

## 測試報告

## Test Report

號碼(No.) : CE/2020/75249

日期(Date) : 2020/08/05

頁數(Page): 1 of 12

台灣通用器材股份有限公司

VISHAY GENERAL SEMICONDUCTOR OF TAIWAN LTD.

新北市新店區寶橋路233號

NO. 233, BAOQIAO RD., XINDIAN DIST., NEW TAIPEI CITY 231, TAIWAN (R.O.C.)

以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as):

送樣廠商(Sample Submitted By) : 台灣通用器材股份有限公司 (VISHAY GENERAL SEMICONDUCTOR OF TAIWAN LTD.)  
樣品名稱(Sample Description) : DIODE CHIP  
樣品型號(Style/Item No.) : TRENCH SKY 1  
Vishay-PDD Raw Material P/N : TRENCH SKY 1  
Supplier Code : VGST  
原產國(Country of Origin) : TAIWAN  
收件日期(Sample Receiving Date) : 2020/07/29  
測試期間(Testing Period) : 2020/07/29 to 2020/08/05

## 測試需求(Test Requested):

- (1) 依據客戶指定, 參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚、DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)
- (2) 其他測試項目請見下一頁. (Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).

結論(Conclusion) : (1) 根據客戶所提供的樣品, 其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP 的測試結果符合RoHS 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求. (Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)

Troy Chang / Manager - Tech  
Signed for and behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei



PIN CODE: 044EC94D

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## 測試結果(Test Results)

測試部位(PART NAME)No. 1 : DIODE CHIP

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)	限值 (Limit)
				No. 1	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5: 2013, 以感應耦合電漿發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-OES.	2	n. d.	100
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013, 以感應耦合電漿發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-OES.	2	n. d.	1000
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4:2013+ AMD1:2017, 以感應耦合電漿發射光譜儀檢測. / With reference to IEC 62321-4:2013+ AMD1:2017 and performed by ICP-OES.	2	n. d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321-7-2: 2017, 以UV-VIS檢測. / With reference to IEC 62321-7-2: 2017 and performed by UV-VIS.	8	n. d.	1000
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3052: 1996, 以感應耦合電漿發射光譜儀檢測. / With reference to US EPA 3052: 1996. Analysis was performed by ICP-OES.	2	n. d.	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)	限值 (Limit)
				No. 1	
多溴聯苯總和 / Sum of PBBs	mg/kg	參考 IEC 62321-6: 2015, 以氣相層析/ 質譜儀檢測。 / With reference to IEC 62321-6: 2015 and performed by GC/MS.	—	n. d.	1000
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n. d.	—
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.	—
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.	—
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n. d.	—
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.	—
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.	—
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.	—
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n. d.	—
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n. d.	—
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n. d.	—
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		—	n. d.	1000
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n. d.	—
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n. d.	—
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.	—
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.	—
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.	—
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.	—
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.	—
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.	—
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n. d.	—
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n. d.	—

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)	限值 (Limit)
				No. 1	
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No. : 85-68-7)	mg/kg	參考IEC 62321-8: 2017，以氣相層析/ 質譜儀檢測. / With reference to IEC 62321-8: 2017. Analysis was performed by GC/MS.	50	n. d.	1000
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No. : 84-74-2)	mg/kg		50	n. d.	1000
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No. : 117-81-7)	mg/kg		50	n. d.	1000
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No. : 84-69-5)	mg/kg		50	n. d.	1000
鄰苯二甲酸二異癸酯 / DIDP (Di- isodecyl phthalate) (CAS No. : 26761-40-0; 68515-49-1)	mg/kg		50	n. d.	-
鄰苯二甲酸二異壬酯 / DINP (Di- isononyl phthalate) (CAS No. : 28553-12-0; 68515-48-0)	mg/kg		50	n. d.	-
鄰苯二甲酸二正辛酯 / DNOP (Di-n- octyl phthalate) (CAS No. : 117-84-0)	mg/kg		50	n. d.	-
鹵素 / Halogen					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No. : 14762-94-8)	mg/kg	參考BS EN 14582: 2016，以離子層析 儀分析. / With reference to BS EN 14582: 2016. Analysis was performed by IC.	50	n. d.	-
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No. : 22537-15-1)	mg/kg		50	n. d.	-
鹵素 (溴) / Halogen-Bromine (Br) (CAS No. : 10097-32-2)	mg/kg		50	n. d.	-
鹵素 (碘) / Halogen-Iodine (I) (CAS No. : 14362-44-8)	mg/kg		50	n. d.	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)	限值 (Limit)
				No. 1	
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ -HBCDD, $\beta$ -HBCDD, $\gamma$ -HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考 IEC 62321: 2008, 以氣相層析/質譜儀檢測。 / With reference to IEC 62321: 2008. Analysis was performed by GC/MS.	5	n. d.	-

## 備註(Note):

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n. d. = Not Detected (未檢出)
4. "-" = Not Regulated (無規格值)
5. 符合性結果之判定係以測試結果與限值做比較。 / The statement of compliance conformity is based on comparison of testing results and limits.

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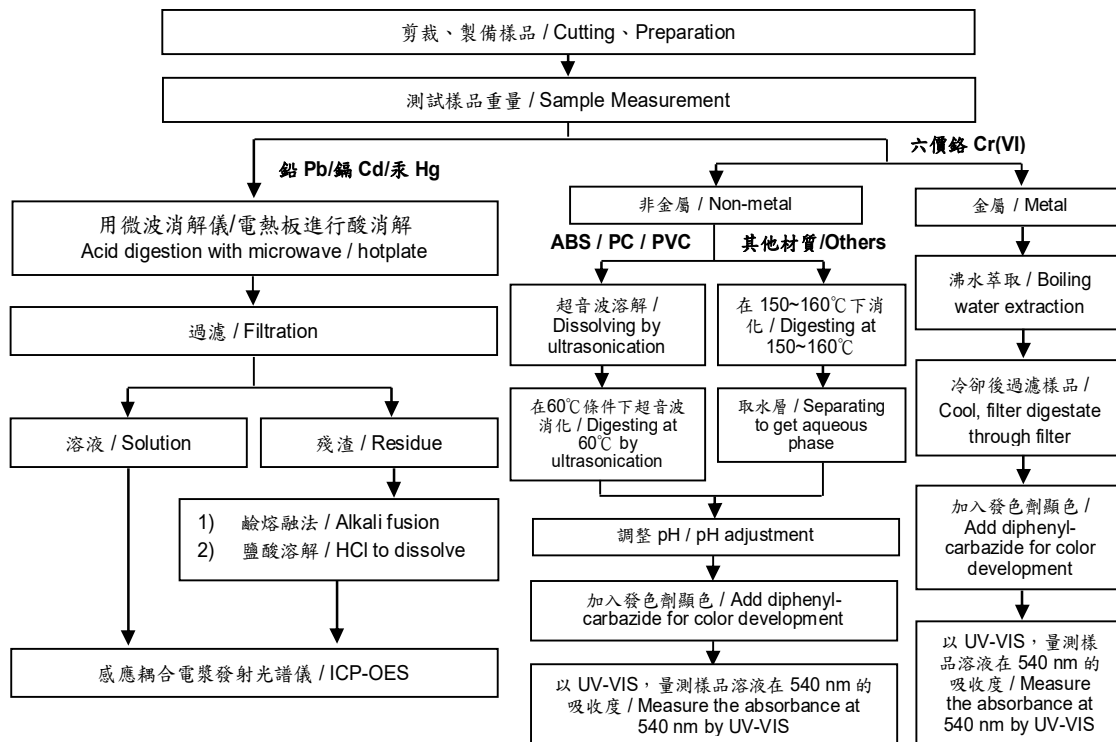
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## 重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。（六價鉻測試方法除外）

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)

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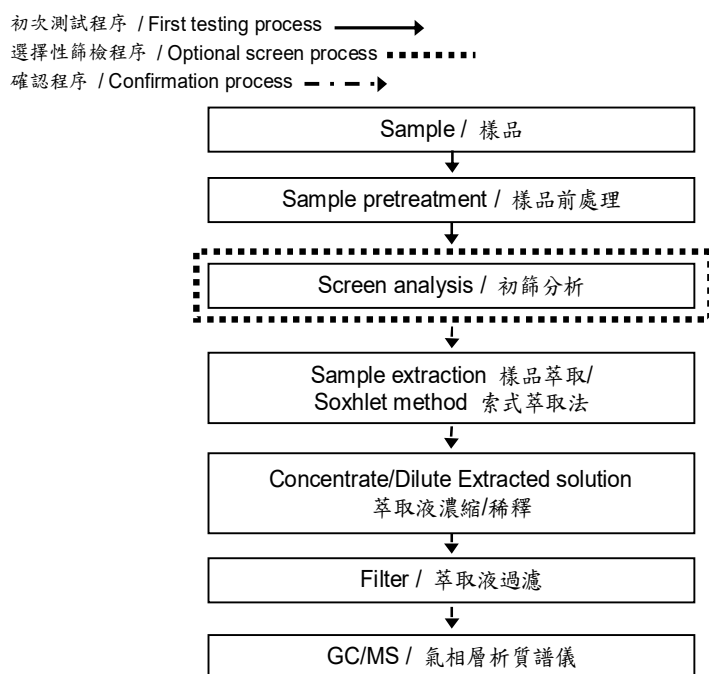
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### 多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE



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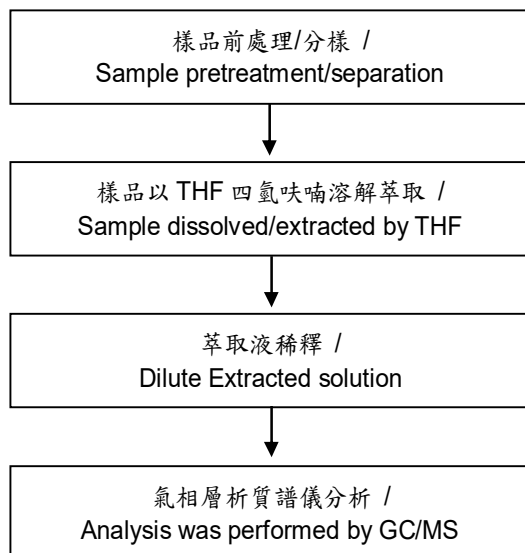
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### 可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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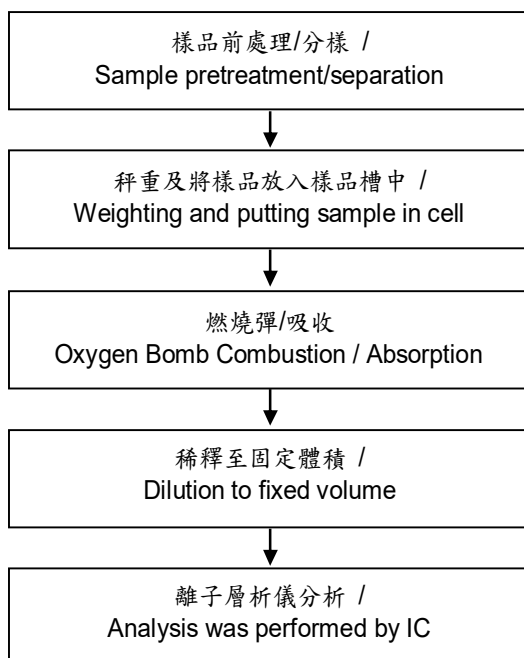
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### 鹵素分析流程圖 / Analytical flow chart - Halogen



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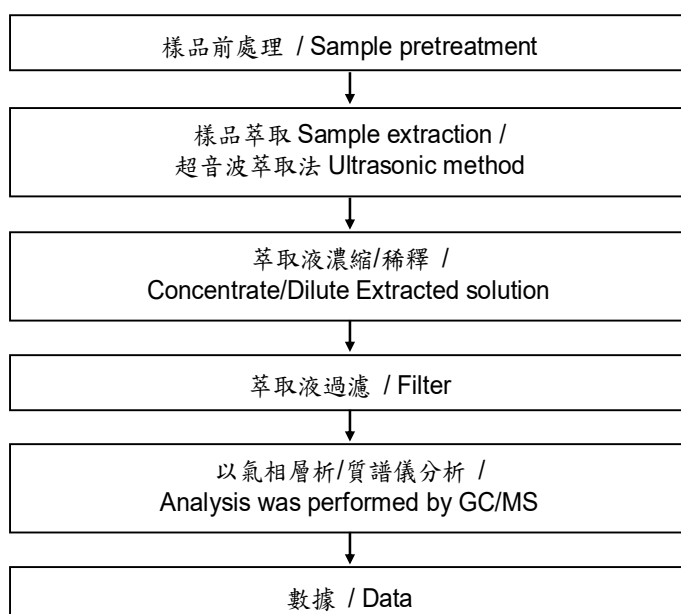
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### 六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



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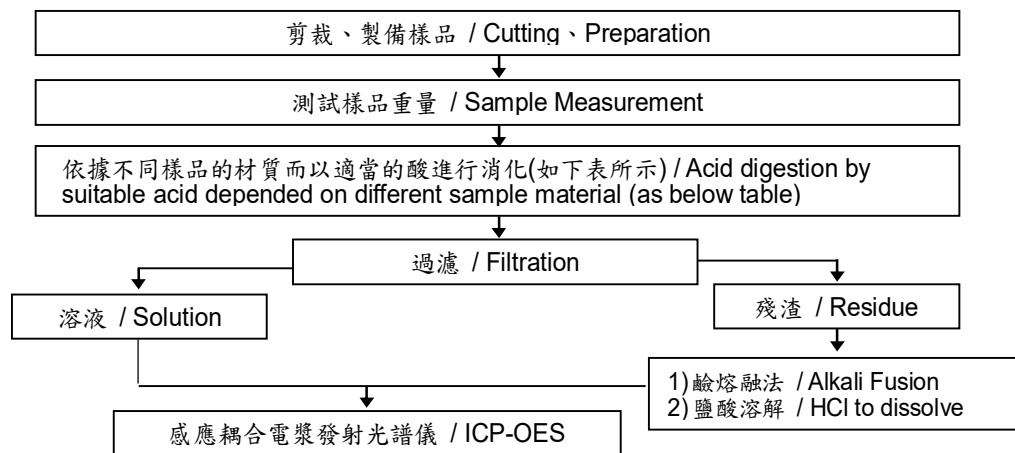
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### 元素以 ICP-OES 分析的消化流程圖 (Flow Chart of digestion for the elements analysis performed by ICP-OES)

根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.



銅,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
玻璃 / Glass	硝酸,氫氟酸 / HNO <sub>3</sub> /HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO <sub>3</sub>
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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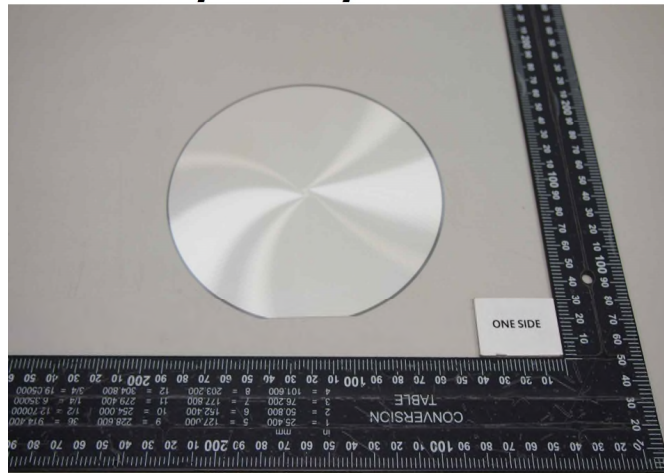
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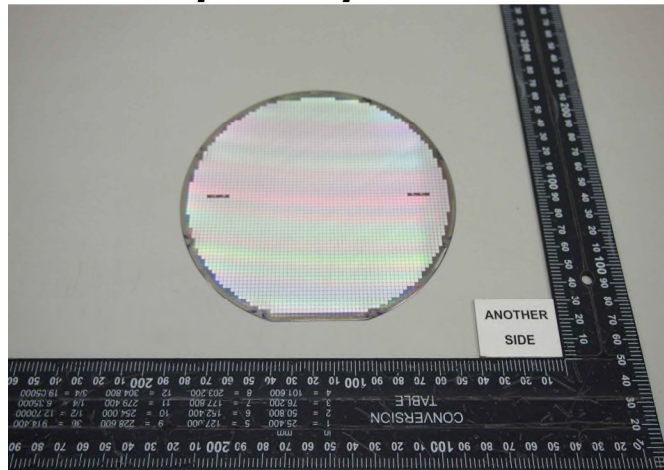
\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。\*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

### CE/2020/75249



### CE/2020/75249



\*\* 報告結尾 (End of Report) \*\*

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