

## ESP32-WROOM Pin Details

The ESP32-WROOM development board provides a total of **30 pins**, which include power pins, ground pins, control pins, and general-purpose input/output (GPIO) pins. The diagram below shows the pinout of the ESP32-WROOM module.

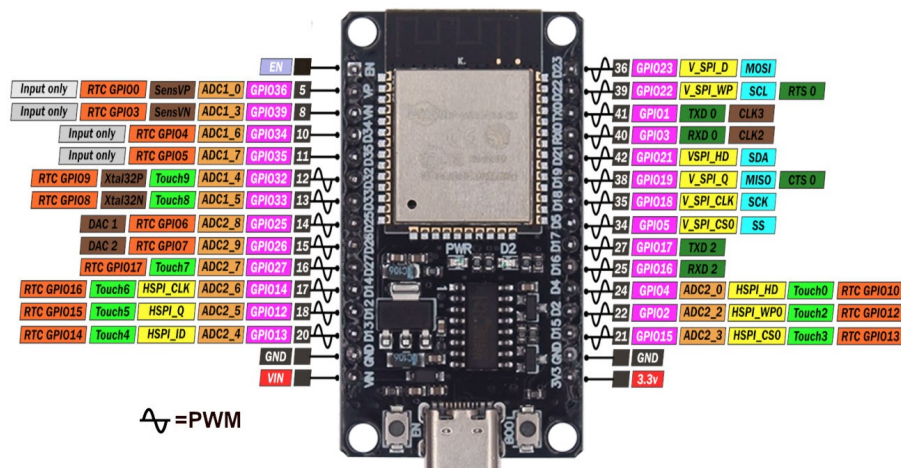


Figure 1: ESP32-WROOM Development Board Pinout Diagram

## Special Pins

- **3V3 Pin:** Provides a regulated 3.3V output. It can also be used to power external sensors and modules that require 3.3V. (Located at the lower right corner.)
- **VIN Pin:** Input power pin. Can be used to supply voltage (typically 5V) to the board when USB is not connected. (Located at the lower left corner.)
- **GND Pins:** Multiple ground pins are available. One is located at the lower right corner (next to 3V3), and another at the lower left corner (next to VIN).
- **EN Pin:** Enable pin (reset). When pulled low, it resets the ESP32 chip. (Located at the upper left corner.)

## GPIO Pins

All remaining pins of the ESP32-WROOM are configurable **GPIO (General Purpose Input/Output) pins**. These pins support various functions such as digital I/O, ADC (Analog-to-Digital Conversion), DAC (Digital-to-Analog Conversion), PWM (Pulse Width Modulation), and communication protocols like **UART, SPI, I2C, I2S, and CAN**.

## Special Behavior of GPIOs

- **Input-Only Pins: GPIO36, GPIO39, GPIO34, and GPIO35** are input-only pins. This means they can read signals (e.g., from sensors) but cannot be used to output signals or drive external devices.
- **PWM-Capable Pins:** All other GPIO pins support **PWM (Pulse Width Modulation)**. PWM is a technique where the output pin rapidly switches between HIGH and LOW, creating an average voltage level. It is commonly used to control the brightness of LEDs, the speed of motors, or to generate analog-like signals from digital pins.