

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)
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ESP32-C3FH4 系列产品内置 flash 更新 Update Integrated Flash of ESP32-C3FH4 Series Products																											
PCN 编号 PCN No.	PCN20241201	提出日期 Issue Date of PCN	2025/01/14																								
变更日期 Proposed Date of Change	2025/02/14	预计变更后产品首次出货日期 Proposed Date of First Shipment After Change	2025/03/14																								
PCN 类型 / PCN Category	☐ 客户需要批准/ Customer Approval Required ☒ 客户通知/ Customer Notification																										
1. 影响产品名称/ Affected Product Name																											
1) 芯片产品/ Chip Product ESP32-C3FH4																											
2) 模组产品/ Module Product																											
<table><tr><th>Product Name</th><th>MPN</th><th>Chip on Board</th></tr><tr><td>ESP32-C3-MINI-1</td><td>ESP32-C3-MINI-1-N4</td><td>ESP32-C3FH4</td></tr><tr><td>ESP32-C3-MINI-1</td><td>ESP32-C3-MINI-1-H4</td><td>ESP32-C3FH4</td></tr><tr><td>ESP32-C3-MINI-1U</td><td>ESP32-C3-MINI-1U-N4</td><td>ESP32-C3FH4</td></tr><tr><td>ESP32-C3-MINI-1U</td><td>ESP32-C3-MINI-1U-H4</td><td>ESP32-C3FH4</td></tr><tr><td>ESP32-C3-MINI-1</td><td>ESP32-C3-MINI-1-N4-A</td><td>ESP32-C3FH4</td></tr><tr><td>ESP32-C3-SOLO-1</td><td>ESP32-C3-SOLO-1-N4</td><td>ESP32-C3FH4</td></tr><tr><td>ESP32-C3-SOLO-1U</td><td>ESP32-C3-SOLO-1U-N4</td><td>ESP32-C3FH4</td></tr></table>				Product Name	MPN	Chip on Board	ESP32-C3-MINI-1	ESP32-C3-MINI-1-N4	ESP32-C3FH4	ESP32-C3-MINI-1	ESP32-C3-MINI-1-H4	ESP32-C3FH4	ESP32-C3-MINI-1U	ESP32-C3-MINI-1U-N4	ESP32-C3FH4	ESP32-C3-MINI-1U	ESP32-C3-MINI-1U-H4	ESP32-C3FH4	ESP32-C3-MINI-1	ESP32-C3-MINI-1-N4-A	ESP32-C3FH4	ESP32-C3-SOLO-1	ESP32-C3-SOLO-1-N4	ESP32-C3FH4	ESP32-C3-SOLO-1U	ESP32-C3-SOLO-1U-N4	ESP32-C3FH4
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2. 变更原因/ Reason for Change																											
原 ESP32-C3FH4 中的内置 flash 计划停产。为保证供应稳定性，乐鑫完成了新 flash 在 ESP32-C3 芯片平台的物料验证测试，测试通过。因此决定导入该 flash 作为段落 1 列出芯片产品 ESP32-C3FH4 中的内置 flash 物料。段落 1 中列出的模组产品的主芯片为 ESP32-C3FH4，故也进行相应的变更。 The integrated flash of ESP32-C3FH4 will reach end of its life. To ensure a robust supply, Espressif has qualified a new integrated flash as the alternative source for products listed in Para 1. Modules based on ESP32-C3FH4 in Para 1 will change accordingly.																											
3. 变更描述/ Description of Change																											
ESP32-C3FH4 合封 flash 物料更新。段落 1 中列出的模组产品的主芯片为 ESP32-C3FH4，故也进行相应的变更。 Integrated flash of ESP32-C3FH4 series will be updated. Modules based on ESP32-C3FH4 in Para 1 will change accordingly.																											
4. 变更对比/ Change Comparison																											
请见附录 I：变更对比。 Please refer to Appendix I: Change comparison.																											
5. 变更影响/ Impact of Change																											
1) 品质和性能/ Quality & Performance:																											
段落 1 中产品使用的新内置 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。																											

A new integrated flash used in the products listed in Para1 has now been qualified. Espressif confirms it fully meets the Espressif's requirements for quality and performance.

2) 交期/ Delivery: 不影响/ No impact

3) 生产料号/ Material Part Numbers (MPN): 不影响/ No impact

4) 认证/ Certification: 不影响/ No impact

5) 软件/ Software:

默认情况下, ESP32-C3FH4 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。

By default, the SPI flash on the ESP32-C3FH4 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.

6) [技术规格书/ Datasheet](#): 不影响且无需更新/ No impact and need no change.

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

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。

Please confirm whether you are using the flash auto suspend feature. If so, please contact Espressif.

Appendix I 变更对比/ Change Comparison

项目/ Item	变更前/ Before Change	变更后/ After Change
Integrated Flash	Flash A	Flash B
Product Name (No Changes)	See Product List in Para 1	See Product List in Para 1
Flash Operating Voltage	2.3V~3.6V	2.7V~3.6V
	All the affected modules should work at 3.0V ~ 3.6V, so all types of flash meet the requirements.	
Chip/Module Typical Power Supply Voltage (No Changes)	3.3V	3.3V
Flash Capacity (No Changes)	4 MB	4 MB
Flash Temperature Range (No Changes)	-40°C ~ 85 °C	-40°C ~ 85 °C
Flash Page Program Time (Typ. / Max)	0.5 ms/ 3 ms	0.25 ms/ 2 ms
Flash Sector Erase Time (4KB) (Typ. / Max)	50 ms / 500 ms	25 ms / 300 ms
Flash Block Erase Time (32KB) (Typ. / Max)	0.15 s / 1.4 s	0.1 s / 0.8 s
Flash Block Erase Time (64KB) (Typ. / Max)	0.3 s / 1.8 s	0.15 s / 1 s
Flash Chip Erase Time (Typ. / Max)	20 s / 60 s	5 s / 50 s

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。

Please send feedback to 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: