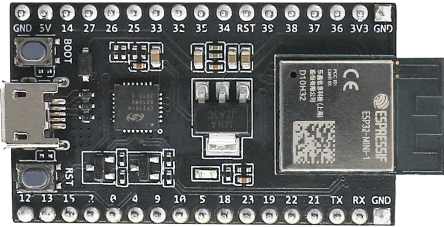
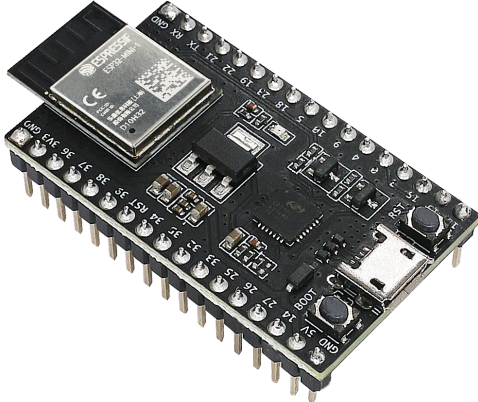


ESP32-DevKitM-1

[\[中文\]](#)

This user guide will help you get started with ESP32-DevKitM-1 and will also provide more in-depth information.

ESP32-DevKitM-1 is an ESP32-MINI-1(1U)-based development board produced by Espressif. Most of the I/O pins are broken out to the pin headers on both sides for easy interfacing. Users can either connect peripherals with jumper wires or mount ESP32-DevKitM-1 on a breadboard.

	
ESP32-DevKitM-1 - front	ESP32-DevKitM-1 - isometric

The document consists of the following major sections:

- [Getting started](#): Provides an overview of the ESP32-DevKitM-1 and hardware/software setup instructions to get started.
- [Hardware reference](#): Provides more detailed information about the ESP32-DevKitM-1's hardware.
- [Related Documents](#): Gives links to related documentaiton.

Getting Started

This section describes how to get started with ESP32-DevKitM-1. It begins with a few introductory sections about the ESP32-DevKitM-1, then Section [Start Application Development](#) provides instructions on how to do the initial hardware setup and then how to flash firmware onto the ESP32-DevKitM-1.

Overview

This is a small and convenient development board that features:

- [ESP32-MINI-1, or ESP32-MINI-1U module](#)
- USB-to-serial programming interface that also provides power supply for the board
- pin headers
- pushbuttons for reset and activation of Firmware Download mode
- a few other components

Contents and Packaging

Retail orders

If you order a few samples, each ESP32-DevKitM-1 comes in an individual package in either antistatic bag or any packaging depending on your retailer.

For retail orders, please go to <https://www.espressif.com/en/contact-us/get-samples>.

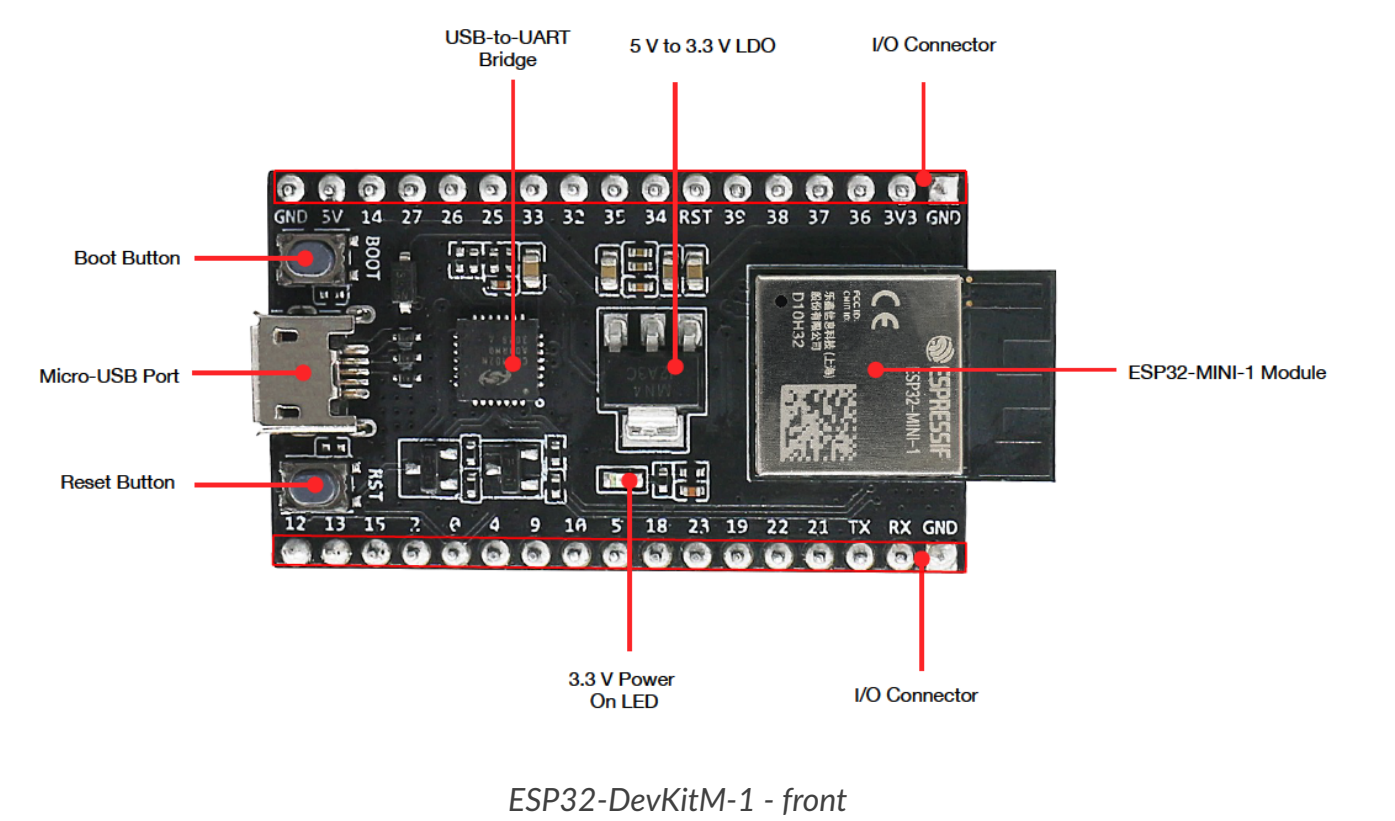
Wholesale Orders

If you order in bulk, the boards come in large cardboard boxes.

For wholesale orders, please go to <https://www.espressif.com/en/contact-us/sales-questions>.

Description of Components

The following figure and the table below describe the key components, interfaces and controls of the ESP32-DevKitM-1 board. We take the board with a ESP32-MINI-1 module as an example in the following sections.



Key Component	Description
On-board module	ESP32-MINI-1 module or ESP32-MINI-1U module. ESP32-MINI-1 comes with an
5 V to 3.3 V LDO	Power regulator converts 5 V to 3.3 V.
Boot Button	Download button. Holding down Boot and then pressing Reset initiates Firmware
Reset Button	Reset Button
Micro-USB Port	USB interface. Power supply for the board as well as the communication interface
USB-to-UART Bridge	Single USB-UART bridge chip provides transfer rates up to 3 Mbps.
3.3 V Power On LED	Turns on when the USB is connected to the board. For details, please see the sche
I/O Connector	All available GPIO pins (except for the SPI bus for flash) are broken out to the pin l

Start Application Development

Before powering up your ESP32-DevKitM-1, please make sure that it is in good condition with no obvious signs of damage.

Required Hardware

- ESP32-DevKitM-1
- USB 2.0 cable (Standard-A to Micro-B)
- Computer running Windows, Linux, or macOS

Software Setup

Please proceed to [Get Started](#), where Section [Installation](#) will quickly help you set up the development environment and then flash an application example onto your ESP32-DevKitM-1.

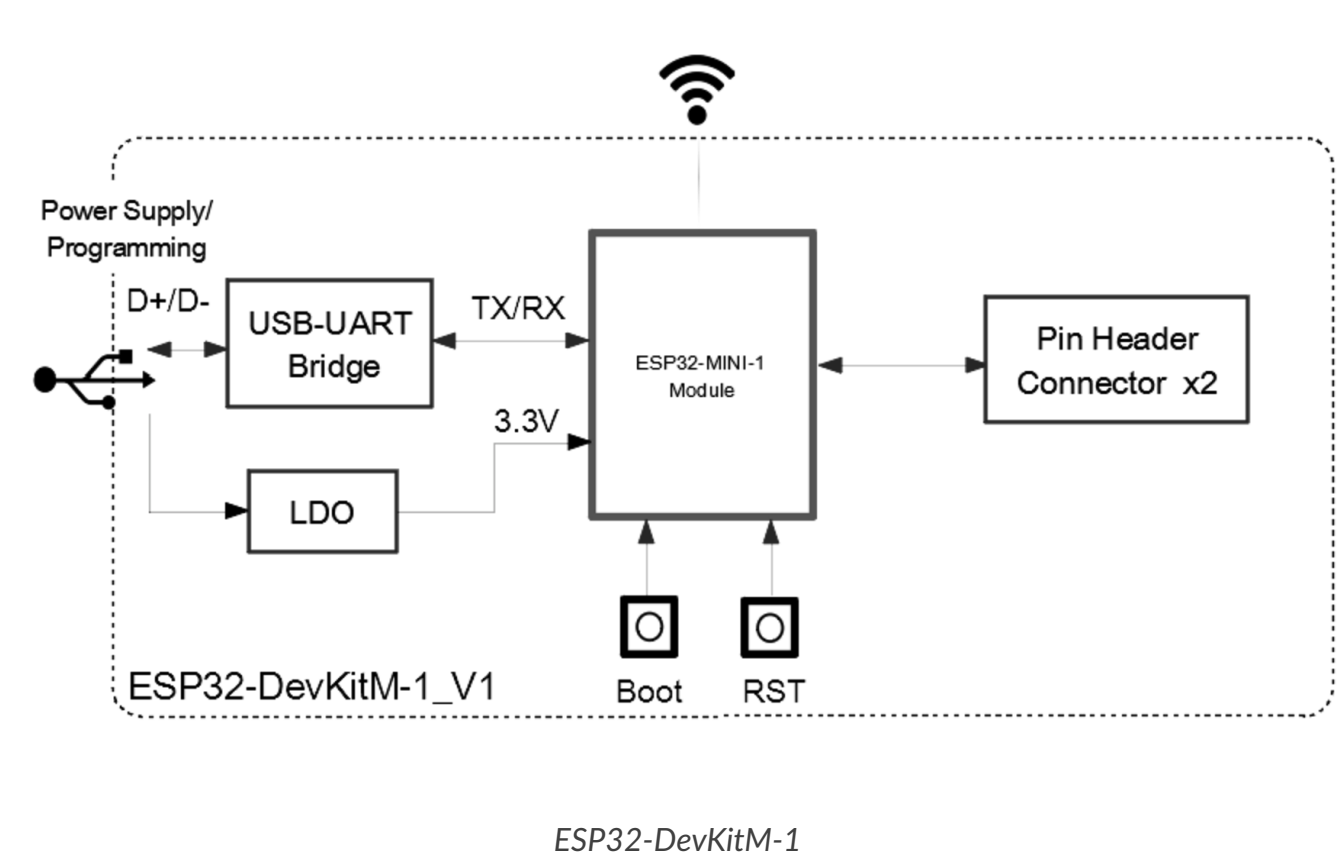
ⓘ Attention

ESP32-DevKitM-1 boards manufactured before December 2, 2021 have a single core module installed. To verify what module you have, please check module marking information in [PCN-2021-021](#) . If your board has a single core module installed, please enable single core mode ([CONFIG_FREERTOS_UNICORE](#)) in [menuconfig](#) before flashing your applications.

Hardware Reference

Block Diagram

A block diagram below shows the components of ESP32-DevKitM-1 and their interconnections.



Power Source Select

There are three mutually exclusive ways to provide power to the board:

- Micro USB port, default power supply
- 5V and GND header pins
- 3V3 and GND header pins

⚠ Warning

- The power supply must be provided using **one and only one of the options above**, otherwise the board and/or the power supply source can be damaged.
- Power supply by micro USB port is recommended.

Pin Descriptions

The table below provides the Name and Function of pins on both sides of the board. For peripheral pin configurations, please refer to [ESP32 Datasheet](#).

No.	Name	Type ¹	Function
1	GND	P	Ground
2	3V3	P	3.3 V power supply
3	I36	I	GPIO36, ADC1_CH0, RTC_GPIO0
4	I37	I	GPIO37, ADC1_CH1, RTC_GPIO1
5	I38	I	GPIO38, ADC1_CH2, RTC_GPIO2
6	I39	I	GPIO39, ADC1_CH3, RTC_GPIO3
7	RST	I	Reset; High: enable; Low: powers off
8	I34	I	GPIO34, ADC1_CH6, RTC_GPIO4
9	I35	I	GPIO35, ADC1_CH7, RTC_GPIO5
10	IO32	I/O	GPIO32, XTAL_32K_P (32.768 kHz crystal oscillator input), ADC1_CH4, TOUCH1
11	IO33	I/O	GPIO33, XTAL_32K_N (32.768 kHz crystal oscillator output), ADC1_CH5, TOUCH2
12	IO25	I/O	GPIO25, DAC_1, ADC2_CH8, RTC_GPIO6, EMAC_RXD0
13	IO26	I/O	GPIO26, DAC_2, ADC2_CH9, RTC_GPIO7, EMAC_RXD1
14	IO27	I/O	GPIO27, ADC2_CH7, TOUCH7, RTC_GPIO17, EMAC_RX_DV

No.	Name	Type ¹	Function
15	IO14	I/O	GPIO14, ADC2_CH6, TOUCH6, RTC_GPIO16, MTMS, HSPICLK, HS2_CLK,
16	5V	P	5 V power supply
17	IO12	I/O	GPIO12, ADC2_CH5, TOUCH5, RTC_GPIO15, MTDI ² , HSPIQ, HS2_DATA2
18	IO13	I/O	GPIO13, ADC2_CH4, TOUCH4, RTC_GPIO14, MTCK, HSPID, HS2_DATA3,
19	IO15	I/O	GPIO15, ADC2_CH3, TOUCH3, RTC_GPIO13, MTDO ² , HSPICS0, HS2_CM
20	IO2	I/O	GPIO2 ² , ADC2_CH2, TOUCH2, RTC_GPIO12, HSPIWP, HS2_DATA0, SD_C
21	IO0	I/O	GPIO0 ² , ADC2_CH1, TOUCH1, RTC_GPIO11, CLK_OUT1, EMAC_TX_CLK
22	IO4	I/O	GPIO4, ADC2_CH0, TOUCH0, RTC_GPIO10, HSPIHD, HS2_DATA1, SD_DA
23	IO9	I/O	GPIO9, HS1_DATA2, U1RXD, SD_DATA2
24	IO10	I/O	GPIO10, HS1_DATA3, U1TXD, SD_DATA3
25	IO5	I/O	GPIO5 ² , HS1_DATA6, VSPICS0, EMAC_RX_CLK
26	IO18	I/O	GPIO18, HS1_DATA7, VSPICLK
27	IO23	I/O	GPIO23, HS1_STROBE, VSPID
28	IO19	I/O	GPIO19, VSPIQ, U0CTS, EMAC_TXD0
29	IO22	I/O	GPIO22, VSPIWP, U0RTS, EMAC_TXD1
30	IO21	I/O	GPIO21, VSPIHD, EMAC_TX_EN
31	TXD0	I/O	GPIO1, U0TXD, CLK_OUT3, EMAC_RXD2
32	RXD0	I/O	GPIO3, U0RXD, CLK_OUT2

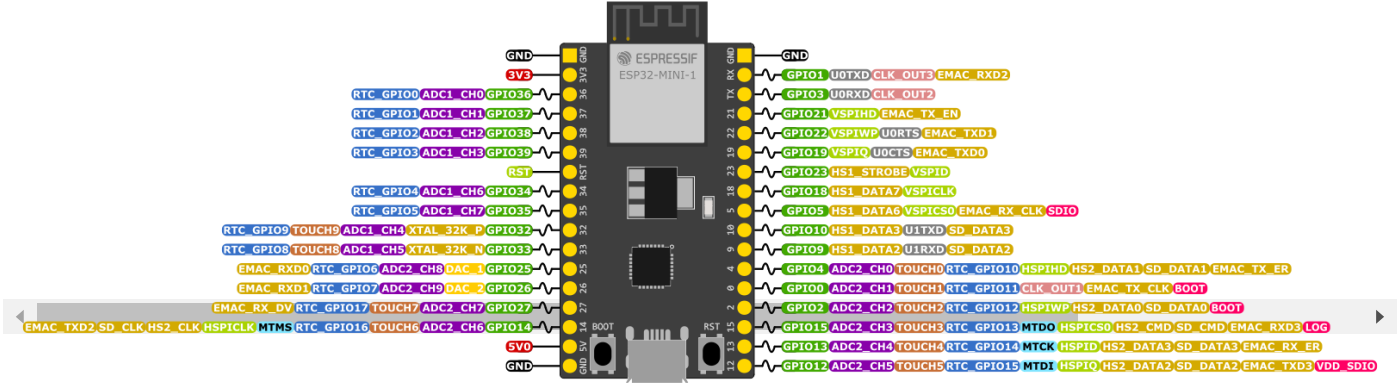
[1] : P: Power supply; I: Input; O: Output.

[2] ([1](#),[2](#),[3](#),[4](#),[5](#)): MTDI, GPIO0, GPIO2, MTDO, and GPIO5 are strapping pins. These pins are used to control several chip functions depending on binary voltage values applied to the pins during chip power-up or system reset. For description and application of the strapping pins, please refer to [ESP32 Datasheet](#) > Section *Strapping Pins*.

Pin Layout

ESP32-DevKitM-1





ESP32 Specs

32-bit Xtensa® dual-core @240MHz
Wi-Fi IEEE 802.11 b/g/n 2.4GHz
BLuetooth 4.2 BR/EDR and BLE
520 KB SRAM (16 KB for cache)
448 KB ROM
34 GPIOs, 4x SPI, 3x UART, 2x I2C,
2x I2S, RMT, LED PWM, 1 host SD/eMMC/SDIO,
1 slave SDIO/SPI, TWAI®, 12-bit ADC, Ethernet

 PWM Capable Pin

Miscellaneous/Secondary Functions

General Purpose Input and Output

Other Related Functions

Clock Function Output

Strapping Pin Functions

JTAG for Debugging and/or USB

Digital-to-Analog Converter

Analog-to-Digital Converter

Serial for Debug/Programming

Ground Plane

Power Rails (3V3 and 5V)

RTC Power Domain (VDD3P3_RTC)

ESP32-DevKitM-1 (click to enlarge)

Hardware Revision Details

No previous versions available.

Related Documents

- ESP32-MINI-1 & ESP32-MINI-1U Datasheet (PDF)

- [ESP32-DevKitM-1 Schematics](#) (PDF)
- [ESP32-DevKitM-1 PCB layout](#) (PDF)
- [ESP32-DevKitM-1 layout](#) (DXF) - You can view it with [Autodesk Viewer](#) online
- [ESP32 Datasheet](#) (PDF)
- [ESP Product Selector](#)

For other design documentation for the board, please contact us at sales@espressif.com.

[Provide feedback about this document](#)