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Nodemcu-32s WIFI MODULE V1

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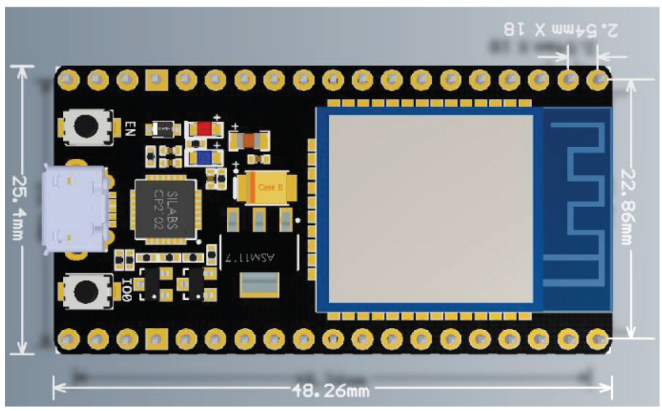
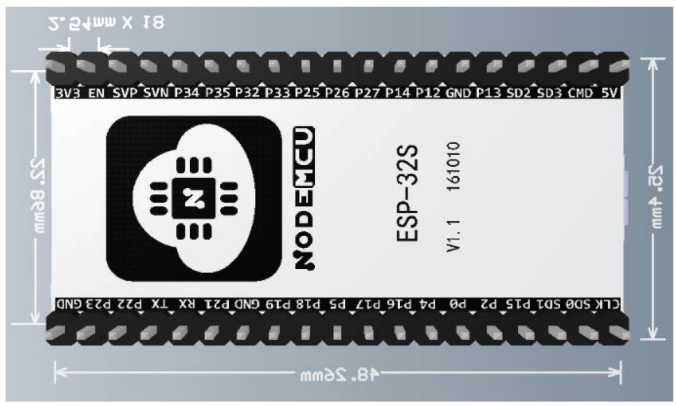
1. Product overview

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





Characteristics

• 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
• Support multiple sleep modes, ESP32 chip sleep current is less than 5 μA
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• 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

Main parameters

Table 1.1 main parameters instruction

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)
Interface	UART/GPIO/ADC/DAC/SDIO/SD card /PWM/I2C/I2S
IO	38
Integrated crystal oscillato	40MHz Crystal oscillator
Antenna	Onboard antenna
Power Supply	Voltage 3.0V ~ 3.6V, Typical 3.3V, Current >500mA
Operating Temperature	-40 ~ 85
Storage Environment	-40 ~ 120

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.

Table 2.1 ESP32-S Pin diagram

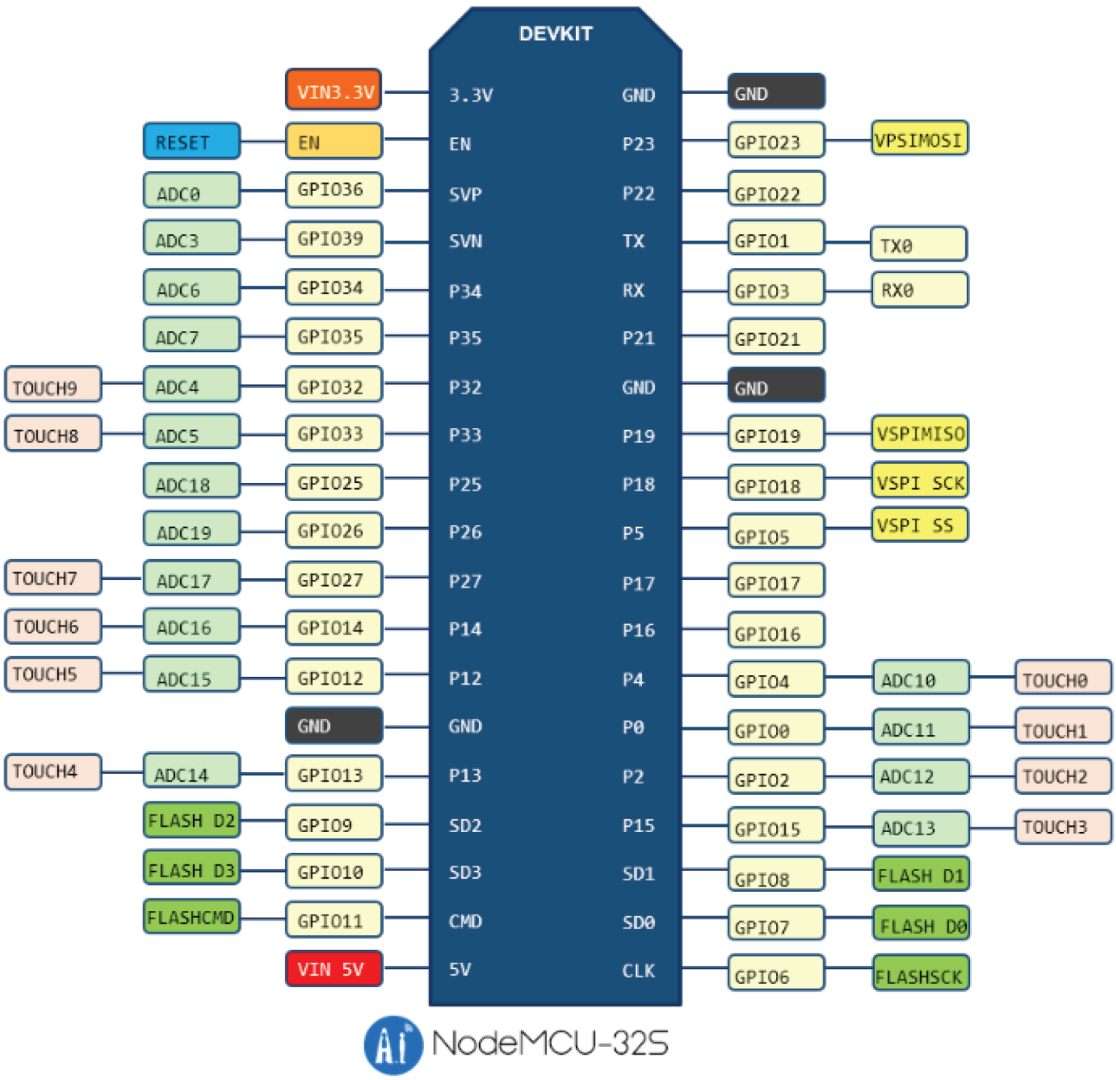
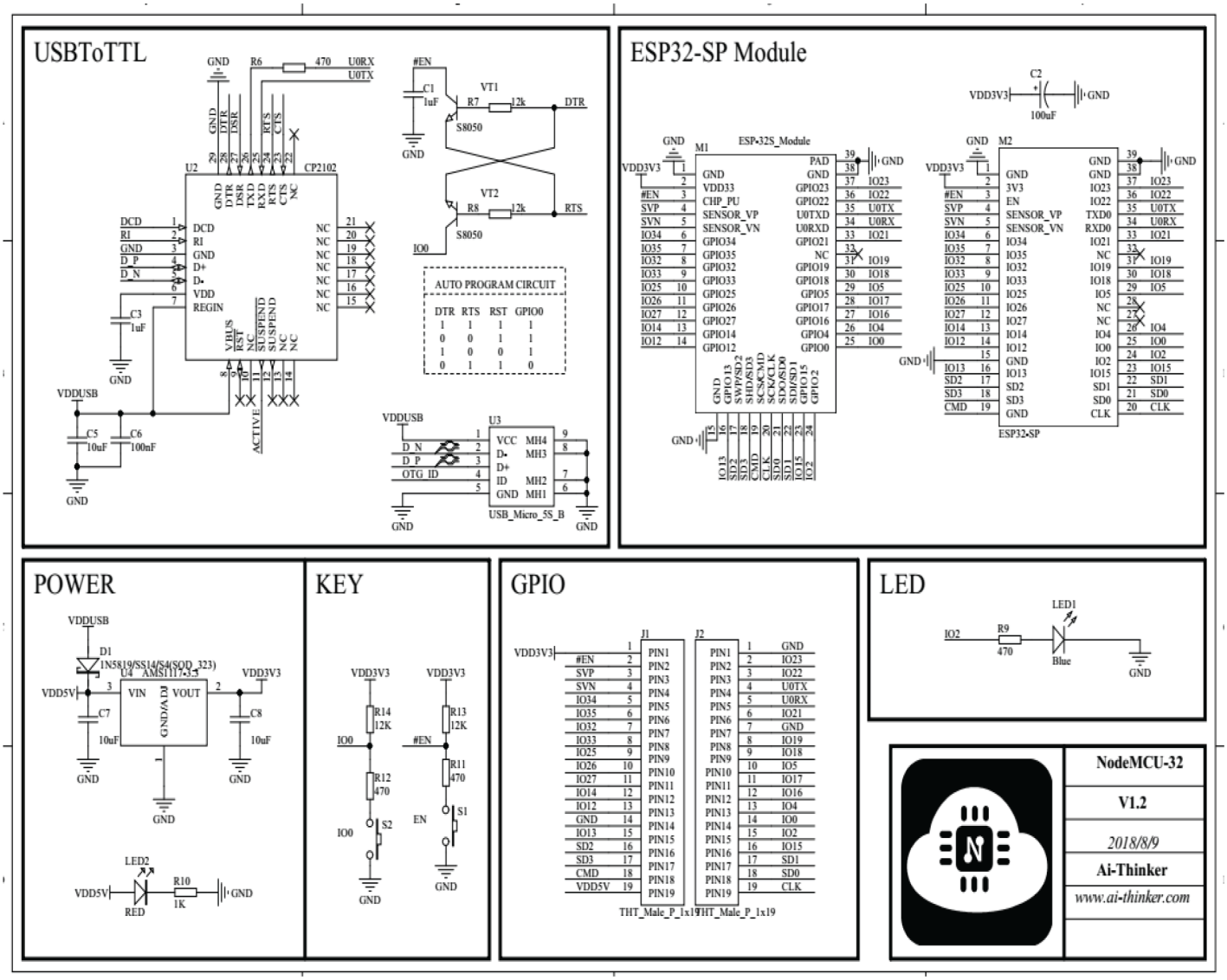


Table 2.2 pin function definition

No.	Pin	Function Description
1	3.3V	Module power supply pin
2	EN	Chip Enabled Pin, Active High
		GPIO36, ADC1_CH0, RTC_GPIO0
3	SVP	GPIO39, ADC1_CH3, RTC_GPIO3
4	SVN	GPIO34, ADC1_CH6, RTC_GPIO4
5	P34	GPIO35, ADC1_CH7, RTC_GPIO5
6	P35	GPIO32, XTAL_32K_P (32.768kHz Crystal input), ADC1_CH4, TOUCH9,RTC_GPIO9
7	P32	GPIO33, XTAL_32K_N (32.768kHz Crystal output), ADC1_CH5, TOUCH8,RTC_GPIO8
8	P33	GPIO25, DAC_1, ADC2_CH8, RTC_GPIO6, EMAC_RXD0
9	P25	GPIO26, DAC_2, ADC2_CH9, RTC_GPIO7, EMAC_RX_DV
10	P26	GPIO27, ADC2_CH7, TOUCH7, RTC_GPIO17, EMAC_RX_DV
11	P27	GPIO14, ADC2_CH6, TOUCH6, RTC_GPIO16, MTMS,
12	P14	GPIO12, ADC2_CH5, TOUCH5, RTC_GPIO15, MTDI,
13	P12	HSPIQ, HS2_DATA2,SD_DATA2, EMAC_TXD3
14	GND	14 GND GND
		GPIO13, ADC2_CH4, TOUCH4, RTC_GPIO14, MTCK,
15	P13	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	CMD	GPIO11, SD_CMD, SPICS0, HS1_CMD, U1RTS
19	5V	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,
24	P2	RTC_GPIO13, HS2_CMD,SD_CMD, EMAC_RXD3
25	P0	GPIO2, ADC2_CH2, TOUCH2, RTC_GPIO12, HSPIWP,
26	P4	GPIO4, ADC2_CH0, TOUCH0, RTC_GPIO10, HSPIHD,
27	P16	HS2_DATA1,SD_DATA1, EMAC_TX_ER
28	P17	GPIO16, HS1_DATA4, U2RXD, EMAC_CLK_OUT
29	P5	GPIO17, HS1_DATA5, U2TXD, EMAC_CLK_OUT_180
30	P18	GPIO5, VSPICS0, HS1_DATA6, EMAC_RX_CLK
31	P19	GPIO18, VSPICLK, HS1_DATA7
32	GND	GPIO19, VSPIQ, U0CTS, EMAC_TXD0
33	P21	32 GND GND
34	RX	GPIO21, VSPIHD, EMAC_TX_EN
35	TX	GPIO3, U0RXD, CLK_OUT2
36	P22	GPIO1, U0TXD, CLK_OUT3, EMAC_RXD2
37	P23	GPIO22, VSPIWP, U0RTS, EMAC_TXD1
38	GND	GPIO23, VSPID, HS1_STROBE

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

CPU and RAM

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.

7. Schematic diagram