M5Core2
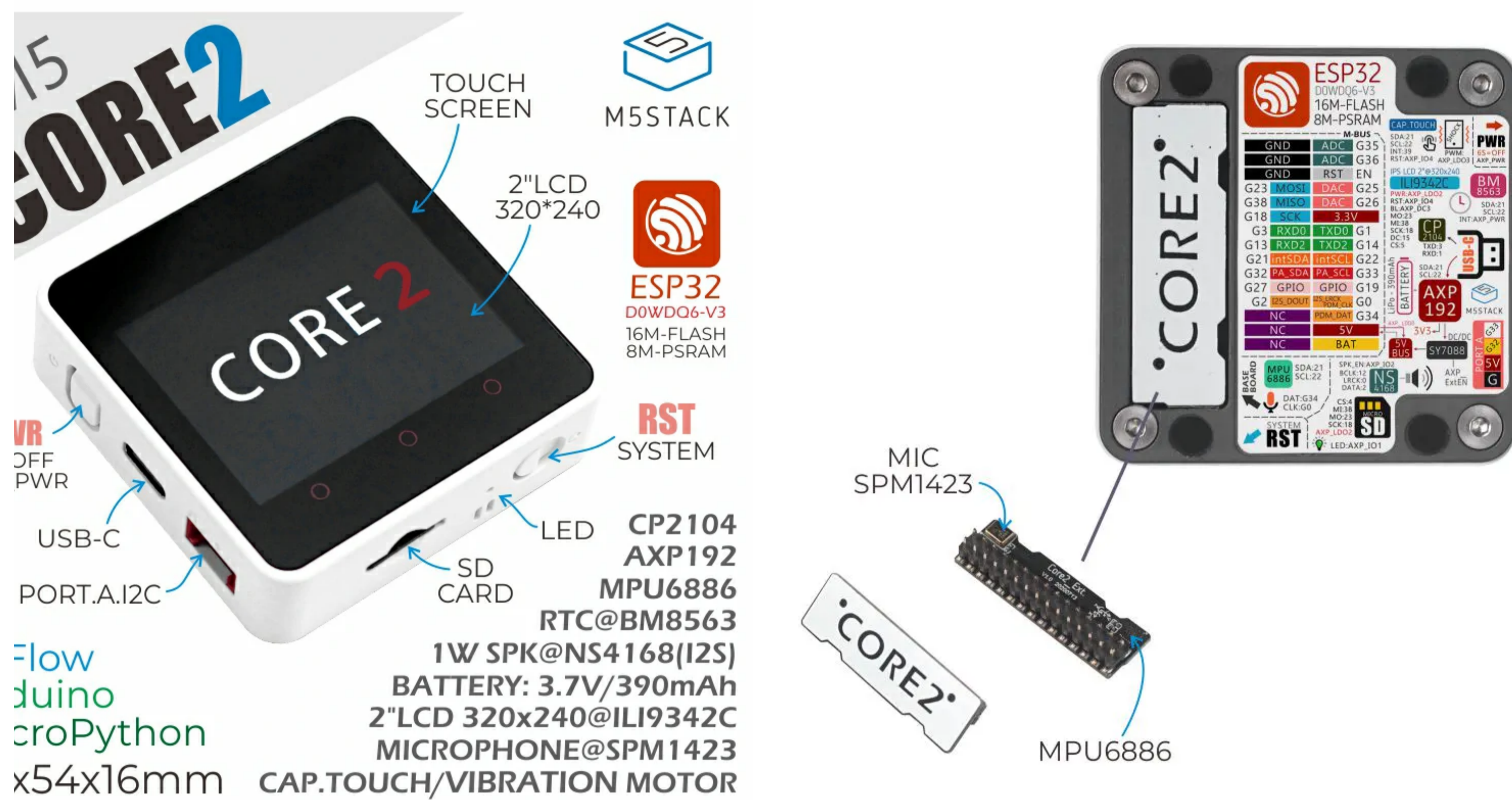
Tutorial&Quick-Start

ose the development platform you want to use, view the corresponding tutorial&quick-Start.

Flow　　Arduino

Description

ore2 is the second generation core device in the M5Stack development kit series, which further enhances the functions of the original generation o
.

MCU is an ESP32 model D0WDQ6-V3 and has dual core Xtensa® 32-bit 240Mhz LX6 processors that can be controlled separately. WiFi and Bluetoc
upported as standard and it includes an on board 16MB Flash and 8MB PSRAM, USB TYPE-C interface for charging, downloading of programs and
l communication, a 2.0-inch integrated capacitive touch screen, and a built-in vibration motor.

ore2 also features a built-in RTC module which can provide accurate timing. The power supply is managed by an AXP192 power management chip,
h can effectively control the power consumption of the base and a built-in green LED power indicator helps to notify the user of battery level. The
ery capacity has been upgraded to 390mAh, which can power the core for much longer than the previous model.

M5Core2 retains the TF-card(microSD) slot and speakers. However, in order to ensure higher quality sound output, the I2S digital audio interface po
ifier chip is used to effectively prevent signal distortion. There are independent power and reset buttons on the left side and bottom of the base.

8 icons on the front of the screen are capacitive buttons which are programmable. There is a small expansion board on the back of the base with a 6
MU sensor and microphone. The development platform and programming language supported by M5Stack Core2: Arduino, UIFlow (using Blockly,
oPython language) No matter what level of your development and programming skills, M5Stack will help You gradually turn your ideas into reality.

ower Management

Operations:

Power on: One click the power button on the left

Power off: Long press the left power button for 6 seconds

Reset: Click the RST button on the bottom side

Core2 is adopting AXP192 as power chip. Please initialize the 'mbus' mode per the powering method, as below:

```
/mbus_mode_t:
/kMBusModeOutput: Powered by USB or battery
/kMBusModeInput: Powered by external 5V or DC jack

5.begin(bool LCDEnable = true, bool SDEnable = true, bool SerialEnable = true, bool I2CEnable = false, mbus_mode_t mode =
MBusModeOutput);
```

USB drive

Before using, please go to download page to download the USB driver that matches your operating system, and install it. Note: **Core2** currently has two CP2104/CH9102F A USB chip version, users can install the drivers (`CH34x` and `CP210x`) that are compatible with two ICs at the same time to ensure that the device drivers work normally.

xtensions

To stack M5Core2 with M5 modules, you need to remove/eliminate the battery bottom of Core2; If you wish to keep I2S Mic, IMU and Battery functions, a M5GO Bottom2 is required. The CP2104 chip interface is reserved on the PCB of CORE2 to interface with the lithium battery.**

roduct Features

- SP32-based, built-in Bluetooth,WiFi
- 6M Flash,8M PSRAM
- Built-in speaker, power indicator, vibration motor, RTC, I2S amplifier, capacitive touch screen, power button, reset button
- F card slot (16G Maximum size)
- Built-in lithium battery, equipped with power management chip
- ndependent small board built-in 6-axis IMU, PDM microphone
- M-Bus Socket & Pins
- Program Platform: UIFlow, MicroPython, Arduino

nclude

- x M5Stack Core2
- x Type-C USB(20cm)

Applications

- Internet of things terminal controller
- Stem education product
- DIY creation
- Smart home equipment

Specification

Resources	Parameter
ESP32-D0WDQ6-V3	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash	16MB
PSRAM	8MB
Input Voltage	5V @ 500mA
Interface	TypeC x 1, GROVE(I2C+I/0+UART) x 1
IPS LCD Screen	2.0"@320*240 ILI9342C
Touch Screen	FT6336U
Speaker amplifier	NS4168
LED	Green power indicator light
Button	Power button, RST button, Virtual screen button*3
Vibration reminder	Vibration motor
MIC	SPM1423
I2S Power Amplifier	NS4168
6-axis IMU	MPU6886
RTC	BM8563
PMU	AXP192
USB Chip	CP2104/CH9102F (two chip versions, there is no difference in function and use)
DC-DC Boost	SY7088
TF card slot	16G Max
Lithium Battery	390mAh @ 3.7V
Antenna	2.4G 3D antenna
Operating temperature	0°C to 60°C
Net Weight	52g
Gross Weight	70g
Product Size	54 x 54 x 16mm
Package Size	75 x 60 x 20mm

Resources	Parameter
Case Material	Plastic (PC)

asyLoader

EasyLoader is a concise and fast program writer, which has a built-in case program related to the product. It can be burned to the main control by simple steps to perform a series of function verification.

wnload Windows Version Easyloader   Download MacOS Version Easyloader

Description:
This case will perform hardware running tests for speakers, wifi, buttons, accelerometer, TF-card(microSD), screen, etc.

inMap

& TF card

: 320x240 TF card Maximum size 16GB

SP32 Chip	GPIO38	GPIO23	GPIO18	GPIO5	GPIO15		
XP192 Chip						AXP_IO4	AXP_DC3
ILI9342C	MISO	MOSI	SCK	CS	DC	RST	BL

ESP32 Chip	GPIO38	GPIO23	GPIO18	GPIO4
TF Card	MISO	MOSI	SCK	CS

TOUCH

ESP32 chip	GPIO21	GPIO22	GPIO39
AXP192			
FT6336U	SDA	SCL	INT

& NS4168(Speaker)

ESP32 Chip	GPIO12	GPIO0	GPIO2	AXP_IO2	GPIO34
NS4168	BCLK	LRCK	DATA	SPK_EN	
Mic		CLK			DATA

Power Indicator Light

AXP192	AXP_IO1	AXP_LDO3

Green LED	Vcc	
Vibration motor		Vcc

ESP32 Chip	GPIO21	GPIO22	
AXP192			AXP_PWR
BM8563	SDA	SCL	INT

(3-axis gyroscope & 3-axis accelerometer)

ESP32 Chip	GPIO21	GPIO22
MPU6886	SDA	SCL

to serial chip

ESP32 Chip	GPIO1	GPIO3
CP2104	RXD	TXD

nal I2C connection

ESP32 Chip	GPIO21	GPIO22
MPU6886	SDA	SCL
AXP192	SDA	SCL
BM8563	SDA	SCL
FT6336U	SDA	SCL

ging current measured value

charging current	Fully charged current(Power OFF)	Fully charged current(Power ON)
0.219A	0.055A	0.147A

M5Core2 M-BUS Schematic diagram

PA_SDA	PA_SCL	G33
GPIO	GPIO	G19
I2S_DOUT	I2S_LRCK PDM_CLK	G0
NC	PDM_DAT	G34
NC	5V	
NC	BAT	

M5PORT EXPLAIN

PORT	PIN	Note:
PORT-A(Red)	32/33	I2C

SP32 ADC/DAC

ADC1	ADC2	DAC1	DAC2
8 channels	10 channels	2 channels	2 channels
G32-39	G0/2/4/12-15/25-27	G25	G26

more information about Pin assignment and Pin Remapping, Please refer to ESP32 Datasheet
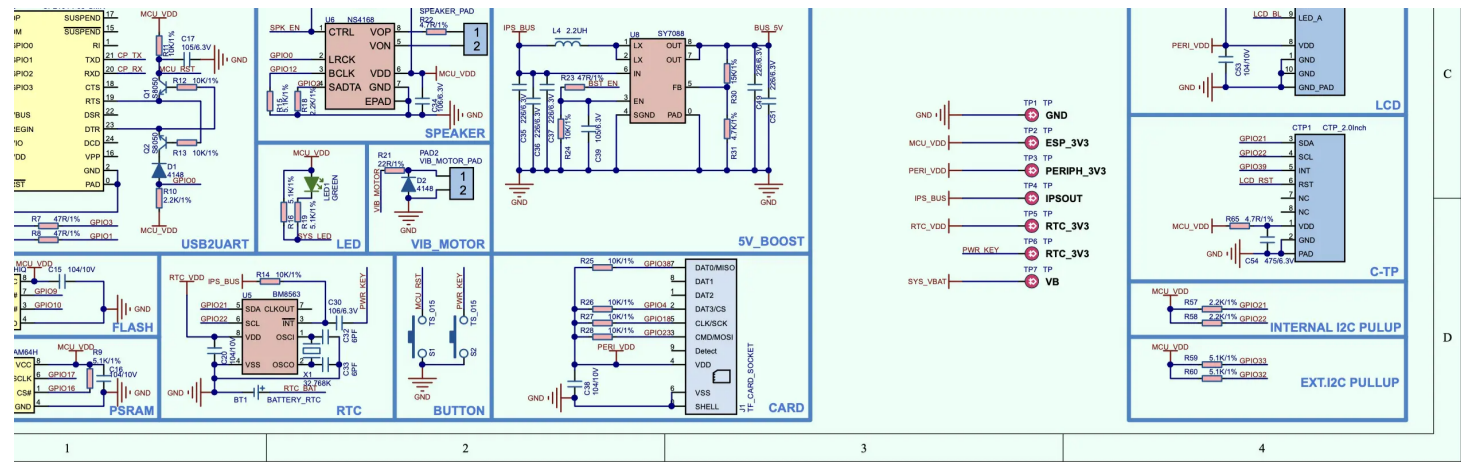
Related Link

Datasheet

- ESP32
- FT6336U
- NS4168
- MPU6886
- ILI9342C
- SPM1423
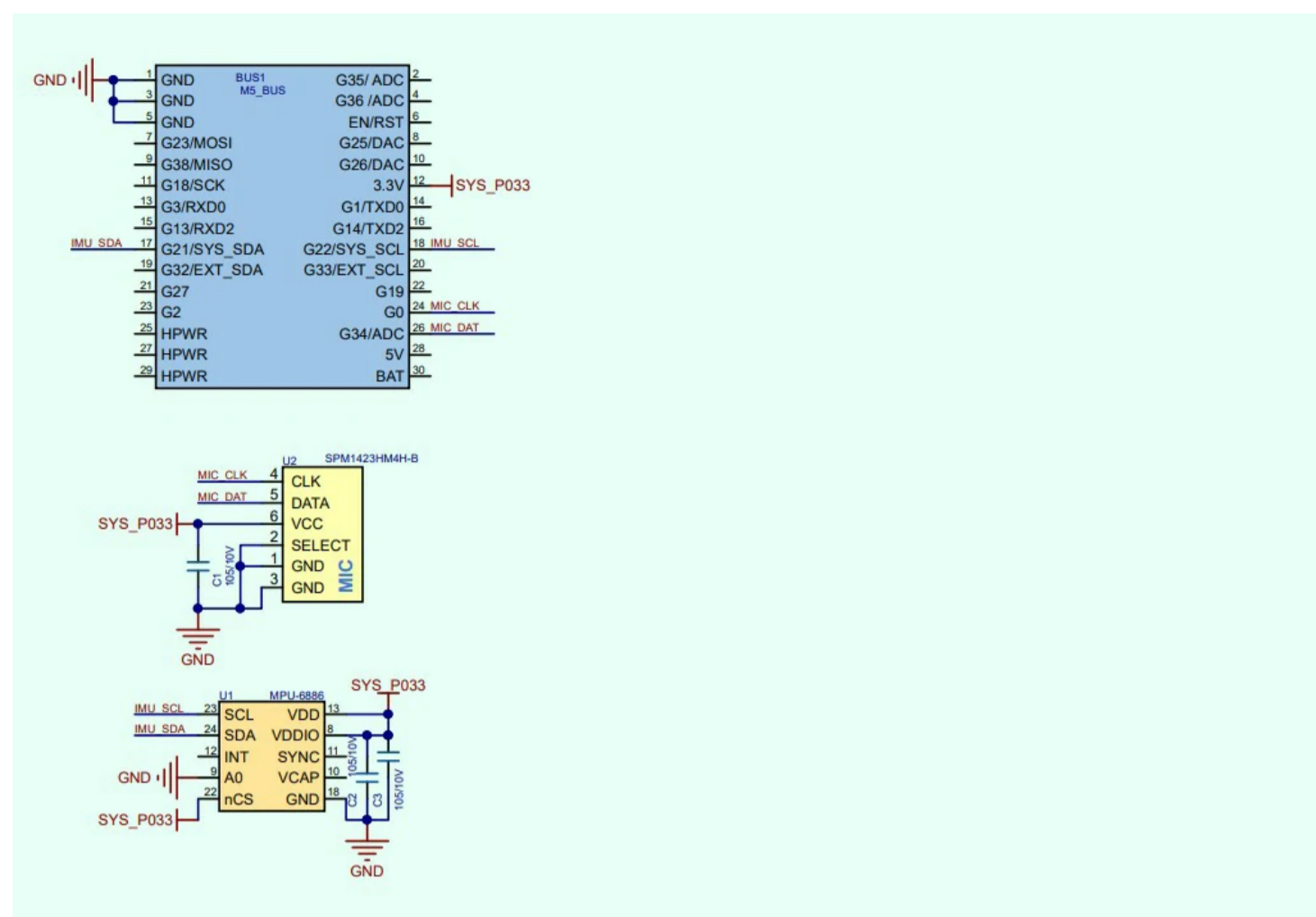- BM8563
- SY7088
- AXP192
- ATECC608A

API

- Arduino API

Schematic
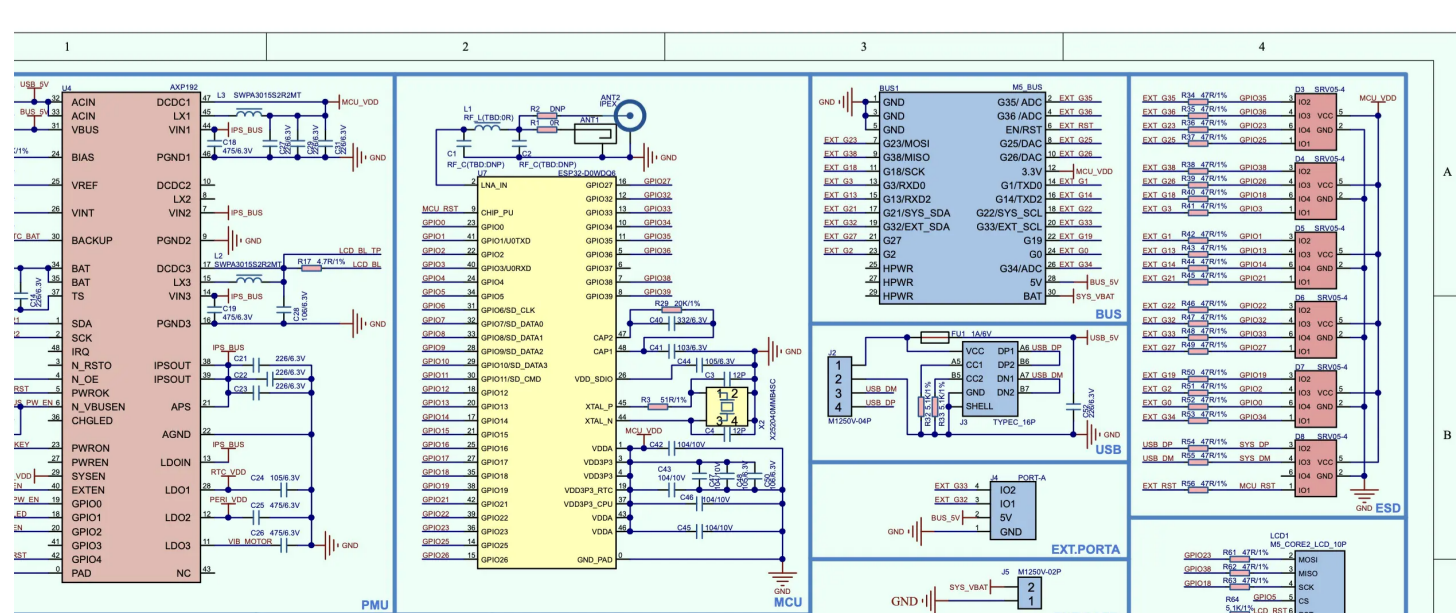
Core2-Schematic

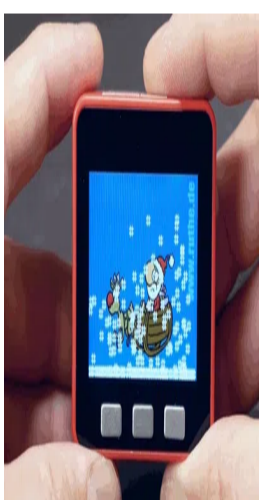Core2 Expansion board-Schematic

earn

Health monitor - Waylay IO

Health monitoring using the M5Stack Mini Heart Rate Unit and Non-Contact Infrared Thermometer Unit and the Waylay IO IoT platform.

One-Wheel Balancing Robot Using Reaction Wheels

I made one-wheel balancing robot. This robot can be operated remotely from a smartphone using Blynk.

M5Stack Christmas Snow Globe

Modern times make modern solutions possible. Therefore, the step to a digital snow globe is not that far.

xample

luino

Click here to get Arduino code

orial

UIFlow

Arduino

ersion Change

elease Date	Product Change	Note:

2020.6	Initial public release<	/
2021.7	USB Chip changed from CP2104 to CH9102F	The actual delivery has two chip versions, CP2104/CH9102F, and there is no difference function and use