ESP32 series development board User manual

Chengdu Ebyte Electronic Technology Co.,Ltd.

Catalog

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The test data in this paper are all obtained by EBAI laboratory test, the actual results may be slightly different.

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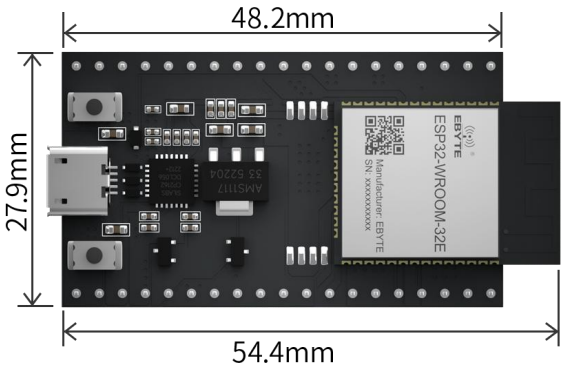
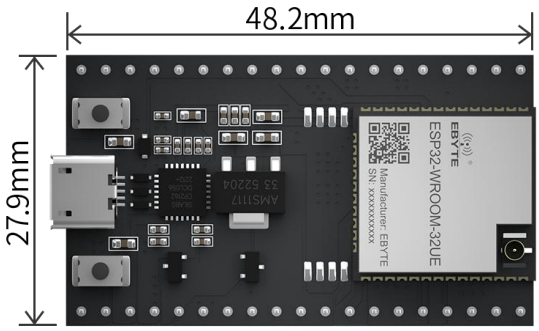
1. Module introduction

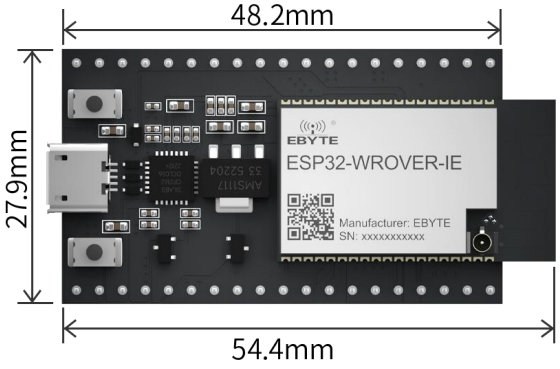
1.1 Features



ESP32-WROOM-32E



ESP32-WROOM-32UE



ESP32-WROVER-IE

ESP32-WROVER-IE-TB 、ESP32-WROOM-32E-TB、ESP32-WROOM-32UE-TB are three entry-level development boards that use the corresponding modules of the ESP32 series as required. The development board has complete Wi-Fi and Bluetooth low power functions, and most of the pins of the module on the board have been drawn to the two sides of the pin row, developers can easily connect a variety of peripheral devices through jumper, and can also plug the development board into the breadboard for use.

1.2 Parameters

Item	Parameter name	Value	Note
1	Support Modules	ESP32-WROVER-IE ESP32-WROOM-32E ESP32-WROOM-32UE	WiFi serial port module
2	Size	48.2 * 27.9mm	USB connector included
3	Production process	Lead-free process, machine paste	Wireless products must be machine attached to ensure batch consistency and reliability
4	Power supply	USB	-

	interface		
5	Communication interface	TTL	-
6	Working temperature	-40 ℃~ +85℃	Industrial grade
7	Working humidity	10%RH ~ 90%RH	Relative humidity, no condensation
8	Storage temperature	-40 ℃~ +125℃	Industrial grade

2. Function introduction

2.1 components

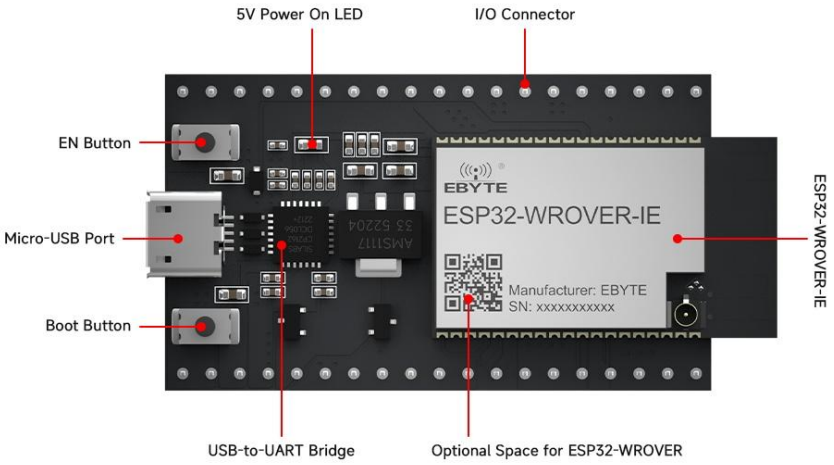


Figure 1 Main components The ESP32-WROVER-IE module is used as an example

Item	Firmware	Introduction
1	ESP32 series of modules	A module based on the ESP32 series. For more information, please download the relevant materials from the official website
2	EN	Reset button.
3	Boot	Download button. Press and hold the Boot key, and press the EN key (do not release the Boot key at this time) to enter the Firmware Download mode, and download the firmware through the serial port.
4	USB-to-UART bridge	Single-chip USB-UART bridge that provides transfer rates of up to 3 Mbps.

5	Micro USB connector	The USB port can be used as the power supply for the circuit board or the communication port for connecting the PC to the ESP32 series module.
6	5V Power On LED	When the development board is powered on (USB or external 5 V), the indicator will light up. See schematics in related documents for more information.
7	I/O	Most of the pins of the on-board module have been drawn to the development board's row pins. Users can program ESP32 to realize PWM, ADC, DAC, I2C, I2S, SPI and other functions.

Note: For specific function instructions, refer to the user manual of the ESP32 series corresponding module.

2.2 Pin definition

The following is a front view of ESP32-WROOM-32E-TB as an example:

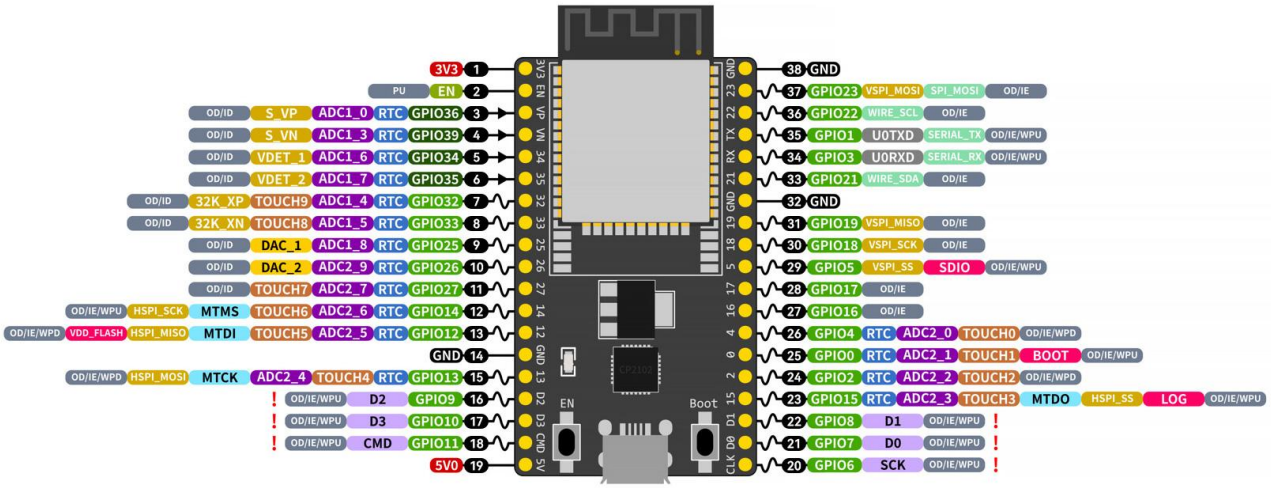


Figure 2. Current test interface diagram

Pin number	Pin name	Type	Pin description
1	3V3	P	3.3 V power supply
2	EN	I	CHIP_PU, Reset
3	VP	I	GPIO36, ADC1_CH0, S_VP
4	VN	I	GPIO39, ADC1_CH3, S_VN
5	IO34	I	GPIO34, ADC1_CH6, VDET_1
6	IO35	I	GPIO35, ADC1_CH7, VDET_2

7	IO32	I/O	GPIO32, ADC1_CH4, TOUCH_CH9, XTAL_32K_P
8	IO33	I/O	GPIO33, ADC1_CH5, TOUCH_CH8, XTAL_32K_N
9	IO25	I/O	GPIO25, ADC1_CH8, DAC_1
10	IO26	I/O	GPIO26, ADC2_CH9, DAC_2
11	IO27	I/O	GPIO27, ADC2_CH7, TOUCH_CH7
12	IO14	I/O	GPIO14, ADC2_CH6, TOUCH_CH6, MTMS
13	IO12	I/O	GPIO12, ADC2_CH5, TOUCH_CH5, MTDI
14	GND	G	Ground
15	IO13	I/O	GPIO13, ADC2_CH4, TOUCH_CH4, MTCK
16	D2	I/O	GPIO9, D2
17	D3	I/O	GPIO10, D3
18	CMD	I/O	GPIO11, CMD
19	5V	P	5 V power supply
20	CLK	I/O	GPIO6, CLK
21	D0	I/O	GPIO7, D0
22	D1	I/O	GPIO8, D1
23	IO15	I/O	GPIO15, ADC2_CH3, TOUCH_CH3, MTDO
24	IO2	I/O	GPIO2, ADC2_CH2, TOUCH_CH2
25	IO0	I/O	GPIO0, ADC2_CH1, TOUCH_CH1, Boot
26	IO4	I/O	GPIO4, ADC2_CH0, TOUCH_CH0
27	IO16	I/O	GPIO16
28	IO17	I/O	GPIO17
29	IO5	I/O	GPIO5
30	IO18	I/O	GPIO18
31	IO19	I/O	GPIO19
32	GND	G	Ground
33	IO21	I/O	GPIO21
34	RX	I/O	GPIO3, U0RXD
35	TX	I/O	GPIO1, U0TXD
36	IO22	I/O	GPIO22
37	IO23	I/O	GPIO23
38	GND	G	Ground

Note: 1.P: power supply; I: input; O: output;

2.Pins D0, D1, D2, D3, CMD, and CLK are used for internal communication between the ESP32 chip and the SPI flash and are centrally distributed on both sides of the development board near the USB port. In general, it is best if these pins are not connected, otherwise they may affect the work of SPI flash/SPI RAM.

3. Pin GPIO16 and GPIO17 are only applicable to the onboard ESP32-WROOM series and ESP32-SOLO-1 development board. Pin GPIO16 and GPIO17 of the onboard ESP32-WROVER series development board are reserved for internal use.

2.3 Notes

If you think C15 may affect the use of the development board, you can remove C15 completely. The specific location of C15 on the development board is shown in the yellow section below.

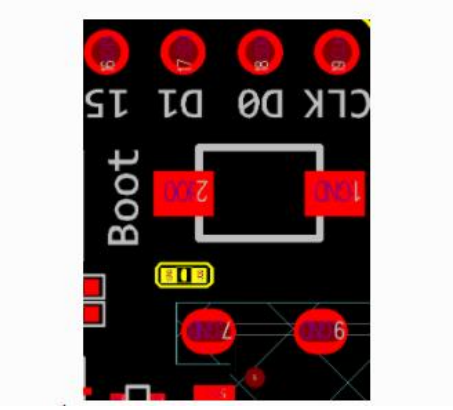


Figure 3

3. Program burning guide

- Electricity before, please make sure that ESP32 WROVER - IE/ESP32 WROOM - 32 E/ESP32 - WROOM - UE is in good condition.
- Prepare tools: ESP32-WROVER-IE-TB /ESP32-WROOM-32E-TB/ ESP32-WROOM-32UE-TB, USB 2.0 data cable (standard type A to Micro-B, computer (Windows, Linux, or macOS). (Make sure you use the appropriate USB cable, some of which can only be used for charging, not for data transfer and programming.)
- Connected to the USB cable in PC software program burn;

4. Version

Version	Revise date	Revise description	Maintenance person
1.0	2022-11-22	Initial version	Hao

5. About us

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