

## 检测报告

编号: TAOEC2305539918

日期: 2023年08月17日 第1页,共13页

客户名称: 苏州固锔电子股份有限公司  
客户地址: 中国江苏苏州市通安开发区通锡路31号

样品名称: KBJ产品  
型号: KBJL  
客户参考信息: GBJL,KBJL,KBJ,GBJ, GBL,KBF,GBU,KBU,KBP,KBPC,KBL,SGBJ 产品  
主要成分: 铜,锡,环氧  
以上样品及信息由客户提供。

SGS工作编号: QDP23-000388 - QD  
SGS 参考编号: 23891892  
样品接收日期: 2023年08月04日  
检测周期: 2023年08月04日 - 2023年08月11日  
检测要求: 根据客户要求检测  
检测方法: 请参见下一页  
检测结果: 请参见下一页  
检测结果概要:

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(PBBs), 多溴二苯醚(PBDEs), 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)	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
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
全氟辛烷磺酸(PFOS)及其衍生物和全氟辛酸(PFOA)及其盐	见检测结果

通标标准技术服务(青岛)有限公司  
授权签名

Zhang Bo, Justin 张波  
批准签署人

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## 检测报告

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日期: 2023年08月17日 第2页,共13页

检测结果:

### 检测样品描述:

样品编号	SGS样品ID	描述
SN1	TAO23-055399.011	黑色本体
SN2	TAO23-055399.012	银色镀层
SN3	TAO23-055399.013	铜色金属
SN4	TAO23-055399.014	黑色本体不带芯片和焊片

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

**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(PBBs), 多溴二苯醚(PBDEs), 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)**

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

检测项目	限值	单位	MDL	011	014
镉(Cd)	100	mg/kg	2	ND	
铅(Pb)	1000	mg/kg	2	5763 <sup>▲</sup>	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	



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## 检测报告

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日期: 2023年08月17日 第3页,共13页

检测项目	限值	单位	MDL	011	014
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。
- (4) ▲根据客户提供的声明, 编号011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)。
- (5) ▲根据客户提供的声明, 编号011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(c)-I|: 电子电气元件中玻璃或陶瓷材料(电容中陶瓷介质除外)所含的铅, 如压电设备、玻璃或陶瓷基复合元件。

### 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 62321-5:2013, IEC 62321-4:2013+AMD1:2017 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	013
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 <sup>2</sup>	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/cm<sup>2</sup>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/cm<sup>2</sup>)时, 样品为阴性, 即未检测到六价铬;



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# 检测报告

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日期: 2023年08月17日 第4页,共13页

- b. 当六价铬的浓度为ND(低于0.10 µg/cm<sup>2</sup>)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/cm<sup>2</sup>与0.13 µg/cm<sup>2</sup>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。

## 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 62321-5:2013, IEC 62321-4:2013+AMD1:2017 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	012
镉(Cd)	100	mg/kg	10	ND
铅(Pb)	1000	mg/kg	10	24
汞(Hg)	1000	mg/kg	10	ND
六价铬(Cr(VI))▼	-	µg/cm <sup>2</sup>	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/cm<sup>2</sup>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/cm<sup>2</sup>)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/cm<sup>2</sup>与0.13 µg/cm<sup>2</sup>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。

## 全氟辛烷磺酸(PFOS)及其衍生物和全氟辛酸(PFOA)及其盐

检测方法: 参照CEN/TS 15968:2010 方法, 采用LC-MS-MS检测。

检测项目	CAS NO.	单位	MDL	011
全氟辛烷磺酸(PFOS)及衍生物	-	mg/kg	-	ND
全氟辛烷磺酸(PFOS) ^	1763-23-1	mg/kg	0.01	ND
N-乙基全氟辛烷磺酰胺(EtFOSA)	4151-50-2	mg/kg	0.01	ND
2-(N-乙基全氟辛基磺酰胺)乙醇(EtFOSE)	1691-99-2	mg/kg	0.01	ND
N-甲基全氟辛烷磺酰胺(MeFOSA)	31506-32-8	mg/kg	0.01	ND
2-(N-甲基全氟辛基磺酰胺)乙醇(MeFOSE)	24448-09-7	mg/kg	0.01	ND
全氟辛基磺酰胺(PFOSA)	754-91-6	mg/kg	0.01	ND
全氟辛酸(PFOA)及其盐+		mg/kg	0.01	ND

备注:

- (1)^全氟辛烷磺酸是指其酸、盐/衍生物, 包括全氟辛烷磺酸 (CAS No.: 1763-23-1), 全氟辛基磺酸钾 (CAS No.: 2795-39-3), 全氟辛基磺酸锂 (CAS No.: 29457-72-5), 全氟辛基磺酸铵 (CAS No.:



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## 检测报告

编号: TAOEC2305539918

日期: 2023年08月17日 第5页,共13页

29081-56-9), 全氟辛烷磺酸二乙醇胺 (CAS No.: 70225-14-8), 全氟辛烷磺酸四乙铵 (CAS No.: 56773-42-3), 全氟辛基磺酸二癸二甲基铵 (CAS No.: 251099-16-8) 和全氟辛基磺酰氟 (CAS No.: 307-35-7)。

(2) PFOA 及其盐+是指其酸/盐, 包括全氟辛酸 (CAS No.: 335-67-1), 全氟辛酸钠 (CAS No.: 335-95-5), 全氟辛酸钾 (CAS No.: 2395-00-8), 全氟辛酸银 (CAS No.: 335-93-3), 全氟辛酰氟 (CAS No.: 335-66-0) 和全氟辛酸铵 (CAS No.: 3825-26-1)。

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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。

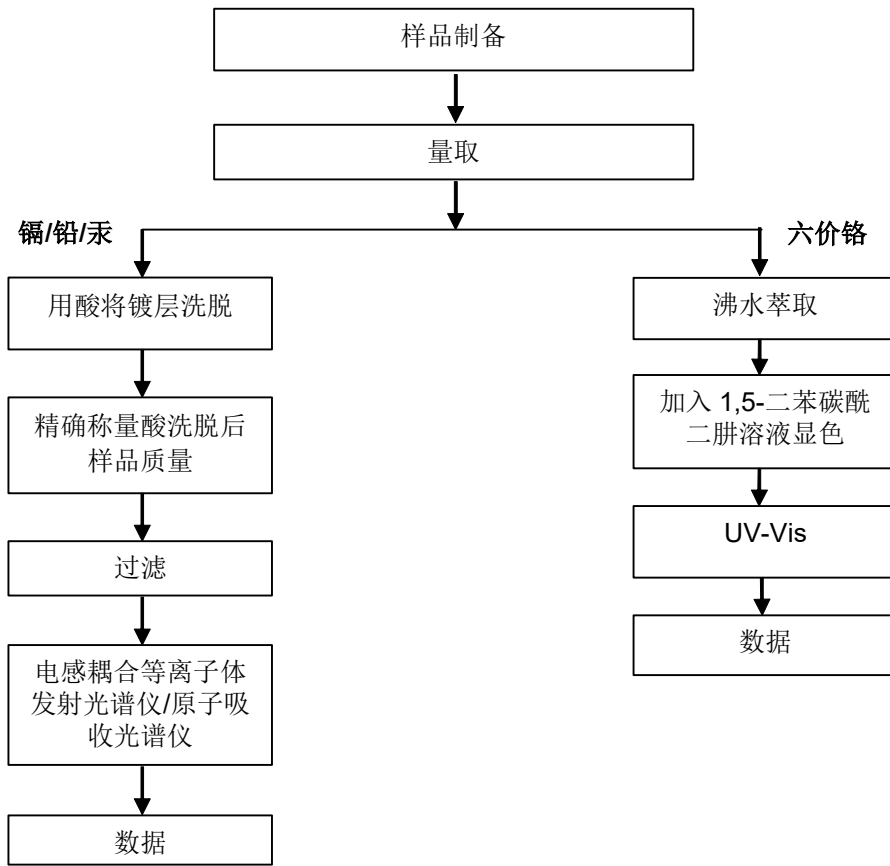


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附件

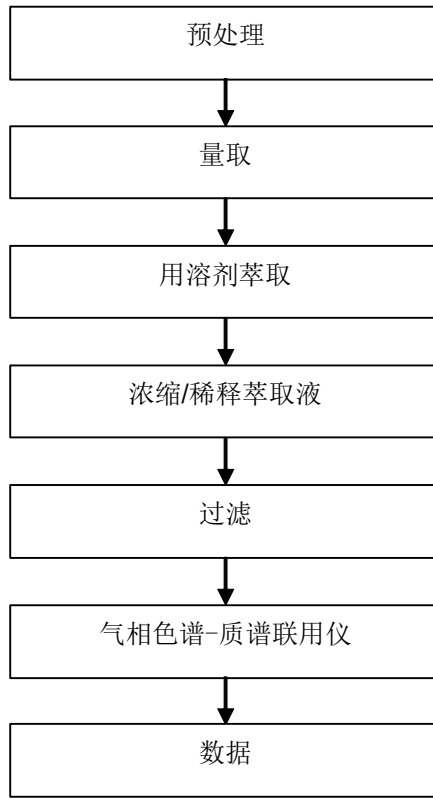
## 镀层样品中 Pb/Cd/Hg/Cr<sup>6+</sup>的测试流程图



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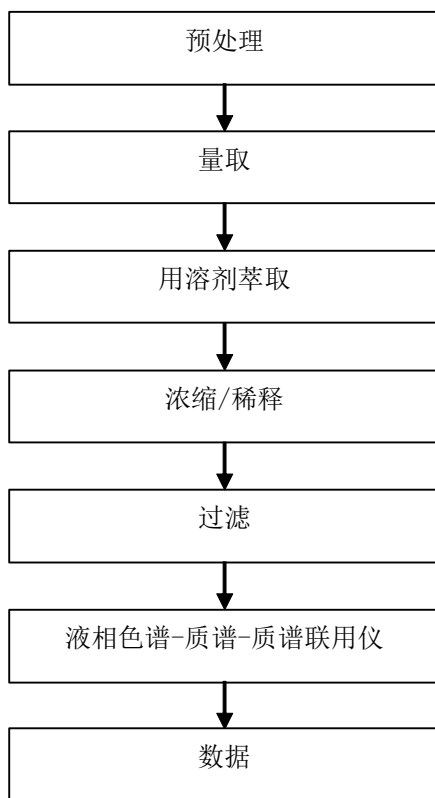
### PBBs/PBDEs 检测流程图



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### PFOS/PFOA 检测流程图

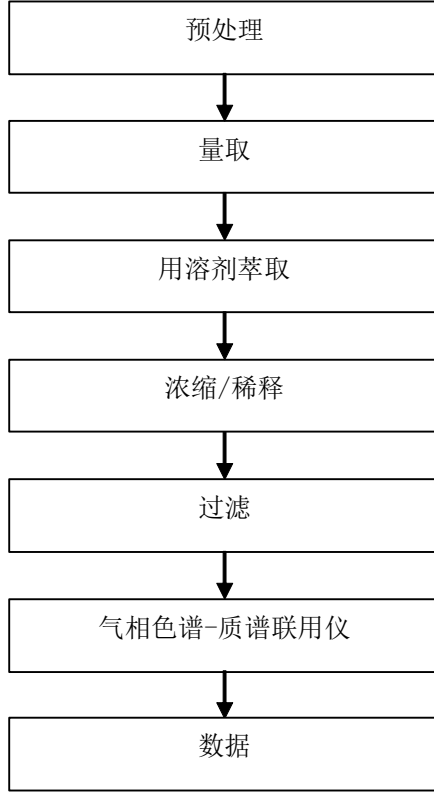


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## Phthalates 检测流程图

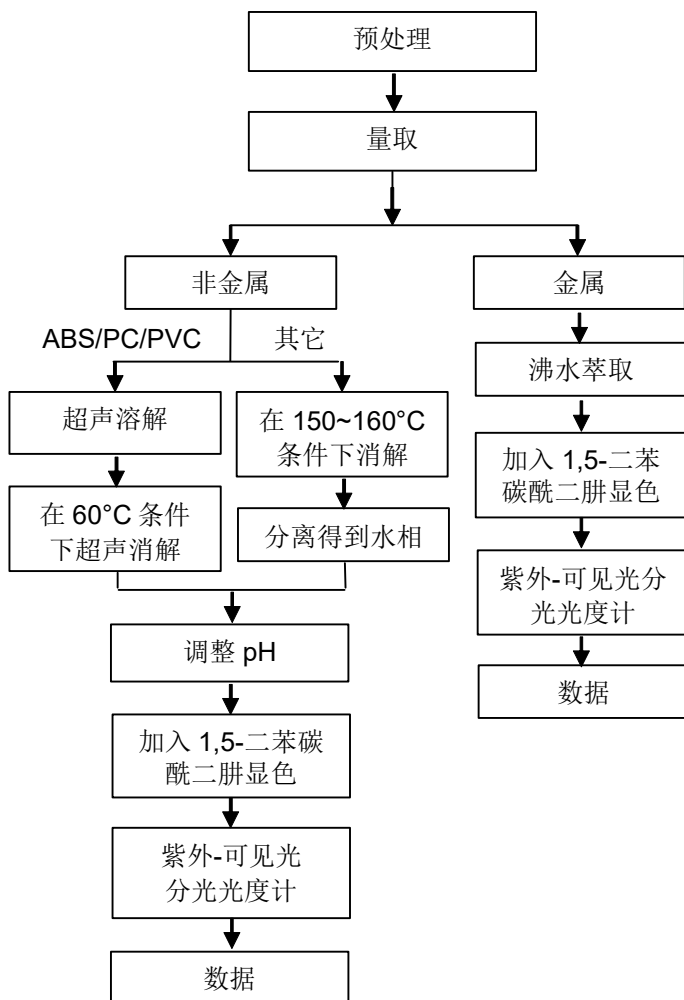


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附件

### 六价铬检测流程图

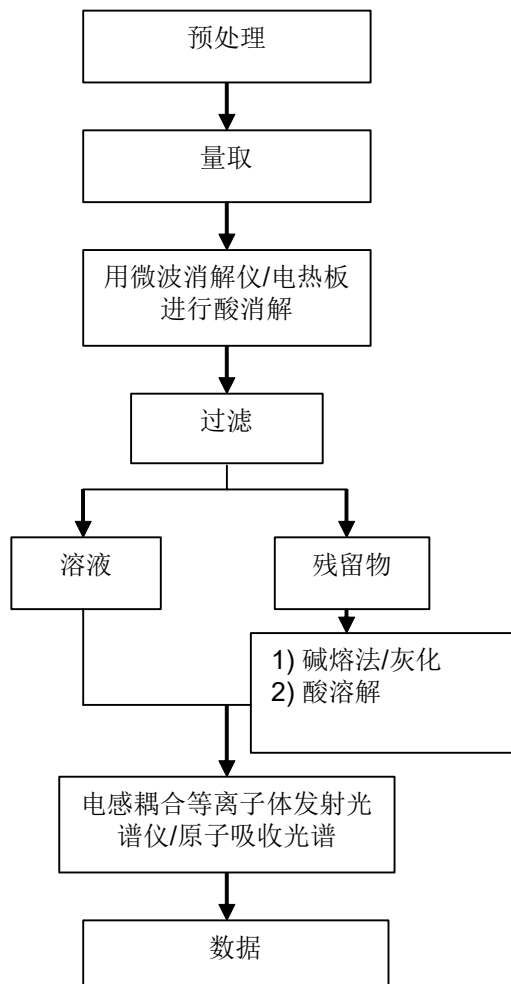


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## 元素(IEC62321) 检测流程图

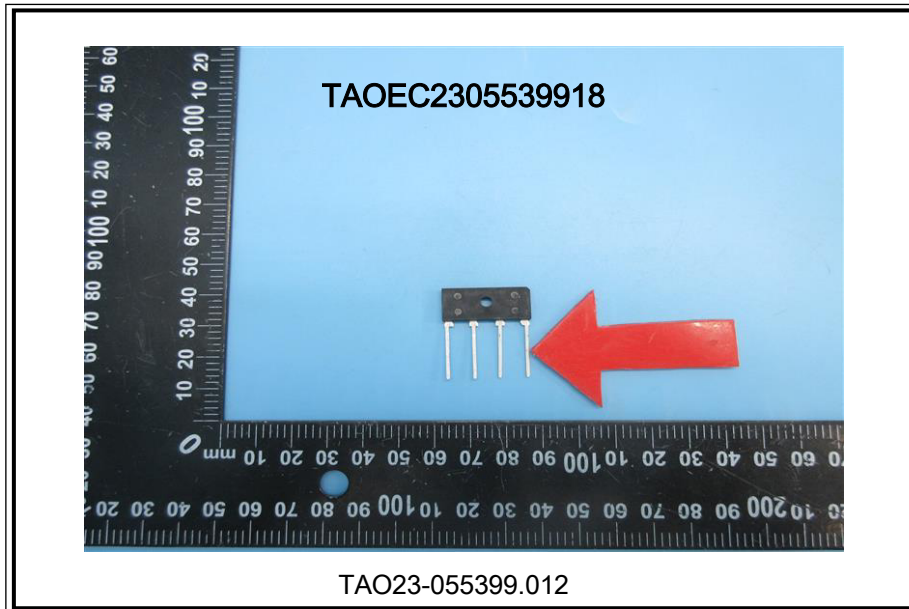
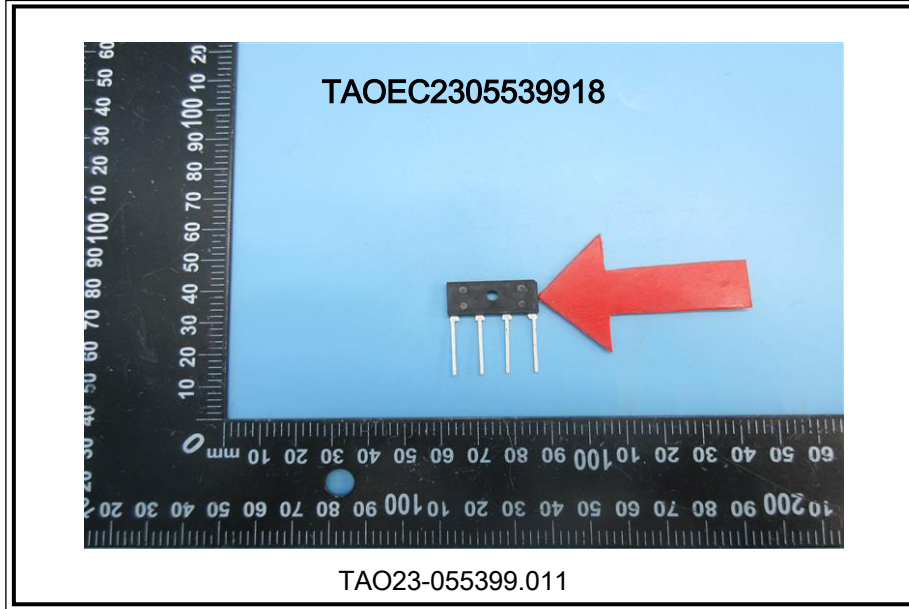
1)样品按下述流程被完全消解



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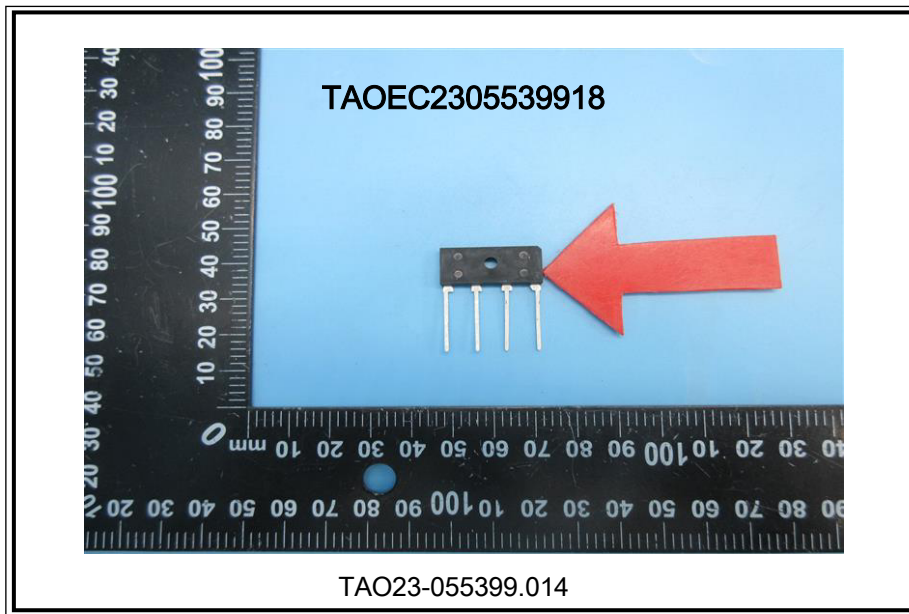
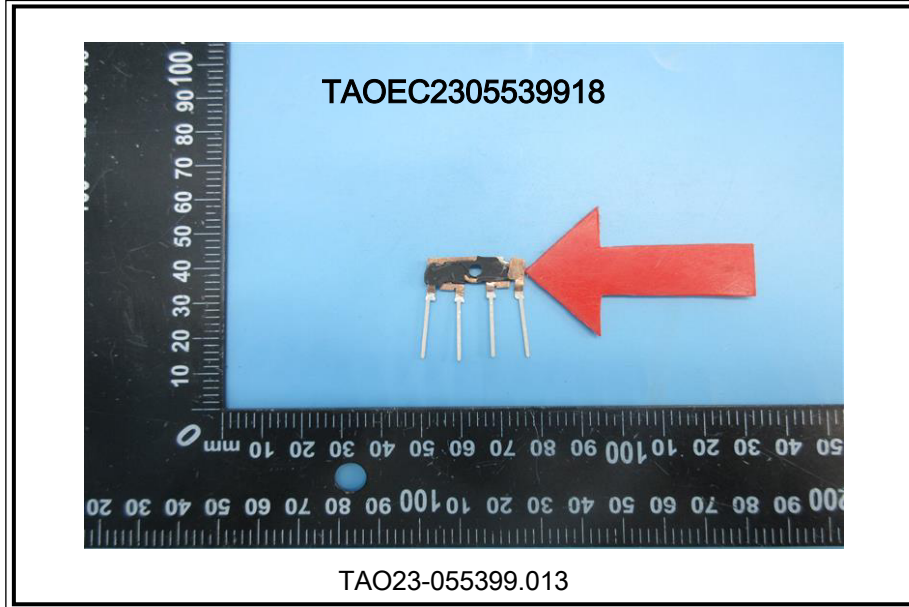
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样品照片:



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