ESP32-C3-DevKitC-02

[中文]

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

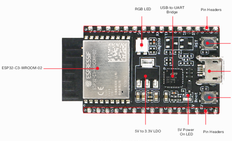
The document consists of the following major sections:

- 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 module that offers Wi-Fi and Bluetooth LE coexistence. It has a PCB antenna and a 4 MB SPI flash.
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 the pin headers on the board. For details, please see Header Block.
Boot Button	Download button. Holding down **Boot** and then pressing **Reset** initiates Firmware Download mode for downloading firmware through the serial port.
Micro-USB Port	USB interface. Power supply for the board as well as the communication interface between a computer and the ESP32-C3 chip.
Reset Button	Press this button to restart the system.
USB-to-UART Bridge	Single-chip 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

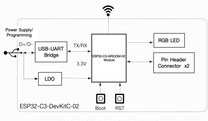
If you order in bulk, the boards come in large cardboard boxes.

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 [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	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 [2], RGB LED
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, XTAL_32K_P
3	1	I/O/T	GPIO1, ADC1_CH1, XTAL_32K_N
4	2	I/O/T	GPIO2 [2], 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
13	19	I/O/T	GPIO19
14	G	G	Ground
15	G	G	Ground

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

[2] (I,Z,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 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.

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