



SYNTON-TECH CORPORATION

RESISTOR NETWORKS

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1. INTRODUCTION

Thick film resistor networks have Metal Glaze Element on the ceramic substrates with strong clip construction terminal, and are coated with special epoxy resin. They are the most suitable to meet the density of circuit assembling.

2. APPLICATION

- Control Circuits of V.T.R. Computer, facsimile, Car & Air-Conditioner.
- Color T.V. & Other Electronic equipments for Consumer use.

3. FEATURES

- Miniature, High Density Packaging.
- Combinations of Different Ohmic value are available.
- High Reliability with RuO₂ Paste.

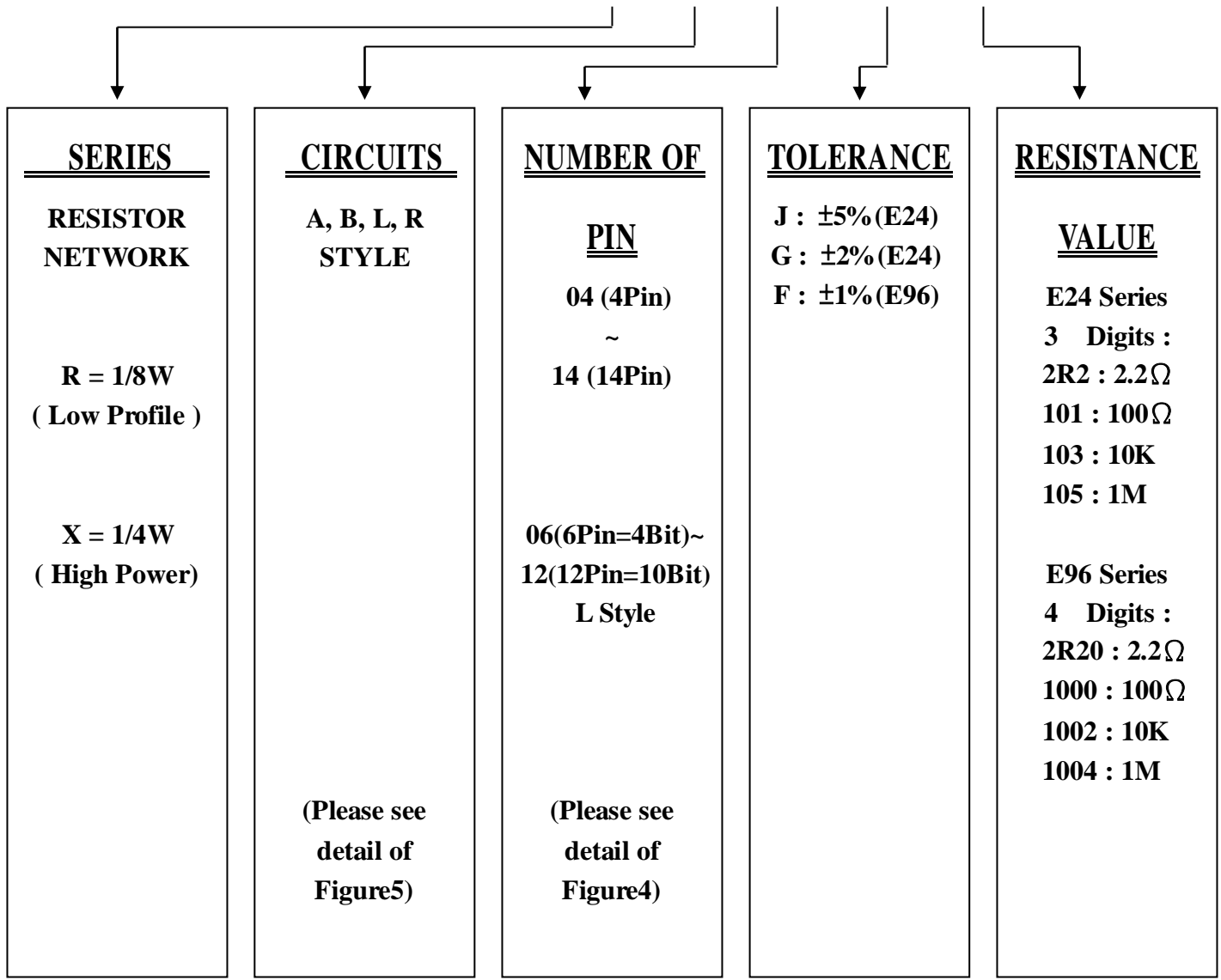
APPROVED	CHECKED	DESIGNED	REMARK	DOCUMENT NO.
Carol	May	Chen		0201010022



4. EXPLANATIONS OF ORDERING CODE

DESCRIPTION : RA 08 1/8W 5% 10K

SYNTON CODE : R A 08 J 103



1.



5. RATING

Wattage/Element	R		X							
	All Style		All Style							
	0.125W		0.25W							
Resistance Range	E-12 Series (Please see detail of Figure2)									
Max. Working Voltage	100V					200V				
CIRCUITS	R Style	Resistance value	100Ω - 10K							
	L Style	Bit Errors	±1/2 LSB							
		Resistance value	5KΩ - 100K							
		Rated voltage	30mW/element							
		Working voltage	DC 20V Max.							
		BITS	4Bits	5Bits	6Bits	7Bits	8Bits	9Bits	10Bits	
		FSA(Max.)	3.12%	1.56%	0.78%	0.39%	0.2%	0.2%	0.2%	
Operating Temp. Range	-55°C ~ +125°C									
T.C.R. (PPM/°C)	±100PPM 50 ohm ~ 1M ohm									
	±250PPM < 50 ohm or ≥ 2.2M ohm									

Figure1

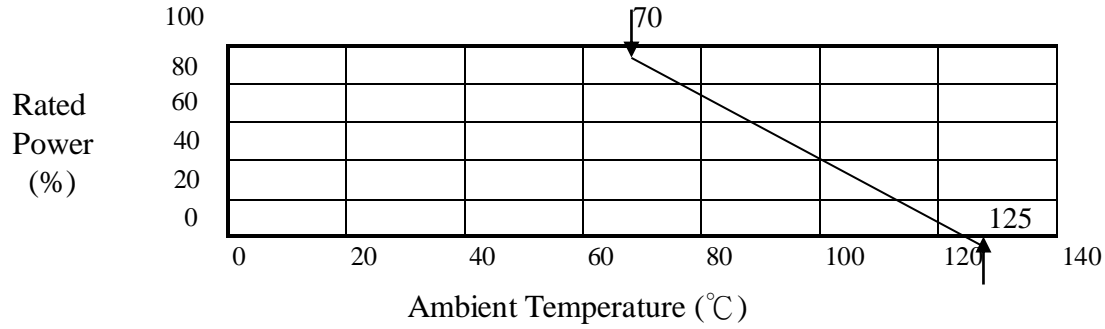
E-12 SERIES											
10	12	15	18	22	27	33	39	47	56	68	82
100	120	150	180	220	270	330	390	470	560	680	820
1K	1.2K	1.5K	1.8K	2.2K	2.7K	3.3K	3.9K	4.7K	5.6K	6.8K	8.2K
10K	12K	15K	18K	22K	27K	33K	39K	47K	56K	68K	82K
100K	120K	150K	180K	220K	270K	330K	390K	470K	560K	680K	820K
1M											
DUAL TERMINATORS (OHM)											
*R STYLE(R1/R2)											
160/240				330/390							
180/390				330/470							
220/270				1.5K/3.3K							
220/330				3.0K/6.2K							
*L STYLE(Standard)											
5Kohm — 10Kohm — 25Kohm — 50Kohm — 100Kohm											

Figure2



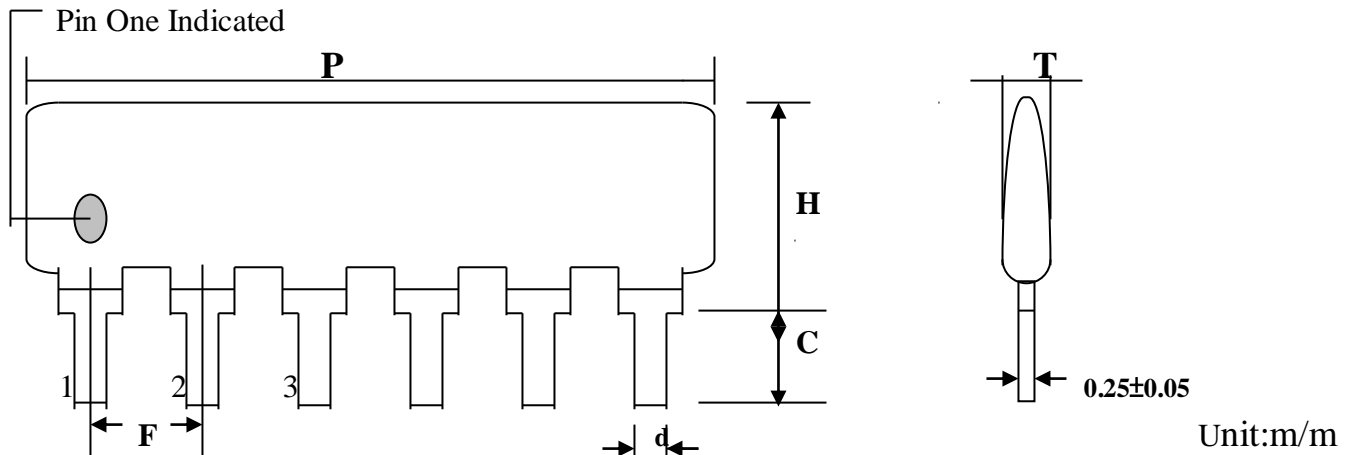
6. DERATING CURVE

The rated power at the temperature in excess of 70°C shall be derated in accordance with figure3



(Figure3)

7. DIMENSIONS



TYPE	L (BITS)	P (Max.)	H (Max.)			T (Max.)	C ±0.5	d ±0.05	F ±0.2
			R	L	X				
4pin		10.2	5.08	8	3.0	3.0	0.5	2.54	
5pin		12.7							
6pin	4BIT	15.3							
7pin	5BIT	17.8							
8pin	6BIT	20.4							
9pin	7BIT	22.9							
10pin	8BIT	25.4							
11pin	9BIT	28.0							
12pin	10BIT	30.5							
13pin		33.1							
14pin		35.6							

Figure4



8. CIRCUITS CONSTRUCTION

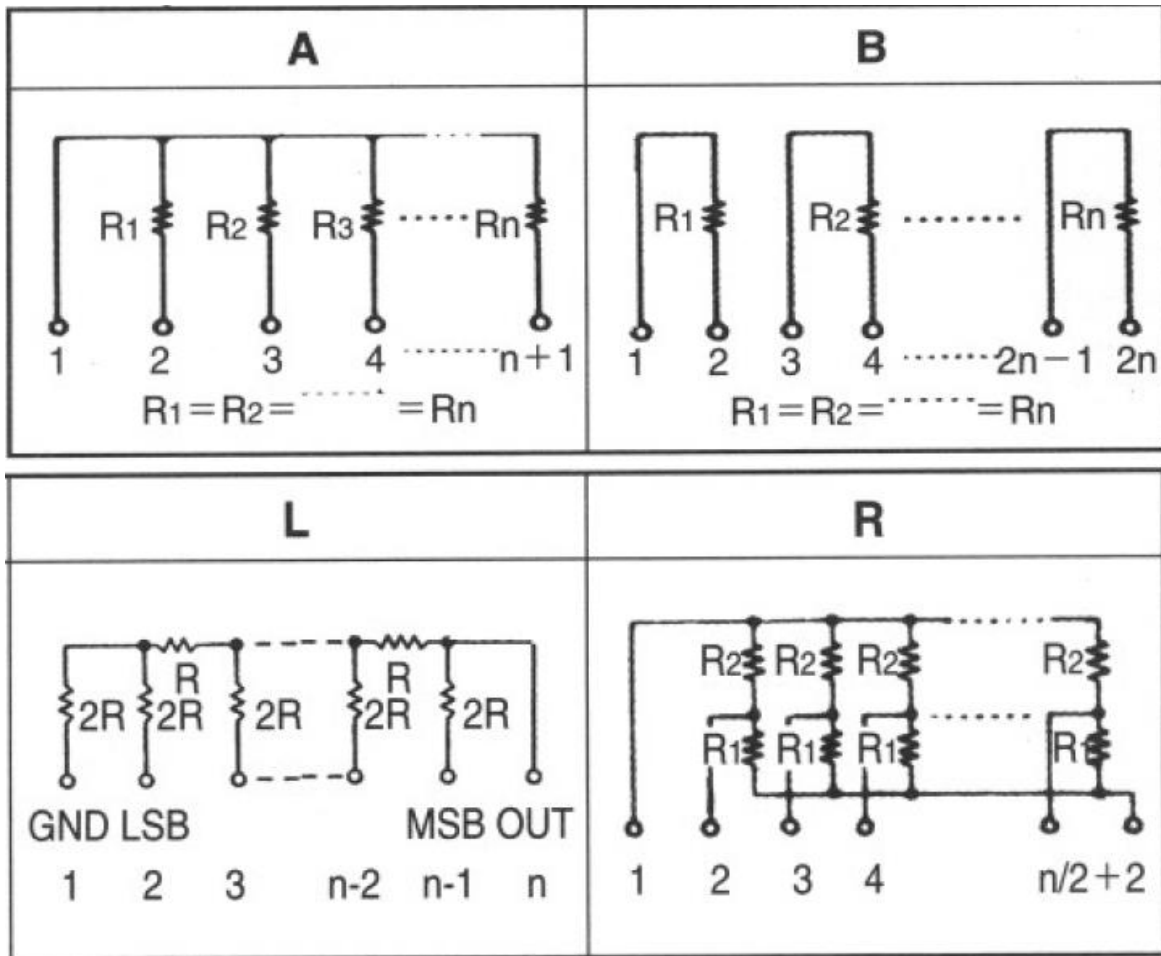


Figure5



9. CHARACTERISTICS

(1) Resistance Temperature Characteristic

Test Method : -55°C ~ 125°C

Acceptance Standard : $\pm 100\text{ppm}/^\circ\text{C}$ for 50 ohm ~2.2M

$\pm 250\text{ppm}/^\circ\text{C}$ for $< 50\text{ ohm} \geq 2.2\text{M}$

(2) Temperature Cycling

Test Method : -55°C ~ +125°C for 5 Cycle

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$

(3) Short-Time Overload

Test Method : Rated Voltage x 2.5 for 5 sec.

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$

(4) Resistance to Soldering Heat

Test Method : 350°C for 3 sec.

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$

(5) Insulation Resistance

Test Method : 100V for 1 minute.

Acceptance Standard : $\Delta 1,000\text{ Meg ohm Min.}$

(6) Terminal Strength

Test Method : Tensile : 1Kg, 30 SEC. Bending : 500g, 2 Times

Acceptance Standard : $\Delta R \leq \pm (0.25\% + 0.05 \Omega)$

(7) Thermal Shock

Test Method : Load V, Room Temp. 30 minutes Unload, -55°C,

15 minute Over 2 hrs in Room Temp. before measuring

Acceptance Standard : $\Delta R \leq \pm (0.5\% + 0.05 \Omega)$



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(8) Solderability

Test Method : 260°C ± 5°C, 3 sec.

Acceptance Standard : Covering 95%

(9) Moisture Load life

Test Method : 40°C, 90-95% RH rated Voltage for 1000 hours.

Acceptance Standard : $\Delta R \leq \pm (2\% + 0.05 \Omega)$

(10) Load Life

Test Method : 70°C at Rated Voltage for 1000 hours.

Acceptance Standard : $\Delta R \leq \pm (2\% + 0.05 \Omega)$



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測試報告 Test Report

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 (廣東省東莞市大朗鎮水口管理區)
 (SHUI KOU INDUSTRIAL ZONE, DA LANG, DONG GUAN, GUANG DONG, CHINA)



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):

樣品名稱(Sample Description) : RESISTOR ARRAY INCLUDING RSA1 (排阻系列產品含RSA1)
 樣品型號(Style/Item No.) : SIP TYPE (樣品型號)
 收件日期(Sample Receiving Date) : 2013/03/21
 測試期間(Testing Period) : 2013/03/21 TO 2013/03/28

測試需求(Test Requested) : 依據客戶指定, 進行鎘, 鉛, 汞, 六價鉻, 多溴聯苯, 多溴聯苯醚測試. (As specified by client, to test Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.)

測試方法(Test Method) : 參考IEC 62321: 2008方法 / With reference to IEC 62321: 2008.

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


 Troy Chang, Asst. Manager
 Signed for and on behalf of
 SGS TAIWAN LTD.
 Chemical Laboratory – Taipei

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(SHUI KOU INDUSTRIAL ZONE, DA LANG, DONG GUAN, GUANG DONG, CHINA)



測試結果(Test Results)

測試部位(PART NAME)No.1 : 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
鎘 / Cadmium (Cd)	mg/kg	參考 IEC 62321: 2008 方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg		2	377
汞 / Mercury (Hg)	mg/kg		2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考 IEC 62321: 2008 方法, 以 UV-VIS 檢測。 / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考 IEC 62321: 2008 方法, 以氣相層析/質譜儀檢測。 / With reference to IEC 62321: 2008 and performed by GC/MS.	-	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		5	n.d.
十溴聯苯 / Decabromobiphenyl	mg/kg	5	n.d.	

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(SHUI KOU INDUSTRIAL ZONE, DA LANG, DONG GUAN, GUANG DONG, CHINA)



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
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
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.	

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. 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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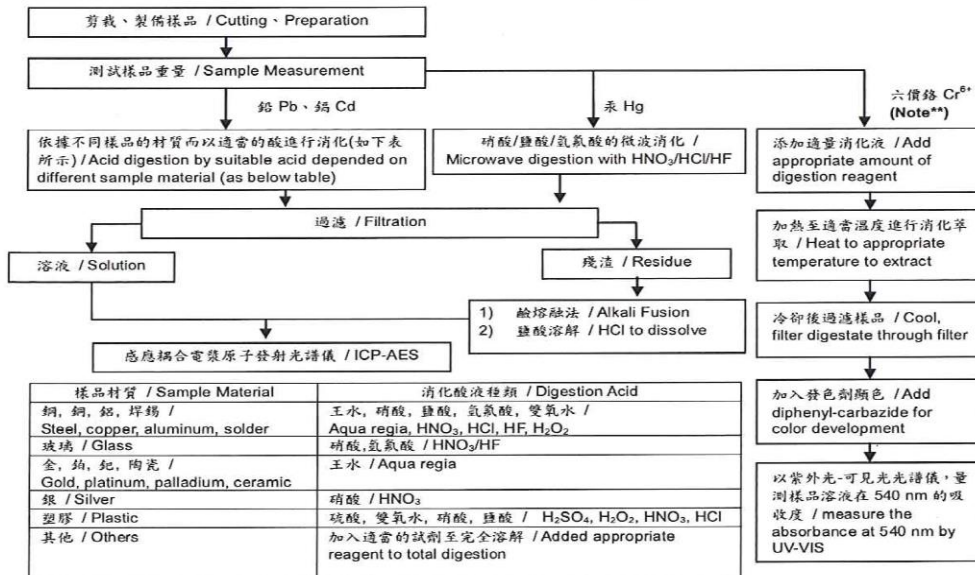
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員: 楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人: 張啓興 / Name of the person in charge of measurement: Troy Chang



Note**: (1) 針對非金屬材料加入鹼性消化液, 加熱至 90-95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90-95°C.
 (2) 針對金屬材料加入純水, 加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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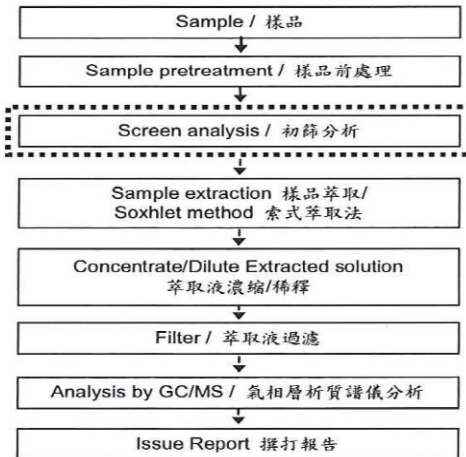
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多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員: 翁賜彬 / Name of the person who made measurement: Roman Wong
 - 測試負責人: 張啓興 / Name of the person in charge of measurement: 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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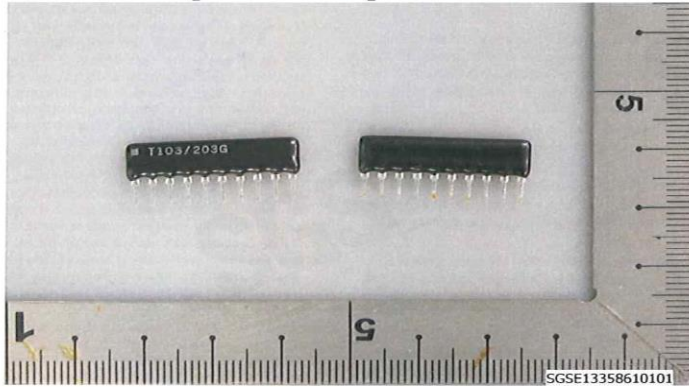
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 (廣東省東莞市大朗鎮水口管理區)
 (SHUI KOU INDUSTRIAL ZONE, DA LANG, DONG GUAN, GUANG DONG, CHINA)



* 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/2013/35861



** 報告結尾 (End of Report) **

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