

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

导入 FM25Q128A-SOB-T-G 作为乐鑫 ESP32 系列模组的备选 16 MB flash 物料
Introduction of FM25Q128A-SOB-T-G as Alternative 16 MB Flash Source to Espressif ESP32 Series
Module Products

PCN 编号 PCN No.	PCN20220801	提出日期 Issue Date of PCN	2022/09/09
变更日期 Proposed Date of Change	2022/10/01	预计变更后产品首次出货日期 Proposed Date of First Shipment After Change	2022/12/09
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

Module Products:

Product Name	Product MPN
ESP32-WROOM-32	ESP32-WROOM-32-N16 ESP32-WROOM-32(M103QH2800PH3Q0)
ESP32-WROOM-32D	ESP32-WROOM-32D-N16 ESP32-WROOM-32D(M113DH2800PH3Q0)
ESP32-WROOM-32U	ESP32-WROOM-32U-N16 ESP32-WROOM-32U(M113DH2800UH3Q0)
ESP32-WROVER-B	ESP32-WROVER-B-N16R8 ESP32-WROVER-B(M213DH2864PH3Q0)
ESP32-WROVER-B	ESP32-WROVER-IB-N16R8 ESP32-WROVER-IB(M213DH2864UH3Q0)
ESP32-WROOM-32SE	ESP32-WROOM-32SE-N16 ESP32-WROOM-32SE(M123DH2800PH3QC)
ESP32-WROVER-E	ESP32-WROVER-E-N16R8 ESP32-WROVER-E(M213EH2864PH3Q0)
ESP32-WROVER-IE	ESP32-WROVER-IE-N16R8 ESP32-WROVER-IE(M213EH2864UH3Q0)
ESP32-WROOM-32E	ESP32-WROOM-32E-N16 ESP32-WROOM-32E(M113EH2800PH3Q0)
ESP32-WROOM-32UE	ESP32-WROOM-32UE-N16 ESP32-WROOM-32UE(M113EH2800UH3Q0)

ESP32-DU1906	ESP32-DU1906-N16R8 ESP32-DU1906(M403EH2864PH3Q0)
ESP32-DU1906-U	ESP32-DU1906-U-N16R8 ESP32-DU1906-U(M403EH2864UH3Q0)
ESP32-WROOM-DA	ESP32-WROOM-DA-N16

Develop Board Products:

Product Name	Product MPN
ESP32-DevKitC	ESP32-DevKitC-32U28
ESP32-DevKitC	ESP32-DevKitC-SE28
ESP32-DevKitC	ESP32-DevKitC-32E28
ESP32-DevKitC	ESP32-DevKitC-32UE28
ESP32-Korvo	ESP32-Korvo

2. 变更原因/ Reason for Change

为提高供应稳定性，乐鑫对料号为 FM25Q128A-SOB-T-G 的 flash 进行了物料验证，测试完成并通过，因此决定引入该 flash 作为段落 1 列出模组和开发板产品的备选 16 MB，-40~85 °C flash 物料。

To ensure a robust module supply, Espressif has qualified flash Part Number: FM25Q128A-SOB-T-G as the new alternative 16 MB, -40~85 °C flash source for Espressif modules and develop board products listed in Para 1.

3. 变更描述/ Description of Change

导入料号为 FM25Q128A-SOB-T-G 作为段落 1 列出产品的备选 flash 物料。

Introduction Part Number: FM25Q128A-SOB-T-G as an alternative flash source for the Espressif products listed in Para1.

4. 变更信息/ Change Information

Item	变更前 Before Change		变更后 After Change
Flash Part Number	****	****	Add FM25Q128A-SOB-T-G
Product Name/MPN (No Changes)	See Module List in Para 1	See Module List in Para 1	See Module List in Para 1
Flash Operating Voltage	2.3V~3.6V	2.7V ~ 3.6V	2.3V ~ 3.6V
	All the affected modules should work at 3.0V ~ 3.6V, so all types of flash meet the requirements.		
Module Typical Power Supply Voltage (No Changes)	3.3V	3.3V	3.3V
Flash Capacity (No Changes)	16 MB	16 MB	16 MB
Flash Temperature Range (No Changes)	-40°C ~ 85 °C	-40°C ~ 85 °C	-40°C ~ 85 °C
Sector Erase Time (4KB) (Typ. / Max)	40 ms / 400 ms	45 ms / 300 ms	45 ms / 300 ms
Block Erase Time (32KB) (Typ. / Max)	0.12 s / 0.9 s	0.15 s / 1.2 s	0.2 s / 1.5 s
Block Erase Time (64KB) (Typ. / Max)	0.25 s / 1.8 s	0.25 s / 1.6 s	0.25 s / 2.0 s
Chip Erase Time (Typ. / Max)	55 s / 100 s	50 s / 100 s	50 s / 100 s

5. 变更影响/ Impact of Change

1) 品质和性能/ Quality & Performance:

料号为 FM25Q128A-SOB-T-G 的 flash 通过了物料验证测试, 乐鑫确认其品质和性能满足乐鑫要求。

Flash Part Number FM25Q128A-SOB-T-G has completed qualification test. Espressif confirms it meets Espressif requirement.

2) 交期/ Delivery:

导入新 flash 可更好地保证段落 1 列出产品的交期。

The introduction of a new source of flash for the products listed in Para 1 will improve the robustness of their supply chain.

3) 生产料号/ Manufacturer Part Number (MPN):

对于涉及的产品的 MPN 无影响, 客户可使用原 MPN 下单。

There is no change to the MPN of the affected Espressif products. Customers can continue to use existing MPN to place orders.

4) 认证/ Certification: 无影响/ No impact

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

FIFO

7. 相关报告/ Report(s) Attached:

☒ Related ECN No. ECN-2022-018

☒ 物料验证信息/ Material Qualification Information:

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, Deep-sleep current is around 0.0048 mA
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

☒ 环境测试报告/ 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 meet the RoHS requirements and the REACH requirements.

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: