

文件编号 Document No.	ESP-07-2-007-03	文件名称 Document Name	产品/工艺变更通知 Product/Process Change Notice (PCN)
文件版本 Document Version	1.4	保存期限 Retention Period	5 年 5 years

**ESP32-C3FH4X 产品更新**  
**Upgrade of ESP32-C3FH4X Product**

PCN 编号 PCN No.	PCN20240702 (v3)	提出日期 Issue Date of PCN	2024/09/09
变更日期 Proposed Date of Change	2024/10/15	预计变更后产品首次出货日期 Proposed Date of First Shipment After Change	2024/10/28
PCN 类型 / PCN Category	<input type="checkbox"/> 客户需要批准/ Customer Approval Required <input checked="" type="checkbox"/> 客户通知/ Customer Notification		

**1. 影响产品名称/ Affected Product Name**  
ESP32-C3FH4X

**2. 变更原因/ Reason for Change**

- 1) 原 ESP32-C3FH4X 中叠封的 flash 产品计划停产。为提高供应稳定性，乐鑫完成了该供应商升级版本 flash 在 ESP32-C3FH4X 的物料验证测试，测试通过，因此决定导入升级版本 flash 作为段落 1 列出产品的备选 flash 物料。
  - 2) 为了提升 ESP32-C3FH4X 内置 flash 的数据安全性，更新 ESP32-C3FH4X 产品的管脚定义。
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- 1) The flash integrated in ESP32-C3FH4X will reach the end of its life. To ensure a robust and diversified module supply, Espressif has qualified the upgraded flash from the same manufacturer on ESP32-C3 series of chips. Therefore, the upgraded flash will be introduced as the new alternative source for product listed in Para 1.
  - 2) To improve the data security of the flash integrated in the ESP32-C3FH4X package, the pin definitions of ESP32-C3FH4X have been updated.

**3. 变更描述/ Description of Change**

- 1) ESP32-C3FH4X 内置 flash 物料更新。
  - 2) ESP32-C3FH4X 产品的管脚定义更新，将 flash 所用到的 SPI pin 直接在封装内部和 ESP32-C3 主芯片相连，不再引出到封装 pin 上，从物理上隔断了外部操作合封 flash 的可能性，具体管脚定义变更请见 Para 4. 变更对比。
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- 1) The flash integrated in the ESP32-C3FH4X package will be updated.
  - 2) The pin definitions of ESP32-C3FH4X have been updated by not breaking out the SPI pins used for in-package flash, to physically prevent external manipulation of the in-package flash. For detailed changes to the pins, see Para 4. Change Comparison.

**4. 变更对比/ Change Comparison**

项目/ Item	变更前/ Before Change	变更后/ After Change
Flash Integrated	flash A	flash B

## Pin Layout

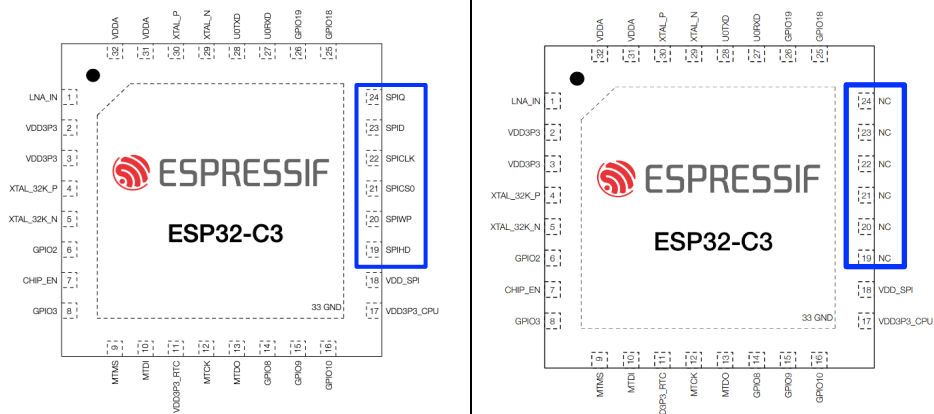


Figure 2-2. ESP32-C3FH4X and ESP32-C3FH4AZ Pin Layout (Top View)

## 5. 变更影响/ Impact of Change

### 1) 品质和性能/ Quality & Performance:

- 新 flash 已经通过了物料验证测试，乐鑫确认该 flash 的品质和性能满足乐鑫的要求。
- ESP32-C3FH4X 产品的管脚定义更新对产品品质和性能无影响。  
客户使用变更后的产品请参照最新的[技术规格书](#)（管脚定义信息更新要求）使用。如需对 ESP32-C3FH4X 进行 SPI 烧录器烧录，请联系乐鑫确认。
- New flash has passed the material validation test, and Espressif confirms that the quality and performance of this flash meet Espressif's requirements.
- The pin definition updates to ESP32-C3FH4X have no impact on its quality and performance. Customers using the updated products should refer to the latest [datasheet](#) (with updated pin definitions) for proper use. If you need to use the SPI serial flasher to program ESP32-C3FH4X, please contact Espressif for confirmation.

### 2) 交期/ Delivery: 不影响/ No impact

### 3) 认证/ Certification: 不影响/ No impact

### 4) 软件/ Software:

默认情况下，ESP32-C3FH4X 系列产品内置 SPI flash 的最大时钟频率为 80 MHz，且不支持自动暂停功能。如需要使用 120 MHz 的 flash 时钟频率或自动暂停功能，请联系乐鑫。

搭载支持版本 ESP-IDF（参见下表），本次新增的 flash 可支持自动暂停功能。请使用 flash 自动暂停功能时，务必联系乐鑫。

By default, the SPI flash on the ESP32-C3FH4X series products operates at a maximum clock frequency of 80 MHz and does not support the auto suspend feature. If you have a requirement for a higher flash clock frequency of 120 MHz or if you need the flash auto suspend feature, please contact us.

The updated flash supports the auto suspend feature. The corresponding ESP-IDF versions are listed below. Contact us if you need the feature.

ESP-IDF 分支 ESP-IDF Branch	支持更新后 flash Suspend 功能的 ESP-IDF 版本 ESP-IDF versions supporting updated flash suspend feature
Release v5.4	v5.4 及以上 v5.4 and above
Release v5.3	<b>v5.3.3 及以上</b> <b>v5.3.3 and above</b>
Release v5.2	<b>v5.2.6 及以上</b>

	v5.2.6 and above
Release v5.1	v5.1.7 及以上 v5.1.7 and above
Release v5.0	v5.0.9 及以上 v5.0.9 and above

5) [技术规格书/ Datasheet](#):

更新 ESP32-C3FH4X 的管脚布局 and GPIO 数量。  
Updated pin layout and the number of GPIOs for ESP32-C3FH4X.

6. 变更前后产品处理/ How to Deal with Products

FIFO

7. 相关报告/ Related Report(s):

☒ Material Qualification Report

编号 No.	测试项目 Test Item	测试结果 Test Result
1	运行模式测试 Operation Mode Test	Pass
2	Deep Sleep 唤醒测试 Wake up from Deep Sleep Test	Pass
3	掉电测试 Powerdown Test	Pass
4	模拟常规 OTA 测试 Simulated General OTA Test	Pass
5	高低温读写测试 High-Low Temp. Read/Write	Pass
6	高温批量读写测试 High Temp. Read/Write (Batch)	Pass

☒ Environment Related Report (RoHS / REACH / HF etc.)

更新后的产品符合 RoHS 标准和 REACH 标准。

Product after change meets the RoHS requirements and the REACH requirements.

8. 给使用者的验证建议/ Verification Suggestion To Users

请确认您是否使用 flash 自动暂停功能, 如有, 请务必联系乐鑫, 并升级到可支持更新后 flash 自动暂停功能的 ESP-IDF 版本。

Please confirm whether you are using the flash auto suspend feature. If so, be sure to contact Espressif and upgrade to an ESP-IDF version that supports this feature with the alternative flash.

**邮件订阅****Espressif Email Notifications**

乐鑫为注册用户提供电子邮件通知服务，用户可通过[乐鑫订阅系统](#)接收技术文档更新、新闻通讯、PCN 等邮件通知。

Espressif sends email notifications of technical documentation changes, along with newsletters, PCNs and other valuable information, to subscribed customers only. If you wish to stay updated on our products and services, please subscribe [here](#).

**客户响应要求****Customer Response Requirements****需客户批准的变更/ Change Requiring Customer Approval:**

- a) 客户须在乐鑫发出 PCN 后的 30 天内告知乐鑫已收到 PCN。如客户未在接收到 PCN 后的 30 天内告知已收到，则视为客户收到变更。

Customers are requested to acknowledge receipt of the PCN within 30 calendar days from the date of issue of the PCN. Customers would be considered as notified 30 calendar days after issue of the PCN if no acknowledgement is received.

- b) 自发布 PCN 之日起 90 天内，客户没有任何其他反馈，则表示客户接受该 PCN。

The lack of any additional responses from customers within 90 calendar days from the date of issue of the PCN constitutes acceptance of the proposed changes.

**客户通知/ Customer Notification:**

- a) 客户需在乐鑫发出 PCN 后 14 天内通知乐鑫收到该 PCN。如客户未在接收到 PCN 14 日反馈乐鑫，则视为客户确认该 PCN。

Customers are requested to acknowledge receipt of the PCN within 14 calendar days from the date of issue of the PCN. Customers would be considered as having acknowledged the PCN if no response is received after 14 calendar days.

请反馈至 [pcn@espressif.com](mailto:pcn@espressif.com)。

Please send feedback to [pcn@espressif.com](mailto:pcn@espressif.com).

**客户批准/确认信息****Customer Approval/Acknowledgement and Remarks**

客户公司全称:

Customer' s Company Name:

PCN 评审结果/ PCN Review Result:

- ☐ 批准/确认 Accepted/Acknowledged  
☐ 不批准/ Rejected  
☐ 需要分析/ Further Analysis Required

客户意见/Comment:

公司代表人姓名  
Representative' s Name:

公司代表人职责  
Representative' s Job  
Title:

公司代表人签名  
Representative' s  
Signature:

日期  
Date: