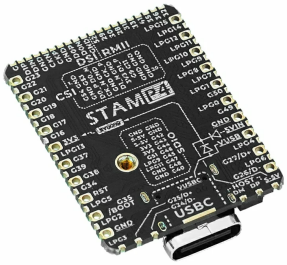
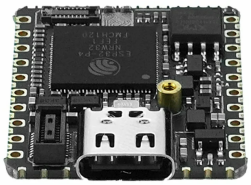
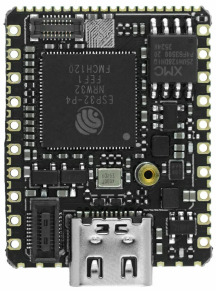
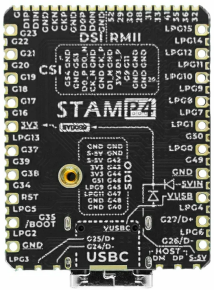
Stamp-P4

SKU:S013









Description

Stamp-P4 is a high-performance embedded module based on the ESP32-P4NRW32 chip. The module features a 32-bit RISC-V high-performance dual-core processor (360 MHz) and a single-core low-power coprocessor (40 MHz), integrated with a 16MB Flash + 32MB PSRAM storage combination. It can stably support complex applications such as image processing, UI rendering, and edge AI inference. In terms of multimedia and human-machine interaction, the chip integrates a MIPI-CSI camera interface and a MIPI-DSI high-definition display interface, combined with a hardware-level H.264 encoder, ISP image signal processor, and PPA pixel processing accelerator, enabling smooth audio-video capture, encoding, and graphical UI display. The module interfaces are compatible with 1.27mm/2.00mm pitch SMT packaging and 2.54mm pitch DIP male/female headers. It supports high-speed communication peripherals such as USB 2.0 OTG HS, Ethernet (GMAC), and SDIO 3.0, making it easy to integrate into various PCB designs and helping developers quickly complete product prototypes and application deployment.

Tutorial

UiFlow2

This tutorial explains how to control the Stamp-P4 device using the UiFlow2 graphical programming platform.

Features

- ESP32-P4NRW32 Core:
  - 16MB Flash
  - 32MB PSRAM
- AI vector expansion instruction set, suitable for edge-side AI recognition and data processing
- Peripheral Interfaces:
  - MIPI CSI (2-lane) camera interface
  - MIPI DSI (2-lane) high-definition display interface
  - SDIO expansion interface (Can expand Stamp-AddOn C6 For P4, quickly integrate 2.4GHz Wi-Fi 6)
  - RMII Ethernet expansion interface
- Module Packaging:
  - 1.27mm/2.00mm pitch SMT packaging
  - 2.54mm pitch DIP male/female headers

    - Supports multiple application forms (SMT, DIP, fly-wire)
- Integrated USB overvoltage protection design, supports input voltage protection greater than 6V
- Development Platform
    - UiFlow2
    - Arduino IDE
    - ESP-IDF
    - PlatformIO

Includes

- 1 x Stamp-P4

Applications

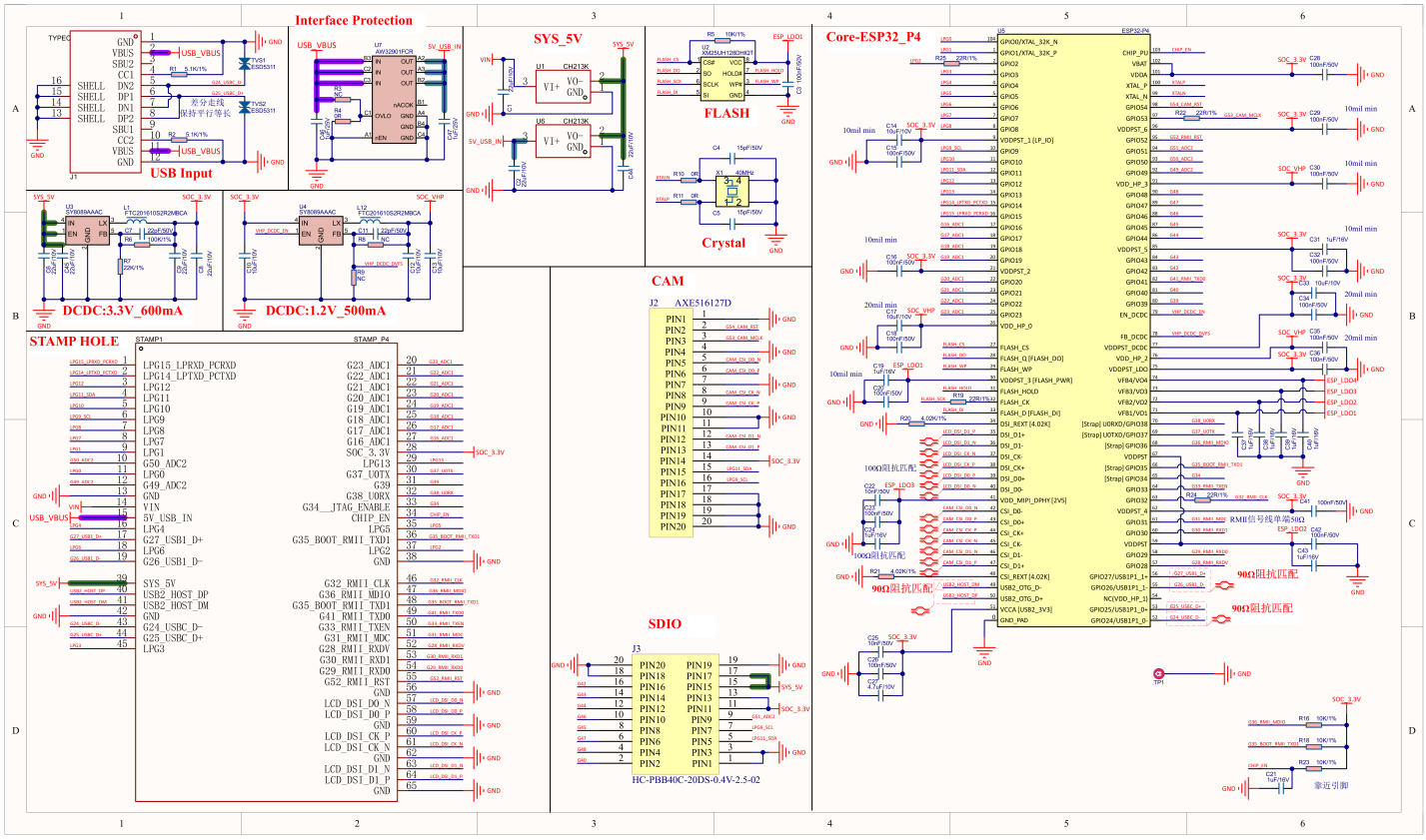
- Smart Home
- Industrial Human-Machine Interface (HMI)
- Visual acquisition nodes
- Edge computing devices

Specifications

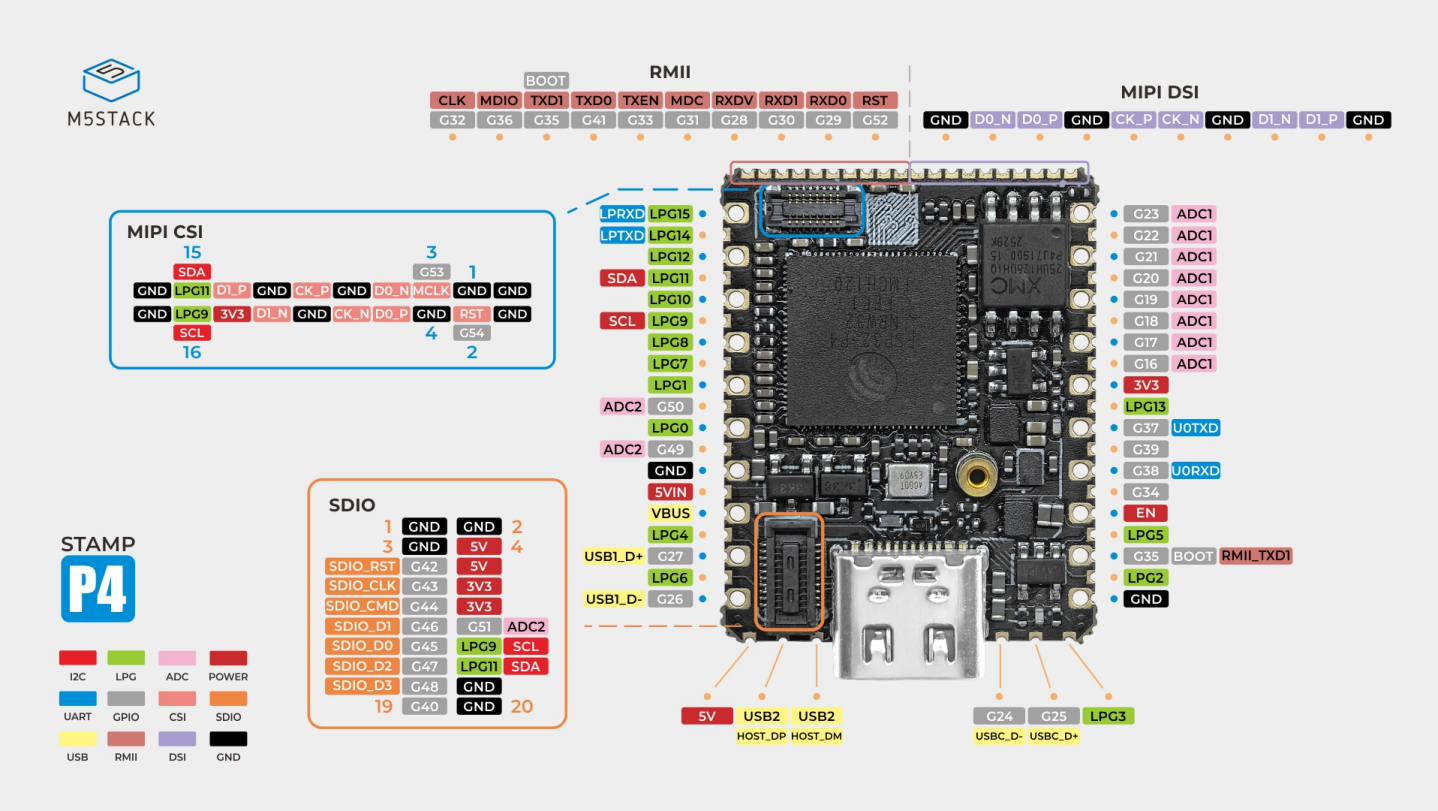
Specification	Parameter
SoC	ESP32-P4NRW32 (RISC-V 32-bit high-performance dual-core processor 360 MHz + RISC-V 32-bit single-core low-power coprocessor 40 MHz)
Flash	16MB
PSRAM	32MB Octal
DC-DC	SY8089AAAC
Overvoltage Protection	AW32901FCR, supports input voltage protection greater than 6V
Input Voltage	DC 5V
Power Consumption	Bare board operation: 5V@30.76mA Bare board deep sleep: 5V@360.84uA / 3.3V@343.90uA
Module Resource Interface	USB, UART, I2C, RMII, GPIO, MIPI CSI, MIPI DSI
Stamp Hole Lead-out Interface	44 x GPIO (G0-G39, G41, G49, G50, G52) MIPI DSI (2-lane) USB HOST (USB2 OTG D+/-) CHIP_EN
Module Packaging	SMT: 1.27 / 2.00mm DIP: 2.54mm
BTB Expansion Interface	SDIO, MIPI CSI (2-lane)
BTB Interface Specification	MIPI CSI: AXE516127D SDIO: HC-PBB40C-20DS-0.4V-2.5-02
Operating Temperature	0 ~ 40°C
Product Size	29.8 x 22.0 x 4.3mm
Product Weight	2.7g
Package Size	138.0 x 93.0 x 7.5mm
Gross Weight	6.1g

Schematics

- Stamp-P4 Schematics PDF

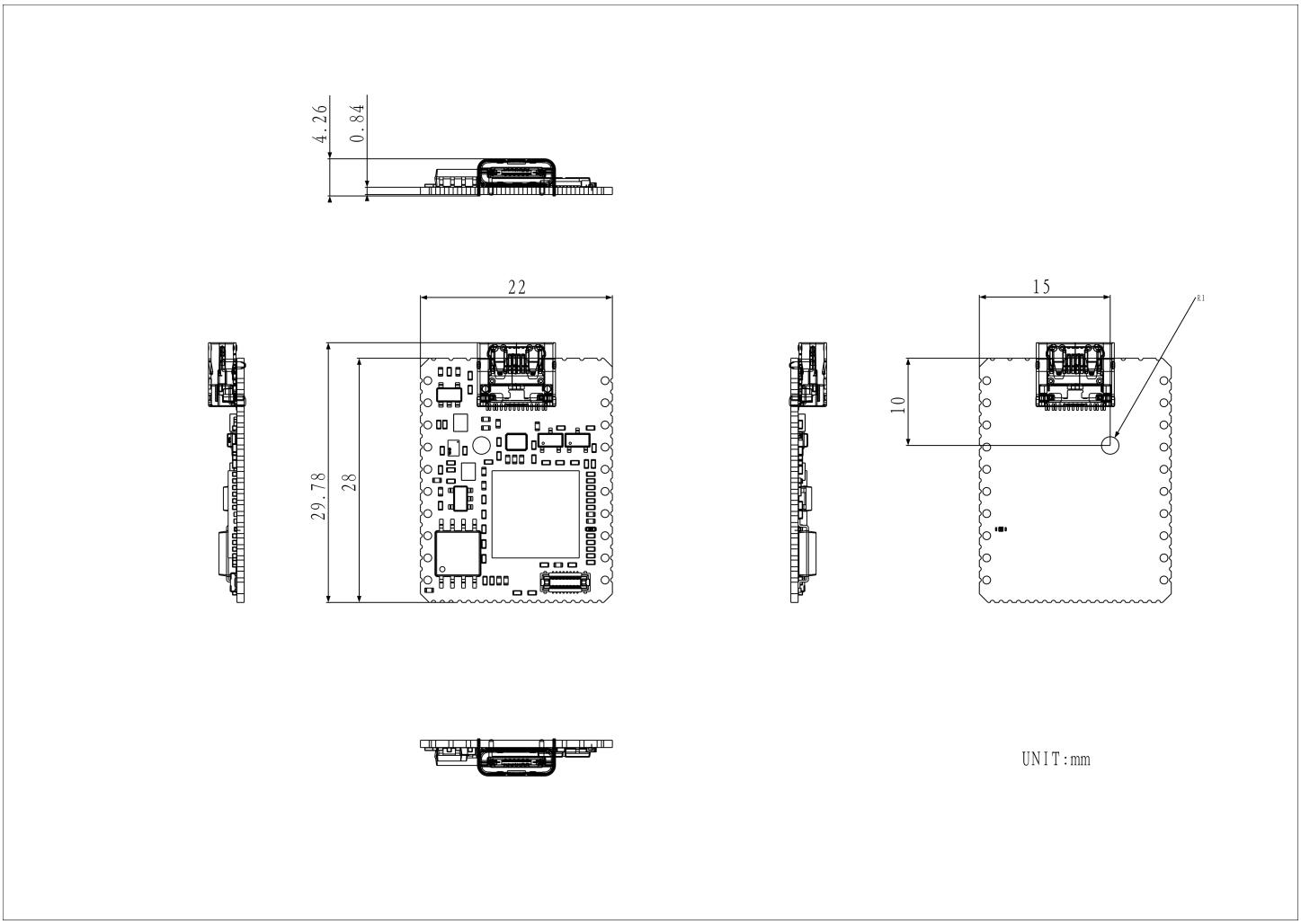


PinMap



Model Size

Stamp-P4 Model Size PDF



PCB

- Stamp-P4 PcbDoc
- Stamp-P4 KiCad Footprint Library

Datasheets

- ESP32-P4
- AXE616124D
- HC-PBB40C-20DP-0.4V-02

Softwares

UiFlow2

- Stamp-P4 UiFlow2 Quick Start

Arduino

- Stamp-P4 Arduino Quick Start

PlatformIO

```
[env:esp32p4_pioarduino]
platform = https://github.com/pioarduino/platform-espressif32.git#54.03.21
upload_speed = 1500000
monitor_speed = 115200
build_type = debug
framework = arduino
board = esp32-p4-evboard
board_build.mcu = esp32p4
board_build.flash_mode = qio

build_flags =
    -DBOARD_HAS_PSRAM
    -DCORE_DEBUG_LEVEL=5
    -DARDUINO_USB_CDC_ON_BOOT=1
    -DARDUINO_USB_MODE=1
```

Video

- Stamp-P4 and Stamp-AddOn C6 For P4 Product Introduction and Functional Demonstration

A172_and_S013_introduce_video_EN.mp4