

ESP8684-DevKitC-02 v1.0

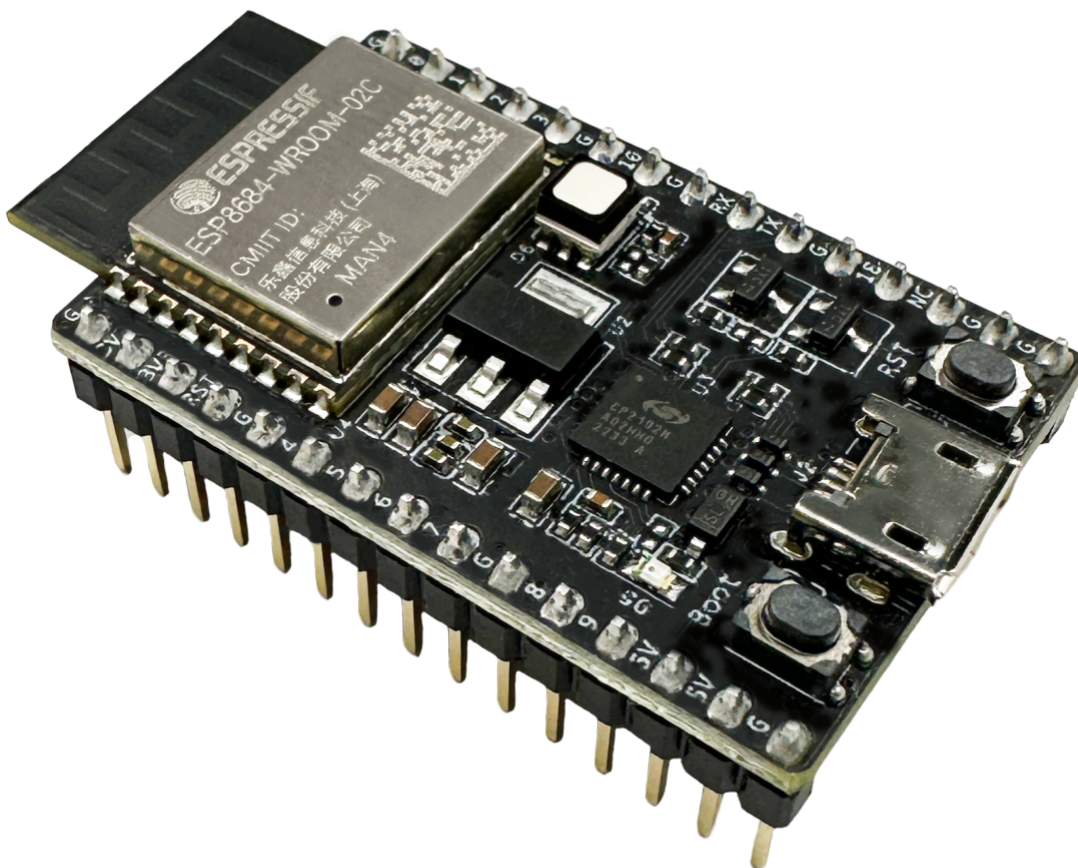
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The latest version: [ESP8684-DevKitC-02 v1.0](#).

This user guide will help you get started with ESP8684-DevKitC-02 and will also provide more in-depth information.

The ESP8684-DevKitC-02 is an entry-level development board based on ESP8684-WROOM-02C/02UC, a general-purpose module with 2 MB/4 MB in-package flash. This board integrates complete Wi-Fi and Bluetooth LE functions.

Most of the I/O pins on the module are broken out to the pin headers on both sides of this board for easy interfacing. Developers can either connect peripherals with jumper wires or mount ESP8684-DevKitC-02 on a breadboard.



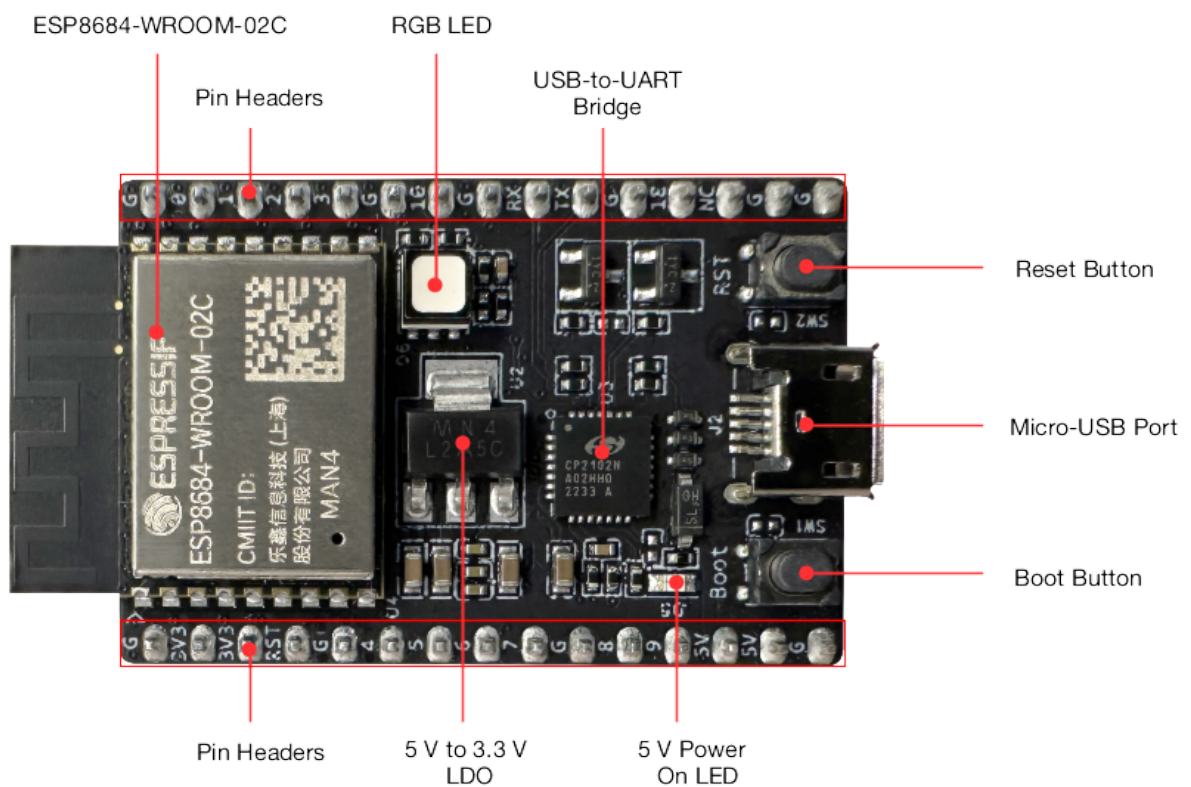
The document consists of the following major sections:

- [Getting Started](#): Overview of the board and hardware/software setup instructions to get started.
- [Hardware Overview](#): More detailed information about the board's hardware.
- [Hardware Revision Details](#): Hardware revision history, known issues, and links to user guides for previous versions (if any) of the board.
- [Related Documents](#): Links to related documentation.

Getting Started

This section provides a brief introduction of ESP8684-DevKitC-02, instructions on how to do the initial hardware setup and how to flash firmware onto it.

Description of Components



ESP8684-DevKitC-02 - front

The key components of the board are described in a counter-clockwise direction.

Key Component	Description
ESP8684-WROOM-02C	ESP8684-WROOM-02C from Espressif is a powerful and general-purpose microcontroller.
Pin Headers	Most of the GPIO pins on the module are broken out to the pin headers.
5 V to 3.3 V LDO	Power regulator that converts a 5 V supply into a 3.3 V output.

Key Component	Description
5 V Power On LED	Turns on when the USB power is connected to the board.
Boot Button	Download button. Holding down Boot and then pressing Reset initiates a download.
Micro-USB Port	USB interface. Power supply for the board as well as the communication interface.
Reset Button	Press this button to restart the system.
USB-to-UART Bridge	Single USB-to-UART bridge chip provides transfer rates up to 3 Mbps.
RGB LED	RGB LED, driven by GPIO0, GPIO1 and GPIO8.

Start Application Development

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

Required Hardware

- ESP8684-DevKitC-02
- USB 2.0 cable (Standard-A to Micro-B)
- Computer running Windows, Linux, or macOS

Note

Be sure to use an appropriate USB cable. Some cables are for charging only and do not provide the needed data lines nor work for programming the boards.

Software Setup

Please proceed to [Get Started](#), where Section [Installation Step by Step](#) will quickly help you set up the development environment then flash an application example onto your board.

ESP-AT Support

The ESP8684-DevKitC-02 supports ESP-AT software that provides a set of AT commands with which you can quickly integrate wireless connectivity features into your product without a need for embedded application development of the module on this development board.

The software is available as a pre-built binary that can be downloaded from [ESP-AT repository](#).

For more information about using ESP-AT, including information on how to customize pre-built binaries, please refer to [ESP-AT User Guide](#).

Contents and Packaging

Retail Orders

If you order a few samples, each board 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/company/contact/buy-a-sample>.

Wholesale Orders

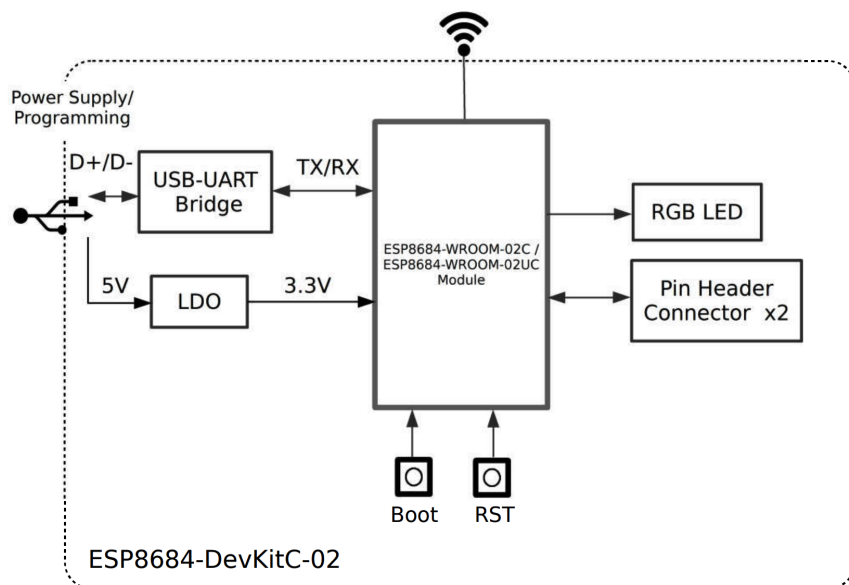
If you order in bulk, the boards come in large cardboard boxes.

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

Hardware Overview

Block Diagram

The block diagram below shows the components of ESP8684-DevKitC-02 and their interconnections.



ESP8684-DevKitC-02 (click to enlarge)

Power Supply Options

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

- Micro-USB Port, default power supply (recommended)
- 5V and G (GND) pins
- 3V3 and G (GND) pins

Header Block

The two tables below provide the **Name** and **Function** of the pins on both sides of the board (J1 and J3). The pin names are shown in [ESP8684-DevKitC-02 - front](#). The numbering is the same as in the [Board Schematic](#) (PDF).

J1

No.	Name	Type ¹	Function
1	G	G	Ground
2	3V3	P	3.3 V power supply
3	3V3	P	3.3 V power supply
4	RST	I	Reset; High: enable; Low: powers off; Pull up by default
5	G	G	Ground
6	4	I/O/T	GPIO4, ADC1_CH4, FSPIHD, MTMS
7	5	I/O/T	GPIO5, FSPIWP, MTDI
8	6	I/O/T	GPIO6, FSPICLK, MTCK
9	7	I/O/T	GPIO7, FSPID , MTDO
10	G	G	Ground
11	8	I/O/T	GPIO8 ² , LED Blue
12	9	I/O/T	GPIO9 ²
13	5V	P	5 V power supply
14	5V	P	5 V power supply
15	G	G	Ground

J3

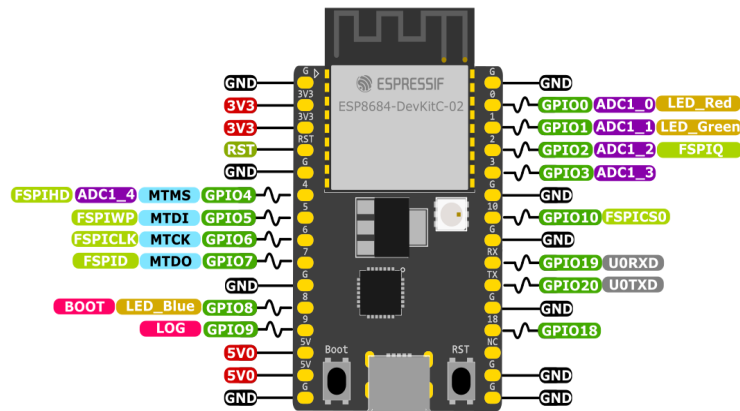
No.	Name	Type ¹	Function
1	G	G	Ground
2	0	I/O/T	GPIO0, ADC1_CH0, LED Red
3	1	I/O/T	GPIO1, ADC1_CH1, LED Green
4	2	I/O/T	GPIO2, ADC1_CH2, FSPIQ

No.	Name	Type ¹	Function
5	3	I/O/T	GPIO3, ADC1_CH3
6	G	G	Ground
7	10	I/O/T	GPIO10, FSPICS0
8	G	G	Ground
9	RX	I/O/T	GPIO19, U0RXD
10	TX	I/O/T	GPIO20, U0TXD
11	G	G	Ground
12	18	I/O/T	GPIO18
13	NC	-	-
14	G	G	Ground
15	G	G	Ground

[1] (1,2): P: Power supply; I: Input; O: Output; T: High impedance.

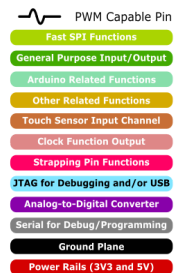
[2] (1,2): GPIO8 and GPIO9 are strapping pins of the ESP8684 chip. These pins are used to control several chip functions depending on binary voltage values applied to the pins during chip power-up or system reset. For description and application of the strapping pins, please refer to [ESP8684 Datasheet](#) > Section *Strapping Pins*.

Pin Layout



ESP8684 Specs

32-bit RISC-V single-core @120MHz
 Wi-Fi IEEE 802.11 b/g/n 2.4GHz + BLE 5
 272 KB SRAM (16 KB for cache)
 576 KB ROM
 14 GPIOs, 3x SPI, 2x UART, 1x I2C,
 LED PWM 6ch, 1x 12-bit ADC with 5ch



ESP8684-DevKitC-02 Pin Layout (click to enlarge)

Hardware Revision Details

This is the first revision of this board released.

Related Documents

- [ESP8684 Datasheet \(PDF\)](#)
- [ESP8684-DevKitC-02 Schematic \(PDF\)](#)
- [ESP8684-DevKitC-02 PCB layout \(PDF\)](#)
- [ESP8684-DevKitC-02 Dimensions \(PDF\)](#)
- [ESP8684-DevKitC-02 Dimensions source file \(DXF\)](#) - You can view it with [Autodesk Viewer](#) online

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

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