

The Banana Pi Pico series is a low-power microcontroller development board designed for the Internet of Things.

BPI-Pico-RP2040 is a microcontroller development board launched by Banana Pi equipped with RP2040 chip. Its most notable feature is to add a Onboard WS2812 color LED; replace the 3-Pin DEBUG interface with a JST SH 1mm 4-Pin socket, which can be connected with Qwiic & STEMMA QT or any possible peripherals; replace the micro-USB socket with a USB Type-C socket , supports reversible insertion, and is compatible with the USB Type-C cable of most modern smartphones, no additional purchase is required.

key features

- Dual-core ARM Cortex M0+ CPU cores (up to 133 MHz)
- 264K SRAM
- 2MB Flash
- 26 available GPIO pins, 4 of which support ADC analog input
- 1 x LED
- 1 x WS2812 LED
- 1 × JST SH 1mm 4-Pin socket

- 1 × USB Type-C socket

Hardware

Hardware interface

UART0 TX I2C0 SDA SPI0 RX GP0

UART0 RX I2C0 SCL SPI0 CSn GP1

GND

I2C1 SDA SPI0 SCK GP2

I2C1 SCL SPI0 TX GP3

UART1 TX I2C0 SDA SPI0 RT GP4

UART1 RX I2C0 SCL SPI0 CSn GP5

GND

I2C1 SDA SPI0 SCK GP6

I2C1 SCL SPI0 TX GP7

UART1 TX I2C0 SDA SPI1 RT GP8

UART1 RX I2C0 SCL SPI1 CSn GP9

GND

I2C1 SDA SPI1 SCK GP10

I2C1 SCL SPI1 TX GP11

UART0 TX I2C0 SDA SPI1 RT GP12

UART0 RX I2C0 SCL SPI1 CSn GP13

GND

I2C1 SDA SPI1 SCK GP14

I2C1 SCL SPI1 TX GP15

VBUS

VSYS

GND

3V3_EN Use this pin to control the power of the pico

+3V3 The output from 3.3V Regulator Absolute MAX 2A

ADC_VREF

GP28_A2 ADC2

GND

GP27_A1 ADC1 I2C1 SCL

GP26_A0 ADC0 I2C1 SDA

RUN

GP22

GND

GP21 I2C0 SCL

GP20 I2C0 SDA

GP19 SPI0 TX I2C1 SCL

GP18 SPI0 SCK I2C1 SDA

GND

GP17 SPI0 CSn I2C0 SCL / UART0 RX

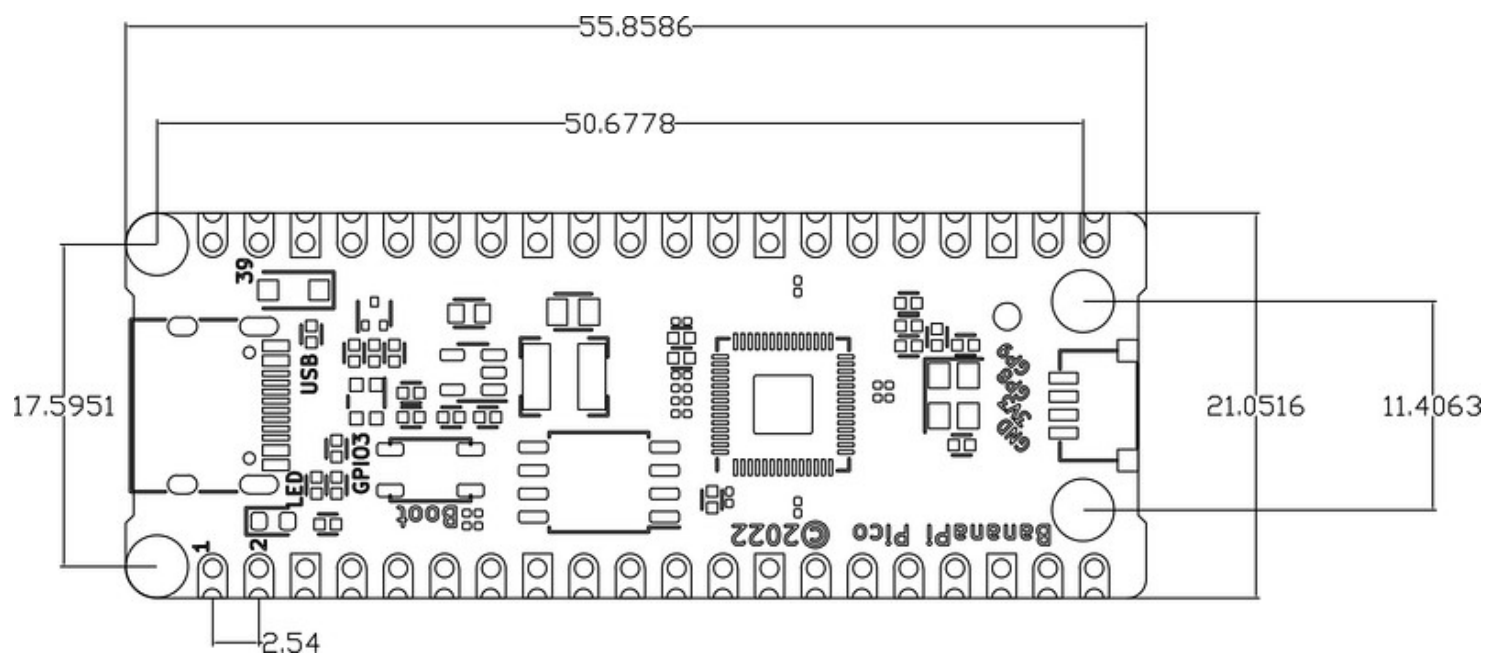
GP16 SPI0 RX I2C0 SDA / UART0 TX

Hardware spec

BPI-Pico-RP2040 Spec Sheet	
Main Chip	RP2040,Dual-core ARM Cortex M0+ CPU cores
Frequency	133MHz MAX
Operating temperature	-20°C~+85°C
On-chip SRAM	264 KB
On-board FLASH	2MB
GPIO	26 GPIO
ADC	4 analogue inputs
PIO	I2C
	SPI,DSPI,QSPI

	UART
	SDIO (SD card)
	I2S
	8080 and 6800 parallel port
USB input voltage	5V
3V3 output current	2A MAX
Neopixel LED	1
LED	1
USB Type-C socket	1
JST SH 4pin socket	1

Hardware Size



BPI-PicoW-S3 size chart	
Pin spacing	2.54mm
Mounting hole spacing	17.6mm/ 11.4mm
Mounting hole size	Inner diameter 2.1mm/outer diameter 3.4mm
Mainboard size	11.4 × 55.8(mm)
Thickness	1.2mm

The pin spacing is compatible with universal boards (hole boards, dot matrix boards) and breadboards, which is convenient for debugging applications.

Software

MicroPython



MicroPython implements most of the features and syntax of Python 3, which is easy to learn and use, and can be downloaded directly into the chip to run the verification program without compiling.

Regardless of whether you have a programming foundation or not, MicroPython is far less difficult to get started with than other programming languages. Its code is easy to read, and the open source community has accumulated rich resources over the years. Just like Python, it has strong vitality and application value.

- [BPI-Pico-RP2040 MicroPython Getting Started\[BPI-STEAM\]](#)
- [Raspberry Pi Pico Python SDK](#)

Arduino



Arduino is an open source embedded software and hardware development platform for users to create interactive embedded projects.

- [BPI-Pico-RP2040 Arduino Getting Started\[BPI-STEAM\]](#)

- [RP2040 Arduino documentation](#)

Reference Resources

- [GitHub: BPI-Pico-RP2040 Schematic diagram of development board PDF](#)
- [rp2040-datasheet.pdf](#)
- [rp2040-product-brief.pdf](#)