

测試報告

	逓	: CE/2016/56431A	日期(Date) : 2016/06/07	頁數(Page): 1 of 16
Test Report	》近 ^本 句(NO.)	. CE/2010/J0431A	日朝(Date). 2010/00/01	其數(rage): 1 01 10
美麗微半導體股份有限公司 FORMOSA MICROSEMI CO., L 新北市土城區中央路三段20	TD. 8號5樓			
5F., NO. 208, SEC. 3, ZH	ONGYANG RD.,	TUCHENG DIST., NEW	V TAIPEI CITY 23680, TAIWAN	
以下測試樣品係由申請廠商 behalf of the applicant		(The following s	ample(s) was/were submitte	d and identified by/on
送樣廠商(Sample Submitte	d By) :	美麗微半導體股份有	f限公司(FORMOSA MICROSEMI(CO., LTD.)
樣品名稱(Sample Descript	ion) :	BRIDGE RECTIFIERS	PRODUCTS(各項橋式整流產品))/ MOLDED TYPE(成型類)
樣品型號(Style/Item No.)	:		/ MDB / MDS (TO-269AA) / MI MDLS (MBF) / KBP / KBL / KBU	

		4GBJ / QFNB
其他(Other Info.)	:	測試部位(PART NAME)No.3:鉛含量適用ROHS排外條款(1) 7A 高熔點銲錫中的鉛(例 如鉛含量≧85 %合金中的鉛),使用於產品中的高溫焊錫膏及焊片 SN5 PB92.5
		AG2.5;(2)7(C)-I 含鉛之玻璃或陶瓷的電器和電子元件,介電陶瓷電容器除外例
		如高壓電子裝置,或玻璃或陶瓷基複合材料,使用於產品中的GLASS
		PASSIVATED(GPP)晶粒。
		PART NAME NO.3 : LEAD CONTENTS IS ROHS EXEMPTION (1) 7(A) LEAD IN HIGH
		MELTING TEMPERATURE TYPE SOLDERS (I.E. LEAD-BASED ALLOYS CONTAINING 85%
		BY WEIGHT OR MORE LEAD.); (2) 7(C)-I LEAD IN GLASS OF CATHODE RAY TUBES,
		ELECTRONIC COMPONENTS AND FLUORESCENT TUBES.
收件日期(Sample Receiving Date)	:	2016/05/31
測試期間(Testing Period)	:	2016/05/31 TO 2016/06/06

测試結果(Test Results) : 請見下一頁 (Please refer to next pages).



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<u>测試結果(Test Results)</u>

測試部位(PART NAME)No.1 : 銀色金屬腳鍍層 (PLATING LAYER OF SILVER COLORED METAL PIN) 測試部位(PART NAME)No.2 銀色金屬腳底材 (BASE MATERIAL OF SILVER COLORED METAL PIN) : 測試部位(PART NAME)No.3 : 整體混測 (MIXED ALL PARTS)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果(Result)		
				No. 1	No. 2	No. 3
鐍 / Cadmium (Cd)	mg/kg	酸洗脫鍍層,參考IEC 62321-5 (2013) ,以感應耦合電漿原子發射光譜儀檢 測. / IEC 62321-5 (2013) application of modified digestion by surface etching and performed by ICP-AES.	2	n. d.		
	mg/kg	参考IEC 62321-5 (2013),以感應耦合 電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2		n. d.	n. d.
鉛 / Lead (Pb)	mg/kg	酸洗脫鍍層,參考IEC 62321-5 (2013) ,以感應耦合電漿原子發射光譜儀檢 測. / IEC 62321-5 (2013) application of modified digestion by surface etching and performed by ICP-AES.	2	80. 4		
	mg/kg	參考IEC 62321-5 (2013),以感應耦合 電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2		23.2	4740



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测試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)		
				No. 1	No. 2	No. 3
汞 / Mercury (Hg)	mg/kg	酸洗脫鍍層,參考IEC 62321-4 (2013) ,以感應耦合電漿原子發射光譜儀檢 測. / IEC 62321-4 (2013) application of modified digestion by surface etching and performed by ICP-AES.	2	n. d.		
	mg/kg	参考IEC 62321-4 (2013),以感應耦合 電漿原子發射光譜儀檢測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2		n. d.	n. d.
六價鉻 / Hexavalent Chromium Cr(VI)(#2)	µg/cm²	参考IEC 62321-7-1 (2015),以UV-VIS 檢測. / With reference to IEC 62321-7-1 (2015) and performed by UV-VIS.	0.10	n. d.	n. d.	
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	参考IEC 62321 (2008),以UV-VIS檢 測. / With reference to IEC 62321 (2008) and performed by UV-VIS.	2			n. d.
鎳 / Nickel (Ni)	mg/kg	參考US EPA 3050B(1996),以感應耦 合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B(1996). Analysis was performed by ICP-AES.	2	13.4		
鈹 / Beryllium (Be)	mg/kg	参考US EPA 3052 (1996),以感應耦合 電漿原子發射光譜儀檢測. / With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.	2			n. d.



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5F., NO. 208, SEC. 3, ZHONGYANG RD., TUCHENG DIST., NEW TAIPEI CITY 23680, TAIWAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)		
(Test Ttems)				No. 1	No. 2	No. 3
砷 / Arsenic (As)	mg/kg	参考US EPA 3052 (1996),以感應耦合 電漿原子發射光譜儀檢測. / With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.	2			n. d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	$\mu{ m g/m^2}$	參考US EPA 3550C (2007),以液相層 析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	1	n. d.		
全氟辛酸 / PFOA(CAS No.: 335-67-1)	$\mu { m g/m^2}$	参考US EPA 3550C (2007),以液相層 析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	1	n. d.		
鄰苯二甲酸丁苯甲酯 / BBP(Butyl Benzyl phthalate)(CAS No.: 85-68-7)	mg/kg		50			n. d.
鄰苯二甲酸二丁酯 / DBP(Dibutyl phthalate)(CAS No.: 84-74-2)	mg/kg		50			n. d.
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	4 + IFC (20201 0/CD (2012)	50			n. d.
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84-69- 5)	mg/kg	參考IEC 62321-8/CD (2013),以氣相 層析儀/質譜儀檢測. / With reference to IEC 62321-8/CD	50			n. d.
鄰苯二甲酸二異癸酯 / DIDP (Di- isodecyl phthalate) (CAS No.: 26761- 40-0; 68515-49-1)	mg/kg	(2013). Analysis was performed by GC/MS.	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.



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测試項目 (Test Items)	單位 测試方法 (Unit) (Method)	方法偵測 極限值	結果(Result)			
(lest lieus)		(Method)	(MDL)	No. 1	No. 2	No. 3
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 (α - HBCDD, β - HBCDD, γ - HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	参考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.
多溴聯苯總和 / Sum of PBBs	mg/kg		-			n. d.
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	参考IEC 62321-6 (2015),以氣相層析	5			n. d.
十溴聯苯 / Decabromobiphenyl	mg/kg	/質譜儀檢測. / With reference to	5			n. d.
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	IEC 62321-6 (2015) and performed	-			n. d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg	by GC/MS.	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	1	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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備註(Note):

- 1. mg/kg = ppm; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected (未檢出)
- 3. MDL = Method Detection Limit (方法偵測極限值)
- 4. "-" = Not Regulated (無規格值)
- 5. "---" = Not Conducted (未測項目)
- 6. (#2) =

a. 當六價鉻結果大於0.13 µg/cm²,表示樣品表層含有六價鉻. / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 μ g/cm². The sample coating is considered to contain Cr(VI). b. 當六價鉻結果為n.d. (濃度小於0.10 μg/cm²),表示表層不含六價鉻. / The sample is negative for Cr(VI) if Cr(VI) is n.d. (concentration less than 0.10 $\mu g/cm^2$). The coating is considered a non-Cr(VI) based coating c. 當六價鉻結果介於 0.10 及 0.13 μg/cm² 時,無法確定塗層是否含有六價鉻. / The result between 0.10 μg/cm² and 0.13 μ g/cm² is considered to be inconclusive – unavoidable coating variations may influence the determination.

7. For No.3: 樣品的測試是基於申請人要求混合測試,報告中的混合測試結果不代表其中個別單一材質的含量. (The samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.)



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PFOS参考資訊(Reference Information): 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm),在半成品、成品或零部件中不得超過0.1%(1000ppm),在紡織品或塗層 材料中不得超過1 μ g/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above $l\mu g/m^2$.)

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測試部位(PART NAME)No.1

根據以下的流程圖之條件,樣品之外部鍍層已完全溶解。(六價鉻測試方法除外)/The plating layer of samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)

測試人員:王志瑋 / Technician: JR Wang

測試負責人:張啟興 / Supervisor: Troy Chang



nm 的吸收度 / measure the absorbance at 540 nm by UV-VIS



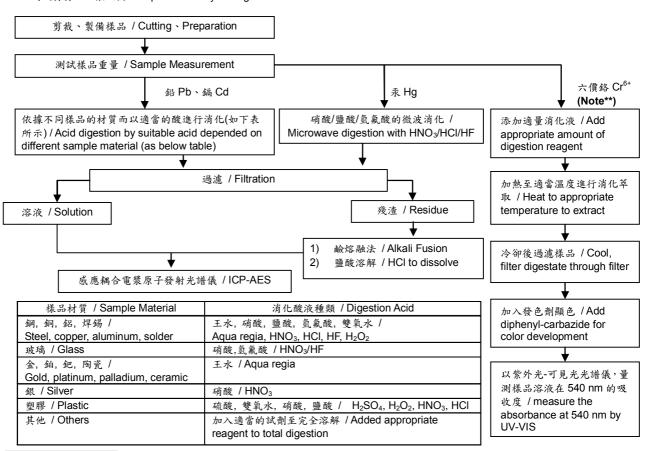
測試報告 號碼(No.): CE/2016/56431A 日期(Date): 2016/06/07 頁數(Page): 9 of 16 基準微半導體股份有限公司

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測試部位(PART NAME)No. 2,3

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. (Cr⁶⁺ test method excluded) ■ 測試人員:王志瑋 / Technician: JR Wang

■ 測試負責人:張啟興 / Supervisor: Troy Chang



Note** (For IEC 62321)

(1) 針對非金屬材料加入鹼性消化液,加熱至 90~95℃萃取. / For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.

(2) 針對金屬材料加入純水,加熱至沸腾萃取. / For metallic material, add pure water and heat to boiling.



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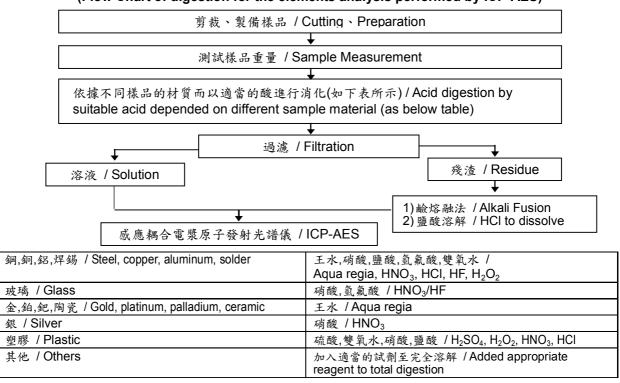
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> 根據以下的流程圖之條件,樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員:王志瑋 / Technician: JR Wang
- 測試負責人:張啟興 / Supervisor: Troy Chang

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





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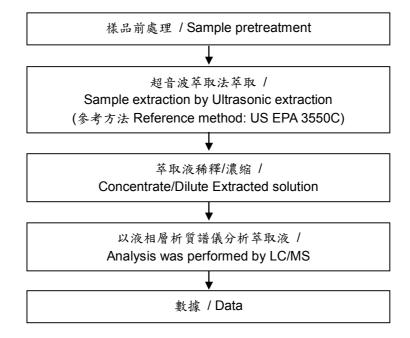
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5F., NO. 208, SEC. 3, ZHONGYANG RD., TUCHENG DIST., NEW TAIPEI CITY 23680, TAIWAN

全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員:涂雅苓 / Technician: Yaling Tu
- 測試負責人:張啟興 / Supervisor: Troy Chang



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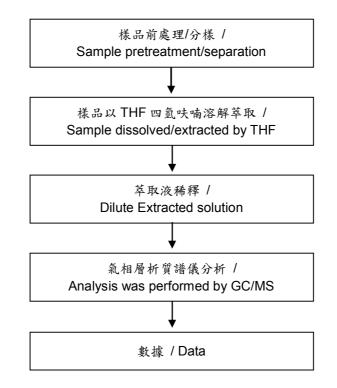
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<u>可塑劑分析流程圖 / Analytical flow chart - Phthalate</u>

- 測試人員:徐毓明 / Technician: Andy Shu
- 測試負責人:張啟興 / Supervisor nt: Troy Chang

【测試方法/Test method: IEC 62321-8】





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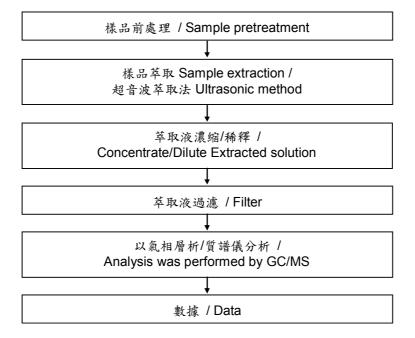
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六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD

- 測試人員:涂雅苓 / Technician: Yaling Tu
- 測試負責人:張啟興 / Supervisor: Troy Chang



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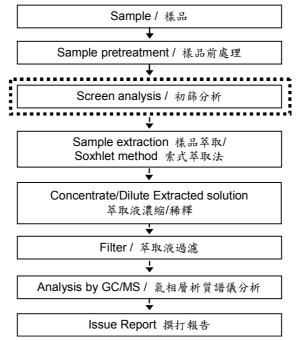
多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

■ 測試人員: 涂雅苓 / Technician: Yaling Tu

■ 測試負責人:張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process _

選擇性篩檢程序 / Optional screen process 確認程序 / Confirmation process _ . _ . ▶



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測試報告 Test Report ^{號碼(No.)}: CE/2016/56431A

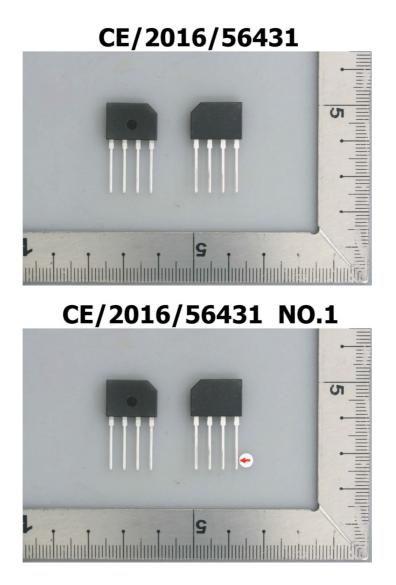
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* 照片中如有箭頭標示,則表示為實際檢測之樣品/部位. * (The tested sample / part is marked by an arrow if it's shown on the photo.)





Test Report

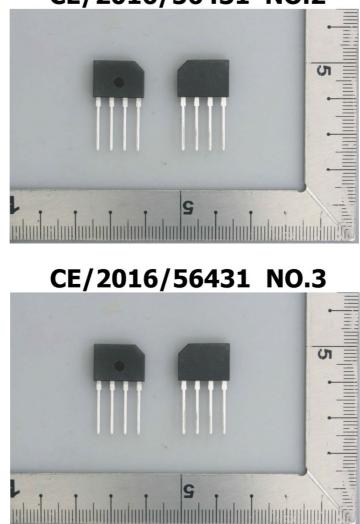
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