ESPRESSIF

SHARE :: CONNECT :: INNOVATE

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About the Company

Who We Are

Espressif Systems (688018.SH) is a public multinational, fabless semiconductor company established in 2008, with offices in China, the Czech Republic, India, Singapore and Brazil. We have a passionate team of engineers and scientists from all over the world, focused on developing cutting-edge Wi-Fi-and-Bluetooth, low-power, AIoT solutions.

What We Are Doing

As a world-leading AIoT platform, Espressif Systems provides millions of users with a variety of secure AIoT solutions. Additionally, by leveraging advanced technology nodes, low power computing, Wi-Fi and/or Bluetooth connectivity, as well as wireless mesh technology, we create high-performance chipsets and modules that are more intelligent, adaptable and versatile.

Our Commitments

Espressif is committed to bringing AIoT to its customers and developers, commercial and non-commercial alike, by open-sourcing its technology and solutions, so that developers from all walks of life can use this technology to solve some of the most pressing problems of our times.

ESPRESSIF

Milestones

2008

Apr. — **Espressif Founded**

2013

Jun. — **ESP8089 Released**

2014

May. — **ESP8266EX Released**

2015

2015 **Red Herring** Top 100 Asia Award

Sep. — **ESP32 Released**

2016

May — **Gartner's Cool Vendor**

Leading **MCU Wi-Fi** Market

2018

Mar. — Espressif's successful **IPO**

2019

Jul. — **ESP-WHO Released**

Jan. — **ESP-ADF v1.0 Released**

May. — **ESP-MDF Released**

2020

Jul. — **ESP32-S2 Released**

Aug. — **ESP-Skainet Released**

Apr. — **ESP Rainmaker Released**

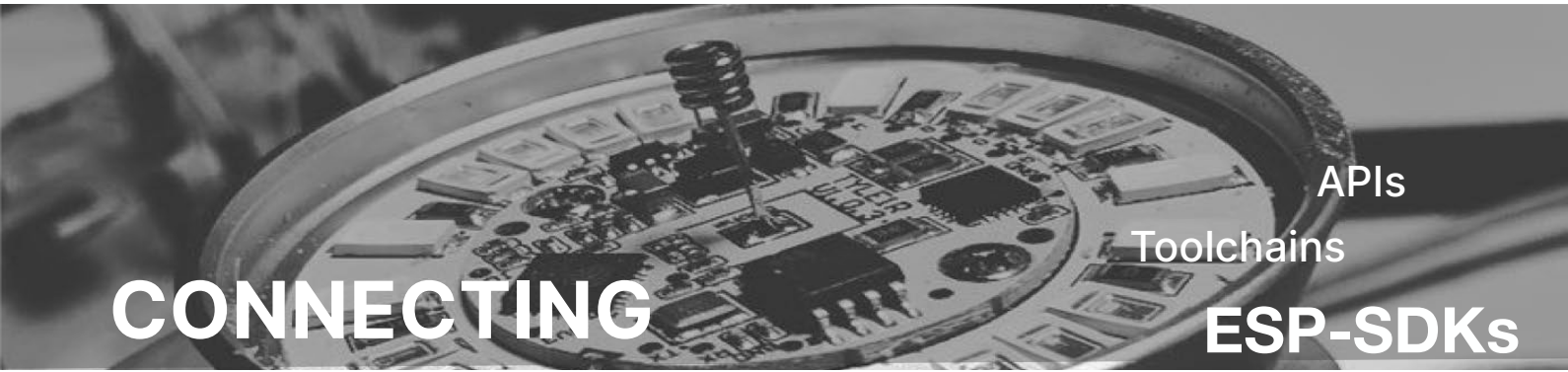
Next Milestone

INNOVATING FOR QUALITY

ESP
Hardware

Espressif is the first company to have successfully integrated a high-power amplifier, balun, RF switch and LNA for Wi-Fi applications of the CMOS technology.

- Small and simple design, with only 7 external components
- Improved yield and high reliability
- Low cost
- Reduced time to market and logistics complexity



ALL WIRELESS Devices

Espressif's Wi-Fi chips are now compliant with, and recommended by, many IoT platforms and service providers. Due to Espressif's unique cost structure and uncompromising quality, our company has become a top choice for many developers as well. With an accompanying easy-to-use toolchain, Espressif has enabled rapid prototyping and fast IoT connections for a broad range of small and medium-sized businesses (SMBs) in over 100 countries. Espressif has built a modern software platform for the IoT industry, based on the community-driven development of its powerful wireless MCUs.

The Espressif SDK provides toolchains, APIs, components and workflows for the development of applications based on the ESP8266, ESP32 and ESP32-S Series which are compatible with Windows, Linux and Mac OS operating systems.

ESP
Software

Ecosystem

Popular Third-Party Development Platforms

Arduino IDE, Amazon FreeRTOS, NodeMCU, MicroPython, PlatformIO, Mongoose OS

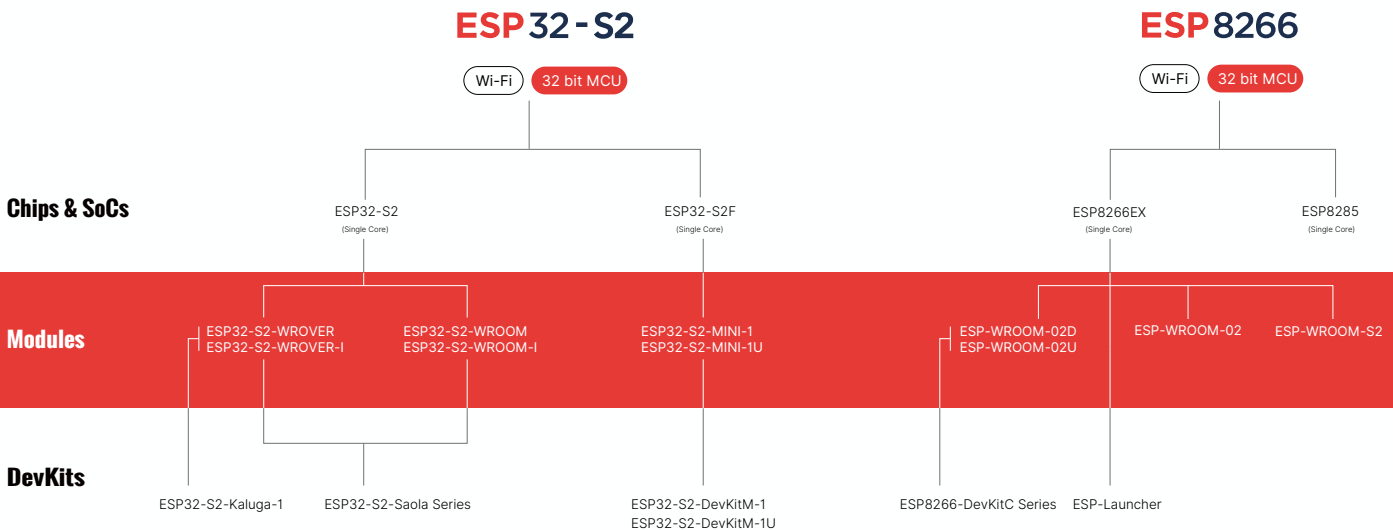
Third-Party Cloud Platforms

More than 40 mainstream cloud platforms support Espressif Products

Strong Community Engagement

- >40,000 open-source projects on Github
- Arduino ESP8266 is one of the most popular open-source
- projects on Github with >9,600 forks
- More than 70 books have been written about ESP8266 and ESP32 in English, German, Italian, Japanese and Chinese.

Product Map


ESP32-S2
Wi-Fi
32 bit MCU
ESP8266
Wi-Fi
32 bit MCU
Chips & SoCs
ESP32-S2
(Single Core)
ESP32-S2F
(Single Core)
ESP8266EX
(Single Core)
ESP8285
(Single Core)
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ESP32-S2-WROOM
ESP32-S2-WROOM-I
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ESP32-S2-MINI-1U
ESP-WROOM-02D
ESP-WROOM-02U
ESP-WROOM-02
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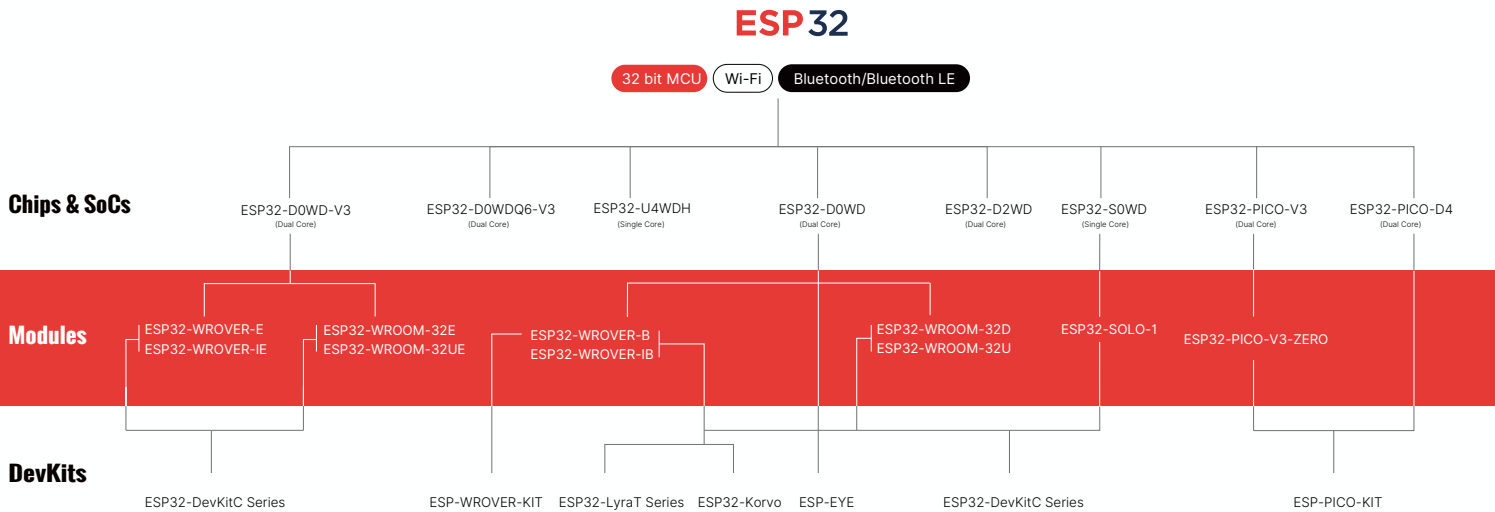
ESP32-S2-Kaluga-1
ESP32-S2-Saola Series
ESP32-S2-DevKitM-1
ESP32-S2-DevKitM-1U
ESP8266-DevKitC Series
ESP-Launcher

Product Map


ESP32
32 bit MCU
Wi-Fi
Bluetooth/Bluetooth LE
Chips & SoCs
ESP32-D0WD-V3
(Dual Core)
ESP32-D0WDQ6-V3
(Dual Core)
ESP32-U4WDH
(Single Core)
ESP32-D0WD
(Dual Core)
ESP32-D2WD
(Dual Core)
ESP32-S0WD
(Single Core)
ESP32-PICO-V3
(Dual Core)
ESP32-PICO-D4
(Dual Core)
Modules
ESP32-WROVER-E
ESP32-WROVER-IE
ESP32-WROOM-32E
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ESP32-WROVER-IB
ESP32-WROOM-32D
ESP32-WROOM-32U
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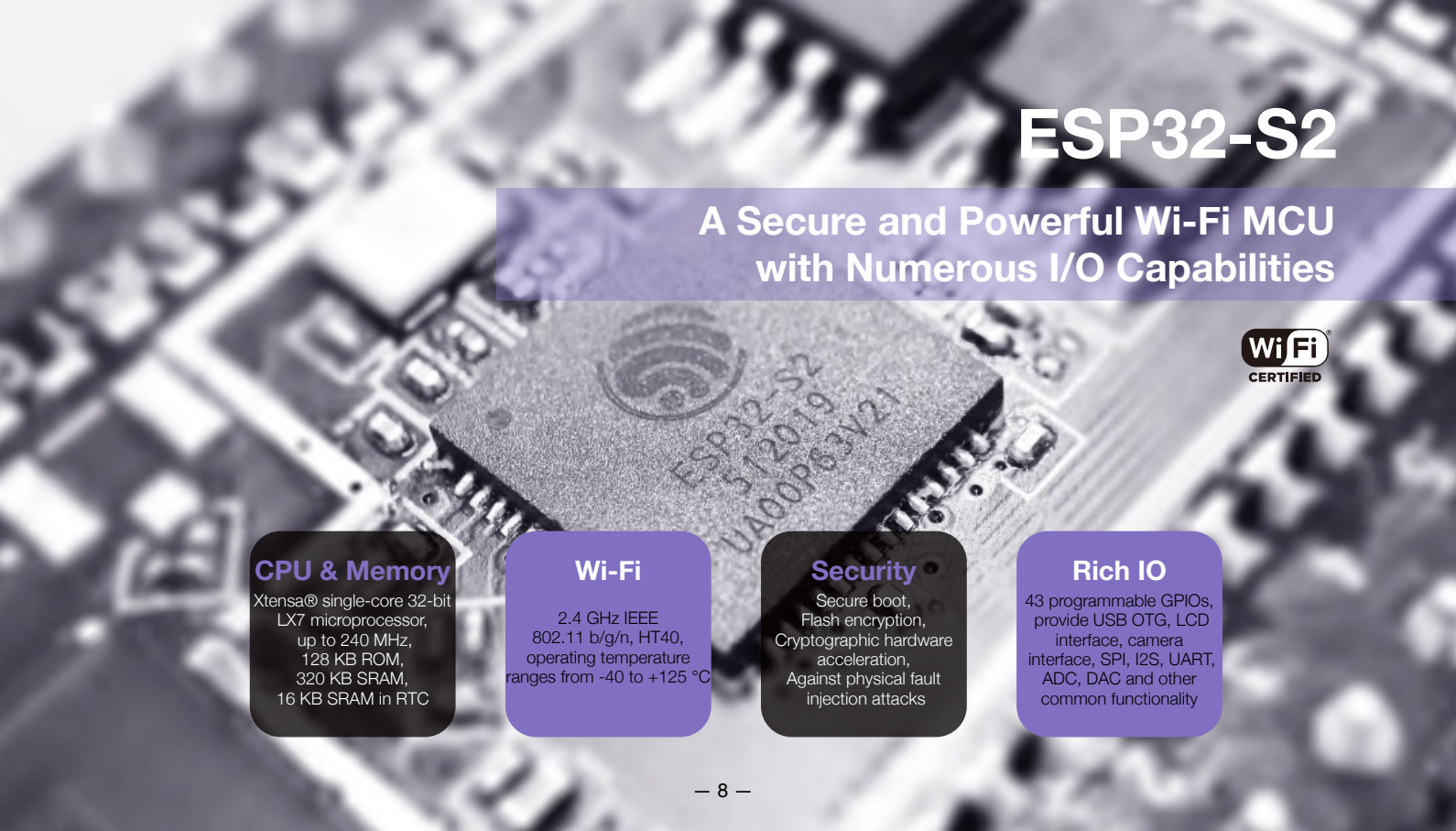
DevKits
ESP32-DevKitC Series
ESP-WROVER-KIT
ESP32-LyraT Series
ESP32-Korvo
ESP-EYE
ESP32-DevKitC Series
ESP-PICO-KIT

ESP32-S2

A Secure and Powerful Wi-Fi MCU with Numerous I/O Capabilities



Wi Fi CERTIFIED

CPU & Memory

Xtensa® single-core 32-bit LX7 microprocessor, up to 240 MHz, 128 KB ROM, 320 KB SRAM, 16 KB SRAM in RTC

Wi-Fi

2.4 GHz IEEE 802.11 b/g/n, HT40, operating temperature ranges from -40 to +125 °C

Security

Secure boot, Flash encryption, Cryptographic hardware acceleration, Against physical fault injection attacks

Rich IO

43 programmable GPIOs, provide USB OTG, LCD interface, camera interface, SPI, I2S, UART, ADC, DAC and other common functionality

ESP32-S2 SoCs

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Peripherals

- 43 programmable GPIOs
- 12-bit SAR ADCs (20 channels)
- 8-bit DAC
- 12C, 12S, UART, SPI
- 14 touch-sensing IOs
- RMT (TX/RX)
- LED PWM (8 channels)
- 1 Full-speed USB OTG
- Temperature sensor

Part Number	ESP32-S2	ESP32-S2F
Core Type	Single Core	Single Core
Flash（MB）	N/A	2, 4
Package Type	QFN 56-pin	QFN 56-pin
SPQ（Reel）	2K	2K
MOQ（Reel）	1K	1K
Dimension（mm）	7 × 7	7 × 7

Wi Fi CERTIFIED

More Information

ESP32-S2 Modules

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Peripherals

- 43 GPIOs
- UART, SPI
- 12S, 12C, IR, GPIO
- LCD
- LED PWM
- Camera interface
- Touch sensor, temperature sensor
- USB OTG 11
- ADC, DAC, etc.

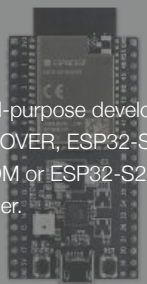
Part Number	ESP32-S2-WROOM	ESP32-S2-WROOM-I	ESP32-S2-WROVER	ESP32-S2-WROVER-I	ESP32-S2-MINI-1	ESP32-S2-MINI-1U
Core	ESP32-S2	ESP32-S2	ESP32-S2	ESP32-S2	ESP32-S2FH4	ESP32-S2FH4
Flash（MB）	4, 8, 16	4, 8, 16	4, 8, 16	4, 8, 16	4 MB Flash packaged in chipset	4 MB Flash packaged in chipset
PSRAM（MB）	N/A	N/A	2	2	N/A	N/A
Antenna Type	PCB antenna	IPEX antenna	PCB antenna	IPEX antenna	PCB antenna	IPEX antenna
SPQ （Reel）	650	650	650	650	TBD	TBD
MOQ（Reel）	650	650	650	650	TBD	TBD
Dimension（mm）	18 × 31 × 3.3	18 × 31 × 3.3	18 × 31 × 3.3	18 × 31 × 3.3	15.4 × 20 × 2.4	15.4 × 15.4 × 2.4

Wi Fi CERTIFIED

More Information

ESP32-S2 Development Kits

ESP32-S2-Saola-1



ESP32-S2 general-purpose development board, based on ESP32-S2-WROVER, ESP32-S2-WROVER-I, ESP32-S2-WROOM or ESP32-S2-WROOM-I, with 4 MB flash and pin header.

User Guide

- **Core:** ESP32-S2-WROVER, ESP32-S2-WROVER-I, ESP32-S2-WROOM, ESP32-S2-WROOM-I
- **Flash/PSRAM:** 4 MB Flash + 2 MB PSRAM
- **Interfaces:** I/O, USB
- **UI:** Buttons, LEDs

ESP32-S2-Kaluga-1

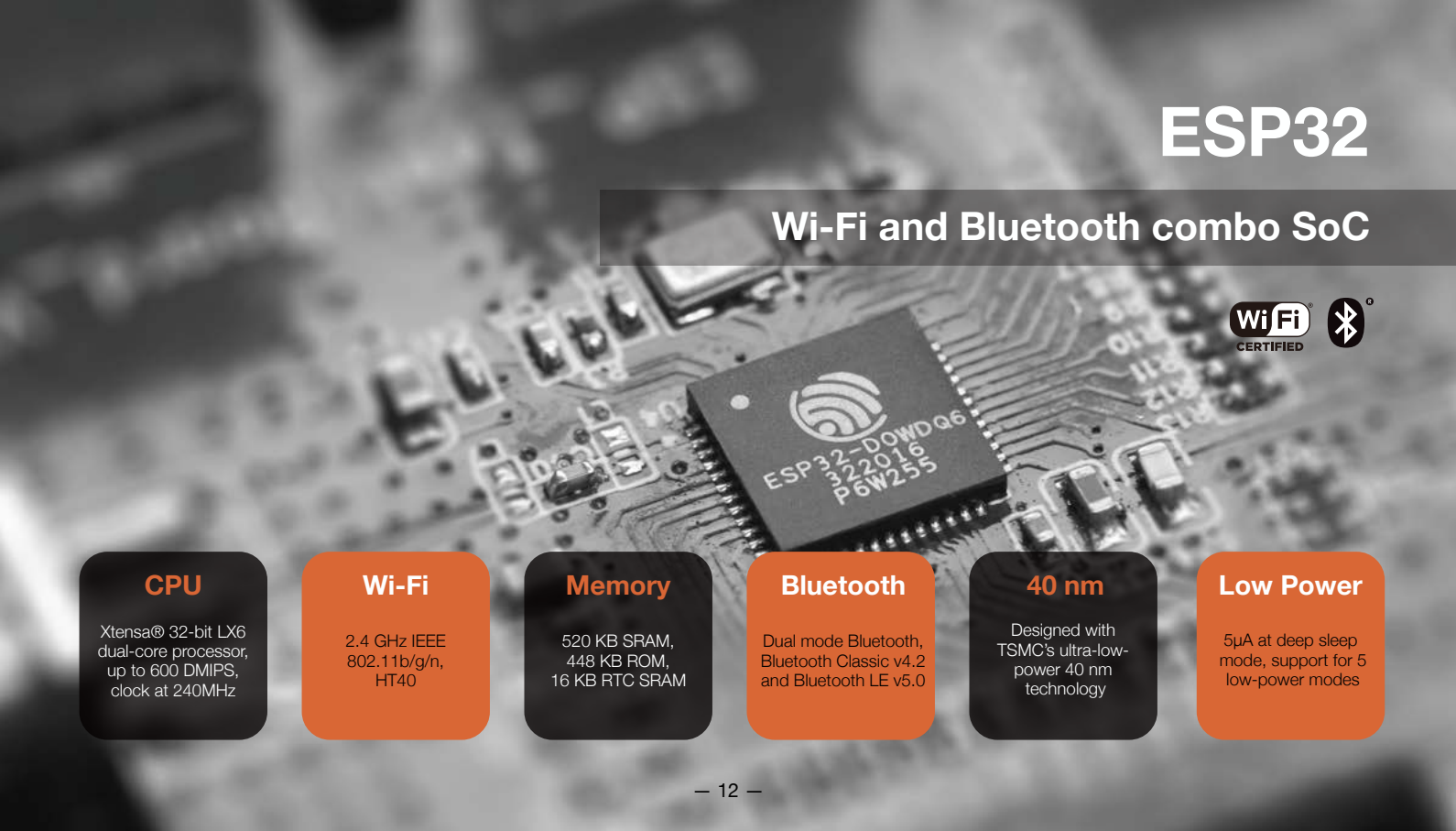
ESP32-S2-Kaluga-1 is based on ESP32-S2, and has various features, such as an LCD screen display, touch panel control, camera image acquisition, audio playback, etc. It can be flexibly assembled and disassembled, thus fulfilling a variety of customized requirements.

User Guide

- **Core:** ESP32-S2-WROVER
- **Flash/PSRAM:** 4 MB Flash + 2 MB PSRAM
- **Interfaces:** SPI, I2C, I2S, UART, ADC, DAC, PWM
- **UI:** Touch, LCD Screen, Mic, Speaker, Camera

ESP32

Wi-Fi and Bluetooth combo SoC



CPU

Xtensa® 32-bit LX6 dual-core processor, up to 600 DMIPS, clock at 240MHz

Wi-Fi

2.4 GHz IEEE 802.11b/g/n, HT40

Memory

520 KB SRAM, 448 KB ROM, 16 KB RTC SRAM

Bluetooth

Dual mode Bluetooth, Bluetooth Classic v4.2 and Bluetooth LE v5.0

40 nm

Designed with TSMC's ultra-low-power 40 nm technology

Low Power

5μA at deep sleep mode, support for 5 low-power modes

ESP32 SoCs

- **Environmental Compliance:** RoHS & REACH




Actual-sized depiction of chips

Part Number	ESP32-D0WD-V3	ESP32-D0WDQ6-V3	ESP32-D0WD	ESP32-D2WD
Core Type	Dual core	Dual core	Dual core	Dual core
Flash（MB）	N/A	N/A	N/A	2
Package Type	QFN 48-pin	QFN 48-pin	QFN 48-pin	QFN 48-pin
SPQ（Reel）	5k	3k	5k	5k
MOQ（Reel）	1k	1k	1k	1k
Dimension（mm）	5 × 5	6 × 6	5 × 5	5 × 5

Peripherals

- 10 × capacitive touch pads
- 12-bit SAR ADC（18 channels）
- 8-bit DAC, Hall sensor
- Temperature sensor
- I2C, I2S, UART, SPI
- Host SDIO / eMMC
- Slave SDIO / SPI
- CAN 2.0, dedicated DMA
- Ethernet MAC interface
- Motor PWM
- LED PWM（16 channels）etc.

Datasheet

More Information

ESP32 SoCs

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Part Number	ESP32-U4WDH	ESP32-S0WD
Core Type	Single core	Single core
Flash（MB）	4	N/A
Package Type	QFN 48-pin	QFN 48-pin
SPQ（Reel）	5k	5k
MOQ（Reel）	1k	1k
Dimension（mm）	5 × 5	5 × 5

Peripherals

- 10 × capacitive touch pads
- 12-bit SAR ADC（18 channels）
- 8-bit DAC, Hall sensor
- Temperature sensor
- I2C, I2S, UART, SPI
- Host SDIO / eMMC
- Slave SDIO / SPI
- CAN 2.0, dedicated DMA
- Ethernet MAC interface
- Motor PWM
- LED PWM（16 channels）etc.

Datasheet

More Information

ESP32 SIP SoC

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips


Part Number	ESP32-PICO-V3	ESP32-PICO-V3-02	ESP32-PICO-D4
Core Type	Dual Core	Dual Core	Dual Core
Flash（MB）	4	8	4
Package Type	LGA 48-pin	LGA 48-pin	LGA 48-pin
SPQ（Reel）	2k	2k	2k
MOQ（Reel）	1k	1k	1k
Dimension（mm）	7 × 7	7 × 7	7 × 7

Peripherals

- Support for SD card
- UART, SPI, SDIO
- I2S, I2C, IR, GPIO
- LED PWM
- Motor PWM
- Capacitive touch sensor
- ADC, DAC, LNA pre-amplifier, etc.

More Information

ESP32 WROOM Modules

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Peripherals

- Support for SD card
- UART, SPI, SDIO
- I2S, I2C, IR, GPIO
- LED PWM
- Motor PWM
- Capacitive touch sensor
- ADC, DAC, LNA pre-amplifier, etc.

Part Number	ESP32-WROOM-32E	ESP32-WROOM-32UE
Core	ESP32-D0WD-V3	ESP32-D0WD-V3
Flash（MB）	4, 8, 16	4, 8, 16
PSRAM（MB）	N/A	N/A
Antenna Type	PCB antenna	IPEX antenna
SPQ（Reel）	650	650
MOQ（Reel）	650	650
Dimension（mm）	18 × 25.5 × 3.1	18 × 19.2 × 3.2

More Information

ESP32 WROOM Modules

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Peripherals

- Support for SD card
- UART, SPI, SDIO
- I2S, I2C, IR, GPIO
- LED PWM
- Motor PWM
- Capacitive touch sensor
- ADC, DAC, LNA pre-amplifier, etc.

Part Number	ESP32-WROOM-32D	ESP32-WROOM-32U	ESP32-SOLO-1	ESP32-DU1906
Core	ESP32-D0WD	ESP32-D0WD	ESP32-S0WD	ESP32-D0WD-V3
Flash（MB）	4, 8, 16	4, 8, 16	4	8
PSRAM（MB）	N/A	N/A	N/A	8
Antenna Type	PCB antenna	IPEX antenna	PCB antenna	PCB antenna
SPQ（Reel）	650	650	650	500
MOQ（Reel）	650	650	650	500
Dimension（mm）	18 × 25.5 × 3.1	18 × 19.2 × 3.2	18 × 25.5 × 3.1	22 × 42 × 3.5

More Information

ESP32 WROVER Modules

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Peripherals

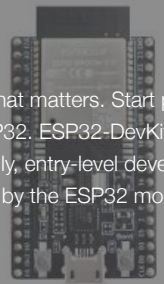
- Support for SD card
- UART, SPI, SDIO
- I2S, I2C, IR, GPIO
- LED PWM
- Motor PWM
- Capacitive touch sensor
- ADC, DAC, LNA pre-amplifier, etc.

Part Number	ESP32-WROVER-E	ESP32-WROVER-IE	ESP32-WROVER-B	ESP32-WROVER-IB
Core	ESP32-D0WD-V3	ESP32-D0WD-V3	ESP32-D0WD	ESP32-D0WD
Flash（MB）	4, 8, 16	4, 8, 16	4, 8, 16	4, 8, 16
PSRAM（MB）	8	8	8	8
Antenna Type	PCB antenna	IPEX antenna	PCB antenna	IPEX antenna
SPQ（Reel）	650	650	650	650
MOQ（Reel）	650	650	650	650
Dimension（mm）	18 × 31.4 × 3.3	18 × 31.4 × 3.3	18 × 31.4 × 3.3	18 × 31.4 × 3.3

More Information

ESP32 Development Kits

ESP32-DevKitC Series

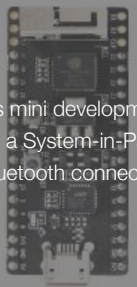


Jump right into what matters. Start prototyping with our flagship SoC, ESP32. ESP32-DevKitC is a low-footprint, breadboard-friendly, entry-level development board which is powered by the ESP32 module.

Getting Started

- **Core:** ESP32-WROOM-32E/ESP32-WROOM-32UE/ ESP32-WROVER-E/ESP32-WROVER-IE/ ESP32-WROOM-32D/ESP32-WROOM-32U/ ESP32-SOLO-1/ESP32-WROVER-B/ ESP32-WROVER-IB
- **Flash/PSRAM:** 4 MB Flash
- **Interfaces:** I/O, USB
- **UI:** Buttons, LEDs

ESP32-PICO-KIT



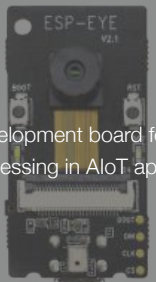
One of Espressif's mini development boards based on ESP32-PICO-D4, a System-in-Package (SiP) module with Wi-Fi and Bluetooth connectivity.

Getting Started

- **Core:** ESP32-PICO-D4
- **Flash/PSRAM:** 4 MB Flash
- **Interfaces:** I/O, USB
- **UI:** Buttons, LEDs

ESP32 Development Kits

ESP-EYE



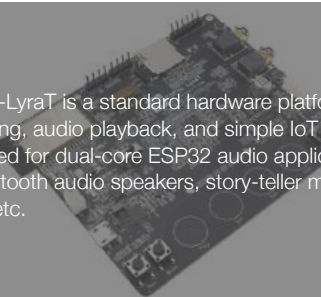
Espressif's development board for image recognition and audio processing in AIoT applications.

Getting Started

- **Core:** ESP32
- **Flash:** 4 MB Flash + 8 MB PSRAM
- **Interfaces:** I/O, USB
- **UI:** Buttons, LEDs

ESP32 Audio DevKits

ESP32-LyraT



ESP32-LyraT is a standard hardware platform supporting recording, audio playback, and simple IoT controls. It's designed for dual-core ESP32 audio applications, e.g., Wi-Fi or Bluetooth audio speakers, story-teller machines, reading pens, etc.

Getting Started

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 4 MB Flash + 8 MB PSRAM
- **Interfaces:** I2S, I2C, JTAG, USB, UART, MicroSD Slot, Audio Output, Speaker Output
- **UI:** Buttons, Function Keys, LEDs, Microphones

ESP32-LyraT-Mini

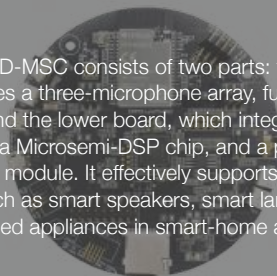
ESP32-LyraT-Mini is a lightweight audio development board based on ESP32-WROVER-E, which implements wake-word engine and front-end acoustic algorithms such as AEC, AGC and NS.

Getting Started

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 4 MB Flash + 8 MB PSRAM
- **Interfaces:** I2S, I2C, JTAG, USB, UART, MicroSD Slot, Audio Output, Speaker Output
- **UI:** Buttons, Function Keys, LEDs, Microphones

ESP32 Audio DevKits

ESP32-LyraTD-MSC

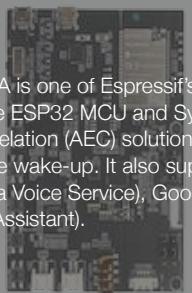


ESP32-LyraTD-MSC consists of two parts: the upper board, which provides a three-microphone array, function keys and LED lights; and the lower board, which integrates ESP32-WROVER-E, a Microsemi-DSP chip, and a power management module. It effectively supports far-field voice solutions, such as smart speakers, smart lamps and other voice-controlled appliances in smart-home applications.

Getting Started

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 4 MB Flash+8 MB PSRAM
- **Interfaces:** I2S, I2C, SPI, JTAG, USB, UART, MicroSD Slot, Audio Output, Speaker Output
- **UI:** Buttons, Function Keys, LEDs, Microphones
- **DSP:** DSP Group's DBMB5P Chip

ESP32-LyraTD-SYNA



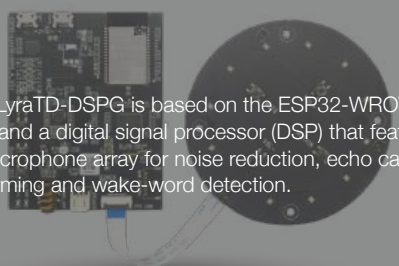
ESP32-LyraTD-SYNA is one of Espressif's Audio Development Boards based on the ESP32 MCU and Synaptics' DSP. It is an Acoustic Echo Cancelation (AEC) solution, supporting voice recognition and voice wake-up. It also supports connection to Amazon's AVS (Alexa Voice Service), Google's Dialogflow and GVA (Google Voice Assistant).

User Guide

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 16 MB Flash+ 8 MB PSRAM
- **Interfaces:** I2S, I2C, SPI, JTAG, USB, UART, FPC Connector, Earphone Jack, Speaker Output
- **UI:** Buttons, LEDs, Microphones
- **DSP:** Synaptics's Cx20921 Chip

ESP32 Audio DevKits

ESP32-LyraTD-DSPG

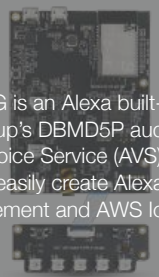


ESP32-LyraTD-DSPG is based on the ESP32-WROVER-B module and a digital signal processor (DSP) that features a three-microphone array for noise reduction, echo cancellation, beamforming and wake-word detection.

User Guide

- **Core:** ESP32-WROVER-B
- **Flash/PSRAM:** 16 MB Flash+8 MB PSRAM
- **Interfaces:** I2S, I2C, JTAG, USB, UART, USB, Earphone Connector, Speaker Connector, FPC Connector, Mini Din Connector
- **UI:** Buttons, LEDs, Microphones
- **DSP:** DSP Group's DBMB5P Chip

ESP32-Vaquita-DSPG



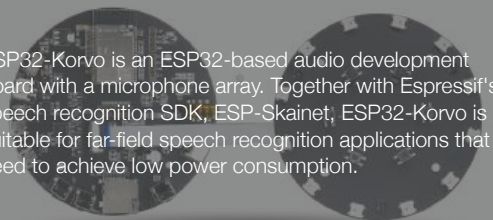
ESP32-Vaquita-DSPG is an Alexa built-in solution powered by ESP32 and DSP Group's DBMD5P audio SoC. The board, together with Alexa Voice Service (AVS) for AWS IoT, provides a turnkey solution to easily create Alexa built-in IoT devices featuring voice enablement and AWS IoT cloud connectivity.

User Guide

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 16 MB Flash+ 8 MB PSRAM
- **Interfaces:** I2S, I2C, JTAG, USB, UART, Speaker Connector, Earphone Connector, FPC Connector
- **UI:** Buttons, Function Keys, LEDs, Microphones
- **DSP:** DSP Group's DBMB5P Chip

ESP32 Audio DevKits

ESP32-Korvo

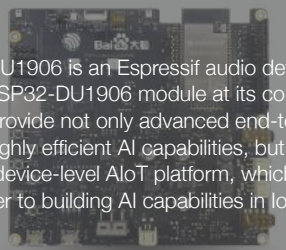


ESP32-Korvo is an ESP32-based audio development board with a microphone array. Together with Espressif's speech recognition SDK, ESP-Skainet, ESP32-Korvo is suitable for far-field speech recognition applications that need to achieve low power consumption.

User Guide

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 16 MB Flash+8 MB PSRAM
- **Interfaces:** I2S, I2C, JTAG, USB, UART, Micro SD Card, Speaker Connector, Earphone Connector, FPC Connector
- **UI:** Function Buttons, LED, Analog Microphone

ESP32-Korvo-DU1906



ESP32-Korvo-DU1906 is an Espressif audio development board with an ESP32-DU1906 module at its core. This board is designed to provide not only advanced end-to-end audio solutions with highly efficient AI capabilities, but also a Cloud + End integrated device-level AIoT platform, which significantly lowers the barrier to building AI capabilities in IoT devices.

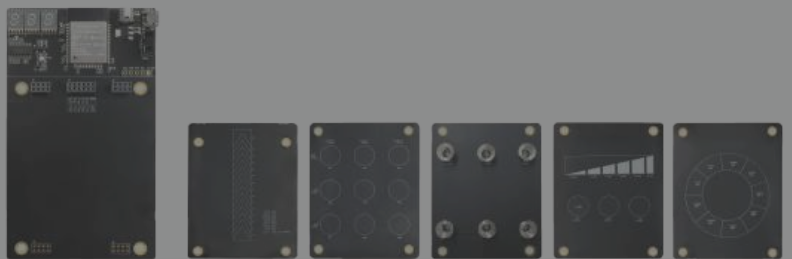
Getting Started

- **Core:** ESP32-WROVER-E
- **Flash/PSRAM:** 8 MB Flash+ 8 MB PSRAM
- **Interfaces:** I2S, I2C, JTAG, USB, UART, MicroSD Slot, LCD Connector, Speaker Connector, Earphone Jacks, Battery Connector
- **UI:** Function Buttons, Microphone Array, LEDs
- **DSP:** Baidu's DU1906 Chip

ESP32 Sense Evaluation Kit

ESP32-Sense Kit

The ESP32-Sense Kit is used for evaluating and developing the ESP32 touch sensor system. The ESP32-Sense Kit consists of one motherboard and five daughterboards. Users can design and add their own daughterboards for special use cases.



- **Core:** ESP32-WROOM-32D
- **Flash/PSRAM:** 4 MB Flash
- **Interfaces:** I/O, USB, ESP-Prog
- **UI:** Touch Sensors, LEDs, RGB, 7-Segment, Displays

Getting Started

ESP32 Mesh Evaluation Kit

ESP32-Mesh Kit

ESP32-MeshKit-Sense is a development board with an ESP32 module at its core. It features peripherals, such as a temperature and humidity sensor, an ambient light sensor, etc. The board can be interfaced with screens. When connected to different peripherals, the board is mainly used for detecting the current consumption of ESP32 modules in a normal-operation state or in sleep mode.

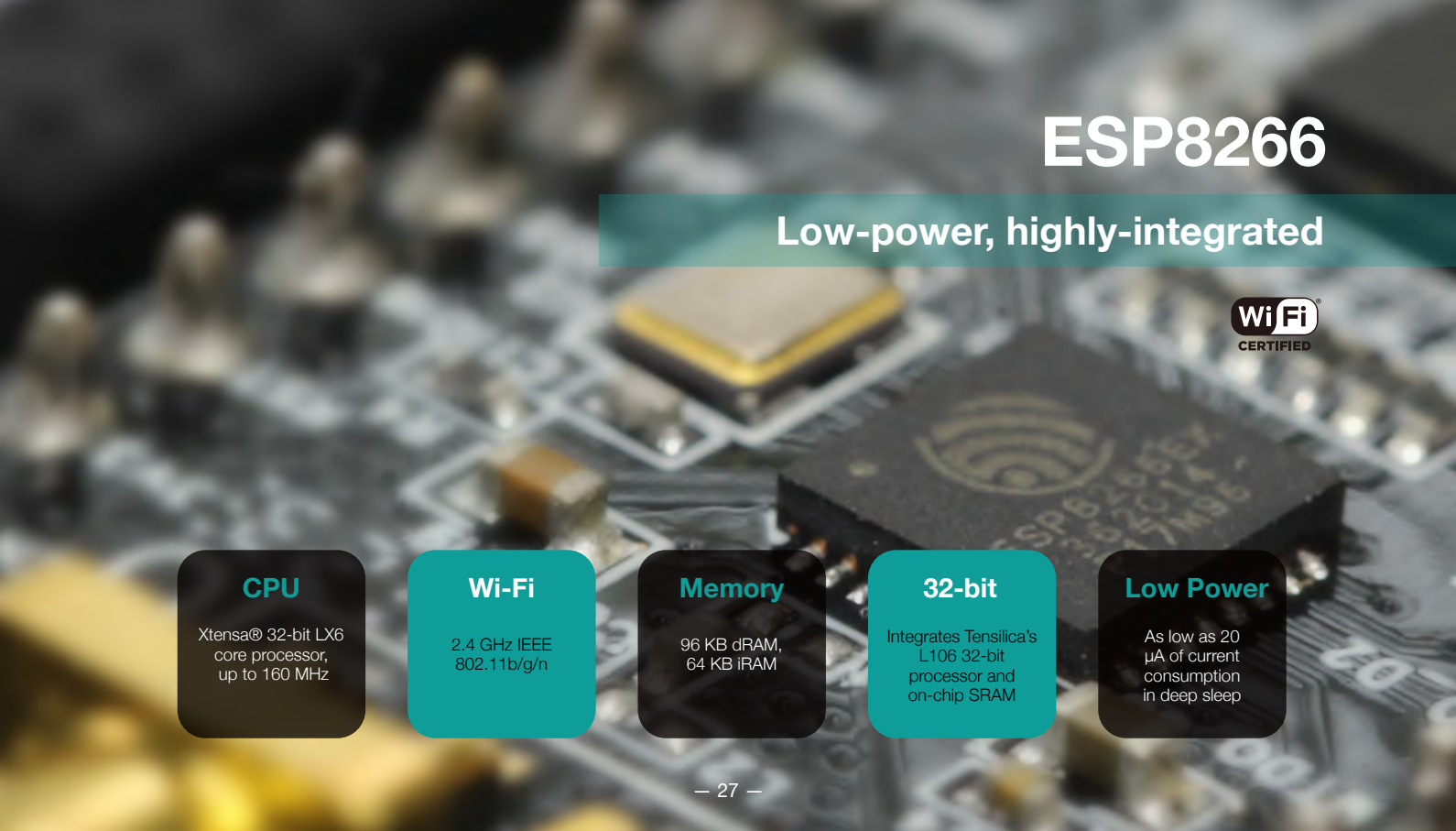
ESP32-MeshKit-Light

ESP32-MeshKit-Sense

- **Core:** ESP32-WROOM-32
- **Flash/PSRAM:** 4 MB Flash
- **Interfaces:** I/O, USB, LCD, ESP-Prog
- **UI:** LEDs, Buttons

Getting Started Video

More Information



ESP8266

Low-power, highly-integrated

Wi Fi CERTIFIED

CPU

Xtensa® 32-bit LX6 core processor, up to 160 MHz

Wi-Fi

2.4 GHz IEEE 802.11b/g/n

Memory

96 KB dRAM, 64 KB iRAM

32-bit

Integrates Tensilica's L106 32-bit processor and on-chip SRAM

Low Power

As low as 20 µA of current consumption in deep sleep

ESP8266 SoCs

- **Environmental Compliance:** RoHS & REACH



Actual-sized depiction of chips

Part Number	ESP8266EX	ESP8285N08	ESP8285H16
Core Type	Single core	Single core	Single core
Flash（MB）	N/A	1	2
PSRAM（MB）	N/A	N/A	N/A
Package Type	QFN 32-pin	QFN 32-pin	QFN 32-pin
SPQ（Reel）	5k	5k	5k
MOQ（Reel）	1k	1k	5k
Dimension（mm）	5 × 5	5 × 5	5 × 5

Peripherals

- 10-bit ADC,
- SPI, UART,
- PWM,
- I2C, I2S,
- SDIO interfaces integrated

Wi Fi CERTIFIED

More Information

ESP8266 WROOM Modules

- **Environmental Compliance:** RoHS & REACH

Actual-sized depiction of chips

Peripherals

- 10-bit ADC,
- SPI, UART,
- PWM,
- I2C, I2S,
- SDIO interfaces integrated

Part Number	ESP-WROOM-02D	ESP-WROOM-02U
Core	ESP8266EX	ESP8266EX
Flash（MB）	2, 4	2, 4
PSRAM（MB）	N/A	N/A
Antenna Type	PCB antenna	IPEX antenna
SPQ（Reel）	650	650
MOQ（Reel）	650	650
Dimension（mm）	18 × 20 × 3.2	18 × 14.3 × 3.2

Wi Fi CERTIFIED

More Information

ESP8266 Development Board

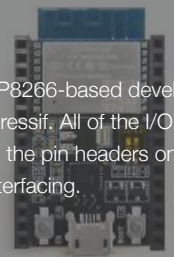
ESP-LAUNCHER

A Micro USB-powered development board that allows access to all 32 pins of ESP8266. It integrates commonly-used peripherals.

Getting Started

- **Core:** ESP8266EX
- **Flash/PSRAM:** 4 MB SPI Flash+4 MB HSPI Flash
- **Interfaces:** I/O, USB
- **UI:** Buttons, LEDs

ESP8266-DevKitC Series



A small-sized ESP8266-based development board produced by Espressif. All of the I/O pins of the module are broken out to the pin headers on both sides of the board for easy interfacing.

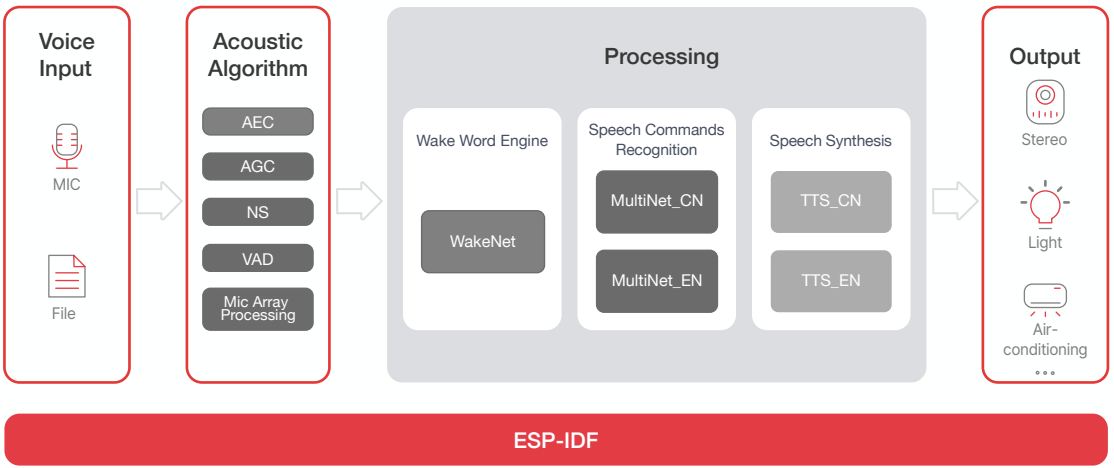
Getting Started

- **Core:** ESP-WROOM-02D/ESP-WROOM-02U
- **Flash/PSRAM:** 2 MB Flash
- **Interfaces:** HSPI, PWM, IR, I/O, ADC, UART, I2S, I2C, USB
- **UI:** Buttons

ESP Skainet Solution

Empowering Things by Speech

ESP-Skainet is Espressif's smart voice assistant, which currently supports a wake-word engine (WakeNet), an offline speech-recognition engine (MultiNet) and acoustic algorithms (VAD, AEC, etc.).

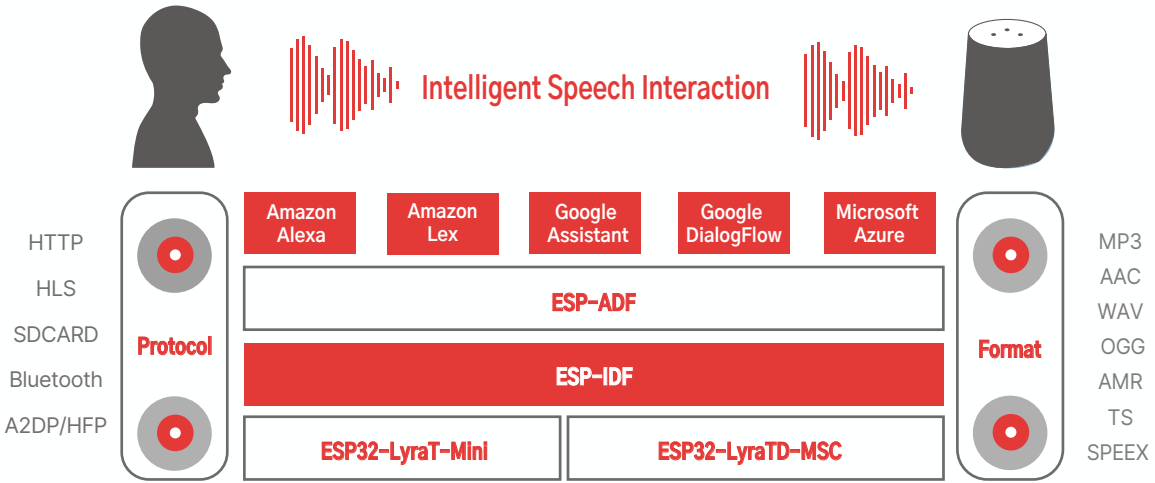


Github: https://github.com/espressif/esp-skainet/blob/master/README.md

ESP
Audio
Solution

Make Your Life Easier with Smart Technology

Espressif enables advanced, cloud-based, voice-controlled applications with its digital signal processor (DSP) chips which can be connected to voice-service providers over the cloud. ESP32 has already been approved by many renowned voice-service providers, such as Amazon Alexa, Google Assistant and Microsoft Azure.
Espressif's Wi-Fi Audio Solution: ESP-ADF with ESP32 LyraT Evaluation Kits.

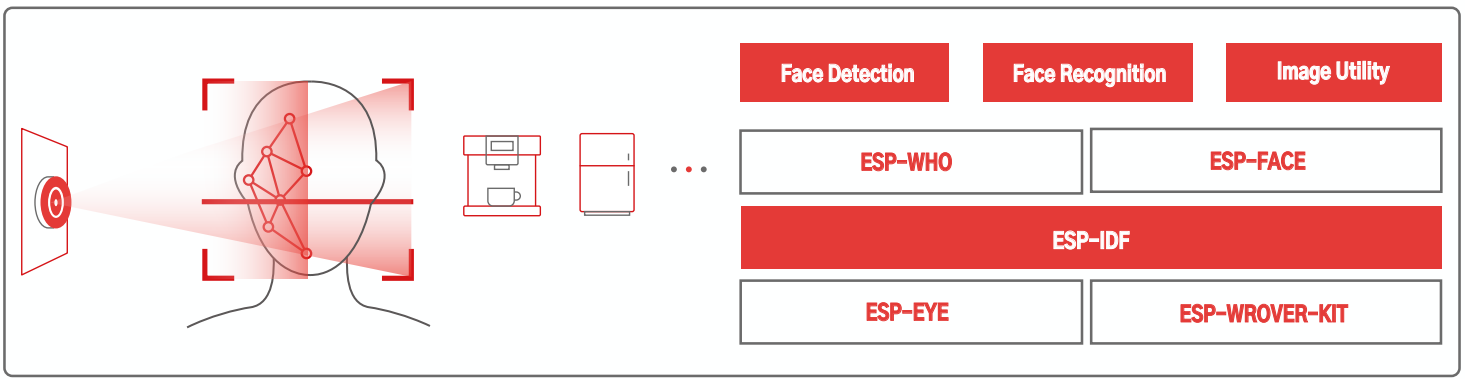


ESP-ADF「Espressif Audio Development Framework」: github.com/espressif/esp-adf
ESP-IDF「Espressif IoT Development Framework」: github.com/espressif/esp-idf
ESP-VA-SDK 「ESP-Voice-Assistant SDK」: https://github.com/espressif/esp-va-sdk

ESP WHO Solution

Create Your Own AIoT Applications

ESP-WHO is a face detection and recognition development framework designed for AIoT applications. You can use it with the **ESP-EYE** development board, the Amazon FreeRTOS-qualified ESP-WROVER-KIT or other ESP32-based development boards. Then, by adding only a few peripherals, such as cameras and screens, you can easily create complete AIoT applications.



ESP-WHO 「Espressif Face Detection and Recognition Framework」: github.com/espressif/esp-who
ESP-IDF 「Espressif IoT Development Framework」: github.com/espressif/esp-idf

Scale Up IoT with Wi-Fi Mesh Network

ESP
Wi-Fi Mesh

ESP-MDF「Espressif Mesh Development Framework」: github.com/espressif/esp-mdf
ESP-IDF「Espressif IoT Development Framework」: github.com/espressif/esp-idf

Supporting the Global Wireless Standard

ESP-BLE-MESH is an open-source Bluetooth® mesh protocol stack. It is fully certified by the Bluetooth Special Interest Group and supports all the functions and application models of the Bluetooth® SIG Mesh Specification v1.0.1. By using the ESP-BLE-MESH technology, different types of Bluetooth mesh devices from different manufacturers can achieve interoperability, communicating with one another reliably and securely. What's more, with an OTA upgrade on your existing Bluetooth LE devices, you could add mesh-networking capability to them. This is the advantage of the ESP-BLE-MESH technology.

Supports Thousands of Nodes and Fast Provisioning

Industrial-Grade Security for Protection Against All Known Attacks

SIG Bluetooth Mesh Full-Feature Certification and Multi-Vendor Interoperability

Supports Wi-Fi & Bluetooth Mesh & Bluetooth LE & BR/EDR Coexistence

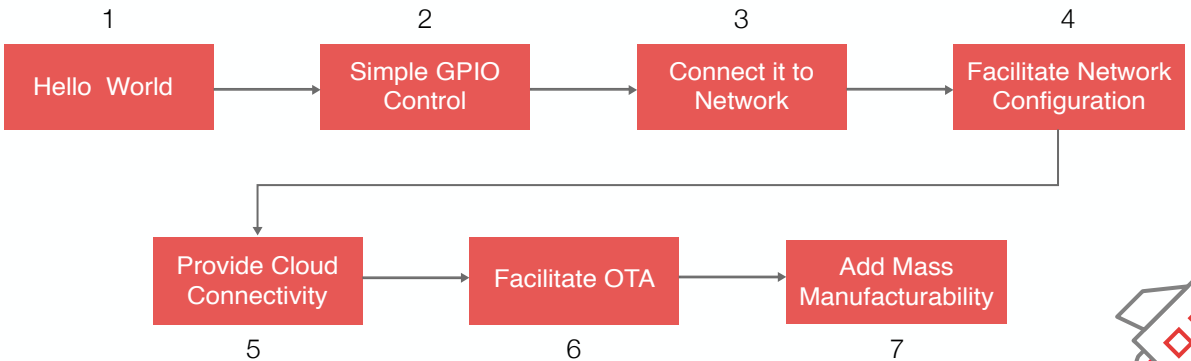
Supports Friend Feature and Low Power Feature

ESP-BLE-MESH: github.com/espressif/esp-idf/tree/master/components/bt/esp_ble_mesh
Document: docs.espressif.com/projects/esp-idf/en/latest/api-guides/esp-ble-mesh/ble-mesh-index.html

ESP Jumpstart

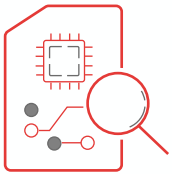
Building production-ready firmware can be hard. It involves multiple questions andBuilding production-ready firmware can be hard. It involves multiple questions and decisions about the best ways of doing things. It involves building phone applications and integrating cloud agents for all the features to be completed properly. "**ESP-Jumpstart**" is a framework created by Espressif, which addresses this common requirement. It also functions as a step-by-step tutorial with a production-quality boilerplate code right from a simple "Hello World" to the use case of a cloud-connected production.

It covers all the common aspects required by any Internet-connected device. Using standard components of ESP-IDF, it ensures that there is consistency with other projects maintained by Espressif. It works with ESP32 as well as ESP8266. The tutorials cover the following:



ESP-Jumpstart「Espressif's new reference guide」: https://github.com/espressif/esp-jumpstart
More information can be found here: https://docs.espressif.com/projects/esp-jumpstart/en/latest/

Design and Certification Services



PCB Design Review

We carry out schematic and layout reviews to ensure correctness and high-performance on your self-designed circuits and PCBs using chips and modules from Espressif Systems.

RF Design Testing

PCBA proofing, RF matching, debugging, and RF testing are now part of the available services for your designs.

Certification Support Program

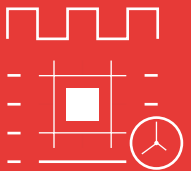
We are committed to assisting you in obtaining certificates required for international product sales.

These include, but are not limited to, SRRC/FCC/CE/TELEC/KCC/NCC/IC/Wi-Fi Alliance/Bluetooth SIG/RoHS/REACH.

Manufacturing Services

Customized Flash Programming

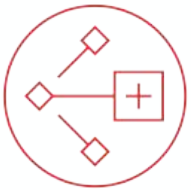
Espressif can help customers use their own flash image when programming modules and chips that have built-in flash. This facilitates customers to receive the modules with their own application firmware and the manufacturing testing firmware. This can significantly reduce the manufacturing time and complexity in our customers' manufacturing line. Furthermore, for the ESP32 and ESP32-S series of modules, we can also enable flash programming, secure boot and the programming of custom data in the eFUSE memory during our manufacturing.



Module Pre-Provisioning Services

(Applicable to ESP32 and ESP32-S series modules)

The ESP32 and ESP32-S series of modules can be securely provisioned in the factory to contain per-device unique certificates and private keys. This enables out-of-the-box connectivity with common IoT clouds that use the X.509 certificate-based authentication.



Other Customizations

The ESP32 and ESP32-S series of modules can also be customized to use a customer-provided set of MAC addresses. Thus, the metallic module shield can print data (such as QR code) as per our customers' requirements.

Espressif Systems (Shanghai) Co., Ltd.

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