

ESP32-C3

Series SoC Errata Version 1.1



ESPRESSIF

Table of contents

Table of contents	i
1 Chip Revision Identification	1
1.1 Chip Revision Numbering Scheme	1
1.2 Primary Identification Methods	1
1.3 Additional Identification Methods	3
1.4 ESP-IDF Release Compatibility	4
1.5 Related Documents	5
2 Errata Summary	5
3 All Errata Descriptions	5
3.1 [SAR ADC] The Digital Controller (DMA) of SAR ADC2 Cannot Work	5
3.2 [SAR ADC] SAR ADC Cannot Sample Sufficient Data in DMA Continuous Conversion Mode After Restart	6
4 Revision History	6
5 Related Documentation and Resources	7
5.1 Related Documentation	7
5.2 Developer Zone	7
5.3 Products	7
5.4 Contact Us	8

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_RD_MAC_SPI_SYS_5_REG[25:23]
- EFUSE_RD_MAC_SPI_SYS_3_REG[20:18]

Table 1.1: Chip Revision Identification by eFuse Bits

	eFuse Bit	Chip Revision					
		v0.0	v0.1	v0.2	v0.3	v0.4	v1.1
Major Number	EFUSE_RD_MAC_SPI_SYS_5_REG[25]	0	0	0	0	0	0
	EFUSE_RD_MAC_SPI_SYS_5_REG[24]	0	0	0	0	0	1
Minor Number	EFUSE_RD_MAC_SPI_SYS_5_REG[23]	0	0	0	0	0	0
	EFUSE_RD_MAC_SPI_SYS_3_REG[20]	0	0	0	0	1	0
	EFUSE_RD_MAC_SPI_SYS_3_REG[19]	0	0	1	1	0	0
	EFUSE_RD_MAC_SPI_SYS_3_REG[18]	0	1	0	1	0	1

Chip Marking

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

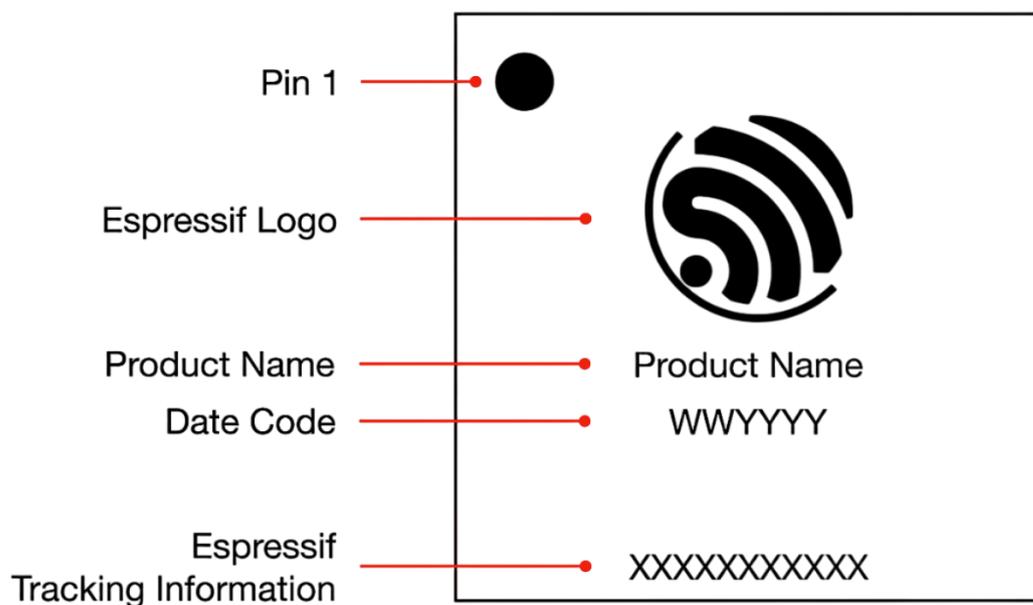


Figure 1.1: Chip Marking Diagram

Table 1.2: Chip Revision Identification by Silk Print

Chip Revision	Main Die
v0.0	X A XXXXXXXXX
v0.1	X B XXXXXXXXX
v0.2	X C XXXXXXXXX
v0.3	X D XXXXXXXXX
v0.4	X E XXXXXXXXX
v1.1	X H XXXXXXXXX

Module Marking

- **Specification Identifier** line in module marking

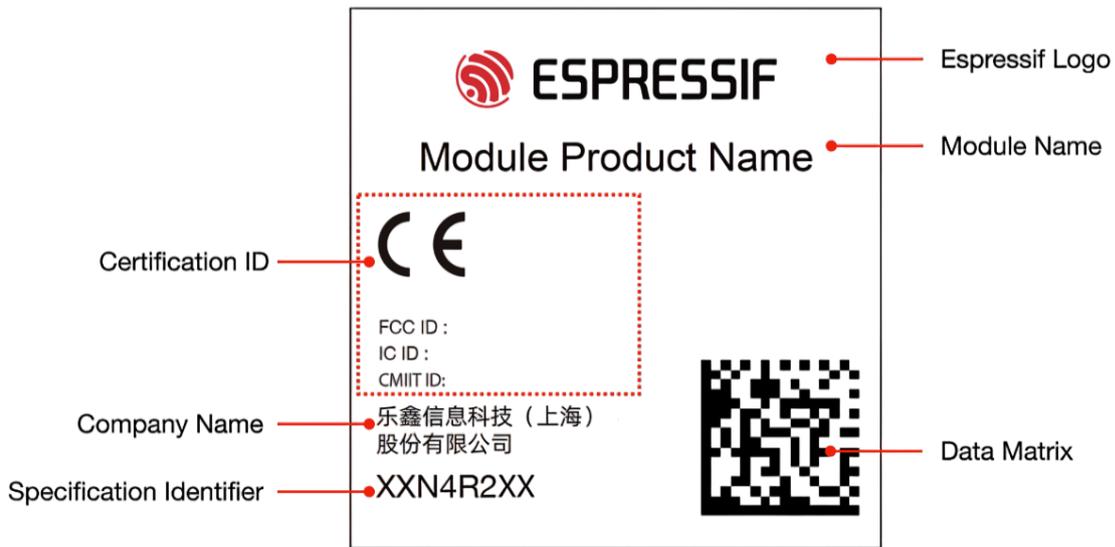


Figure 1.2: Module Marking Diagram

Table 1.3: Chip Revision Identification by Module Marking

Chip Revision	Specification Identifier ¹
v0.0	—
v0.1	—
v0.2	—
v0.3	XX XXXX
v0.4	M4 XXXX
v1.1	—

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](#).

 ESPRESSIF 乐鑫信息科技(上海)股份有限公司	
生产工单 PW Number	PW-2020-11-0001
产品型号 Product Name	ESP32-WROOM-32D
产品料号 Product Number	M21EH3264PH3Q0
数量 Quantity	650 pcs
固件版本 Firmware Ver	IDF: AT: FW P/N:
原产国 Country of Origin	MADE IN CHINA
生产日期 Seal Date	2020-11-30
批次号 Lot Number	202048-000001 202048-000002 202048-000003 202048-000004 202048-000005
出货检验 OQC	产品条码 QR code
	

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-C3 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	v0.1	v0.2	v0.3	v0.4	v1.1
SAR ADC	[SAR ADC] The Digital Controller (DMA) of SAR ADC2 Cannot Work	Y	Y	Y	Y	Y	Y
	[SAR ADC] SAR ADC Cannot Sample Sufficient Data in DMA Continuous Conversion Mode After Restart	Y	Y	Y	Y	Y	Y

3 All Errata Descriptions

3.1 [SAR ADC] The Digital Controller (DMA) of SAR ADC2 Cannot Work

Affected revisions: v0.0 v0.1 v0.2 v0.3 v0.4 v1.1

Description

The Digital Controller of SAR ADC2, i.e., DIG ADC2 controller, may receive a false sampling enable signal. In such a case, the controller will enter an inoperative state.

Workarounds

It is suggested to use SAR ADC1.

Solution

No fix scheduled.

3.2 [SAR ADC] SAR ADC Cannot Sample Sufficient Data in DMA Continuous Conversion Mode After Restart

Affected revisions: v0.0 v0.1 v0.2 v0.3 v0.4 v1.1

Description

In DMA continuous conversion mode, if the SAR ADC is stopped and then restarted, the internal hardware counter that counts ADC samples will not be automatically cleared, and there is no dedicated register to manually clear it.

Consequently, users might encounter scenarios such as:

- Garbled sampling results
- Samples fewer than the configured value

Workarounds

Before starting the ADC continuous conversion:

1. Reset the ADC by first setting and then clearing SYSTEM_APB_SARADC_RST
2. Sequentially configure the 16-bit APB_SARADC_APB_ADC_EOF_NUM field with all values ranging from the previously configured value down to 0, so as to clear the ADC sample counter

Note that this flow may take around 14 ms at most.

Solution

No fix scheduled.

4 Revision History

Table 4.1: Revision History

Date	Ver- sion	Release Notes
2024-01-19	v1.1	<ul style="list-style-type: none"> • <i>Chip Revision Identification</i> <ul style="list-style-type: none"> – Added information about chip revision v1.1 – Added Section <i>Additional Identification Methods</i> • <i>All Errata Descriptions</i> <ul style="list-style-type: none"> – Added Section <i>[SAR ADC] SAR ADC Cannot Sample Sufficient Data in DMA Continuous Conversion Mode After Restart</i>
2022-11-14	v1.0	First release

5 Related Documentation and Resources

5.1 Related Documentation

- [ESP32-C3 Datasheet](#) –Specifications of the ESP32-C3 hardware.
- [ESP32-C3 Technical Reference Manual](#) –Detailed information on how to use the ESP32-C3 memory and peripherals.
- [ESP32-C3 Hardware Design Guidelines](#) –Guidelines on how to integrate the ESP32-C3 into your hardware product.
- Certificates
<https://espressif.com/en/support/documents/certificates>
- ESP32-C3 Product/Process Change Notifications (PCN)
<https://espressif.com/en/support/documents/pcns?keys=ESP32-C3>
- ESP32-C3 Advisories –Information on security, bugs, compatibility, component reliability.
<https://espressif.com/en/support/documents/advisories?keys=ESP32-C3>
- Documentation Updates and Update Notification Subscription
<https://espressif.com/en/support/download/documents>

5.2 Developer Zone

- [ESP-IDF Programming Guide for ESP32-C3](#) –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-C3 Series SoCs –Browse through all ESP32-C3 SoCs.
<https://espressif.com/en/products/socs?id=ESP32-C3>
- ESP32-C3 Series Modules –Browse through all ESP32-C3-based modules.
<https://espressif.com/en/products/modules?id=ESP32-C3>
- ESP32-C3 Series DevKits –Browse through all ESP32-C3-based devkits.
<https://espressif.com/en/products/devkits?id=ESP32-C3>
- 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>