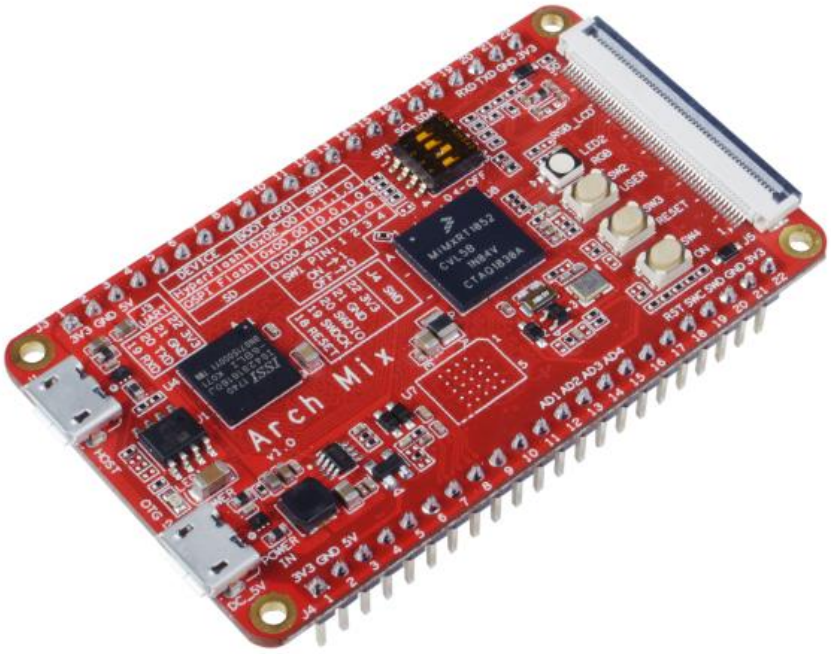


Arch Mix

SKU 102080027

Arch Mix is a thin, lightweight development board based on NXP i.MX RT1052 processor(3020 CoreMark/1284 DMIPS @ 600 MHz). This development board comes pre-installed RT-Thread real-time operating system and built-in micro-python. Which makes it suitable for industrial control, especially for scenes with large code and high real-time application requirements.

The i.MX RT1052 is a new processor family featuring NXP's advanced implementation of the Arm Cortex®-M7 core. Currently, the i.MX RT1052 is the highest performing Cortex-M7 solution delivering 3036 CoreMarks, which is 13 times better than the LPC1788 microcontroller. In addition to the high-speed performance it provides fast real-time responsiveness. The i.MX RT1050 also has rich audio and video features, including LCD display, basic 2D graphics, camera interface, SPDIF, and I2S audio interface.

The RT-Thread is an open source IoT operating system for embedded devices. The kernel has real-time multi-task scheduling, semaphore, mutex, mail box, message queue, signal etc. This is a lightweight system that loads quickly. For more detail about the RTOS, please refer to the Github Page.

Also, we are very excited to announce that there will soon be a Grove breakout board and MicroPython libraries available for use with Grove! This means that plug-and-play prototypes for industrial control and IoT projects will soon be possible, so stay tuned!

> **Note**
>
> RT-Thread has complete and detailed Chinese materials and community resources , also provide a complete set of development tools and debug tools. We will continue to update relevant English materials and resources in our wiki.

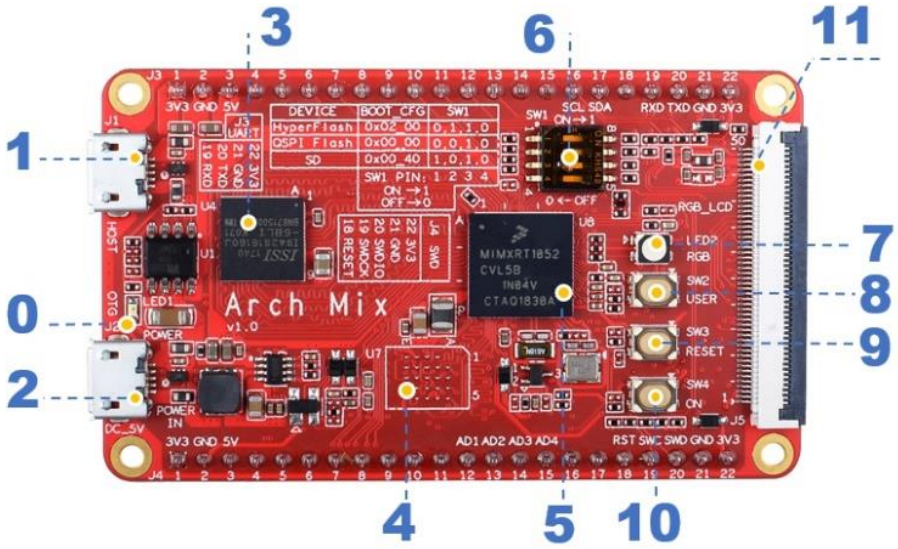
Features

- ARM® Cortex®-M7 600MHz microcontroller(NXP i.MX RT1052)
- Comes with real-time operating system RT-Thread
- Build-in micro-python
- Ultra-fast system loading speed
- Rich peripheral interface: RMII, CAN, I2C, UART, CSI, I2S, ADC, SPDIF IN/OUT, SWD
- Smaller than other Demo boards of RT1052/1050: 67mm x 39mm
- Cost-effective: Normally, development boards for RT1052 would cost around a whopping $90, only $ for Arch Mix!!!

Application Ideas

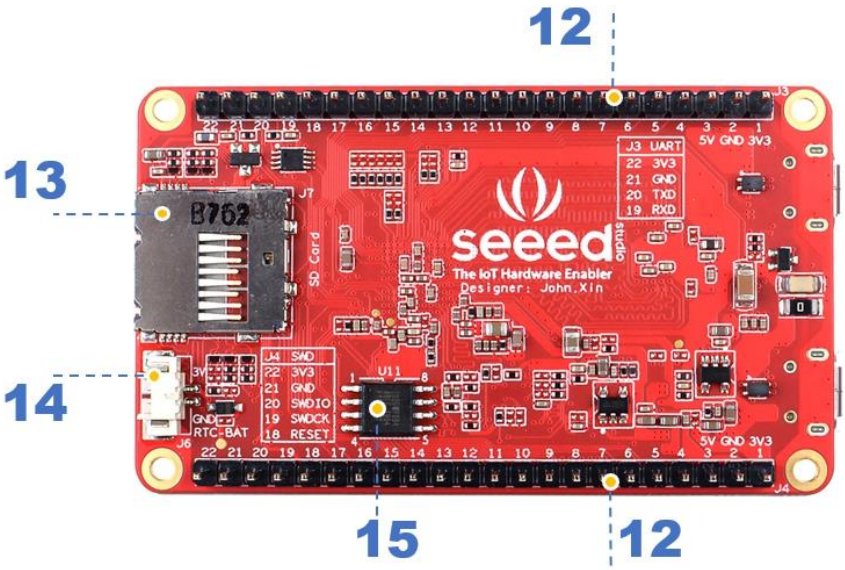
- Industrial Control
- Smart Building
- Industrial Human Machine Interfaces
- Automation & Process Control
- Robot

Hardware Overview



0- LED1, Power LED
1- J1, USB Host*0
2- J2, USB OTG and DC Power In*0
3- U4, 32MB SDRAM
4- U7, 64MB HyperFlash*1
5- U8, CPU RT1052
6- SW1, Boot Configuration DIP Switch
7- LED2, RGB
8- SW2, User Button
9- SW3, Reset Button
10- SW4, Power ON/OFF Button*2
11- J5, RGB LCD Interface

Figure 1. *Front Hardware Overview*



12- J3 J4 , 1x22Pin Expansion PIN Header
13- J7, Micro SD Card
14- J6, RTC CR2032 BAT Connector*3
15- U11, 8MB QSPI Flash*1

Figure 2. *Back Hardware Overview*

Pinout

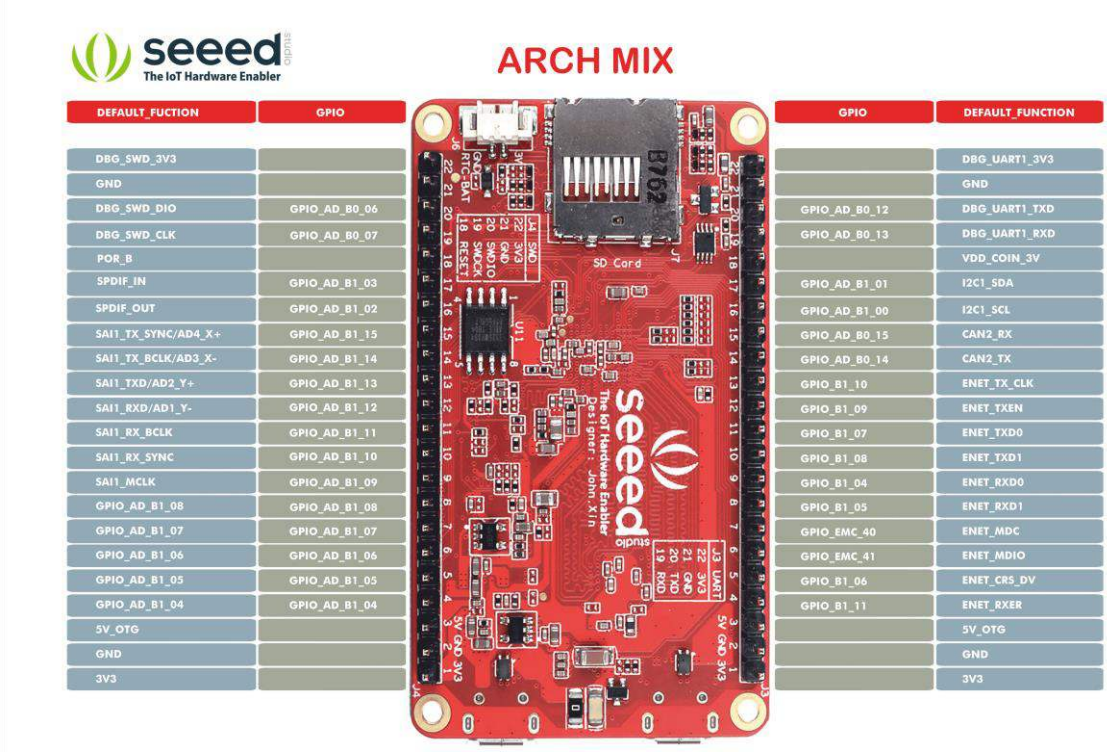


Figure 3. *Pinout, ckick the image to view the original file*

Block Diagram

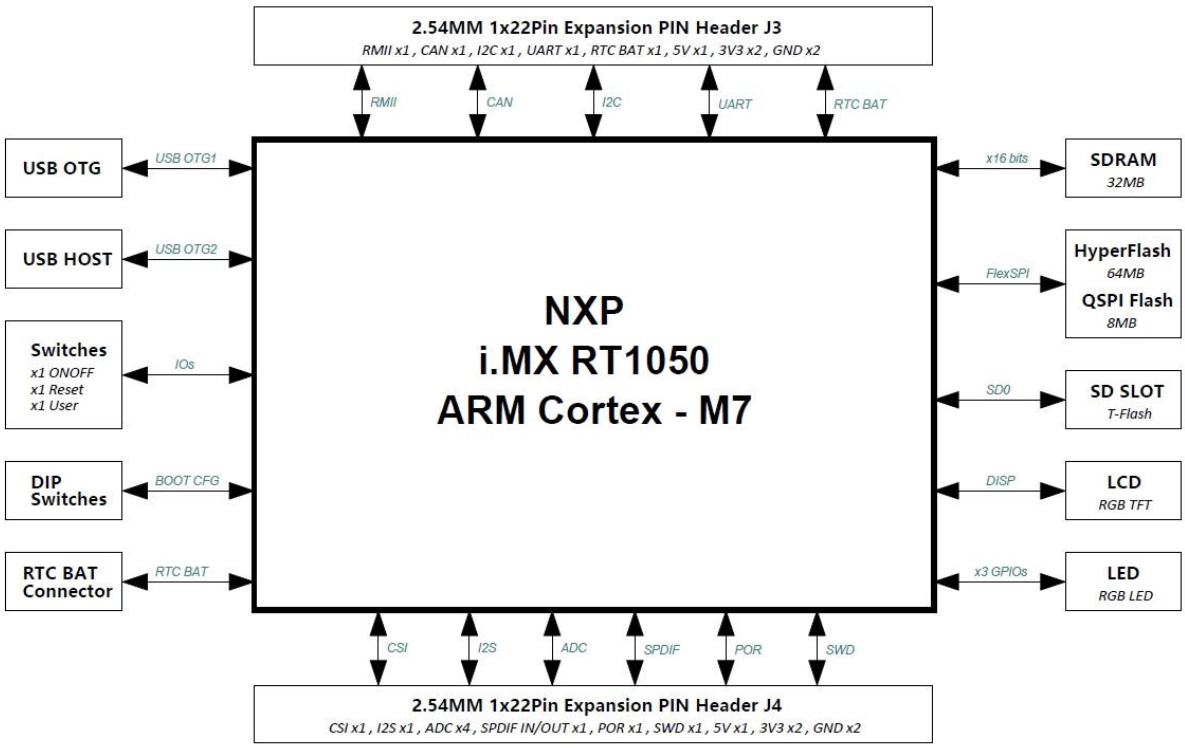


Figure 4. *Arch Mix Blcok Diagram, ckick the image to view the original file*

About RT-Thread

The RT-Thread is a mature, lightweight IoT system with a complete ecological chain. The following table illustrates a comparison between the RT-Thread and other RTOS.

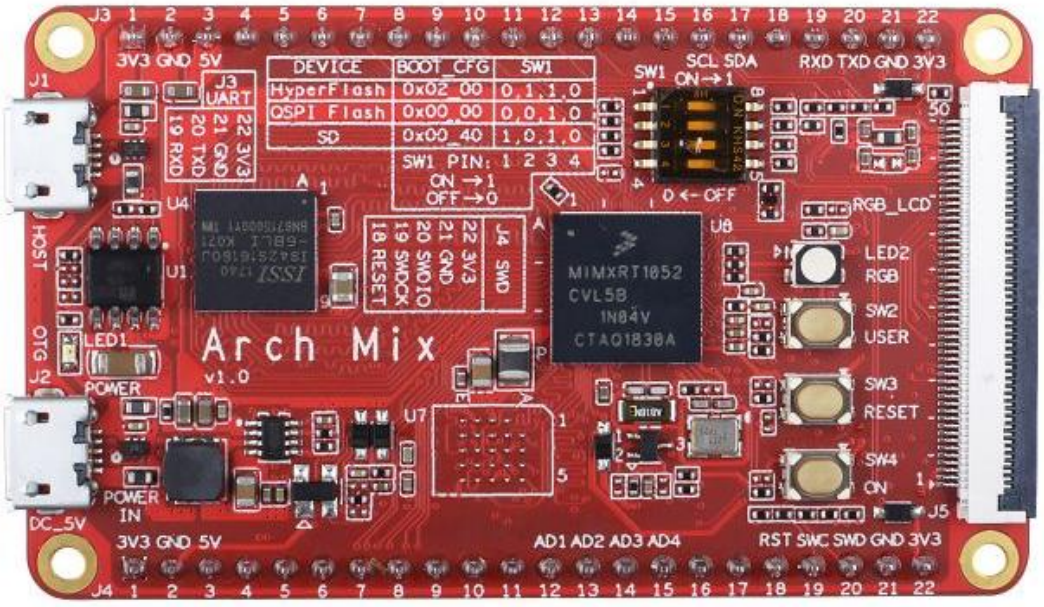
Item	FreeRTOS	µC/OS	RT-Thread
Kernel size	5KB ROM, 2KB RAM	6KB ROM, 1KB RAM	3KB ROM,1KB RAM
Kernel mechanism	Mailbox ✗ Event ✓ Coroutine ✓	Mailbox ✓ Event ✓	Mailbox ✓ Event ✓ Message queue✓
Development tools	Support a variety of mainstream tools, full toolchain	Support a variety of mainstream tools, full toolchain	Support a variety of mainstream tools, full toolchain, provide accessibility tools
Debug tools	Shell SystemView	SystemView	Shell Logging system NetUtils ADB SystemView
Testing system	Don't support	Don't support	Unit test framework Auto test system
Support chip and CPU architecture	Support ARM, MIPS, RISC-V, xtensa and other mainstream CPU architecture	Support ARM, MIPS and other mainstream CPU architecture	Support ARM, MIPS, RISC-V and other mainstream CPU architecture
File system	Support FAT	Need authorization	Provide various file systems layer. Support fatfs, littlefs, jffs2, romfs and the popular file systems.
Low power consumption	Partial support	Partial support	Support
GUI	None	µC/GUI	Provide GUI engine
Component ecology	Provide network, debugging, security related components	There are some, but need to be authorized	Provide a software package platform, currently about 100 components, covering a wide range
IoT component	TCP/UDP/AWS	Need authorization	TCP/UDP, Azure, Ayla, Aliyun , onenet, webclient, mqtt , websocket, WebNet...

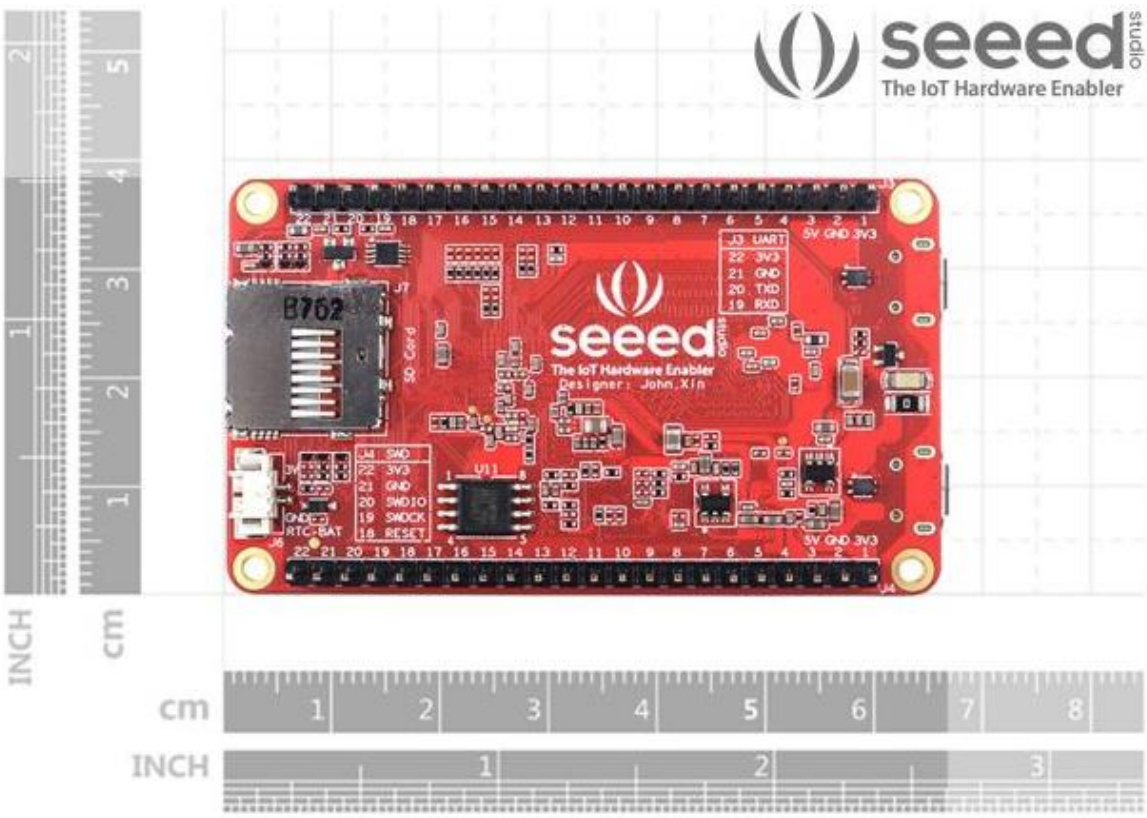
ECCN/HTS

ECCN	3A991.a
HSCODE	8543709990
USHSCODE	85177000
UPC	

RT-Thread Programming-Manual

https://github.com/RT-Thread/rtthread-manual-doc





https://www.seeedstudio.com/Arch-Mix-p-2901.html//4-15-19