MYD-SAMA5D3X Development Board

- *MYC-SAMA5D3X CPU Module as Controller Board*
- *DDR2 SO-DIMM 200-pin Signals Consistent with Atmel's Official Board*
- *536MHz Atmel SAMA5D3 Series ARM Cortex-A5 Processors*
- *512MB DDR2 SDRAM, 256MB Nand Flash, 4MB Data Flash, 16MB Nor Flash*
- *Serial ports, USB, Ethernet, CAN, RS485, SD, Audio, LCD, HDMI*
- *Two Ethernet for SAMA5D35/36*
- *Two CAN for SAMA5D34/35/36*
- *HDMI and LCD Display for SAMA5D31/33/34/36*
- *Ready-to-Run Linux 3.6.9 and Android 4.0.4*

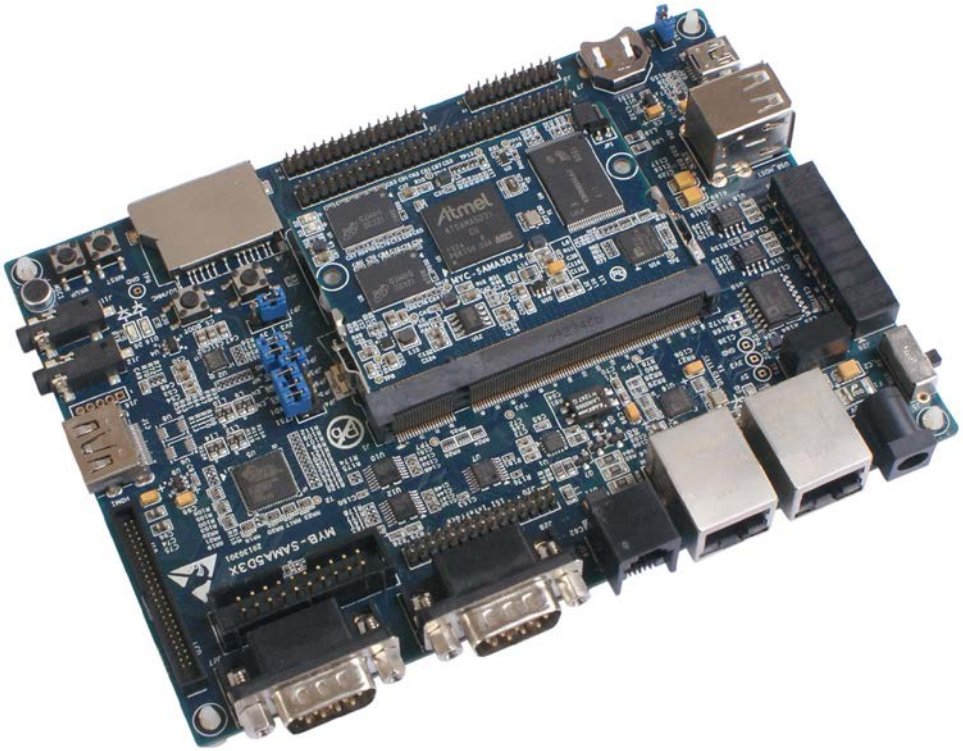

Figure 1-1 MYD-SAMA5D3X Development Board

Description

The MYD-SAMA5D3X Development Board is designed by MYIR for the newest Atmel ARM Cortex-A5 based SAMA5D3 series processors which can operate at up to 536MHz. It has a base board which can be equipped with five different CPU modules based respectively on Atmel's SAMA5D31, SAMA5D33, SAMA5D34, SAMA5D35 and SAMA5D36 MPUs. All five CPU modules are sharing the same circuit design with minor configuration settings. It is capable of running Linux and Android operating systems and offered with optional 4.3- and 7-inch LCD panels USB 3G module, USB Camera module**,** USB WiFi module and GPS module. It can work in harsh environment supporting -40 to +85°C extended temperature operation.

The CPU module has the most features of the processor and integrates 512MB DDR2 SDRAM, 256MB Nand Flash, 16MB Nor Flash and 4MB Data Flash on board. It is connected with the base board through a 1.8v DDR2 SD-DIMM 200-pin connector which provides an interface for the base board to carry all the I/O signals to and from the CPU module. A set of peripherals have been brought out through headers and connectors on the base board including serial ports, USB, Ethernet, CAN, LCD, HDMI, Audio, SDIO/SD/MMC, etc.

The MYD-SAMA5D3X Development Board comes along with Linux 3.6.9 and android 4.0.4 software packages, necessary cable accessories as well as detailed documents to allow customers to start development soon when getting the goods out of box. It is a solid and flexible reference design to enable users to extensively evaluate, prototype and create applications that require audio, mass storage, networking, connectivity and more. Typical applications are such as control panel/HMI, smart grid, medical and handheld terminals, smart watches, outdoor GPS, DECT (digital enhanced cordless telecommunications) phones, etc.

The MYD-SAMA5D3X Development Kit includes following items and add-on options:


MYD-SAMA5D3X board


Ethernet cable


Serial cable


USB cable


Product DVD


5V Power Adapter


Optional 4.3- or 7-inch LCD/TSP


Optional SO-DIMM200-pin socket


Optional Camera module


Optional 3G module

Optional WiFi module


Optional GPS module

Figure 1-2 MYD-SAMA5D3X Development Kit

Below are the five partnerships for MYD-SAMA5D3X:

- *MYD-SAMA5D31 Development Board* – with *MYC-SAMA5D31 CPU Module* for Atmel *SAMA5D31*
- *MYD-SAMA5D33 Development Board* – with *MYC-SAMA5D33 CPU Module* for Atmel *SAMA5D33*
- *MYD-SAMA5D34 Development Board* – with *MYC-SAMA5D34 CPU Module* for Atmel *SAMA5D34*
- *MYD-SAMA5D35 Development Board* – with *MYC-SAMA5D35 CPU Module* for Atmel *SAMA5D35*
- *MYD-SAMA5D36 Development Board* – with *MYC-SAMA5D36 CPU Module* for Atmel *SAMA5D36*

Item	MYD-SAMA5D31	MYD-SAMA5D33	MYD-SAMA5D34	MYD-SAMA5D35	MYD-SAMA5D36
Processor	ATSAMA5D31	ATSAMA5D33	ATSAMA5D34	ATSAMA5D35	ATSAMA5D36
10/100 Ethernet	1	0	0	1	1
10/100/1000 Ethernet	0	1	1	1	1
UART	2	2	2	2	2
LCD/HDMI	1	1	1	0	1
CAN	0	0	2	2	2

Table 1-1 Comparison for Model Selection

Hardware Specification

The Atmel® SAMA5D3 series of microprocessor units (MPUs) is based on the ARM® Cortex™-A5 processor, operating at up to 536MHz (850DMIPS) at under 150mW, delivering a high-performance, low-power platform for cost-sensitive industrial and consumer applications. It has comprehensive peripheral set for connectivity and user interface applications including Gigabit and 10/100 Ethernet, up to three HS USB ports, dual CAN, three SDIO/SD/MMC, UARTs, SPIs, TWIs, soft modem, LCD controller with graphics accelerator, camera interface, 12-bit ADC, 32-bit timers and more.

	SAMA5D31	SAMA5D33	SAMA5D34	SAMA5D35	SAMA5D36
LCD	✓	✓	✓	–	✓
10/100 EMAC	✓	–	–	✓	✓
10/100/1000 EMAC	–	✓	✓	✓	✓
DUAL CAN	–	–	✓	✓	✓
ISI	✓	✓	✓	✓	✓
USB	✓	✓	✓	✓	✓
Secure Boot	✓	✓	✓	✓	✓
Crypto	✓	✓	✓	✓	✓

Figure 1-3 SAMA5D3 Series Key Features

The MYD-SAMA5D3X series development boards include one CPU module mounted on one base board. It exposes many of the Atmel SAMA5D3 features to the user in support of developing specific solutions.

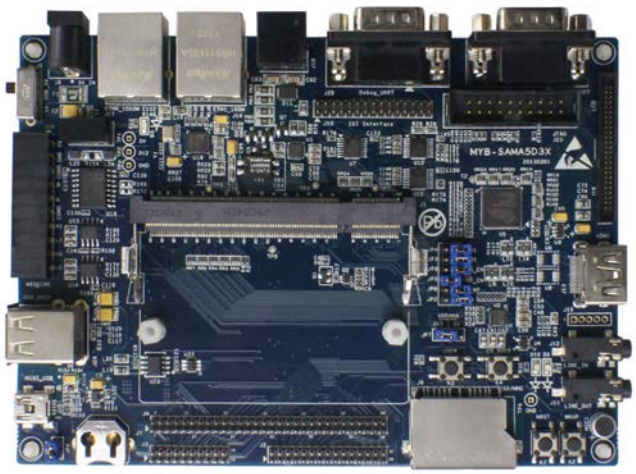

Figure 1-4 Base Board of MYD-SAMA5D3X

Figure 1-5 MYC-SAMA5D3X CPU Module Controller Board of MYD-SAMA5D3X

This board is characterized as in below table 1-2:

Item	MYD-SAMA5D31	MYD-SAMA5D33	MYD-SAMA5D34	MYD-SAMA5D35	MYD-SAMA5D36
Processor	ATSAMA5D31	ATSAMA5D33	ATSAMA5D34	ATSAMA5D35	ATSAMA5D36
CPU Module	MYC-SAMA5D31	MYC-SAMA5D33	MYC-SAMA5D34	MYC-SAMA5D35	MYC-SAMA5D36
	- 536MHz Atmel SAMA5D31, SAMA5D33, SAMA5D34, SAMA5D35 and SAMA5D36 ARM Cortex-A5 Processors - CPU internal 128KB of SRAM and 160KB of ROM - On-board 512MB DDR2 SDRAM, 256MB Nand Flash, 16MB Nor Flash, 4MB Data Flash - On-board Gigabit Ethernet PHY - 1.8V DDR2 SO-DIMM 200-pin Expansion Connector - SO-DIMM 200-pin Signals Consistent with Atmel's SAMA5D3-EK Official Board				
Dimensions	CPU Module – 67.6 x 45mm; Base board – 154 x 110mm				
PCB Layer	CPU Module – 8-layer design; Base board – 4-layer design				
Power Supply	5V/2A				
Working Temp.	0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)				
Storages	One Micro SD card slot One SD/MMC card slot				
Serial ports	One 3-line RS232 Debug serial port (DB-9) One 5-line RS232 serial port (UART1, DB-9) One RS485 serial port (UART2, 10-pin 3.5mm pitch terminal block connector)				
USB	Two High-speed USB 2.0 Host ports (Type A) One Mini USB 2.0 OTG port (Mini USB Type-AB)				
Ethernet	ETH1_10/100	ETH0_10/100/1000	ETH0_10/100/1000	ETH1_10/100 ETH0_10/100/1000	ETH1_10/100 ETH0_10/100/1000
CAN	0	0	2	2	2
Audio	Audio input/output port				
LCD/TSP	Support	Support	Support	Not support	Support
	Supports 24-bit true color TFT LCD, resolution up to 2048 x 2048 pixels 4-line resistive touch screen 4.3-inch LCD for option (including Touch screen, with resolution 480 x 272 pixels) 7-inch LCD for option (including Touch screen, with resolution 800 x 480 pixels)				
Camera	One ISI interface (driver is not provided at present)				
HDMI	One HDMI interface (driver is provided but no source code)				
Telephone	One Telephone interface (driver is not provided at present)				
JTAG	20-pin standard JTAG interface				
RTC	Battery backed RTC socket (Battery CR1220 and CR1225 models are recommended)				
Buttons	One Reset button, One Wakeup button and Two User buttons				
LED	Two Power indicators (Red, one on CPU board and one on base board) One user LED (Blue, on CPU board)				
Expansion Interface	There expansion interfaces (J2, J3, J4) brings out: 2 x SPI, 2 x I2C, 1 x PWM, 4 x ADC, GPIOs *Note: The resources brought out from the expansion interfaces may be multiplexed with others. Please refer to the product user manual and schematics for details for your development.*				

Table 1-2 Hardware Specification of MYD-SAMA5D3X Development Board

Function Block Diagram

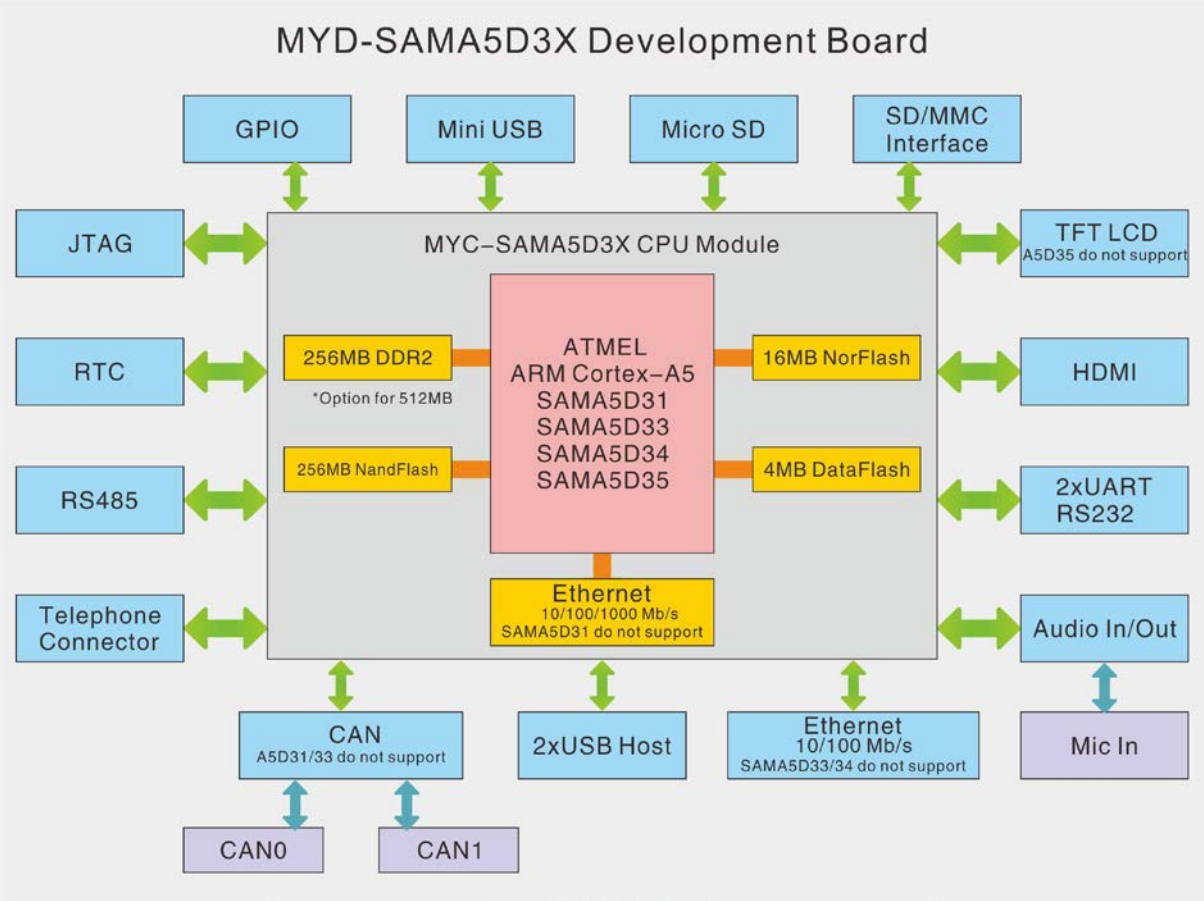

Figure 1-6 Function Block Diagram of MYD-SAMA5D3X

Dimension Chart of MYD-SAMA5D3X

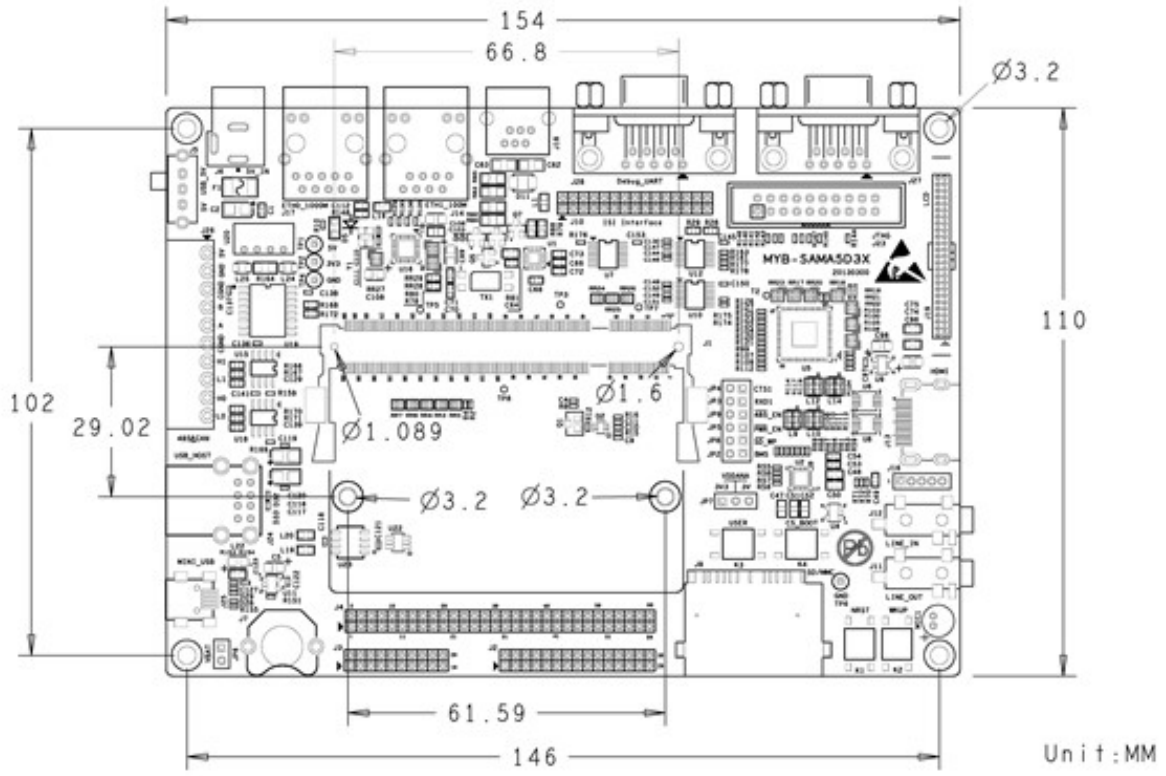

Figure 1-7 Dimension Chart of MYD-SAMA5D3X

MYD-SAMA5D3X Development Board Layout

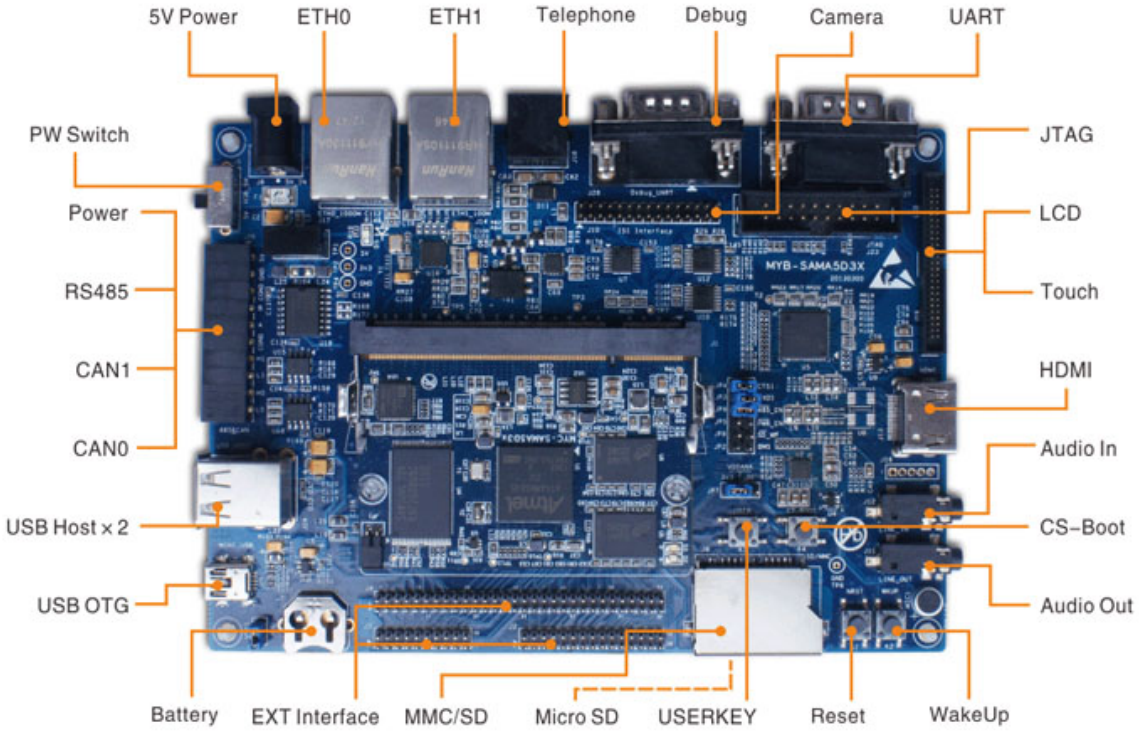

Figure 1-8 MYD-SAMA5D3X Development Board Peripherals

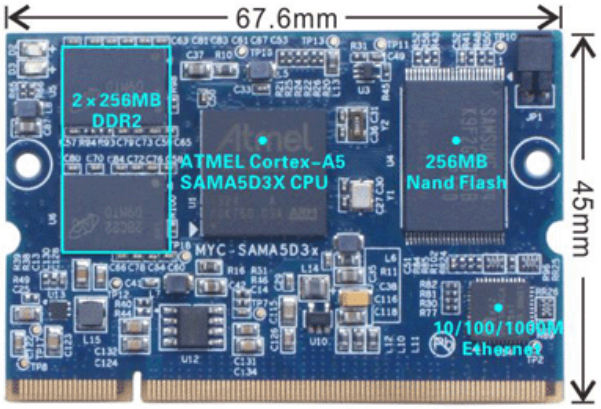

Figure 1-9 MYC-SAMA5D3X CPU Module Top-view

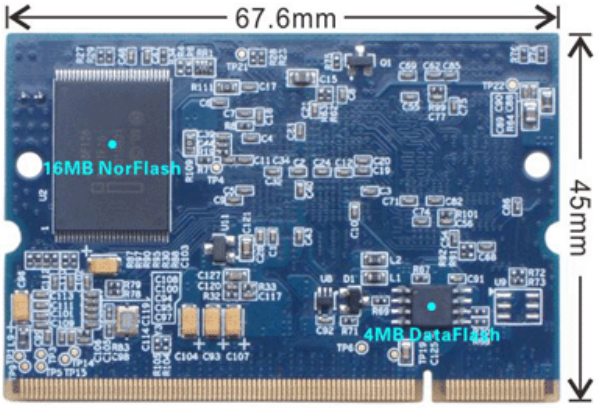

Figure 1-10 MYC-SAMA5D3X CPU Module Bottom-view

Software Features

The MYD-SAMA5D3X is a Linux and Android ready-to-run development board. MYIR offers software packages along with the board. Many peripheral drivers are provided in source code to help customers quickly start their own development and create their own applications. The software features are summarized as below:

OS	Item	Features	Description
Linux	Boot	Boot Strap	First boot program (source code available)
		u-boot	Secondary boot program (source code available)
		Boot Mode	Boot Linux from NAND Flash
		Image update	Support programming kernel image into Nand Flash through USB
		File system update	Support programming file system into Nand Flash through USB
	Kernel	Version	Linux 3.6.9 (source code available)
		File system	Supports ROM/CRAM/EXT2/EXT3/FAT/NFS/ JFFS2/UBIFS
	File system	Format	UBIFS file system
	Drivers	USB Host, USB Device, Ethernet, MMC/SD, CAN, RS485, NandFlash, TWI (I2C), SPI, WM8904 (Audio), LCD Controller, RTC, Touch-Screen, PWM, USART, LED (source code available)	
		HDMI (no source code provided)	
	Graphical Library	QT	Already ported (source code available)
Android	Kernel	Version	Android 4.0.4
	Drivers	Ethernet, Serial port driver (USART1, DBGU), USB (USB_HOST*2,USB_OTG), SD card driver (Micro SD, MMC/SD), LCD+touch (LCD and touch screen driver), GPIO driver (source code available)	
		HDMI (no source code provided)	

Order Information

Product Item	Part No.	Packing List
MYD-SAMA5D31 Development Board	MYD-SAMA5D31	➢ One MYD-SAMA5D3X Development Board ➢ One DB9-to-DB9 Serial cable ➢ One Net cable ➢ One USB cable ➢ One 5V/2A Power adapter ➢ One Product DVD (including user manual, datasheet, schematic in PDF format and software packages) **Add-on Options** ➢ MY-LCD43TP 4.3-inch LCD Module ➢ MY-LCD70TP 7-inch LCD Module ➢ MY-SODIMM200 Socket ➢ MYC-SAMA5D3X CPU Module ➢ MY-CAM001U USB Camera Module ➢ MY-CU005U USB 3G Module ➢ MY-WF003U USB WiFi Module ➢ MY-GPS008C GPS Module
MYD-SAMA5D33 Development Board	MYD-SAMA5D33	
MYD-SAMA5D34 Development Board	MYD-SAMA5D34	
MYD-SAMA5D35 Development Board	MYD-SAMA5D35	
MYD-SAMA5D36 Development Board	MYD-SAMA5D36	
MY-LCD43TP 4.3-inch LCD Module	MY-LCD43TP	
MY-LCD70TP 7-inch LCD Module	MY-LCD70TP	
MY-SODIMM200 Socket	MY-SODIMM200	
MYC-SAMA5D31 CPU Module	MYC-SAMA5D31	
MYC-SAMA5D33 CPU Module	MYC-SAMA5D33	
MYC-SAMA5D34 CPU Module	MYC-SAMA5D34	
MYC-SAMA5D35 CPU Module	MYC-SAMA5D35	
MYC-SAMA5D36 CPU Module	MYC-SAMA5D36	

Remark:

1. *One MYD-SAMA5D3X Development Board includes one CPU module MYC-SAMA5D3X mounted on the base board. If you need more CPU module, you can order extra ones.*
2. *Our products are delivered of commercial grade (0~70 Celsius) by default. Anyhow the MYD-SAMA5D3X board based on Atmel ARM Cortex-A5 processor can work in harsh environment with working temperature ranging from -40 to 85 Celsius. Please contact us for price and availability of products of industrial grade if you needed.*
3. *The HDMI chip supports working temperature from -20 to +85 Celsius.*
4. *We accept custom design based on the MYD-SAMA5D3X, whether reducing, adding or modifying the existing hardware according to customer's requirement.*

More details about the MYD-SAMA5D3X can be found at:
http://www.myirtech.com/list.asp?id=432

MYIR Tech Limited
Room 1306, Wensheng Center, Wenjin Plaza, North Wenjin Road, Luohu District,
Shenzhen, China 518020
E-mail: sales@myirtech.com
Phone: +86-755-22984836
Fax: +86-755-25532724
Website: http://www.myirtech.com