SMD Power Choke Coil

TMPC0615H-2R2MG-DTH

	ECN HISTORY LIST							
REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN			
1.0	15/09/23	新 發 行	楊祥忠	詹偉特	何秦芝			
備								
註								

SMD Power Choke Coil

TMPC0615H-2R2MG-DTH

1. Features

- 1. Carbonyl powder inductor.
- 2. Compact design.
- 3. High current , low DCR , high efficiency.
- 4. Very low acoustic noise and very low leakage flux noise.
- 5. High reliability.
- 6. 100% Lead(Pb) & Halogen-Free and RoHS compliant.



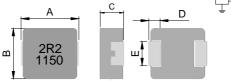


2. Applications

Note PC power system , incl. IMVP-6 DC/DC converter.

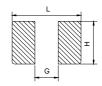
r incl. IMVP-6

3. Dimensions



Series	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
TMPC0615H	7.0±0.3	6.6±0.3	1.3±0.2	1.8±0.3	3.0±0.3

Recommend PC Board Pattern



L(mm)	G(mm)	H(mm)	
7.7	2.5	3.5	

4. Part Numbering



A: Series

B: Dimension BxC

C: Type Carbonyl powder
D: Inductance 2R2=2.2uH
E: Inductance Tolerance M=±20%

F: D/C 印字:黑色; 2R2 及 D/C 1150 (D/C 前二碼是年份,後二碼是週期,依實際生產週期而定)

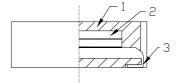
5. Specification

Part Number	Inductance	I rms	I sat	DCR	DCR
	L0 (uH) ±20% @ 0 A	(A) typ.	(A) typ.	(mΩ) typ. @25℃	(mΩ) max. @25℃
TMPC0615H-2R2MG-DTH	2.20	4.5	6.5	48	55

Note:

- 1. Test frequency : L : 100KHz /1.0V
- 2. All test data referenced to 25°C ambient.
- $3. \ \ \mathsf{Testing\ Instrument: L/Q: HP4284A, CH11025, CH3302, CH1320\ , CH1320S\ LCR\ METER\ /\ Rdc: CH16502, Agilent 33420A\ MICRO\ OHMMETER.}$
- 4. Heat Rated Current (Irms) will cause the coil temperature rise approximately $\Delta t \leq$ 40 $^{\circ}$ C (keep 1min.).
- 5. Saturation Current (Isat) will cause L0 $\,$ to drop $\, \leq \,$ 20% typical. (keep quickly).
- 6. The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions. Circuit design, component, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
- 7. Special inquiries besides the above common used types can be met on your requirement.

6. Material List



NO Items		Materials
1	Core	Carbonyl powder or equ.
2	Wire	Polyester Wire or equivalent.
3	Solder Plating	100% Pb free solder

7. Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125℃ (Including self - temperature rise)	
Storage temperature	-40~+125℃ (on board)	
Electrical Performance	Test Test	
Inductance	Defects are dead all attitud above a significant	HP4284A,CH11025,CH3302,CH1320,CH1320S LCR Meter.
DCR	Refer to standard electrical characteristics list.	CH16502,Agilent33420A Micro-Ohm Meter.
Saturation Current (Isat)	△L≦20% typical.	Saturation DC Current (Isat) will cause L0 to drop \triangle L(%)(keep quickly).
Heat Rated Current (Irms)	Approximately △T ≤ 40°C	Heat Rated Current (Irms) will cause the coil temperature rise △T(°C) without core loss. 1.Applied the allowed DC current(keep 1 min.). 2.Temperature measured by digital surface thermometer
Reliability Test		1=
Life Test	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value.	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature: 125±2°C (Bead) Temperature: 85±2°C (Inductor) Applied current: rated current Duration: 1000±12hrs Measured at room temperature after placing for 24±2 hrs
Load Humidity	RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Humidity: 85±2% R.H, Temperature: 85°C±2°C Duration: 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24±2 hrs
Thermal shock		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1: -40±2°C 30±5min Step2: 25±2°C ≤0.5min Step3: 105±2°C 30±5min Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment: Vibration checker Total Amplitude:1.52mm±10% Testing Time: 12 hours(20 minutes, 12 cycles each of 3 orientations)。
Shock		Type Peak value (g's) Normal duration (D) (ms) Wave form (Vi)ft/sec Velocity change (Vi)ft/sec SMD 1500 0.5 Half-sine 15.4 Lead 100 6 Half-sine 12.3
Bending		Shall be mounted on a FR4 substrate of the following dimensions: >=0805:40x100x1.2mm <0805:40x100x0.8mm Bending depth: >=0805:1.2mm <0805:0.8mm duration of 10 sec.

Item	Performance	Test Method and Remarks
Soderability	More than 95% of the terminal electrode should be covered with solder。	Preheat: 150°C,60sec.。 Solder: Sn96.5% Ag3% Cu0.5%。 Temperature: 245±5°C。 Flux for lead free: Rosin. 9.5%。 Dip time: 4±1sec。 Depth: completely cover the termination
Resistance to Soldering Heat		Number of heat cycles: 1 Temperature (°C) Time(s) Temperature ramp/immersion and emersion rate 260 ±5(solder temp) 10 ±1 25mm/s ±6 mm/s
	Appearance: No damage. Inductance: within±10% of initial value Q: Shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020DClassification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force (>0805:1kg , <=0805:0.5kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.

8. Soldering and Mounting

(1) Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. TAI-TECH terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

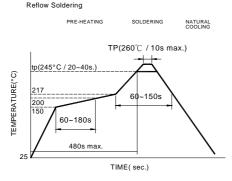
(2) Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

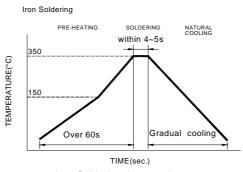
(3) Soldering Iron:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355°C tip temperature (max) 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.



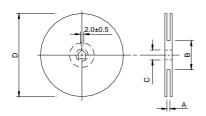
Reflow times: 3 times max. Fig.1

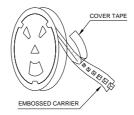


Iron Soldering times: 1 times max.
Fig.2

9. Packaging Information

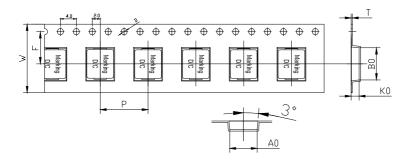
(1) Reel Dimension





Туре	A(mm)	B(mm)	C(mm)	D(mm)
13"x16mm	16.4+2/-0	100±2	13.5±0.5	330

(2) Tape Dimension

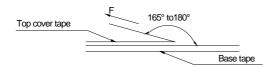


Series	Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	W(mm)	F(mm)	t(mm)	D(mm)
TMPC	0615	7.7±0.1	7.1±0.1	1.8±0.1	12.0±0.1	16±0.3	7.5±0.1	0.35±0.05	1.5±0.1

(3) Packaging Quantity

ТМРС	0615
Chip / Reel	2000
Inner box	4000
Carton	16000

(4) Tearing Off Force



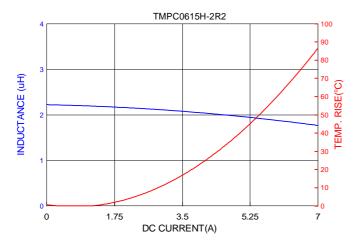
The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions(referenced ANSI/EIA-481-C-2003 of 4.11 standard).

Room Temp. (℃)	'		Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions(component level)
- To maintain the solderability of terminal electrodes:
- 1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
- 2. Temperature and humidity conditions: Less than 40 $^{\circ}\mathrm{C}$ and 60% RH.
- 3. Recommended products should be used within 12 months form the time of delivery.
- 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
- 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
- 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

10. Typical Performance Curves





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日期(Date): 2015/01/27

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Test Report

西北臺慶科技股份有限公司 / TAI-TECH ADVANCED ELECTRONICS CO., LTD.

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SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)

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)

SMD POWER INDUCTOR

樣品型號(Style/Item No.)

TMPB, TMPC, SLPI, SMPI, SMPI-P3, EPI(ePI), VMPI, MLPI SERIES

收件日期(Sample Receiving Date)

: 2015/01/20

測試期間(Testing Period)

: 2015/01/20 TO 2015/01/27

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

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

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SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)

測試結果(Test Results)

测试部位(PART NAME)No.1 : 整體混測 (MIXED ALL PARTS)

測試項目 (Test Items)	單位 (Unit) (Method)		方法債測 極限値 (MDL)	結果 (Result)	
(Test Items)	(onit)	(onit) (method)		No.1	
缟 / Cadmium (Cd)	mg/kg	參考IEC 62321-5: 2013方法, 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.	
给 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013方法, 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.	
乘 / Mercury (Hg)	mg/kg	參考IEC 62321-4: 2013方法, 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.	
六價絡 / Hexavalent Chromium Cr(VI)	mg/kg	多考IEC 62321: 2008方法, 以UV-VIS 检测. / With reference to IEC 62321: 2008 and performed by UV- VIS.	2	n.d.	
绨 / Antimony (Sb)	mg/kg	参考US EPA 3052方法,以感應耦合電 漿原子發射光譜儀檢測。/ With reference to US EPA Method 3052. Analysis was performed by ICP-AES.	2	n.d.	

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SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)

测试项目	單位	測試方法	方法侦测 極限值	結果 (Result)
(Test Items)	(Unit)	(Method)	(MDL)	No.1
六溴環十二烷及所有主要被辨别出的異構物 / 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方法,以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 method. Analysis was performed by GC/MS.	5	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	参考IEC 62321-8 (111/321/CD),以氣相層析儀/質譜儀檢測之. / With reference to IEC 62321-8 (111/321/CD). Analysis was performed by GC/MS.	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		50	n.d.
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84-69- 5)	mg/kg		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		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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SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)

測試項目	單位	测試方法	方法偵測 極限値	結果 (Result)
(Test Items)	(Unit)	(Method)	(MDL)	No.1
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	1 [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.
へ溴聯苯 / Octabromobiphenyl	mg/kg	1	5	n.d.
九溴聯苯 / Nonabromobiphenyl	mg/kg	冬考1EC 62321: 2008方法, 以氣相層	5	n.d.
十溴聯苯 / Decabromobiphenyl	mg/kg	析/質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	5	n.d.
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		-	n.d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n.d.
二溴聯苯醚 / Dibronodiphenyl 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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Test Report

西北臺慶科技股份有限公司 / TAI-TECH ADVANCED ELECTRONICS CO., LTD.

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(江蘇省昆山市蓬朗昆嘉高科技工業區郭澤路 / GUO-ZE ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN, JIANG-SU, CHINA)

(桃園蘇中經市中經工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320, TAIWAN)

(江蘇省宿達市泗洪縣經濟開發區金沙南路-高新技術產業團 / HIGH-TECH INDUSTRIAL DISTRICT, JINSHAJIANG ROAD,

SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法負測 極限值 (MDL)	結果 (Result)
				No.1
鹵素 / Halogen				
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg		50	n.d.
由素(氣)/ Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	参考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN	50	n.d.
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	14582:2007. Analysis was performed by IC.	50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg] [50	n.d.

備註(Note):

- 1. mg/kg = ppm; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected (未检出)
- 3. MDL = Method Detection Limit (方法偵測極限值)
- 4. "-" = Not Regulated (無规格值)
- 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别單一材質的含量。(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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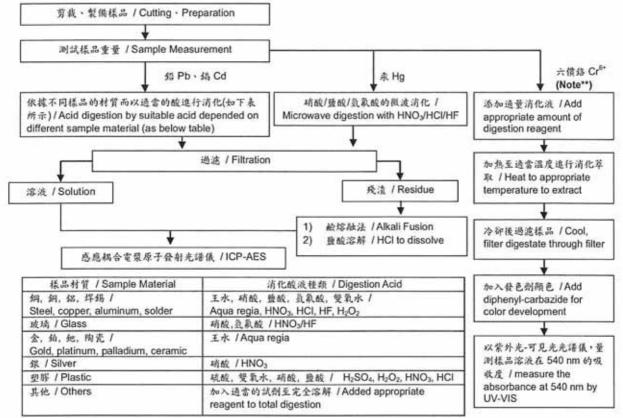
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- 1) 根據以下的流程關之條件,樣品已完全溶解。(六價格測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr5+ test method excluded)
- 测试人員:楊登律 / Name of the person who made measurement: Climbgreat Yang
- 3) 测试负责人: 张啓典 / Name of the person in charge of measurement: Troy Chang



Note** (For IEC 62321)

- (1) 封對非金易材料加入鹼性消化液, 加热至 90~95℃草取. / For non-metallic material, add alkaline digestion reagent and heat to 90-95℃
- (2) 針對金屬材料加入純水,加熱至沸騰萃取. / For metallic material, add pure water and heat to boiling.

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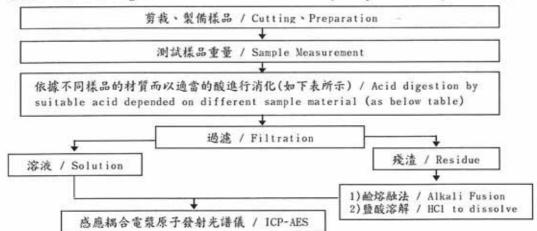
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- 1) 根據以下的流程圖之條件,樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) 測試人員:楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人:張啓興 / Name of the person in charge of measurement: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

元素以 ICP-AES 分析的消化流程圈

(Flow Chart of digestion for the elements analysis performed by ICP-AES)



纲,纲,绍,垾锡 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氮氯酸,雙氧水 / Aqua regia, HNOs, HC1, HF, H:Os
玻璃 / Glass	硝酸,氫氰酸 / HNOs/HF
金,銪,宛,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNOs
型形 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H.SO,, H.O,, HNO, HCI
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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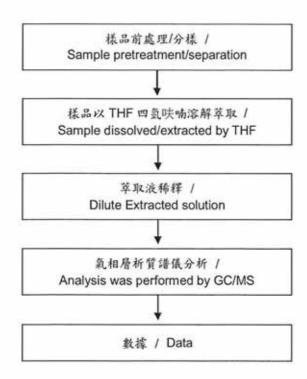
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 测试人員:徐毓明 / Name of the person who made measurement: Andy Shu
- 测試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang

【測試方法/Test method: IEC 62321-8】



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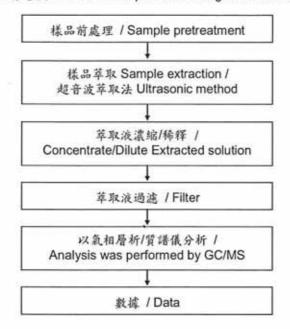
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六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 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



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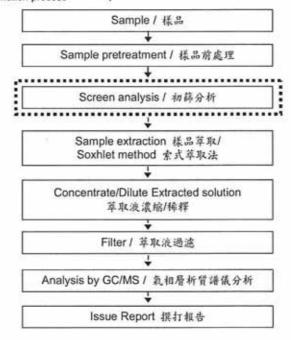
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多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 测試人員: 翁赐彬 / Name of the person who made measurement: Roman Wong
- 测試負责人: 張啓興 / Name of the person in charge of measurement: Troy Chang

初次测试程序 / First testing process -選擇性篩檢程序 / Optional screen process ****

磁認程序 / Confirmation process - · - · ▶



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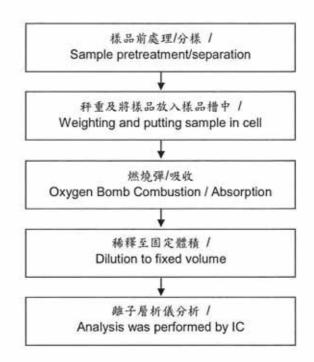
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鹵素分析流程圖 / Analytical flow chart of halogen content

- 测試人員: 陳恩臻 / Name of the person who made measurement: Rita Chen
- 测試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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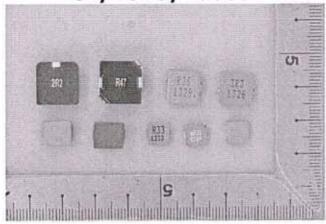
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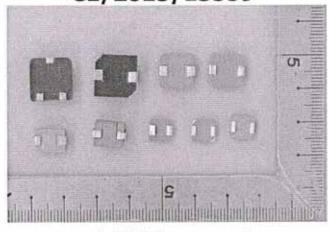
* 照片中如有箭頭標示,則表示爲實際檢測之樣品/部位. *

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

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PG0936.113NLT 9220-20 9310-16 PM06-2N7 PM06-39NJ A01TK 1206CS-471XJ HC2LP-R47-R HC2-R47-R HC3-2R2-R HCF13053R3-R 1206CS-151XG RCH664NP-140L RCH664NP-4R7M RCH8011NP-221L RCP1317NP-332L RCP1317NP-391L RCR1010NP-470M