MYiR 米尔电子
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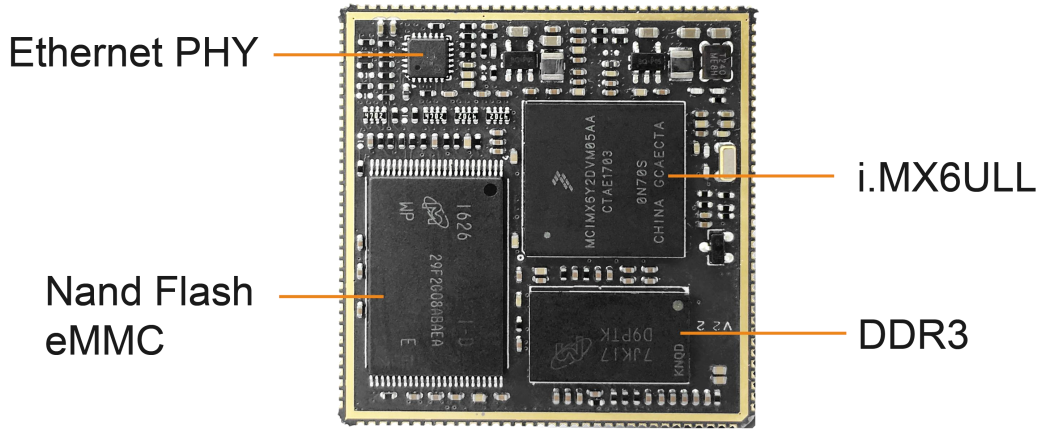
MYC-Y6ULX-V2 CPU Module

Overview

- ✓ *528MHz NXP i.MX 6UL/6ULL ARM Cortex-A7 Processors*
- ✓ *256MB DDR3 SDRAM*
- ✓ *256MB Nand Flash (4GB eMMC Flash is optional)*
- ✓ *On-board 10/100M Ethernet PHY*
- ✓ *1.0mm pitch 140-pin Stamp Hole Expansion Interface*
- ✓ *Ready-to-Run Linux 5.4.3*

Measuring only 37mm by 39mm, the **MYC-Y6ULX-V2 CPU Module** is covered with shield and powered by **NXP i.MX 6UltraLite/6ULL** processor based on the **ARM Cortex-A7** architecture. It is an updated version of **MYC-Y6ULX** with new PCB lamination and thickness, as well as the shield design; but it is fully compatible with **MYC-Y6ULX**. With a choice of G2 and Y2 sub family processors running at 528MHz and integrated 256MB DDR3 and 256MB Nand Flash (4GB eMMC Flash is optional), the **MYC-Y6ULX-V2** module delivers high performance with ultra-efficient power that targets Industry Control, Communications, HMI, Smart Healthcare and Internet of Things (IoT) applications. It carries out as many as peripheral signals and IOs through 1.0mm pitch 140-pin stamp hole expansion interface to allow customer's extension for their next embedded design. The module is ready to run Linux and can support industrial operating temperature range from -40 to +85 Celsius.



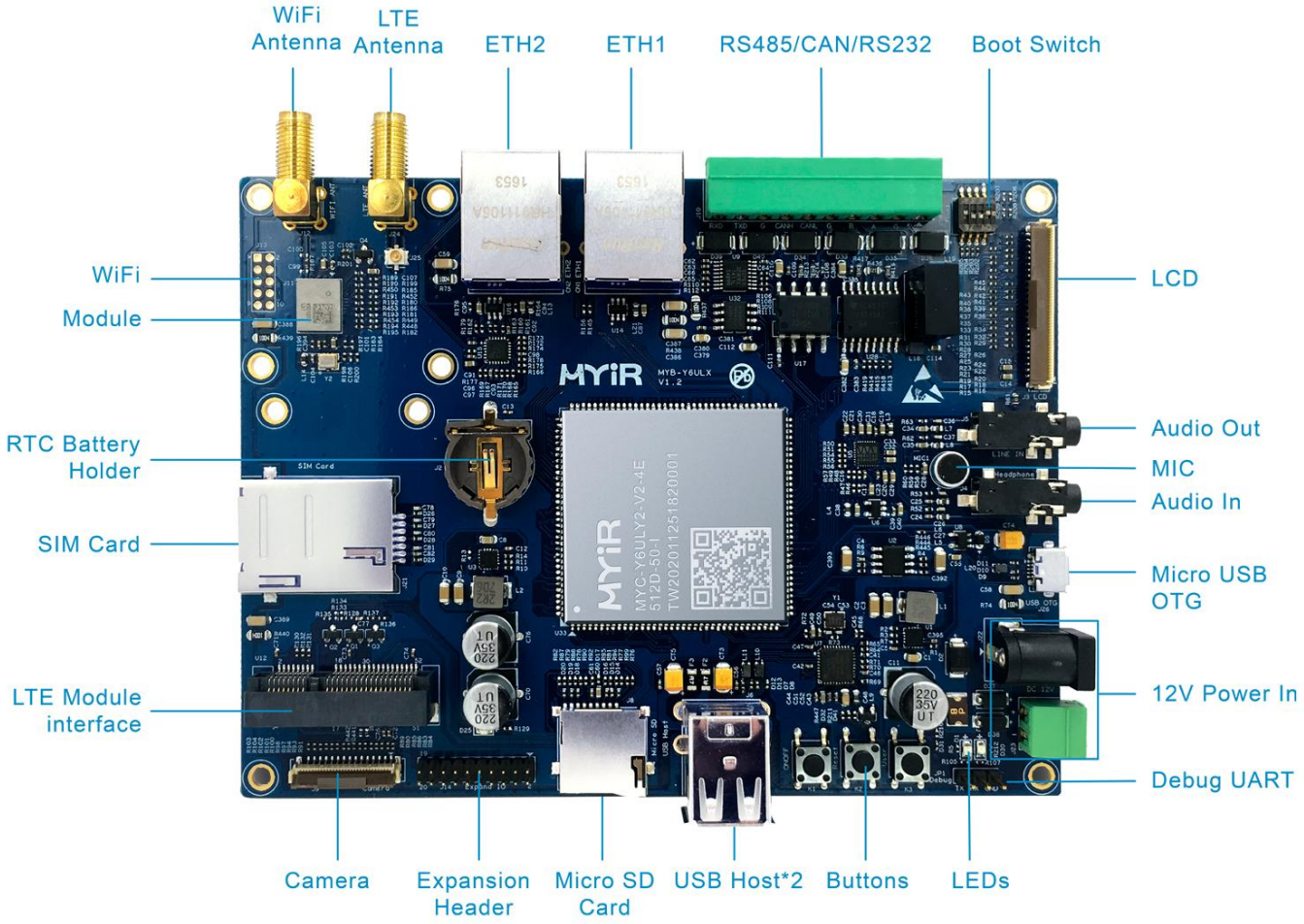
MYC-Y6ULX-V2 CPU Module Top-view (delivered with shielding cover by default)

MYIR provides five standard models of **MYC-Y6ULX-V2 CPU Module** with mainly different features as shown in below table. User can select model according to their own requirement.

Part No.	MYC-Y6ULG2-V2-256N256D-50-I	MYC-Y6ULY2-V2-256N256D-50-C / MYC-Y6ULY2-V2-256N256D-50-I	MYC-Y6ULY2-V2-4E512D-50-C / MYC-Y6ULY2-V2-4E512D-50-I
Processor	MCIMX6G2CVM05A	MCIMX6Y2DVM05A	MCIMX6Y2DVM05A
RAM	256MB DDR3	256MB DDR3	512MB DDR3
Flash	256MB Nand Flash	256MB Nand Flash	4GB eMMC
Working Temp.	-40 to +85 Celsius (-I)	0 to +70 Celsius (-C) / -40 to +85 Celsius (-I)	0 to +70 Celsius (-C) / -40 to +85 Celsius (-I)

Five Models of MYC-Y6ULX-V2 (standard configurations)

MYIR also offers a development board **MYD-Y6ULX-V2** which is built around the **MYC-Y6ULX-V2 CPU Module** with a specially designed base board. A variety of peripheral interfaces have been brought out to the base board through headers and connectors including serial ports, two USB Host, one USB OTG, two 10/100Mbps Ethernet, CAN, Camera, LCD, Audio, TF card as well as a Mini PCIe interface for 4G LTE Module. The board also has an integrated WiFi Module with external antenna to allow wireless communications. Along with some cable accessories, the **MYD-Y6ULX-V2** is a complete evaluation platform and reference design for development based on i.MX 6UL/6ULL processors.



MYD-Y6ULX-V2 Development Board

Hardware Specification

The **MYC-Y6ULX-V2 CPU Module** is using the 14 x 14mm, 0.8 mm ball pitch, 289 MAPBGA package 528 MHz i.MX 6UltraLite / i.MX 6ULL ARM Cortex-A7 application processor which provides multiple compatible options of G0, G1, G2, G3, Y0, Y1 and Y2 sub family. The MCIMX6G2CVM05AB and MCIMX6Y2DVM05AA are optional as the default part with the board.

Expanding the i.MX 6 series, the i.MX 6UltraLite is a high performance, ultra-efficient processor family featuring an advanced implementation of a single ARM® Cortex®-A7 core, which operates at speed up to 696 MHz. The i.MX 6UltraLite applications processor includes an integrated power management module that reduces the complexity of external power supply and simplifies power sequencing. Each processor in this family provides various memory interfaces, including 16-bit LPDDR2, DDR3, DDR3L, raw and managed NAND flash, NOR flash, eMMC, Quad SPI and a wide range of other interfaces for connecting peripherals such as WLAN, Bluetooth™, GPS, displays and camera sensors.

Feature	MCIMX6G0	MCIMX6G1	MCIMX6G2	MCIMX6G3
Speed	528 MHz	528 MHz, 696 MHz	528 MHz, 696 MHz	528 MHz
Cache	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D 128 KB L2	32 KB-I, 32 KB-D 128 KB L2	32 KB-I, 32 KB-D 128 KB L2
OCRAM	128 KB	128 KB	128 KB	128 KB
DRAM	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR4L	16-bit LP-DDR2, DDR3/DDR5L	16-bit LP-DDR2, DDR3/DDR6L
eFuse	512-bit	1024-bit	1536-bit	2048-bit
NAND (BCH40)	Yes	Yes	Yes	Yes
EBI	Yes	Yes	Yes	Yes
Ethernet	10/100-Mbit/s x 1	10/100-Mbit/s x 1	10/100-Mbit/s x 2	10/100-Mbit/s x 2
USB	OTG, HS/FS x 1	OTG, HS/FS x 2	OTG, HS/FS x 2	OTG, HS/FS x 2
CAN	0	1	2	2
Security	Basic	TRNG, Crypto Engine (AES/TDES/SHA), Secure Boot	TRNG, Crypto Engine (AES/TDES/SHA), Secure Boot	TRNG, Crypto Engine (AES with DPA/TDES/SHA/RSA), Secure Boot, tamper monitor, PCI4.0 pre-certification, OTF DRAM encryption
Graphic	None	None	PxP	PxP
CSI	None	None	24-bit Parallel CSI	24-bit Parallel CSI
LCD	None	None	24-bit Parallel LCD	24-bit Parallel LCD
Quad SPI	1	1	1	1
SDIO	2	2	2	2
UART	4	8	8	8
I2C	2	4	4	4
SPI	2	4	4	4
I2S/SAI	1	3	3	3
S/PDIF	1	1	1	1
Timer/PWM	Timer x 2, PWM x 4	Timer x 4, PWM x 8	Timer x 4, PWM x 8	Timer x 4, PWM x 8
12-bit ADC	1 x 10-ch.	1 x 10-ch.	2 x 10-ch.	2 x 10-ch.

i.MX 6UL Device Options

The i.MX 6ULL is a power efficient and cost optimized application processor family featuring an advanced implementation of a single ARM Cortex-A7 core, which operates at speeds up to 900 MHz. The i.MX 6ULL applications processor includes an integrated power management module that reduces the complexity of an external power supply and simplifies power sequencing. Each processor in this family provides various memory interfaces, including 16-bit LPDDR2, DDR3, DDR3L, raw and managed NAND flash, NOR flash, eMMC, Quad SPI and a wide range of other interfaces for connecting peripherals such as WLAN, Bluetooth®, GPS, displays and camera sensors.

Feature	MCIMX6Y0	MCIMX6Y1	MCIMX6Y2
Core	ARM® Cortex-A7	ARM® Cortex-A7	ARM® Cortex-A7
Speed	528 MHz	528 MHz	528 MHz
Cache	32 KB-I, 32 KB-D	32 KB-I, 32 KB-D 128 KB L2	32 KB-I, 32 KB-D 128 KB L2
OCRAM	128 KB	128 KB	128 KB
DRAM	16-bit LP-DDR2, DDR3/DDR3L	16-bit LP-DDR2, DDR3/DDR4L	16-bit LP-DDR2, DDR3/DDR5L
eFuse	256-bit	256-bit	256-bit
NAND (BCH40)	Yes	Yes	Yes
EBI	Yes	Yes	Yes
Ethernet	10/100-Mbit/s x 1	10/100-Mbit/s x 1	10/100-Mbit/s x 2
USB	OTG, HS/FS x 1	OTG, HS/FS x 2	OTG, HS/FS x 2
CAN	0	1	2
Graphic	None	None	PxP
CSI	None	None	16-bit Parallel CSI
LCD	None	None	24-bit Parallel LCD
Quad SPI	1	1	1
SDIO	2	2	2
UART	4	8	8
I2C	2	4	4
SPI	2	4	4
I2S/SAI	1	3	3
ESAI	1	1	1
S/PDIF	1	1	1
Timer/PWM	Timer x 2, PWM x 4	Timer x 4, PWM x 8	Timer x 4, PWM x 8
12-bit ADC	1 x 10-ch.	1 x 10-ch.	2 x 10-ch.
Security	None	AES-128, HAB	AES-128, HAB
Temperature	-40°C to 105°C (Tj)	-40°C to 105°C (Tj)	0°C to 90°C (Tj)

i.MX 6ULL Device Options

Mechanical Parameters

- Dimensions: 37mm x 39mm
- PCB Layers: 10-layer design
- Power supply: 3.3V/0.3A
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)

Processor

- 528MHz NXP i.MX 6UltraLite / i.MX 6ULL ARM Cortex-A7 processor (MCIMX6G2CVM05A or MCIMX6Y2DVM05A by default)

Memory

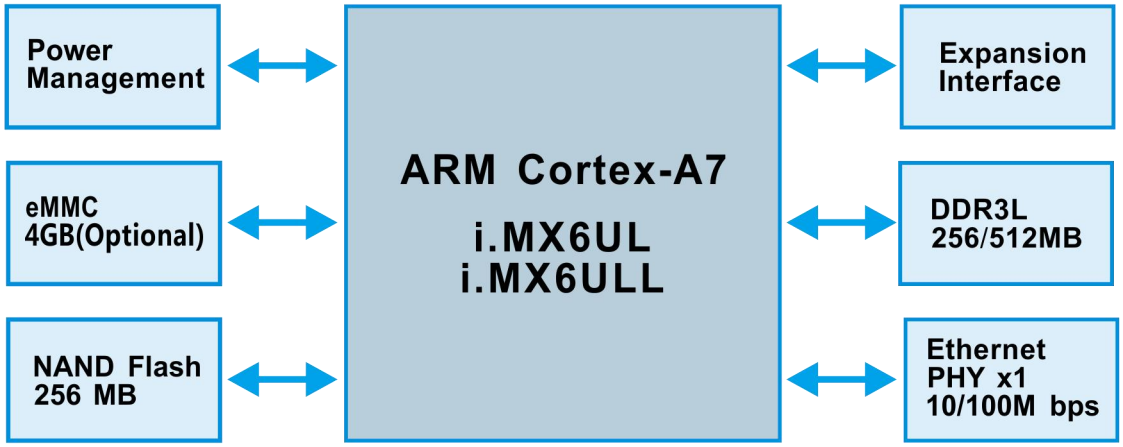
- 256MB DDR3 SDRAM (supports up to 1GB)
- 256MB Nand Flash (4GB eMMC Flash is optional)

Peripherals and Signals Routed to Pins

- One 10/100M Ethernet PHY
- 1.0mm pitch 140-pin stamp hole expansion interface
  - 2 x 10/100Mbps Ethernet
  - 8 x Serial ports
  - 4 x I2C
  - 2 x CAN
  - 4 x SPI
  - 8 x ADC
  - 8 x PWM
  - 3 x I2S
  - 1 x Parallel Camera Sensor Interface
  - 1 x JTAG
  - 1 x 24-bit LCD interface
  - Up to 97 x GPIOs

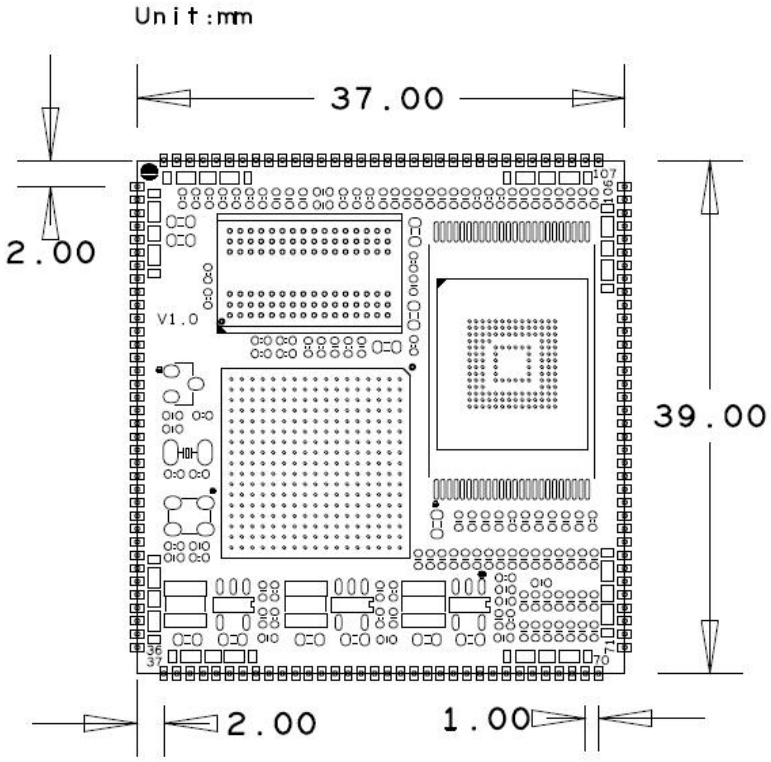
Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet.

Function Block Diagram



MYC-Y6ULX-V2 Function Block Diagram

Dimension Chart of MYC-Y6ULX



MYC-Y6ULX-V2 Dimension Chart

Software Features

MYIR's **MYC-Y6ULX-V2 CPU module** supports for Linux and is provided with software packages. Many peripheral drivers are in source code to help accelerate customers' designs with a stable and reliable hardware and software platform. The software features are summarized as below:

Item	Features	Description
Bootstrap program	U-boot-2020	The primary bootstrap (source code)
Kernel	Version	Linux 5.4.3 (source code)
Linux Drivers	USB	HOST and OTG driver (source code)
	Ethernet	Ethernet driver (source code)
	MMC/SD	MMC/SD card driver (source code)
	NandFlash	Nand Flash driver (source code)
	eMMC	eMMC driver (source code)
	UART	UART driver (source code)
	LCD Controller	LCD driver (source code, supports MYIR's 4.3- and 7- inch LCD)
	RTC	RTC driver (source code)
	Touch Panel	Resistive and Capacitive touch screen driver (source code)
	GPIO Button	Button driver (source code)
	GPIO LED	LED driver (source code)
	CAN	CAN driver (source code)
	RS485	RS485 driver (source code)
	WiFi	WiFi Module driver (SDIO signal, source code)
	4G LTE	4G LTE Module driver (USB signal, source code)
	Camera	Camera driver (source code, supports MYIR's MY-CAM011B)
	Audio	Audio (wm8904) driver (source code)
	SPI	SPI driver (source code)
File System	Yocto	Yocto3.0, including QT5.13 (source code)
Compiler Tool Chain	Linaro GCC 4.9 hf	Binary file
	MetaToolchain	Built by Yocto, GCC 5.3 (Binary file)
	Applications Tool Chain	Built by Yocto, GCC 5.3 (Binary file)

Software Features of MYC-Y6ULX-V2

Order Information

Product Item	Part No.	Packing List
MYC-Y6ULX-V2 CPU Module	MYC-Y6ULG2-V2-256N256D-50-I	✓ One MYC-Y6ULX-V2 CPU Module
	MYC-Y6ULY2-V2-256N256D-50-C	
	MYC-Y6ULY2-V2-256N256D-50-I	
	MYC-Y6ULY2-V2-4E512D-50-C	
	MYC-Y6ULY2-V2-4E512D-50-I	
MYD-Y6ULX-V2 Development Board	MYD-Y6ULG2-V2-256N256D-50-I	✓ One MYD-Y6ULX-V2 Board ✓ One 12V/1.5A Power adapter ✓ One USB cable ✓ One Ethernet cable ✓ One 4G LTE antenna ✓ One WiFi antenna (MYD-Y6ULY2-V2-4E512D-50-C/I is without WiFi antenna delivered.)
	MYD-Y6ULY2-V2-256N256D-50-C	
	MYD-Y6ULY2-V2-256N256D-50-I	
	MYD-Y6ULY2-V2-4E512D-50-C	
	MYD-Y6ULY2-V2-4E512D-50-I	
MY-LCD43TP LCD Module	MY-TFT043RV2	**Add-on Options** ✓ MYD-Y6ULX-V2 Development Board ✓ MY-LCD43TP 4.3-inch LCD Module ✓ MY-LCD70TP 7-inch LCD Module ✓ MY-LCD70TP-C 7-inch LCD Module ✓ MY-CAM002U Camera Module
MY-LCD70TP LCD Module	MY-TFT070RV2	
MY-LCD70TP-C LCD Module	MY-TFT070CV2	
MY-CAM002U Camera Module	MY-CAM002U	

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