

测试报告

No. SHAEC1806747806

日期: 2018年04月23日 第1页,共12页

深圳市普诺实业有限公司

深圳市福田区华强北路深纺大厦B座1803

以下测试之样品是由申请者所提供及确认: 二极管

SGS工作编号: SP18-010365 - SH

客户参考信息: 塑封料: 白胶: 引线/框架: GPP,SKY,OJ 芯片: 锡锭: 油墨: 焊片/焊膏: 成品二极管 (轴向式、贴片式、桥式、TO式)

样品接收日期: 2018年04月08日

测试周期: 2018年04月08日 - 2018年04月16日

测试要求: 根据客户要求测试

测试方法: 请参见下一页

测试结果: 请参见下一页

结论: 基于所送样品进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯(如邻苯二甲酸二丁酯 (DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP))的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务(上海)有限公司
授权签名

刘海鹏

Helen Liu 刘海鹏
批准签署人

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No. SHAEC1806747806

日期: 2018年04月23日 第2页,共12页

测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	SHA18-067478.001	银色芯片
SN2	SHA18-067478.002	银色液体
SN3	SHA18-067478.003	黑色固体
SN4	SHA18-067478.004	白色液体
SN5	SHA18-067478.005	铜色金属
SN6	SHA18-067478.006	银色金属
SN7	SHA18-067478.007	银色金属

备注:

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

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 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。

测试项目	限值	单位	MDL	001	002	003
镉(Cd)	100	mg/kg	2	ND	ND	ND
铅(Pb)	1000	mg/kg	2	ND	ND	ND
汞(Hg)	1000	mg/kg	2	ND	ND	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND	ND	ND
多溴联苯之和(PBBs)	1000	mg/kg	-	ND	ND	ND
一溴联苯	-	mg/kg	5	ND	ND	ND
二溴联苯	-	mg/kg	5	ND	ND	ND
三溴联苯	-	mg/kg	5	ND	ND	ND
四溴联苯	-	mg/kg	5	ND	ND	ND
五溴联苯	-	mg/kg	5	ND	ND	ND
六溴联苯	-	mg/kg	5	ND	ND	ND
七溴联苯	-	mg/kg	5	ND	ND	ND
八溴联苯	-	mg/kg	5	ND	ND	ND
九溴联苯	-	mg/kg	5	ND	ND	ND



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测试项目	限值	单位	MDL	001	002	003
十溴联苯	-	mg/kg	5	ND	ND	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND	ND	ND
一溴二苯醚	-	mg/kg	5	ND	ND	ND
二溴二苯醚	-	mg/kg	5	ND	ND	ND
三溴二苯醚	-	mg/kg	5	ND	ND	ND
四溴二苯醚	-	mg/kg	5	ND	ND	ND
五溴二苯醚	-	mg/kg	5	ND	ND	ND
六溴二苯醚	-	mg/kg	5	ND	ND	ND
七溴二苯醚	-	mg/kg	5	ND	ND	ND
八溴二苯醚	-	mg/kg	5	ND	ND	ND
九溴二苯醚	-	mg/kg	5	ND	ND	ND
十溴二苯醚	-	mg/kg	5	ND	ND	ND
邻苯二甲酸二丁酯 (DBP)	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(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND	ND	ND

测试项目	限值	单位	MDL	004
镉(Cd)	100	mg/kg	2	ND
铅(Pb)	1000	mg/kg	2	ND
汞(Hg)	1000	mg/kg	2	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND
多溴联苯之和(PBBs)	1000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND



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日期: 2018年04月23日 第4页,共12页

测试项目	限值	单位	MDL	004
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND
邻苯二甲酸二丁酯 (DBP)	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(2-乙基己基)酯(DEHP)	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。

IEC 62321系列等同于 EN 62321 系列

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) 2015年6月4号发表在欧盟官方杂志(官方公报)上的RoHS指令(EU) 2015/863附录II限值中还包括邻苯二甲酸酯BBP, DBP, DEHP和DIBP。新的指令限制了电子电器产品的每一个均一材质中邻苯二甲酸酯含量不得超过0.1%。

(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。

(4) DEHP, BBP, DBP 和 DIBP的限制不适用于2019年7月22日前投放市场的电缆及电子电气产品中用于维修、重复利用、功能更新及容量提升的备用配件以及2021年7月22日前投放市场的医疗器械, 包括体外医疗器械, 监控仪表, 包括工业监测和控制仪器。

(5) DEHP、BBP 和 DBP的限制不适用于玩具产品, 因为No.1907/2006附录XVII第51条已对玩具产品中的DEHP、BBP 和 DBP含量进行了限制。

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考滴定法, 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。

测试项目	限值	单位	MDL	005	006	007
镉 (Cd)	100	mg/kg	2	ND	ND	ND
铅(Pb)	1000	mg/kg	2	79		6
汞 (Hg)	1000	mg/kg	2	ND	ND	ND
铅 (Pb)	0.1	%	-		93.73▲	
六价铬(Cr(VI))▼	-	µg/cm²	0.10	ND	ND	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。



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日期: 2018年04月23日 第5页,共12页

IEC 62321 系列等同于 EN 62321 系列

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

- (2) ▼ = 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, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。
 (3) ▲根据客户提供的声明, 编号 006 中的铅(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 III 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)。

所示结果为湿样品总重量中的含量

此报告数据来源于 SHAEC1806747802 的报告。

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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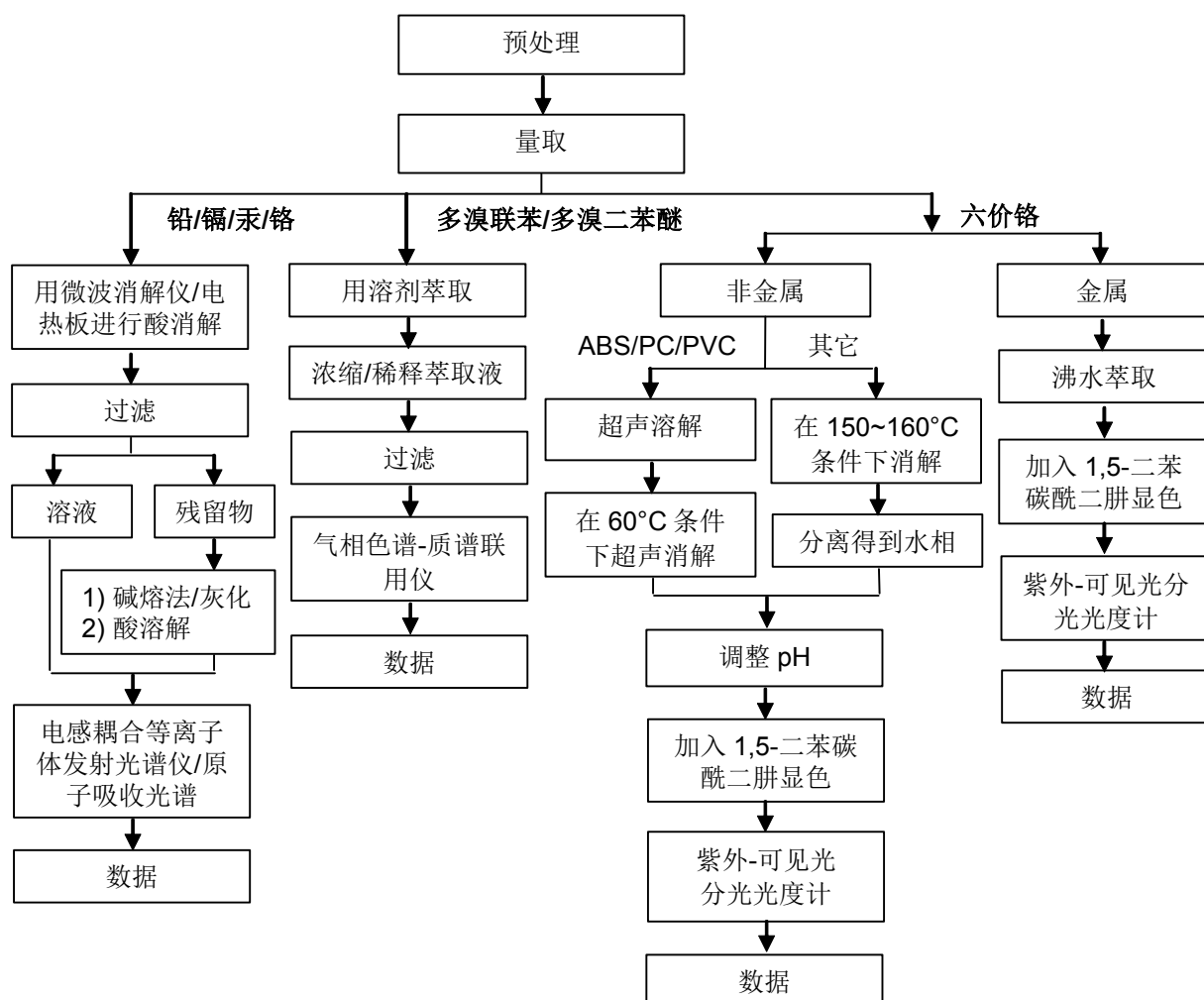
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附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

- 1) 分析人员: 金叶/徐刚/杨小龙 /宋珂静
- 2) 项目负责人: 施青/马永存/徐亮/王晓艳
- 3) 样品按照下述流程被完全消解 (六价铬和多溴联苯/多溴二苯醚测试除外)。



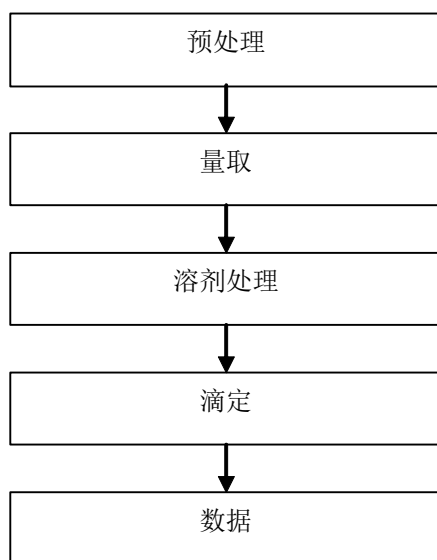
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滴定测试流程图

- 1) 分析人员: 徐祥书
- 2) 项目负责人: 王保群



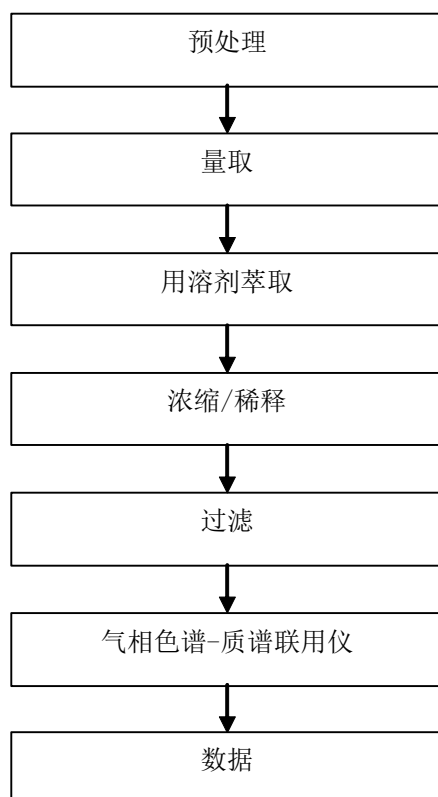
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Phthalates 测试流程图

- 1) 分析人员: 高仰景
- 2) 项目负责人: 黄婷



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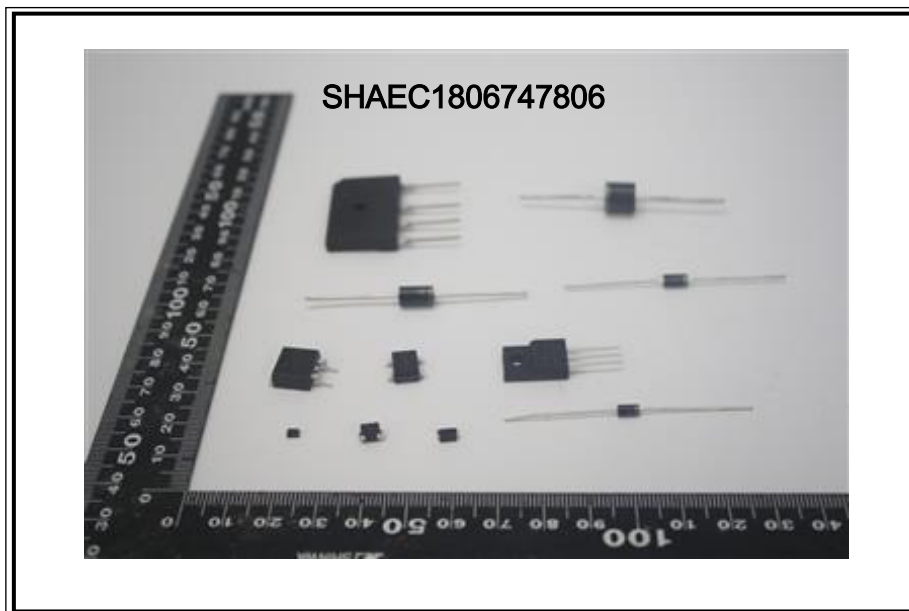
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测试报告

No. SHAEC1806747806

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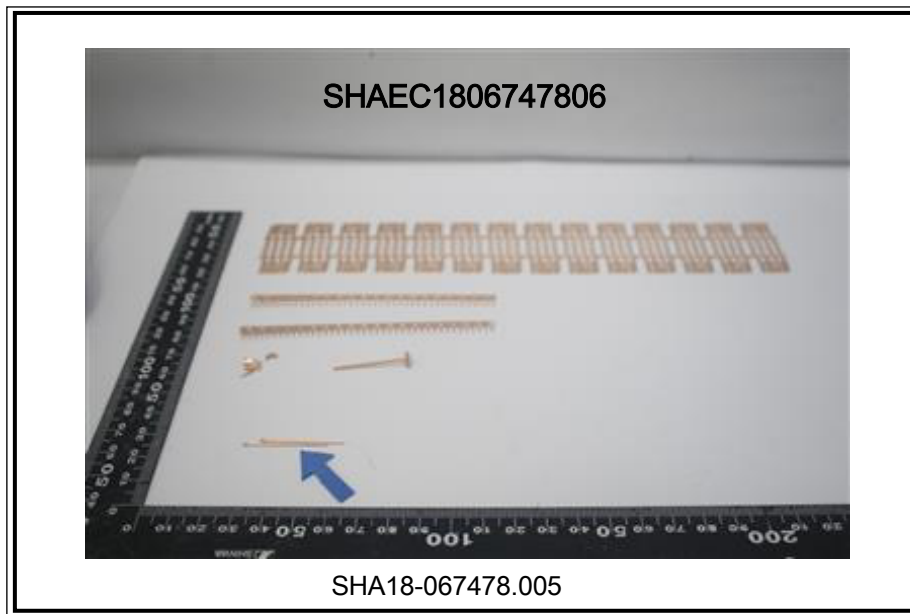
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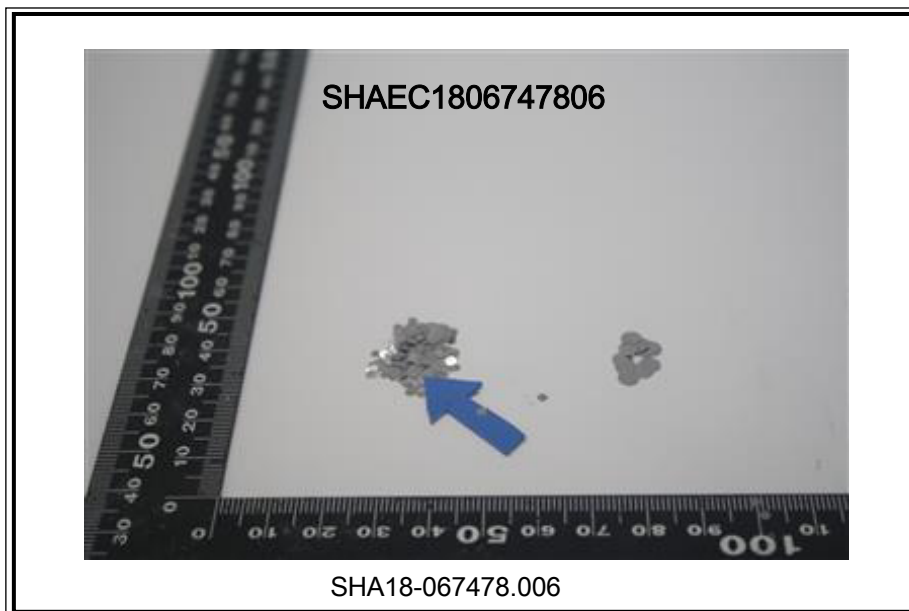
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