

## 验证报告

编号: SHAEC26021421004

日期: 2026 年 08 月 12 日

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客户名称: 江苏捷捷微电子股份有限公司  
客户地址: 江苏省启东市经济开发区钱塘江路 3000 号

样品名称: V1  
客户参考信息: D0, D1, D1H, D2, D2H, D2L, D3, E1, E2, F1, F2, F3, F4, G1, G2, G3, G4, P2, P3, P3A, S1, S2, T1, T1A, T2, T2A, T2B, T3, V1, V1-A-Pack  
以上样品及信息由客户提供。

SGS 工作编号: SHP26-026292  
样品接收时间: 2026 年 07 月 14 日  
验证周期: 2026 年 07 月 14 日 ~ 2026 年 08 月 10 日  
验证要求: 参考欧盟 RoHS 指令 2011/65/EU 的修正指令(EU) 2015/863。  
验证方法: 见后续页。  
验证程序和结果: 见后续页。

## 检测结果总结:

| 检测项目                                                                                                                                                   | 结论 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉、六价铬、多溴联苯 (PBB)、多溴二苯醚 (PBDE)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP)和邻苯二甲酸二异丁酯 (DIBP) | 符合 |

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方金

Peter Fang 方金  
批准签署人

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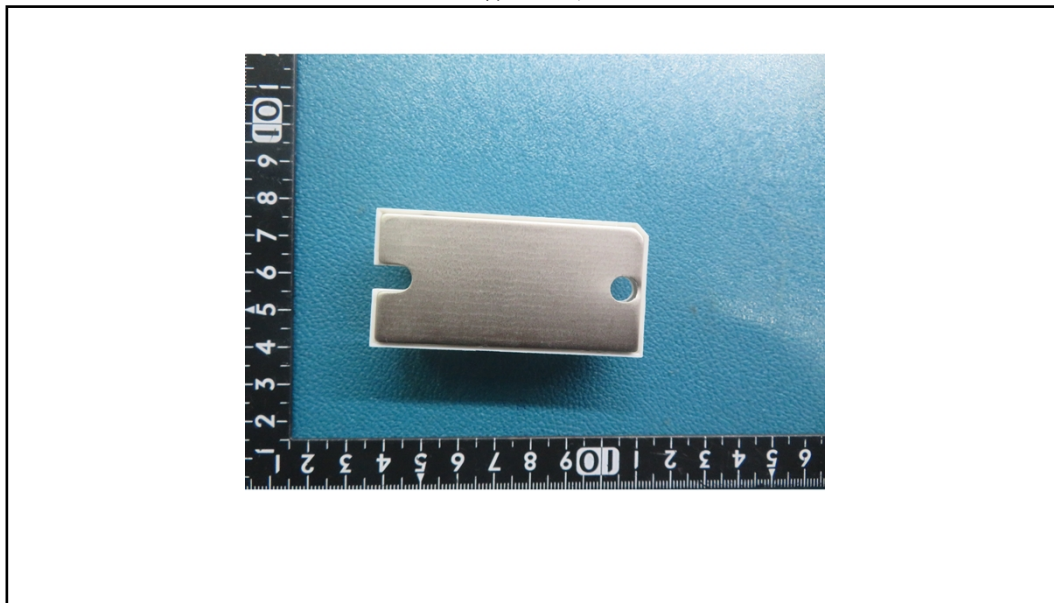
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样品照片



## 验证方法:

1. 参考 IEC 62321-2:2021, 拆分申请者提供的成品。
2. 参考 IEC 62321-1:2013, 仅对本报告照片中标识的样品进行了下列测试分析。
  - (1) 参考 IEC 62321-3-1: 2026, 用能量色散型 X 射线荧光分析仪器进行筛选。
  - (2) 湿法化学检测方法: 参考 IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-7-2:2017, IEC 62321-12:2023, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES, UV-Vis 和 GC-MS 进行分析。



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## 验证部件外观描述:

| 样品序号 | 样品编号 | SGS 样品 ID                    | 样品描述                        |
|------|------|------------------------------|-----------------------------|
| SN1  | A1   | SHA26-0214210-0001.C001      | 银色金属                        |
| SN2  | A2   | SHA26-0214210-0001.C002      | 白色塑料                        |
| SN3  | A3   | SHA26-0214210-0001.C003      | 白色塑料                        |
| SN4  | A4   | SHA26-0214210-0001.C004      | 透明胶                         |
| SN5  | A5   | SHA26-0214210-0001.C005      | 银色金属                        |
| SN6  | A6   | SHA26-0214210-0001.C006      | 铜色金属                        |
| SN7  | A7.1 | SHA26-0214210-0001.C007.C001 | 铜色金属 (A7 整改样提交于 2026-08-04) |



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## 验证结果:

根据物料风险评估的结果, 验证送测样品中的以下材料。(除特别标注, 单位均为: mg/kg)

| 检测项目    | A1  | A2 | A3 | A4 | A5  | A6  | A7.1 |
|---------|-----|----|----|----|-----|-----|------|
| Pb      | BL  | BL | BL | BL | BL  | BL  | ND   |
| Hg      | BL  | BL | BL | BL | BL  | BL  | BL   |
| Cd      | BL  | BL | BL | BL | BL  | BL  | BL   |
| Cr(VI)▼ | BL  | BL | BL | BL | BL  | BL  | BL   |
| PBB     | --- | ND | ND | BL | --- | --- | ---  |
| PBDE    | --- | ND | ND | BL | --- | --- | ---  |
| DEHP    | --- | ND | ND | ND | --- | --- | ---  |
| BBP     | --- | ND | ND | ND | --- | --- | ---  |
| DBP     | --- | ND | ND | ND | --- | --- | ---  |
| DIBP    | --- | ND | ND | ND | --- | --- | ---  |
| 结论      | 符合  | 符合 | 符合 | 符合 | 符合  | 符合  | 符合   |



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## 备注:

(1) X 射线荧光光谱法(XRF)筛选结果说明:

(a) 下表为 IEC62321-3-1: 2026 附录 A 不同基体材料中以 mg/kg 表示的筛选元素限值:

| 元素 / 物质    | 塑料                                                   | 金属                                                   | 复合材料                                                 |
|------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Cd         | $BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$   | $BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$   | $LOD < X < (150+3\sigma) \leq OL$                    |
| Pb         | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$ |
| Hg         | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$ | $BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$ |
| PBB / PBDE | Br: $BL \leq (700-3\sigma) < X$                      | 不适用                                                  | Br: $BL \leq (500-3\sigma) < X$                      |
| Cr         | $BL \leq (700-3\sigma) < X$                          | $BL \leq (700-3\sigma) < X$                          | $BL \leq (500-3\sigma) < X$                          |

(b) 现行法规限制的最大允许值是对 PBB/PBDE 和 Cr(VI) 而不是对 Br 和 Cr 的, 而 XRF 测定的是 Br 和 Cr。如果元素 Br 和或 Cr 的定量结果均高于限值(Br 计算基于在常见物质中 PBB/PBDE 的组成的理论计算), 则样品的筛选结果为“不确定”。

(c) EDXRF 的结果用于初步筛选, LOD=检出限, BL=低于限值, OL=超出限值, IN (符号“X”标记的区域)=不确定, 需要进一步研究, 我们建议客户用更精确的化学检测方法测试样品, 如用 ICP-OES 测定 Cd/Pb/Hg; 用 UV-Vis 测定 Cr(VI); 用 GC-MS 测定 PBB/PBDE。

(d) 对于复合材料, EDXRF 筛选测定元素所得数据可能与样品中实际含量不同。

(2) 邻苯二甲酸酯(PHTH)先进行筛分检测以确认样品是否符合限值要求, 符合则以“BL”表示, 若不符合则采用更精确的 GC-MS 化学检测方法测试样品。

| 检测项目                   | CAS No.  |
|------------------------|----------|
| 邻苯二甲酸二(2-乙基己基)酯 (DEHP) | 117-81-7 |
| 邻苯二甲酸丁苄酯 (BBP)         | 85-68-7  |
| 邻苯二甲酸二丁酯 (DBP)         | 84-74-2  |
| 邻苯二甲酸二异丁酯 (DIBP)       | 84-69-5  |

(3) 化学检测方法结果说明:

(a) mg/kg = 0.0001%, MDL=方法检出限, ND =未检出(低于 MDL), --- =不适用。

(b) 化学检测方法的表达单位和方法检出限

| 检测项目  | Pb    | Hg    | Cd    | DEHP  | BBP   | DBP   | DIBP  |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 单位    | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| 方法检出限 | 10    | 10    | 10    | 100   | 100   | 100   | 100   |

任何一种 PBB 和 PBDE 的方法检出限是 100 mg/kg;

聚合物, 复合材料和皮革样品中 Cr(VI)的方法检出限是 10 mg/kg。

金属样品中 Cr(VI)的方法检出限是 0.10  $\mu\text{g}/\text{cm}^2$ 。

(c) ▼ = 金属样品中

a. 当六价铬的浓度高于 0.13  $\mu\text{g}/\text{cm}^2$ 时, 样品为阳性, 即含有六价铬;

b. 当六价铬的浓度为 ND(低于 0.10  $\mu\text{g}/\text{cm}^2$ )时, 样品为阴性, 即未检测到六价铬;

c. 当六价铬的浓度介于 0.10  $\mu\text{g}/\text{cm}^2$ 与 0.13  $\mu\text{g}/\text{cm}^2$ 之间时, 无法直接判定是否检测到六价铬, 因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价铬检测结果仅能代表检测时样品含六价铬的状态。



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(4) RoHS 指令中限制物质及均质材料中最大允许浓度值: Cd: 0.01%, Pb/Hg/Cr(VI)/PBB/PBDE/ DEHP /BBP/DBP/DIBP: 0.1%, 限值引用自 RoHS 指令(EU) 2015/863。

(5) IEC 62321 系列等同于 EN 62321 系列。

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检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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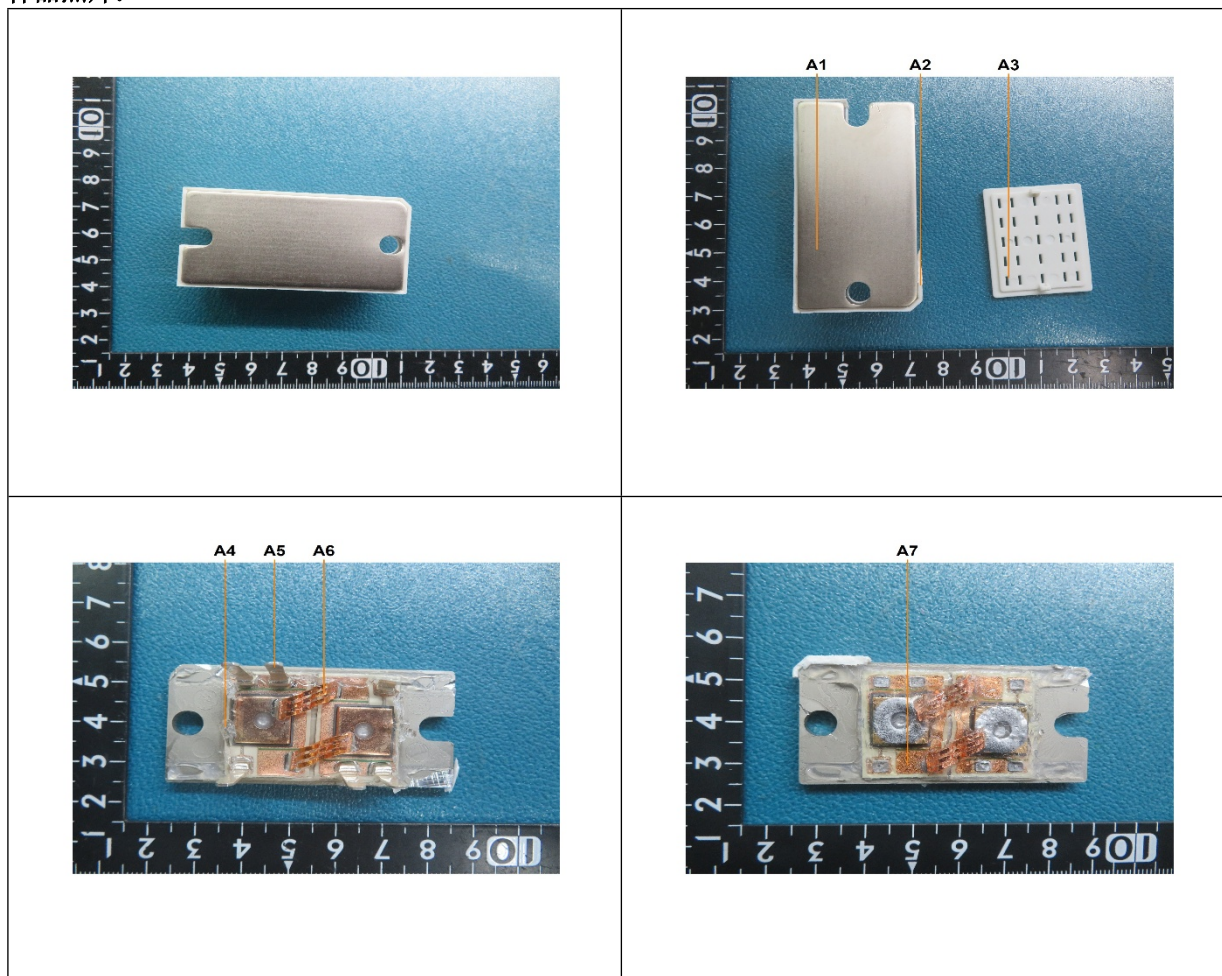
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