承　認　書
SPECIFICATION FOR APPROVAL

研揚科技股份有限公司

Customer P/N：
客戶料號：175921156B

Dreamer P/N：
產品料號：DSA-00273

DESCRIPTION：
規格描述：Ø 94.3*65.2 mm FanSink

APPROVED NO：	APPROVED DATE：	EDITION：
承認編號：	承認日期：2015/03/23	版次：**0.5**

承認	單位 DEPARTMENT	主管 CHIEF	核對 CHECKED	承認 APPROVED
	Alan	Damon	Queena	

夢想家創新有限公司
Dreamer Creation Co.; Limited
新北市板橋區萬板路 188 巷 2 弄 2 號 1 樓
TEL：886-2-8252-6990　FAX：886-2-8252-7296

工程變更歷程記錄

申請日期	修改前版次	修改前料號	修改後版次	修改後料號	修改原因及變更後規格說明
2013/8/15	0.1	DSA-00273	0.2	DSA-00273	風扇框腳座避位抬高
2013/10/15	0.2	DSA-00273	0.3	DSA-00273	風扇Label 改為綠底白字
2014/6/20	0.3	DSA-00273	0.4	DSA-00273	更新我司名稱為夢想家創新有限公司
2015/3/23	0.4	DSA-00273	0.5	DSA-00273	鋁擠底部剖溝改為圓形

正式圖面

REVISIONS							
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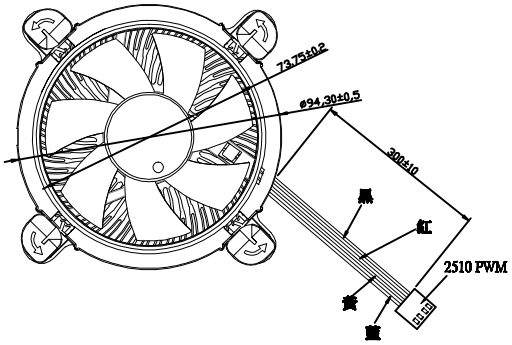
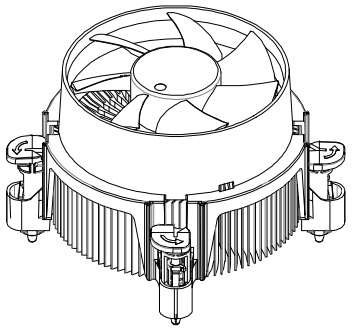
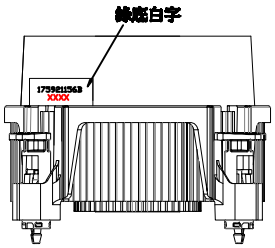
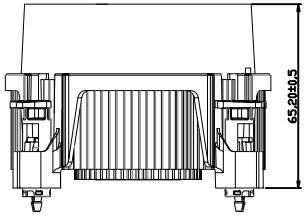
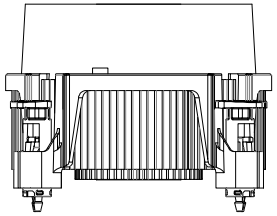
C	DRAWN	Alan	2013/10/15				
D	DRAWN	Alan	2015/03/23				

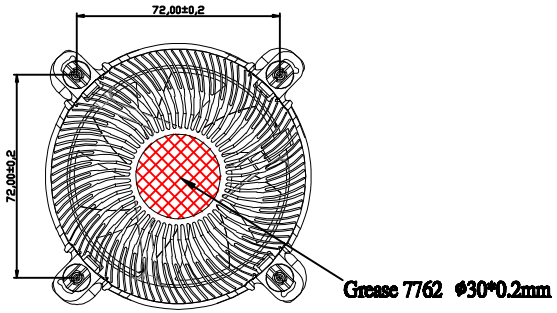












Dreamer Tech Co. Limited			MATERIAL	FINISH	UNIT MM	SCALE 1:1	PART NAME DSA-00273 組合圖	DWG NO.
	TOLERANCE UNLESS NOTED	0.0~ 5.0 ±0.2 5.0~ 20.0 ±0.3 20.0~ 50.0 ±0.5	50.0~100.0 ±0.9 R=0.5 ANGULAR ±3°	APPROVED BY	CHECKED BY Damon	DRAWN BY Alan	DATE 2015/03/23	PART NO DSA-00273	REVISION D

正式圖面

REVISIONS							
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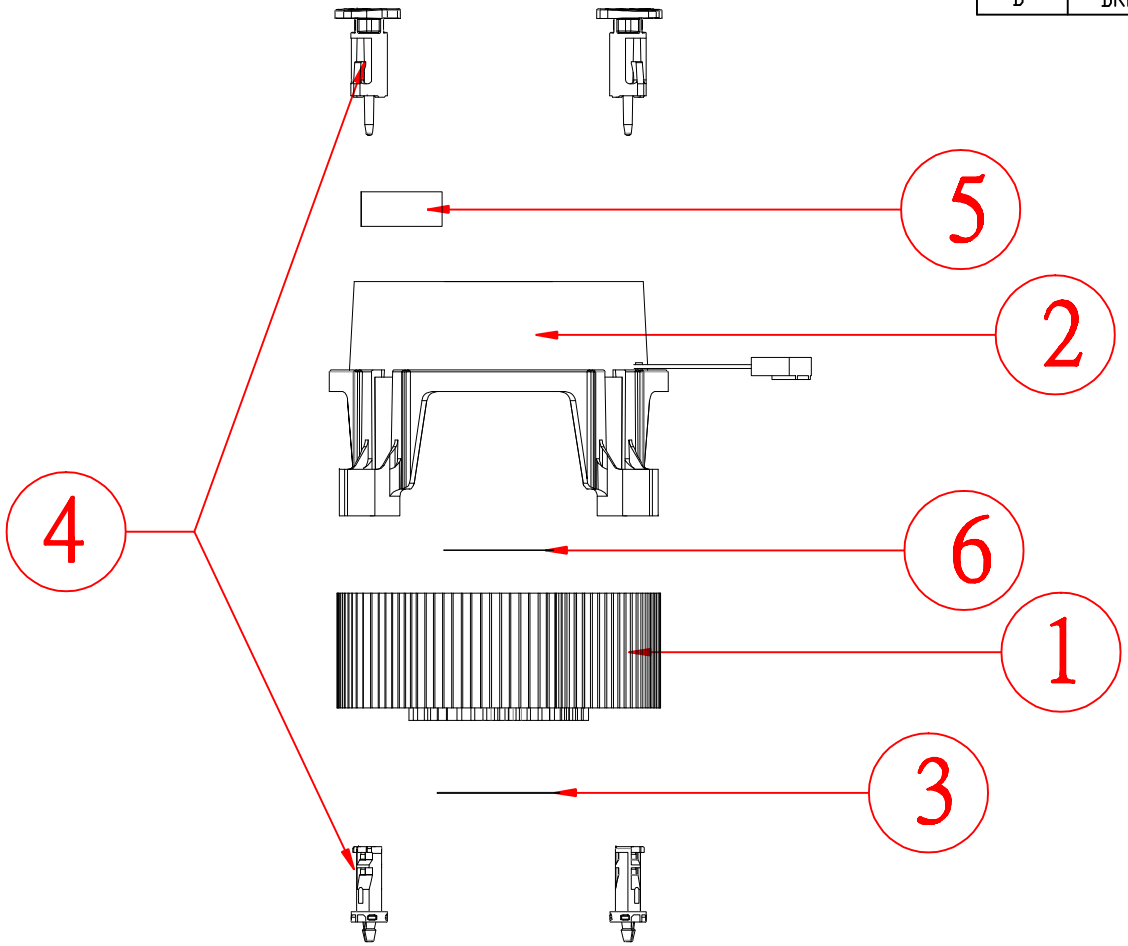
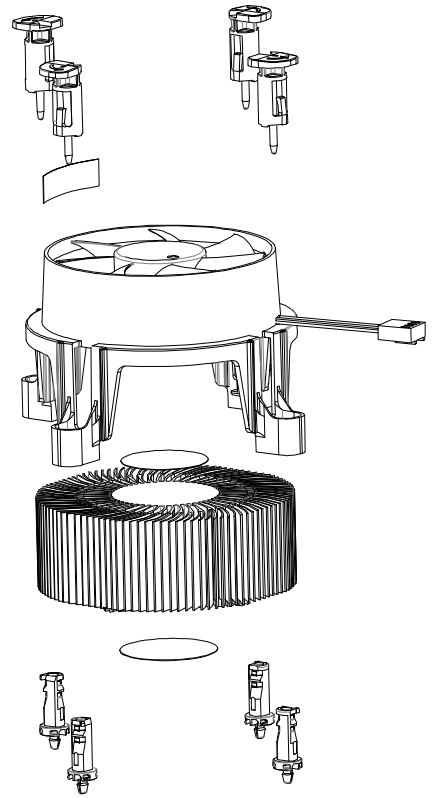
D	DRAWN	Alan	2015/03/23				





項目號	物料號	物料名	描述	數量
1	DSB-00178	Sink	尺寸:ø90*35.5 mm	1
2	DSC-00163	Fan	8025 4500RPM,IE軸 2BALL	1
3	DSF-00047	Thermal Grease	Gram:7M2,尺寸:93*92 mm	1
4	DSD-00011	Clip	ø10*35.3 mm	4
5	DSZ-00012	Model name 貼紙	30*9.6*0.1 mm	1
6	DSY-00009	Fan Label	model name	1

Dreamer Tech Co. Limited	MATERIAL	FINISH	UNIT MM	SCALE 1:1	PART NAME: DSA-00273 風扇圖	DWG NO.
TOLERANCE UNLESS NOTED 0.0~ 5.0 ±0.2; 5.0~ 20.0 ±0.3; 20.0~ 50.0 ±0.5; 50.0~100.0 ±0.9; R=0.5; ANGULAR ±3°	APPROVED BY	CHECKED BY Damon	DRAWN BY Alan	DATE 2015/03/23	PART NO. DSA-00273	REVISION D

正式圖面

REVISIONS							
REV	DESCRIPTION	DFT	DATE	CHK	DATE	APVD	DATE
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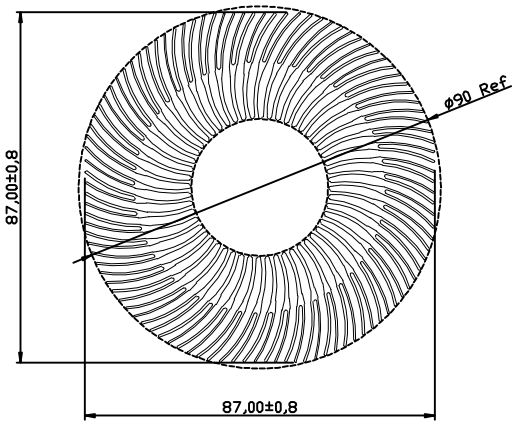
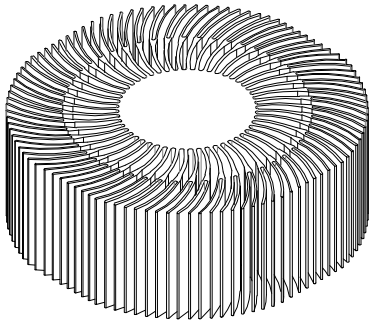
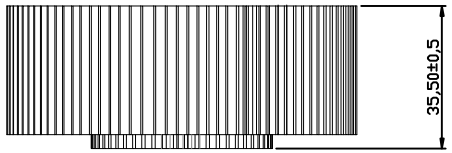
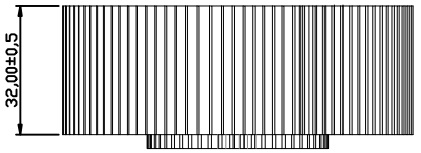
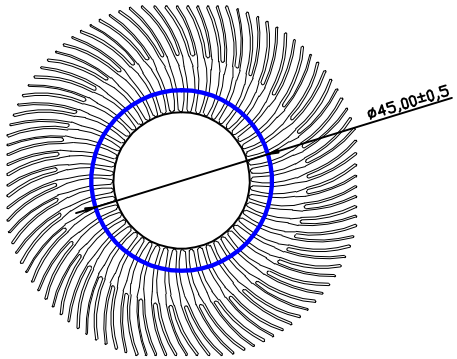
D	DRAWN	Alan	2013/11/06				

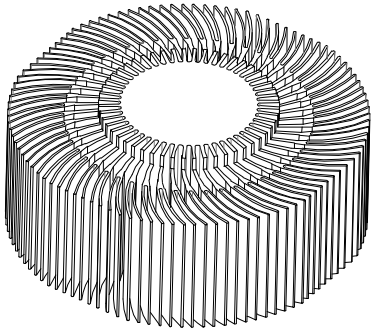








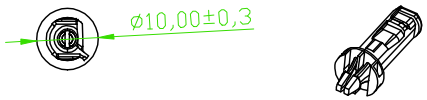


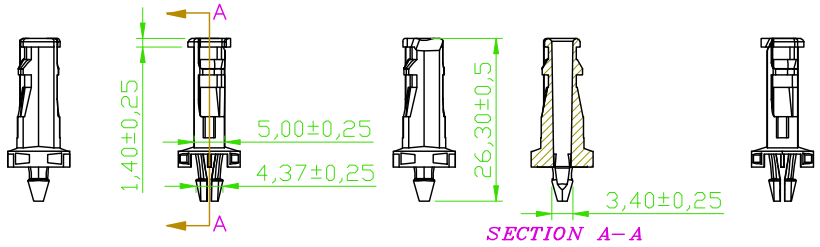


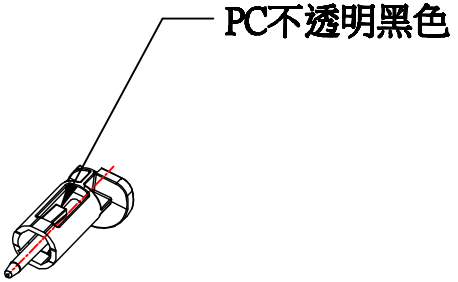
Dreamer Tech Co. Limited		MATERIAL AL 6063T5	FINISH 洗白	UNIT MM	SCALE 1:1	PART NAME: DSA-00307 Sink	DWG NO.
	TOLERANCE UNLESS NOTED 0.0~ 5.0 ±0.2; 5.0~ 20.0 ±0.3; 20.0~ 50.0 ±0.5; 50.0~100.0 ±0.9; R=0.5; ANGULAR ±3°	APPROVED BY	CHECKED BY Alan	DRAWN BY Alan	DATE 2013/11/06	PART NO. DSB-00178	REVISION D

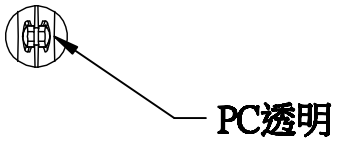
正式圖面

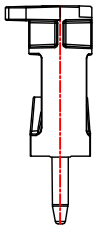
REVISIONS							
REV	DESCRIPTION	DFT	DATE	CHK	DATE	APVD	DATE
A	DRAWN	Alan	2011/05/13				
B							

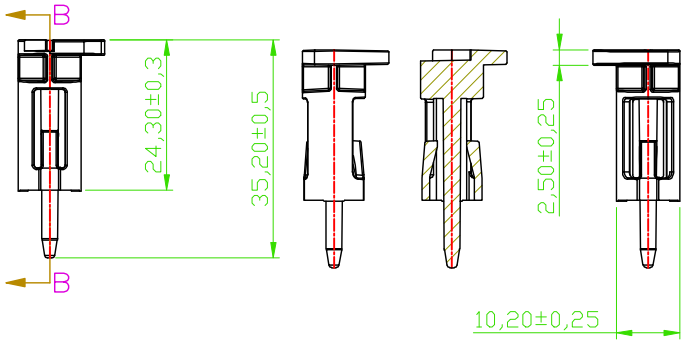


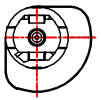








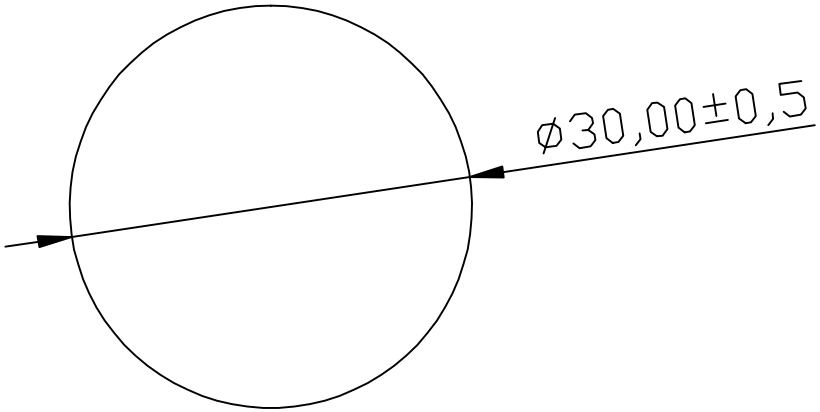




Dreamer Tech Co. Limited			MATERIAL	FINISH	UNIT	SCALE	PART NAME:	DWG NO.
					MM	1:1	DSA-00273 Clip	
	TOLERANCE UNLESS NOTED	0.0~ 5.0 ±0.2 5.0~ 20.0 ±0.3 20.0~ 50.0 ±0.5 50.0~100.0 ±0.9 R=0.5 ANGULAR ±3°	APPROVED BY	CHECKED BY Damon	DRAWN BY Alan	DATE 2011/05/13	PART NO. DSC-00011	REVISION A

正式圖面

REVISIONS							
REV	DESCRIPTION	DFT	DATE	CHK	DATE	APVD	DATE
A	DRAWN	Alan	2013/11/06				



Dreamer Tech Co. Limited		MATERIAL Grease	FINISH 7762	UNIT MM	SCALE 1:1	PART NAME: DSA-00307 Grease	DWG NO.
TOLERANCE UNLESS NOTED	0.0~ 5.0 ±0.2 5.0~ 20.0 ±0.3 20.0~ 50.0 ±0.5 50.0~100.0 ±0.9 R=0.5 ANGULAR ±3°	APPROVED BY	CHECKED BY Alan	DRAWN BY Alan	DATE 2013/11/06	PART NO. DSF-00047	REVISION A

正式圖面

REVISIONS							
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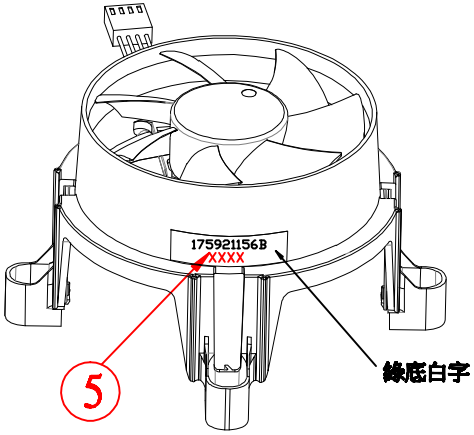
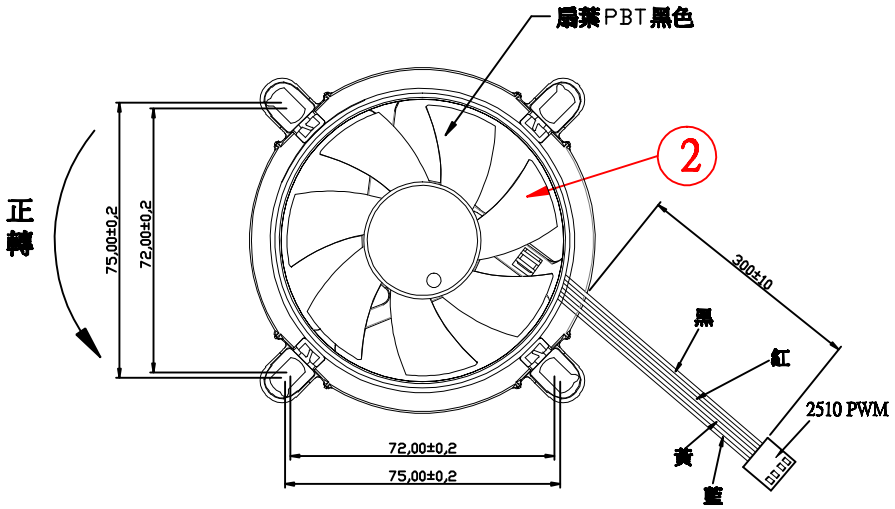
D	DRAWN	Alan	2013/10/15				

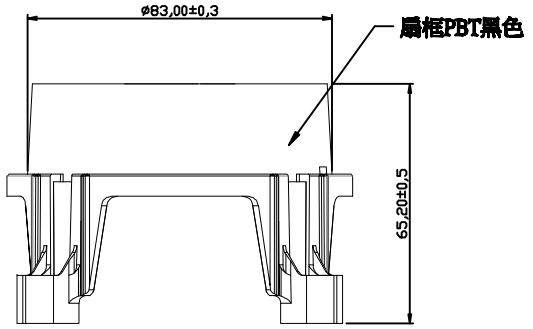




注意：貼紙需貼在出線口的對面

XXXX
年 週數

4500RPM
2Ball
正轉風扇



項次	零件編號	零件名稱	描述	數量
2	DSC-00163	Fan	8025 4500RPM 正轉風扇	1
5	DSZ-00012	Model name 貼紙	30*9.6*0.1mm	1

Dreamer Tech Co. Limited		MATERIAL PBT	FINISH 黑色	UNIT MM	SCALE 1:1	PART NAME: DSA-00273 Fan+貼紙	DWG NO.
	TOLERANCE UNLESS NOTED 0.0~ 5.0 ±0.2; 5.0~ 20.0 ±0.3; 20.0~ 50.0 ±0.5; 50.0~100.0 ±0.9; R=0.5; ANGULAR ±3°	APPROVED BY	CHECKED BY Damon	DRAWN BY Alan	DATE 2013/10/15	PART NO. Fan+貼紙	REVISION D

Engineering Department

Data Sheet – DC Brushless Fan

Model No.:	PLA08025B12HH-1-LV-A007	Sample Attached:	pcs
Safety Approvals:	TUV, UL, CE (See the attachments)		

SPECIFICATION

Item	Unit	Specification	Condition
· Dimension	mm	See dimensions drawing	
· Bearing Type		2 ball	
· Rated Volt	Volt	12.0	
· Operating Voltage	Volt	6.0~13.8	
· Start-up Voltage	Volt	6.0(On/Off)	Nominal(25℃)
· Rated Current	Amp	0.50(0.60Max)	At rated Volt (25℃)
· Power Consumption	Watt	7.20(Max)	At rated Volt (25℃)
· Rated Speed (PWM)	RPM	1500±300~4500±10%	At rated Volt (25℃)
· Rated Speed (FG)	RPM	4500±10%	At rated Volt (25℃)
· Max. Air Flow	CFM	57.18	At zero static pressure
· Max. Static Air Pressure	mm-H_20	6.90	At zero air flow
· Noise Level	dBA	45.00(Max)	At rated Speed
· Motor Protection	----	Reversed Polarity	----
· Other Features	Tacho Signal	Yes	
	Auto-restart	Yes	
	Thermal Control	No	
	PWM Control	Yes	
	VR Control	No	
	RD signal Control	No	
	Build-in LED	----	----
· Connection Lead Type	Lead Wire	300mm UL1061AWG26	
	Housing	2.54	Alternative
· Life Expectancy	Hours	110000	40℃(L10)
· Net Weight	Gram	68g/pcs (w/o Connector)	Ref

Notes

P/N Description

Example: PLA08025S12HH-1-LV-A000

PL	A	08025	S	12	M	-	X-XX	-	XXXX
①	②	③	④	⑤	⑥		⑦		⑧

① Corp. Mark — **PL:** Power Logic

② Product type: **A: Axial Fan** **B: Blower Fan** **D: Dish Fan** **P: Pump(Water Pump)**

③ Product Size

02506: 25*25*06mm **02510:** 25*25*10mm **03010:** 30*30*10mm
03828: 38*38*28mm **04007:** 40*40*07mm **04010**: 40*40*10mm
04015: 40*40*15mm **04020:** 40*40*20mm **04028:** 40*40*28mm

04056: 40*40*56mm **04510:** 45*45*10mm **05010:** 50*50*10mm
05012: 50*50*12.5mm **05015:** 50*50*15mm **05020:** 50*50*20mm
06010: 60*60*10mm **05015:** 50*50*15mm Φ50*10mm
Φ55*10mm **06015:** 60*60*15mm

06020: 60*60*20mm **06025:** 60*60*25mm **07015:** 70*70*15mm
07018: 70*70*18mm **07020:** 70*70*20mm **07025:** 70*70*25mm
07530: 75*75*30mm **08015:** 80*80*15mm **08020:** 80*80*20mm

08025: 80*80*25mm **08038:** 80*80*38mm **09225:** 92*92*25mm
09237: 92*92*37mm **09238:** 92*92*38mm Φ95*25.5mm
10025: 100*100*25mm **10478:** Φ104*78mm **12025:** 120*120*25mm
12032: 120*120*32mm **12038:** 120*120*38mm

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Dish Fan:

08040: 80*40mm **08108:** 80*108mm **09040:** 90*40mm
09108: 90*108mm **11137:** 110*137mm **11142:** 110*142.5mm
11144: 110*144mm **11151:** 110*151mm **12145:** 120*145mm

.....

Pump(Water Pump):

04540: 45*40mm **08065:** 80*65mm
08765: 87*65mm **08567:** 85*67mm
.....

④ Bearing Type
S: Sleeve Bearing (NDB) **B:** 2 Balls Bearing **S:** Long-Life Bearing(Label)
D: 1 Ball 1 Sleeve Bearing **S:** Hydro Bearing(Label) .....

⑤ Rated Voltage
03: $3.3V_{DC}$ **20:** $20V_{DC}$ **120:** $120V_{AC}$
05: $5V_{DC}$ **24:** $24V_{DC}$ **230:** $230V_{AC}$
07: $7.2V_{DC}$ **48:** $48V_{DC}$ .....
12: $12V_{DC}$ **53:** $53V_{DC}$

⑥ Rotate Speed
LL: Extra Low Speed **H:** High Speed
L: Low Speed **HH:** Extra High Speed
M: Medium Speed .....

⑦ Safety Mark — **1 2 3 4 1-LV ...**

⑧ Model Mark — **A000 A010 ...**

****** ① to ⑦ are safety model number. ******
****** ⑧ Serial NO. ******
****** Rotate speed upon customer's request. ******
****** Lead wire length and connector upon customer's request. ******

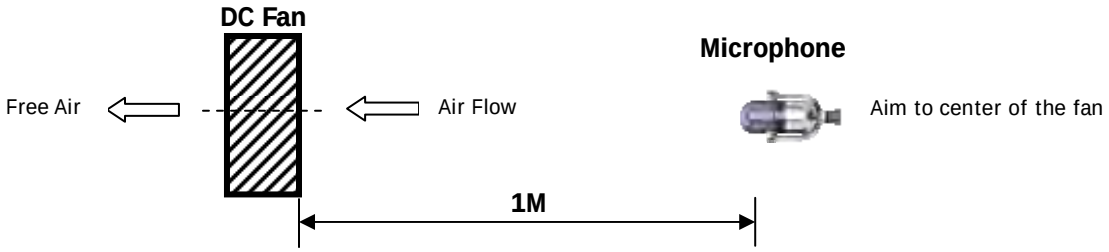
Notes

1. Characteristics Definition:

- Rated current, rated speed and rated input power shall reach bottom line of specification after 3 minutes continuous rotation at rated voltage and reach standard specification after 5 minutes continuous at rated volt.
- Starting voltage is the least voltage that enables to start the fan by sudden power on.
- Operating temperature at -10℃~+70℃. Storage temperature at -30℃~+85℃.
- At room temperature for 30minutes after the test
- Environment humidity at 10%(RH) 45℃ for 24 hours & 98% (RH) 45℃ for 24 hours.
- Insulation resistance at least 10MΩ at 500VDC between frame and both lead wires.
- Dielectric strength withstands 500VAC 1 minute 1mA between housing and both lead wires.
- Life expectance (MTTF) continuous operation at rated voltage and normal temperature & humidity.
- Connector will not be any broken at 1Kg for 15 seconds per piece.
- Lock test at least 72 hours. Fans work in normally after locked released.

2. Acoustic Sound Level Test Descriptions:

- At rated voltage in sound proof room background noise: testing criteria correspondent to ISO7779



3. Others:

- We, Power Logic, will not guarantee the products if the applications of our products are exceeded the limitation which is specified on this specification.
- In case of changes of the specification specified on this document. A written notice is requested in advance.
- Please do not touch the impeller with the pressure and never bring the fan with lead wire. The bearing and lead wire may be damaged.
- No guarantee on the products against the safety problem or failure caused by powder dust, drop of water or insect.
- If there is any data or related documentation different from this data sheet. This data sheet is the principle reference.
- Please do not use the fan in the environment of corrosive gas or liquid or any detrimental gas.
- Please do not store the fan in the environment of high/low temperature, high humidity or detrimental gas. Please store within six months, every six months, shall be a leakage of electric current to the fan, even though the fan is stored in room temperature.
- During the installation of the fan, please pay substantial attention to possible notice caused by resonance vibration and shock.
- It is very important to notify that avoid to drop from 0.6 meter height when in any movement or operation, it will impact the balance of blade. Especially ball bearing structure is avoided to drop down.
- The torque of the screw which locked the frame should not exceed 4Kg/f.
- All of test instruments should contact smoothly on the ground otherwise will cause fan interference or damage.
- Please be careful that revolution signal lead wire shall not have any voltage directly applied. It should damage inner circuit.
- Noise:Static listen at three sides,there is not any sound except the cutting wind sound.
- Not all fans are provided with the lock rotor protection feature, If you impair the rotation of the impeller for the fans that do not have this function,the performance of those fans will lead to failure.
- It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
- Except where specifically stated,all tests are carried out at relative(ambient)temperature and humidity conditions of 25℃,65%.The test value is only for fan performance itself.
- Be certain to connect an"over 4.7UF" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.

Notes

4. Major Material List

item	Major Component	Material & Specification	Grade	UL NO.	Remark
1	Fan Frame	PBT	94V-0	E59481	8025 M frame
2	Fan blade	PBT	94V-0	E59481	8025 D blade
3	Shaft	Stainless steel (SUS420F /SUS420J2)			
4	Bearing	2 ball bearing			
5	Rubber magnet	Strontium ferrite		E202461	
6	Silicon steel strip	(H23)			
7	Enameled copper wires	Material & Specification 0.04 ~ 0.80mm	2UEW/2UEW-F	E229423 E225143 E196473	
8	Printed Circuit Board	Wiring printed single layer board	94V-0	E317342 E317642 E78022	
9	Lead wires	Polyvinyl Chloride enameled copper wires	94V-0	E170689 E204204	
10	Label	PET			
11	Connector housing	2.54	94V-0		
12	Label	White polyester			

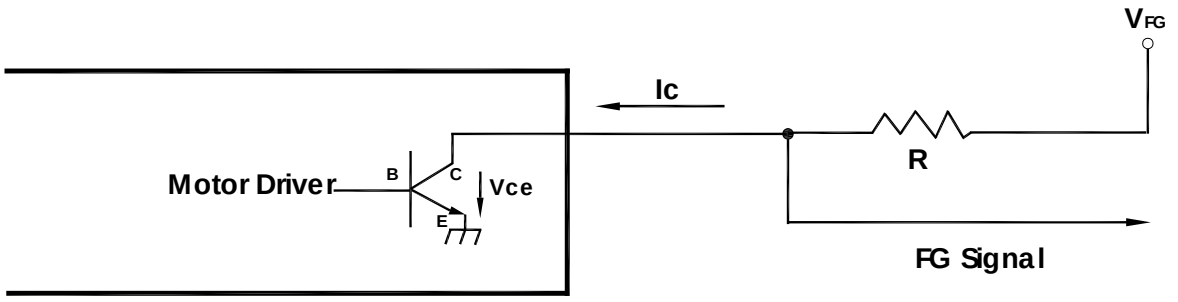
5. The Criteria of Content of Above Mentioned Material As Below:

Seq.	Material / Substance	Standard Reference	Content Criteria
1	Pb	RoHS	< 1000ppm
2	Hg	RoHS	< 1000ppm
3	Cd	RoHS	< 100ppm
4	Cr VI	RoHS	< 1000ppm
5	PBB	RoHS	< 1000ppm
6	PBDE	RoHS	< 1000ppm

Notes

6. Frequency Generator (FG) Signal:

Output Circuit – Open Collector Mode



Specification:

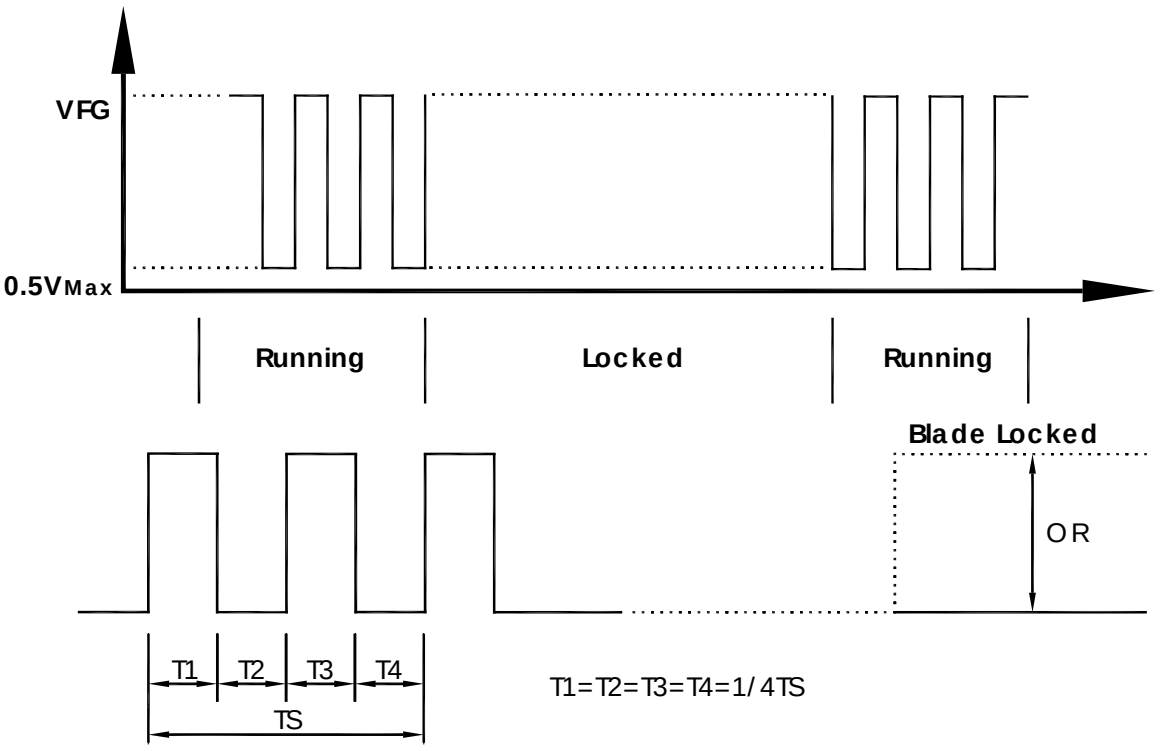
V_{cc}=+13.8V_{max}

I_c=10m$A_{(max)}$

$V_{ce(sat)}$=0.5V_{max}

$I_c=(V_{cc}-V_{ce})/R \leqq 10mA$

Output signal Waveform



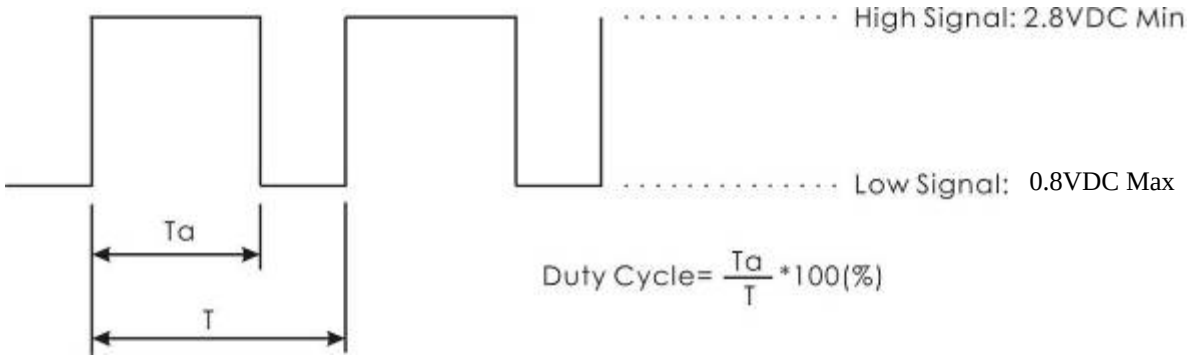
T1=T2=T3=T4=1/4TS

N=R.P.M.

TS=[60/N(sec)] * 4 Poles

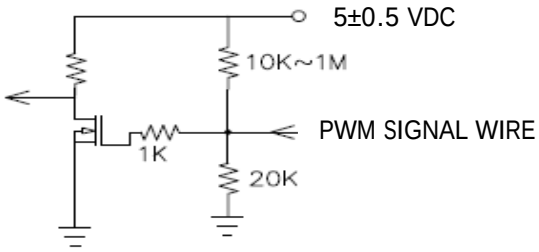
Notes

7.PWM Control Signal:

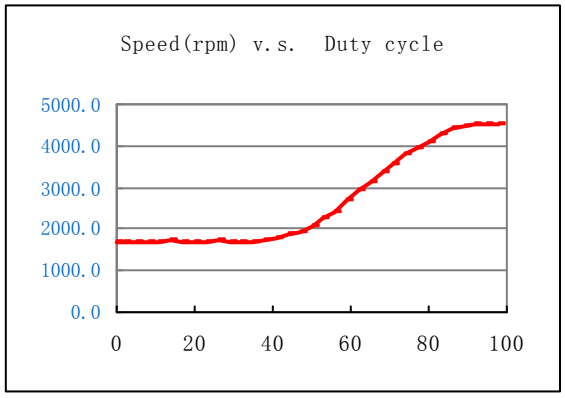


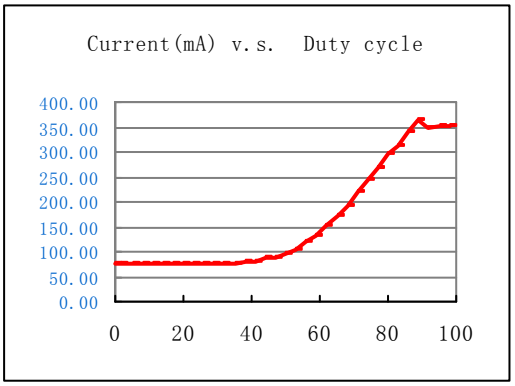
- The Frequency for control signal of the fan shall be able to accept a 21KHz~28KHz.
- The preferred operating frequency for the fan is 25KHz.

PWM control lead wire input impedance:



PWM Control Curve:

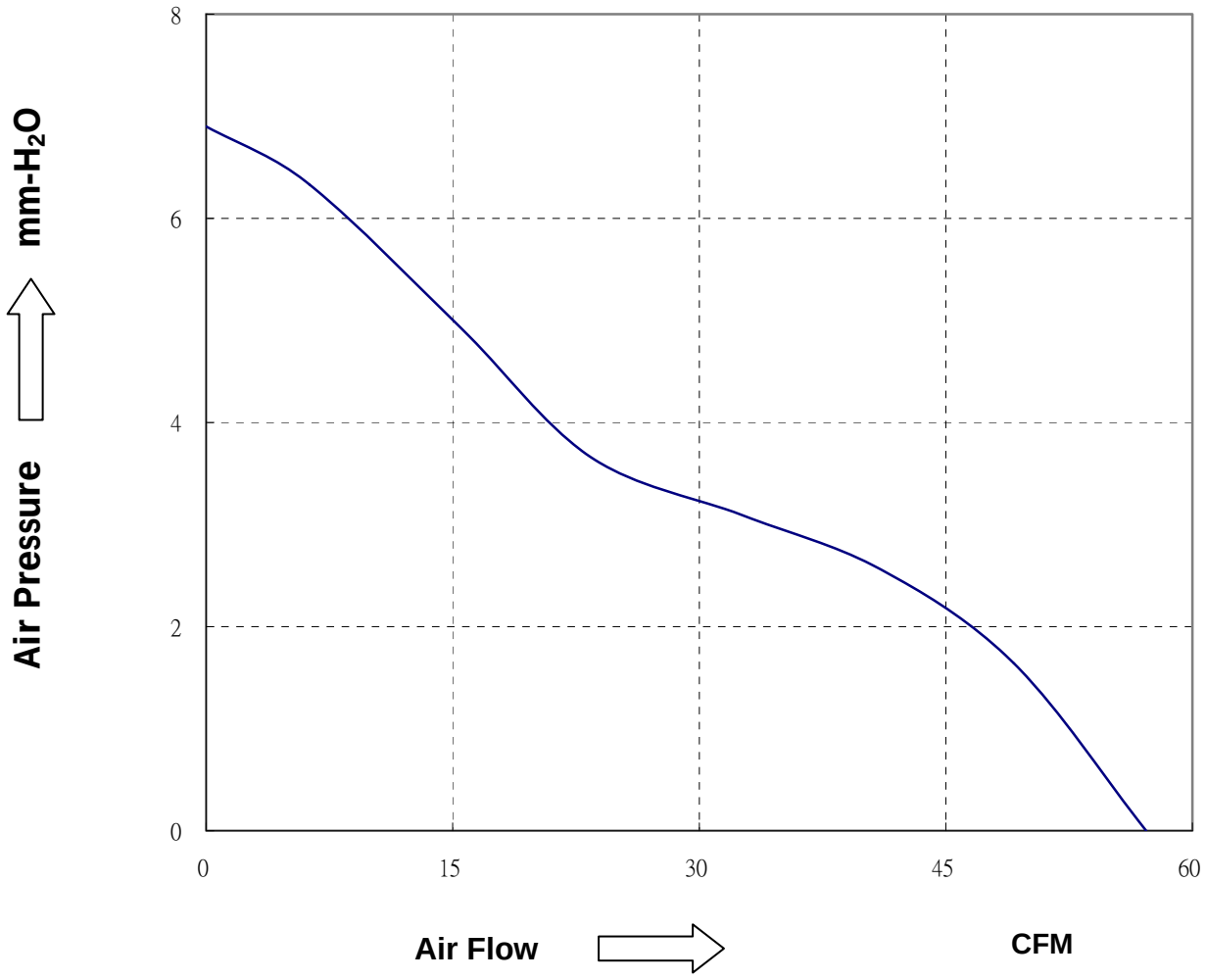




Duty Cycle	PWM Control signal disconnected	0~37%	100%
Speed(RPM)	4500±10%	1500±300	4500±10%
Current (mA)	600Max	100(Ref)	600Max

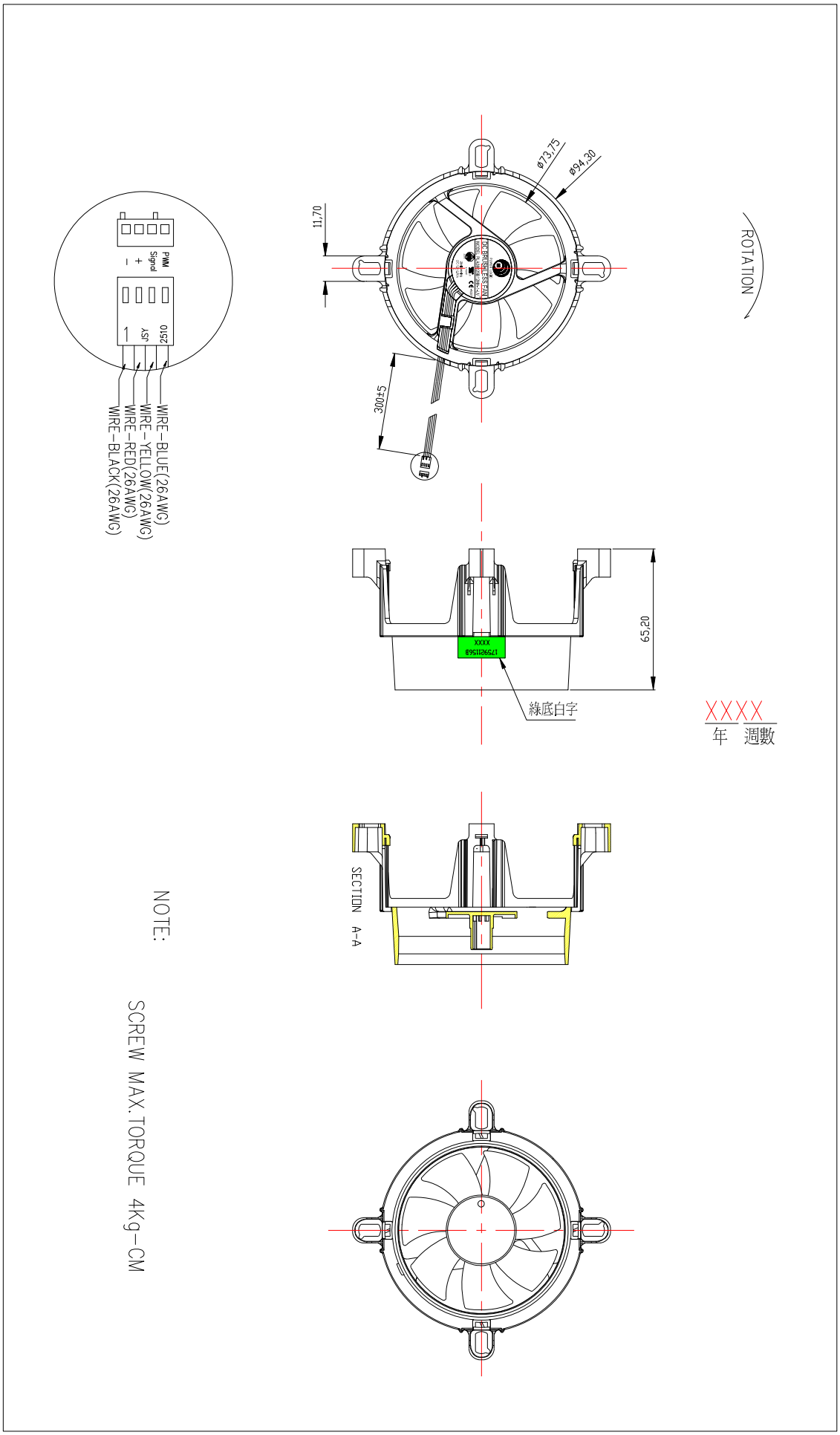
Notes

8. PQ Curve:



Test Condition:

- Input Voltage: Operation Voltage
- Temperature: Room temperature
- Humidity: 65%RH


PWM
Signal
+
-
2510
JST
1
WIRE-BLUE(26AWG)
WIRE-YELLOW(26AWG)
WIRE-RED(26AWG)
WIRE-BLACK(26AWG)
ø73.75
ø94.30
11.70
300±5
ROTATION
65.20
XXXX
綠底白字
XXXX
年 週數
SECTION A-A
NOTE:
SCREW MAX.TORQUE 4Kg-CM

Product MTTF Report

Power Logic Tech.(Dong Guan) Inc.

DC FAN LIFE EXPERIMENT REPORT

Experiment Name:**70℃ Accelerative Aging Test** Model: PLA08025B12HH-1-LV Sampling Q'ty: 56pcs

RequiredTest Time(Hrs)	Date for Test Beginning	Date for Test Termination	Failure (PCS)	Current Total Test Time (Hrs)
5568	**2006.8.5**	**2007.3.25**	0	5568

According to the equation for **Weibull distribution**,

MTTF=7*L10

And we rely on a zero failure Weibull test strategy and accelerated testing technique,to determine the total test time(**t**) for verifying the above life estimation by the equations,

$$t = 1.036*MTTF*[(B_{r;c})\div n]^{0.91}\div A_F$$

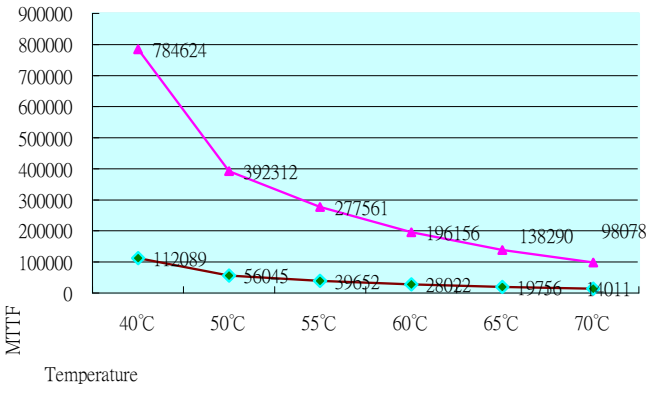
$$(A_F = 2^{(Ts-Tu)/10})$$

where,($B_{r;c}$) is Poisson distribution factor with the failure number of equal to 0 and the decimal confidence level of equal to 90%.

Stress/elevated Temperature Ts(℃) (Actual Test Temperature)	Unstress Temperature Tu(℃)	Acceleration Factor (A_F)	Quantity of Test Devices n(pcs)	Poisson Distribution Factor $B_{r;c}$	Required test time with zero failure t(Hrs)	Actual test time with zero failure t(Hrs)	Verified MTTF 40℃ (Hrs)	Verified L10 40℃ (Hrs)
70	40	8	56	2.3026	5568	5568	784624	112089

Poisson Distribution Factor	**Number of Failure**										
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
90%	2.3026	3.8897	5.3223	6.6808	7.9936	9.2747	10.532	11.77	12.994	14.206	15.406

Temperature for MTTF Estimation (℃)	Acceleration Factor A_F	Estimated MTTF (Hrs)	Estimated L10 (Hrs)
40℃	8.00	784624	112089
50℃	4.00	392312	56045
55℃	2.83	277561	39652
60℃	2.00	196156	28022
65℃	1.41	138290	19756
70℃	1.00	98078	14011



Fan permission criteria for the measurement after test:	**Evaluate**	
1.For current,the allowable descrease is less than 15%.		
2.For speed,the allowable descrease is less than 15%.	■Accept	□ Reject
3.For noise,the limit is less than spec.(max.).+3dB		

Approved: George Fan Audit: Skying Liu **Inspection: Hu Dong qin**

TUV - Certificate

Product Service

CERTIFICATE

No. B 12 12 34076 101

Holder of Certificate: **Power Logic Technology Inc.**
6F-2, No.16, Jian 8th Rd.,
23511 Jhonghe District, New Taipei City,
TAIWAN

Certification Mark:

Product: **Component fan**

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition the certification holder must not transfer the certificate to third parties. See also notes overleaf.

Test report no.: 6121012168101

Date, 2012-12-19

(Bill Lin)

Page 1 of 3

TÜV SÜD Product Service GmbH · Zertifizierstelle · Ridlerstraße 65 · 80339 München · Germany

TUV - Certificate

Product Service

CERTIFICATE
No. B 12 12 34076 101

Model(s):

PLB05020 Series, PLA08010 Series, PLP08078 Series,
PLP08567 Series, PLP08765 Series, PLA08025 Series,
PLA12025 Series, PLA12038 Series
Difference :
Model Example:

PL	P	08567	N	12	M	S
X1	X2	X3	X4	X5	X6	X7

X1 - Manufacturer code
X2 - Fan Type
"P": Pump (Water Pump)
"A": Axis Fan
"B": Blower Fan
X3 - Frame Dimension
05020: 50mm x 50mm x 20mm
08010: 80mm x 80mm x 10mm
08078: 80mm x 80 mm x78mm
08567: 85mm x 67mm
08765: 87mm x 65mm
08025: 80mm x 80 mm x25mm
12025: 120mm x 120 mm x25mm
12038: 120mm x 120 mm x38mm
X4 - Bearing Type
"S": Sleeve type
"B": Two ball bearing
"D": One ball bearing
"N": Nano Millimeter Ceramic type
"C": Ceramic Bearing
X5 - Input Voltage
"12": 12Vdc
"24": 24Vdc
X6 - Motor Speed
"HH": Ultra high speed
"H": High speed
"M": Middle speed
"L": Low speed
"LL": Extra low speed
X7 - Type
"C": CPU cooler
"S": System cooler
Custom code, can be -1-LV, -LV, -PWM

Parameters:

Rated input voltage:	12 or 24 Vdc
Rated input current:	See attachment
Protection class:	III
Max. ambient temperature:	40 °C
Degree of protection against ingress of liquids:	Ordinary

Remark: When installing,all requirements of below mentioned test standards must be fulfilled.

Tested according to:

EN 60950-1/A12:2011

Production Facility(ies):

68992

Page 2 of 3 Bill Li

TÜV SÜD Product Service GmbH · Zertifizierstelle · Ridlerstraße 65 · 80339 München · Germany TÜV®

TUV - Certificate

Attachment to the Certificate No. B 12 12 34076 101

Taiwan

The following models of Component Fan "PLB05020, PLA08010, PLP08078, PLP08567, PLP08765, PLA08025, PLA12025, PLA12038 Series" will be covered by above certificate:

Model-#	DC Ratings	Model-#	DC Ratings
PLB05020S24LL	24Vdc, 0.12A	PLB05020B24LL	24Vdc, 0.12A
PLB05020S24L	24Vdc, 0.14A	PLB05020B24L	24Vdc, 0.14A
PLB05020S24M	24Vdc, 0.16A	PLB05020B24M	24Vdc, 0.16A
PLB05020S24H	24Vdc, 0.18A	PLB05020B24H	24Vdc, 0.18A
PLB05020S24HH	24Vdc, 0.23A	PLB05020B24HH	24Vdc, 0.23A
PLB05020D24LL	24Vdc, 0.12A	PLB05020D24H	24Vdc, 0.18A
PLB05020D24L	24Vdc, 0.14A	PLB05020D24HH	24Vdc, 0.23A
PLB05020D24M	24Vdc, 0.16A		
PLA08010S24H	24Vdc, 0.25A	PLA08010B24H	24Vdc, 0.25A
PLA08010S24M	24Vdc, 0.10A	PLA08010B24M	24Vdc, 0.10A
PLA08010S24L	24Vdc, 0.08A	PLA08010B24L	24Vdc, 0.08A
PLA08010D24H	24Vdc, 0.25A	PLA08010D24L	24Vdc, 0.08A
PLA08010D24M	24Vdc, 0.10A		
PLP08567N12MS	12Vdc, 600mA	PLP08567N12LS	12Vdc, 450mA
PLP08765N12MC	12Vdc, 600mA	PLP08765N12LC	12Vdc, 500mA
PLP08078C12HHS	12Vdc, 1.5A		
PLA08025S12HH-1-LV	12Vdc, 0.50A		
PLA12025S12HH-LV	12Vdc, 0.50A		
PLA12038S12HH-PWM	12Vdc, 1.25A		
PLA12038BS12HH-PWM	12Vdc, 1.25A		

Model Example:

PL	P	08567	N	12	M	S
X1	X2	X3	X4	X5	X6	X7

X1 – Manufacturer code

X2 – Fan Type
"P": Pump (Water Pump)
"A": Axis Fan
"B": Blower Fan

X3 – Frame Dimension
05020: 50mm x 50mm x 20mm
08010: 80mm x 80mm x 10mm
08078: 80mm x 80mm x 78mm
08567: 85mm x 67mm
08765: 87mm x 65mm
08025: 80mm x 80mm x 25mm
12025: 120mm x 120mm x 25mm
12038: 120mm x120mm x 38mm

X4 – Bearing Type
"S": Sleeve type
"B": Two ball bearing
"D": One ball bearing
"N": Nano Millimeter Ceramic type
"C": Ceramic Bearing

X5 – Input Voltage
"12": 12Vdc
"24": 24Vdc

X6 – Motor Speed
"HH": Ultra high speed
"H": High speed
"M": Middle speed
"L": Low speed
"LL": Extra low speed

X7 – Type
"C": CPU cooler
"S": System cooler
Custom code, can be -1-LV, -LV, -PWM

Date: 2012-12-19

TÜV SÜD ASIA LTD. TÜV SÜD TAIWAN

Testing Laboratory

Bill Lin

Bill Lin

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UL - Certificate

ONLINE CERTIFICATIONS DIRECTORY

GPWV2.E192307
Fans, Electric - Component

Page Bottom

Fans, Electric - Component

See General Information for Fans, Electric - Component

POWER LOGIC TECHNOLOGY INC E192307
6F-2 16 JIAN 8TH RD
JHONGHE DISTRICT
NEW TAIPEI, 235 TAIWAN

AC fans, Models PLA04010S230L, PL40S230L, PLA04010S120L, PL40S120L, PLA04010S120L-1, PL40S120L-1, PLA04010S120L-2, PL40S120L-2,

Models PL40S120LL, PLA04010S120LL.

DC fans, Models PLA08015(X)12(U), PL81(X)12(U), PLA08015(X)24(U), PL81(X)24(U), where (X) may be S, B or D, (U) may be H, M or L.

Models PLA06010(X)12(Y), PL61(X)12(Y), PLA06010(X)24(U), PL61(X)24(U), PLA07015(X)12(Y), PL71(X)12(Y), PLA07015(X)24(U), PL71(X)24(U), PLA07025(X)12(U), PL70(X)12(U), PLA07025(X)24(U), PL70(X)24(U), PLA12025(X)12(U), PL12(X)12(U), PLA12025(X)24(V), PL12(X)24(V), where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L, (V) may be M or L.

Models PLA04010(X)05(Y), PL40(X)05(Y), PLA04010(X)12(Y), PL40(X)12(Y), PLA05010(X)05(Z), PL50(X)05(Z), PLA05010(X)12(U), PL50(X)12(U), PLA08025(X)12(U), PL80(X)12(U), PLA08025(X)24(U), PL80(X)24(U), PLA09225(X)24(U), PL92(X)24(U), PLA09225(X)12(V), PL92(X)12(V) where (X) may be S, B or D, (Y) may be HH, H, M or L, (Z) may be H or M, (U) may be H, M or L, (V) may be M or L.

Models PLA04020(X)05(Y), PL42(X)05(Y), PLA04020(X)12(Y), PL42(X)12(Y), PLA06015(X)12(Y), PL60(X)12(Y), PLA06015(X)24(Y), PL60(X)24(Y), PLA04009(X)05M, PL49(X)05M, PLA04009(X)12M, PL49(X)12M, where (X) may be S, B or D, (Y) may be HH, H, M or L.

Models PLA05015(X)12(V), PL51(X)12(V), PLA05015(X)24(V), PL51(X)24(V), PLA06015(X)12(U), PL60(X)12(U), PLA06015(X)24(U), PL60(X)24(U), PLA08020(X)12(Y), PL82(X)12(Y), PLA08020(X)24(V), PL82(X)24(V), PLA08025(X)12(Y)-1, PL80(X)12(Y)-1, PLA08025(X)24(V)-1, PL80(X)24(V)-1, where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L, (V) may be M or L.

Models PLA12038(X)12(U), PL13(X)12(U), PLA12038(X)24(U), PL13(X)24(U), PLA12038(X)48(Z), PL13(X)48(Z), PLA02506(B)05(U), PL25(B)05(U), PLA02506(B)12(U), PL25(B)12(U), PLA08025(X)12(Y)-2, PL80(X)12(Y)-2, PLA08025(X)12(Y)-4, PL80(X)12(Y)-4, PLA04710(X)05(U), PLV4(X)05(U), PLA04710(X)12(Y), PLV4(X)12(Y), where (X) may be S, B or D, (B) may be B or D, (Y) may be HH, H, M or L, (U) may be H, M or L, (Z) may be H or M.

Models PLA08025(X)12HH, PL80(X)12HH, PLA12038(X)12HH, PL13(X)12HH, PLA12038(X)12HH PWM, PL13(X)12HH-PWM, PLA06020(X)12(Y), PL62(X)12(Y), PLA06020(X)24(Y), PL62(X)24(Y), PLA06025(X)12(Y), PL65(X)12(Y), PLA06025(X)24(Y), PL65(X)24(Y), PLA09238(X)12(U), PL93(X)12(U), PLA09238(X)24(U), PL93(X)24(U), PLB07530(X)12(Y), PL07530(X)12(Y), PLB07530(X)24(Y), PL07530(X)24(Y), PLA05012(X)12(Y), PL52(X)12(Y), PLA12025(X)12(Y)-2, PL12(X)12(Y)-2, PLA12025(X)12(Y)-4, PL12(X)12(Y)-4, PLA03010(X)12(U), PL30(X)12(U), PLA03010(X)05(U), PL30(X)05(U) series, where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L; Models CF12S25SH12B, PL12025S12VH-K.

Models PLA04010(X)05(Y)-1, PL40(X)05(Y)-1, PLA04010(X)12(Y)-1, PL40(X)12(Y)-1, PLA04010(X)24(Y)-1, PL40(X)24(Y)-1, PLA04010(X)24HH-2, PL40(X)24HH-2, PLA04020(X)12(Y)-1, PL42(X)12(Y)-1, PLA05010(X)12(U)-1, PL50(X)12(U), PLA05015(X)12H, PL51(X)12H, PLA05015(X)24H, PL51(X)24H, PLA07025(X)12HH, PL70(X)12HH, PLA08020(X)24H, PL82(X)24H, PLA08025(X)24HH, PL80(X)24HH, PLA08025(X)24H-1, PL80(X)24H-1, PLA08025(X)24HH-1, PL80(X)24HH-1, PLA09225(X)12(U)-2, PL92(X)12(U)-2, PLA09225(X)24(U)-2, PL92(X)24(U)-2, PLA09238(X)48(U), PL93(X)48(U), PLD11142(X)12M-1, PL11142(X)12M-1, PLD11142(X)12M, PL11142(X)12M, PLD11144(X)12M, PL11144(X)12M, PLA04010(X)24(Y), PL40(X)24(Y), where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L.

Models PLA04010(X)05(Y)-2, PL40(X)05(Y)-2, PLA04010(X)12(Y)-2, PL40(X)12(Y)-2, PLA04010(X)12LL, PL40(X)12LL, PLA07015(X)24HH-1, PL71(X)24HH-1, PLA07015(X)24HH, PL71(X)24HH, PLA09225(X)12(U)-1, PL92(X)12(U)-1, PLA09225(X)24(U)-1, PL92(X)24(U)-1, where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L.

Models PLA02510(X)05(U), PL20(X)05(U), PLA02510(X)12(U), PL20(X)12(U), PLB03010(X)05(U), PL03010(X)05(U), PLB03010(X)12(U), PL03010(X)12(U), PLB06015(X)05(U), PL06015(X)05(U), PLB06015(X)12(U), PL06015(X)12(U), PLA09225(X)12(Y)-3, PL92(X)12(Y)-3, PLA09225(X)12(U)-4, PL92(X)12(U)-4, PLA09225(X)24(Y)-3, PL92(X)24(Y)-3, PLA10025(X)12(Y), PL10(X)12(Y), PLA10025(X)12(Y) 4, PL10(X)12(Y)-4, PLA10025(X)24(Y), PL10(X)24(Y), PLA06025(X)48(Y), PL65(X)48(Y), where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L.

Models PLA08025(X) 12HH-1-LV, PL80(X) 12HH-1-LV, PLA12025(X) 12HH-LV, PL12(X) 12HH-LV, PLP08765N12MC, PL8765N12MC, PLP08765N12LC, PL8765N12LC, PLP08567N12MS, PL8567N12MS, PLP08567N12LS, PL8567N12LS where (X) may be S, B or D.

Models PLA04010(X)12(Y)-3, PL40(X)12(Y)-3, PLA07015(X)05(U),PL71(X)05(U), PLA05010(X)12(Y)-2, PL50(X)12(Y)-2, PLA06010(X)05(U), PL61(X)05(U), PLA04020(X)24(Y), PL42(X)24(Y), PLA08025(X)48(U), PL80(X)48(U), PLA05010(X)05(Y)-2, PL50(X)05(Y)-2, where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L.

Models PLB06015(X)12HH-1, PL06015(X)12HH-1, PLA05010(X)12(Y)-4, PL50(X)12(Y)-4, PLB05010(X)12(U)-3, PL50(X)12(U)-3, PLA08038(X)12(U), PL83(X)12(U), PLA08038(X)12LL, PL83(X)12LL, PLA08020(X)12HH, PL82(X)12HH, where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L.

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Models PLB07018X12(U)-1, PL07018X12(U)-1, PLA07015X12(Y)-1, PL71X12(Y)-1, where (X) may be S, B or D, (Y) may be HH, H, M or L, (U) may be H, M or L.

Models PLB05010(X)12(Y), PL05010(X)12(Y), PLA05810(X)12(Y), PLV6(X)12(Y), PLA09225(X)12(Y)-5, PL92(X)12(Y)-5, where (X) may be S, B or D, (Y) may be HH, H, M or L.

Models PLA04010X12EL, PL40X12EL, PLA09225(X)12H, PL92(X)12H, PLA04020(X)05(Y)-1, PL42(X)05(Y)-1, PLA06015(X)05(Y)-1, PL60(X)05(Y)-1, where (X) may be S, B or D, (Y) may be HH, H, M or L.

Models PLA07020(X)12(A), PL92(X)48(A), PLB12032(X)12(B), PLB12032(X)24(B),PL12(X)48(A), PL81(X)12HH, PLD09225(X)12(A), PLA09238(X)12(A)-1, PLB10478(X)12(A), PLD05010(X)12(A), PLA08025(X)05(B)-1, PLA12025(X)24H, , PLA08015(X)12HH, PLA09225(X)48(A), PLA12025(X)48(A) series, where (A) may be HH, H, M or L, (B) may be H, M or L, (X) may be S, D or B.

Models PLA04028(X)12(Y), PLA04028(X)24(Y), PLA04028(X)12H, PLA04028(X)24H, PLA12025(X)24HH series, where (X) may S, B or D, (Y) may be L or M.

Models PLA05010(X)24(Y), PLB05015(X)12(Y), PLB05710(X)12(Y), PLD06010(X)12(Y), PLA06025(X)12VH, PLA08038(X)48(Y), PLB09523(X)12(Y) series, where (X) may be S, D or B, (Y) may be L, M, H or HH.

Models PLA08038(X)24(Y), PLA09238(X)24(Y)-1, PLA09238(X)48(Y)-1, PLB09533B12(Z), PLB09533B24(Y), PLA12032(X)12(Z), PLA12032(X)24(Z), PLA12032(X)48(Z) series, where (X) may be S, B or D, (Y) may be H, M or L, (Z) may be HH, H, M or L.

Models PLA05010(X)12HH series, where (X) may be S, D or B.

Models PLA04015(X)05(U), PLA04015(X)12(U), PLA04015(X)24(V), PLA05015(X)05(U), PLA05020(X)05(U), PLA05020(X)12(U), PLD08010(X)12(U), PLA08010(X)05(U), PLA08010(X)12(U), PLB07010(X)12(U), PLA12540(X)14(V), PLA12038(X)12(W)-1, PLA12038(X)24(V)-1 series, where (U) may be L, M, H or HH, (V) may be L, M or H, (W) may be L or M, (X) may be S, D or B.

Models PLA02506(X)03(U), PLA04007(X)03(U), PLA04007(X)05(U), PLA04007(X)12(U), PLA04010(X)03(U)-C, PLA04010(X)12VH, PLB04010(X)03(Z), PLB04010(X)05(W), PLB04010(X)12(W), PLB04010(X)24(W), PLA04020(X)03(U)-B, PLA04028B12HH, PLA06038B12(Y), PLA08020(X)24HH, PLB08020(X)05(U), PLB08020(X)12(W), PLB08020(X)24(W), PLA08025(X)05(T)-3, PLA08025(X)12L-3, PLA08025(X)24(W)-3, PLA08025(X)48(W)-3, PLB07525(X)12(W), PLA09215(X)05(T), PLA09215(X)12(U), PLA09215(X)24(U), PLA12025(X)24VH, PLB09733B12(V), PLB09733B24(V), PLA14025(X)12(V), PLA14025(X)24(V), PLA12038B48(U)-1 series, where (X) may be S, B or D, (T) may be L or M, (U) may be L, M, H, (V) may be LL, L, M or H, (W) may be L, H, M or HH, (Y) may be LL, L, M, H or HH, (Z) may be LL, M, H, HH.

Models PLA17251B12(T), PLA17251B24(U), PLA17251B48(U), PLA07010X05(T), PLA07010X12(U), PLB07010X05(W), PLA04056B12(U) series, where X may be S, B or D, (T) may be L, M or H , (U) may be L, M, H or HH, (W) may be L, M.

Models PLA03820X12(T), PLA03820X24(T), PLA03828B12(T), PLA03828B24(U), PLA06025X05(T), PLB07222X12(T), PLA13525X05(U), PLA13525X12(T), PLA13525X24(T), PLA14025X05(W) series, where X may be S, B or D, (T) may be L, M, H or HH, (U) may be L, M or H, (W) may be LL, L, M.

Models PLB05020X12(T), PLB07020X05(U), PLB07020X12(U), PLA08025B12(W)-5, PLA08025B24(W)-5, PLA08025B48(W)-5, PLA09225B12(W)-6, PLA09225B24(W)-6, PLA09225B48(W)-6, PLA12025B12(U)-1, PLA12025B24(U)-1, PLA12025B48(U)-1 series, where X may be S, B or D, (T) may be L, M, H, HH or VH, (U) may be L, M, H or HH, (W) may be L, M or H.

Models PLB05020(X)24(Y), PLB08020(X)12(Z), PLA08010(X)24(R) series, where (X) may be S, B or D, (Y) may be HH, H, M, L or LL, (Z) may be HH, H, M or L, (R) may be H, M or L.

Models PLD10010X12L, PLD10010X12M, PLD10010X12H, PLD10010X12HH, PLA04020X12VH, PLA06025X05L, PLA06025X05M, PLA06025X05H, PLA06025X05HH, PLA07025B12VH, PLA09225X12HH-A. Where (X) may be S, B or D.

Model PLD09210(X)12(T) series, where (X) may be S, B or D; (T) may be L, M, H or HH.

Model PLB07222(X)24(Y)(Z) series, where (X) may be S, B or D;(Y) may be L, M , H or HH; (Z) may be -1, -3, -A, -B, -C or blank.

Models PLB06625(X)12(X)(Z), PLB07016(X)12(Y)(Z), PLD10015(X)12(Y1)(Z), where (X) may be S, B or D; (Y) may be HH, H, M, L; (Y1) may be H, M or L; (Z) may be -1, -3, -A, -B, -C or blank.

Models PLD06010(X)24(Y)(Z), PLB11020(X)12(Y)(Z), where (X) may be S, B or D, (Y) may be HH, H, M, L, (Z) may be -1, -3, -A, -B, -C or blank.

Marking: Company name or "E192307" and model designation.
Last Updated on 2012-08-22

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UL - Certificate

CE - Certificate

CERTIFICATE

HTS

of Conformity

EC Council Directive 2004/108/EC

Electromagnetic Compatibility

Registration No.: HTS 20090308 001

Report No. : 200903008 001

Holder : **Power Logic Tech., Inc.**
7F-5, No, 128, Shin Chien, Rd., Panchiao City, Taipei Hsien, Taiwan, R.O.C

Product : DC Component Fan

Identification : Type Designation : PL8765N12MC, PLP08765N12MC, PLP08765N12LC, PLP08567N12MS, PLP08567N12LS, PL80S12HH-1-LV, PLA08025S12HH-1-LV, PL12S12HH-LV, PLA12025S12HH-LV, PLA04020S05L, PLA04020S05M, PLA04020S05H, PLA04020S05HH, PLA04020S12L, PLA04020S12M, PLA04020S12H, PLA04020S12HH, PLA06015X12L, PLA06015X12M, PLA06015X12H, PLA06015X24L, PLA06015X24M, PL60B24M, PLA06015X24H.
(X may be S, B, D)

Tested acc. To : **European Standard EN 55022:2006+A1:2007, EN 61000-3-2: 2006, EN 61000-3-3:1995+A1:2001+A2:2005 and EN 55024:1998 + A1: 2001 + A2: 2003 (IEC 61000-4-2:2001, IEC 61000-4-3:2008, IEC 61000-4-4:2004, IEC 61000-4-5:2005, IEC 61000-4-6:2007, IEC 61000-4-8:2001, IEC 61000-4-11:2004)**

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all provisions of f Annex III of Council Directive 2004/108/EC,in its latest amended version, referred to EMC Directive. This certificate does not imply assessment of the production and does not permit the use of HTS's logo. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex ||| of the directive.

Certification Body

Dongguan, Mar. 09, 2009

Honesty Technology Service HTS

Jack.Li

Honesty Technology Service Ltd

2/F, 72 Victoria Rd., Zhangmutou Town Dongguan City, Guangdong, P.R. China
Tel.: 86-769-87708451 Fax: 86-769-87708450 Postcode: 523632

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

CTI Report

Power Logic Tech.(Dong Guan) Inc.

HSF Test data sheet

零件名稱(中文)	型号	供应商/制造商	Part name(英文)	Materical Name	Test Data (ppm)										Test No.	Test Date
					Cd	Pb	Hg	Cr6+	PBB	PBDE	F	Cl	Br	I		
芯片	SO	津圣 MAGNESENS	IC	HALL SENSOR	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2013/10566A	2013/1/10
方型线	0.5~1.0mm	宜江 YI JIANG	Square line	CP Wire	N.D.	N.D.	N.D.	Negative	N.D.	N.D.					CANEC1209120001	2012/7/13
漆包線	UEW-R	金亿 CHIN YIH	Enamelled Wire	Enamelled Wire	N.D.	6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1207261619	2012/6/19
矽鋼片	50CS600	国臣 KAOCHEN	silicon steel strip	Silicone steel strip	N.D.	N.D.	N.D.	Negative			N.D.	N.D.	N.D.	N.D.	CANEC1207640301	2012/6/19
磁条	NBR R3A	保磁 BOSS	Rubber magnet	Rubber magnet	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	189	N.D.	N.D.	RLSZE00151891 RLSZE001528600001	2012/12/20 2012/12/20
铁壳（藍鋅	鍍藍鋅	三创 SANCHUANG	Motor case	COLD ROLLED STEEL	N.D.	N.D.	N.D.	Negative	N.D.	N.D.					RLSZE001366670001	2012/7/26
铁壳（線）	鍍錫	三创 SANCHUANG	Motor case	Motor case	N.D.	N.D.	N.D.	Negative	N.D.	N.D.					RLSZE00155543000	2013/1/18
軸心	SUS420J2	金城 MOONYO	Shaft	Shaft	N.D.	N.D.	N.D.	Negative	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1214896402	2012/11/8
AB膠水		力固 LIGU	AB Glue	Epoxy	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	839	N.D.	N.D.	CANEC1217845903	2013/1/8
電源線芯線		领亚 LINYO	Cable wire	Copper of lead wire	N.D.	255	N.D.	Negative							CANEC1211548101	2012/9/5
電阻	402	江軍 LIKET	Resistor	Resistor	N.D.	2410	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2012/92926D	2012/10/30
無鉛錫線		GOODWAY	Lead free solder wire	Lead free solder wir	N.D.	40	N.D.	Negative	N.D.	N.D.	N.D.	N.D.	410	N.D.	CANEC1213227101	2012/10/8
無鉛錫條		GOODWAY	Lead free solder bar	Lead free solder bar	N.D.	26	N.D.	Negative							CANEC1302466101	2013/3/6
彈簧	SUS304	臻荣	Spring	Spring	N.D.	N.D.	N.D.	Negative	N.D.	N.D.					CANEC1215889802	2012/11/27
液压轴承	FBS	HUA YI	Hydro bearing	Hydro bearing	N.D.	N.D.	N.D.	Negative							CANEC1306012604	2013/5/6
含油轴承	CS	HUA YI	Sleeve bearing	Sleeve bearing	N.D.	15	N.D.	Negative							CANEC1306012603	2013/5/6
滚珠轴承	AISI 304	頌泰	Ball bearing	AISI304	N.D.	N.D.	N.D.	Negative							SHAML1219868101	2012/11/19
扇框	PBT 5630	长春	Fan frame	PBT(black)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2012/C5209A	2013/1/2
扇葉	PBT 5630	长春	Fan blade	PBT(white)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2012/C5208A	2013/1/2
扇葉	PBT 5630	长春	Fan blade	PBT(red)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RLSZE001354160001	2012/7/16
絕緣套	PBT 5630	长春	Fan skeleton	PBT(black)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE/2012/C5209A	2013/1/2
扇葉	PC 2805	拜耳	Fan blade	PC(White)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					CANEC13047796	2013/4/12
絕緣套	PC 2805	拜耳	Fan skeleton	PC(White)							N.D.	79	N.D.	N.D.	SHAEC12143008	2012/8/20
線路板(PCB)	S1155	大順	Printed Circuie Board	PCB CCL	N.D.	4	N.D.	N.D.	N.D.	N.D.	1298	329	N.D.	N.D.	CANEC1207150701	2012/6/13
	G900HF	大順		PCB green ink	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	217	N.D.	N.D.	RLSZE00148905000	2012/11/20
	C179	富多肯		PCB black ink	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RLSZE00134876000	2012/7/11
	W169B	大順		PCB white ink	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	169	N.D.	N.D.	RLSZE001499190001	2012/11/28
電容	X7R	HEC	Chip capacitor	Chip capacitor	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	TWNC00293418	2013/1/11
二級管	SOD	拓世基 SEMTECI	Diode	Black body	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1305669807	2013/4/26
				Silver-white surfaced metal pin	N.D.	N.D.	N.D.	Negative							CANEC1305669807	2013/4/26
三級管	SOT-23(HAF	拓世基 SEMTECI	audion	Black body w/brown printing	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1305669806	2013/4/26
				Silvery metal pin	N.D.	17	N.D.	Negative							CANEC1305669806	2013/4/26
切口华司	Mylar	三创 FULWEALTH	Washer	Washer	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					CANEC1215047403	2012/11/13
		三创 FULWEALTH		Washer (HF)							N.D.	N.D.	N.D.	N.D.	RLSZE001512730001	2012/12/7
石墨华司	石墨	三创	Graphite washer	Washer	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RHS01F000622002	2013/5/24
電源線外皮		领亚 LINYO	Cable	cable (RoHS)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.					RLSHF00137717000	2013/2/27
				cable (HF)							N.D.	N.D.	N.D.	N.D.	RLSHF00134117000	2013/1/17
连接器	PA66	JSY / 建盛荣	Connector	Housing(white)	ND	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RLSZE001447340001 RLSZE001316480001	2012/10/11 2012/6/15
	銅合金	JSY / 建盛荣		Terminal	N.D.	32	N.D.	Negative	N.D.	N.D.					RLSZE001447340002	2012/10/11
標籤	PET	新艺 XINYI	Label	White PET	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	RLSDF000205680010 RLSDF0002057700	2013/2/28 2013/2/28
	油墨	新艺 XINYI	INK	Black ink of lable	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	778	205	N.D.	N.D.	RLSZE001461080001 RLSZE001360110001	2012/10/23 2012/7/20
热缩套管		億美達	Heat shrinkable tubing	HEAT SHRINKABLE TUBING (Black)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	72	N.D.	N.D.	N.D.	CANEC1303661001	2013/3/28

广州市羊城铝业有限责任公司材质证明书

(羊铝质证(2010)第(921)号)

ADD:中国广东广州市黄埔区荔联街沧头村路口南新收费站北侧　邮编：510760

TEL:020-82261292　　FAX:020-82260565

兹证明本公司生产的铝型材依据中华人民共和国 GB5237-93 铝合金化学成份标准制造，符合 LD31(6063) 铝合金化学成份，化学元素组成如下：

序号	组份	标准值(%)	检测值(%)
1	Si	02-0.6	(0.413)
2	Fe	0.35MAX	(0.146)
3	Mg	0.45-0.9	(0.594)
4	Mn	0.1MAX	(0.012)
5	Cu	0.1MAX	(0.006)
6	Ti	0.1MAX	(<0.1)
7	Zn	0.1MAX	(<0.1)
8	Cr	0.1MAX	(<0.1)
9	其余单项	0.05MAX	(<0.05)
10	其余总量	0.15MAX	(<0.15)
11	AL	余量	( )

核定：[illegible]　审核：[illegible]　检验员：[illegible]　盖章生效：

2010 年 9 月 21 日

Test Report

No. CANEC1418365401 Date: 13 Nov 2014

DONGGUAN HUACHANG ALUMINUM CO., LTD.

YUWU INDUSTRY AREA DONGCHENG DONGGUAN GUANGDONG
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Aluminum Alloy

SGS Job No. :	CP14-059122 - SZ
Date of Sample Received :	07 Nov 2014
Testing Period :	07 Nov 2014 - 13 Nov 2014
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Yan Lee
Approved Signatory

198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgsgroup.com.cn
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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN14-183654.001	Silvery metal

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
(2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
(3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
(4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by spot test / Colorimetric Method using UV-Vis.
(5)With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Test Item(s)	Limit	Unit	MDL	001
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II
(2)◇Spot-test:
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)
◇Boiling-water-extraction:
Negative = Absence of CrVI coating
Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.
Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

PFOS (Perfluorooctane Sulfonates)

Test Method : With reference to US EPA 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)	Unit	MDL	001
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	mg/kg	10	ND

Notes :

For reference: commission regulation (EU) No 757/2010 amending regulation (EC) No 850/2004:
(1) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.
(2) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1µg /m2 of the coated material.

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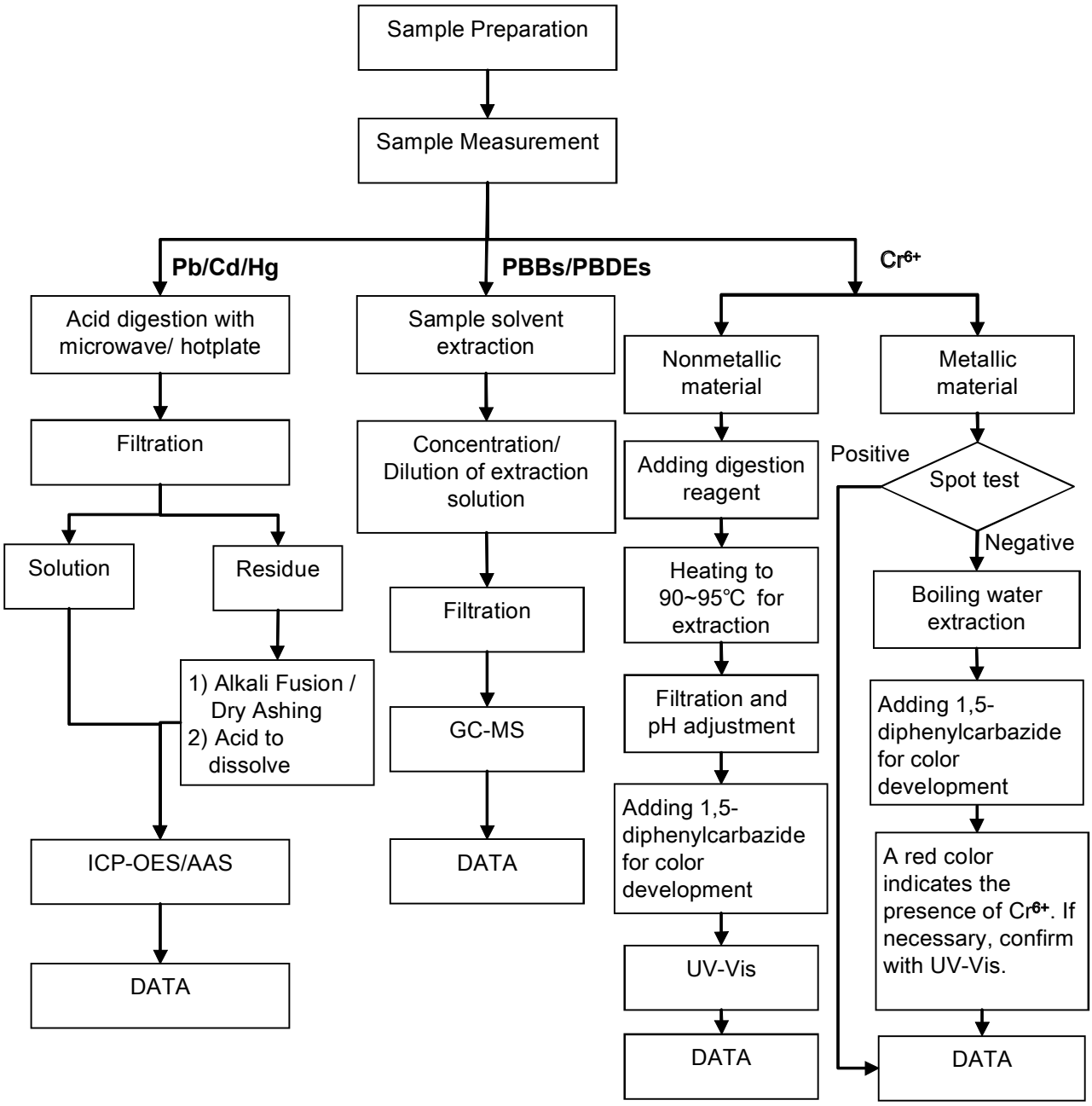
ATTACHMENTS

RoHS Testing Flow Chart

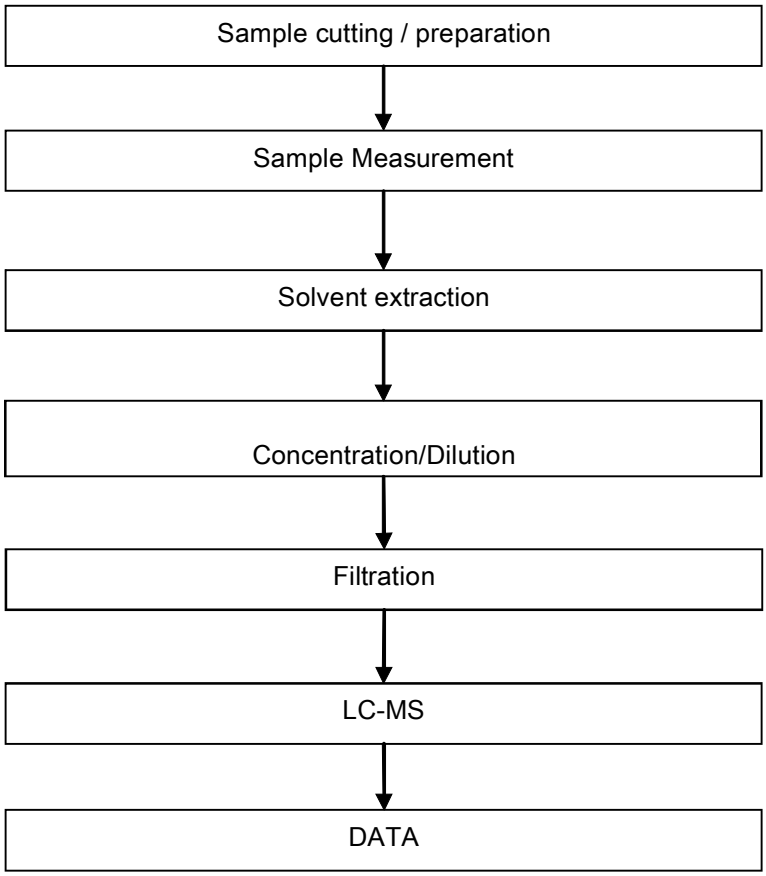
1) Name of the person who made testing: Bruce Xiao / Sunny Hu
2) Name of the person in charge of testing: Bella Wang / Cutey Yu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr^{6+} and PBBs/PBDEs test method excluded).



ATTACHMENTS

PFOA / PFOS Testing Flow Chart

1) Name of the person who made testing: Zhihong Wang
2) Name of the person in charge of testing: Cutey Yu



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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Sample photo:

CAN14-183654.001

SGS authenticate the photo on original report only

*** End of Report ***

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X-23-7762

Thermal Interface Material

Description of Use

Thermal grease (X-23-7762) is a thermal interface material developed by Shin-Etsu Chemical Co., Ltd. to meet the current and future thermal management requirements of high performance microprocessors. It is used to increase heat sink effectiveness by closing the air gap existing between the top of the processor and the fan heat sink. Air is a thermal insulator with a thermal conductivity of 0.027W/mK. The grease is applied to the raised area on top of the processor after the processor is in the socket. The fan heat sink is centered on the processor top, with the raised areas on the bottom of the heat sink and the processor top aligned. The fan heat sink is firmly pressed to evenly distribute the thermal grease until the metal of the heat sink is felt against the metal of the processor top. The excess grease can be removed by wiping with a soft cloth.

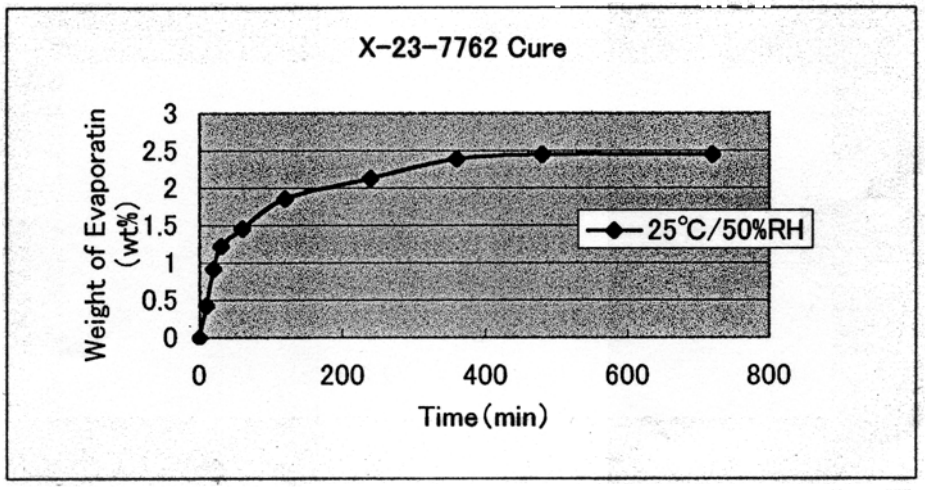
Typical Physical Properties

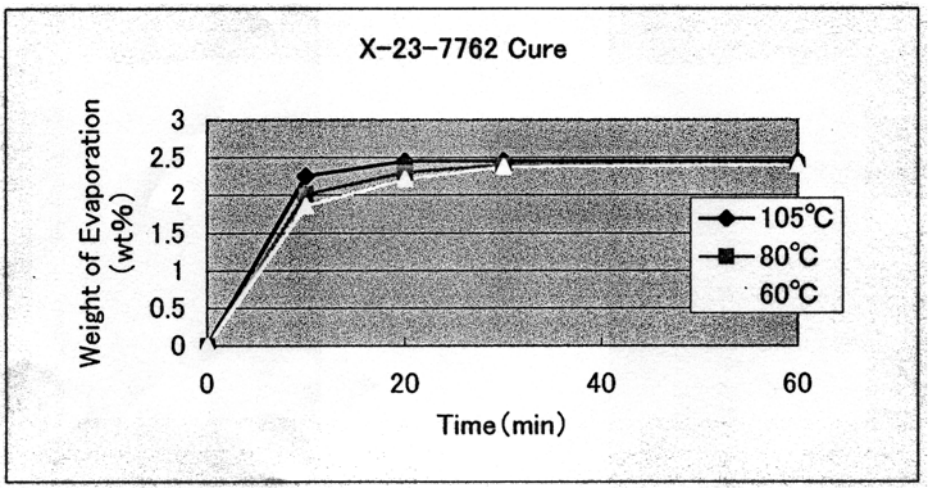
Appearance	Gray
Viscosity (25C)	1700 Poise
Bulk Thermal Conductivity	More than 4 W/mK (with solvent) More than 6 W/mK (w/o solvent, as X-23-7732)
Volatile Content (150C x 24hrs)	2.5%

Handling instruction

1. Suggest to store the material under 10 deg C. Once open the lid, please use it up as soon as possible.
2. Require stirring the material up before using.
3. X-23-7762 contains 2wt% of solvent as a diluted component for application of screen-printing. Therefore, require removing solvent after putting 7762 on substrate. Recommendable curing condition: 60 deg C x 30min

X-23-7762 Cure Data





【試験条件】
アルミ板上にメタルスクリーンで、2.5cm角、厚み120μmの塗布膜を印刷し、各温度で揮発量を追った。
【結果】
25℃/50%RHの場合、ｲｿﾊﾟﾗが揮発しきるのに6時間かかった。
加熱した場合、60℃, 80℃では30min必要、105℃で20min必要であった。

ShinEtsu

QA , TAKEFU

Date :Aug. 17, 2007
No. SI-MC-1160

To : FOXCONN TECHNOLOGY GROUP.

Information on ingredients of X-23-7762

Shin-Etsu product X-23-7762 is a mixture consisting of following ingredients.

Formulation of X-23-7762:

Ingredients	Contents
Silicone Oil	ca. 10%
Additive (Minor constituents)	
Metal Oxide Powder	ca. 20%
Metal Powder	ca. 70%

Your kind consideration and arrangements will be greatly appreciated.

Mikio Kobayashi
Manager
Quality Assurance Department
Takefu Plant
Shin-Etsu Chemical Co., Ltd.

Test Report 測試報告

Number 報告號碼 : TWNC00378664

Applicant 申請廠商: Shin-Etsu Silicone Taiwan Co., Ltd.
25, Kuang Fu S. Rd.,
Hsin-Chu Ind, Park,
Hsin-Chu Taiwan, R.O.C

Date 日期 : Jun 26, 2014

Sample Description 樣品敘述:

One (1) group of submitted samples said to be :
以下測試樣品乃供應商所提供及確認：

Sample Description 樣品名稱	: Silicone Grease
Style / Item No. 產品型號	: X-23-7762
Series No. 系列號碼	: 312401
Date Sample Received 收件日期	: Jun 19, 2014
Date Test Started 開始測試日期	: Jun 20, 2014

Test Conducted 測試執行 :

As requested by the applicant, for details please refer to attached pages.
依申請商之要求，細節請參考附頁 .

Authorized by:
On Behalf of Intertek Testing Services Taiwan Limited

K. Y. Liang
Director

Intertek Testing Services Taiwan Ltd.
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Test Report 測試報告

Number : TWNC00378664
報告號碼

Test Conducted 測試執行

Test Result Summary 測試結果：

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果 Grey paste	RL
Heavy Metal 重金屬				
Cadmium (Cd) content 鎘含量	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES. 參考 IEC 62321-5: 2013，以微波或酸液消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Lead (Pb) content 鉛含量	ppm	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES. 參考 IEC 62321-5: 2013，以微波或酸液消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Mercury (Hg) content 汞含量	ppm	With reference to IEC 62321-4: 2013, by microwave or acid digestion and determined by ICP-OES. 參考 IEC 62321-4: 2013，以微波或酸液消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Chromium VI (Cr^{6+}) content 六價鉻含量	ppm	With reference to IEC 62321: 2008, by alkaline digestion and determined by UV-Vis Spectrophotometer. 參考 IEC 62321:2008，以鹼液消化並用紫外光-可見光分光光度計分析。	ND	1

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Test Report 測試報告

Number : TWNC00378664
報告號碼

Test Conducted 測試執行

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果 Grey paste	RL
Polybrominated Biphenyls (PBBs) 多溴聯苯				
Monobrominated Biphenyls (MonoBB) 單溴聯苯	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD. confirmation when necessary. 參考 IEC 62321: 2008，以溶劑萃取並用氣相層析質譜儀分析，必要時會以高效液相層析儀光二極體陣列偵測儀進行確認。	ND	5
Dibrominated Biphenyls (DiBB) 二溴聯苯	ppm		ND	5
Tribrominated Biphenyls (TriBB) 三溴聯苯	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB) 四溴聯苯	ppm		ND	5
Pentabrominated Biphenyls (PentaBB) 五溴聯苯	ppm		ND	5
Hexabrominated Biphenyls (HexaBB) 六溴聯苯	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB) 七溴聯苯	ppm		ND	5
Octabrominated Biphenyls (OctaBB) 八溴聯苯	ppm		ND	5
Nonabrominated Biphenyls (NonaBB) 九溴聯苯	ppm		ND	5
Decabrominated Biphenyl (DecaBB) 十溴聯苯	ppm		ND	5
Polybrominated Diphenyl Ethers (PBDEs) 多溴聯苯醚				
Monobrominated Diphenyl Ethers (MonoBDE) 單溴聯苯醚	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD. confirmation when necessary. 參考 IEC 62321: 2008，以溶劑萃取並用氣相層析質譜儀分析，必要時會以高效液相層析儀光二極體陣列偵測儀進行確認。	ND	5
Dibrominated Diphenyl Ethers (DiBDE) 二溴聯苯醚	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE) 三溴聯苯醚	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE) 四溴聯苯醚	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE) 五溴聯苯醚	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE) 六溴聯苯醚	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE) 七溴聯苯醚	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE) 八溴聯苯醚	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE) 九溴聯苯醚	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE) 十溴聯苯醚	ppm		ND	5

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Test Report 測試報告

Number : TWNC00378664
報告號碼

Test Conducted 測試執行

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果 Grey paste	RL
Phthalates 鄰苯二甲酸酯				
Di(2-ethylhexyl) Phthalate (DEHP) 鄰苯二甲酸二(2-乙基己基)酯	ppm	With reference to EN 14372: 2004, by solvent extraction and determined by GC-MS. 參考 EN 14372: 2004，以溶劑萃取並用氣相層析質譜儀分析。	ND	50
Dibutyl Phthalate (DBP) 鄰苯二甲酸二丁酯	ppm		ND	50
Benzyl Butyl Phthalate (BBP) 鄰苯二甲酸苯基丁酯	ppm		ND	50
Halogen Content 鹵素含量				
Fluorine (F) 氟	ppm	With reference to EN 14582:2007 by combustion bomb with oxygen and determined by Ion Chromatography. 參考 EN 14582:2007，以氧彈燃燒集氣法並用離子層析儀分析。	ND	50
Chlorine (Cl) 氯	ppm		ND	50
Bromine (Br) 溴	ppm		ND	50
Iodine (I) 碘	ppm		ND	50
Others 其他				
Hexabromo cyclododecane (HBCDD) 六溴環十二烷	ppm	With reference to USEPA 3540C, by solvent extraction and determined by GC-MS. 參考 USEPA 3540C，以溶劑萃取並用氣相層析質譜儀分析。	ND	10

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg
備註 百萬分之一，依據測試樣品重量計算 = 毫克/公斤
ND = Not detected 未檢測出
RL = Reporting limit, quantitation limit of analyte in sample
報告極限，測試樣品之定量偵測極限

Responsibility of Chemist 分析人員 : Ryan Lin/ Pelny Hsiao/ Vico Lin

Date Sample Received 樣品收件日期 : Jun 19, 2014
Test Period 樣品測試期間 : Jun 20, 2014 to Jun 25, 2014

RoHS Limit RoHS 限值

Restricted Substances 限用物質	Limits 限值
Cadmium (Cd) content 鎘含量	0.01% (100ppm)
Lead (Pb) content 鉛含量	0.1% (1000ppm)
Mercury (Hg) content 汞含量	0.1% (1000ppm)
Chromium VI (Cr^{6+}) content 六價鉻含量	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs) 多溴聯苯	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs) 多溴聯苯醚	0.1% (1000ppm)

The limits were quoted from Annex II of 2011/65/EU for homogeneous material.
本限值是依據歐盟指令 2011/65/EU 附錄二針對均質材質所訂定。

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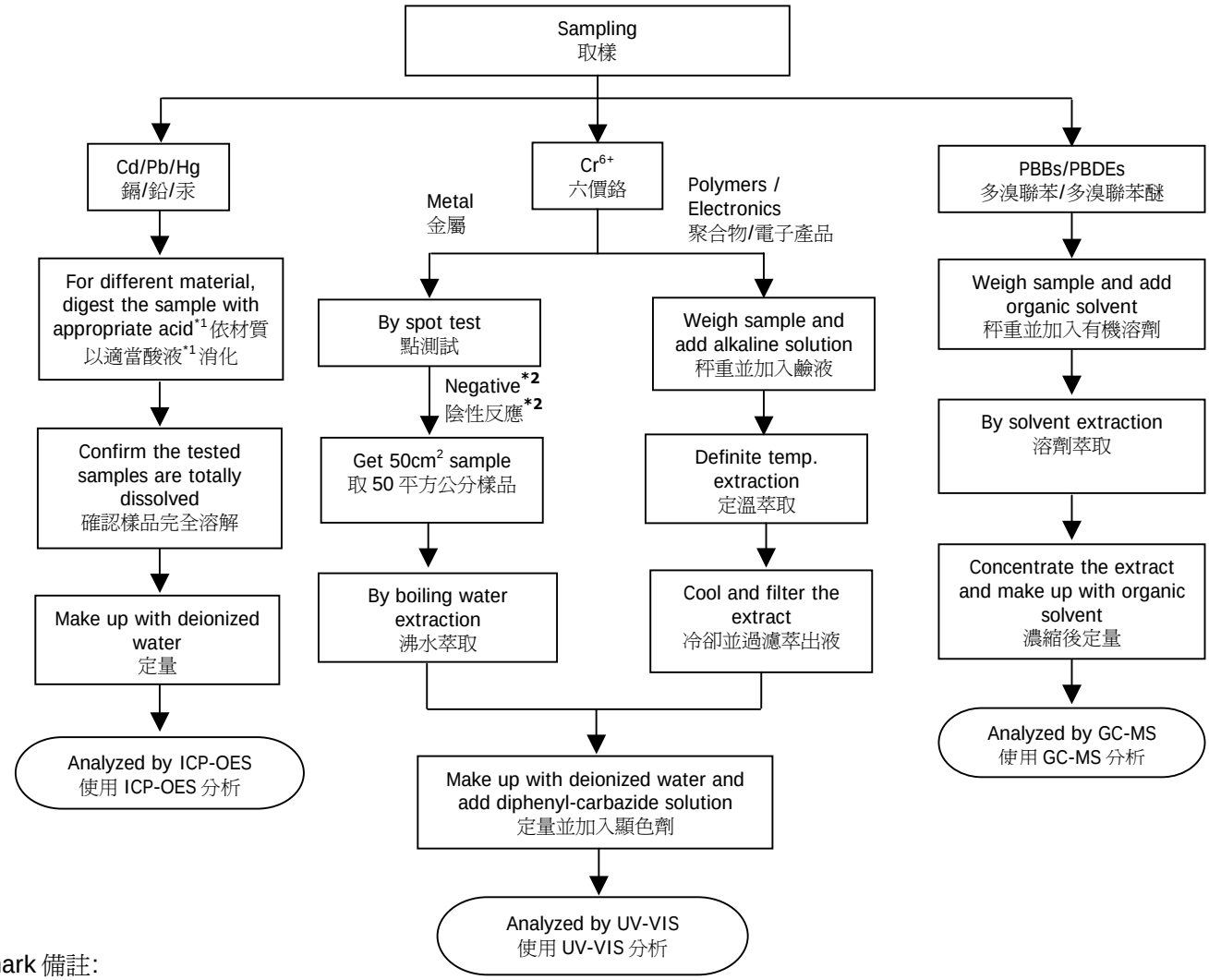
Test Report 測試報告

Number : TWNC00378664
報告號碼

Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents RoHS 六項測試
Reference Method 參考方法: Cd/Pb: IEC 62321-5:2013; Hg: IEC 62321-4:2013;
Chromium (VI)/PBBs/PBDEs: IEC 62321:2008



Remark 備註:
*1: List of Appropriate Acid 各材質添加酸液如下表：

Material 材質	Acid Added for Digestion 添加酸液種類
Polymers 聚合物	HNO_3,HCl,HF,H_2O_2,H_3BO_3 硝酸、鹽酸、氫氟酸、雙氧水、硼酸
Metals 金屬	HNO_3,HCl,HF 硝酸、鹽酸、氫氟酸
Electronics 電子產品	HNO_3,HCl,H_2O_2,HBF_4 硝酸、鹽酸、雙氧水、氟硼酸

*2: If the result of spot test is positive, Chromium VI would be determined as detected.
若點測試的結果爲陽性反應，則直接判定爲測試樣品含有六價鉻。

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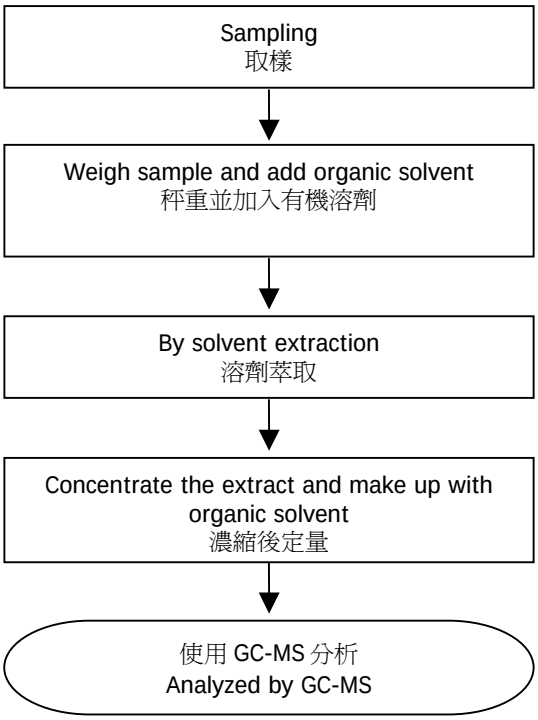
Test Report 測試報告

Number : TWNC00378664
報告號碼

Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Phthalates Contents 鄰苯二甲酸酯測試
Reference Method 參考方法: EN 14372: 2004



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Test Report 測試報告

Number : TWNC00378664
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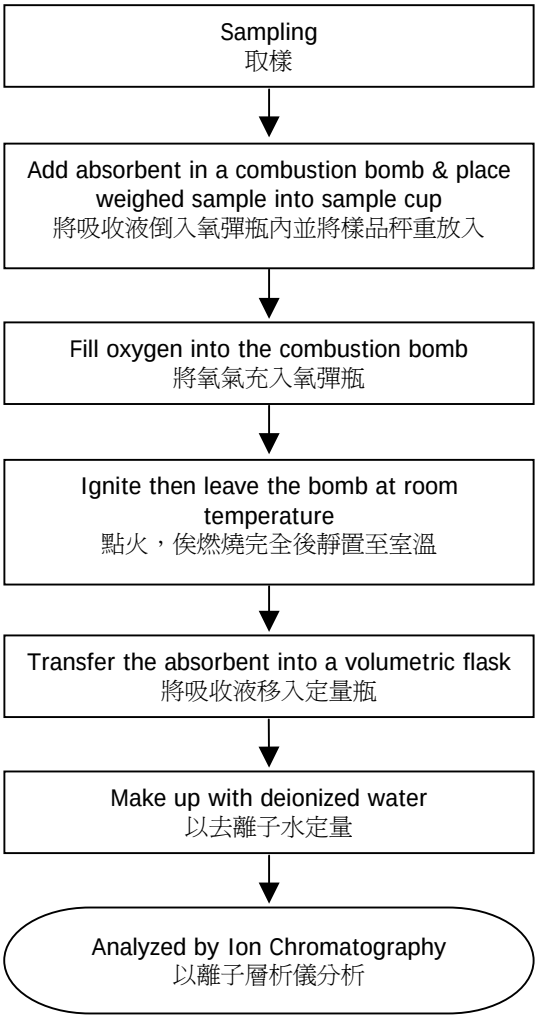
Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Halogen Content 鹵素測試
Reference Method 參考方法：EN 14582



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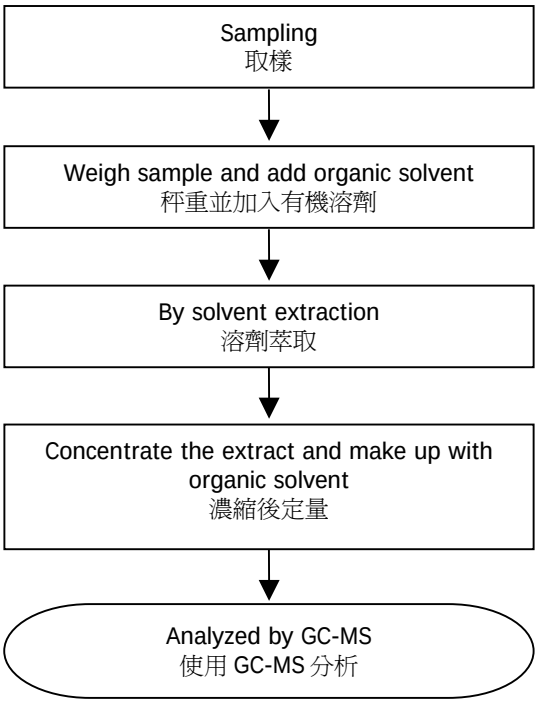
Test Report 測試報告

Number : TWNC00378664
報告號碼

Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Hexabromocyclododecane (HBCDD) 六溴環十二烷
Reference Method 參考方法：USEPA 3540C



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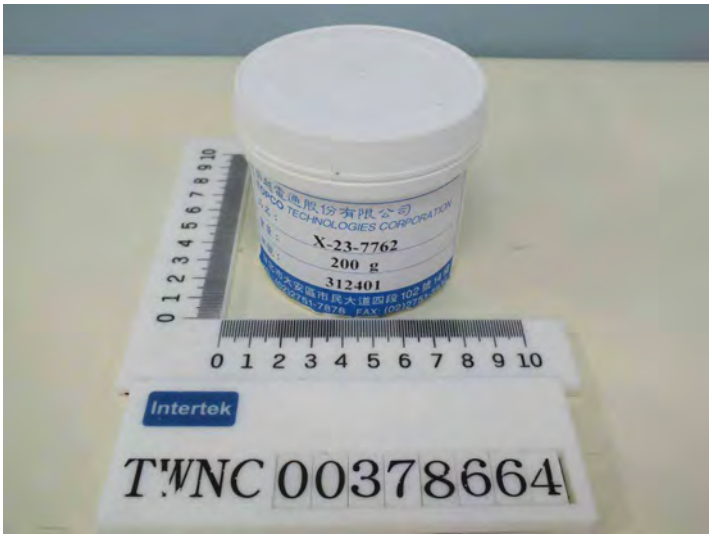

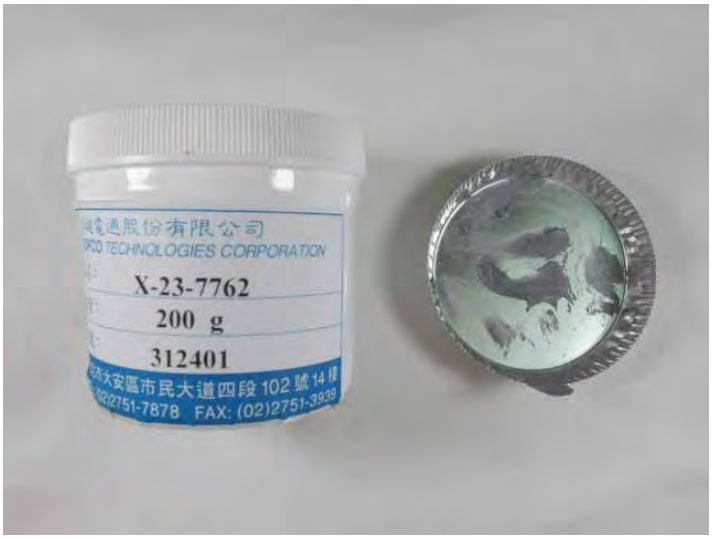

End of Report

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Number : TWNC00378664
報告號碼

TERMS AND CONDITIONS OF BUSINESS

1. Intertek Testing Services Taiwan Ltd. (hereinafter "the Company") agrees to provide its services in accordance with and subject to the terms and conditions herein contained (hereinafter "the Conditions"). The Conditions may only be modified by a variation expressed in writing and signed on behalf of the Company by a director and no other action on the part of the Company or its employees or agents shall be construed as an acceptance of any other terms and conditions.
2. The Company acts for the person or body from whom the request to provide its services has originated (hereinafter "the Principal"). No other party is entitled to give instructions to the Company unless agreed by the Company.
3. All rights (including but not limited to copyright) in any test reports, surveys, certificates of inspection or other material produced by the Company in the course of providing its services shall remain vested in the Company. The Principal shall not reproduce or make copies, publish or disclose the contents of any such material or extracts thereof to any third party without the Company's prior written consent, which may be refused at its discretion. The Principal further undertakes that its servants and agents shall keep confidential and shall not publish or otherwise use any information that may be acquired relating to the Company's activities.
4. 4.1 The Company undertakes to exercise due care and skill in the performance of its services and accepts responsibility only where such skill and care is not exercised.
   4.2 The liability of the Company in respect of any claims for loss, damage or expense of whatsoever nature and howsoever arising in respect of any breach of contract and/or any failure to exercise due skill and care by the Company shall in no circumstances exceed a total aggregate sum equal to ten (10) times the amount of the fee or commission payable in respect of the specific service required under the particular contract with the Company which gives rise to such claims provided however that the Company shall have no liability in respect of any claims for indirect or consequential loss including loss of profit and/or loss of future business and/or loss of production and/or cancellation of contracts entered into by the Principal.
   4.3 The Company shall not in any event be liable for any loss or damage caused by delay in performance or non-performance of any of its services where the same is occasioned by any cause whatsoever that is beyond the Company's control including but not limited to war, civil disturbance, requisitioning, governmental or parliamentary restriction, prohibitions or enactment of any kind, import or export regulations, strike or trade dispute (whether involving its own employees or those of any other person), difficulties in obtaining workmen or materials, breakdown of machinery, fire or accident. Should any such event occur the Company may cancel or suspend any contract for the provision of services without incurring any liability whatsoever.
   4.4 The Company will not be liable to the Principal for any loss or damage whatsoever sustained by the Principal as a result of any failure by the Company to comply with any time estimate given by the Company relating to the provision of its services. [See clause 9.1] [See clause 9.2]
   4.5 The Principal acknowledges that samples may be damaged or destroyed in the course of testing carried out by the Company or any of the Company's agent or subcontractor as part of the necessary testing process and the Company shall not in any event be liable for any loss or damage arising from the damage or destruction of the samples subject to testing.
   4.6 In the event that the Principal requests for the return of the samples, the Company shall not be responsible for any re-packaging of the samples prior to such return and the Company shall in no circumstances be liable for any loss or damage caused to any of the samples during or as a result of their shipment to the Principal for the purpose of this Clause 4.6.
5. 5.1 Subject to the Principal's instructions as accepted by the Company, the test reports, surveys, certificates of inspection or other material produced by the Company shall contain statements of opinion made with due care within the limitation of the instructions received by the Company. The Company is under no obligation to refer to or report upon any facts or circumstances which are outside the specific instructions received.
   5.2 For pre-shipment inspection or survey of goods, the Company's inspector shall perform the inspection or survey when goods are 100% completed, packed and marked (unless otherwise agreed between the Company and the Principal). Goods for inspection or survey shall be unpacked in the presence of the Company's inspector and inspection or survey shall, subject to Condition 5.3, take place at the place specified by the Principal.
   5.3 If the Company's inspector finds that the location is not suitable for carrying out a proper inspection or survey of goods or where necessary equipment for inspection or survey is not available the inspector may, if practical in the circumstances, draw samples of goods from the location and carry out the inspection or survey at the premises of the Company. The Principal shall be responsible for all costs and expenses incurred in relation thereto.
   5.4 Reports, surveys or certificates issued following testing or analysis of samples contain the Company's specific opinion on those samples only but do not express any opinion upon the bulk from which the samples were drawn. If an opinion on the bulk is requested special arrangements in writing must be made in advance with the Company for the inspection and sampling of the bulk. In no circumstances shall the Company's responsibility extend beyond inspection, testing and reporting upon the samples actually drawn from the bulk and inspected, tested and surveyed by the Company and any inference to be drawn from the results of such inspection or survey or testing shall be entirely in the discretion and at the sole and exclusive responsibility of the Principal.
6. The Company shall be entitled at its discretion to delegate the performance of the whole or any part of the services contracted for with the Principal to any agent or subcontractor.
7. Every officer, employee, agent or subcontractor of the Company shall have the benefit of the limitations of liability and the indemnities contained in the General Conditions. So far as relates to such limitations and indemnities, any contract entered into by the Company is entered into not only on its own behalf but also as agent and trustee for every such person as aforesaid.
8. If the requirements of the Principal necessitate the analysis of samples by the Principal or by any third party the Company will pass on the results of the analysis but without responsibility for its accuracy. Where the Company is only able to witness an analysis by the Principal or by any third party the Company will provide confirmation, if such be the case, that a correct sample has been analysed but will not otherwise be responsible for the accuracy of such analysis.
9. The Principal will:
   9.1 ensure that instructions to the Company are given in due time and are accompanied by sufficient information to enable the required services to be performed effectively;
   9.2 accept that documents reflecting arrangements or agreements made between the Principal and any third party, or third party documents such as copies of contracts of sale, letters of credit, bills of lading, etc. are -if received by the Company considered to be for information only, without extending or restricting the services to be provided or obligations accepted by the Company.
   9.3 procure all necessary access for the Company's representatives to enable the required services to be performed effectively.
   9.4 supply, if required, any special equipment and personnel necessary for the performance of the required services.
   9.5 ensure that all necessary measures are taken for safety and security of working conditions, sites and installations during the performance of the required services;

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9.6 take all necessary steps to eliminate or remedy any obstruction to or interruptions in the performance of the required services and repack all inspected goods immediately after any inspection or survey of them;

9.7 inform the Company in advance of any known hazards or dangers, actual or potential, associated with any request for the provision of services by the Company including but not limited to the presence or risk of radiation, toxic or noxious or explosive elements or materials, environmental pollution or poisons;

10. The Principal shall guarantee, hold harmless and indemnify the Company and its officers, employees, agents or subcontractors against :

10.1 all claims made by any third party for any loss, damage or expense of whatsoever nature and howsoever arising relating to the performance, purported performance or non-performance of any of services to the extent that the aggregate of any such claims relating to any one service exceeds the limit mentioned in Condition 4.2.

10.2 any loss or damage suffered by the Company as a result of the provision of services by the Company to the Principal otherwise than resulting from the Company's own error, negligence or wilful default.

11. 11.1 The Principal will punctually pay the Company immediately upon presentation of the relevant invoice or within such other period as may have been agreed in writing by the Company all charges rendered by the Company failing which interest will become due at the rate of 1.5 per cent per month from the date of invoice until payment. The Principal further agrees and undertakes to reimburse the Company all disbursements reasonably incurred in connection with the provision of its services.

11.2 The Principal shall not be entitled to retain or defer payment of any sums due to the Company on account of any dispute, cross claim or set off which it may allege against the Company.

11.3 In the event of any suspension of payment arrangement with creditors, bankruptcy, insolvency, receivership or cessation of business or failure of the Principal to pay part or all of any sums owing to the Company, the Company shall be entitled to suspend all further performance of its services and withhold the issue of any test report, survey, certificate of inspection or other material requested forthwith and without liability until payment of all sums owing to the Company together with interest thereon is made

12. Without prejudice to any rights the Company may have at law or under the Conditions, the Company has the following rights in the event of non-payment of sums owing to the Company as set out below:

12.1 The Company has a general and particular lien over all samples delivered to be tested for all claims and sums owing by the Principal to the Company under any contract whatsoever and in any other way whatsoever.

12.2 During the currency of any such lien the Company is entitled to be paid reasonable storage charges for samples retained in the Company's custody.

12.3 Without prejudice to the Company's lien and other rights under Conditions 12.1 to 12.2 above, if test, inspection or survey of the goods takes place on the premises of the Company, the Company may give notice to the Principal that the goods (or any part thereof) are ready for collection and the Principal shall collect the same within three (3) calendar days (Saturdays, Sundays and Public Holidays excepted). Upon the expiry of this period, if the goods are not collected by the Principal, at the sole discretion of the Company the goods may be deemed abandoned and/or destroyed.

12.4 Without prejudice to Conditions 12.3 above, the Company shall have the discretion to store the goods (or any of them) at their own premises or elsewhere at the Principal's expense if the Principal has deposited the goods at the Company's premises for the performance of these services and has subsequently failed to collect the said goods.

12.5 The expenses by way of disbursements that the Company may reclaim from the Principal include all reasonable costs incurred by the Company (whether by way of storage, insurance or otherwise) in respect of the goods and it is expressly declared that it shall be reasonable but not mandatory for the Company to effect comprehensive insurance in respect of the goods.

12.6 Without prejudice to the Company's lien and other rights under Conditions 12.1 to 12.5 above, the risk and property in the goods shall remain at all times in the Principal.

13. In the event of the Company being prevented by reason of any cause whatsoever outside the Company's control from performing or completing any service for which an order has been given or an agreement made, the Principal will pay to the Company:

13.1 the amount of all abortive expenditure actually made or incurred; and

13.2 a proportion of the agreed fee or commission equal to the proportion (if any) of the service actually carried out;

and the Company shall be relieved of all responsibility whatsoever for the partial or total non-performance of the required service.

14. The Company shall be discharged from all liability to the Principal for all claims for loss, damage or expense unless suit is brought within twelve (12) months after the date of the performance by the Company of the service which gives rise to the claim or in the event of any alleged non-performance within twelve (12) months of the date when such service should have been completed.

15. In the event that any unforeseen additional time or costs are incurred in the course of carrying out any of its services the Company shall be entitled to render additional charges as shall reasonably reflect such additional time and costs incurred.

16. All contracts for provision of services by the Company and the Conditions shall be construed in accordance with and governed by the laws of the ROC and for the purpose of any arbitral or litigation proceedings such contracts shall be deemed to have been made and performed in Taiwan. If any provision contained in the Conditions is and/or becomes invalid, illegal or unenforceable in any respect under the laws of the ROC, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired thereby.

17. Any dispute or claim arising out of or relating to the provision of, or any agreement to provide, services by the Company shall be referred to and determined by arbitration subject to the Company's sole and overriding discretion to commence litigation proceedings in the courts of Taiwan or the courts of any other country as the Company may choose. The parties may agree to the appointment of an arbitrator failing which either party may, after having made a written request to concur in the appointment of an arbitrator, request the ROC Arbitration Association to appoint an arbitrator. The place of arbitration shall be in Taiwan. There shall only be one arbitrator.

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Makrolon 2805

泛用品级 / 中粘度

MVR (300 °C/1.2 kg) 9.0 cm³/10 min; general purpose; medium viscosity; easy release; injection molding - melt temperature 280 - 320 °C; available in transparent, translucent and opaque colors

ISO 7391-PC,MR,(,,)-09-9

	性能	测试条件	单位	标准	数值
流变性能					
C	熔融指数（体积）	300 ° C; 1.2 kg	cm³/10 min	ISO 1133	9.0
C	成型收缩率，流动方向	60x60x2 mm; 500 bar	%	ISO 294-4	0.65
C	成型收缩率，垂直流动方向	60x60x2 mm; 500 bar	%	ISO 294-4	0.7
C	成型收缩率，流动方向/垂直流动方向	Value range based on general practical experience	%	b.o. ISO 2577	0.6 - 0.8
C	熔融指数（质量）	300 ° C; 1.2 kg	g/10 min	ISO 1133	10
机械性能					
C	抗拉模量	1 mm/min	MPa	ISO 527-1,-2	2400
C	屈服应力	50 mm/min	MPa	ISO 527-1,-2	66
C	屈服应变	50 mm/min	%	ISO 527-1,-2	6.2
C	名义断裂拉伸应变	50 mm/min	%	ISO 527-1,-2	> 50
C	断裂应力	50 mm/min	MPa	ISO 527-1,-2	70
C	断裂应变	50 mm/min	%	b.o. ISO 527-1,-2	130
C	拉伸蠕变模量	1 h	MPa	ISO 899-1	2200
C	拉伸蠕变模量	1000 h	MPa	ISO 899-1	1900
C	弯曲模量	2 mm/min	MPa	ISO 178	2400
C	弯曲强度	2 mm/min	MPa	ISO 178	97
C	弯曲强度下的弯曲应变	2 mm/min	%	ISO 178	7.1
C	3.5%应弯时的弯曲应力	2 mm/min	MPa	ISO 178	73
C	Charpy 冲击强度	23 ° C	kJ/m²	ISO 179-1eU	N
C	Charpy 冲击强度	-30 ° C	kJ/m²	ISO 179-1eU	N
C	Charpy 冲击强度	-60 ° C	kJ/m²	ISO 179-1eU	N
C	Charpy 缺口冲击强度	23 ° C; 3 mm	kJ/m²	ISO 7391/b.o. ISO 179-1eA	75P
C	Charpy 缺口冲击强度	-30 ° C; 3 mm	kJ/m²	ISO 7391/b.o. ISO 179-1eA	16C
C	Izod 缺口冲击强度	23 ° C; 3.2 mm	kJ/m²	b.o. ISO 180-A	85P
C	Izod 缺口冲击强度	-30 ° C; 3.2 mm	kJ/m²	b.o. ISO 180-A	14C
C	最大穿透力	23 ° C	N	ISO 6603-2	5400
C	最大穿透力	-30 ° C	N	ISO 6603-2	6300
C	穿透能量	23 ° C	J	ISO 6603-2	60
C	穿透能量	-30 ° C	J	ISO 6603-2	65
C	球压硬度		N/mm²	ISO 2039-1	115

Makrolon 2805

	性能	测试条件	单位	标准	数值
热性质					
C	玻璃化温度	10 ° C/min	°C	ISO 11357-1,-2	145
C	热变型温度	1.80 MPa	°C	ISO 75-1,-2	125
C	热变型温度	0.45 MPa	°C	ISO 75-1,-2	137
C	维卡软化温度	50 N; 50 ° C/h	°C	ISO 306	144
C	维卡软化温度	50 N; 120 ° C/h	°C	ISO 306	146
C	热膨胀系数, 流动方向	23 to 55 ° C	10^{-4}/K	ISO 11359-1,-2	0.65
C	热膨胀系数, 垂直流动方向	23 to 55 ° C	10^{-4}/K	ISO 11359-1,-2	0.65
C	可烧性试验UL94 [UL 认可]	0.75 mm	Class	UL 94	V-2
C	可烧性试验UL94 [UL 认可]	2.5 mm	Class	UL 94	HB
C	氧指数	Method A	%	ISO 4589-2	28
C	导热性	23 ° C	W/(m·K)	ISO 8302	0.20
C	耐热 (球压试验)		°C	IEC 60695-10-2	136
C	相对温度指数 (拉伸强度) [UL 认可]	1.5 mm	°C	UL 746B	125
C	相对温度指数 (拉伸冲击强度) [UL 认可]	1.5 mm	°C	UL 746B	115
C	相对温度指数 (介电强度) [UL 认可]	1.5 mm	°C	UL 746B	125
C	灼热丝燃烧指数	0.75 mm	°C	IEC 60695-2-12	850
C	灼热丝燃烧指数	1.5 mm	°C	IEC 60695-2-12	850
C	灼热丝燃烧指数	3.0 mm	°C	IEC 60695-2-12	930
C	灼热丝燃烧温度	0.75 mm	°C	IEC 60695-2-13	875
C	灼热丝燃烧温度	1.0 mm	°C	IEC 60695-2-13	875
C	灼热丝燃烧温度	1.5 mm	°C	IEC 60695-2-13	875
C	灼热丝燃烧温度	3.0 mm	°C	IEC 60695-2-13	900
C	灼热丝燃烧测试	1.5 mm	°C	b.o. EDF HN60 E.02	750
C	灼热丝燃烧测试	3.0 mm	°C	b.o. EDF HN60 E.02	750
C	使用小型点火器加热	Method K and F; 2.0 mm	Class	DIN 53438-1,-3	K1, F1
C	针焰试验	Method K; 1.5 mm	s	IEC 60695-11-5	5
C	针焰试验	Method K; 2.0 mm	s	IEC 60695-11-5	5
C	针焰试验	Method K; 3.0 mm	s	IEC 60695-11-5	10
C	针焰试验	Method F; 1.5 mm	s	IEC 60695-11-5	60
C	针焰试验	Method F; 2.0 mm	s	IEC 60695-11-5	60
C	针焰试验	Method F; 3.0 mm	s	IEC 60695-11-5	120
C	燃烧等级 (US-FMVSS)	>=1.0 mm	mm/min	ISO 3795	passed
C	闪光点火温度		°C	ASTM D1929	480
C	自点火温度		°C	ASTM D1929	550

	电性能 (23 ° C/50 % 相对湿度)				
C	相对介电常数	100 Hz	-	IEC 60250	3.1
C	相对介电常数	1 MHz	-	IEC 60250	3.0
C	损耗因数	100 Hz	10^{-4}	IEC 60250	5
C	损耗因数	1 MHz	10^{-4}	IEC 60250	90
C	体积电阻率		Ohm·m	IEC 60093	1E14
C	表面电阻率		Ohm	IEC 60093	1E16
C	Electrical strength	1 mm	kV/mm	IEC 60243-1	34
C	相比耐漏电起痕指数CTI	Solution A	Rating	IEC 60112	250
C	相比耐漏电起痕指数CTI M	Solution B	Rating	IEC 60112	125M
C	电解腐蚀		Rating	IEC 60426	A1

Makrolon 2805

	性能	测试条件	单位	标准	数值
其他性能 (23 ° C)					
C	Water absorption (saturation value)	Water at 23 ° C	%	ISO 62	0.30
C	Water absorption (equilibrium value)	23 ° C; 50 % r. h.	%	ISO 62	0.12
C	密度		kg/m³	ISO 1183-1	1200
C	水蒸汽渗透性	23 ° C; 85 % RH; 100 m film	g/(m²·24 h)	ISO 15106-1	15
C	气体渗透性	Oxygen; 100 m film	cm³/(m²·24 h·bar)	b.o. ISO 2556	650
C	气体渗透性	Oxygen; 25.4 m (1 mil) film	cm³/(m²·24 h·bar)	b.o. ISO 2556	2760
C	气体渗透性	Nitrogen; 100 m film	cm³/(m²·24 h·bar)	b.o. ISO 2556	120
C	气体渗透性	Nitrogen; 25.4 m (1 mil) film	cm³/(m²·24 h·bar)	b.o. ISO 2556	510
C	气体渗透性	Carbon dioxide; 100 m film	cm³/(m²·24 h·bar)	b.o. ISO 2556	3800
C	气体渗透性	Carbon dioxide; 25.4 m (1 mil) film	cm³/(m²·24 h·bar)	b.o. ISO 2556	16900
C	松密度	Pellets	kg/m³	ISO 60	660
原料特定性能					
C	折射系数	Procedure A	-	ISO 489	1.586
C	透明材料的雾度	3 mm	%	ISO 14782	< 0.8
C	透光率 (透明材料)	1 mm	%	ISO 13468-2	89
C	透光率 (透明材料)	2 mm	%	ISO 13468-2	89
C	透光率 (透明材料)	3 mm	%	ISO 13468-2	88
C	透光率 (透明材料)	4 mm	%	ISO 13468-2	87
测试试样的工艺条件					
C	注塑-熔体温度		°C	ISO 294	300
C	注塑-模具温度		°C	ISO 294	80
C	注塑-注塑速度		mm/s	ISO 294	200

C 这些性能数据来源於 CAMPUS 塑料数据库并且依据 ISO 10350 标准的国际分类原则

Makrolon 2805

声明

典型值

这些数据仅应作为经典值。除非有明确的书面同意，不能认定为材料的指标或保证值。产品的性能在一定程度上受模具/机头设计，加工工艺条件以及着色的影响。除非另有特别说明，所有数据均来源于室温条件下对标准试样进行的测试。

通用

发行者: Global Innovations - Polycarbonates

Bayer MaterialScience AG,

D-51368 Leverkusen,

www.bayermaterialscience.com

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Test Report

MILTON PLASTICS LTD

22/F,EASTERN COMMERCIAL CENTRE,83 NAM ON STREET,SHAUKEIWAN,HONG KONG

The following sample(s) was/were submitted and identified on behalf of the clients as : Polycarbonate

SGS Job No. :	CP13-048135 - GZ
Model No. :	PC 2805
Main Substance :	Polycarbonate
Buyer :	Milton Plastics Ltd
Supplier :	Bayer
Date of Sample Received :	10 Sep 2013
Testing Period :	10 Sep 2013 - 13 Sep 2013
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Trophy Zhang
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN13-142602.001	Transparent plastic grains

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
(2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
(3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
(4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
(5)With reference to IEC 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	*001*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

Test Item(s)	Limit	Unit	MDL	*001*
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

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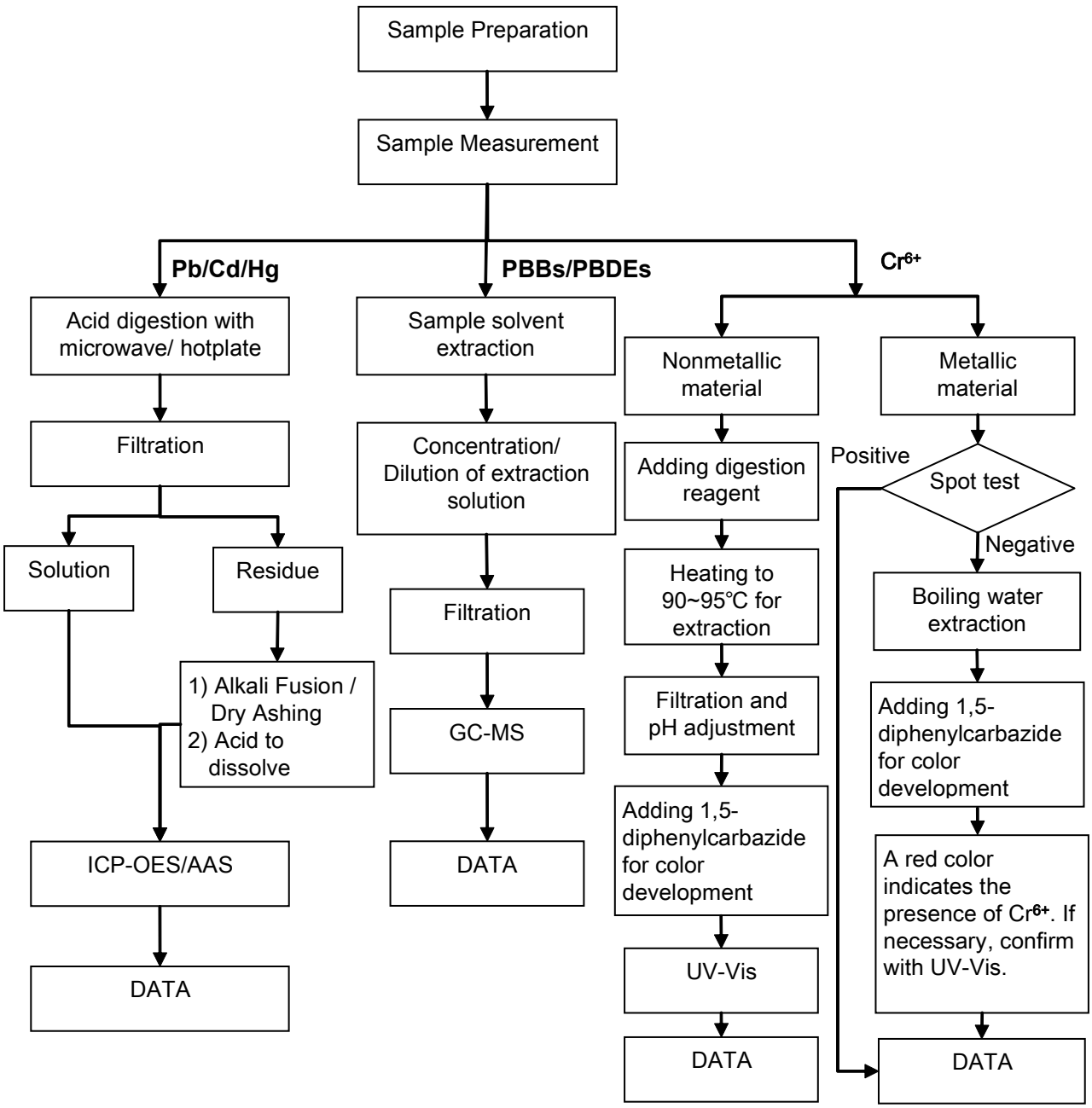
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Michael Tso / Cutey Yu
2) Name of the person in charge of testing: Adams Yu / Yolanda Wei
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr^{6+} and PBBs/PBDEs test method excluded).



Sample photo:

CAN13-142602.001

SGS authenticate the photo on original report only

*** End of Report ***

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