

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-C3, C6, S3 系列模组产品新增备选 flash 物料
Add Alternative Flash Source for ESP32-C3, C6, S3 Series Modules

PCN 编号 PCN No.	PCN20250102	提出日期 Issue Date of PCN	2025/05/09
变更日期 Proposed Date of Change	2025/05/30	预计变更后产品首次出货日期 Proposed Date of First Shipment After Change	2025/05/30
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

产品系列/ Product Series	产品名称/ Product Name	订购代码/ Ordering Code	变更对比/ Change Comparison
ESP32-C3	ESP32-C3-WROOM-02	ESP32-C3-WROOM-02-N4	Appendix I-1
ESP32-C3	ESP32-C3-WROOM-02U	ESP32-C3-WROOM-02U-N4	Appendix I-1
ESP32-C3	ESP32-C3-WROOM-02	ESP32-C3-WROOM-02-H4	Appendix I-2
ESP32-C3	ESP32-C3-WROOM-02U	ESP32-C3-WROOM-02U-H4	Appendix I-2
ESP32-S3	ESP32-S3-WROOM-1	ESP32-S3-WROOM-1-H4	Appendix I-2
ESP32-S3	ESP32-S3-WROOM-1U	ESP32-S3-WROOM-1U-H4	Appendix I-2
ESP32-C3	ESP32-C3-WROOM-02	ESP32-C3-WROOM-02-N8	Appendix I-3
ESP32-C3	ESP32-C3-WROOM-02U	ESP32-C3-WROOM-02U-N8	Appendix I-3
ESP32-C3	ESP32-C3-WROOM-02	ESP32-C3-WROOM-02-N16	Appendix I-4
ESP32-C3	ESP32-C3-WROOM-02U	ESP32-C3-WROOM-02U-N16	Appendix I-4
ESP32-C6	ESP32-C6-WROOM-1	ESP32-C6-WROOM-1-N16	Appendix I-4
ESP32-C6	ESP32-C6-WROOM-1U	ESP32-C6-WROOM-1U-N16	Appendix I-4

2. 变更原因/ Reason for Change

为提高供应稳定性，乐鑫完成了新备选 flash 在 ESP32-C3, C6, S3 芯片平台的物料验证测试，测试通过。因此决定导入新 flash 作为段落 1 中模组产品的备选物料。

To ensure a robust and diversified module supply, second source flashes for modules listed in Para1 have now been qualified.

3. 变更描述/ Description of Change

乐鑫 ESP32-C3 3.3 V 4MB -40~85°C 模组增加备选 flash 物料。
乐鑫 ESP32-C3 3.3 V 4MB -40~105°C 模组增加备选 flash 物料。
乐鑫 ESP32-S3 3.3 V 4MB -40~105 °C 模组增加备选 flash 物料。
乐鑫 ESP32-C3 3.3 V 8MB -40~85°C 模组增加备选 flash 物料。
乐鑫 ESP32-C3 3.3 V 16MB -40~85°C 模组增加备选 flash 物料。
乐鑫 ESP32-C6 3.3 V 16MB -40~85°C 模组增加备选 flash 物料。

Introduce new flash for ESP32-C3 3.3 V 4MB -40~85°C series module.
Introduce new flash for ESP32-C3 3.3 V 4MB -40~105°C series module.
Introduce new flash for ESP32-S3 3.3 V 4MB -40~105 °C series module.
Introduce new flash for ESP32-C3 3.3 V 8MB -40~85°C series module.
Introduce new flash for ESP32-C3 3.3 V 16MB -40~85°C series module.
Introduce new flash for ESP32-C6 3.3 V 16MB -40~85°C series module.

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:

新增加的 flash 已经通过了物料验证测试，乐鑫确认他们的品质和性能满足乐鑫的要求。

The second source for flash memory components used in the products listed in Para1 have now been qualified. Espressif confirms they fully meet the Espressif's requirements for quality and performance.

2) 交期/ Delivery: 不影响/ No impact

3) 订购代码/ Ordering Code: 不影响/ No impact

4) 认证/ Certification: 不影响/ No impact

5) 软件/ Software: 不影响/ No impact

默认情况下，ESP32-C3, C6, S3 系列产品的 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 flash 自动暂停功能，请联系乐鑫。

By default, the SPI flash on the ESP32-C3, C6, S3 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	Wi-Fi OTA 测试 Wi-Fi 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。

Products after change meet the RoHS and REACH requirements.

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

请确认您是否使用 120 MHz 的 flash 时钟频率或 flash [自动暂停功能](#)，如有，请务必联系乐鑫。

Please confirm whether you are using the higher flash clock frequency of 120 MHz or if you need the flash [auto suspend feature](#). If so, please contact us.

Appendix I 变更对比/ Change Comparison

1. Introduce new flash for ESP32-C3 3.3 V 4MB -40~85°C series module.

Item	变更前 Before Change	变更后 After Change	变更后 After Change
Flash	Flash A	Add Flash B	Add Flash C
Product Name/MPN (No Changes)	See Product List in Para 1	See Product List in Para 1	See Product List in Para 1
Flash Operating Voltage	2.3 V ~ 3.6 V	2.3 V ~ 3.6 V	2.7 V ~ 3.6 V
	All the affected modules should work at 3.0 V ~ 3.6 V, so all types of flash meet the requirements.		
Module Typical Power Supply Voltage (No Changes)	3.3 V	3.3 V	3.3 V
Flash Capacity (No Changes)	4 MB	4 MB	4 MB
Flash Temperature Range (No Changes)	-40 °C ~ 85 °C	-40 °C ~ 85 °C	-40 °C ~ 85 °C

2. Introduce new flash for ESP32-C3 and ESP32-S3 3.3 V 4MB -40~105 °C series module.

Item	变更前 Before Change	变更后 After Change
Flash	Flash D	Add Flash E
Product Name/MPN (No Changes)	See Product List in Para 1	See Product List in Para 1
Flash Operating Voltage	2.3 V ~ 3.6 V	2.3 V ~ 3.6 V
	All the affected modules should work at 3.0 V ~ 3.6 V, so all types of flash meet the requirements.	
Module Typical Power Supply Voltage (No Changes)	3.3 V	3.3 V
Flash Capacity (No Changes)	4 MB	4 MB
Flash Temperature Range (No Changes)	-40 °C ~ 105 °C	-40 °C ~ 105 °C

3. Introduce new flash for ESP32-C3 3.3 V 8MB -40~85°C series module.

Item	变更前 Before Change	变更后 After Change
Flash	Flash F	Add Flash G
Product Name/MPN (No Changes)	See Product List in Para 1	See Product List in Para 1
Flash Operating Voltage	2.7 V ~ 3.6 V	2.3 V ~ 3.6 V
	All the affected modules should work at 3.0 V ~ 3.6 V, so all types of flash meet the requirements.	
Module Typical Power Supply Voltage (No Changes)	3.3 V	3.3 V
Flash Capacity (No Changes)	8 MB	8 MB
Flash Temperature Range (No Changes)	-40 °C ~ 85 °C	-40 °C ~ 85 °C

4. Introduce new flash for ESP32-C3 and ESP32-C6 3.3 V 16MB -40~85°C series module.

Item	变更前 Before Change	变更后 After Change
Flash	Flash H	Add Flash J
Product Name/MPN (No Changes)	See Product List in Para 1	See Product List in Para 1
Flash Operating Voltage	2.7 V ~ 3.6 V	2.3 V ~ 3.6 V
	All the affected modules should work at 3.0 V ~ 3.6 V, so all types of flash meet the requirements.	
Module Typical Power Supply Voltage (No Changes)	3.3 V	3.3 V
Flash Capacity (No Changes)	16 MB	16 MB
Flash Temperature Range (No Changes)	-40 °C ~ 85 °C	-40 °C ~ 85 °C

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: