



Nodemcu-32s Datasheet

Version V1

Copyright ©2019



Disclaimer and Copyright Notice

Information in this document, including URL references, is subject to change without notice.

This document is provided "as is" without warranty of any kind, including any warranties of merchantability, non-infringement, fitness for any particular purpose, or any other proposal, specification or sample. All liability, including liability for infringement of any proprietary rights, relating to use of information in this document is disclaimed. No licenses express or implied, by estoppel or otherwise, to any intellectual property rights are granted herein.

The test data obtained in this paper are all tested by Ai-Thinker lab, and the actual results may be slightly different.

The Wi-Fi Alliance Member logo is a trademark of the Wi-Fi Alliance. The Bluetooth logo is a registered trademark of Bluetooth SIG.

All trade names, trademarks and registered trademarks mentioned in this document are property of their respective owners, and are hereby acknowledged.

The final interpretation is owned by Shenzhen Ai-Thinker Technology Co., Ltd.

NOTE

The contents of this manual are subject to change due to product version upgrades or other reasons. Shenzhen Anxinke Technology Co., Ltd. reserves the right to modify the contents of this manual without any notice or prompt. This manual is for guidance only. Shenzhen Anxinke Technology Co., Ltd. makes 第1页共12页



every effort to provide accurate information in this manual. However, Shenzhen Anxinke Technology Co., Ltd. does not ensure that the contents of the manual are completely error-free. All statements and information in this manual. And the recommendations do not constitute any warranty, express or implied.

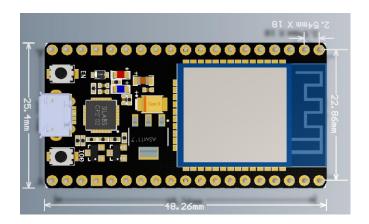
1. Product overview

The core of this module is the ESP32 chip, which is scalable and adaptive. Two CPU cores can be individually controlled. The clock frequency is adjustable from 80 MHz to 240 MHz and supports RTOS. It is a general-purpose Wi-Fi+BT+BLE MCU module.ESP-WROOM-32s

The module integrates traditional Bluetooth, Bluetooth low energy and Wi-Fi. Wide range of uses: Wi-Fi supports a wide range of communication connections, as well as direct connection to the Internet via a router; Bluetooth allows users to connect to a mobile phone or broadcast a BLE Beacon for signal detection. The module supports data rates up to 150 Mbps and antenna output power of 20 dBm for maximum wireless communication. As a result, this module has industry-leading specifications and performs well in terms of high integration, wireless transmission distance, power consumption, and network connectivity.



Appearance size





Features

- \blacksquare 802.11b/g/n (802.11n, speed up to 150Mbps)
- WIFI Frequency Range 2.4GHz ~ 2.5GHz
- Clock frequency adjustment range from 80 MHz to 240 MHz, support for RTOS
- Built-in 2-channel 12-bit high-precision ADC with up to 18 channels
- Support UART/GPIO/ADC/DAC/SDIO/SD card/PWM/I2C/I2S interface
- \blacksquare Support multiple sleep modes, ESP32 chip sleep current is less than 5 μA



- Embedded Lwip protocol stack
- Supports STA/AP/STA + AP operation mode
- Supports remote firmware upgrade (FOTA)
- General AT commands can be used quickly
- Support secondary development, integrated Windows, Linux development environment

Product Specification

Table 1 Description of main parameters

Module model	ESP-WROOM-32s
Size	25. 4*48. 26*3mm(±0. 2mm)
Certification	FCC/CE-RED/IC/TELEC/KCC/SRRC/NCC/BQB/RoHS/REACH
SPI Flash	32Mbit(default)
Support interface	UART/GPIO/ADC/DAC/SDIO/SD card /PWM/I2C/I2S
Integrated crystal oscillator	40MHz Crystal oscillator
IO Port	38
Antenna	Onboard antenna
Power Supply	Voltage 3.0V ~ 3.6V, Typical 3.3V, Current >500mA
Operating Temperature	-40 °C ~ 85 °C
Storage Environment	-40 °C ~ 120 °C



2. Pin Definition

The ESP-WROOM-32s module has a total of 38 interfaces, as shown in Figure 1, and Table 2 is the interface definition.

Figure 1 ESP-WROOM-32s pin diagram

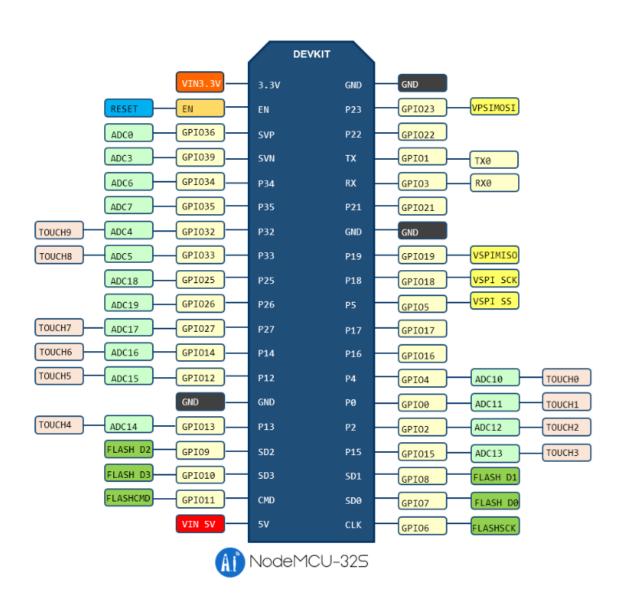




Table 2 pin function definition

No.	Pin Name	Functional Description
1	3.3V	Module power supply pin
2	EN	Chip Enabled Pin, Active High
3	SVP	GPIO36, ADC1_CH0, RTC_GPIO0
4	SVN	GPIO39, ADC1_CH3, RTC_GPIO3
5	P34	GPIO34, ADC1_CH6, RTC_GPIO4
6	P35	GPIO35, ADC1_CH7, RTC_GPIO5
7	P32	GPIO32, XTAL_32K_P (32.768kHz Crystal input),
		ADC1_CH4, TOUCH9,RTC_GPIO9
8	P33	GPIO33, XTAL_32K_N (32.768kHz Crystal output),
		ADC1_CH5, TOUCH8,RTC_GPIO8
9	P25	GPIO25, DAC_1, ADC2_CH8,
		RTC_GPIO6, EMAC_RXD0
10	P26	GPIO26, DAC_2, ADC2_CH9, RTC_GPIO7,
		EMAC_RX_DV
11	P27	GPIO27, ADC2_CH7, TOUCH7, RTC_GPIO17,
		EMAC_RX_DV
12	P14	GPIO14, ADC2_CH6, TOUCH6, RTC_GPIO16, MTMS,



		HSPICLK, HS2_CLK,SD_CLK, EMAC_TXD2
13	P12	GPIO12, ADC2_CH5, TOUCH5, RTC_GPIO15, MTDI,
		HSPIQ, HS2_DATA2,SD_DATA2, EMAC_TXD3
14	GND	GND
15	P13	GPIO13, ADC2_CH4, TOUCH4, RTC_GPIO14, MTCK,
		HSPID, HS2_DATA3,SD_DATA3, EMAC_RX_ER
16	SD2	GPIO9, SD_DATA2, SPIHD, HS1_DATA2, U1RXD
17	SD3	GPIO10, SD_DATA3, SPIWP, HS1_DATA3, U1TXD
18	СМД	GPIO11, SD_CMD, SPICS0, HS1_CMD, U1RTS
19	5V	Module power supply pin
20	CLK	GPIO6, SD_CLK, SPICLK, HS1_CLK, U1CTS
21	SD0	GPIO7, SD_DATA0, SPIQ, HS1_DATA0, U2RTS
22	SD1	GPIO8, SD_DATA1, SPID, HS1_DATA1, U2CTS
23	P15	GPIO15, ADC2_CH3, TOUCH3, MTDO, HSPICS0,
		RTC_GPIO13, HS2_CMD,SD_CMD, EMAC_RXD3
24	P2	GPIO2, ADC2_CH2, TOUCH2, RTC_GPIO12, HSPIWP,
		HS2_DATA0,SD_DATA0
25	P0	GPIO0, ADC2_CH1, TOUCH1, CLK_OUT1,
		RTC_GPIO11, EMAC_TX_CLK; Download mode:



		external pull low, running mode: floating or external pull high
26	P4	GPIO4, ADC2_CH0, TOUCH0, RTC_GPIO10, HSPIHD, HS2_DATA1,SD_DATA1, EMAC_TX_ER
27	P16	GPIO16, HS1_DATA4, U2RXD, EMAC_CLK_OUT
28	P17	GPIO17, HS1_DATA5, U2TXD, EMAC_CLK_OUT_180
29	P5	GPIO5, VSPICSO, HS1_DATA6, EMAC_RX_CLK
30	P18	GPIO18, VSPICLK, HS1_DATA7
31	P19	GPIO19, VSPIQ, U0CTS, EMAC_TXD0
32	GND	GND
33	P21	GPIO21, VSPIHD, EMAC_TX_EN
34	RX	GPIO3, U0RXD, CLK_OUT2
35	тх	GPIO1, U0TXD, CLK_OUT3, EMAC_RXD2
36	P22	GPIO22, VSPIWP, U0RTS, EMAC_TXD1
37	P23	GPIO23, VSPID, HS1_STROBE
38	GND	GND



How to download the running program of ESP-WROOM-32s

Download mode: you can download directly after connecting the USB cable. Note: The baud rate cannot be selected 1152000.

Run mode: press the EN button on the development board, the development board will go to the run mode

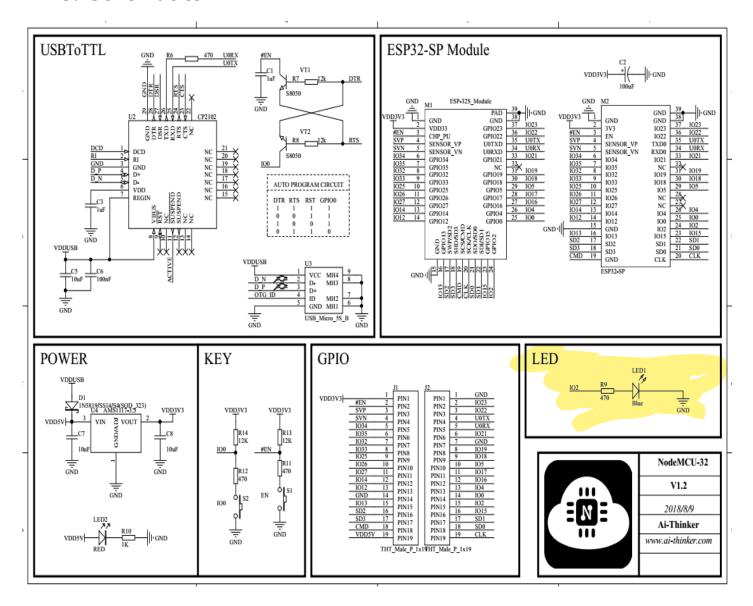
NOTE:

For the performance of the specific module, please see the technical specifications of the ESP-WROOM-32 module.

https://www.espressif.com/sites/default/files/documentation/esp 32-wroom-32_datasheet_cn.pdf



3. Schematics





4. Contact Us

Official website: https://www.ai-thinker.com

Develop Wiki: http://wiki.ai-thinker.com

Official forum: http://bbs.ai-thinker.com

Official forum: https://anxinke.taobao.com

Business cooperation: sales@aithinker.com

Technical support: support@aithinker.com

Telephone: 0755-29162996

Company Address: 7/F, Fengze Building B, Huafeng Industrial Park 2th, Hangkong street,

Xixiang Raod, Baoan, Shenzhen China.

