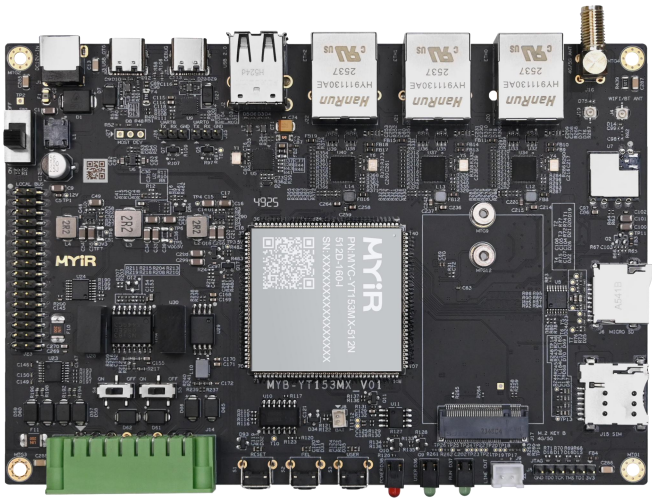
MYiR 米尔电子
Make Your Idea Real

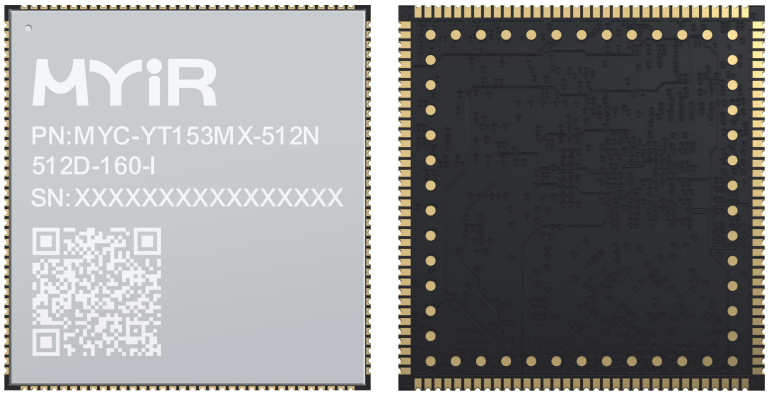
MYD-YT153MX Development Board Overview



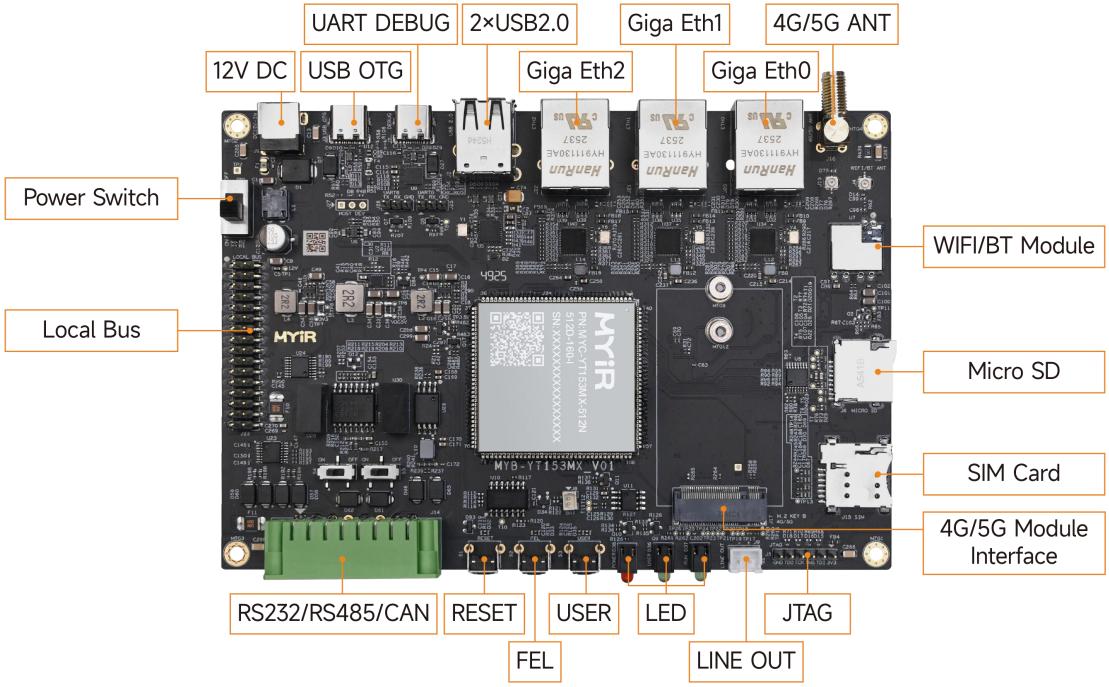
- ✓ *MYC-YT153MX SOM as Controller Board*
- ✓ *Allwinner T153MX-BCX Processor based on 1.6GHz Quad ARM Cortex-A7 and 600MHz RISC-V E907 Cores*
- ✓ *512MB/1GB DDR3(L), 8GB eMMC/512MB NAND FLASH, 32KB EEPROM*
- ✓ *3x Gigabit Ethernet, 2x USB 2.0 Host, 1x USB 2.0, 1x USB Debug Port, 2x RS232, 2x RS485, 1x CAN*
- ✓ *1x Micro SD Card Slot, 1x SIM Card Slot, 1x Localbus Interface, 5G/4G Module Interface, 1x JTAG Interface*
- ✓ *Supports LVDS and HDMI Display, Audio Line Out and MIPI-CSI*
- ✓ *Supports Linux OS*
- ✓ *Optional 7-inch LCD Module and MIPI Camera Module*

The MYD-YT153MX development board is an advanced evaluation platform designed for the Allwinner T153 processor. This processor features a quad-core Arm Cortex-A7 running at 1.6GHz and a single-core RISC-V E907 operating at 600MHz, offering powerful computing performance and fast response capabilities. The T153 supports rich multimedia resources: RGB, LVDS, and MIPI-DSI, and also integrates an ISP image signal processor, supporting one 4-lane sensor. The processor also supports three Gigabit Ethernet interfaces, CAN-FD, LocalBus, 24 GPADCs, 30 PWMs, 6 TWIs, 10 UARTs, and 4 SPIs; suitable for industrial controllers, industrial HMIs, industrial gateways, robots, industrial vision equipment, power terminals, charging piles, and other scenarios.

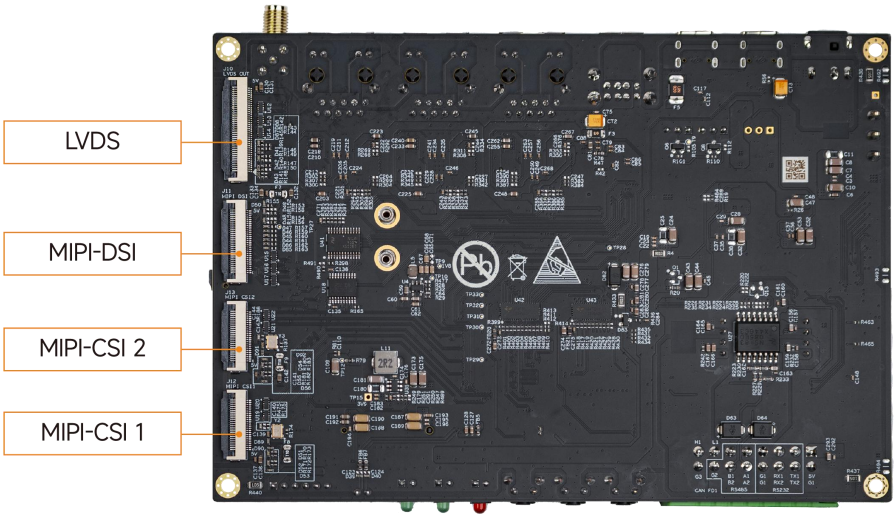
The MYD-YT153MX is equipped with an integrated WiFi/BT module and features versatile connectivity options, including three Gigabit Ethernet ports, two USB 2.0 Host interfaces, one USB 2.0 OTG interface, two RS232, two RS485, and one CAN interface via Phoenix terminals. It also has LVDS, MIPI-DSI, and dual MIPI-CSI interfaces for display and camera integration, along with a LINE OUT audio port. Additionally, there is a microSD card slot, a SIM card slot, a Localbus interface, and a 5G/4G module interface with a USB based M.2 Type B socket, as well as dedicated Debug and JTAG interfaces. To enhance its capabilities, MYIR provides optional accessories such as the MY-LVDS070C 7-inch LVDS Display Module and the MY-CAM003M MIPI Camera Module.



MYC-YT153MX Top-view and Bottom-view



Top-view of MYD-YT153MX Development Board



Bottom-view of MYD-YT153MX Development Board

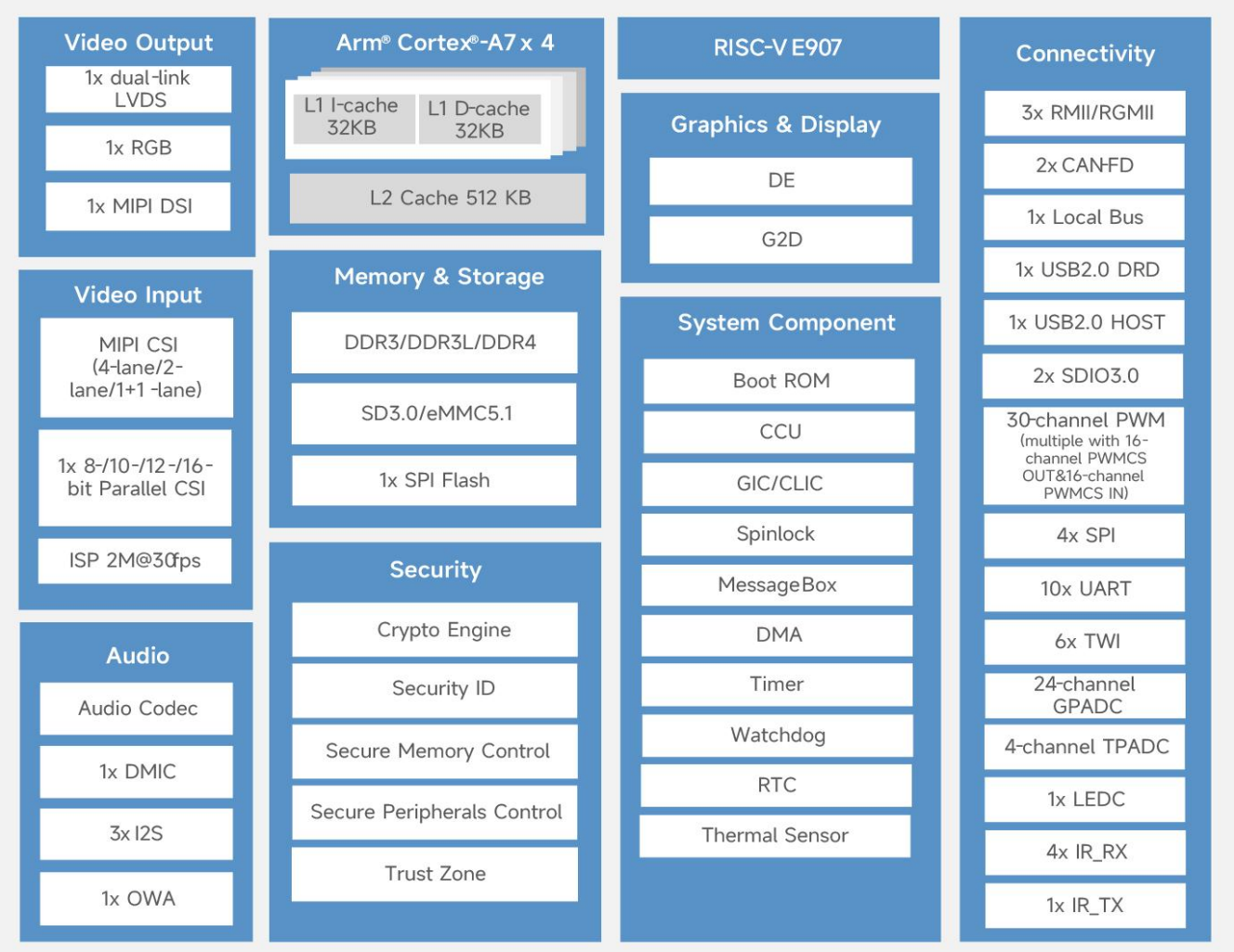
The MYD-YT153MX Development Board is capable of running Linux OS. To support rapid development, MYIR provides a comprehensive software package, including the U-Boot bootloader, full source code for all peripheral drivers, essential development tools, and detailed documentation.

The board comes standard with necessary accessories: a 12V/2A power adapter, a USB Type-A to Type-C cable, and a Quick Start Guide. For expanded functionality, optional accessories such as the MY-LVDS070C 7-inch LCD Module and the MY-CAM003M MIPI Camera Module are also available.

Hardware Specification

The T153 series processor integrates a quad-core Arm Cortex-A7 at 1.6GHz and a single-core RISC-V E907 at 600MHz. It boasts rich multimedia resources: an integrated ISP image signal processor supporting RGB, LVDS, MIPI-DSI (up to 1920x1200@60fps), and MIPI-CSI interfaces. Furthermore, the processor supports three Gigabit Ethernet ports, CAN-FD, LocalBus, 24 GPADCs, 30 PWMs, 6 TWI (I2C) ports, 10 UARTs, and 4 SPIs, among other peripheral expansion interfaces.

It is suitable for industrial controllers, industrial HMIs, industrial gateways, robots, industrial vision equipment, power terminals, charging piles, and other applications.



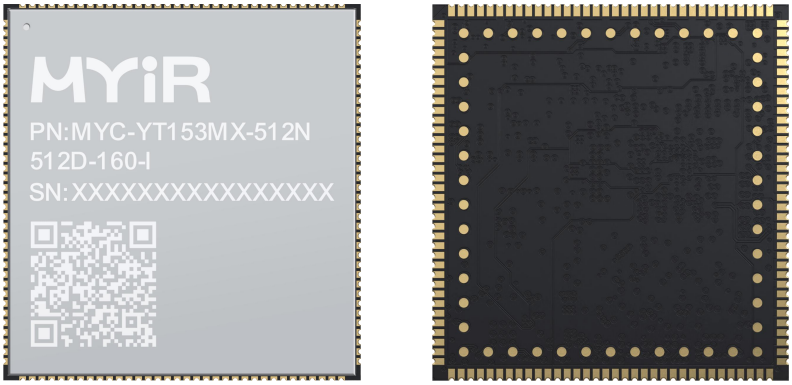
T153 Processor Block Diagram

The MYD-YT153MX Development Board features the MYC-YT153MX System-On-Module as its core controller and is equipped with the Allwinner T153 processor. Its primary characteristics are as follows:

Mechanical Parameters

- Dimensions: 160mm x 110mm (base board), 37mm x 39mm (SOM)
- PCB Layers: 6-layer design (base board), 10-layer design (SOM)
- Power supply: 12V/2A (base board), 5V/2A (SOM)
- Working temperature: -40~85 Celsius (industrial grade)

The MYD-YT153MX Controller Board (MYC-YT153MX System-On-Module)



MYC-YT153MX System-On-Module (Top-view and Bottom-view)

Processor

- Allwinner T153 processor (T153MX-BCX)
  - Quad-Core Arm Cortex-A7, up to 1.6GHz
  - RISC-V XuanTie E907, up to 600MHz
  - Display Enable (DE) and Graphics 2D (G2D) acceleration

Memory

- 512MB DDR3 (Optional 1GB DDR3L)
- 512MB NAND FLASH (Optional 8GB eMMC)
- 32KB EEPROM

Peripherals and Signals Routed to Pins

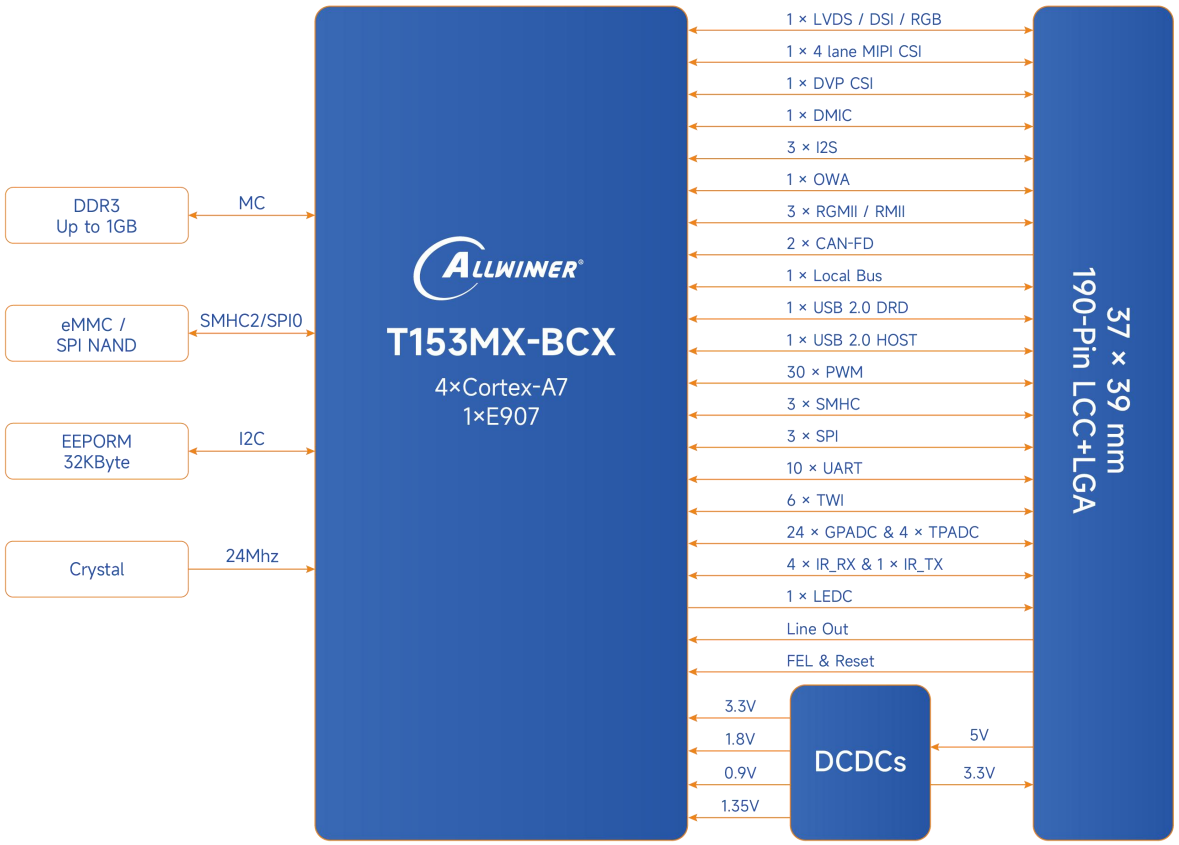
- 3x RMII/RGMII
- 1x Local Bus
- 1x USB 2.0 DRD
- 1x USB 2.0 HOST
- 3x SMHC
- 1x Local Bus
- 10x UART
- 2x CAN FD
- 6x TWI
- 30x PWM
- 3x SPI
- 1x IR-TX

- 4x IR-RX
- 1x LEDC
- 24x GPADC, 12-bit resolution, sampling frequency up to 1MHz, analog input range 0~1.8V
- 4x TPADC, 12-bit resolution, sampling frequency up to 750kHz
- 2x MIPI CSI, supports 1x 4-lane or 2x 2-lane
- 1x Parallel CSI, supports 8/10/12/16-bit width
- 1x MIPI DSI, supports 4 lanes, maximum resolution 1920x1080@60fps
- 1x dual-link LVDS, dual-channel LVDS, maximum resolution 1920x1080@60fps; single-channel LVDS, maximum resolution 1366x768@60fps
- 1x LCD, supports 24-bit RGB interface mode, maximum resolution 1920x1080@60fps, supports RGB888, RGB666, RGB565 pixel formats, etc.
- 1x DMIC
- 1x OWA
- 3x I2S
- 1x Audio Codec
- 1x LINEOUTP/LINEOUTN output

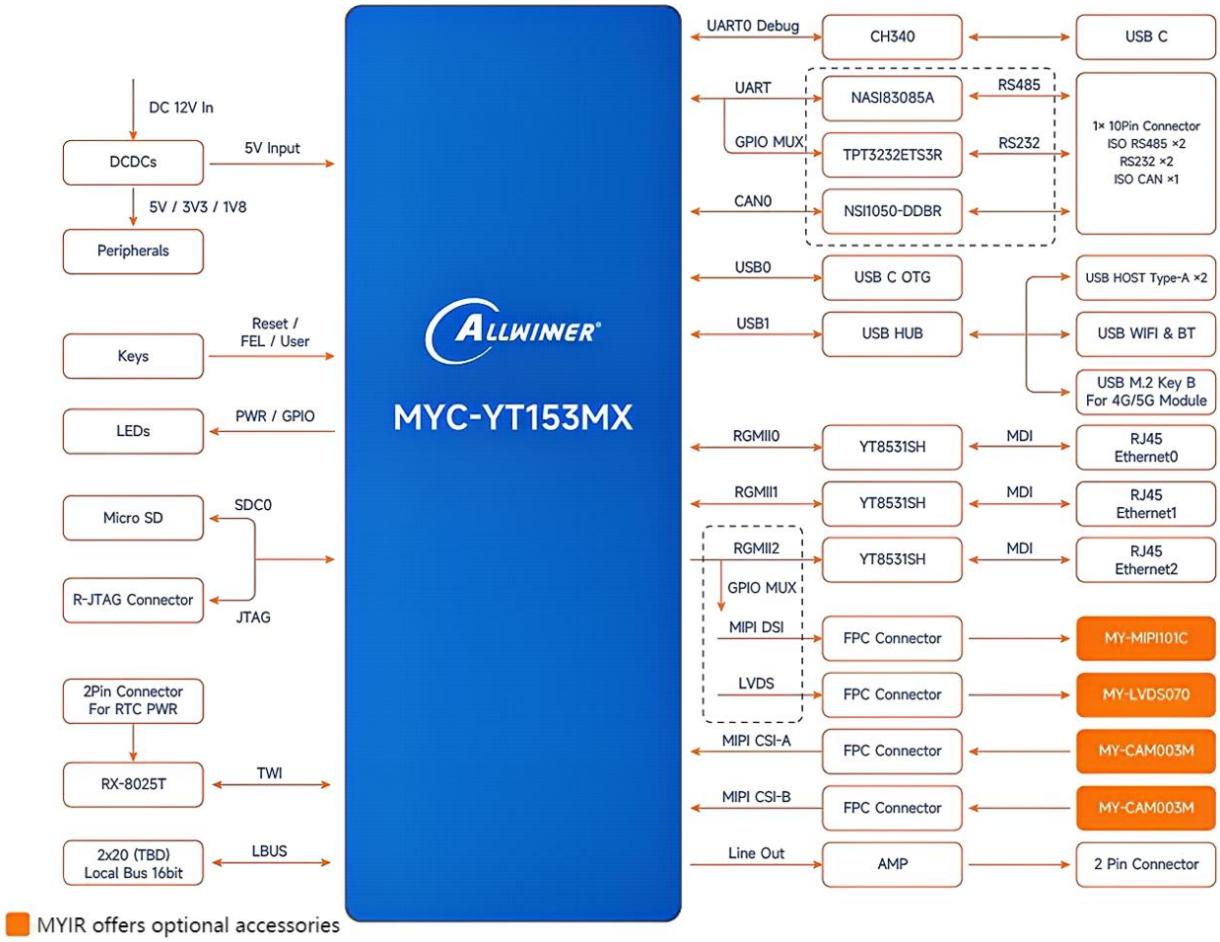
Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet and the SOM pinout description file.

The MYD-YT153MX Development Board Base Board

- 1x Power Jack
- 1x Power Switch
- 2x RS232
- 2x RS485
- 1x USB Debug Port (TTL to USB, Type-C)
- 2x USB 2.0 Host (Type-A)
- 1x USB 2.0 OTG (Type-C)
- 3x Gigabit Ethernet
- 1x WiFi/BT module
- 1x M.2 B-type socket for USB based 4G/5G module
- 1x SIM card slot
- 1x CAN
- 1x Micro SD card slot
- 1x JTAG interface
- 1x 16-bit Local Bus
- 1x LVDS interface
- 1x MIPI-DSI interface
- 2x MIPI-CSI interfaces
- 1x Audio interface (Line out)
- 3x Buttons (1x USER, 1x RESET, 1x FEL)
- 3x LEDs (1x PWR, 1x RUN, 1x USER)



MYC-YT153MX System-On-Module Function Block Diagram



MYD-YT153MX Development Board Function Block Diagram

Software Features

The MYD-YT153MX development board is fully compatible with Linux and comes with a complete set of software packages. To assist clients in speeding up their projects, the source code for the kernel and various peripheral drivers is included. Below is a summary of the main software features:

Item	Features	Description	Source Code
Bootloader	U-boot	Second bootloader uboot 2023.04	YES
Kernel	Linux kernel	Customized base on official kernel_5.10.198 version	YES
Drivers	EEPROM	BL24C32F Driver	YES
	USB OTG	USB OTG Driver	YES
	Ethernet	YT8531SH Driver	YES
	Camera	OV5640 Driver	YES
	MIPI DSI	MIPI DSI Driver	YES
	LVDS	LVDS Driver	YES
	Audio	Audio Driver	YES
	Local Bus	Local Bus Driver	YES
	GPIO	General GPIO Driver	YES
	CAN	CAN Driver	YES
	WiFi/BT	BL-M8733BU2EDriver	YES
File system	myd_yt153_emmc_dsi	Image built with buildroot, displayed via DSI	YES
	myd_yt153_emmc_lvds	Image built with buildroot, displayed via LVDS	YES
	myd_yt153_emmc_rgmii2	Image built with buildroot for multi ethernet interfaces, no display, for MYD-YT153MX	YES

MYD-YT153MX Software Features

Order Information

<table>
<tr><th>Product Item</th><th>Part No.</th><th>Packing List</th></tr>
<tr><td rowspan="3">MYD-YT153MX
Development Board</td><td>MYD-YT153MX-512N512D-160-I</td><td rowspan="3">✓ One MYD-YT153MX Board (including MYC-YT153MX SOM)
✓ One USB Type A to Type-C cable
✓ One12V/2A power adapter
✓ One Quick Start Guide</td></tr>
<tr><td>MYD-YT153MX-8E512D-160-I</td></tr>
<tr><td>MYD-YT153MX-8E1D-160-I</td></tr>
<tr><td rowspan="3">MYC-YT153MX
System-On-Module</td><td>MYC-YT153MX-512N512D-160-I</td><td rowspan="3">✓ One MYC-YT153MX SOM</td></tr>
<tr><td>MYC-YT153MX-8E512D-160-I</td></tr>
<tr><td>MYC-YT153MX-8E1D-160-I</td></tr>
<tr><td>MY-LVDS070C
7-inch LCD Module</td><td>MY-LVDS070C</td><td rowspan="2">Add-on Options
✓ MY-LVDS070C 7-inch LCD Module
✓ MY-CAM003M MIPI Camera Module</td></tr>
<tr><td>MY-CAM003M
MIPI Camera Module</td><td>MY-CAM003M</td></tr>
<tr><td colspan="3">Note:

1. One MYD-YT153MX Development Board comprises one MYC-YT153MX 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-YT153MX, whether reducing, adding or modifying the existing hardware according to customer's requirement.</td></tr>
</table>

MYIR Electronics Limited
Headquarter Address: Room 04, 6th Floor, Building No.2, Fada Road, Yunli Smart Park, Bantian, Longgang District, Shenzhen, Guangdong, China 518129

Factory Address: Room 201, Block C, Shengjianli Industrial Park, Dafu Industrial Zone, Guanlan, Longhua District, Shenzhen, 518110, China

Website: en.myir.cn
Email: sales@myir.cn
Tel: +86-755-22984836