

ESP32

Microcontrollers / 3.3 V logic

A functional GPIO map for the original ESP32-WROOM development boards.

01 GPIO map

General I/O

Common choices: 18, 19, 21, 22, 23, 25, 26, 27, 32, 33. Verify board use.

Input only

GPIO34-39; no internal pull-up/down. 37/38 usually not exposed.

Avoid

GPIO6-11 connect to flash. 16/17 may be reserved for PSRAM on WROVER.

02 Analog & buses

ADC

ADC1: GPIO32-39. Prefer ADC1 when using Wi-Fi; ADC2 is shared with Wi-Fi.

DAC / PWM

8-bit DAC on 25/26; LEDC PWM on output-capable GPIOs. ADC range depends on attenuation.

I2C example

SDA 21 / SCL 22; configurable in software.

SPI / UART

SPI example: MOSI 23, MISO 19, SCK 18, CS 5. UART0 TX 1 / RX 3; often used by USB.

03 Boot rules

Strapping

GPIO0, 2, 5, 12, 15 are sampled at reset. Attached circuits must preserve required boot levels.

Power

Use board USB/VIN as documented. GPIOs are 3.3 V only.

Variants

ESP32-S2/S3/C3 have different pin maps and peripheral availability.

Before you power on

GPIO12 pulled high at boot can select the wrong flash voltage. Do not treat header position numbers as GPIO numbers.

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Datasheets & further reading

Espressif ESP32 datasheet

https://documentation.espressif.com/esp32_datasheet_en.html