MYC-C335X-GW CPU Module

- *Up to 1GHz TI AM335x ARM Cortex-A8 Processors (800MHz AM3354 by Default)*
- *256MB/512MB DDR3L, 256MB Nand Flash/4GB eMMC, 256Kbit EEPROM*
- *Power Management IC (TPS65217C)*
- *Two 0.8mm pitch 80-pin Board-to-Board Expansion Connectors*
- *Ready to Run Linux 4.14.67*
- *Supports -40 to +85 Celsius Extended Temperature Operation for Industrial Applications*

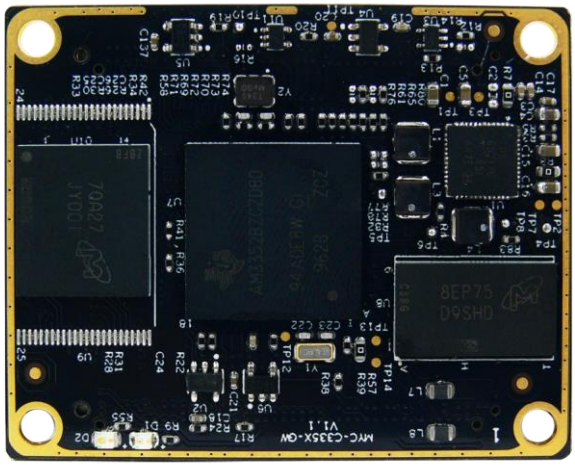

Figure 1-1 MYC-C335X-GW Top-view

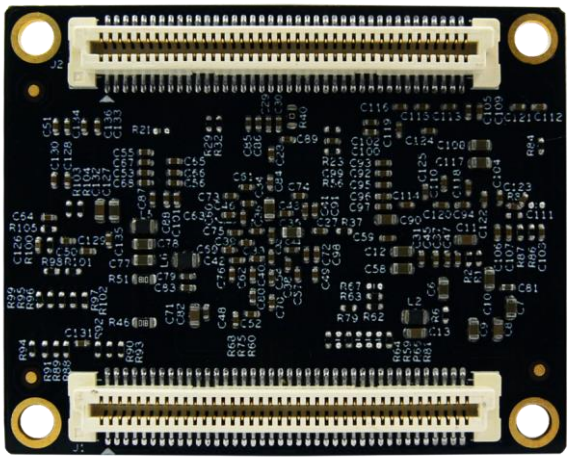

Figure 1-2 MYC-C335X-GW Bottom-view

Measuring only 50mm by 40mm, the **MYC-C335X-GW** is the fourth **AM335x** CPU Module designed by MYIR especially for gateway applications. It is powered by 800MHz **TI AM3354 ARM Cortex-A8 processor** which features PowerVR™ SGX530 for 2D and 3D graphics acceleration. In addition to a DDR3L RAM memory, the MYC-C335X-GW is equipped with a Nand Flash or an eMMC Flash. It has an integrated PMIC on board and two 0.8mm pitch 80-pin board-to-board expansion connectors for interconnecting with your base board, thus providing an interface for the base board to carry out most of the I/O signals to and from the CPU module.

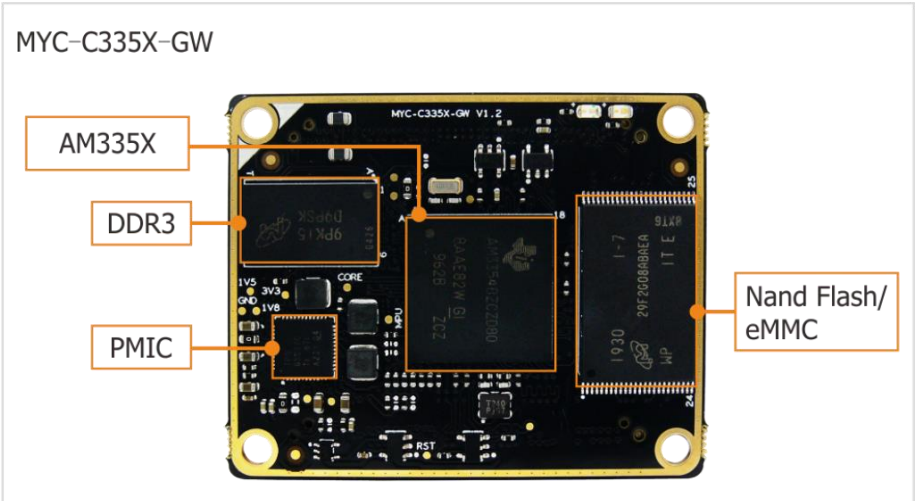

Figure 1-3 MYC-C335X-GW CPU Module

The **MYC-C335X-GW CPU Module** is compatible to use other AM335x processors which are with 15 x 15mm ZCZ package and sharing the **same pin-out with software fully compatible**. MYIR deliveries MYC-C3354-GW by default. The main differences of the usable Sitara AM335x can be known from **Feature 1-4**.

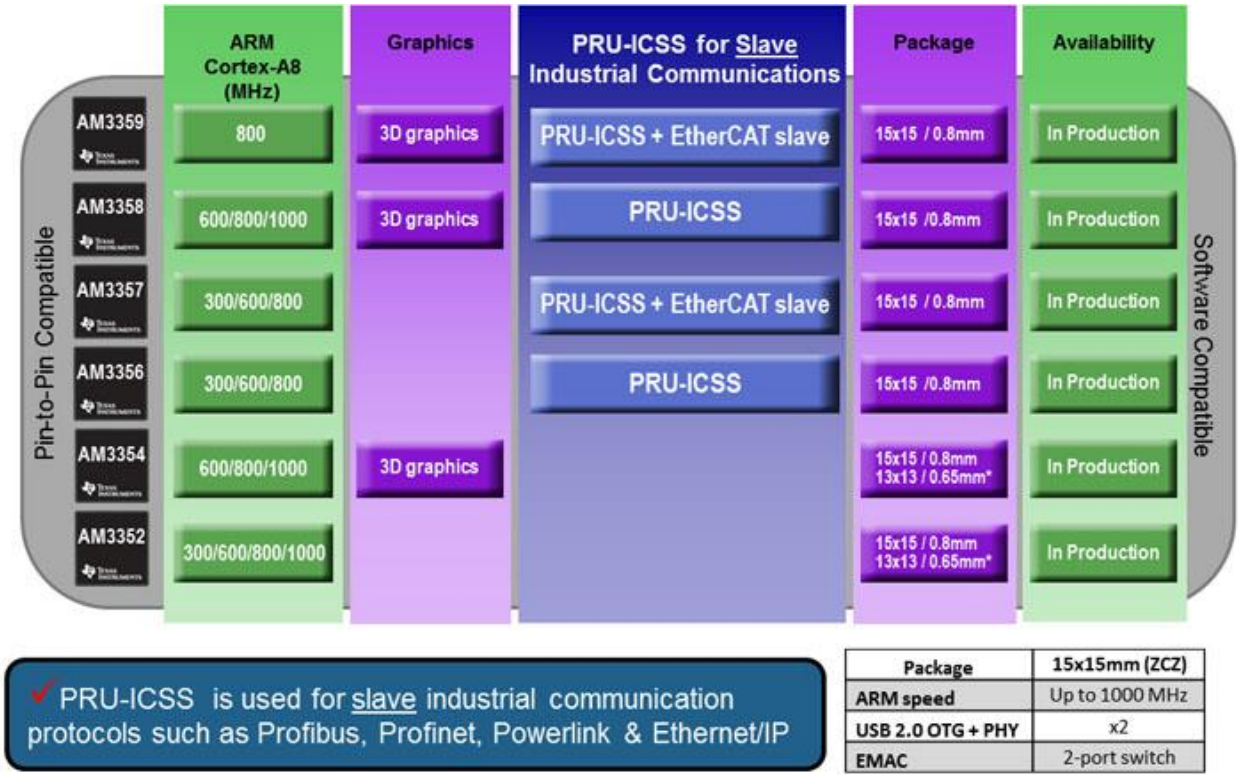

Figure 1-4 AM335x Devices Comparison

MYIR has designed the **MYD-C335X-GW development board** for evaluating the **MYC-C335X-GW**. The base board has extended versatile peripheral interfaces and capable of running Linux OS. A plenty of software resources are provided to help accelerate customers' designs with a stable and reliable hardware and software platform.

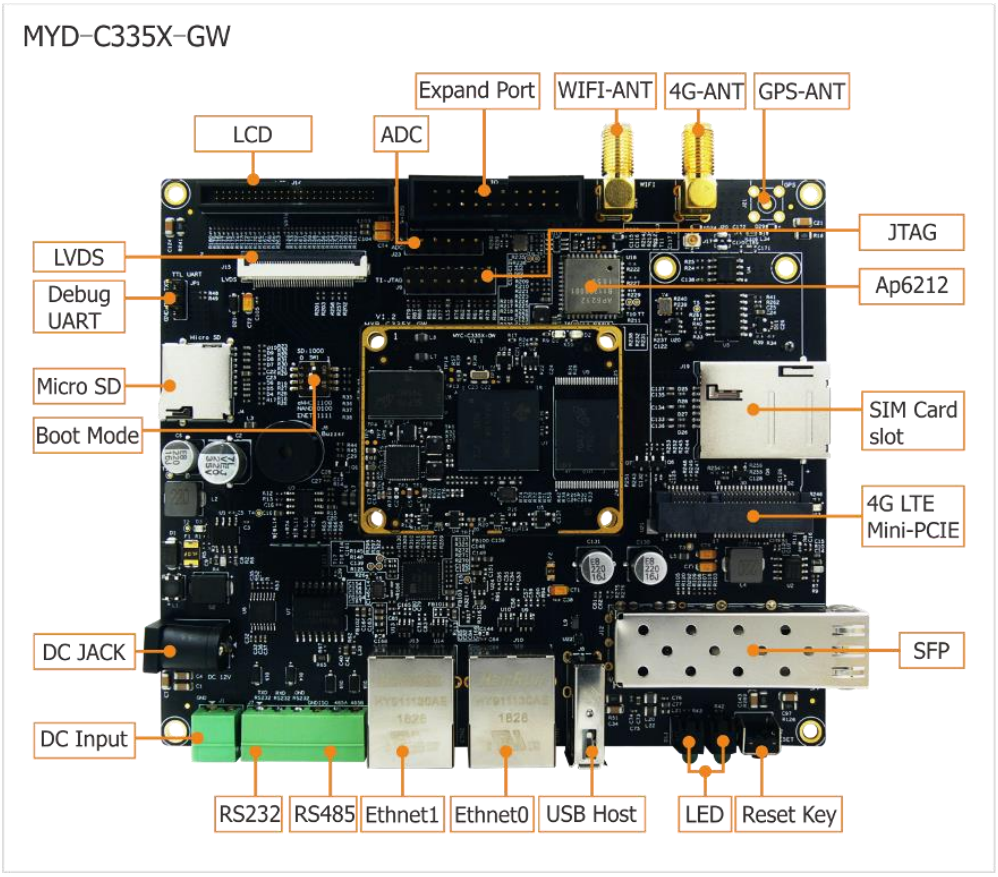

Figure 1-5 MYD-C335X-GW Development Board

Hardware Specification

The TI AM335x microprocessors, based on the ARM Cortex-A8, operating at up to 1GHz, are enhanced with image, graphics processing, peripherals and industrial interface options such as EtherCAT and PROFIBUS. The device supports the following high-level operating systems (HLOSs) that are available free of charge from TI:

• Linux®

• Android™

The AM335x microprocessor contains these subsystems:

• Microprocessor unit (MPU) subsystem based on the ARM Cortex-A8 microprocessor.

• POWERVR SGX™ Graphics Accelerator subsystem for 3D graphics acceleration to support display and gaming effects.

• The Programmable Real-Time Unit and Industrial Communication Subsystem (PRU-ICSS) is separate from the ARM core, allowing independent operation and clocking for greater efficiency and flexibility.

The PRU-ICSS enables additional peripheral interfaces and real-time protocols such as EtherCAT, PROFINET, EtherNet/IP, PROFIBUS, Ethernet Powerlink, Sercos, and others.

AM335x ARM Cortex™-A8 Processors						
Core Feature	AM3352	AM3354	AM3356	AM3357	AM3358	AM3359
Package	15x15mm, 0.8mm (ZCZ)					
CPU Speed (MHz)	300, 600, 800, 1000	600, 800,1000	300, 600,800	300, 600,800	600, 800,1000	800
Core Internal Memory	64KB SRAM shared w/ Data 32KB Cache, Programmable 32KB Cache					
On-chip L2 (KB)	256					
External Memory Interface	DDR2/DDR3/DDR3L/mDDR (LPDDR), 2x16-bit, NAND ECC					
Graphics	-	3D Graphics	-		3D Graphics	
OS Support	Linux, Android, RTOS, Windows Embedded, no-OS					
Other Hardware Acceleration	Crypto Accelerator	Crypto Accelerator	2 PRU-ICSS Crypto Accelerator	2 PRU-ICSS Crypto Accelerator + EtherCAT slave support	2 PRU-ICSS Crypto Accelerator	2 PRU-ICSS Crypto Accelerator + EtherCAT slave support
10/100/1000 EMAC	2 port switch					
USB 2.0 OTG + PHY	2					
Serial Ports	6 UART, 2 SPI, 3 I2C, 2 McASP, 2 CAN, 8 Timers					
System	EDMA, WDT, RTC, 3 eQEP, 3 eCAP, JTAG, ADC (8ch)					
Parallel	3 MMC/SD/SDIO, GPIO					

Table 1-1 AM335x Devices Key Features

Mechanical Parameters

- Dimensions: 50mm x 40mm
- PCB Layers: 8-layer design
- Supply voltage: 4.75-5.25V
- Working temperature: -40~85 Celsius (industrial grade)

Processor

- TI AM3352, AM3354, AM3356, AM3357, AM3358, AM3359 (pin-to-pin compatible, 15x15 mm, 0.8-mm ball pitch, ZCZ package)
  - Up to 1GHz ARM Cortex-A8 32-bit RISC MPU
  - NEON™ SIMD Coprocessor
  - 32KB/32KB of L1 Instruction/Data Cache with Single-Error Detection (parity)
  - 256KB of L2 Cache with Error Correcting Code (ECC)
  - SGX530 Graphics Engine
  - Programmable Real-Time Unit Subsystem

Memory

- 256/512MB DDR3L (supports up to 1GB)
- 256MB Nand Flash (supports optional 512MB/1GB)
- 4GB eMMC (alternative design with Nand Flash)
- 256Kbit EEPROM

Peripherals and Signals Routed to Pins

- Power Management IC (TPS65217C)
- Two 0.8mm pitch 80-pin expansion connectors can carry out interfaces below
  - 2 x RGMII
  - 2 x USB2.0 Host or 2 x USB2.0 Device
  - 6 x UART
  - 3 x I2C
  - 2 x CAN
  - 2 x SPI
  - 7 x ADC
  - 1 x SAI
  - 1 x RGB (supports RGB888 at up to 2048 x 2048 pixels resolution)
  - 2 x SDIO
  - 1 x JTAG
  - 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 and pin-out description file.

Function Block Diagram

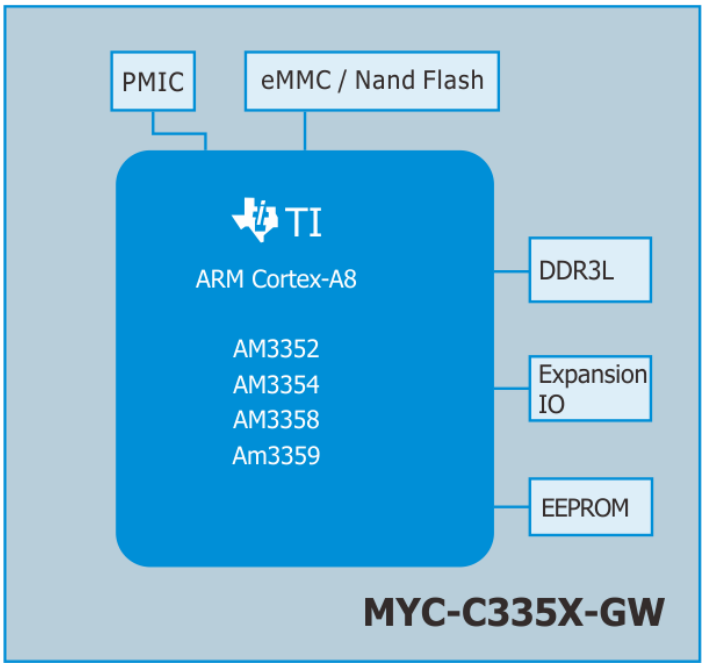

Figure 1-6 MYC-C335X-GW Function Block Diagram

Dimension Chart of MYC-C335X-GW

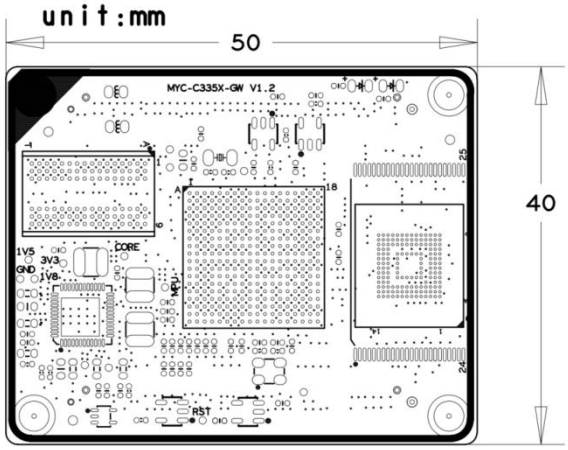

Figure 1-7 MYC-AM335X Dimension Chart

Software Features

The MYC-C335X-GW is provided with Linux software package. The software features are summarized as below:

Item	Features	Description	Source Code
Bootstrap program	U-boot	The primary bootstrap	YES
Linux kernel	Linux 4.14.67	Customized kernel for MYD-C335X-GW	YES
Drivers	LCD	LCD driver (source code, supports 4.3- / 7-inch LCD)	YES
	Touch	Resistive and Capacitive touch screen driver	YES
	USB Host	USB Host driver	YES
	I2C	I2C Bus driver	YES
	SPI	SPI Bus driver	YES
	ADC	ADC driver	YES
	Ethernet	10/100/1000M Ethernet driver	YES
	MMC/SD	MMC/SD card driver	YES
	eMMC	eMMC driver	YES
	NAND	NAND Flash driver	YES
	RTC	Internal RTC driver	YES
	RX-8025T	External RTC driver	YES
	UART	UART driver	YES
	RS485	RS485 drive	YES
	RS232	RS232 drive	YES
	4G LTE Module	Supports Quectel's EC20 using USB driver	YES
	WiFi & BT	AP6212 driver	YES
	GPS	GPS driver	YES
	Fiber	SFP driver	YES
	GPIO-LED	GPIO-LED driver	YES
	PMU	PMU driver	YES
File System	rootfs	customized file system based on buildroot	Image
	Rootfs-qt	Customized MEasy IoT file system Based on buildroot	
	UBI	NAND Flash ubi file system	
	Ramdisk.gz	SD card Ramdisk file system	
	sdcard.img	SD card ext4 file system	
Application Programs	QT	QT environment validation demo	YES
	GPIO-LED	GPIO-LED example	YES
	NET	TCP/IP Socket C/S example	YES
	RTC	RTC example	YES
	RS232/RS485	RS232/RS485 example	YES
	LCD	LCD example	YES
	NAND Flash	NAND Flash example	YES
Compiler Tool Chain	Cross compiler	gcc version 7.4.0 \ (Buildroot 2019.02.2-gb4331a8-dirty\)	BINARY
Cross Compiler Tool Chain	Cross compiler	gcc version 7.2.1 20171127 \ (Linaro GCC 7.2-2017.11\)	BINARY

Table 1-2 Software Features of MYC-C335X-GW

The MYD-C335X-GW runs Linux OS and is provided with software packages. Based on Linux 4.14.67 kernel, MYIR has provided abundant software resources including kernel and driver source code as well as MYIR' s MEasy IOT Demo to allow customer to get a good experience and development reference.

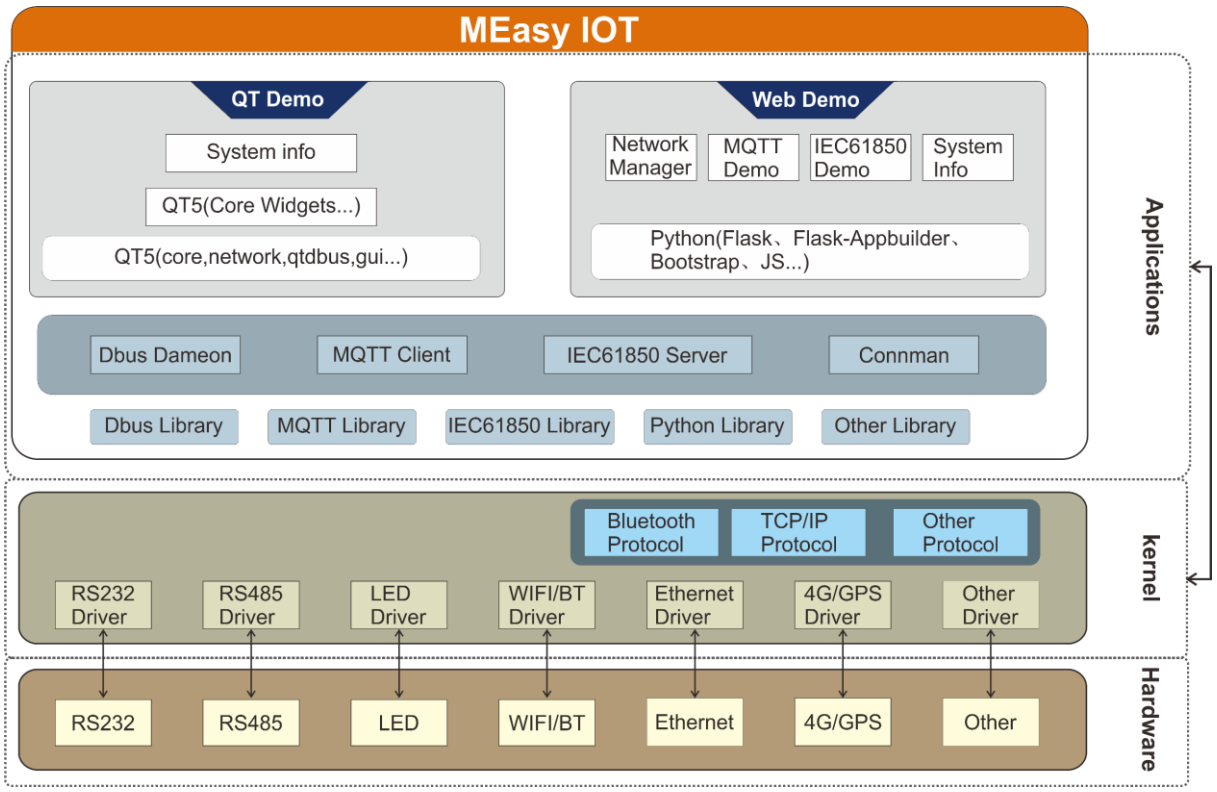

Figure 1-8 MEasy-IOT System Structure