ESP32-C2

Series SoC Errata Version 1.1

ESPRESSIF

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Important: The ESP32-C2 SoC currently consists of only one series, the ESP8684, so the references of ESP32-C2 in this document refers to the ESP8684 Series SoCs.

1 Chip Revision Identification

Espressif is introducing a new **vM.X** numbering scheme to indicate chip revisions. This guide outlines the structure of this scheme and provides information on chip errata and additional identification methods.

1.1 Chip Revision Numbering Scheme

The new numbering scheme **vM.X** consists of the major and minor numbers described below.

M –Major number, indicating the major revision of the chip product. If this number changes, it means the software used for the previous version of the product is incompatible with the new product, and the software version shall be upgraded for the use of the new product.

X –Minor number, indicating the minor revision of the chip product. If this number changes, it means the software used for the previous version of the product is compatible with the new product, and there is no need to upgrade the software.

The **vM.X** scheme replaces previously used chip revision schemes, including ECOx numbers, Vxxx, and other formats if any.

1.2 Primary Identification Methods

eFuse Bits

The chip revision is encoded using two eFuse fields:

- EFUSE_BLK2_DATA1_REG[21:20]
- EFUSE_BLK2_DATA1_REG[19:16]

Table 1.1: Chip Revision Identification by eFuse Bits

	eFuse Bit	Chip Revision		
		v0.0	v1.0	v1.1
Major Number	EFUSE_BLK2_DATA1_REG[21]	0	0	0
	EFUSE_BLK2_DATA1_REG[20]	0	1	1
Minor Number	EFUSE_BLK2_DATA1_REG[19]	0	0	0
	EFUSE_BLK2_DATA1_REG[18]	0	0	0
	EFUSE_BLK2_DATA1_REG[17]	0	0	0
	EFUSE_BLK2_DATA1_REG[16]	0	0	1

Chip Marking

- **Espressif Tracking Information** line in chip marking

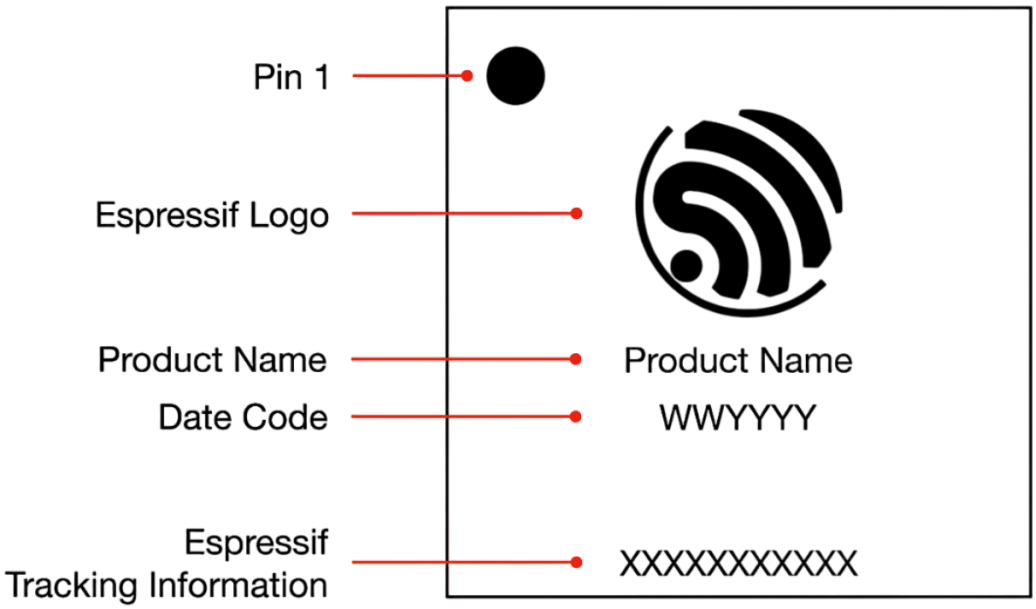

Figure 1.1: Chip Marking Diagram

Table 1.2: Chip Revision Identification by Silk Print

Chip Revision	Main Die
v0.0	X A XXXXXXXX
v1.0	X AA XXXXXXX
v1.1	X B XXXXXXXX

Module Marking

- **Specification Identifier** line in module marking

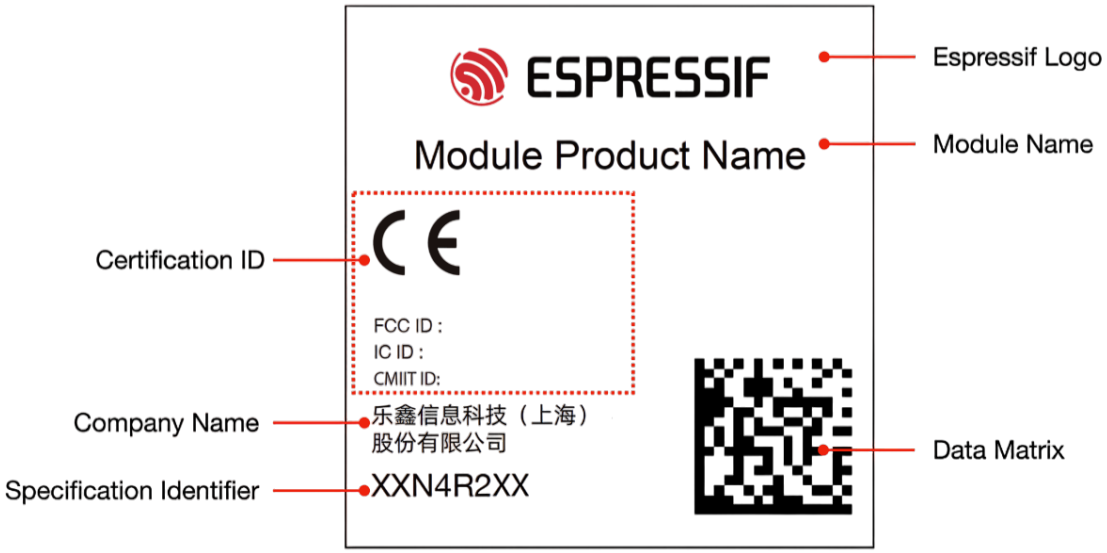

Figure 1.2: Module Marking Diagram

Table 1.3: Chip Revision Identification by Module Marking

Chip Revision	Specification Identifier
v0.0	—[1]
v1.0	XA XXXX
v1.1	XB XXXX

[1] Missing specification identifier "—" means modules with this chip revision are not mass produced.

1.3 Additional Identification Methods

Date Code

Some errors in the chip product don't need to be fixed at the silicon level, or in other words in a new chip revision.

In this case, the chip may be identified by **Date Code** in chip marking (see *Chip Marking Diagram*). For more information, please refer to Espressif Chip Packaging Information.

PW Number

Modules built around the chip may be identified by **PW Number** in product label (see *Module Product Label*). For more information, please refer to Espressif Module Packaging Information.

Figure 1.3: Module Product Label

Note: Please note that **PW Number** is only provided for reels packaged in aluminum moisture barrier bags (MBB).

1.4 ESP-IDF Release Compatibility

Information about ESP-IDF release that supports a specific chip revision is provided in Compatibility Between ESP-IDF Releases and Revisions of Espressif SoCs.

1.5 Related Documents

- For more information about the chip revision upgrade and their identification of series products, please refer to ESP32-C2 Product/Process Change Notifications (PCN).
- For more information about the chip revision numbering scheme, see Compatibility Advisory for Chip Revision Numbering Scheme.

2 Errata Summary

Table 2.1: Errata summary

Category	Descriptions	Affected Revisions		
		v0.0	v1.0	v1.1
Crystal	*[Crystal] 40 MHz Crystal Cannot Work*	Y	Y	

3 All Errata Descriptions

3.1 [Crystal] 40 MHz Crystal Cannot Work

Affected revisions: v0.0 v1.0

Description

ESP32-C2 was designed to support 26 MHz and 40 MHz crystals. However, for revision v1.0 and previous versions, some chips cannot work properly when equipped with 40 MHz crystal. Specific symptoms of the problem include clock issues, or printing garbled characters when powering on, etc.

Workarounds

Use 26 MHz crystal instead of 40 MHz for revision v1.0 and previous chips.

Solution

Fixed in chip revision v1.1, which supports both 26 MHz and 40 MHz crystals.

4 Revision History

Table 4.1: Revision History

Date	Version	Release Notes
2023-08-17	v1.1	•*Chip Revision Identification* – Added information about module marking
2022-12-14	v1.0	First release

5 Related Documentation and Resources

5.1 Related Documentation

- ESP32-C2 Datasheet –Specifications of the ESP32-C2 hardware.
- ESP32-C2 Technical Reference Manual –Detailed information on how to use the ESP32-C2 memory and peripherals.
- ESP32-C2 Hardware Design Guidelines –Guidelines on how to integrate the ESP32-C2 into your hardware product.
- Certificates
  https://espressif.com/en/support/documents/certificates
- ESP32-C2 Product/Process Change Notifications (PCN)
  https://espressif.com/en/support/documents/pcns?keys=ESP32-C2
- ESP32-C2 Advisories –Information on security, bugs, compatibility, component reliability.
  https://espressif.com/en/support/documents/advisories?keys=ESP32-C2
- Documentation Updates and Update Notification Subscription
  https://espressif.com/en/support/download/documents

5.2 Developer Zone

- ESP-IDF Programming Guide for ESP32-C2 –Extensive documentation for the ESP-IDF development framework.
- ESP-IDF and other development frameworks on GitHub.
  https://github.com/espressif
- ESP32 BBS Forum –Engineer-to-Engineer (E2E) Community for Espressif products where you can post questions, share knowledge, explore ideas, and help solve problems with fellow engineers.
  https://esp32.com/

- The ESP Journal –Best Practices, Articles, and Notes from Espressif folks.
  https://blog.espressif.com/
- See the tabs SDKs and Demos, Apps, Tools, AT Firmware.
  https://espressif.com/en/support/download/sdks-demos

5.3 Products

- ESP32-C2 Series SoCs –Browse through all ESP32-C2 SoCs.
  https://espressif.com/en/products/socs?id=ESP32-C2
- ESP32-C2 Series Modules –Browse through all ESP32-C2-based modules.
  https://espressif.com/en/products/modules?id=ESP32-C2
- ESP32-C2 Series DevKits –Browse through all ESP32-C2-based devkits.
  https://espressif.com/en/products/devkits?id=ESP32-C2
- ESP Product Selector –Find an Espressif hardware product suitable for your needs by comparing or applying filters.
  https://products.espressif.com/#/product-selector

5.4 Contact Us

- See the tabs Sales Questions, Technical Enquiries, Circuit Schematic & PCB Design Review, Get Samples (Online stores), Become Our Supplier, Comments & Suggestions.
  https://espressif.com/en/contact-us/sales-questions