

检测报告 编号: SHAEC24000935704 日期: 2024年01月22日 第1页,共13页

客户名称: 捷捷半导体有限公司

客户地址: 南通市苏通科技产业园井冈山路6号

样品名称: TG-C 型号: TG-C

以上样品及信息由客户提供。

TIC1020240115103547T6B1 SGS 工作编号:

样品接收时间: 2024年01月16日

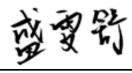
检测周期: 2024年01月16日~2024年01月22日

根据客户要求检测。 检测要求:

检测方法: 见后续页。 检测结果: 见后续页。

| 检测要求   | 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-乙基已基)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    |
| 欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉和六价铬   | 符合    |
| 红磷   | 见检测结果 |
| 美国环保署有毒物质控制法 (TSCA) 第 6 (h)节规定的持久性、生物累积性和毒性 (PBT) 化学物质   | 符合    |

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Sue Sheng 盛雯舒 批准签署人





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#### 检测结果:

检测部件外观描述:

| 样品序号 | 样品编号 | SGS 样品 ID               | 样品描述 |  |  |
|------|------|-------------------------|------|--|--|
| SN1  | A1   | SHA24-0009357-0001.C001 | 黑色塑料 |  |  |
| SN2  | A2   | SHA24-0009357-0001.C002 | 白色固体 |  |  |
| SN3  | А3   | SHA24-0009357-0001.C003 | 黑色固体 |  |  |
| SN4  | A4   | SHA24-0009357-0001.C004 | 银色金属 |  |  |
| SN5  | A5   | SHA24-0009357-0001.C005 | 银色金属 |  |  |

#### 备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL= 方法检测限
- (3) ND = 未检出( < MDL)
- (4) "-" = 未规定

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-乙基已基)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)

检测方法: 参考 IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES/AAS, UV-Vis 和 GC-MS 进行分析。

| 检测项目            | 限值   | 单位    | MDL | A1 | A2 | A3 |
|-----------------|------|-------|-----|----|----|----|
| 铅 (Pb)          | 1000 | mg/kg | 2   | 9  | 6  | ND |
| 汞 (Hg)          | 1000 | mg/kg | 2   | ND | ND | ND |
| 镉 (Cd)          | 100  | mg/kg | 2   | ND | ND | ND |
| 六价铬 (Cr(VI))    | 1000 | mg/kg | 8   | ND | ND | ND |
| 多溴联苯之和 (PBB)    | 1000 | mg/kg | -   | ND | ND | ND |
| 一溴联苯 (MonoBB)   | -    | mg/kg | 5   | ND | ND | ND |
| 二溴联苯 (DiBB)     | -    | mg/kg | 5   | ND | ND | ND |
| 三溴联苯 (TriBB)    | -    | mg/kg | 5   | ND | ND | ND |
| 四溴联苯 (TetraBB)  | -    | mg/kg | 5   | ND | ND | ND |
| 五溴联苯 (PentaBB)  | -    | mg/kg | 5   | ND | ND | ND |
| 六溴联苯 (HexaBB)   | -    | mg/kg | 5   | ND | ND | ND |
| 七溴联苯 (HeptaBB)  | -    | mg/kg | 5   | ND | ND | ND |
| 八溴联苯 (OctaBB)   | -    | mg/kg | 5   | ND | ND | ND |
| 九溴联苯 (NonaBB)   | -    | mg/kg | 5   | ND | ND | ND |
| 十溴联苯 (DecaBB)   | -    | mg/kg | 5   | ND | ND | ND |
| 多溴二苯醚之和 (PBDE)  | 1000 | mg/kg | -   | ND | ND | ND |
| 一溴二苯醚 (MonoBDE) | -    | mg/kg | 5   | ND | ND | ND |



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| 检测项目                   | 限值   | 单位    | MDL | A1 | A2 | А3 |
|------------------------|------|-------|-----|----|----|----|
| 二溴二苯醚 (DiBDE)          | -    | mg/kg | 5   | ND | ND | ND |
| 三溴二苯醚 (TriBDE)         | -    | mg/kg | 5   | ND | ND | ND |
| 四溴二苯醚 (TetraBDE)       | -    | mg/kg | 5   | ND | ND | ND |
| 五溴二苯醚 (PentaBDE)       | -    | mg/kg | 5   | ND | ND | ND |
| 六溴二苯醚 (HexaBDE)        | -    | mg/kg | 5   | ND | ND | ND |
| 七溴二苯醚 (HeptaBDE)       | -    | mg/kg | 5   | ND | ND | ND |
| 八溴二苯醚 (OctaBDE)        | -    | mg/kg | 5   | ND | ND | ND |
| 九溴二苯醚 (NonaBDE)        | -    | mg/kg | 5   | ND | ND | ND |
| 十溴二苯醚 (DecaBDE)        | -    | mg/kg | 5   | ND | ND | ND |
| 邻苯二甲酸二(2-乙基己基)酯 (DEHP) | 1000 | mg/kg | 50  | ND | ND | ND |
| 邻苯二甲酸丁苄酯 (BBP)         | 1000 | mg/kg | 50  | ND | ND | ND |
| 邻苯二甲酸二丁酯 (DBP)         | 1000 | mg/kg | 50  | ND | ND | ND |
| 邻苯二甲酸二异丁酯 (DIBP)       | 1000 | mg/kg | 50  | ND | ND | ND |

#### 备注:

- (1) 最大允许极限值引用自 RoHS 指令(EU) 2015/863。
- (2) IEC 62321 系列等同于 EN 62321 系列。
- (3) 2021 年 7 月 22 号开始, DEHP, BBP, DBP 和 DIBP 的限制适用于医疗器械,包括体外医疗器械,监控 仪表,包括工业监测和控制仪器。

## 欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉和六价铬

检测方法: 参考 IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 和 IEC 62321-7-1:2015, 采用 ICP-OES/AAS和UV-Vis进行分析。

| 检测项目          | 限值   | 单位     | MDL  | A4 | A5 |
|---------------|------|--------|------|----|----|
| 铅 (Pb)        | 1000 | mg/kg  | 2    | 32 | ND |
| 汞 (Hg)        | 1000 | mg/kg  | 2    | ND | ND |
| 镉 (Cd)        | 100  | mg/kg  | 2    | ND | ND |
| 六价铬 (Cr(VI))▼ | -    | μg/cm² | 0.10 | ND | ND |

#### 备注:

- (1) 最大允许极限值引用自RoHS指令(EU) 2015/863。
- (2) IEC 62321系列等同于 EN 62321系列。
- a. 当六价铬的浓度高于0.13 μg/cm²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 μg/cm²) 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 μg/cm²与0.13 μg/cm²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。

#### 红磷

检测方法: 参考 SGS 内部方法,采用 ICP-OES 和热裂解 GC-MS 进行分析。



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| 检测项目 | CAS No.   | 单位    | MDL | A1 |
|------|-----------|-------|-----|----|
| 红磷   | 7723-14-0 | mg/kg | 500 | ND |

#### 备注:

(1) 检测结果基于最坏情况考虑,并经热裂解 GC-MS 确认。

### 美国环保署有毒物质控制法 (TSCA) 第 6 (h) 节规定的持久性、生物累积性和毒性 (PBT) 化学物质

检测方法: 参考 US EPA 3550C:2007, 采用 GC-MS 进行分析。

| 检测项目                                       | CAS No.    | 限值    | 单位    | MDL | A1 | A2 | A3 |
|--|------------|-------|-------|-----|----|----|----|
| 十溴二苯醚 (Deca-<br>BDE) <sup>Δ¹</sup>         | 1163-19-5  | 禁用    | mg/kg | 5   | ND | ND | ND |
| 异丙基化磷酸三苯酯 (PIP 3:1) <sup>2²</sup>          | 68937-41-7 | 禁用    | mg/kg | 5   | ND | ND | ND |
| 2,4,6-三叔丁基苯酚<br>(2,4,6-TTBP) <sup>Δ³</sup> | 732-26-3   | 3000  | mg/kg | 5   | ND | ND | ND |
| 六氯丁二烯 (HCBD)                               | 87-68-3    | 禁用    | mg/kg | 5   | ND | ND | ND |
| 五氯苯硫酚 (PCTP)                               | 133-49-3   | 10000 | mg/kg | 5   | ND | ND | ND |
| 结论   |            |       |       |     | 符合 | 符合 | 符合 |

#### 备注:

(1) 法规信息请参见下链接

https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/persistent-bioaccumulative-and-toxicpbt-chemicals-under

- (2) 4':若送测样品来自于产品或物品含有十溴二苯醚的产品或物品的回收塑料,则可豁免;
- (3) 42: 提交的样品有下列情形之一的,不在法规的管控范围内:
- 用于航空或军事用途的液压油;
- 润滑剂和润滑脂;
- 汽车和航空航天车辆的新零件和替换零件;
- 生产氰基丙烯酸酯胶粘剂的中间体;
- 机车和船用专用发动机空气滤清器;
- 来自于含有 PIP (3:1) 的产品或物品的回收塑料;
- 用含有 PIP (3:1) 回收产品或物品的塑料制成的产品或物品
- (4) 43: 提交的样品如果不是机油或润滑油,则不在法规的管控范围内;

除非另有说明,参照 ILAC-G8:09/2019,使用简单接受(w=0)的二元判定规则进行符合性判定。 除非另有说明,此报告结果仅对检测的样品负责。本报告未经本公司书面许可,不可部分复制。 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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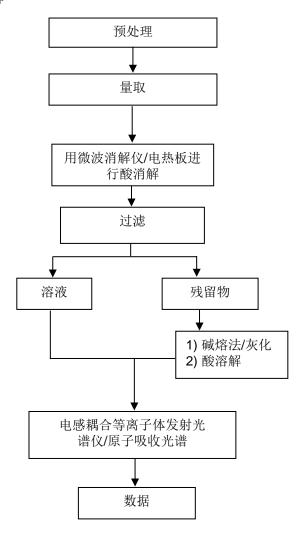
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附件

### 元素检测流程图

样品按照下述流程被完全消解





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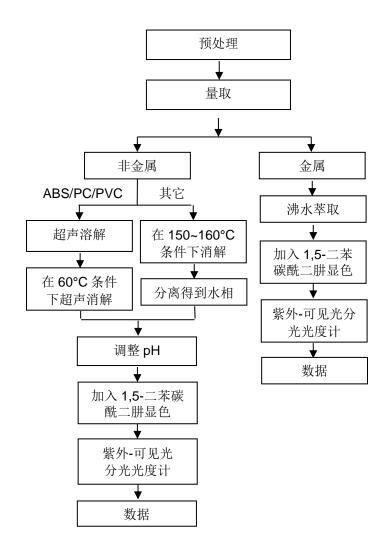


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## 六价铬检测流程图





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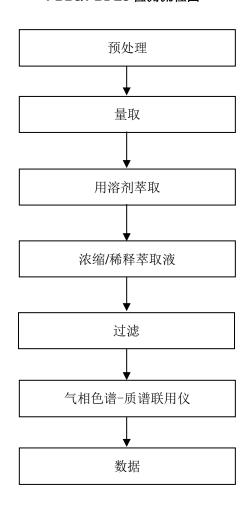
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## PBBs/PBDEs 检测流程图





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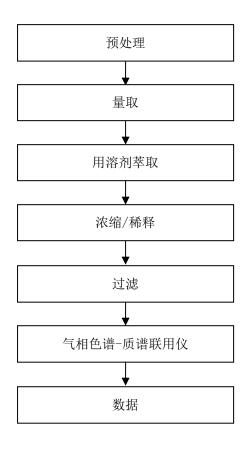
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附件

### Phthalates 检测流程图





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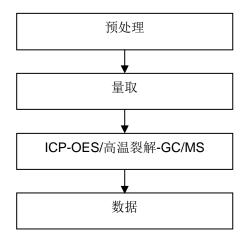


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# Red Phosphorus 检测流程图





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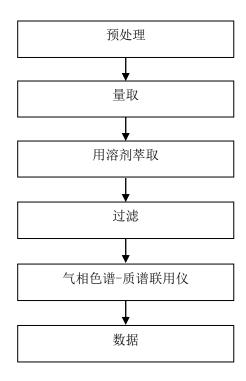


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# 持久性、生物累积性和毒性 (PBT) 化学物质检测流程图





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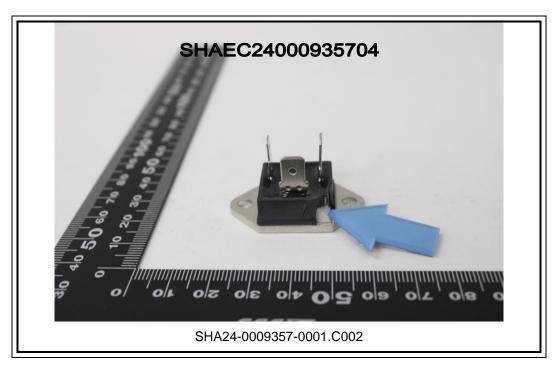


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样品照片:







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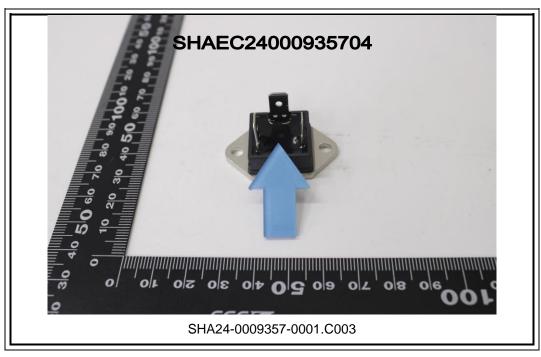
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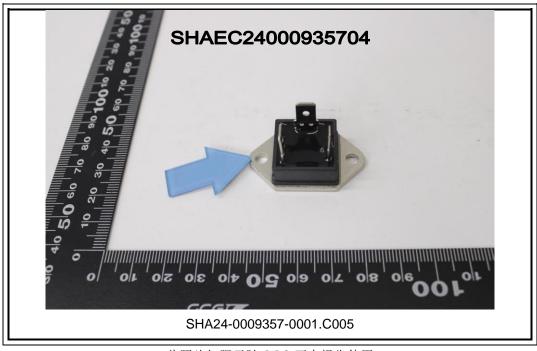
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