

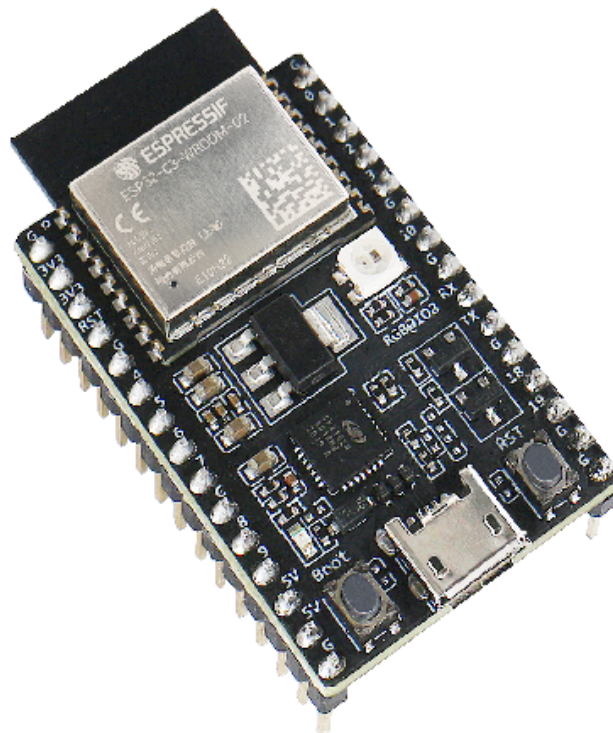
# ESP32-C3-DevKitC-02

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This user guide will help you get started with ESP32-C3-DevKitC-02 and will also provide more in-depth information.

ESP32-C3-DevKitC-02 is an entry-level development board based on [ESP32-C3-WROOM-02](#), a general-purpose module with 4 MB SPI flash. This board integrates complete Wi-Fi and Bluetooth LE functions.

Most of the I/O pins are broken out to the pin headers on both sides for easy interfacing. Developers can either connect peripherals with jumper wires or mount ESP32-C3-DevKitC-02 on a breadboard.



ESP32-C3-DevKitC-02

The document consists of the following major sections:

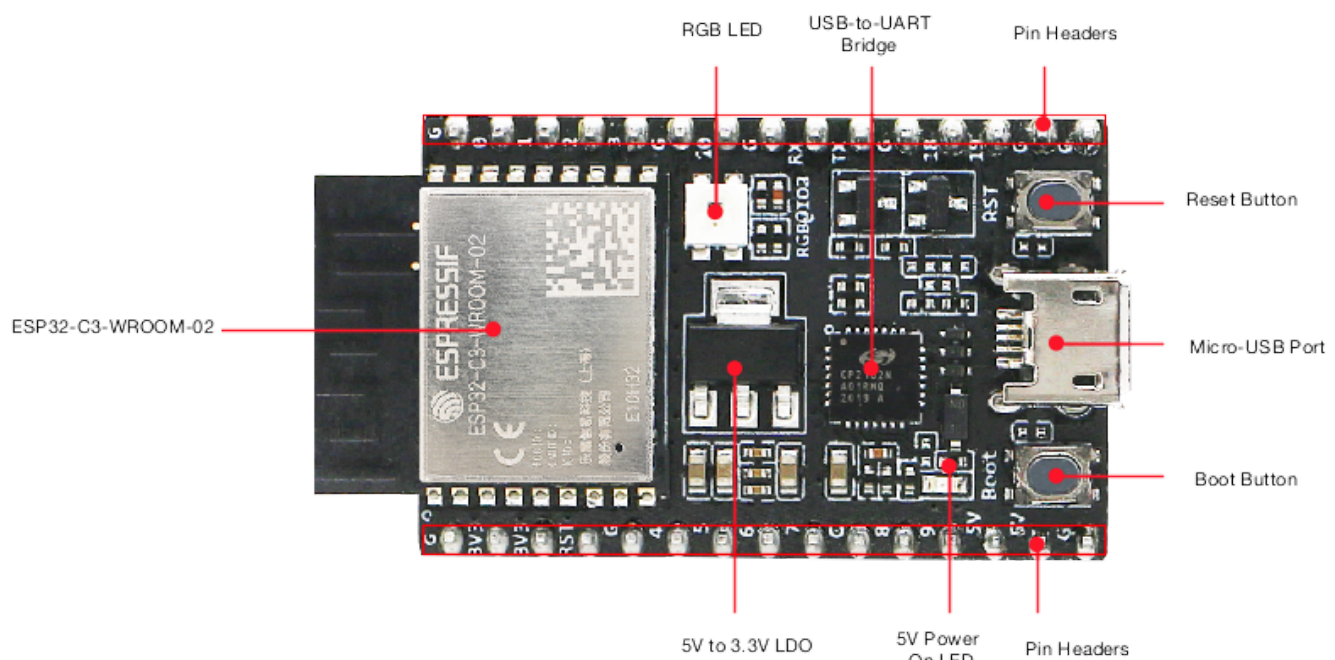
- [Getting Started](#): Overview of ESP32-C3-DevKitC-02 and hardware/software setup instructions to get started.

- [Hardware Reference](#): More detailed information about the ESP32-C3-DevKitC-02's hardware.
- [Hardware Revision Details](#): Revision history, known issues, and links to user guides for previous versions (if any) of ESP32-C3-DevKitC-02.
- [Related Documents](#): Links to related documentation.

## Getting Started

This section provides a brief introduction of ESP32-C3-DevKitC-02, instructions on how to do the initial hardware setup and how to flash firmware onto it.

## Description of Components



*ESP32-C3-DevKitC-02 - front*

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

Key Component	Description
ESP32-C3-WROOM-02	ESP32-C3-WROOM-02 from Espressif is a powerful and general-purpose n
5 V to 3.3 V LDO	Power regulator that converts a 5 V supply into a 3.3 V output.
5 V Power On LED	Turns on when the USB power is connected to the board.
Pin Headers	All available GPIO pins (except for the SPI bus for flash) are broken out to th
Boot Button	Download button. Holding down <b>Boot</b> and then pressing <b>Reset</b> initiates Firr
Micro-USB Port	USB interface. Power supply for the board as well as the communication int

Key Component	Description
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	Addressable RGB LED, driven by GPIO8.

## Start Application Development

Before powering up your ESP32-C3-DevKitC-02, please make sure that it is in good condition with no obvious signs of damage.

## Required Hardware

- ESP32-C3-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](#) will quickly help you set up the development environment and then flash an application example into your ESP32-C3-DevKitC-02.

## Contents and Packaging

### Retail orders

If you order a few samples, each ESP32-C3-DevKitC-02 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

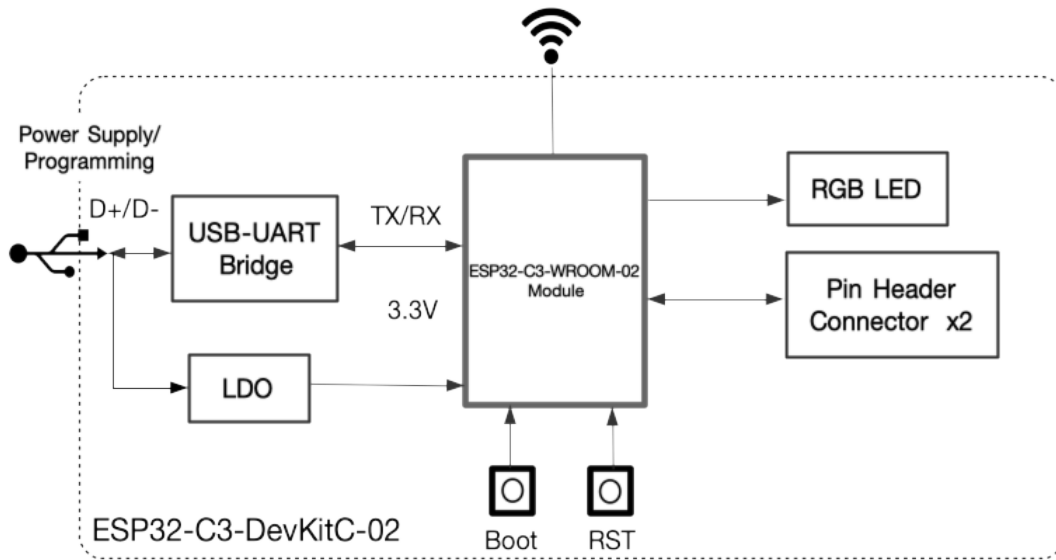
If you order in bulk, the boards come in large cardboard boxes.

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

## Hardware Reference

### Block Diagram

The block diagram below shows the components of ESP32-C3-DevKitC-02 and their interconnections.



*ESP32-C3-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
- 5V and GND pin headers
- 3V3 and GND pin headers

It is recommended to use the first option: Micro-USB Port.

### Header Block

The two tables below provide the **Name** and **Function** of the pin headers on both sides of the board (J1 and J3). The pin header names are shown in [ESP32-C3-DevKitC-02 - front](#). The numbering is the same as in the [ESP32-C3-DevKitC-02 Schematic](#) (PDF).

#### J1

No.	Name	Type <sup>1</sup>	Function
1	G	G	Ground
2	3V3	P	3.3 V power supply
3	3V3	P	3.3 V power supply
4	RST	I	CHIP_PU
5	G	G	Ground
6	4	I/O/T	GPIO4, ADC1_CH4, FSPIHD, MTMS
7	5	I/O/T	GPIO5, ADC2_CH0, 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 <sup>2</sup> , RGB LED
12	9	I/O/T	GPIO9 <sup>2</sup>
13	5V	P	5 V power supply
14	5V	P	5 V power supply
15	G	G	Ground

### J3

No.	Name	Type <sup>1</sup>	Function
1	G	G	Ground
2	0	I/O/T	GPIO0, ADC1_CH0, XTAL_32K_P
3	1	I/O/T	GPIO1, ADC1_CH1, XTAL_32K_N
4	2	I/O/T	GPIO2 <sup>2</sup> , ADC1_CH2, FSPIQ
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	GPIO20, U0RXD
10	TX	I/O/T	GPIO21, U0TXD
11	G	G	Ground
12	18	I/O/T	GPIO18

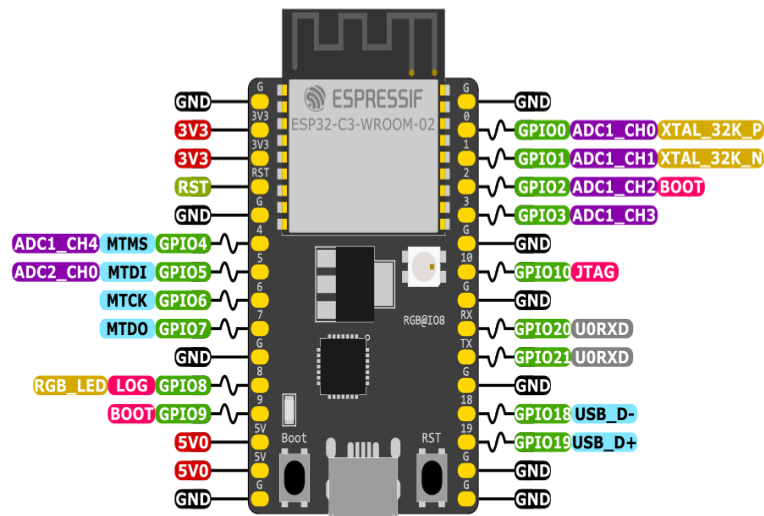
No.	Name	Type <sup>1</sup>	Function
13	19	I/O/T	GPIO19
14	G	G	Ground
15	G	G	Ground

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

[2] (1,2,3): GPIO2, GPIO8, and GPIO9 are strapping pins of the ESP32-C3 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 Section Strapping Pins in [ESP32-C3 Datasheet](#).

## Pin Layout

### ESP32-C3-DevKitC-02



#### ESP32-C3 Specs

32-bit RISC-V single-core @160MHz  
 Wi-Fi IEEE 802.11 b/g/n 2.4GHz  
 Bluetooth LE 5  
 400 KB SRAM (16 KB for cache)  
 384 KB ROM  
 22 GPIOs, 3x SPI, 2x UART, I2C,  
 I2S, RMT, LED PWM, USB Serial/JTAG,  
 GDMA, TWAI®, 12-bit ADC

PWM Capable Pin

Miscellaneous/Secondary Functions

General Purpose Input and Output

Other Related Functions

JTAG for Debugging and/or USB

Analog-to-Digital Converter

Serial for Debug/Programming

Ground Plane

Power Rails (3V3 and 5V)

Strapping Pin Functions

ESP32-C3-DevKitC-02 Pin Layout (click to enlarge)

# Hardware Revision Details

No previous versions available.

## Related Documents

- [Build Secure and Cost-effective Connected Devices with ESP32-C3](#)
- [ESP32-C3 Datasheet \(PDF\)](#)
- [ESP32-C3-WROOM-02 Datasheet \(PDF\)](#)
- [ESP32-C3-DevKitC-02 Schematic \(PDF\)](#)
- [ESP32-C3-DevKitC-02 PCB Layout \(PDF\)](#)
- [ESP32-C3-DevKitC-02 Dimensions \(PDF\)](#)
- [ESP32-C3-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](mailto:sales@espressif.com).

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