

检测报告 编号: SHAEC24017558416 日期: 2024年08月20日 第1页,共15页

客户名称: 苏州固锝电子股份有限公司

客户地址: 苏州高新技术开发区通安镇华金路 200 号

样品名称: TO220AB(AMBR40250S) 产品

型号: TO220AB(AMBR40250S)

客户参考信息: PPAK Package(TO263,TO220,ITO220,TO252,TO262,TO247,PQFN,PDFN)

主要成分: 铜,锡,环氧

以上样品及信息由客户提供。

SUP24-002437 SGS 工作编号:

样品接收时间: 2024年08月02日

检测周期: 2024年08月02日~2024年08月16日

检测要求: 根据客户要求检测。

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)	见检测结果
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	见检测结果
元素	见检测结果

通标标准技术服务(上海)有限公司 授权签名

Jenny Lan 兰柳珍 批准签署人





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检测要求	结论
卤素	见检测结果
六溴环十二烷 (HBCDD)	见检测结果

检测结果:

检测部件外观描述:

<u> </u>			
样品序号	样品编号	SGS 样品 ID	样品描述
SN1	A11	SHA24-0175584-0001.C011	黑色本体
SN2	A12	SHA24-0175584-0001.C012	银色镀层
SN3	A13	SHA24-0175584-0001.C013	银色金属
SN4	A14	SHA24-0175584-0001.C014	黑色固体

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)

参考 IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-检测方法: 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	A11	A14
铅 (Pb)	1000	mg/kg	2	4153▲	ND
汞 (Hg)	1000	mg/kg	2	ND	-
镉 (Cd)	100	mg/kg	2	ND	-
六价铬 (Cr(VI))	1000	mg/kg	8	ND	-
多溴联苯之和 (PBB)	1000	mg/kg	-	ND	-
一溴联苯 (MonoBB)	-	mg/kg	5	ND	-
二溴联苯 (DiBB)	-	mg/kg	5	ND	-
三溴联苯 (TriBB)	-	mg/kg	5	ND	-
四溴联苯 (TetraBB)	-	mg/kg	5	ND	-
五溴联苯 (PentaBB)	-	mg/kg	5	ND	-
六溴联苯 (HexaBB)	-	mg/kg	5	ND	-
七溴联苯 (HeptaBB)	-	mg/kg	5	ND	-
八溴联苯 (OctaBB)	-	mg/kg	5	ND	-
九溴联苯 (NonaBB)	-	mg/kg	5	ND	-



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检测项目	限值	单位	MDL	A11	A14
十溴联苯 (DecaBB)	-	mg/kg	5	ND	-
多溴二苯醚之和 (PBDE)	1000	mg/kg	ı	ND	-
一溴二苯醚 (MonoBDE)	-	mg/kg	5	ND	-
二溴二苯醚 (DiBDE)	-	mg/kg	5	ND	-
三溴二苯醚 (TriBDE)	-	mg/kg	5	ND	-
四溴二苯醚 (TetraBDE)	-	mg/kg	5	ND	1
五溴二苯醚 (PentaBDE)	-	mg/kg	5	ND	-
六溴二苯醚 (HexaBDE)	-	mg/kg	5	ND	-
七溴二苯醚 (HeptaBDE)	-	mg/kg	5	ND	-
八溴二苯醚 (OctaBDE)	-	mg/kg	5	ND	-
九溴二苯醚 (NonaBDE)	-	mg/kg	5	ND	-
十溴二苯醚 (DecaBDE)	-	mg/kg	5	ND	-
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND	-
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND	-
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND	-
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	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	A12
铅 (Pb)	1000	mg/kg	10	31
汞 (Hg)	1000	mg/kg	10	ND
镉 (Cd)	100	mg/kg	10	ND
六价铬 (Cr(VI))▼	-	μg/cm²	0.10	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) ▼ = 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。



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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	A13
铅 (Pb)	1000	mg/kg	2	8
汞 (Hg)	1000	mg/kg	2	ND
镉 (Cd)	100	mg/kg	2	ND
六价铬 (Cr(VI))▼	-	μg/cm²	0.10	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) ▼ = 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。

元素

检测方法: 参考 US EPA 3052:1996, 采用 ICP-OES/AAS 进行分析。

检测项目	单位	MDL	A13
铍(Be)	mg/kg	5	ND

卤素

检测方法: 参考 EN 14582:2016, 采用 IC 进行分析。

检测项目	单位	MDL	A11
氟 (F)	mg/kg	20	ND
氯 (CI)	mg/kg	50	ND
溴 (Br)	mg/kg	50	ND
碘 (I)	mg/kg	50	ND

六溴环十二烷 (HBCDD)

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



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检测项目	CAS No.	单位	MDL	A11
六溴环十二烷 (HBCDD)	134237-50-6 /134237-51-7 /134237-52-8 /25637-99-4 /3194-55-6	mg/kg	10	ND

备注:

▲根据客户提供的声明,铅(Pb)被欧盟 RoHS 指令 2011/65/EU 豁免,相应豁免条文(请以英文原文为准) |ANNEX || 7(a)|: 高熔点型焊料中的铅(即铅含量等于或大于 85%的铅基合金焊料)。 更多豁免相关信息,可以从以下链接获取:

https://rohs.sgsonline.com.cn/PDFLinks/zh-cn/RSTS-TP-037%20RoHS%20Exemption%20%28CN%29.pdf

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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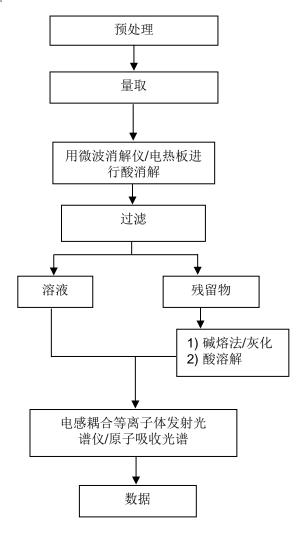
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附件

元素检测流程图

样品按照下述流程被完全消解





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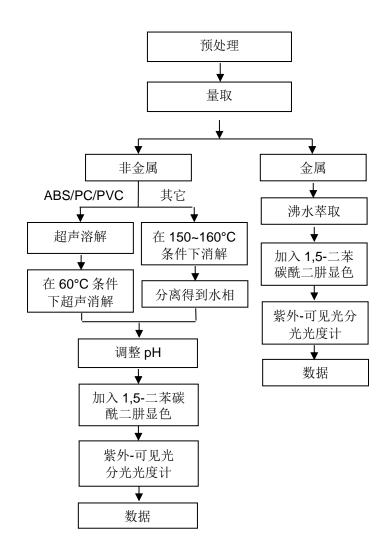


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六价铬检测流程图





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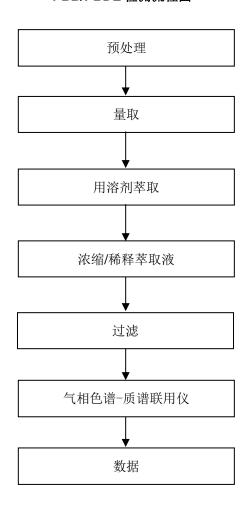


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PBB/PBDE 检测流程图





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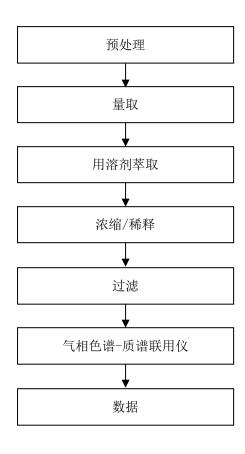
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附件

Phthalates 检测流程图





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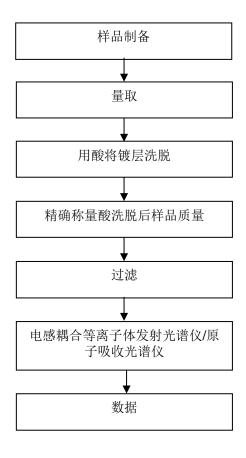


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镀层元素检测流程图





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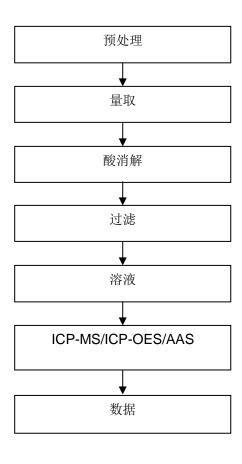


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元素检测流程图





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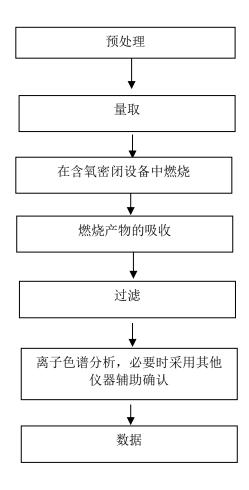


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卤素检测流程图





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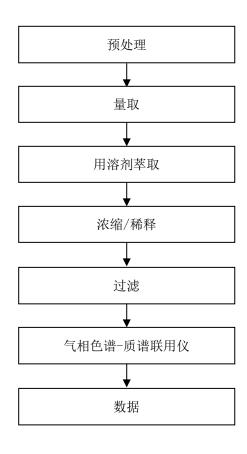
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附件

HBCDD 检测流程图





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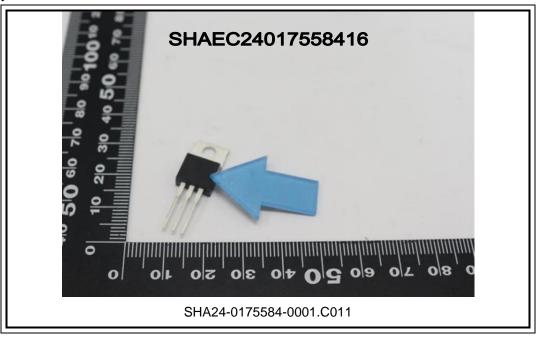


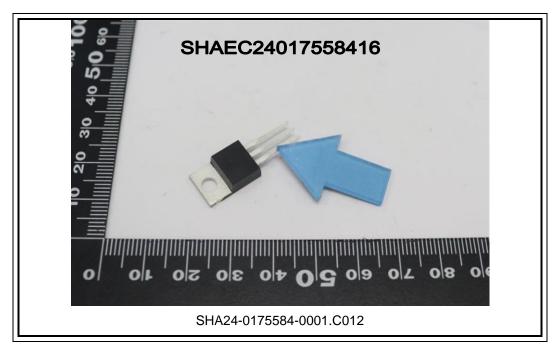
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样品照片:







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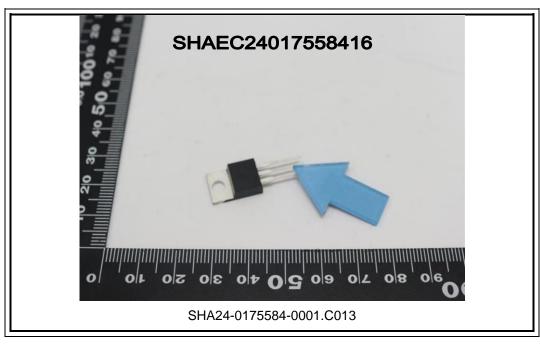
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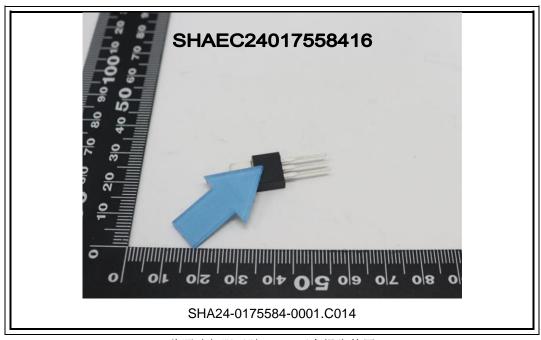


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3rdBuilding,No.889 Yishan Road Xuhui District,Shanghai China 200233 中国・上海・徐汇区宜山路889号3号楼 邮编: 200233