MYiR Make Your Idea Real

MYiR 米尔电子
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MYC-YG2UL
System-On-Module
Overview

- ✓ RENESAS RZ/G2UL Processor based on 1.0GHz Single-core ARM Cortex-A55 and 200MHz Cortex-M33 Cores
- ✓ 512MB DDR3L, 4GB eMMC Flash, 4KB EEPROM
- ✓ Power Management IC
- ✓ 1.0mm pitch 140-pin Castellated-Hole and 50-pin LGA Expansion Interfaces
- ✓ Ready-to-Run Linux 5.10 OS, supports Yocto Project and OpenWrt 22.03

Measuring only 37mm by 39mm, the MYC-YG2UL SOM is a high-performance System-on Module (SoM) equipped with Renesas high-performance and cost-effective RZ/G2UL processor, single-core Cortex-A55@1.0GHz + Cortex-M33@200MHz. The processor features dual Gigabit Ethernet, dual CAN-FD, dual USB2.0 and up to seven UARTs and supports camera input and display output, thus making it ideal for applications such as entry-class industrial gateway control and embedded devices with simple GUI capabilities. In addition to the RZ/G2UL MPU, the MYC-YG2UL module has integrated DDR3L, eMMC, EEPROM and power management IC (PMIC) to provides a minimum system for your next embedded design through 1.0 mm pitch 140-pin Castellated-Hole and 50-pin LGA expansion interfaces.
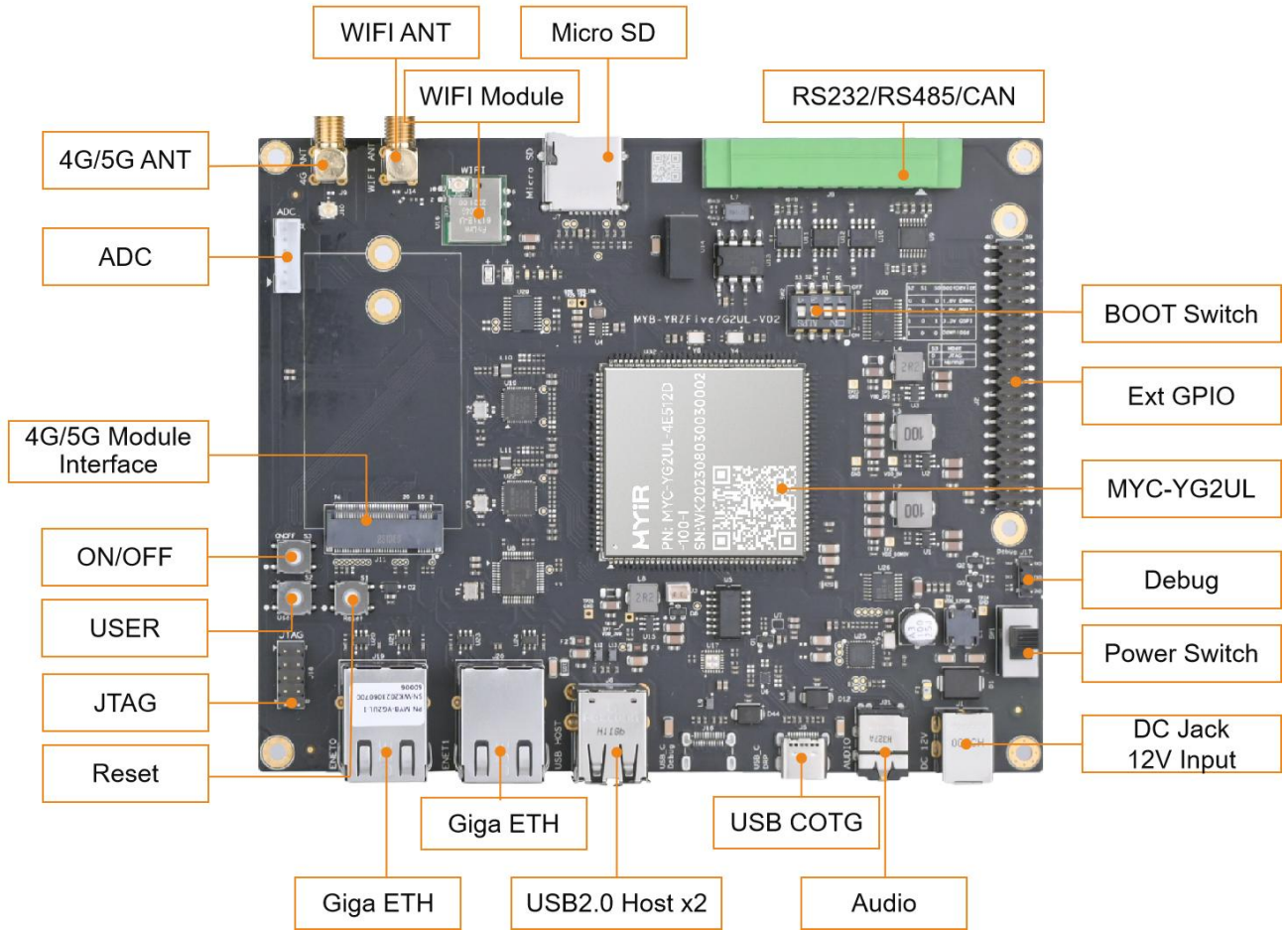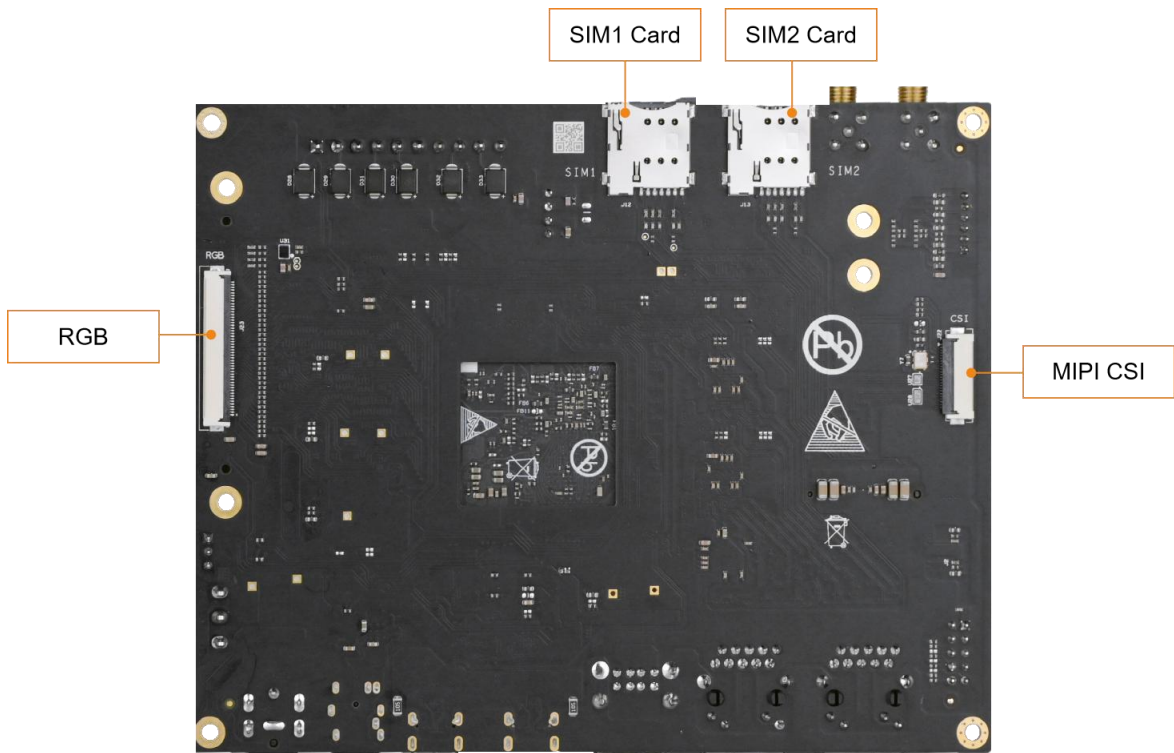

MYC-YG2UL SOM Top-view
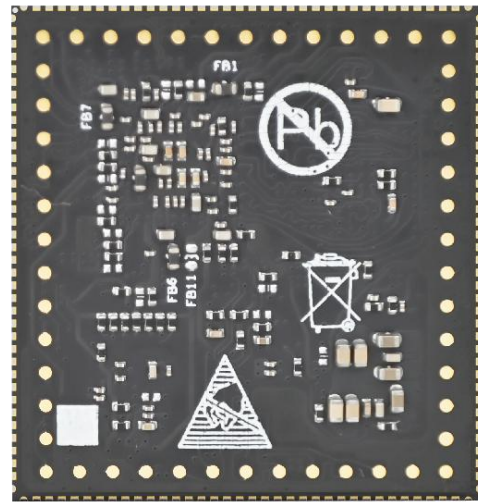
MYC-YG2UL SOM Bottom-view

The MYC-YG2UL SOM is capable of running Linux 5.10 and provided with streamlined core-image and full-featured image by Yocto as well as highly modular and highly automated OpenWrt image. MYIR also offers the kernel and driver source codes, Linux gateway demo and compilation tools to enable users to start their development rapidly and easily.

The MYD-YG2UL Development Board is an expansion design based on the MYC-YG2UL SOM. It takes full features of the RZ/G2UL processor to carry out a variety of peripheral interfaces including one RS232, one RS485, two Gigabit Ethernet, two USB 2.0 HOST, one USB 2.0 OTG, one CAN, one Micro SD card slot, one M.2 Socket for USB based 4G/5G LTE Module with two SIM card holders and one USB2.0 based WiFi module. The board supports RGB video output, MIPI-CSI camera input and Audio input/output and it has one GPIO/I2C/UART/SPI/CAN extension header which can connect to MYIR's MY-WIREDCOM RPI Module to further extend extra RS232, RS485 and CAN interfaces. The MY-LCD70TP-C LCD Module and MY-CAM003M MIPI Camera Module are also add-on options for the board to make the MYD-YG2UL a good reference design and starter kit for using Renesas' RZ/G2UL solutions.

WIFI ANT

Micro SD

WIFI Module

RS232/RS485/CAN

4G/5G ANT

ADC

BOOT Switch

Ext GPIO

4G/5G Module
Interface

MYC-YG2UL

ON/OFF

Debug

USER

Power Switch

JTAG

DC Jack
12V Input

Reset

USB COTG

Giga ETH

Giga ETH

USB2.0 Host x2

Audio

MYD-YG2UL Development Board (Top-view)

SIM1 Card

SIM2 Card

RGB

MIPI CSI

MYD-YG2UL Development Board (Bottom-view)

Hardware Specification

The MYC-YG2UL SOM is using the 13 x 13mm, 0.5 mm ball pitch, 361pin BGA package, 1.0 GHz RZ/G2UL (Type-1) MPU which belongs to the RENESAS RZ/G2UL product group and features single-core Arm Cortex-A55 (1.0 GHz) CPU and Single-core Arm Cortex-M33 (200 MHz) CPU. The processor also has many interfaces such as camera input, display output, USB 2.0, and Gbit-Ether, making it ideal for applications such as entry-class industrial gateway control and embedded devices with Simple GUI capabilities.

In addition, there are two types of RZ/G2UL:

Type-1 supports all functions and Type-2 supports pin compatibility with RZ/G2LC.

Type-1 Part Number: R9A07G043U11GBG#BC0

Type-2 Part Number: R9A07G043U12GBG#BC0

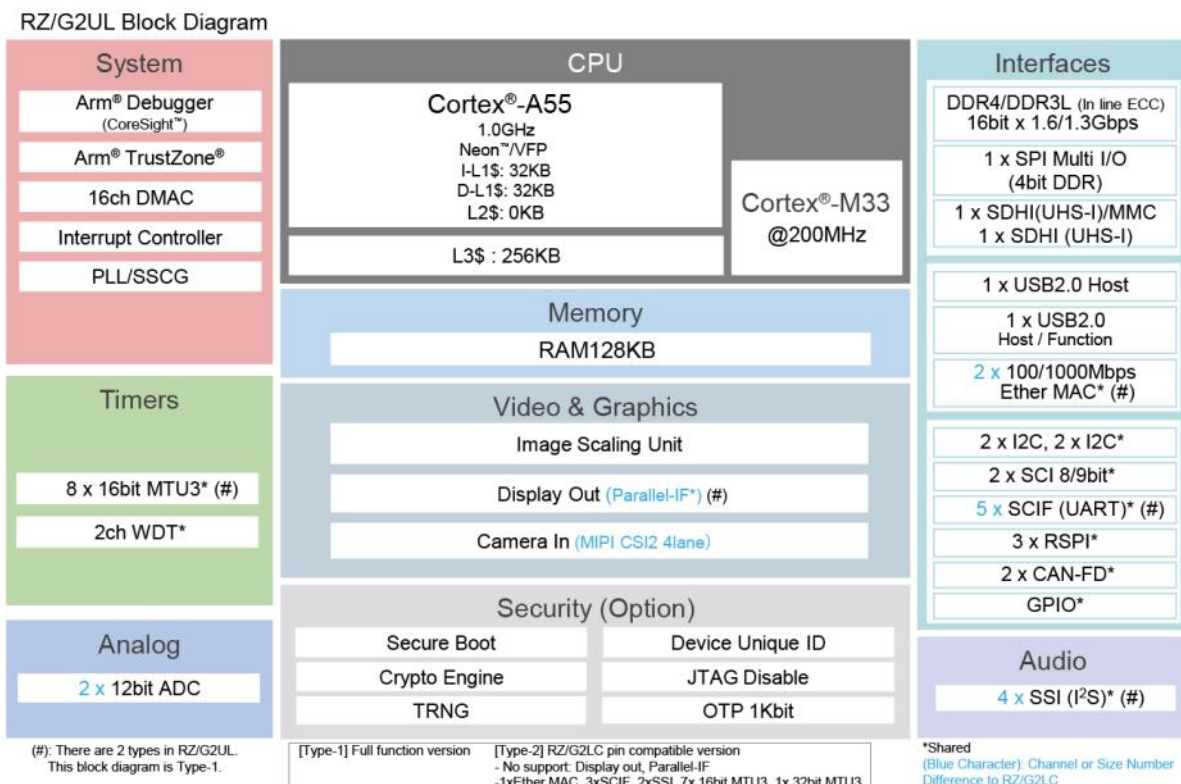| Product Group		RZ/G2L	RZ/G2LC	RZ/G2UL (Type-1)
Arm Cortex-A55	Dual	✓	✓	—
	Single	✓	✓	✓
Arm Cortex-M33		✓	✓	✓
3D Graphics		✓	✓	—
Video Codec (H.264)		✓	—	—
Display Interface		MIPI DSI or Parallel	MIPI DSI	Parallel
Camera Interface		MIPI CSI-2 or Parallel	MIPI CSI-2	MIPI CSI-2
Gigabit Ethernet		2ch	1ch	2ch
12-bit A/D Converter		8ch	—	2ch
Package (PBGA)		551pin, 21 x 21mm (0.8mm pitch) 456pin, 15 x 15mm (0.5mm pitch)	361pin, 13 x 13mm (0.5mm pitch)	361pin, 13 x 13mm (0.5mm pitch)

For More Information on RZ/G2L, RZ/G2LC and RZ/G2UL, please visit:

RZ/G2L: https://www.renesas.com/rzg2l

RZ/G2LC: https://www.renesas.com/rzg2lc

RZ/G2UL: https://www.renesas.com/rzg2ul

Production Information for RZ/G2L, RZ/G2LC, and RZ/G2UL

RZ/G2UL Processor Block Diagram

The MYC-YG2UL SOM takes full features of RZ/G2UL processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 39mm x 37mm
- PCB Layers: 10-layer design
- Power supply: +5V/1A
- Working temperature: -40~85 Celsius (industrial grade)

Processor

- RENESAS RZ/G2UL processor (Type-1)
    - 1.0 GHz Single-core ARM Cortex-A55
    - 200 MHz ARM Cortex-M33
    - 16-bit DDR3L/DDR4-1600 (in line ECC)
    - MIPI CSI-2 (4 lanes) Camera Interface
    - Parallel Display Interface
   - 2 x Gigabit Ethernet

Memory

- 512MB DDR3L
- 4GB eMMC
- 4KB EEPROM

Peripherals and Signals Routed to Pins

- Power Management IC
- 1.0mm pitch 140-pin Stamp Hole Expansion Interface + 50-pin LGA
    - 2 x RGMII
    - 2 x USB2.0
    - 5 x SCIF
    - 2 x SCI
    - 2 x CAN FD
    - 4 x I2C
    - 3 x SPI
    - 2 x ADC
    - 1 x RGB
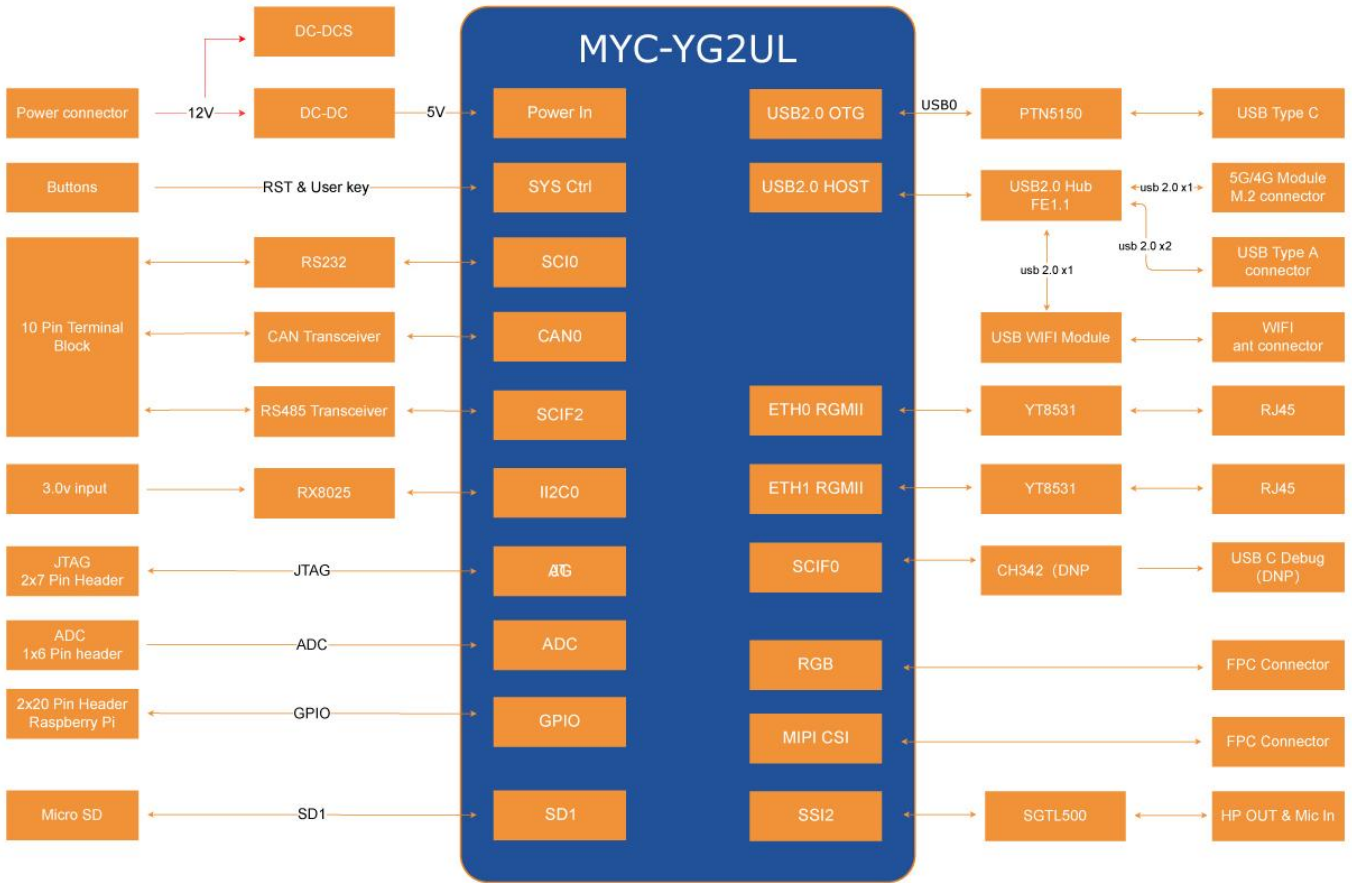   - 1x MIPI-CSI
    - 4 x SSI
    - Up to 82 GPIOs

  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 the SOM pinout description file.
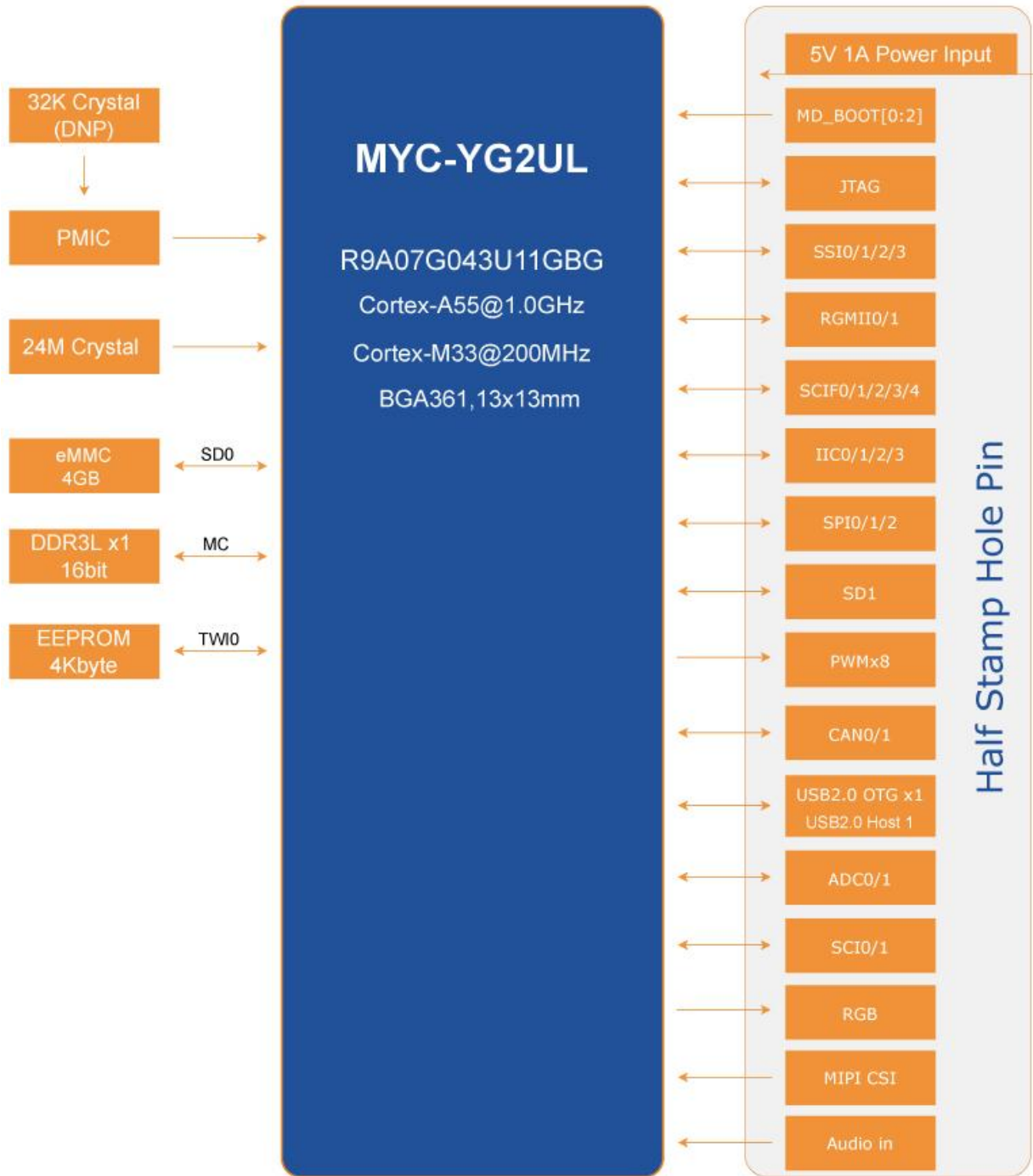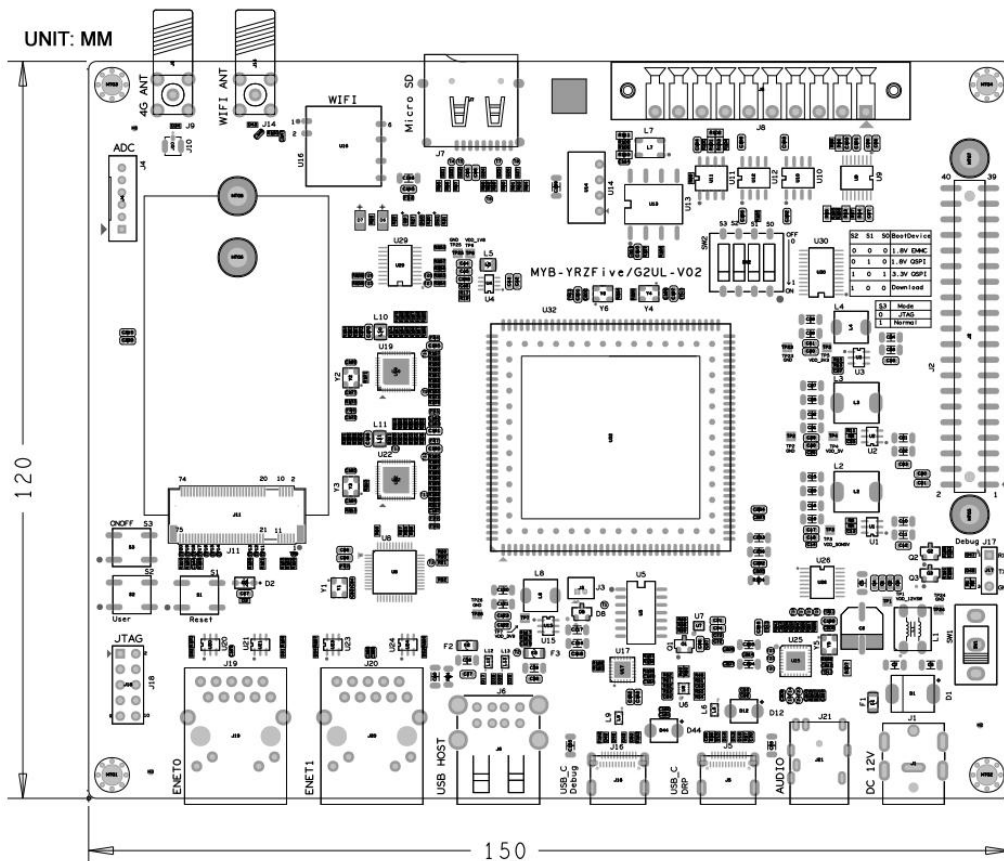
MYC-YG2UL SOM Function Block Diagram
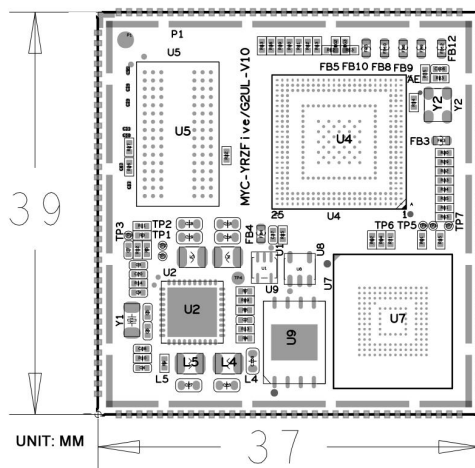
MYC-YG2UL Dimensions Chart

MYD-YG2UL Development Board Function Block Diagram

MYD-YG2UL Dimensions Chart

Software Features

The MYC-YG2UL SOM supports Linux OS and comes with complete software package. The kernel and many peripheral drivers are available in source code to assist clients to expedite their development. The following are a summary of the software features:

Item	Feature	Description	Source code
Bootloader	trusted-firmware-a	fsbl boot	YES
	U-boot	secondary boot program based on uboot_2021.10	YES
Linux kernel	Kernel version	Customized base on official kernel_5.10.83 version	YES
Drivers	PMIC	DA9062-53AM1 driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C driver	YES
	SPI	SPI driver	YES
	Ethernet	YT8531SH driver	YES
	SDHI	eMMC/SD driver	YES
	RGB	RGB display driver	YES
	Audio	SGTL5000 audio driver	YES
	4G/5G	4G/5G module driver	YES
	PWM	PWM driver	YES
	ADC	ADC driver	YES
	RTC	RTC driver	YES
	GPIO	GPIO driver	YES
	UART	RS485/RS232/TTL driver	YES
	CAN	CAN driver	YES
	Camera (MIPI)	OV5640 camera driver	YES
	WiFi	FG6131EUXX-00 driver	YES
File System	myir-image-core	image without GUI interface built with Yocto	YES
	myir-image-full	full-featured image built with Yocto	YES
	myir-image-OpenWrt	Image built with OpenWrt	YES

MYC-YG2UL Software Features

Order Information

Product Item	Part No.	Packing List
MYC-YG2UL SOM	MYC-YG2UL-4E512D-100-I	✓ One MYC-YG2UL SOM
MYD-YG2UL Development Board	MYD-YG2UL-4E512D-100-I	✓ One MYD-YG2UL Development Board ✓ One USB to TTL cable ✓ One 12V/2A Power adapter ✓ One DC Power jack adapter ✓ One Quick Start Guide
MY-CAM003M MIPI Camera Module	MY-CAM003M	**Add-on Options** ✓ MY-TFT070CV2 7-inch LCD Module ✓ MY-CAM003M Module ✓ MY-WIREDCOM Module
MY-TFT070CV2 7 inch LCD Module	MY-TFT070CV2	
MY-WIREDCOM RPI Module	MY-WIREDCOM	

Note:

1. One MYD-YG2UL Development Board includes one SOM MYC-YG2UL mounted on the base board. If you need more SOM, you can order extra ones.

2. Discounts are available for bulk orders.

3. We provide OEM/ODM services to reduce time and save cost for customers.

MYIR Electronics Limited

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