MYC-IM28X CPU Module

- 454MHz Freescale I.MX28 Series ARM926EJ-S Processors

- 128MB DDR2 SDRAM, 256MB Nand Flash, 128KB SPI Flash

- On-board Ethernet PHY

- Two 1.27mm pitch 80-pin SMT Male Connectors for Board-to-Board Connections

- Ready-to-Run Linux 2.6.35 System-on-Module

- Supports -40 to +85 Celsius Extended Temperature Operation for Industrial Applications
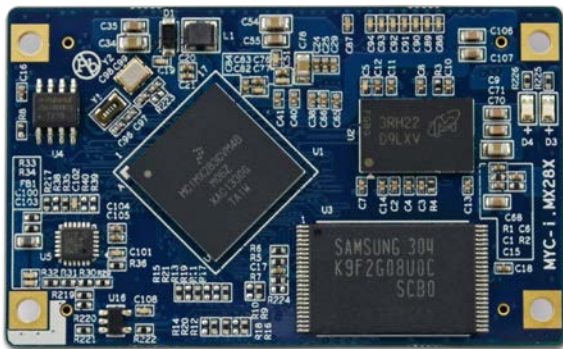

Figure 1-1 MYC-IMX28X Top-view

Figure 1-2 MYC-IMX28X Bottom-view

Measuring only 62mm by 38mm, the MYC-IMX28X is a low-cost and high-performance ARM embedded controller board based on Freescale i.MX28 family applications processor with ARM926EJ-S core and speeds of up to 454MHz. It integrates 128MB DDR2 SDRAM, 256MB Nand Flash, 128KB SPI Flash as well as one Ethernet PHY on board and has two 1.27mm pitch 80-pin SMT connectors to allow all the I/O signals brought in and out from the CPU Module for further expansion.

The MYC-IMX28X CPU Module is a ready-to-run system-on-module (SoM) which can be embedded into your next design for volume production or prototype. It can also come with MYIR own designed base board along with Linux software packages, document and other necessary cable accessories to enable rapid development based on this Freescale i.MX28 starter kit MYD-IMX28X.

MYIR offers the module with **Freescale i.MX283** or **i.MX287** ARM9 CPU by default; user can integrate a different **MYC-IMX28X** CPU module on the same base board, thus making two variants of i.MX28 evaluation boards.

- *MYC-IMX283 CPU Module* for Freescale *i.MX283*
- *MYC-IMX287 CPU Module* for Freescale *i.MX287*

Please get to know the difference for i.MX283 and i.MX287 from below table:

Function	i.MX283	i.MX287
UART	5	5
Debug UART	1	1
CAN	—	2
ETHERNET	1	2

LCD interface	YES	YES
High-speed ADC	1	1
LRADC	8	8
PWM	8	8
SD/SDIO/MMC	4	4
SPI	4	4
TOUCH SCREEN	YES	YES
USB 2.0	HS USB OTG x1	HS USB OTG x1
	HS USB Host x1	HS USB Host x1

Table 1-1 MYC-IMX28X Comparison

The MYD-IMX28X takes full features of the MYC-IMX28X module and has extended many peripherals and interfaces through headers and connectors including **1 x RS232, 1, Debug, 2 x USB ports, up to 2 x Ethernet, 2 x CAN, 1 x RS485, TF, Audio, LCD, JTAG, etc.** It can support -40 to +85 Celsius extended temperature operation and is ideal for smart gateways, human-machine interfaces (HMIs), handheld devices, scanners, portable medical, experimental education and more other industrial applications.
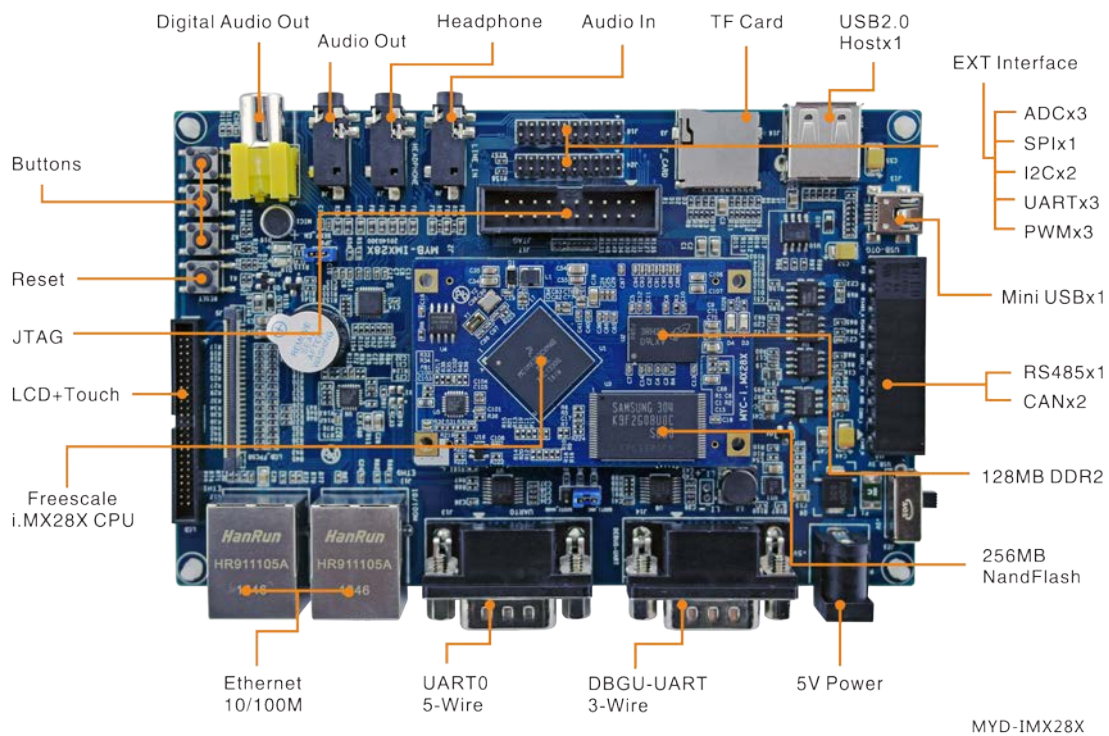

Figure 1-3 MYD-IMX28X Development Board

![MYIR logo] Make Your Idea Real

Hardware Specification

The i.MX28 is a low-power, high-performance applications processor optimized for the general embedded industrial and consumer markets. The core of the i.MX28 is Freescale's fast, power-efficient implementation of the ARM926EJ-S™ core, with speeds of up to 454 MHz.

The device is suitable for a wide range of applications, including the following:

- Human-machine interface (HMI) panels: industrial, home
- Industrial drive, PLC, I/O control display, factory robotics display, graphical remote controls
- Handheld scanners and printers
- Patient-monitoring, portable medical devices
- Smart energy meters, energy gateways
- Media phones, media gateways

The integrated power management unit (PMU) on the i.MX28 is composed of a triple output DC-DC switching converter and multiple linear regulators. These provide power sequencing for the device and its I/O peripherals such as memories and SD cards, as well as provide battery charging capability for Li-Ion batteries.

The i.MX28 processor includes an additional 128-Kbyte on-chip SRAM to make the device ideal for eliminating external RAM in applications with small footprint RTOS.

The i.MX28 supports connections to various types of external memories, such as mobile DDR, DDR2 and LV-DDR2, SLC and MLC NAND Flash.

The i.MX28 can be connected to a variety of external devices such as high-speed USB2.0 OTG, CAN, 10/100 Ethernet, and SD/SDIO/MMC.

Family Comparison				
Feature	**i.MX280**	**i.MX283**	**i.MX286**	**i.MX287**
Temp. ranges	-20°C to +70°C -40°C to +85°C	-20°C to +70°C -40°C to +85°C	-20°C to +70°C -40°C to +85°C	-40°C to +85°C
LCD	-	Y	Y	Y
Ethernet	X1	X1	X1	X2
L2 Switch	-	-	-	Y
CAN	-	-	X2	X2
SDIO*	X4	X4	X4	X4
SPI*	X4	X4	X4	X4
S/PDIF Tx	-	-	Y	Y
* Represents maximum available. Some pins are shared with other interfaces				

Table 1-2 i.MX28 Family Comparison

Mechanical Parameters

- Dimensions: 62mm x 38mm
- PCB Layers: 6-layer design
- Power supply: +3.3V
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)

  Note: Our products are delivered of commercial grade (0~70 Celsius) by default. Anyhow the MYC-IMX28X modules based on Freescale ARM926EJ-S processors can work for industrial applications working in harsh environment with working temperature ranging from -40 Celsius to 85 Celsius. Please contact MYIR for price and availability of products of industrial grade if you needed.

Processor

- Freescale i.MX283, i.MX287 Applications processor
  - Up to 454MHz ARM926EJ-STM core with 16KB/32KB I and D Cache
  - 128 kbytes of integrated low-power on-chip SRAM
  - 128Kbytes of integrated mask-programmable on-chip ROM
  - 1280 bits of on-chip one-time-programmable(OCOTP)ROM
  - 16-bit mobile DDR(mDDR)(1.8V),DDR2(1.8V)and LV-DDR2(1.5V),up to 205MHz DDR clock frequency with voltage overdrive
  - Support for up to eight NAND Flash memory devices with up to 20-bit BCH ECC

Memory

- 128MB DDR2 SDRAM
- 256MB Nand Flash
- 128KB SPI Flash

Peripherals and Signals Routed to Pins

- On-board Ethernet PHY
- One power indicator (Red LED)
- One user LED (Blue)
- Two 1.27mm pitch 2 x 40-pin SMT male expansion connectors can carry out interfaces below
  - Ethernet (two for i.MX287, one for i.MX283)
  - 2 x USB2.0 High-speed ports
  - Up to 6 x Serial ports (including one Debug port)
  - 1 x I2C
  - 2 x SPI
  - Up to 8 x ADC (one high-speed ADC, seven low-resolution ADC)
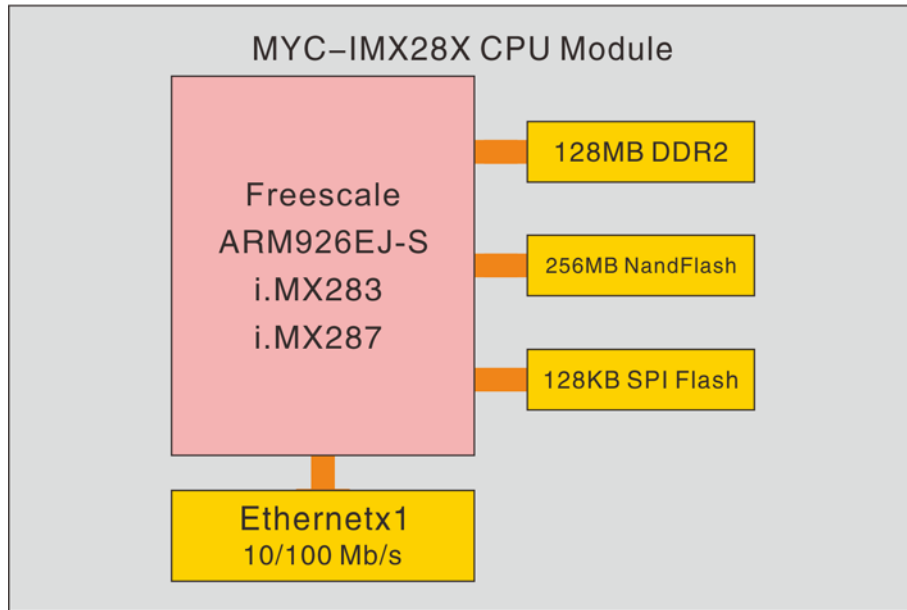 - Up to 5 x PWM
  - 1 x SDIO

Function Block Diagram

Figure 1-4 MYC-IMX28X Function Block Diagram

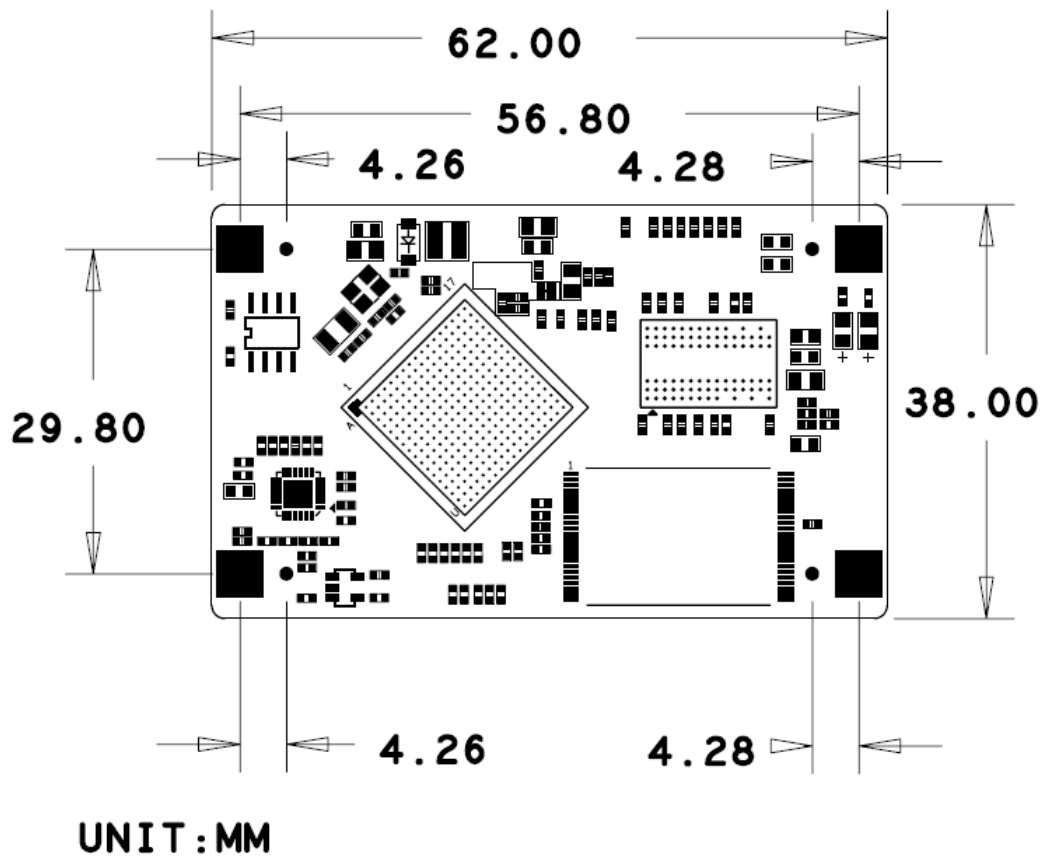**Dimension Chart of MYC-IMX28X**

Figure 1-5 MYC-IMX28X Dimension Chart

Software Features

MYIR's MYC-IMX28X 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:

OS	Item	Features	Description
Linux	Bootstrap	u-boot	The secondary bootstrap
	Kernel	Version	Linux 2.6.35
	Drivers	USB Host (support both OHCI and EHCI transmission modes), USB Device (Gadget), Ethernet, MMC/SD, NandFlash, TWI (I2C), SPI, Audio (SGTL5000), LCD Controller (supports 4.3-inch, 7-inch and 10.2-inch LCD), RTC, TouchScreen (4-wire resistive), PWM, UART, CAN, Power Management Unit, LED (GPIO LED and PWM LED)	
	File system	UBIFS	Provide image file

Table 1-3 Software Features of MYC-IMX28X

Order Information

Product Item	Part No.	Packing List
MYC-IMX283 CPU Module	MYC-IMX283	➢ One MYC-IMX28X CPU Module ➢ One Product DVD (including user manual, datasheet, schematic in PDF format and software packages)
MYC-IMX287 CPU Module	MYC-IMX287	
MYD-IMX283 Development Board	MYD-IMX283	
MYD-IMX287 Development Board	MYD-IMX287	**Add-on Options**
MY-LCD43TP 4.3-inch LCD Module	MY-LCD43TP	➢ MYD-IMX28X Development Board ➢ MY-LCD43TP 4.3-inch LCD Module
MY-LCD70TP 7-inch LCD Module	MY-LCD70TP	➢ MY-LCD70TP 7-inch LCD Module

Remark:
1. *For Price information, please contact MYIR.*
2. *Our products are delivered of commercial grade (0~70 Celsius) by default. Anyhow the MYC-IMX28X boards based on Freescale ARM926EJ-S processors 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. *We accept custom design based on the MYC-IMX28X, whether reducing, adding or modifying the existing hardware according to customer's requirement.*

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

Distributor: NeoMore 23 rue des Poiriers F-78370 PLAISIR FRANCE +33 1 30 64 15 81 www.neomore.com