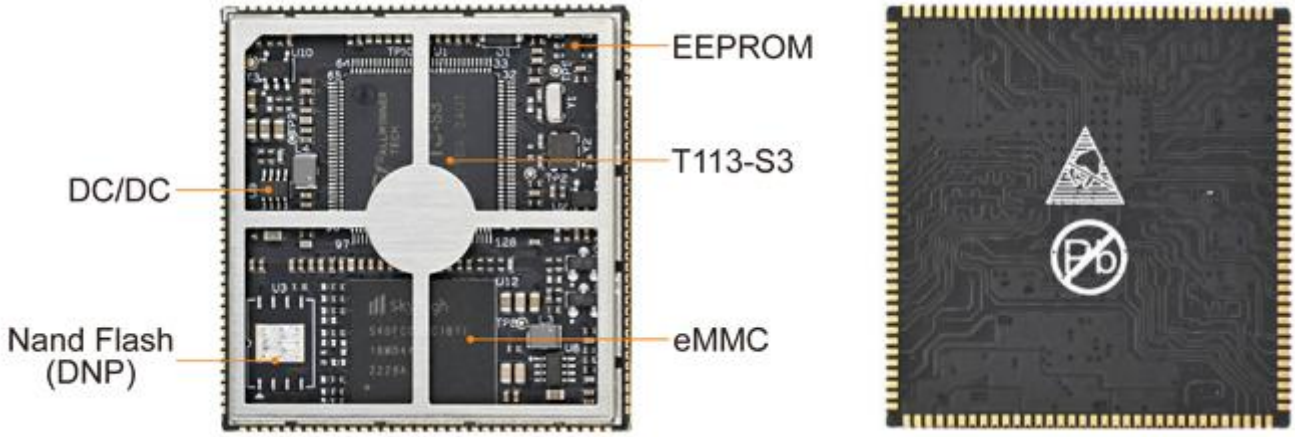
MYiR 米尔电子
Make Your Idea Real

MYC-YT113X System-On-Module Overview

- ✓ *Up to 1.2GHz Allwinner T113-S3 Dual-core ARM Cortex-A7 MPU with 128MB DDR3 and Single-core HiFi4 DSP*
- ✓ *4GB eMMC/256MB Nand Flash, 32KB EEPROM*
- ✓ *1.0mm pitch 140-pin Stamp Hole Expansion Interface*
- ✓ *Supports Running Linux 5.4 OS*

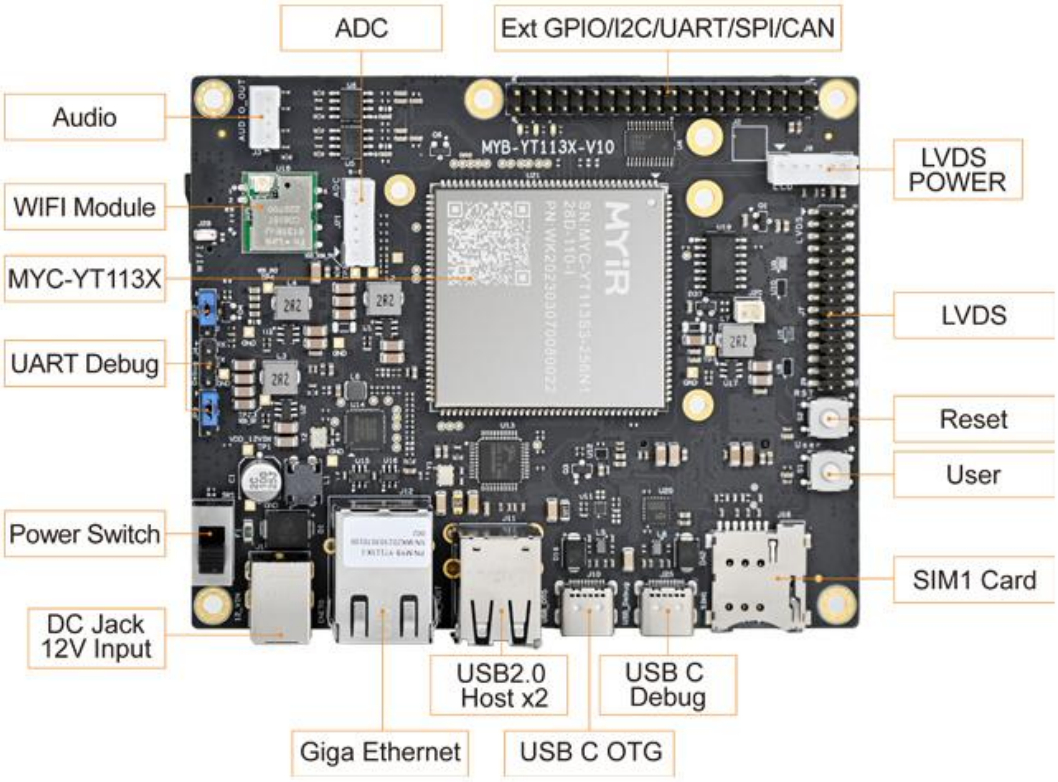
Measuring only 37mm by 39mm, the MYC-YT113X is a low-cost embedded ARM System-On-Module (SoM) based on **Allwinner T113-S3** processor which features up to **1.2GHz Dual-core ARM Cortex-A7** MPU with built-in 128MB DDR3, single-core HiFi4 DSP, Robust Video Engine and a broad range of peripherals like Gigabit Ethernet, 2 x CAN, 2 x USB2.0, 6 x UART, etc. The MYC-YT113X takes full features of the T113-S3 processor and has standard configurations for 256MB Nand Flash or 4GB eMMC external memory options. A number of peripheral and IO signals are access through 1.0mm pitch 140-pin stamp-hole (Castellated-Hole) expansion interface. It is capable of running Linux and suitable for applications such as HMI, industrial automation, display and control terminals.



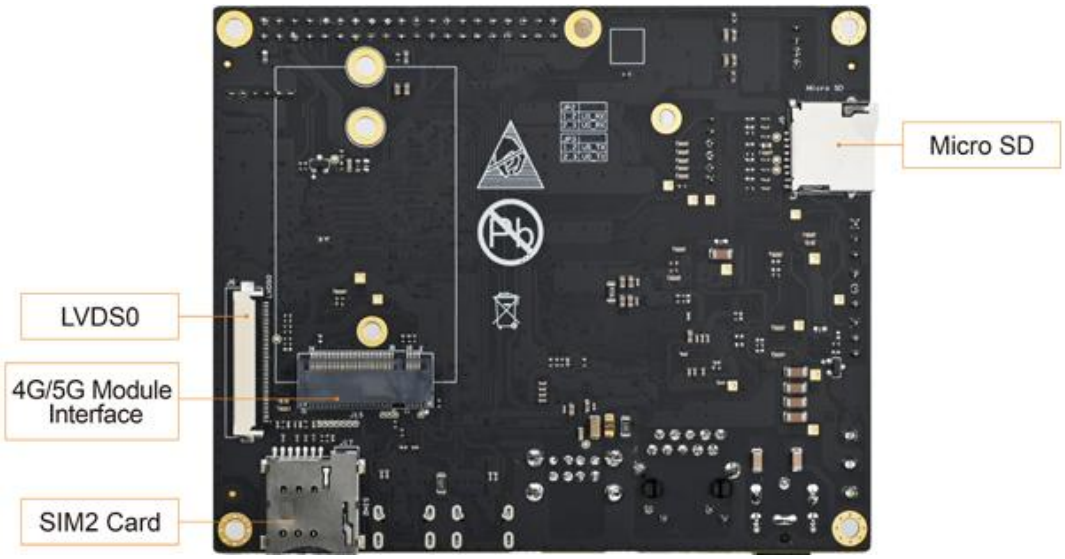
MYC-YT113X SOM (Top-view and Bottom-view)

MYC-YT113X Function Block Diagram

MYIR provides MYD-YT113X Development Board for evaluating the MYC-YT113X System-On-Module. It takes full advantages of the Allwinner T113-S3 MPU to explore a rich set of peripherals and interfaces to the base board including serial ports, one Gigabit Ethernet, two USB 2.0 HOST and one USB 2.0 OTG, one Micro SD card slot, one M.2 Socket for USB based 4G/5G LTE Module with two SIM card holders, one USB2.0 based WiFi module, one GPIO/I2C/UART/SPI/CAN extension header, Audio input/output and LVDS display interface.



MYD-YT113X Development Board Top-view



MYD-YT113X Development Board Bottom-view

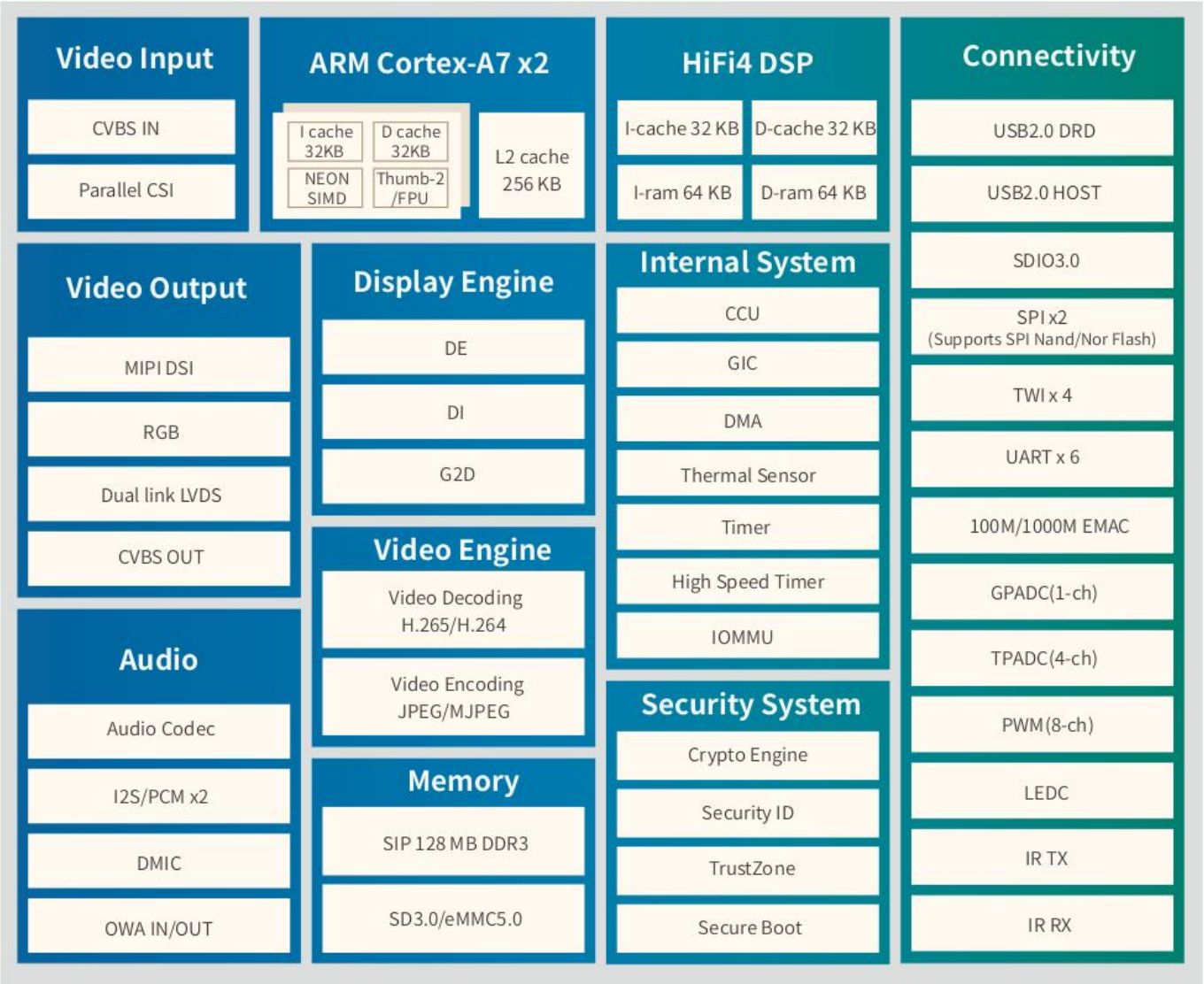
MYIR also offers MY-WIREDCOM RPI Module (RS232/RS485/CAN) and MY-LVDS070C LCD Module as options for the MYD-YT113X Development Board to enhance the functionality of the board.

Hardware Specification

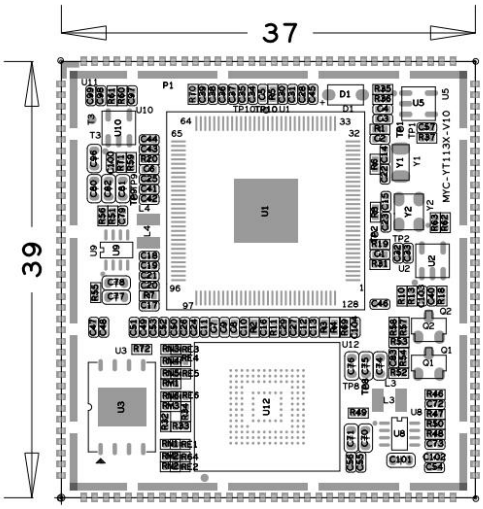
The MYC-YT113X Module is using 14 x 14 mm, eLQFP128 package Allwinner T113-S3 processor which is designed for the automotive and industrial control products. It integrates dual-core Cortex-A7 CPU and single-core HiFi4 DSP to provide the high efficient computing power. T113-S3 supports full format decoding such as H.265, H.264, MPEG-1/2/4, JPEG, VC1, and so on. The independent hardware encoder can encode in JPEG or MJPEG. Integrated multi ADCs/DACs and I2S/PCM/DMIC/OWA audio interfaces can provide the perfect voice interaction solution. T113-S3 comes with extensive connectivity to facilitate product expansion, such as CAN, USB, SDIO, EMAC, TWI, UART, SPI, PWM, GPADC, IR TX&RX, and so on.

Features	Description
CPU	● Dual-core ARM Cortex-A7 ● 32KB L1 I-cache + 32KB L1 D-cache per core, and 256KB L2 cache
DSP	● Single-core HiFi4 ● 32KB I-cache + 32KB D-cache
Memory	● SIP 128MB DDR3 ● SD 3.0/eMMC 5.1, SPI Nor/NAND Flash
Video Engine	**Video decoding** ● H.265 up to 1080p@60fps ● H.264 up to 1080p@60fps ● H.263, MPEG-1/2/4, JPEG, Xvid, Sorenson Spark, up to 1080p@60fps **Video encoding** ● JPEG/MJPEG up to 1080p@60fps ● Supports input picture scaler up/down
Display Engine	● Allwinner SmartColor2.0 post processing for an excellent display experience ● Supports de-interlace (DI) up to 1080p@60fps ● Supports G2D hardware accelerator including rotate, mixer, lbc decompression
Video OUT	● CVBS OUT interface, supporting NTSC and PAL format ● RGB LCD output interface up to 1920 x 1080@60fps ● Dual link LVDS interface up to 1920 x 1080@60fps ● 4-lane MIPI DSI interface up to 1920 x 1080@60fps
Video IN	● 8-bit parallel CSI interface ● CVBS IN interface, supporting NTSC and PAL format
Audio	● 2 DACs and 3 ADCs ● Analog audio interfaces: MICIN3P/N,LINEINL/R, FMINL/R,HPOUTL/R ● Digital audio interfaces: 12S/PCM, DMIC, OWA
Security System	● AES, DES, 3DES encryption and decryption algorithms ● RSA signature verification algorithm ● MD5/SHA and HMAC tamper proofing ● Hardware random number generator ● Integrated 2Kbits OTP storage space
Connectivity	● USB2.0 0TG,USB2.0 Host ● SDIO 3.0,SPI x 2,UART x 6, TWI x 4, CAN x 2 ● PWM (8-ch),GPADC(1-ch),TPADC(4-ch),IR TX&RX ● 10/100/1000M EMAC with RMII and RGMII interfaces
Package	● eOFP128, 14 mm x 14 mm

Features of T113-S3 Processor



Allwinner T113-S3 Block Diagram



MYC-YT113X Dimensions Chart (Unit: mm)

The MYC-YT113X System-On-Module takes full features of T113-S3 processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 37mm x 39mm
- PCB Layers: 6-layer design
- Power supply: +5V/1A
- Working temperature: -40~85 Celsius (industrial grade)

Processor

- Allwinner T113-S3 processor
  - Up to 1.2GHz Dual-core Arm Cortex-A7 with built-in 128MB DDR3
  - Single-core HiFi4 DSP
  - Supports H.265/H.264 video decoding up to 1080p@60fps and JPEG/MJPEG video encoding up to 1080p@60fps

External Memory

- 4GB eMMC or 256MB Nand FLASH
- 32KB EEPROM

Peripherals and Signals Routed to Pins

- 1.0mm pitch 140-pin Stamp Hole Expansion Interface
  - 1 x RGMII/RMII
  - 2 x USB2.0
  - 6 x UART
  - 2 x CAN
  - 4 x TWI
  - 2 x SPI
  - 1 x GPADC and 4 x TPADC
  - 1 x MIPI DSI
  - 2 x LVDS
  - 1x RGB
  - 1 x CVBS Out (TV Out)
  - 1 x Parallel CSI
  - 2 x CVBS In (TV In)
  - 2 x I2S
  - Up to 59 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.

Software Features

The MYC-YT113X System-On-Module 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	U-boot	Boot boot program uboot_2018.05	YES
Linux kernel	Linux kernel	Customized base on official kernel_5.4.61 version	YES
Device driver	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C bus driver	YES
	SPI	SPI bus driver	YES
	Ethernet	YT8531SH driver	YES
	SDHI	EMMC/SD card storage driver	YES
	LVDS	LCD driver	YES
	Touch	Touch screen driver	YES
	Audio	SPDIF driver	YES
	Watchdog	Watchdog driver	YES
	4G/5G	4G/5G driver	YES
	PWM	PWM control driver	YES
	ADC	ADC driver	YES
	RTC	RTC driver	YES
	GPIO	Universal GPIO driver	YES
	UART	RS232/RS485/TTL driver	YES
	CAN	CAN driver	YES
	WIFI	RTL8731BU driver	YES
File system	t113_linux_myir_emmc_core	Image built with Buildroot, excluding GUI interface	YES
	t113_linux_myir_emmc_full	A fully functional image built with Buildroot	YES
	t113_linux_myir_nand	Image built with Buildroot, excluding GUI interface, used for Nand Flash version	YES

MYC-YT113X Software Features

Order Information

Product Item	Part No.	Packing List
MYC-YT113X System-On-Module	MYC-YT113S3-256N128D-110-I-G	✓ One MYC-YT113X System-On-Module
	MYC-YT113S3-4E128D-110-I-G	
MYD-YT113X Development Board	MYD-YT113S3-256N128D-110-I-G	✓ One MYD-YT113X Development Board (including MYC-YT113X SOM) ✓ One USB to UART Debug cable ✓ One 12V/2A Power adapter ✓ One DC Power jack adapter ✓ One Quick Start Guide
	MYD-YT113S3-4E128D-110-I-G	
MY-LVDS070C 7-inch LCD Module	MY-LVDS070C	**Add-on Options** MY-LVDS070C 7-inch LCD Module MY-WIREDCOM Module
MY-WIREDCOM RPI Module	MY-WIREDCOM	

Note:

1. One MYD-YT113X Development Board includes one System-On-Module MYC-YT113X mounted on the base board. If you need more SOMs, 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

Headquarter Address: Room 04, 6th Floor, Building No.2, Fada Road, Yunli Smart Park, Bantian, Longgang District, Shenzhen, Guangdong, China 518129

Factory Address: Room 201, Block C, Shengjianli Industrial Park, Dafu Industrial Zone, Guanlan, Longhua District, Shenzhen, 518110, China

Website: en.myir.cn
Email: sales@myir.cn
Tel: +86-755-22984836