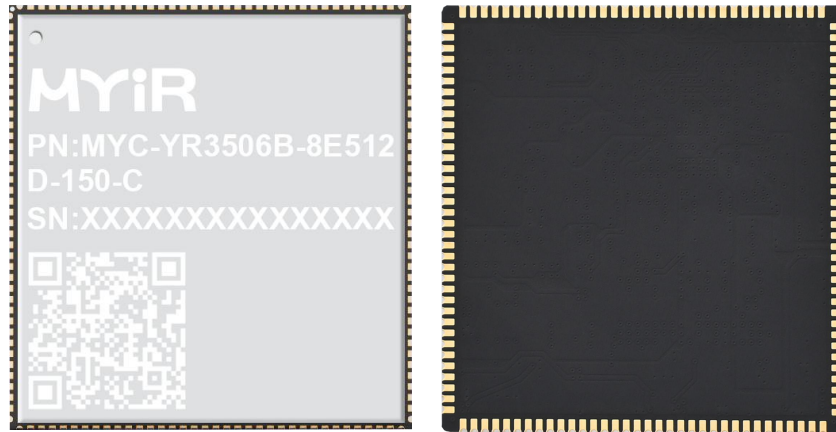


# MYC-YR3506 System-On-Module Overview



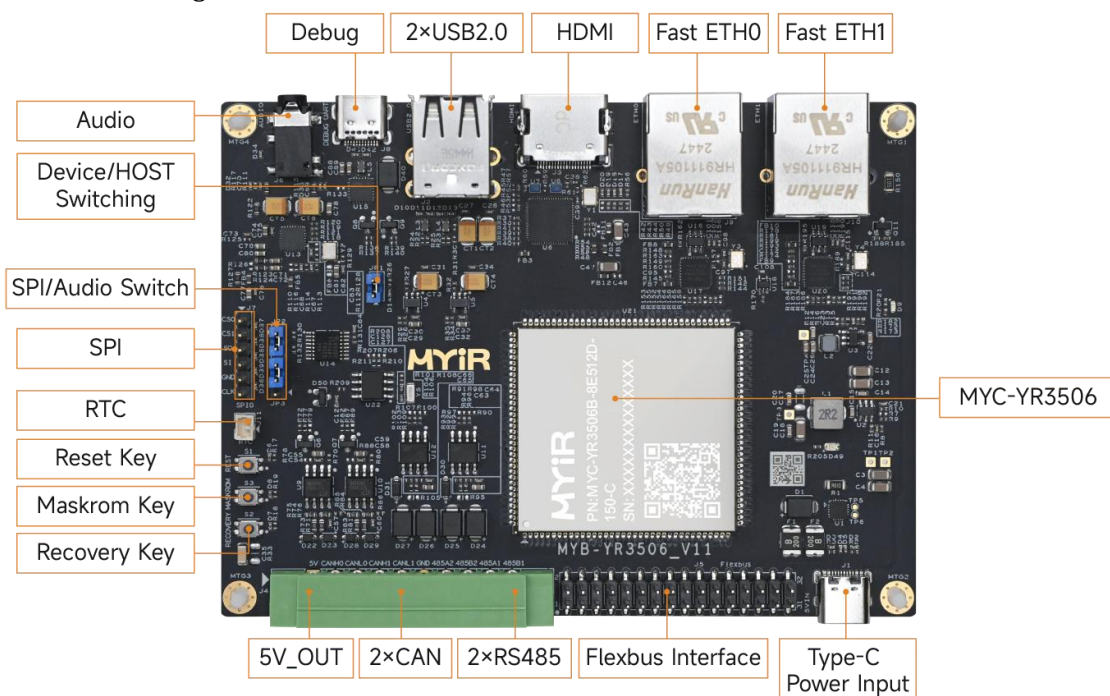
- ✓ Rockchip RK3506 Processor based on Up to 1.5GHz Triple ARM Cortex-A7 and 200MHz Cortex-M0 Cores
- ✓ 256MB/512MB LPDDR3L, 256MB Nand Flash/8GB eMMC, 32Kbit EEPROM
- ✓ Supports 2x 10/100Mbps Ethernet, 2x CAN FD, 6x UART
- ✓ 140-pin Castellated-Hole Expansion Interface
- ✓ Supports Working Temperature Ranging from -40°C to 85°C and 0 °C~+70 °C
- ✓ Supports for Linux 6.1.99 OS

The MYC-YR3506 is a compact and robust System-On-Module (SoM) measuring 37mm x 39mm. It is powered by the Rockchip RK3506B/RK3506J triple-core ARM Cortex-A7 processor, clocked at up to 1.5GHz, complemented by a 200MHz Cortex-M0 MCU. The module includes 256MB/512MB of LPDDR3L memory, 256MB Nand Flash or 8GB eMMC storage, and a 32Kbit EEPROM. It offers extensive peripheral and I/O connectivity via a 140-pin Castellated-Hole expansion interface, featuring RGB output, a 2Lane MiPi output with 1.5Gbps per lane, and supports a maximum resolution of 1280x1280@60fps. Additionally, it includes 2x 100Mbps Ethernet interfaces, 2x CAN FD interfaces, 6x UART, and various other communication interfaces. Running on Linux 6.1.99, the MYC-YR3506 comes with comprehensive documentation and software packages, making it an ideal choice for next-generation power intelligent devices, industrial gateways, industrial control equipment, teach pendants, HMIs, commercial displays, and smart home applications that require high reliability and real-time performance.



*MYC-YR3506 Top-view and Bottom-view*

The MYD-YR3506 development board, powered by the MYC-YR3506 SOM, provides a comprehensive range of peripherals to its carrier board via the SOM's 140-pin expansion interface. This includes dual USB 2.0 OTG ports, dual 10/100Mbps Ethernet connections, dual CAN interfaces, dual RS485 ports, a single SPI interface, and a DSMC interface, along with a MIPI-converted HDMI display output and audio input/output capabilities. It stands as an exceptional reference design for RK3506-based solutions.



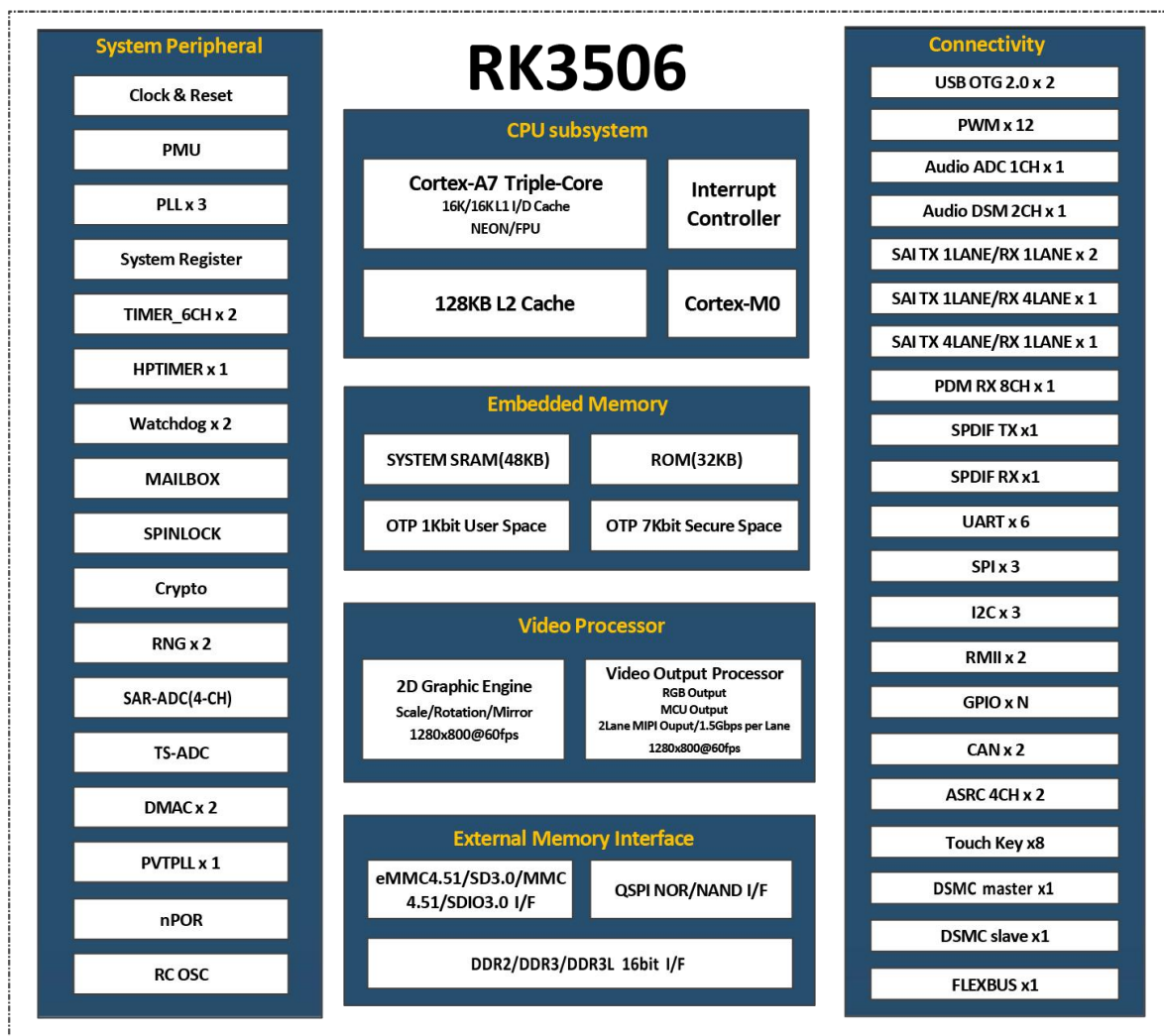
*MYD-YR3506 Development Board*

## Hardware Specification

MYIR utilizes the RK3506B and RK3506J for its MYC-YR3506 System-On-Module. The Rockchip RK3506 series processor is a high-performance chip designed for industrial and commercial applications. It integrates tripe-core ARM Cortex-A7 main CPU and single Cortex-M0 real-time MCU, with 2D graphic engine and support for a variety of display interfaces such as MIPI and Parallel DSI. The processor also integrates rich interfaces such as DSMC (Localbus), FLEXBUS, Dual 100 Mbps Ethernet, USB2.0, CAN, SDIO/SD/MMC, I2C, SPI, and UART, which are suitable for the new generation of power intelligent devices, industrial gateways, industrial control devices, demonstrators, HMIs, commercial displays, and smart homes, etc., which require high reliability and real-time application scenarios.

Features	RK3506G2	RK3506B	RK3506J
CPU Clock Speed	1.2GHz	1.5GHz	1.2GHz
DDR	Embedded DDR3L 128MB	16-bit DDR2/DDR3/DDR3L External Memory	16-bit DDR2/DDR3/DDR3L External Memory
Packaging	QFN128L 12.3mm x 12.3mm	FBGA333L 13.3mm x 11.3mm	FBGA333L 13.3mm x 11.3mm
Working Temp.	-20°C to 80°C	-20°C to 80°C	-40°C to 85°C

*RK3506 Application Processors*



*RK3506 Block Diagram*



The MYC-YR3506 takes full features of RK3506B/RK3506J processor and the main features are characterized as below:

**Mechanical Parameters**

- Dimensions: 37mm x 39mm
- PCB Layers: 8-layer design
- Power supply: +5V/2A
- Working temperature: -40~85 Celsius (industrial grade), 0~70 Celsius (commercial grade)

**Processor**

- Rockchip RK3506B/RK3506J Processor
  - RK3506B: Tripe-core ARM Cortex-A7@1.5GHz + Cortex-M0@200MHz
  - RK3506J: Tripe-core ARM Cortex-A7@1.2GHz + Cortex-M0@200MHz
  - 2D Graphics Engine
  - Supports dual-channel MIPI output, with the maximum output resolution of 1280x1280@60fps

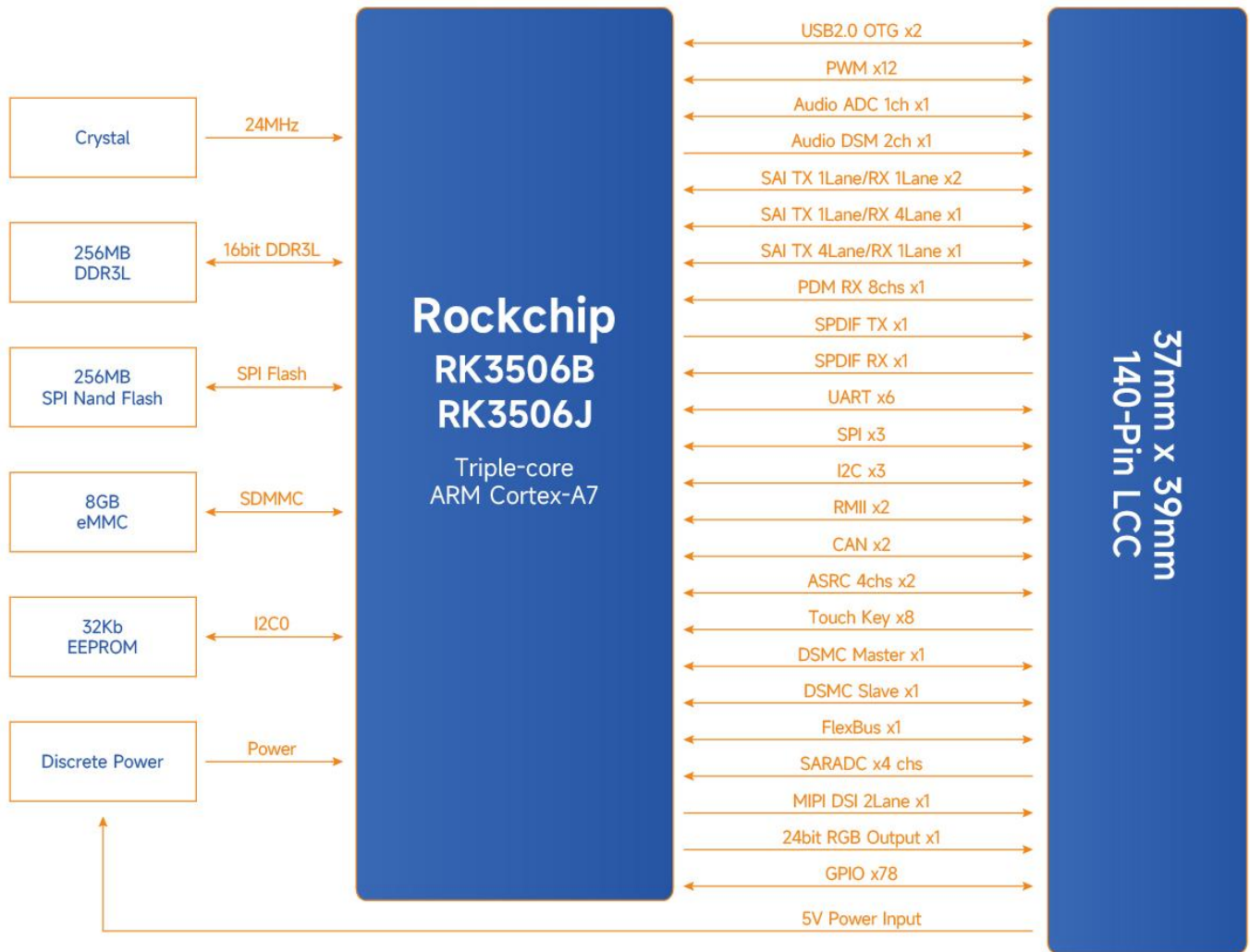
**Memory**

- 256MB/512MB LPDDR3L
- 256MB Nand Flash/8GB eMMC
- 32Kbit EEPROM

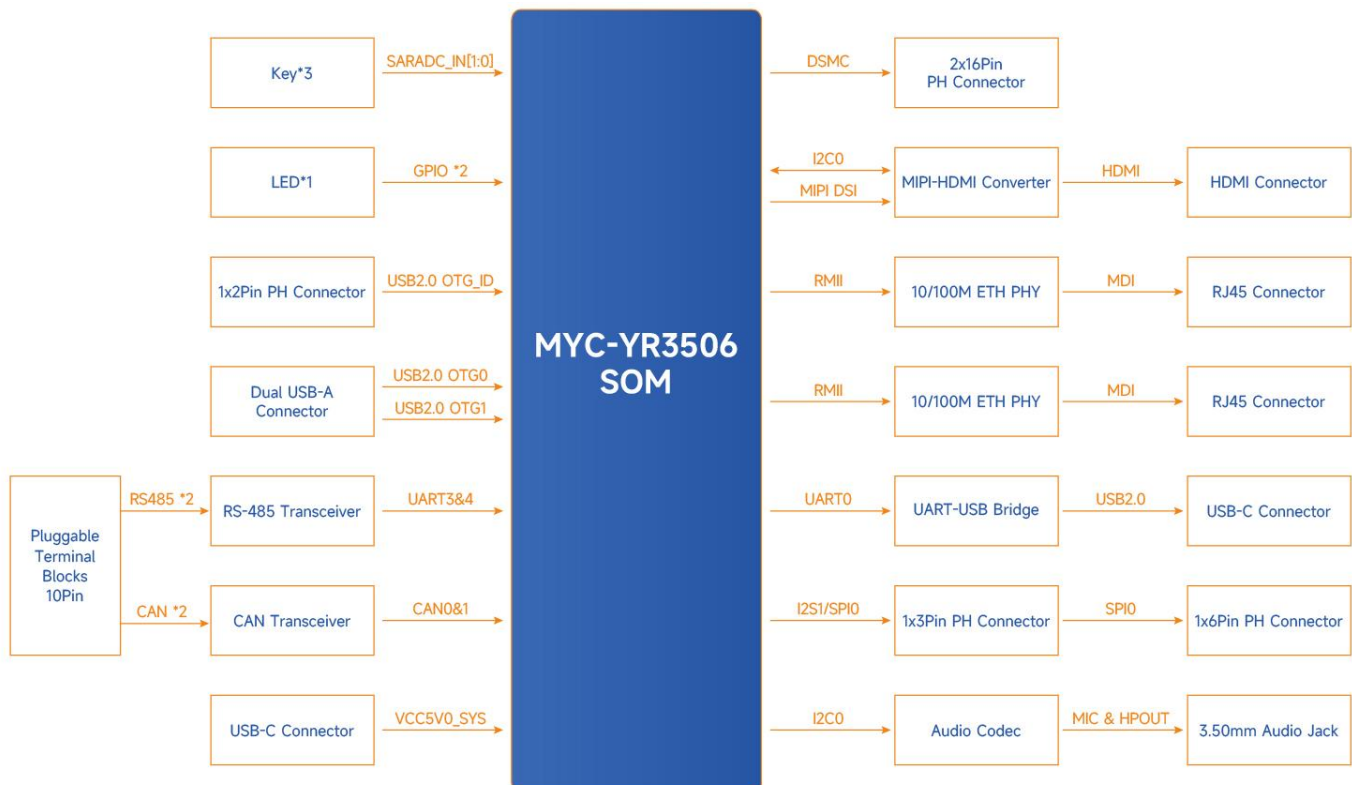
**Peripherals and Signals Routed to Pins**

- 140-pin Castellated-Hole Expansion Interface
  - 2x RMII
  - 2x USB2.0 OTG
  - 3x SPI
  - 6x UART
  - 2x CAN
  - 3x I2C
  - 12x PWM
  - 1x SARADC
  - 1x DSMC Master, 1x DSMC Slave
  - 1x FlexBus
  - 2x MIPI CSI
  - 1x 2Lane MIPI DSI
  - 1x 24-bit RGB output
  - 2x SAI TX 1Lane/RX 1Lane
  - 1x SAI TX 1Lane/RX 4Lane
  - 1x SAI TX 4Lane/RX 1Lane
  - 1x SPDIF TX
  - 1x SPDIF RX
  - 1x PDM RX 8ch
  - 1x Audio ADC 1ch
  - 1x Audio ADC 2ch
  - 2x ASRC 4ch
  - 78x 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-YR3506 Function Block Diagram



MYD-YR3506 Function Block Diagram





## Software Features

The MYC-YR3506 System-On-Module supports Linux 6.1.99 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	SPL	First bootloader	YES
	U-boot	The second boot program uboot_2017.09	YES
Linux kernel	Linux kernel	Customized based on official kernel_6.1.99 version	YES
Device driver	USB OTG	USB OTG driver	YES
	I2C	I2C bus driver	YES
	SPI	SPI bus driver	YES
	Ethernet	YT8522H driver	YES
	Audio	ES8388 audio driver	YES
	MIPI-HDMI	LT9611 driver	YES
	GPIO	General purpose GPIO driver	YES
	RS485	CS48520S driver	YES
	UART	CH342F driver	YES
	CAN	SIT1050T driver	YES
	DSMC	DSMC driver	YES
File system	myir-image-linux	A fully functional image built with buildroot, including all complete hardware drivers, commonly used system tools, debugging tools, etc	YES

*MYC-YR3506 Software Features*



## Order Information

Product Item	Part No.	Packing List
MYC-YR3506 System-On-Module	MYC-YR3506B-8E512D-150-C	✓ One MYC-YR3506 SOM
	MYC-YR3506B-256N256D-150-C	
	MYC-YR3506J-256N256D-120-I	
	MYC-YR3506J-8E512D-120-I	
MYD-YR3506 Development Board	MYD-YR3506B-8E512D-150-C	✓ One MYD-YR3506 Development Board
	MYD-YR3506J-8E512D-120-I	✓ One USB TYPE-C Cable ✓ One Quick Start Guide
<b>Note:</b>  1. One MYD-YR3506 Development Board comprises one MYC-YR3506 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-YR3506, whether it involves reducing, adding or modifying the existing hardware components to suit the customers' specific needs.		



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