

测试报告

No. TSNEC1700962702

日期: 2017年06月07日 第1页,共8页

丹东华奥电子有限公司

辽宁省丹东市振兴区春三路23号

以下测试之样品是由申请者所提供及确认: 集成电路 分立器件

SGS工作编号: TP17-004118 - TJ
客户参考信息: 其他型号: 见附页
样品接收日期: 2017年05月27日
测试周期: 2017年05月27日 - 2017年06月05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002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)、邻苯二甲酸丁苯酯(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。

基于所送样品001进行的测试, 镉、铅、汞、六价铬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(天津)有限公司
授权签名

Reabeca Zhou周艳
批准签署人

备注: 根据客户申请, SGS出具了此中文报告, 英文版本可根据客户要求提供。(The Chinese test report is issued according to the applicant's request. The English version is available from SGS if further needed)



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测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	TSN17-009627.001	银灰色金属引脚
SN2	TSN17-009627.002	带有棕色印字的黑色塑料外壳

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:
- (1) 参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
 - (2) 参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
 - (3) 参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
 - (4) 参考IEC 62321-7-2:2017, 用UV-Vis分析六价铬含量和/或者参考IEC 62321-5:2013, 用ICP-OES测试总铬含量
 - (5) 参考IEC 62321-6:2015, 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚) 的含量
 - (6) 参考IEC 62321-8:2017, 用GC-MS测定邻苯二甲酸酯的含量

测试项目	限值	单位	MDL	002
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

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测试项目	限值	单位	MDL	002
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
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) 检测的铬(Cr)含量是“ND”，则六价铬(Cr(VI))含量也是“ND”，不需要进行六价铬(Cr(VI))的确认性测试。

(3) 若铬(Cr)含量超过方法检出限，需要进行六价铬(Cr(VI))的确认性测试。

(4) 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%。

(5) 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。

(6) 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。

(7) 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:

- (1) 参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
- (2) 参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
- (3) 参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
- (4) 参考IEC 62321-7-1:2015, 用紫外-可见分光光度计比色法测定六价铬的含量



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测试项目	限值	单位	MDL	001
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))▼	-	µg/cm ²	0.10	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) ▼=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, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态.



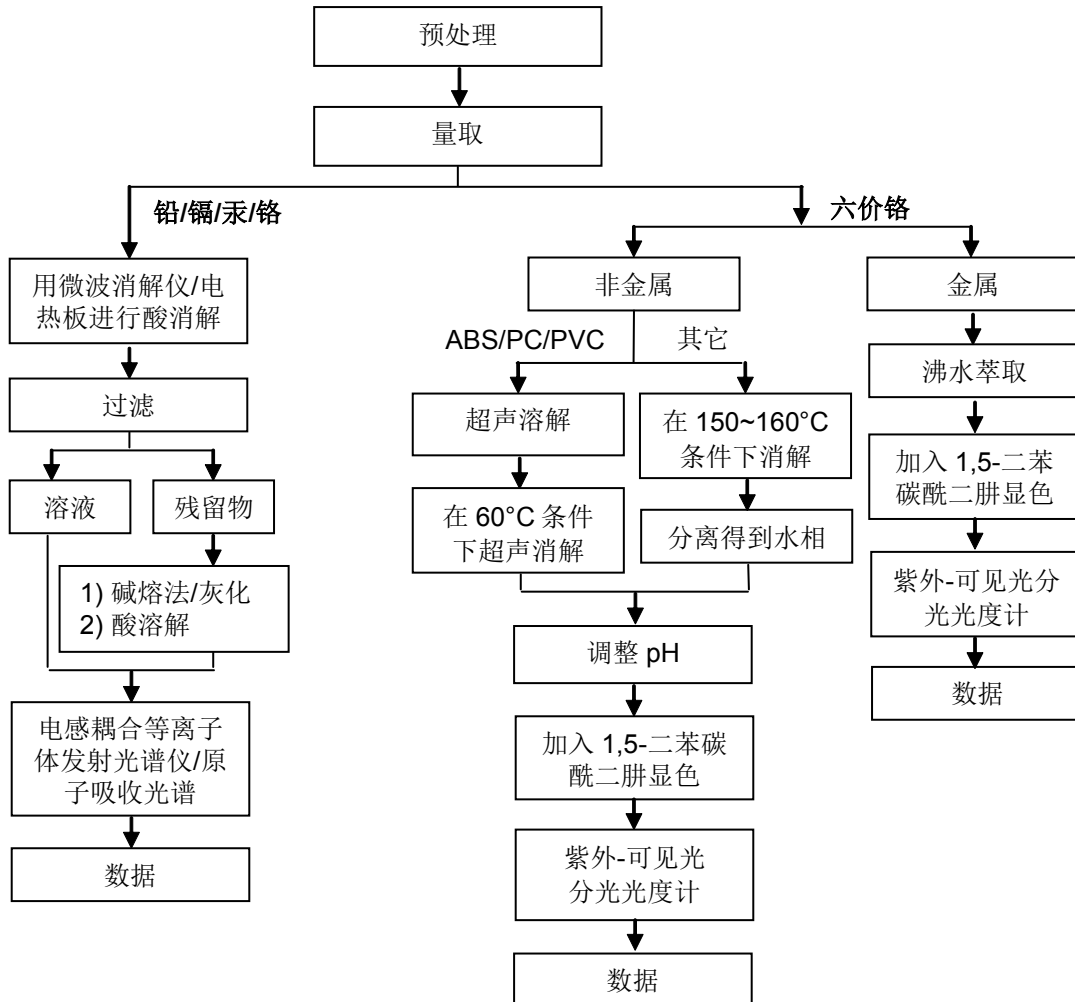
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附件

Pb/Cd/Hg/Cr⁶⁺ 测试流程图

- 1) 分析人员: 张盼/刘占文
- 2) 项目负责人: 王富强
- 3) 样品按照下述流程被完全消解 (六价铬测试除外)。



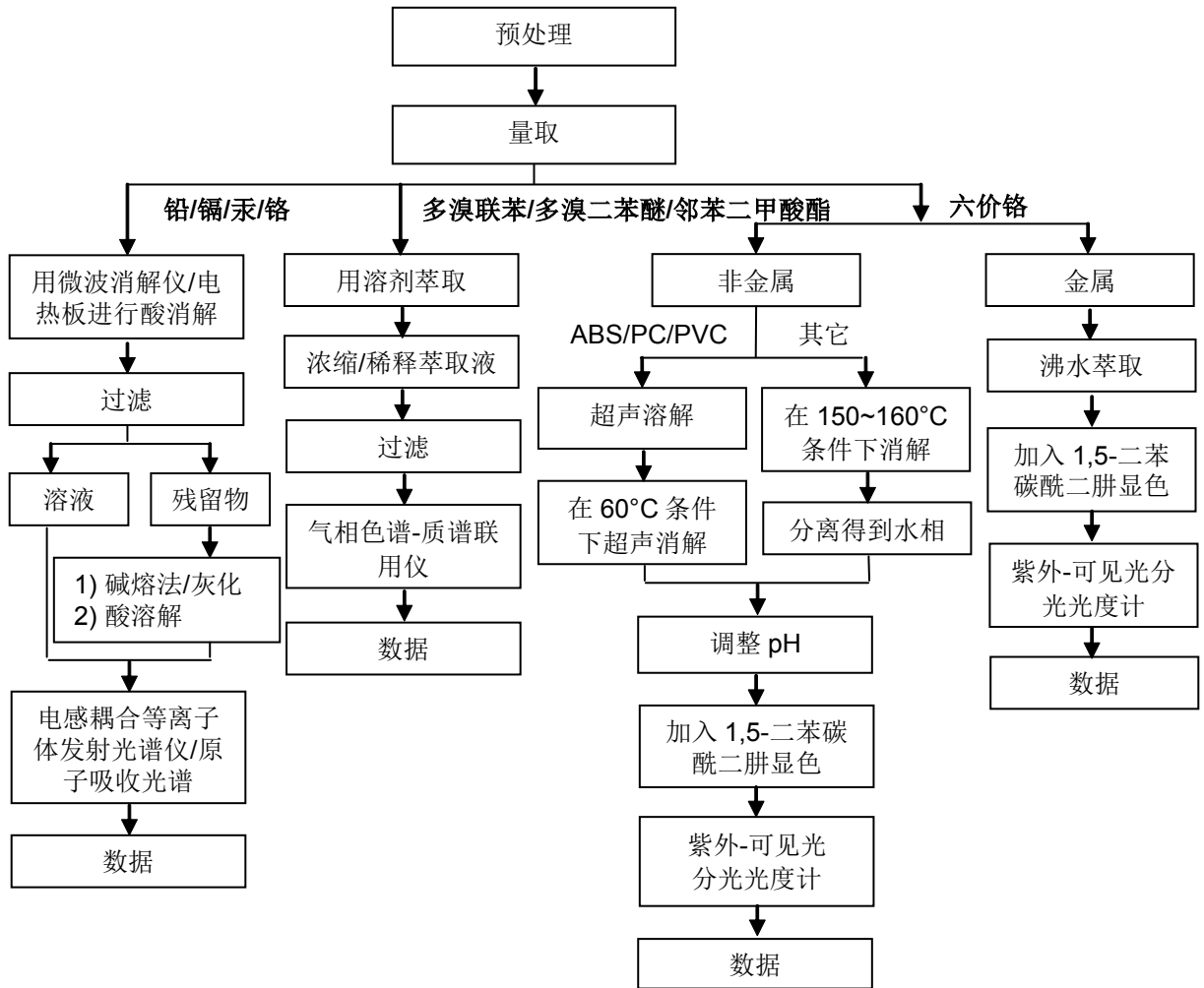
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附件

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs/Phthalates 测试流程图

- 1) 分析人员: 张盼/刘占文/王海颖/陈希涵
- 2) 项目负责人: 王富强/朱敏
- 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/邻苯二甲酸酯测试除外)。



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附页:

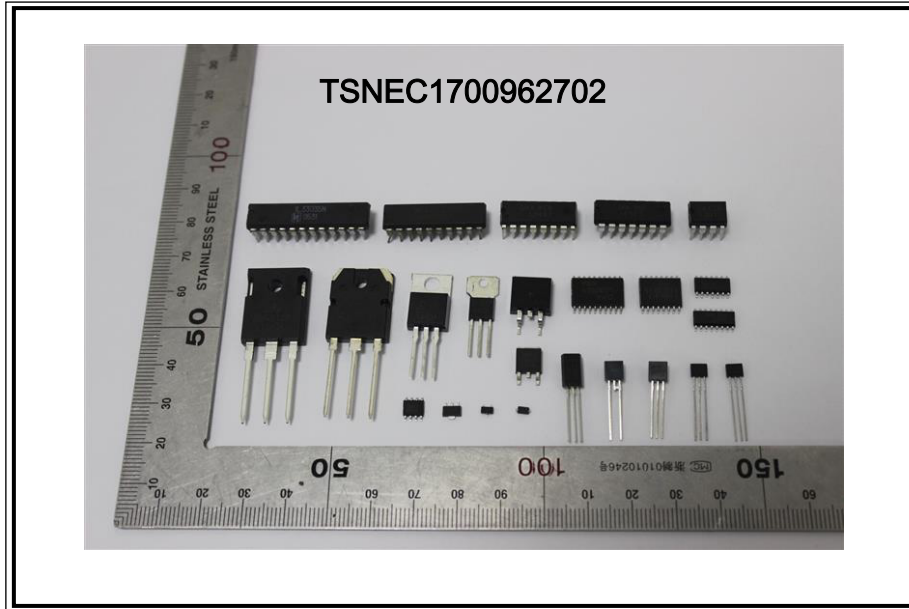
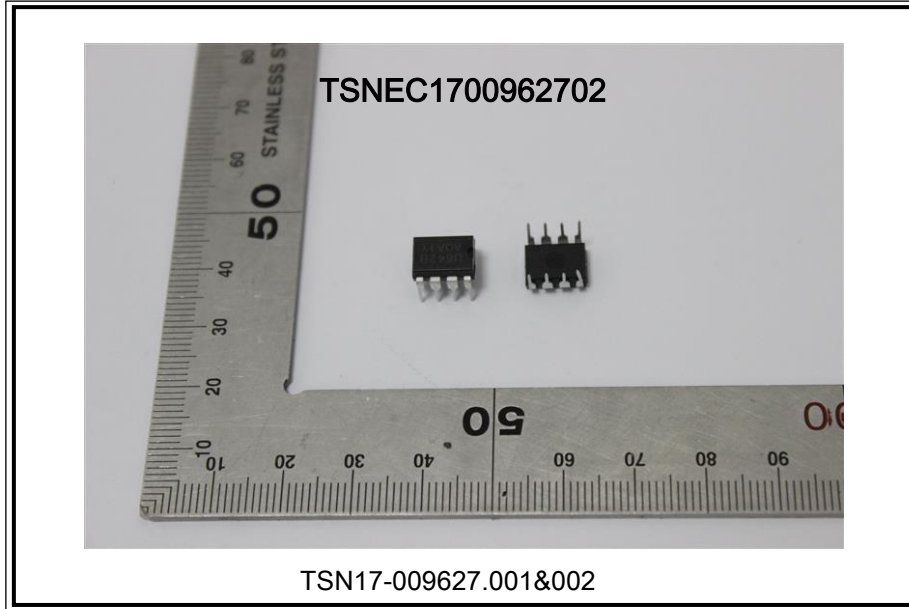
SOP-8, SOP-14, SOP-16, SOP-16L (W), SOP-20
DIP-8, DIP-14, DIP-16, DIP-20
SOD-123, SOT-23, SOT-89
TO-220, TO-247, TO-252, TO-263, TO-3P, TO-92, TO-92-2, TO-92NL, TO-92S

LT4761, LD1041, U2043B, U2043C, U2043D, LD2044, L2044, LD1203, LD1204, LD1205
LD3334, LD497, LD3335, LD4213L
U641B, U642B, LD33197
LD1815, LD650, LD209A, LD8190, LD441A, LD461A
LD33290, LDA82C251
LD6046, LD6047
LD6083B, LD6083BP, LD2480L, LD2480LP, LD3505
LD3092A, LD4275
LD1185, LD33153, LD33035

BU931ZL, BU931ZM, BU941ZB, BU941ZP, D1071, D1071S, TIP142H, TIP147, TIP122, TIP127
TIP41C, TIP42C



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