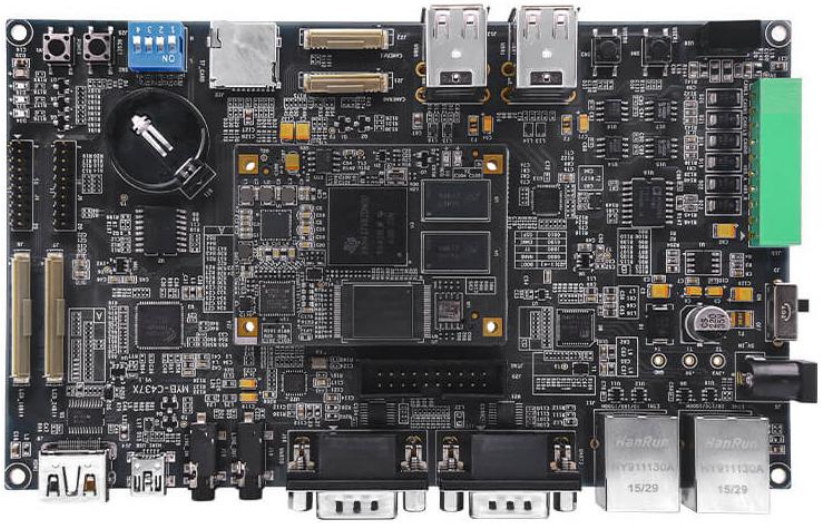
MYiR 米尔电子
Make Your Idea Real

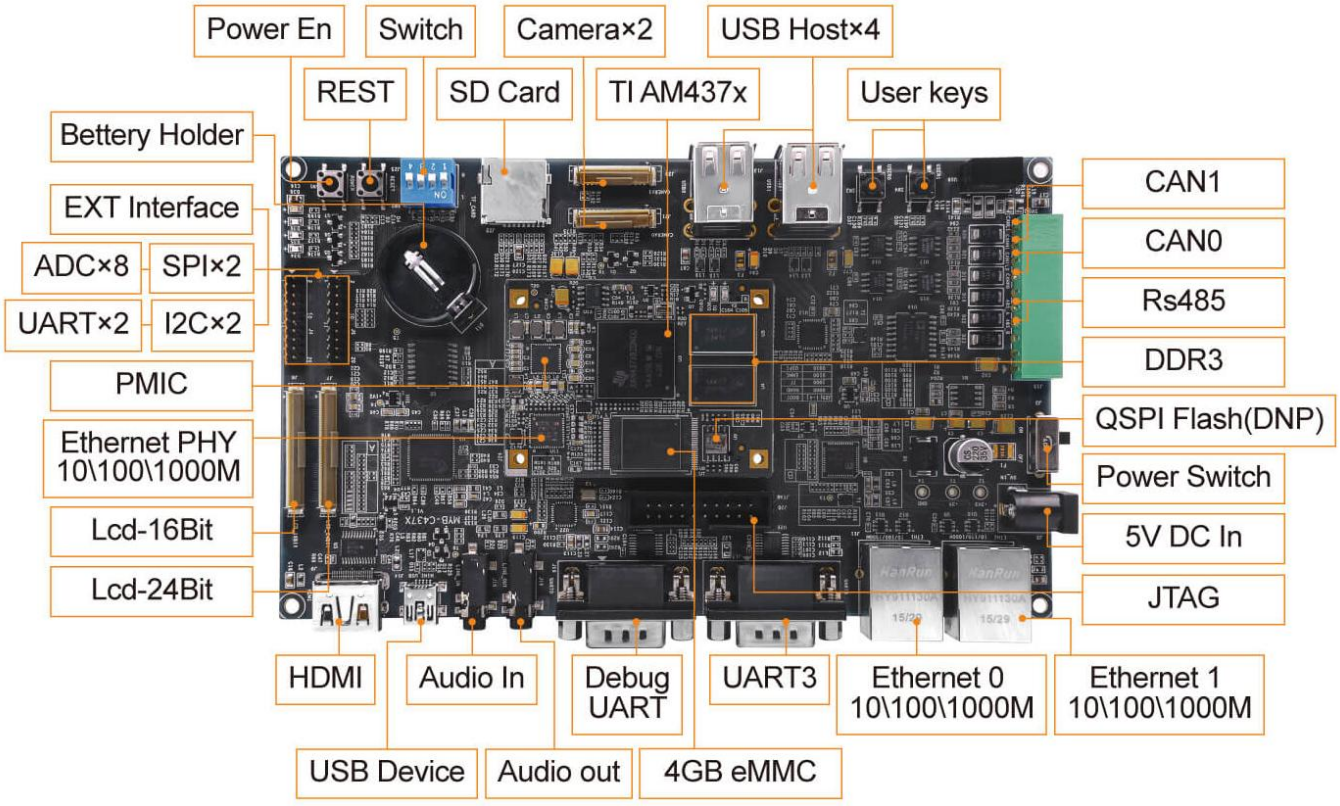
MYD-C437X-V2 Development Board Overview



- ✓ *MYC-C437X-V2 System-On-Module as Controller Board*
- ✓ *Two 0.8mm pitch 100-pin Connectors for Board-to-Board Connections*
- ✓ *Up to 1GHz TI AM437x Series ARM Cortex-A9 Processors*
- ✓ *512MB DDR3 SDRAM, 4GB eMMC Flash, 32KB EEPROM*
- ✓ *2 x Serial ports, 4 x USB Host, 1 x USB Device, 2 x Gigabit Ethernet, 2 x CAN, RS485, 2 x Camera, TF*
- ✓ *Supports HDMI and LCD Display*
- ✓ *Optional 4.3 or 7 inch LCD/TSP Module, WiFi and Camera Modules*
- ✓ *Ready-to-Run Linux 4.1.18*

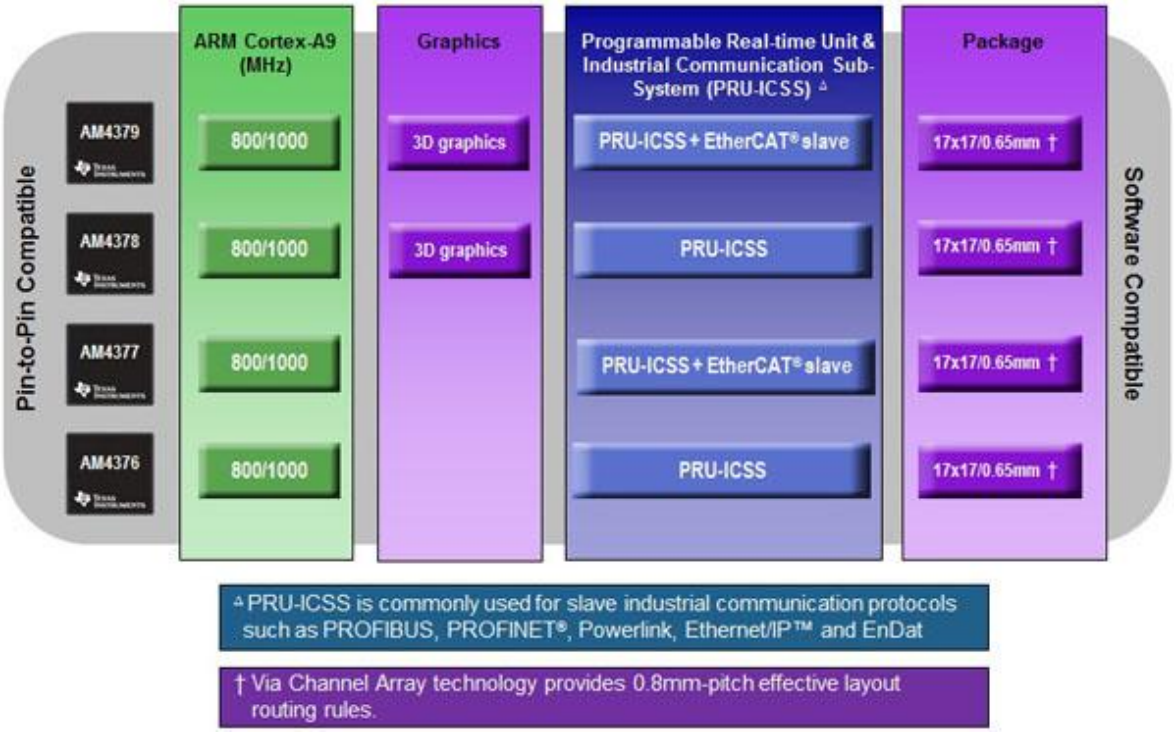
The MYD-AM437X-V2 Development Board is a complete evaluation platform for Texas Instruments (TI) Sitara **AM437x** family (AM4376, AM4377, AM4378 and AM4379) of ARM Cortex-A9 Microprocessors (MPUs) with optional 3D graphics acceleration and a quad-core Programmable Real-time Unit (PRU) as well as dual camera support. Typical applications are patient monitoring, navigation equipment, industrial automation, portable data terminals, bar code scanners, point of service, portable mobile radios, test and measurement and more others.

The MYD-AM437X-V2 development board is using the MYC-AM437X-V2 System-On-Module as the core controller board which integrates the core components including the AM437x processor, optional 512MB DDR3, 4GB eMMC, 32KB EEPROM, Gigabit PHY and PMIC (TPS65218). The MYC-AM437X CPU Module is mounted onto the MYD-AM437X base board through two 0.8mm pitch 2*50-pin board-to-board connectors. In addition to those functions provided by the SOM, the base board has extended a rich set of peripherals through headers and connectors from the SOM and some extended controller chips including two serial ports, four USB Host ports, one USB Device port, dual Gigabit Ethernet ports, one CAN, one RS485, two Camera interfaces, one Micro SD, HDMI, LCD, Touch screen and more others.



MYD-C437X-V2 Development Board

The MYC-C437X-V2 SOM series have four models with different AM437x processors. They are sharing the same pin-out with software fully compatible. And the minor differences are mainly from the processors features. MYIR delivers the board with AM4378 by default.

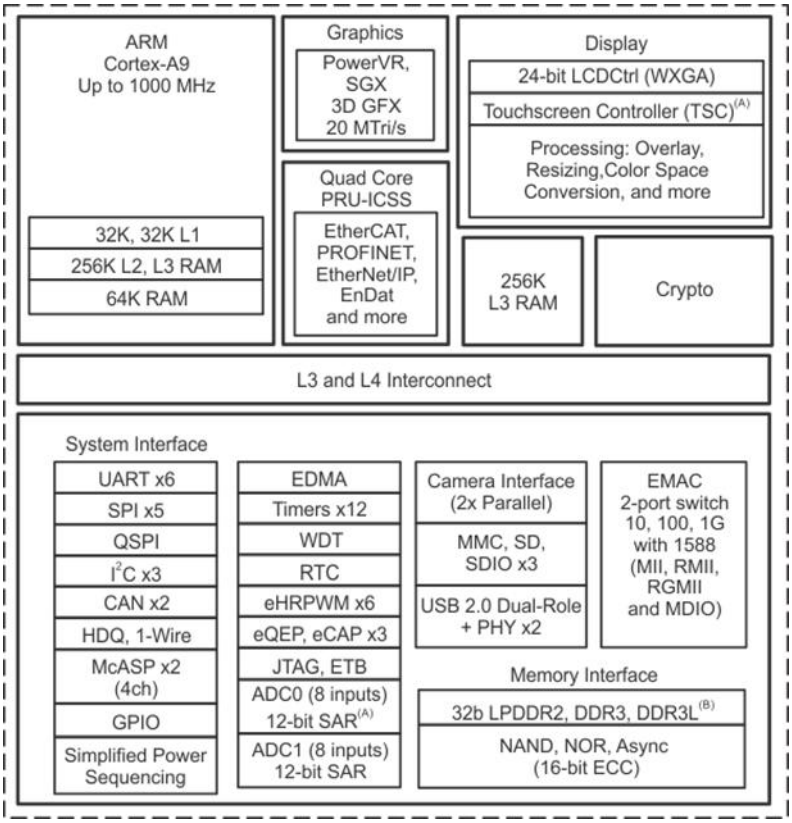


AM437x Devices Comparison

The MYD-C437X-V2 board is able to run Linux OS. It is delivered with some necessary cable accessories and a product disk containing Linux 4.1.18 software packages and detailed documents. MYIR also offers optional 4.3- and 7-inch LCD module (with touch screen), USB based Wi-Fi and Camera modules and SDIO based Camera modules for the MYD-C437X-V2 board. The complete platform provides a quick AM437x starter kit for users when getting the goods out-of-the-box right away.

Hardware Specification

The TI AM437x high-performance processors are based on the ARM Cortex-A9 core. Customers using this next generation solution will see an increase in performance, as well as extensive reuse from the ARM Cortex-A8 offerings.



A. Use of TSC will limit available ADC0 inputs.

B. Max clock: LPDDR2 = 266 MHz; DDR3/DDR3L = 400 MHz

AM437x Function Block Diagram

Increasing performance and peripheral support

Sitara AM437x processors deliver the right balance of:

Performance

- Up to 1GHz of processing power
- 3D graphics accelerator
- On-chip quad-core PRU co-processor for real-time processing
- Improved vector floating-point unit

Interfaces

- LPDDR2/DDR3
- QSPI
- Display subsystem

Connectivity

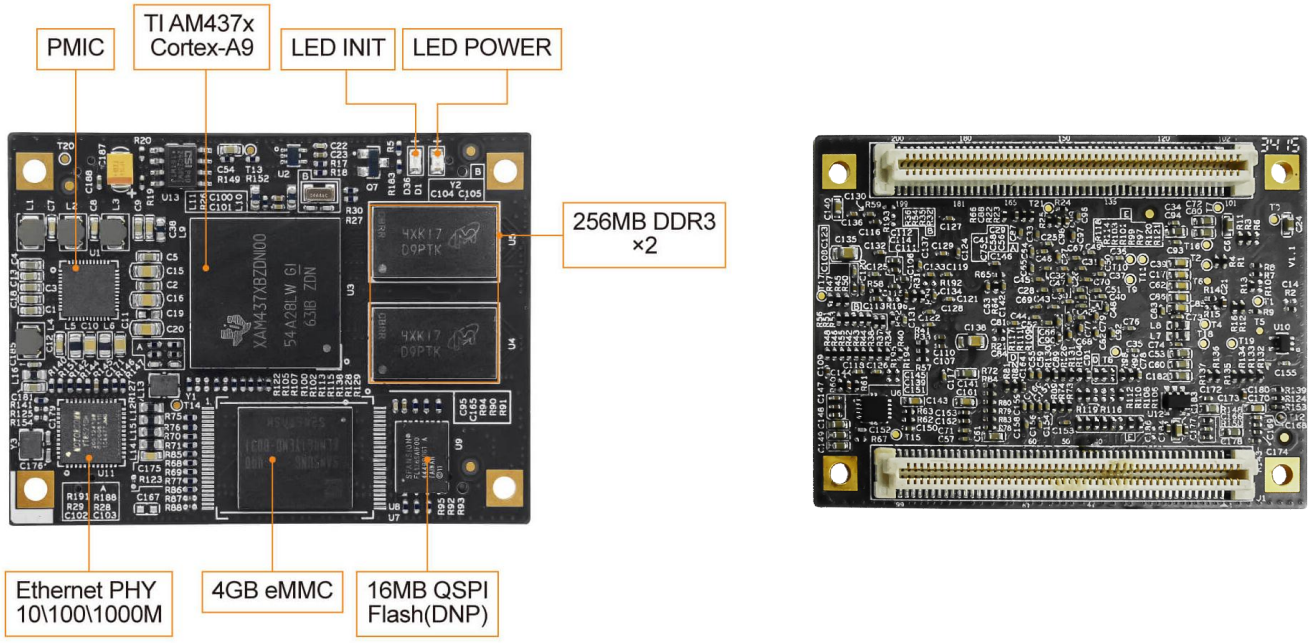
- Two parallel camera ports
- Dual-port 1Gb Ethernet switch
- Two independent, eight-channel ADCs
- WiLink connectivity drivers
- Industrial protocols via PRU-ICSS

The MYD-C437X-V2 has a System-On-Module MYC-C437X-V2 integrated with AM437x processor, DDR3 SDRAM, eMMC Flash, Gigabit Ethernet PHY and Power Management IC on it, which exposes many of these features to the user in support of developing specific solutions. The SOM can be mounted directly onto the base board through two 0.8mm pitch 100-pin expansion connectors. This board is characterized as follows:

Mechanical Parameters

- Dimensions: 177mm x 106mm (base board), 60mm x 45mm (SOM)
- PCB Layers: 4-layer design (base board), 8-layer design (SOM)
- Power supply: +5V/2A (base board), +5V/0.33A (SOM)
- System static power: about 5V/0.2A (base board), about 5V/0.7A (base board + SOM)
  about 5V/1.1A (base board + SOM + 4.3-inch LCD)
  about 5V/1.2A (base board + SOM +7-inch LCD)
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)

The MYD-C437X-V2 Controller Board (MYC-C437X-V2 SOM)



MYC-C437X-V2 System-On-Module

Processor

- TI AM437x (AM4376, AM4377, AM4378, AM4379)
  - Up to 1GHz Sitara ARM Cortex-A9 32-Bit RISC processor
  - POWERVR SGX Graphics Accelerator subsystem for 3D graphics acceleration to support display and gaming effects
  - Single-cycle vector floating point (VFP)
  - Dual camera and display processing subsystem
  - Cryptographic acceleration and secure boot
  - PRU-ICSS enables simultaneous industrial Ethernet protocols and motor feedback protocols
  - Support for 32 bit LPDDR2/DDR3/DDR3L
  - Low power: ~5mW deep sleep and < 0.1mW RTC-only
  - Simplified power sequence for flexible power design

Memory

- 512MB DDR3 SDRAM (256MB is optional)
- 4GB eMMC Flash (reserved 256/512MB Nand Flash design)
- 16MB QSPI Flash (reserved design, not soldered)
- 32KB EEPROM

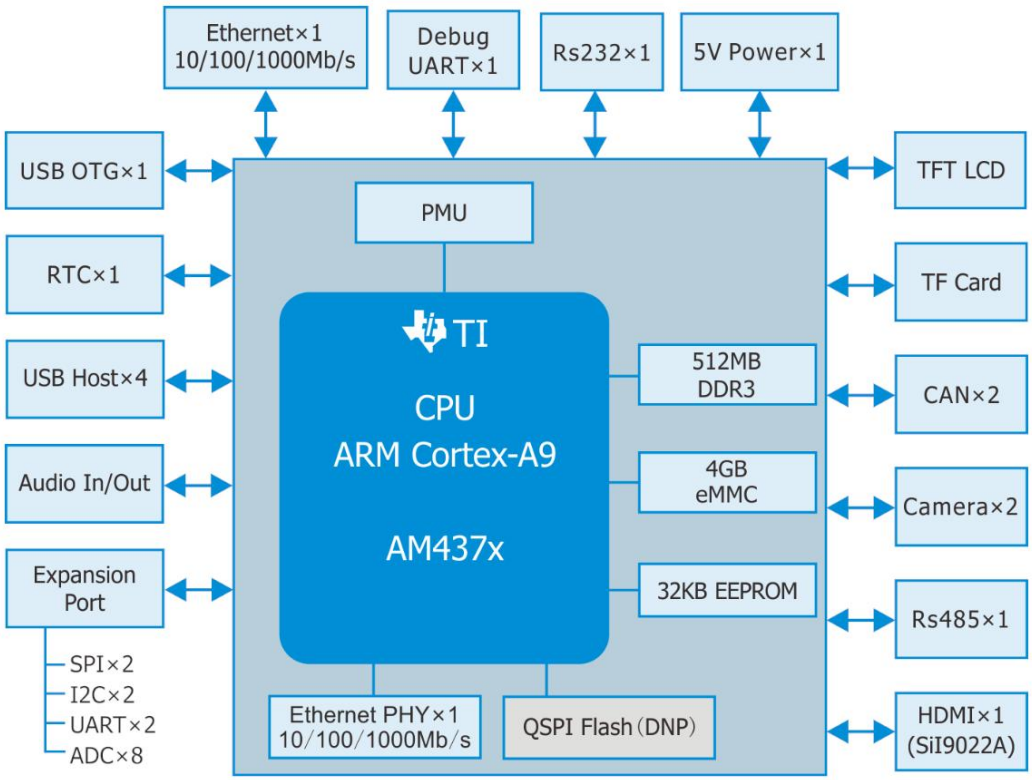
Peripherals and Signals Routed to Pins

- Power Management IC (TPS65218B1RSLR)
- Gigabit Ethernet PHY (V1 uses AR8035, V2 uses YT8511)
- One power indicator (Red LED)
- One user LED (Green)
- Two 0.8mm pitch 100-pin board-to-board expansion connectors can carry out interfaces below
  - 2 x USB
  - 6 x Serial ports
  - 2 x I2C
  - 2 x CAN
  - 2 x SPI
  - 14 x ADC (8 channels from ADC1 and 6 channels from ADC0)
  - 3 x SDIO

The MYD-C437X-V2 Base Board

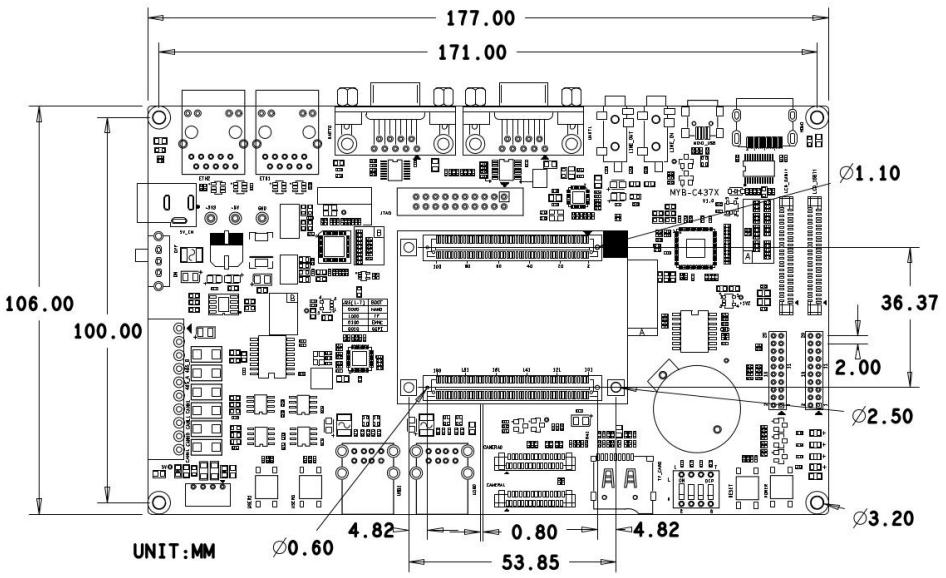
- Serial ports
  - 1 x 5-wire RS232 Debug serial port (DB9)
  - 1 x 5-wire RS232 serial port (UART1)
  - 1 x RS485 (with isolation)
- USB
  - 4 x USB2.0 Host ports
  - 1 x Mini USB2.0 Device port
- 2 x 10/100/1000Mbps Ethernet interfaces
- 2 x CAN interfaces (with isolation)
- 1 x TF card slot
- 1 x HDMI output interface
- 1 x LCD interface (16-/24-bit true color, supports optional 4.3-inch and 7-inch TFT LCD)
- 2 x Camera interfaces (0.5mm pitch 30-pin FPC connectors)
- 1 x 4-wire resistive touch screen interface
- 1 x Audio input port (3.5mm jack, do not provide driver at present)
- 1 x Stereo Audio output port (3.5mm jack, do not provide driver at present)
- 1 x 2.54mm pitch 20-pin JTAG interface
- 4 x Buttons (1 x Reset button, 1 x PMIC, 2 x User buttons)
- 1 x Power indicator (Red LED)
- 3 x User LEDs (Blue)
- 2 x 2.0mm 20-pin expansion connectors
  - 8 x ADC
  - 2 x SPI
  - 2 x I2C
  - 2 x UART

Function Block Diagram



Function Block Diagram of MYD-C437X-V2

Dimension Chart of MYD-C437X-V2



Dimension Chart of MYD-C437X-V2

Software Features

OS	Item	Features	Description
Linux	**Bootstrap program**	SPL	The primary bootstrap (source code)
		u-boot	The secondary bootstrap (source code)
	Kernel	Version	Linux 4.1.18 (source code)
	Drivers	USB Host	USB Host driver (source code)
		USB Device	USB Device driver (source code)
		Ethernet	Gigabit Ethernet driver (source code)
		MMC/SD/TF	MMC/SD/TF card driver (source code)
		NandFlash	Nand Flash driver (source code)
		eMMC	eMMC driver (source code)
		LCD Controller	LCD driver (source code, supports MYIR's 4.3- and 7- inch LCD)
		RTC	RTC driver (source code)
		HDMI	HDMI driver (source code)
		Touch driver	Resistive and Capacitive touch screen driver (source code)
		Button	Button driver (source code)
		UART	UART driver (source code)
		LED	LED driver (source code)
		GPIO	GPIO driver (source code)
		Watchdog	Watchdog driver (source code)
		Camera	Camera driver (source code)
		CAN	CAN driver (source code)
		ADC	ADC driver (source code)
		Audio	SGTL5000 driver (source code, do not provide driver at present)
		PWM	PWM driver (source code)
		RS485	RS485 driver (source code)
	File system	Buildroot with QT library (V5.6.2)	Provide ubi image file and buildroot in source code
	Examples	Audio, CAN, CAMERA, EEPROM, framebuffer, gpio, keypad, led, rtc, RS232, RS485	

Software Features of MYD-C437X-V2

Order Information

Item	Part No.
MYD-C437X-V2 Development Board	MYD-C4378-V2-4E512D-100-C
	MYD-C4378-V2-4E512D-100-I
MYC-C437X-V2 System-On-Module	MYC-C4378-V2-4E512D-100-C
	MYC-C4378-V2-4E512D-100-I
MY-TFT043RV2 4.3-inch LCD Module with resistive touch screen	MY-TFT043RV2
MY-TFT070RV2 7-inch LCD Module with resistive touch screen	MY-TFT070RV2
MY-TFT070CV2 7-inch LCD Module with capacitive touch screen	MY-TFT070CV2
MY-WF003U USB WiFi Module	MY-WF003U
MY-CAM002U USB Camera Module	MY-CAM002U
MY-CAM011B BUS Camera Module	MY-CAM011B

Note:

1. One MYD-C437X-V2 Development Board includes one SOM MYC-C437X-V2 mounted on the base board. If you need more CPU module, you can order extra ones.
2. MYIR offers MYD-C4378-V2 by default; if you need other CPU model or other RAM/Flash configuration, please contact MYIR for availability.
3. We accept custom design based on the MYD-C437X-V2, whether reducing, adding or modifying the existing hardware according to customer's requirement.

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