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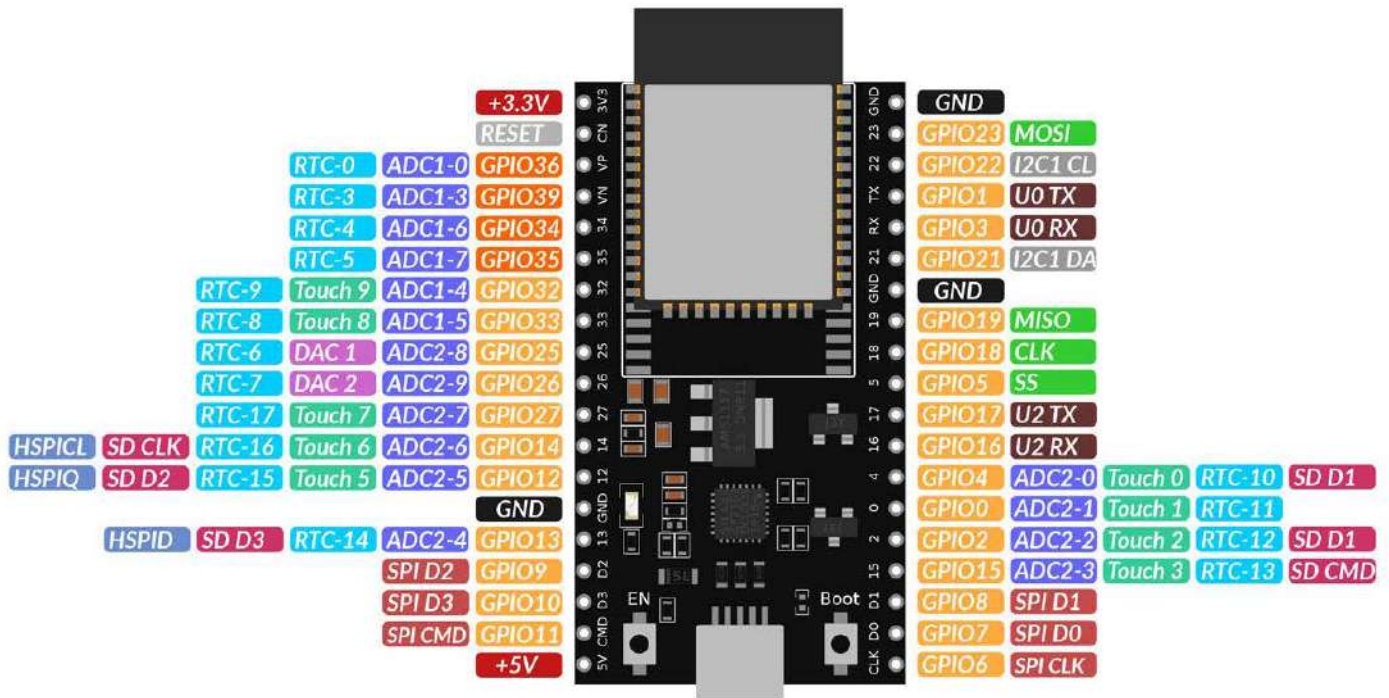
## 1. Features

NodeMCU is an open source IoT platform. ESP32 is a series of low cost, low power system-on-chip (SoC) microcontrollers with integrated Wi-Fi & dual-mode Bluetooth. The ESP32 series employs a Tensilica Xtensa LX6 microprocessor in both dual-core and single-core variations, with a clock rate of up to 240 MHz. ESP32 is highly integrated with built-in antenna switches, RF balun, power amplifier, low-noise receive amplifier, filters, and power management modules.

### Features:

- Able to achieve ultra-low power consumption.
- Built-in ESP-WROOM-32 chip.
- Breadboard Friendly module.
- Light Weight and small size.
- On-chip Hall and temperature sensor
- Uses wireless protocol 802.11b/g/n.
- Built-in wireless connectivity capabilities.
- Built-in PCB antenna on the ESP32-WROOM-32
- Capable of PWM, I2C, SPI, UART, 1-wire, 1 analog pin.
- Uses CP2102 USB Serial Communication interface module.
- Programmable with ESP-IDF Toolchain, LuaNode SDK supports Eclipse project (C language).

## 2. Pinout



- Digital In/Out ports (all support PWM)
- Digital Input ports
- Analog Input 12 bits, 0 to 3.3V
- Analog Output 8 bits, 0 - 3.3V
- Capacitive Touch Sensor ports
- I/O -pins from RTC ultra low power processor, usable in deep sleep mode
- SD card interface
- SPI bus for Flash-memory, do not use

The following pins show the default assignment. All these signals can be changed to any In/Out port. This applies also to UART0 and UART1, which cannot be accessed in the default assignment.

- I2C bus (Wire)
- VSPI bus
- Serial interfaces
- HSPI bus

### 3. Specifications

<b>Wireless Standard</b>	FCC/CE/IC/TELEC/KCC/SRRC/NCC
<b>Wireless Protocol</b>	802.11 b/g/n/d/e/l/k/r
<b>Frequency Range</b>	2.4 - 2.5 GHz
<b>Bluetooth Protocol</b>	Bluetooth v4.2 BR/EDR and BLE specification
<b>Bluetooth Specifications</b>	NZIF Receiver with -98dBm sensitivity Class-1, Class-2 and Class-3 transmitter AFH, CVSD and SBC
<b>Memory</b>	4 MB Flash, 520KB SRAM
<b>Wireless Form</b>	On-board PCB Antenna
<b>IO Capability</b>	UART, I2C, SPI, I2S, PWM, SDIO, GPIO, ADC, DAC
<b>Electrical Characteristic</b>	3.3 V Operated 15 mA output current per GPIO pin 80 mA average working current
<b>Operating Temperature</b>	-40 to +125 °C
<b>Wireless Network Type</b>	Station / SoftAP / SoftAP + Station / P2P
<b>Security Type</b>	WPA / WPA2 / WPA2-Enterprise / WPS
<b>Encryption Type</b>	AES / RSA / ECC / SHA
<b>Firmware Upgrade</b>	UART Download / OTA / Host
<b>Network Protocol</b>	IPv4, IPv6, SSL, TCP / UDP / FTP / HTTP / MQTT
<b>User Configuration</b>	AT + Order Set, Web Android / iOS, Cloud Server