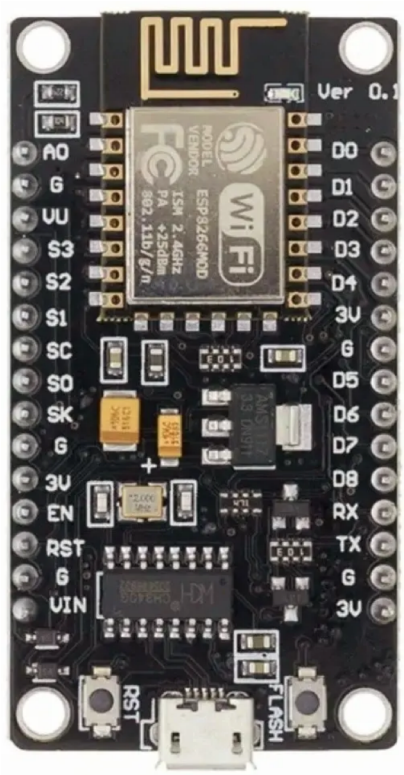
DevTitans

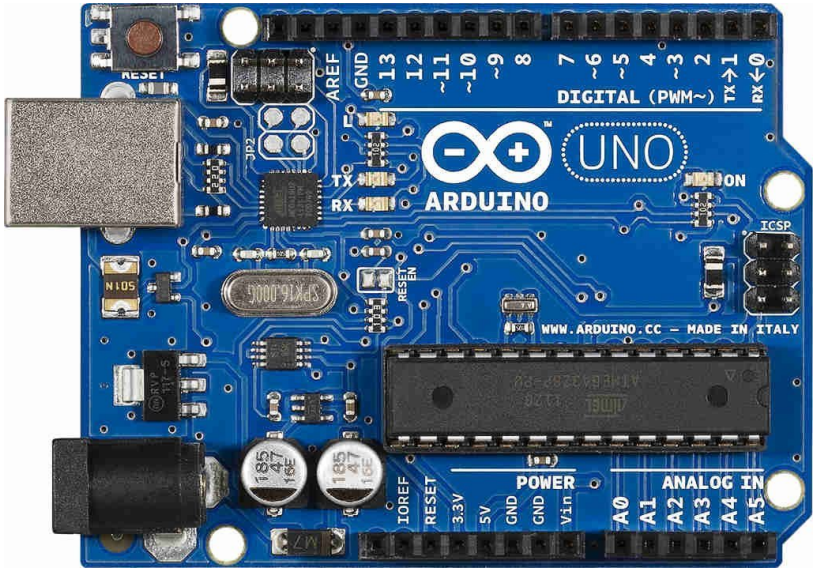
ESP32: Visão Geral

ESP32

- É um dispositivo **IoT** que consiste de um microprocessador de **baixa potência** **dual core** Tensilica Xtensa 32-bit LX6 com suporte embutido à rede **WiFi, Bluetooth** v4.2 e memória **flash** integrada
- Essa arquitetura permite que ele possa ser programado de forma **independente,** sem a necessidade de outras placas e ***shields***
- É ***open source***, possui baixo custo, baixo, consumo de energia, alto desempenho, robustez, versatilidade e confiabilidade

ESP32 x ESP8266 x Uno





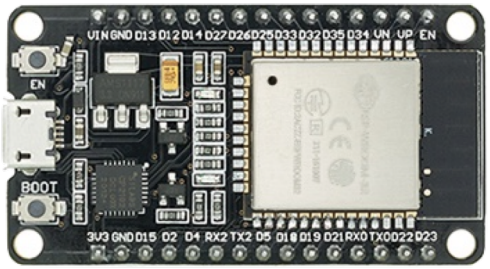
Comparação ESP32 x ESP8266 x Uno

	ESP32	ESP8266	ARDUINO UNO R3
Cores	2	1	1
Arquitetura	32 bits	32 bits	8 bits
Clock	160MHz	80MHz	16MHz
WiFi	Sim	Sim	Não
Bluetooth	Sim	Não	Não
RAM	512KB	160KB	2KB
FLASH	16Mb	16Mb	32KB
GPIO	36	17	14
Interfaces	SPI / I2C / UART / I2S / CAN	SPI / I2C / UART / I2S	SPI / I2C / UART
ADC	18	1	6
DAC	2	0	0

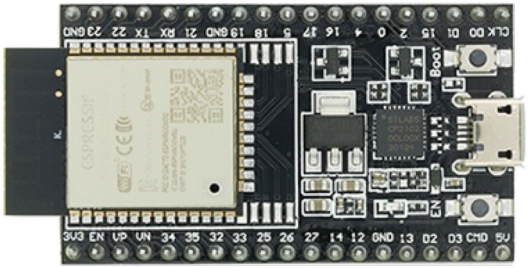
Vários modelos

ESP32-WROOM

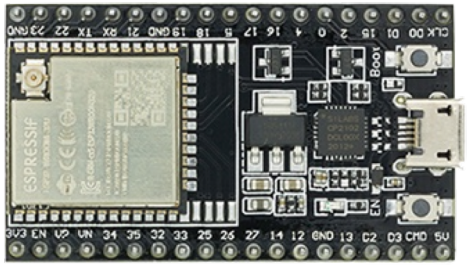
ESP32-CAM



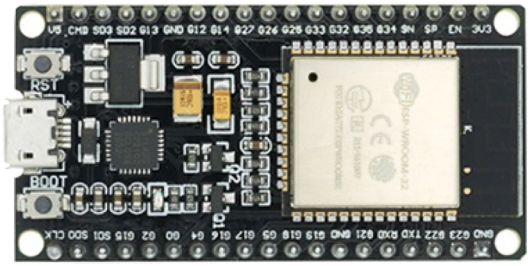
ESP-32 30PIN



ESP32-WROOM-32D



ESP32-WROOM-32U



ESP-32 38PIN

Vários modelos

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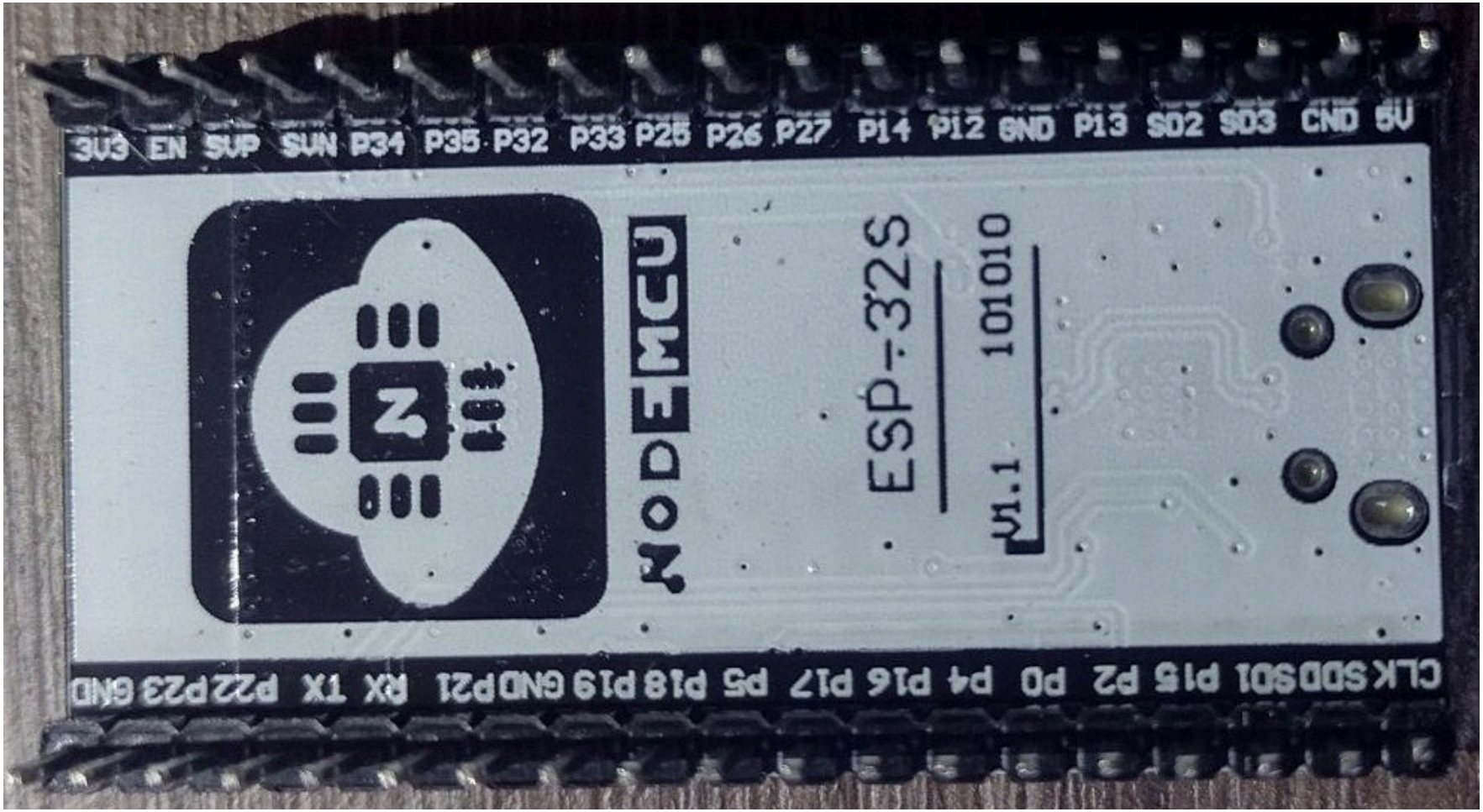
MAKER ADVISOR

ESP32 Development Boards Review and Comparison

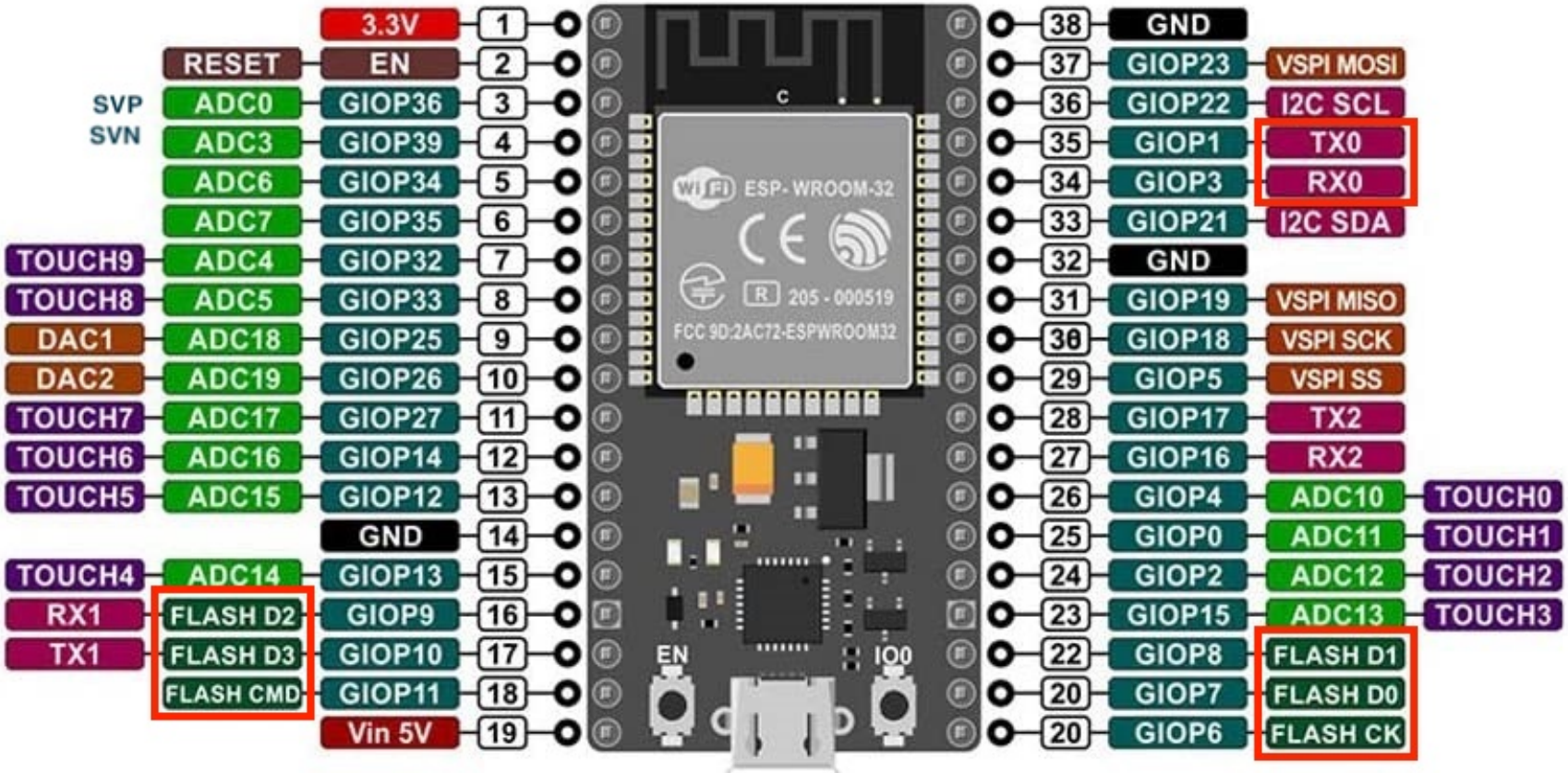
May 31, 2021 By Sara Santos

https://makeradvisor.com/esp32-development-boards-review-comparison/

Utilizado no Laboratório



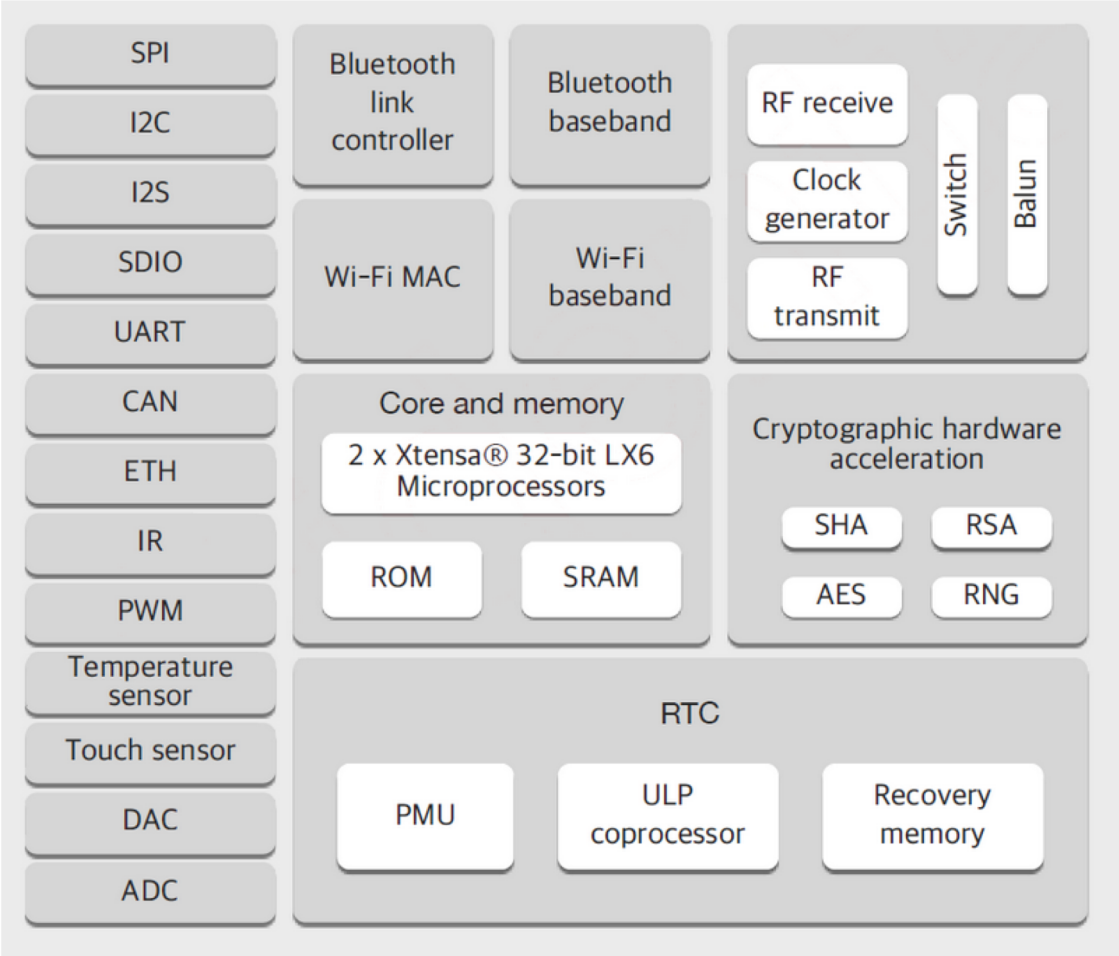
Utilizado no Laboratório



ESP-32S

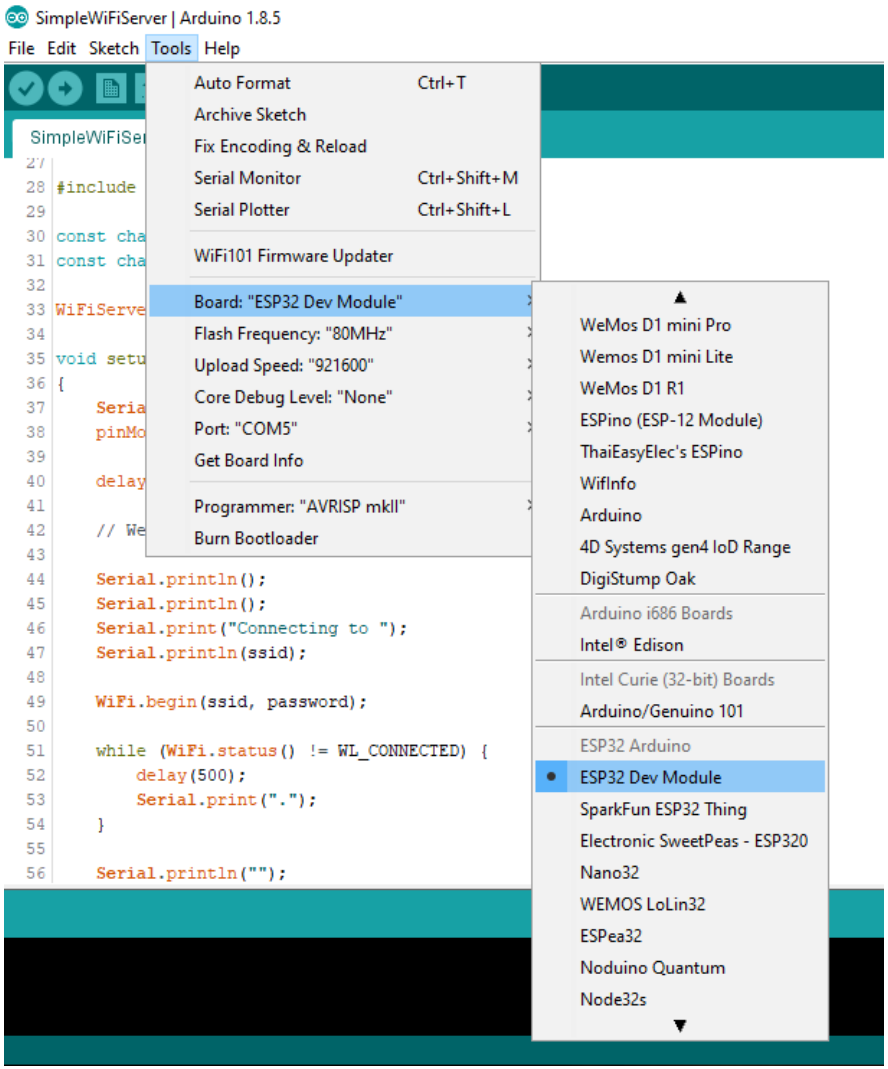
- Alguns desses pinos podem ser usados apenas para **entrada**: GPIOs 34, 35, 36 e 39 (**não podem ser de saída**)
- Os pinos **com** resistor pull up interno são os GPIOs: 14, 16, 17, 18, 19, 21, 22 e 23
- Os pinos **sem** resistor pull up interno são os GPIOs: 13, 25, 26, 27, 32 e 33

Diagrama de Blocos



O ESP32 é **dual-core** (possui **dois** processadores), tem **Wi-Fi** e **Bluetooth** integrados e executa programas de **32 bits.** Possui suporte às interfaces de comunicação **SPI, UART** e **I2C,** como também tem suporte a Infravermelho (**IR**) e **SDIO** (para interface com cartão de memória), e como diferencial, **CAN, Ethernet, DAC, Sensor de Toque,** e **I2S,** que é útil para comunicar com dispositivos de áudio. Possui hardware para aceleração de **criptografia** embutido

Arduino IDE



Há várias IDEs disponíveis

Eclipse IDE com IoT Development Framework (IDF), a extensão PlatformIO pode ser utilizada com VS Code, Codeblocks e Netbeans, dentre outras

Neste curso foco será na IDE do Arduino

Datasheet

ESP32 Series

Datasheet

Including:

ESP32-D0WD-V3

ESP32-D0WDR2-V3

ESP32-U4WDH

ESP32-S0WD

ESP32-D0WD – Not Recommended for New Designs (NRND)

ESP32-D0WDQ6 – Not Recommended for New Designs (NRND)

ESP32-D0WDQ6-V3 – Not Recommended for New Designs (NRND)

https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf

esp32.net

ESP32-DOWDQ6
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