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Part number Changes	Data Sheets Edition From	Data Sheets Edition To
Chang fan number	200021600-GP	200022960-GP
Add grill		500018860-GP
Add screw		150008730-GP



2. Component List

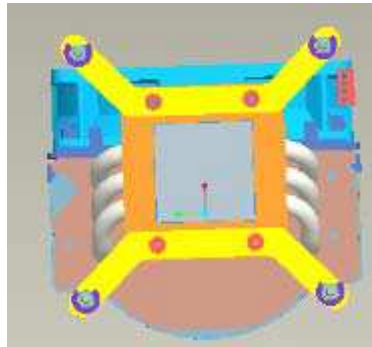
ITEM	PART NO.	PART NAME	DESCRIPTION	QUANTIT Y	MATERIA L
1	601017970-GP	Fin	79.6*53*93.2	1	AL1100
		Pipe1	C1020- ϕ 6.0	1	C1020
		Piep2	C1020- ϕ 6.0	1	C1020
		Pipe3	C1020- ϕ 6.0	1	C1020
		Cu Base	50*53	1	C1100
		H.S	38.8*19.1*37.07	1	AL6063-T5
		Solder	----	3g	----
2	450008470-GP	Clip	85.93*8.5*2	2	SUS304
3	150005630-GP	Base Screwr	M3	4	AISI1018
4	150026780-GP	Cpu Screw	M3	4	AISI1018
5	450008480-GP	Spring	ϕ 7.4*14.7	4	SPWB
6	300002012-GP	C-ring	ϕ 4	4	SK5
7	150014740-GP	Cover Screw	M3	2	AISI1018
8	200022960-GP	Fan	9225	1	----
9	310010160-GP	Cover	98.5*96.3*45.5	1	PC
10	150008730-GP	Grill Screw	M4.8*7	4	AISI1018
11	500018860-GP	Grill	90*90*505	1	C1008
12	310010610-GP	AL Cover	95.2*54.9	1	AL1100
13	520000220-GP	Interface	30*30	0.40g	7783
14	359000530-GP	Fan Label	----	1	PET
15	104031660-GP3	UP Tray	545*403*62	1/8	PET
16	104031670-GP3	Down Tray	545*403*60	1/8	PET
17	111002430-GP	Carton	555*413*217	1/16	K=K



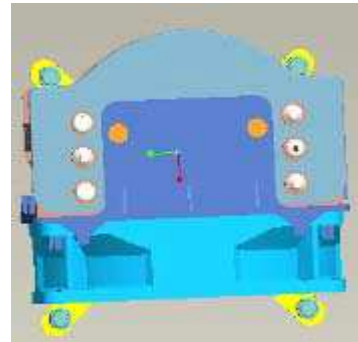
16	104032250-GP3	S-Tray	80*56*15	1/1	PET
----	---------------	--------	----------	-----	-----

3. Specification&Dimension

3.01. Sample photo

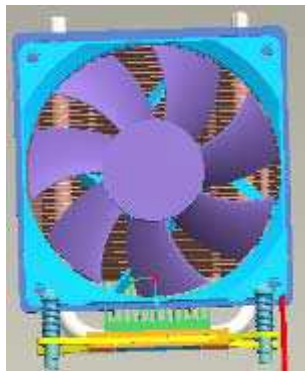


Top side

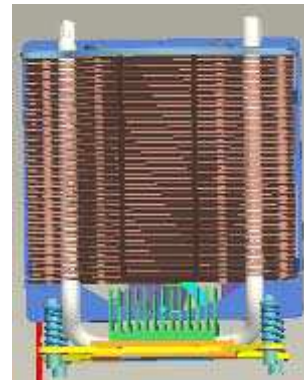


Bottom side

Front side

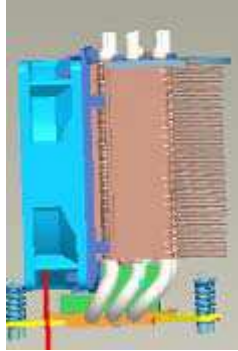


Back side





Left side

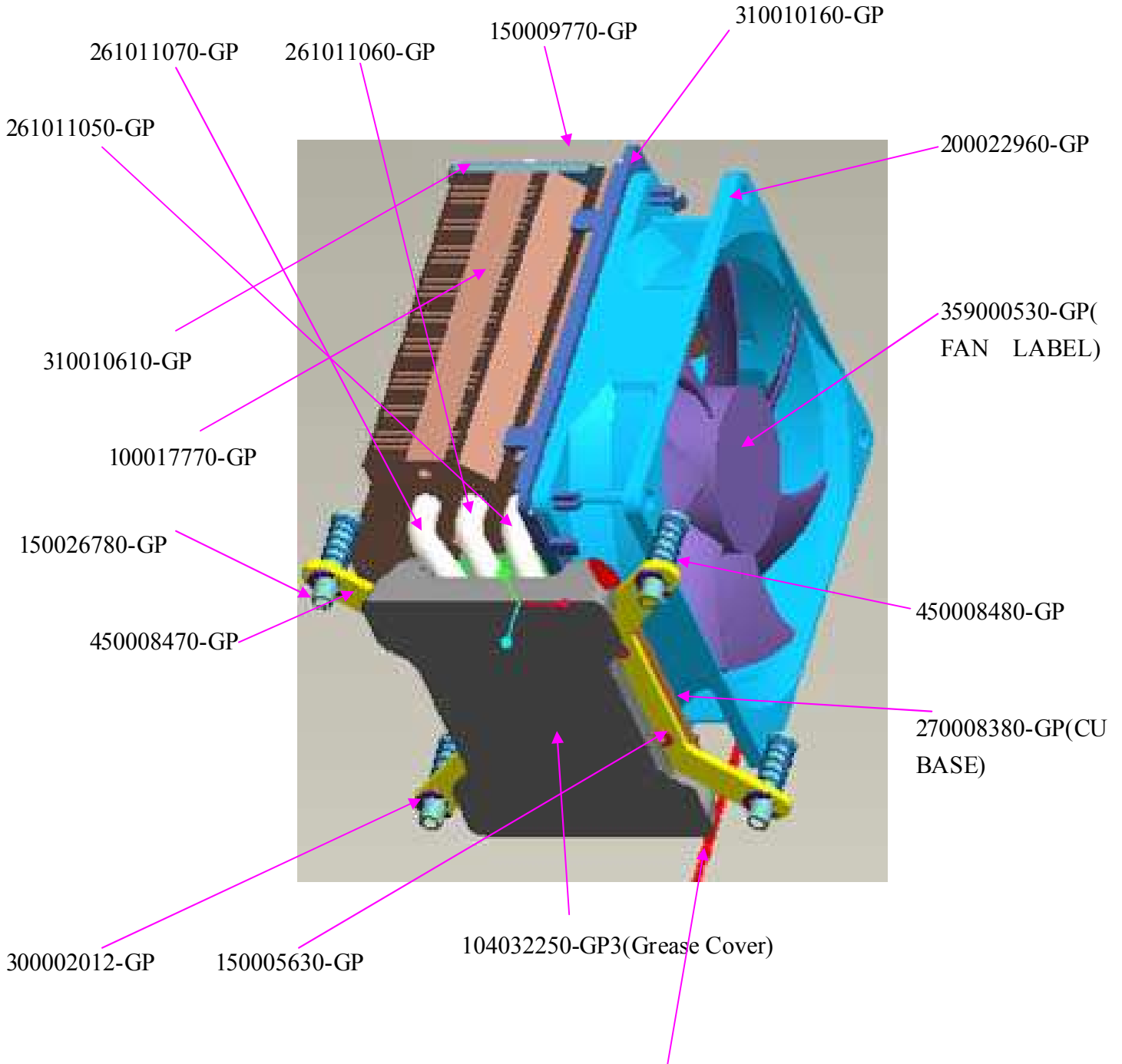


Right side





3.02. Cooler Explosion



Direction of cable wire is as below
Length of cable wire is 100mm



3.03. Cooler Assembly

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VER:A1

REV	DESCRIPTION	Section	Engineer	Checked	Date
△	風扇料號由2002160A-GP 變更為20022960-GP 增加風扇護網及螺絲	C2	張本	張本	2012/01/05
△		C2	張本	張本	2012/03/13

投訴要求:

- 所有零件必須配對位，不可有漏裝或裝反現象
- 產品外觀時不可有刮傷，零件或漆面等不良現象
- 產品不可有明顯刮傷、變形等不良現象
- 產品不可有油污、異味、發熱等異常不良現象
- 螺絲有刮傷或螺絲頭變形
- 產品必須裝配
- 扭力：0.1~0.2NM
- 包裝方式：上、下腳盒、起底、外箱

料號要求:

- 所有零件必須配對位，不可有漏裝或裝反現象
- 產品外觀時不可有刮傷，零件或漆面等不良現象
- 產品不可有明顯刮傷、變形等不良現象
- 產品不可有油污、異味、發熱等異常不良現象
- 螺絲有刮傷或螺絲頭變形
- 產品必須裝配
- 扭力：0.1~0.2NM
- 包裝方式：上、下腳盒、起底、外箱

ITEM	PART NO.	MATERIAL	QTY	DESCRIPTION
△ 15	150008730-GP	GRILL SCREW	4	NI-PLATING
△ 14	500018860-GP	GRILL	1	C1018
△ 13	500003890-GP	*****	1	*****
12	601017970-GP	Mix closely Sample	1	緊配
11	520002200-GP	INTERFACE	0.3/1000	±0.1~0.2MM
10	150005630-GP	CLIP SCREW	4	鍍銀
9	450008470-GP	CLIP	2	去油
8	30002012-GP	E-RING	4	鍍銀
7	450008480-GP	SPRING	4	鍍銀
6	150026780-GP	CPU SCREW	4	鍍銀
5	20022960-GP	FAN	1	*****
4	359000330-GP	FAN LABEL	1	*****
3	310010160-GP	FAN COVER	1	*****
2	150014740-GP	COVER SCREW	2	鍍銀
1	310010610-GP	AL COVER	1	去油

Tolerance:

Range	0.1	0.15	0.2	0.3
0~10	0.1	0.15	0.2	0.3
10~30	0.15	0.2	0.25	0.4
30~50	0.2	0.3	0.35	0.6
50~100	0.25	0.4	0.4	0.8
100~	0.3	0.5	0.6	1.0

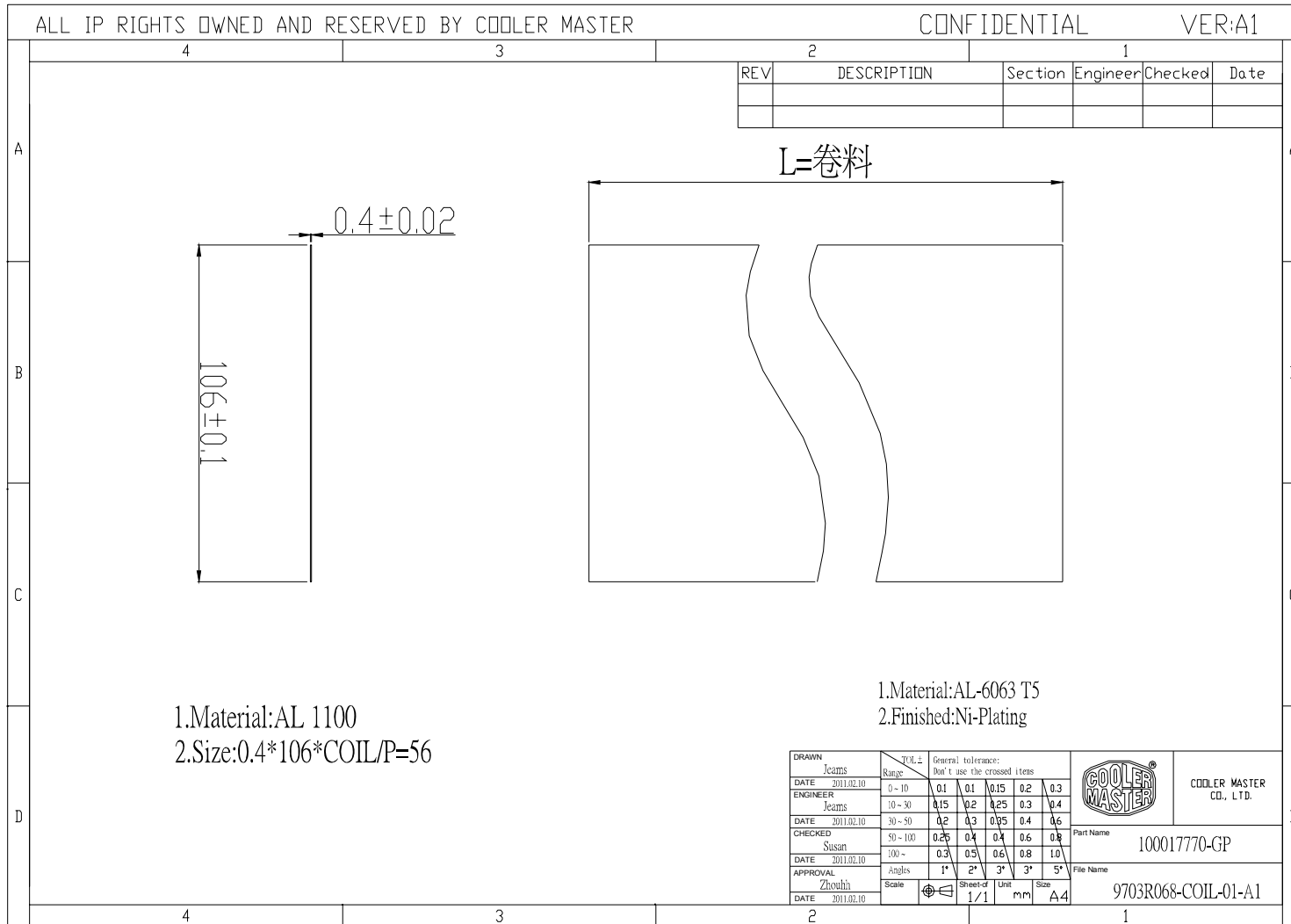
Angles: 1°, 2°, 3°, 5°

Scale: 1/1 mm

Cooler Master Co., Ltd
正式圖面
DATE 2011.11.25

DRAWN: 張本
DATE: 2011.11.25
ENGINEER: 張本
DATE: 2011.11.25
CHECKED: 張本
DATE: 2011.11.25
APPROVED: 張本

COOLER MASTER
CDL, LTD.
Part Name: HP6-00002-N1-GP
File Name: 10011R039-ASM-01-A3



3.04. Fin



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3.05. Cu Base

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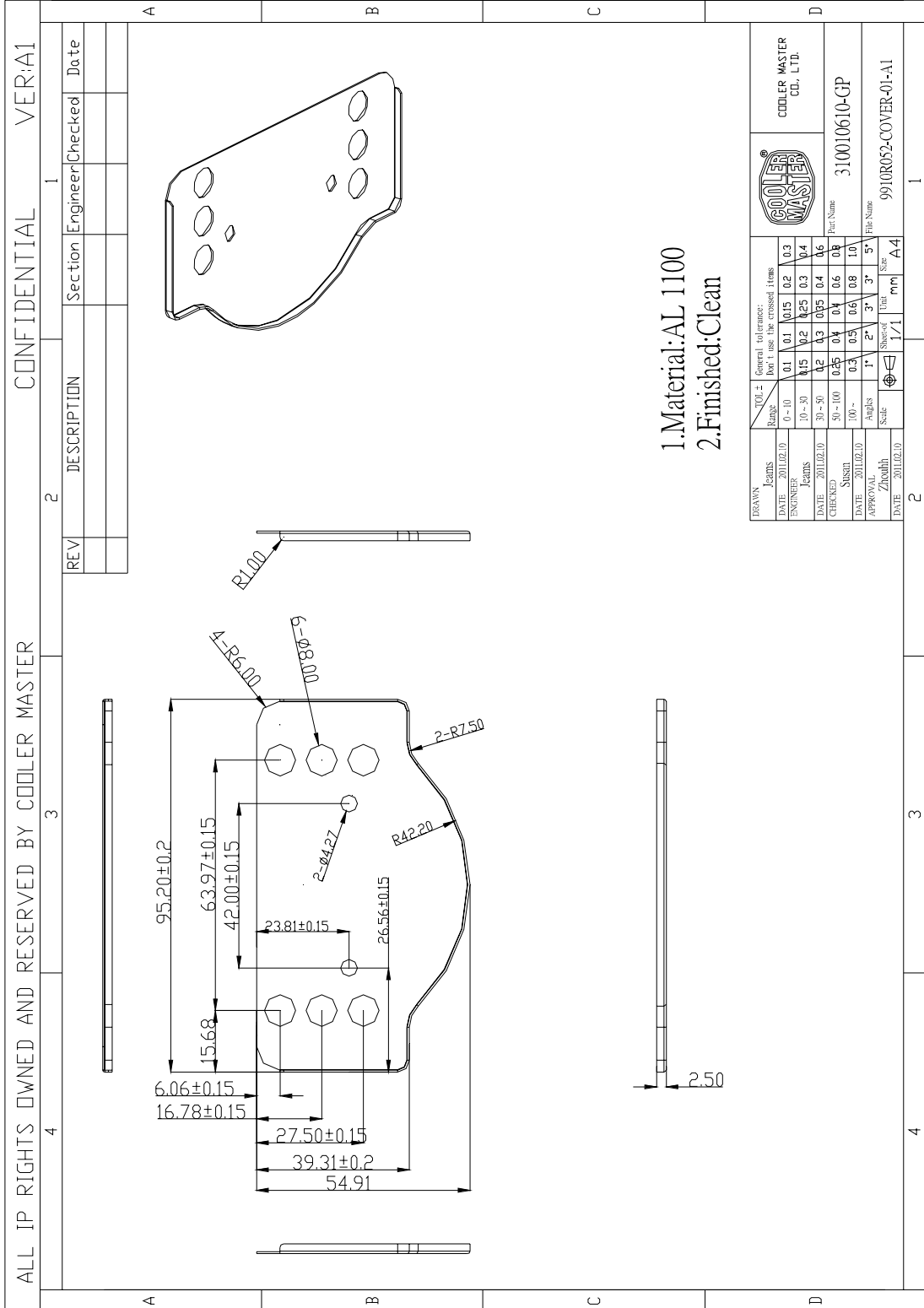
REV	DESCRIPTION	Section	Engineer	Checked	Date

1. Material: Cu C1100
2. Finished: Anti-Oxidation

DRAWN	Jeans	DATE	2011.02.10	ENGINEER	Jeans	DATE	2011.02.10	CHECKED	Susan	DATE	2011.02.10	APPROVAL	Zhouhh	DATE	2011.02.10			
General tolerance:	Don't use the crossed items																	
Tolerance Range	0 - 10	0.1	0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.5	2.0	3.0	4.0			
Angles	1°	2°	3°	3°	5°													
Scale	1/1	Sheet of	1/1	Unit	mm	Size	A4	Part Name	270008380-GP							File Name	9910R052-CU BASE-01-A1	



3.06. Cover





3.07. Fan Cover

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REV	DESCRIPTION	Section	Engineer	Checked	Date

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1. Material: PC

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CO., LTD.

Part Name: 310010160-GP
File Name: 9910R052-COVER-01-A1

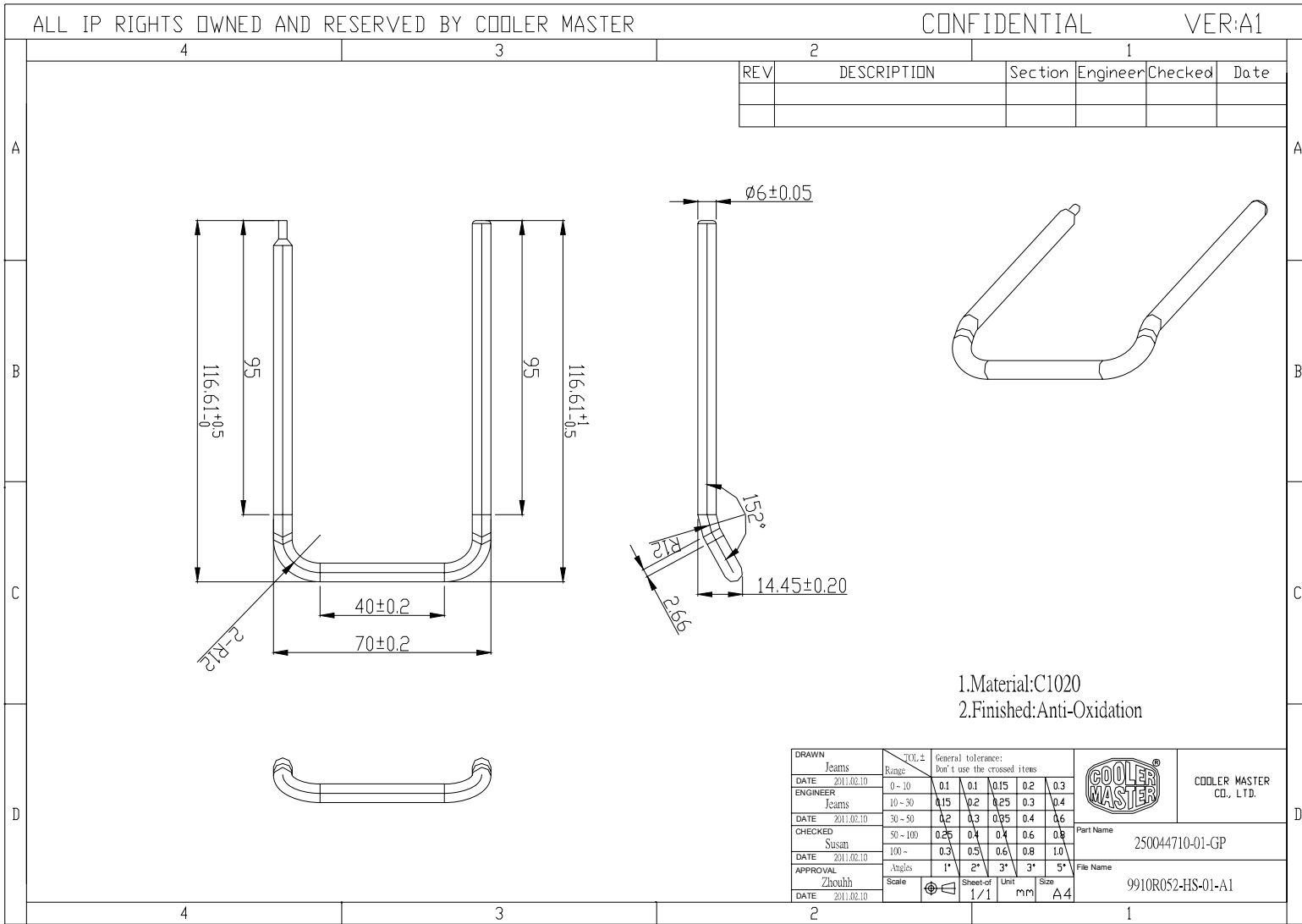
Range	0-10	10-30	30-50	50-100	100+	Angles	Scale	Sheet	Unit	Size
General Tolerances:	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Form	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Position	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Surface	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Dimension	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Form	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Position	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Surface	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	
Dimension	0.1	0.15	0.2	0.3	0.4	1°	1:1	mm	A4	



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3.08. Pipe1

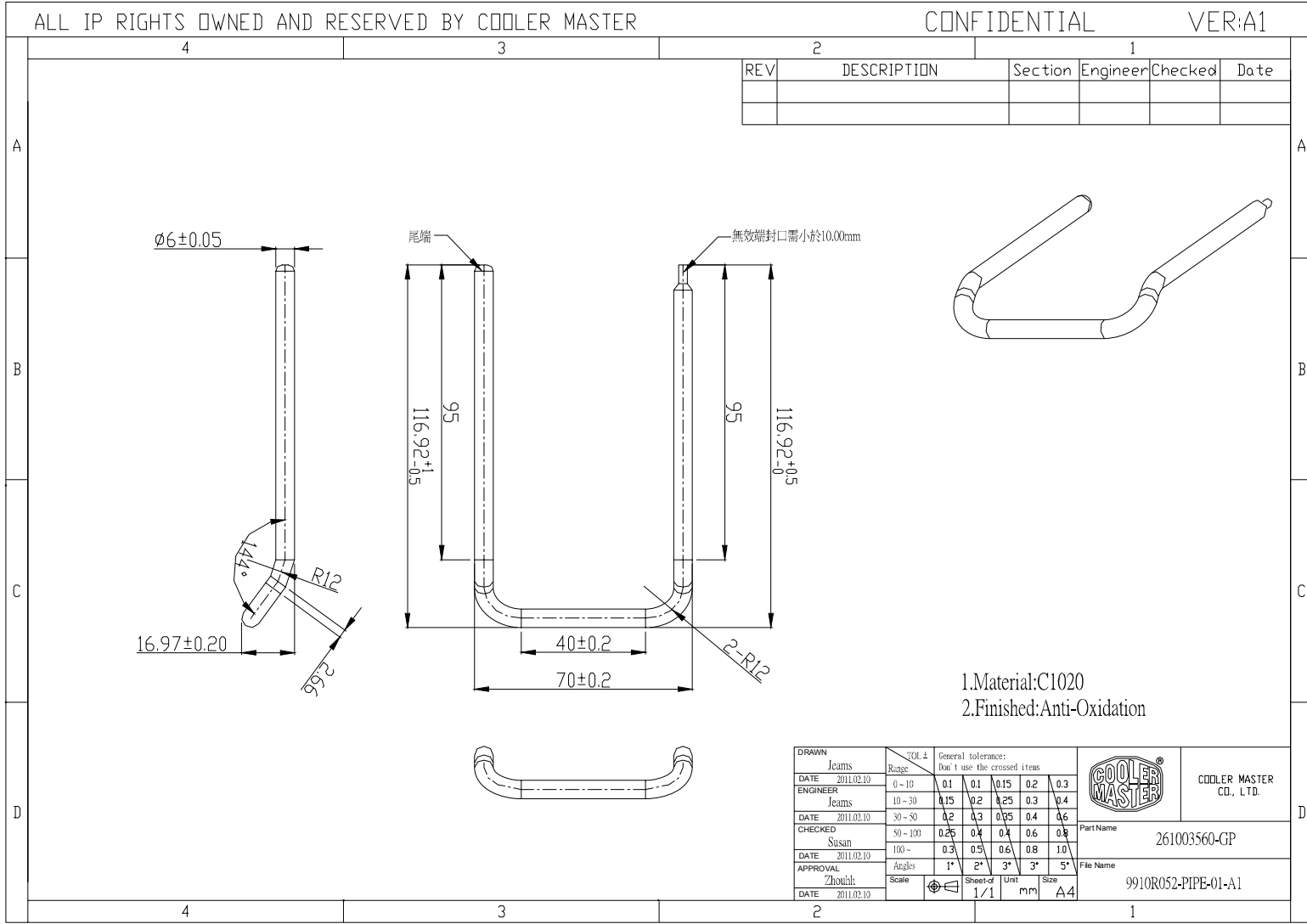




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3.09. Pipe2

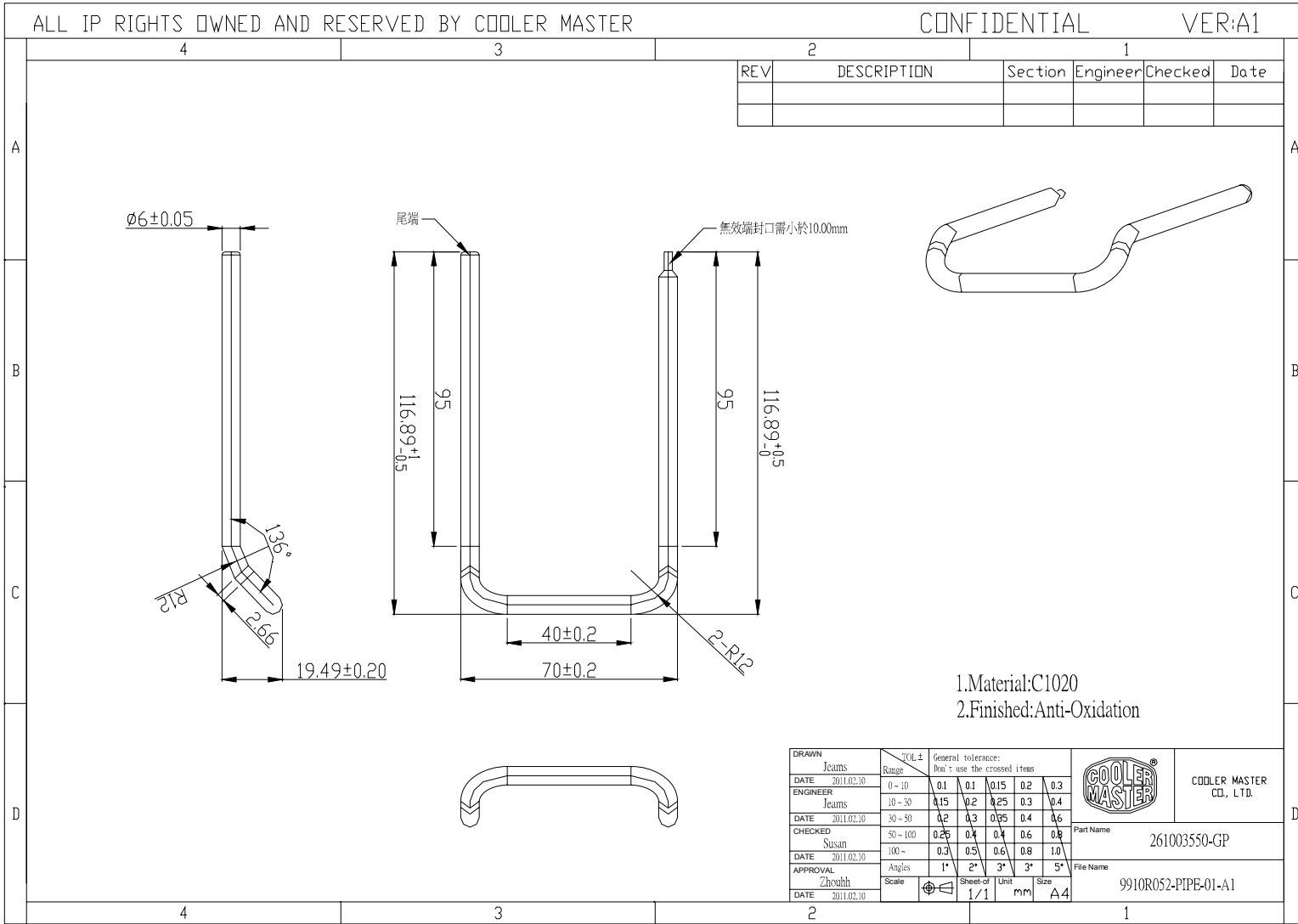




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3.10. Pipe3

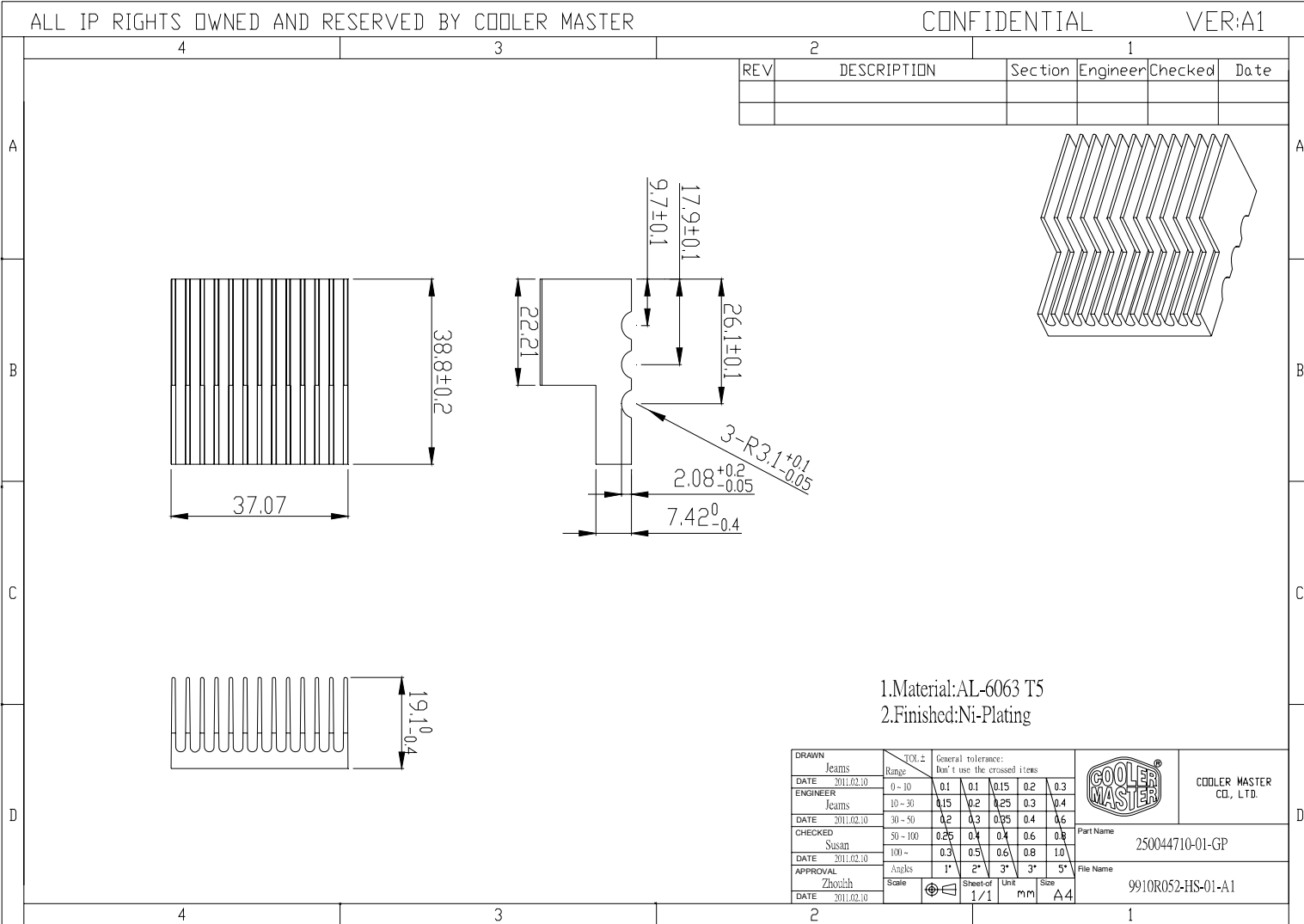




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3.11. H.S

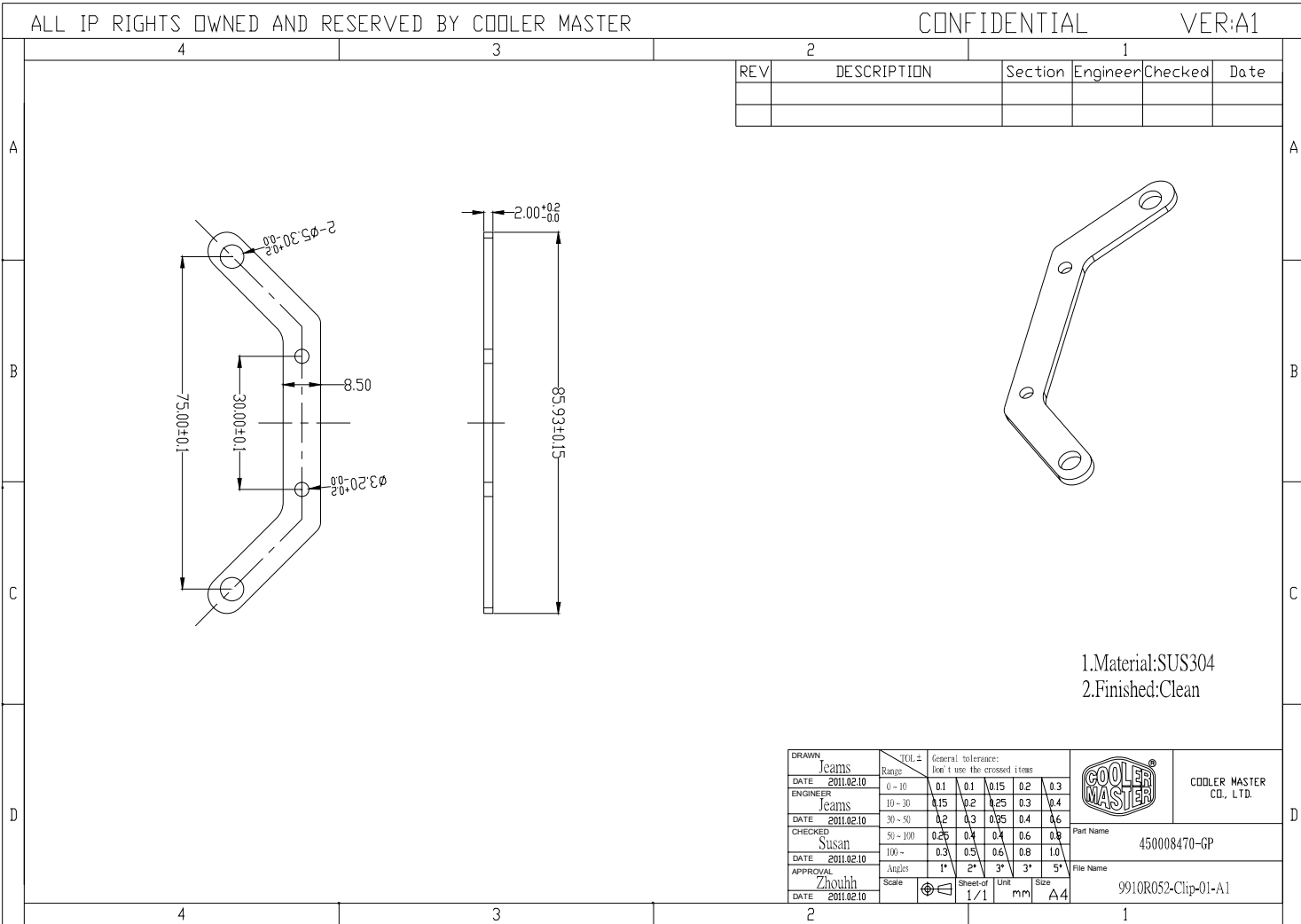




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3.12. Clip

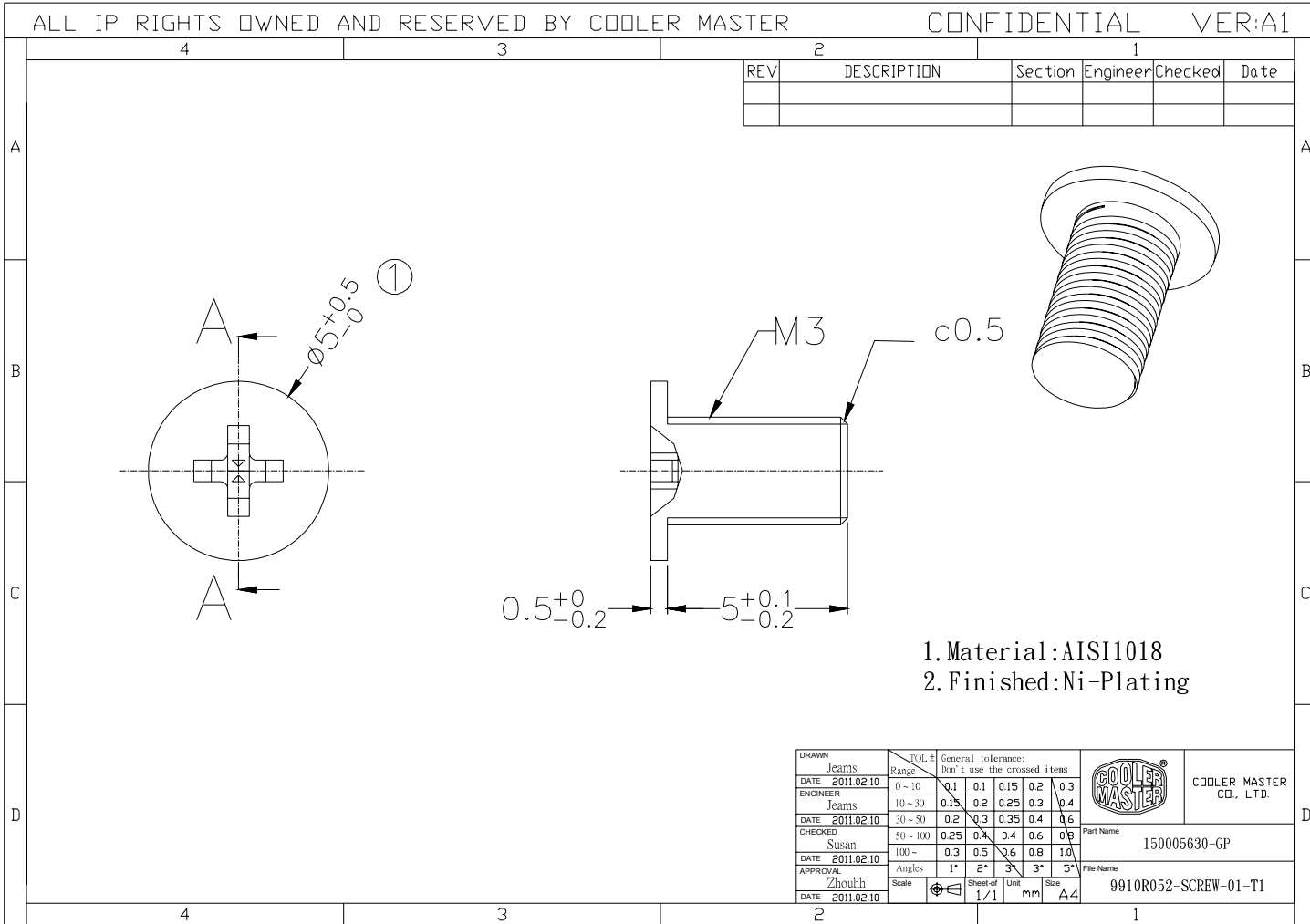




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3.13. Base Screw

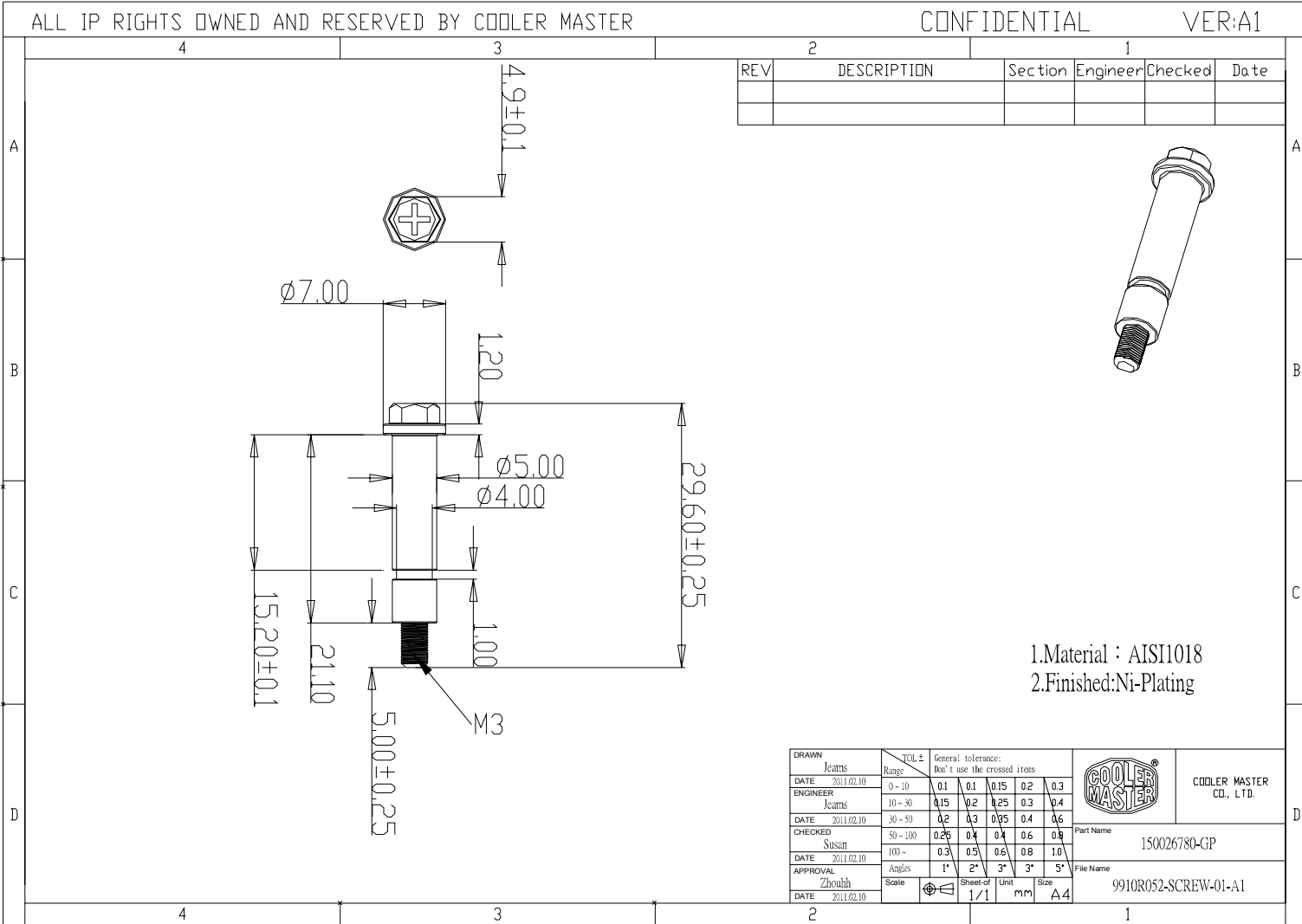




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3.14. Cpu Screw

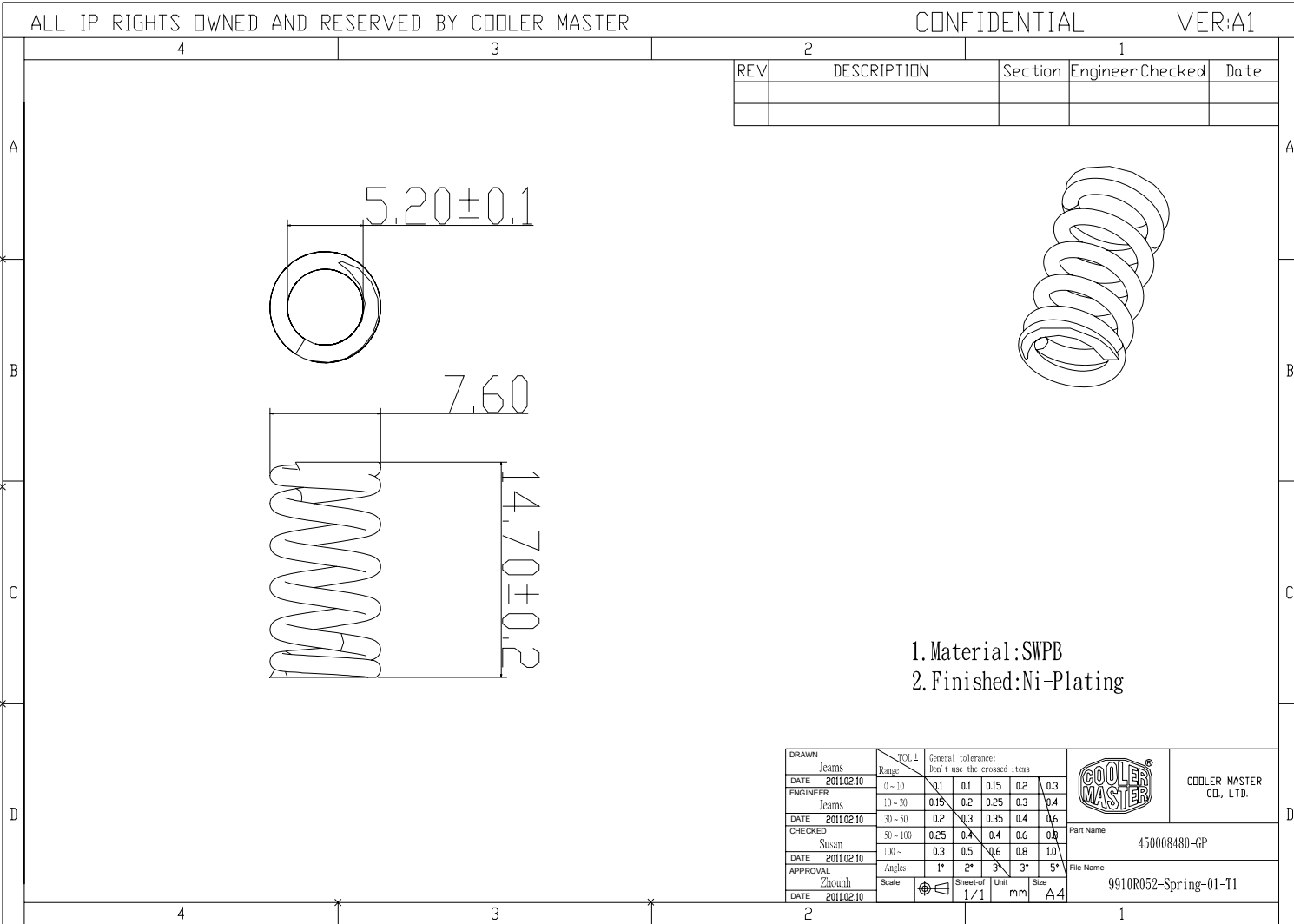




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3.15. Spring





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3.16. C-ring

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REV	DESCRIPTION	Section	Engineer	Checked	Date

1:MATERIAL:SK5
2:FINISH:NI-PLATING

DRAWN	DATE	ENGINEER	CHECKED	APPROVAL	DATE	TOL.±					General tolerance: Don't use the crossed items	Part Name	File Name		
						Range	0.1	0.15	0.2	0.3				0.4	0.6
Jcams	2009.10.09	Jcams	Susan	Zhouhh	2009.10.09	0-10	0.1	0.15	0.2	0.3	0.4	0.6	1.0	300002012-HF	9910R052-C-ring-01-A1

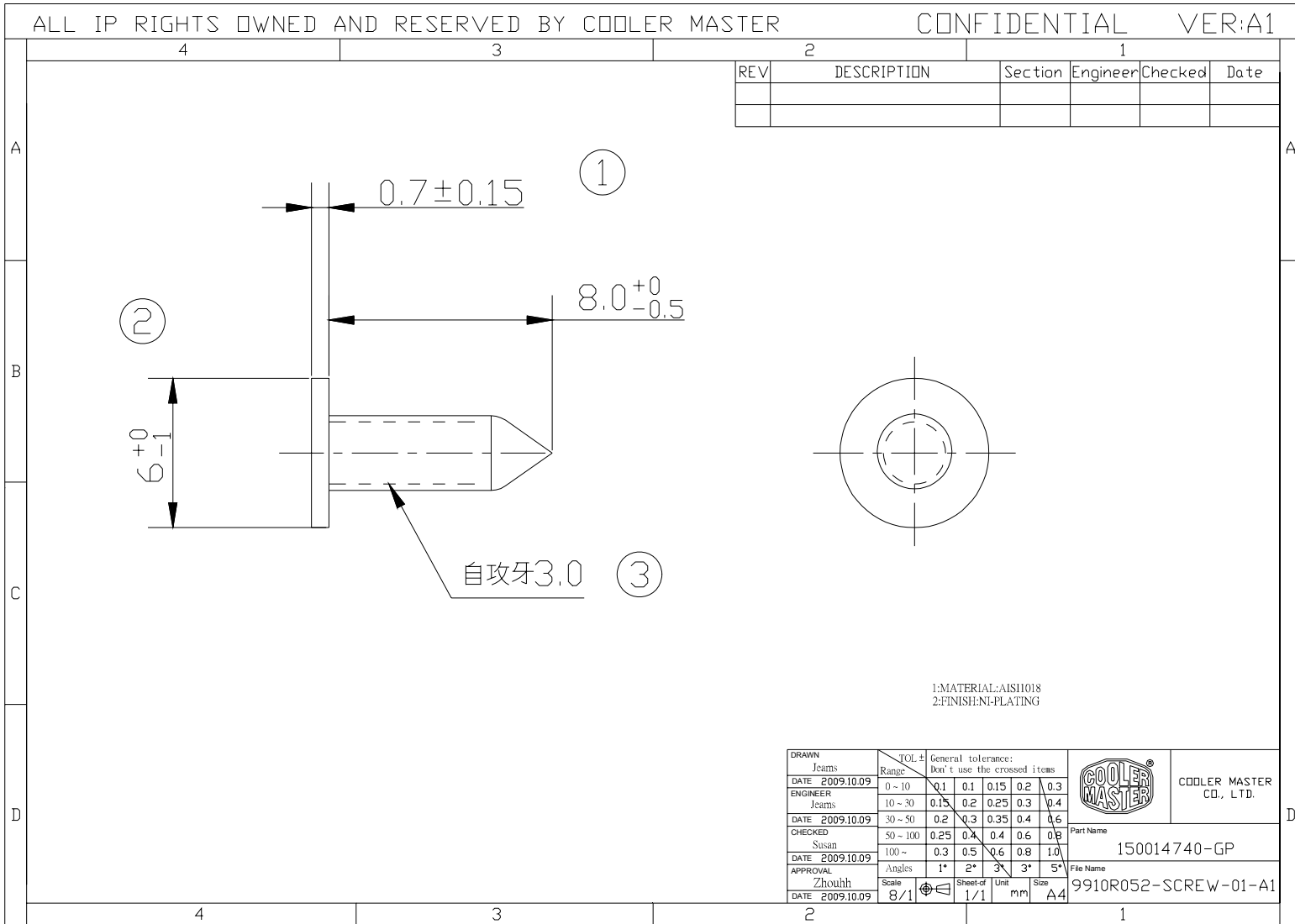
Scale: 8/1 Sheet-of: 1/1 Unit: mm Size: A4



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3.17. Cover Screw

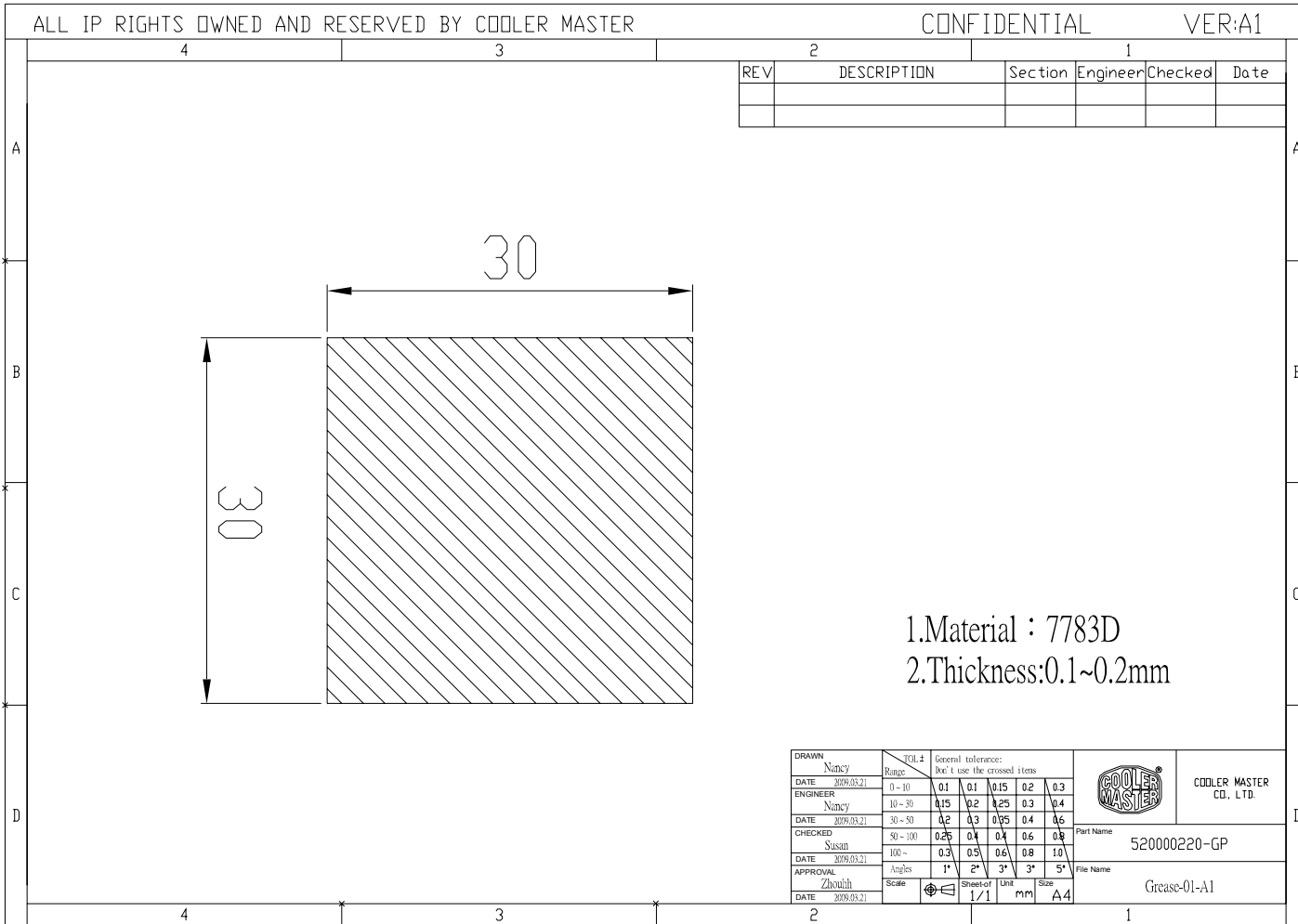




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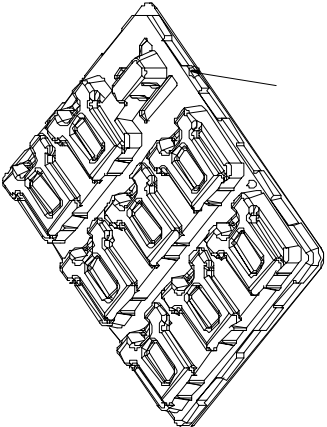
3.18. Interface






3.19. Up Tray

CONFIDENTIAL		VER: A1
REV	DESCRIPTION	
1	Eng. [redacted]	Date: [redacted]
2	[redacted]	[redacted]
3	[redacted]	[redacted]
4	[redacted]	[redacted]

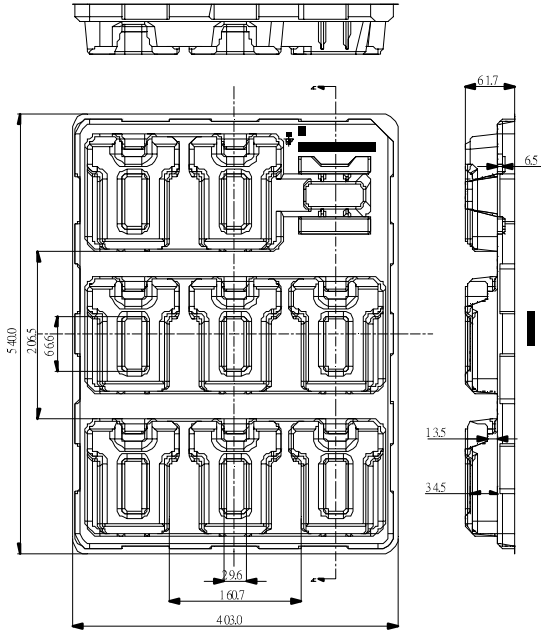


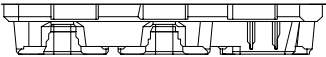
1. Material: B PET T=0.7mm



104031660-GF3

9902R043-TY-01-T1





1	[redacted]	
2	[redacted]	[redacted]
3	[redacted]	[redacted]
4	[redacted]	[redacted]



3.20. Down Tray

CONFIDENTIAL

VER: A1

1	2	3	4	A	B	C	D
R-1	ELECTRIFICATION	Accessories	Pkg. Material	Checklist	Date		

技術要求:
1. Material: B PET T= 0.7mm

Items	Range	0.1	0.1	0.15	0.2				
Items	0-10								
Items	50-100								
Serial									
Angles	1	2	3	4	5				
Zkoubh									

COOLERM
104031670-GP3
9902R043-TY-01-T1



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3.21. Carton





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3.22.S-Tary

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REV	DESCRIPTION	Section	Engineer	Checked	Date

Section A-A

1.Material: B PET T=0.7mm

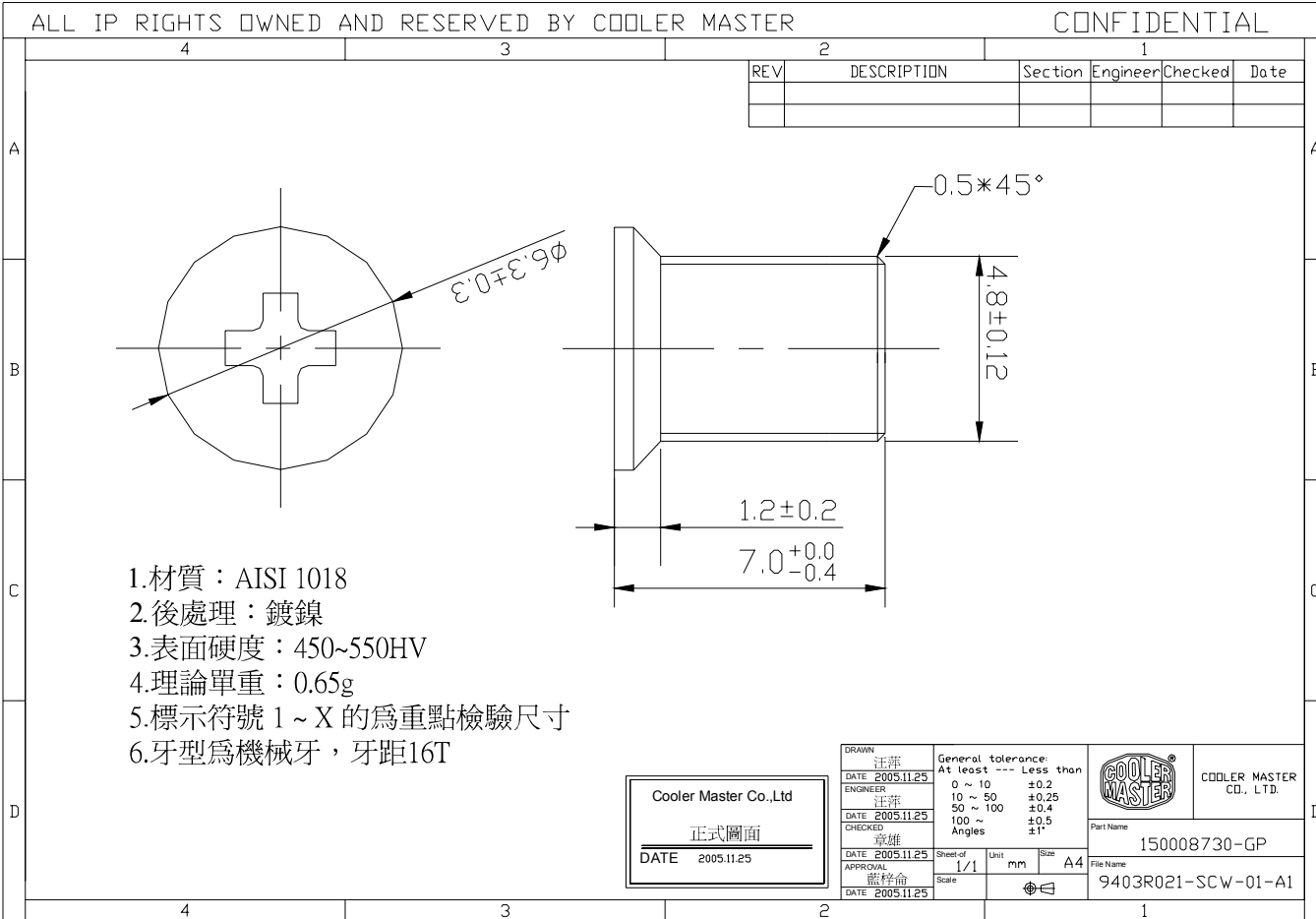
DRAWN	Jcams	TOL ±						General tolerance: Don't use the crossed items		COOLER MASTER CO., LTD.
		Range	0.1	0.1	0.15	0.2	0.3			
DATE	2011.01.17	0 ~ 10	0.1	0.1	0.15	0.2	0.3	Part Name	104032250-GP3	
ENGINEER	Jcams	10 ~ 30	0.15	0.2	0.25	0.3	0.4			
DATE	2011.01.17	30 ~ 50	0.2	0.3	0.35	0.4	0.5	File Name	9902R043-TY-01-T1	
CHECKED	Susan	50 ~ 100	0.25	0.3	0.3	0.4	0.8			
DATE	2011.01.17	100 ~	0.3	0.3	0.6	1.0	1.0			
APPROVAL	Zhouhh	Angles	1'	2'	3'	4'	5'			
DATE	2011.01.17	Scale			Sheet-of	Unit	Size			
			1/1	mm	A4					



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3.23. Grill Screw





3.24.Grill

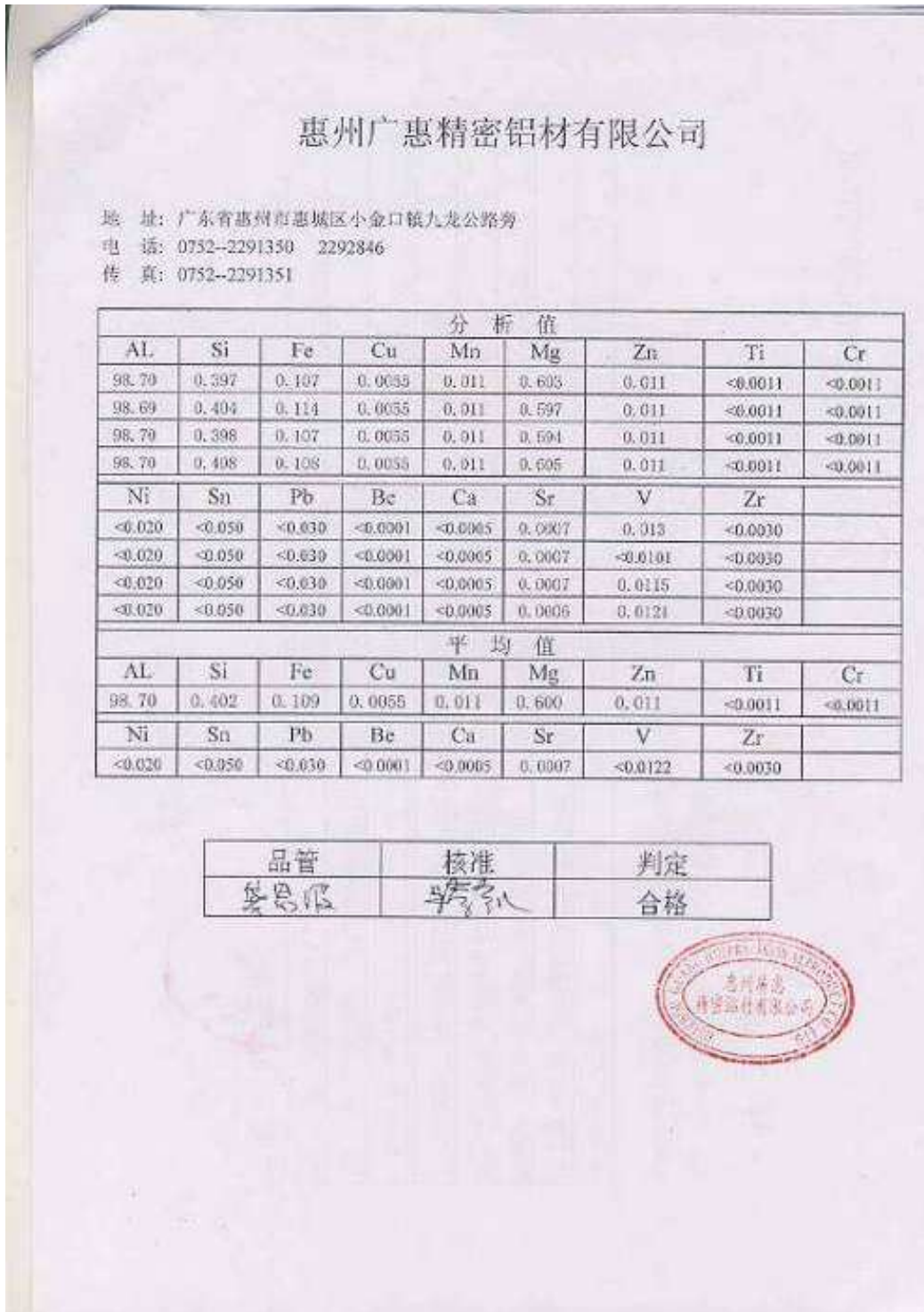
ALL IP RIGHTS OWNED AND RESERVED BY COOLER MASTER	CONFIDENTIAL	VER:A0																																									
4	3	2	1																																								
REV	DESCRIPTION	Section	Engineer/Checked																																								
			Date																																								
A	B	C	D																																								
		<ol style="list-style-type: none"> 1. 材質：鐵（C1008光澤金屬線） 2. 表面處理：電鍍鎳 3. 鐵網(1)環圈線徑為φ1.6mm (2)支架線徑為φ1.8mm 4. 焊接處毛刺最大不可超過0.35mm 5. 焊接處最小可承受88磅拉力 6. 平面度在1.5mm內 7. 標示1 - X的為重點檢驗尺寸 	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:20%;">DRAWN: 銀春林</td> <td style="width:20%;">General tolerance</td> <td style="width:20%;">mm</td> <td style="width:20%;">Part Name</td> <td style="width:20%;">COOLER MASTER</td> </tr> <tr> <td>DATE: 2008.11.15</td> <td>At first</td> <td>±0.1</td> <td>500018860-GP</td> <td>CD., LTD.</td> </tr> <tr> <td>DRAWING: 銀春林</td> <td>10 ~ 10</td> <td>±0.15</td> <td></td> <td></td> </tr> <tr> <td>DATE: 2008.11.15</td> <td>10 ~ 50</td> <td>±0.2</td> <td></td> <td></td> </tr> <tr> <td>CHECKED: 楊俊</td> <td>50 ~ 100</td> <td>±0.2</td> <td></td> <td></td> </tr> <tr> <td>DATE: 2008.11.15</td> <td>100 ~</td> <td>±1*</td> <td></td> <td></td> </tr> <tr> <td>APPROVED: 周耀華</td> <td>Unit</td> <td>mm</td> <td>Scale</td> <td>A4</td> </tr> <tr> <td>DATE: 2008.11.15</td> <td>1/1</td> <td></td> <td></td> <td>9703R068-FANGRILL-01-A1</td> </tr> </table>	DRAWN: 銀春林	General tolerance	mm	Part Name	COOLER MASTER	DATE: 2008.11.15	At first	±0.1	500018860-GP	CD., LTD.	DRAWING: 銀春林	10 ~ 10	±0.15			DATE: 2008.11.15	10 ~ 50	±0.2			CHECKED: 楊俊	50 ~ 100	±0.2			DATE: 2008.11.15	100 ~	±1*			APPROVED: 周耀華	Unit	mm	Scale	A4	DATE: 2008.11.15	1/1			9703R068-FANGRILL-01-A1
DRAWN: 銀春林	General tolerance	mm	Part Name	COOLER MASTER																																							
DATE: 2008.11.15	At first	±0.1	500018860-GP	CD., LTD.																																							
DRAWING: 銀春林	10 ~ 10	±0.15																																									
DATE: 2008.11.15	10 ~ 50	±0.2																																									
CHECKED: 楊俊	50 ~ 100	±0.2																																									
DATE: 2008.11.15	100 ~	±1*																																									
APPROVED: 周耀華	Unit	mm	Scale	A4																																							
DATE: 2008.11.15	1/1			9703R068-FANGRILL-01-A1																																							
A	B	C	D																																								
4	3	2	1																																								

Cooler Master Co., Ltd
正式圖面
DATE 2008.11.15



4. Materials Of Certificate

4.01. Al6063 T5(H.H)





4.02. Al 1100(Fin)

Inspection Certificate

Novelis

DATE: 01 DEC 2008

05818 8938 883 0821 801583

STANDARDS: JIS

DESCRIPTION OF PRODUCT: AL-Coil

LOT NUMBER: C5Y28012

PROCESS NUMBER: H056412

ALLOY	TEMPER	PRODUCT SPEC SIZE (mm)			ULTIMATE YIELD (kgf/mm ²)	ELONGATION (%)	GAUGE (mm)	WIDTH (mm)	LENGTH ()						
		GAUGE	WIDTH	LENGTH											
1050	H16	0.400	1,219.00	0.00	14.78 12.23	3.00	0.824 0.775	1,219.00 1,218.00							
		ACTUAL		14.90	13.29	4.88	0.788	1,212.00							
CHEMICAL COMPOSITION (%)	MAX	MIN	Cr	Zn	Ti	Each	Total	APPEARANCE	DIMENSION						
										Mg	Mn	Cu	Fe		
ACTUAL	0.025	0.025	0.05	0.05	0.002	0.002	0.002	99.5	O.K						
OTHERS	0.070	0.091	0.002	0.002	0.002	0.002	0.002	99.588	O.K						
NET WEIGHT (kg)	GROSS WEIGHT (kg)	CUT DIA & SHEETS		OPTION FIELD											
		MAX	MIN	NET WEIGHT	GROSS WEIGHT	Fe	Mn	Cu	Mg	Zn	Ti	Each	Total	APPEARANCE	DIMENSION
MAX	3,000	1,304	0.05	0.05	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	99.5	O.K
MIN	2,000	1,071	0.05	0.05	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	99.588	O.K
ACTUAL	2,358	2,453	0.05	0.05	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	99.588	O.K

REMARKS:

P.O NUMBER: XT31171

Coil Length (m): 880

东莞翔隆金属制品有限公司


Novelis

WE HEREBY CERTIFY THAT THIS MATERIAL MEETS THE CUSTOMER'S SPECIFICATIONS



4.03. Emerge PC (Cover)

Q for Plastics Yellow Card 第1頁, 共1頁



QMFZ2 Component - Plastics Friday, October 24, 2003 E206114

DOW CHEMICAL PACIFIC LTD
40-50 TSING YI RD TSING YI ISLAND NT HK

Material Designation: **EMERGE PC 8600(a)**

Product Description: Polycarbonate (PC), designated "EMERGE" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	1.5	V-0	3	0	125	125	125	-	-
	2.5	V-0, 5VA	3	0	125	125	125	-	-
	3.0	V-0, 5VA	2	0	125	125	125	-	-


CTI: 3 IEC CTI: - HVTR: - D495: 7 IEC Ball Pressure (°C): -

Dielectric Strength (kV/mm): 25 Volume Resistivity (10⁹ohm-cm): 18 Dimensional Stability(%): 0.0
 ISO Tensile Strength (MPa): - ISO Flexural Strength (MPa): - ISO Heat Deflection (°C): -
 ISO Tensile Impact (kJ/m²): - ISO Izod Impact (kJ/m²): - ISO Charpy Impact (kJ/m²): -

(a) V-0 rating applies to melt flow range of 3 to 22 g/10 min inclusive; 5V rating applies only to melt flow range of 20 to 22 g/10 min range.

Report Date: 9/12/2002 Underwriters Laboratories Inc®

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.



Physical Properties	Test Methods	English Units	SI Units
Specific Gravity	ASTM D 792	1.2	1.2
Melt Flow Rate, 300°C/1.2 kg	ASTM D 1238	10 g/10 min	10 g/10 min
Mold Shrink, Linear Flow	ASTM D 955	0.005-0.007 in/in	0.005-0.007 mm/mm
Mechanical Properties®			
Tensile Strength at Yield (2 in/min)	ASTM D 638	8700 psi	60 MPa
Tensile Strength at Break	ASTM D 638	8400 psi	58 MPa
Tensile Modulus	ASTM D 638	320,000 psi	2200 MPa




Cooler Master Co., Ltd.

www.coolermaster.com



4.04. C1020(Pipe)

 Cooler Master Co., Ltd.
www.coolermaster.com

熱管規格說明
The Specification Of Heat Pipe

材質說明Material

材質Material:C1020
純度Pure Copper:99.96% ↑

內部結構Structure

內壁材質Wick:Copper powder Sintered
內壁液體Working Fluid:Pure Water

形狀尺寸Dimension

形狀Shape:S形折彎圓管
成型厚度Diameter:D=6.0mm(+0.05/-0.05)mm
直管長度Length:L=263mm(+1/-1)mm

操作模式Operation

可操作傾斜度Inclination:Any Direction
爆破溫度Burst Temperature (No cooling): > 250℃

性能規格Performance

最小傳熱功率Qmin Heat Transfer Rate:32W
功率量測誤差Qmax Instrument Test Deviation:10%
水浴測試溫度差 ΔT (Water): $\Delta T \leq 2^\circ\text{C}$
熱阻Thermal Resistance:0.16℃/W(For Static State)
功率測試抽樣比例Qmax Sampling Rate:1% PCS/lot

訊強電子(惠州)有限公司



4.05. AISI1018(Screw)

<p>中國鋼鐵</p> <p>品質證明書 TEST CERTIFICATE</p> <p>TEST CERTIFICATE</p>		<p>CHINA STEEL CORPORATION 1 Chung Kang Road, Hsiangshui Taiwan Tel 886 (7) 802 1111</p>																					
<p>客戶名稱 CUST. NO.</p> <p>品名 SAE 1018 AL-KILLED (AQ)</p> <p>規格 CSC MILL INSPECTION</p>	<p>產品名稱 PRODUCT</p> <p>標號 930147/ED9019</p> <p>客戶編號 T0611H K</p> <p>交運日期 ON/ABOUT FEB. 06, 2004</p> <p>客戶訂單編號 ORDER NO.</p>	<p>備註 備註</p> <p>說明書編號 930206B0010</p> <p>中標訂單編號 CSC ORDER NO.</p> <p>說明書日期 T/C ISSUE DATE FEB. 06, 2004</p>	<p>80010-01</p>																				
<p>尺寸及規格 DIMENSIONAL SPECIFICATION</p> <p>品名 COIL 37 55.43618300</p> <p>單位 M</p> <p>重量 7.50328266</p> <p>長度 24 35.75228413</p> <p>寬度 68 88.690</p> <p>TOTAL</p>		<p>化學成份 CHEMICAL ANALYSIS %</p> <table border="1"> <tr> <td>C</td> <td>Mn</td> <td>P</td> <td>S</td> <td>Si</td> <td>Cu</td> <td>Ni</td> <td>Cr</td> <td>Mg</td> <td>Al</td> </tr> <tr> <td>0.15</td> <td>0.03</td> <td>0.005</td> <td>0.003</td> <td>0.03</td> <td>0.005</td> <td>0.005</td> <td>0.005</td> <td>0.005</td> <td>0.005</td> </tr> </table>		C	Mn	P	S	Si	Cu	Ni	Cr	Mg	Al	0.15	0.03	0.005	0.003	0.03	0.005	0.005	0.005	0.005	0.005
C	Mn	P	S	Si	Cu	Ni	Cr	Mg	Al														
0.15	0.03	0.005	0.003	0.03	0.005	0.005	0.005	0.005	0.005														
<p>機械性能 MECHANICAL PROPERTIES</p> <p>屈服強度 Y.S. 415</p> <p>抗拉強度 T.S. 570</p> <p>伸長率 E.L. 24</p>		<p>試驗日期 TEST DATE</p> <p>試驗地點 TEST PLACE</p>																					
<p>備註 REMARKS</p>		<p>品質保證 QUALITY GUARANTEE</p>																					
<p>客戶簽名 CUST. SIGNATURE</p>		<p>鋼廠簽名 STEEL MILL SIGNATURE</p>																					



4.06. SWPB(Spring)

FM: 吳喆 / 吳小波

FACTORY: #753-1, SOTO-RI, SANGBUK-MYUN, YANGSAN-CITY, KYOUNGNAI, (626-850), KOREA
 TEL: ++82-55-375-3500-4 FAX: ++82-55-375-3505

Date of Shipment: 2003.12.09
 Date of Issue: 2003.12.08

TEST CERTIFICATE 시험 성적서

Customer FEIJIANG BRASS WIRE MANUFACTURING CO., LTD. 고객	Wire Dimension 1.4 mm 지수	Commodity Hard Drawn Steel Wires 제품	Specification JIS G 3533
Customer's PO No. 03088 수주번호	KISWIRE's Lot No / BX No. HS-321302 지시번호	J/C No (ITR No. BMA No) TWT	Total Coils 31 수량
		Total Net weight 3,079 중량량	Total Net weight 3,079 kgs

Heat No: X71952

Rod Maker: PSC

A. Chemical Composition(%)		Chemical Composition(%)											
Item	1.4mm	C	Si	Mn	P	S	Cu	Cx	V	Al	O2	Ti	N
Specification	Min 0.600	0.154	0.600	0.030	0.030	0.030							
Actual	Max 0.760	0.354	0.990										
	0.720	0.204	0.690	0.014	0.012								

B. Mechanical Properties

Item	Diameter 1.4mm	Tensile Strength (N/mm ²)	Torsion Yield (N/mm ²)	Torsion Stress (N/mm ²)	Warp (%)	Bend (90°)	Coiling 크리핑시험	Reduction of Area (%)	Decarbur- ization (mm)	Defects (sum)	Appearance 외관	Hardness 경도	Coil weight (kg)	Remark
Spec.	Min	1,370	20	Good							Good			
	Max	1,430	39	Pass							Pass			
Coil No	Max	1,375	36											
	Ave	1,386	33											
	Min	1,386												

Handwritten signature





4.07. SK5 (C-ring)

FROM : FROM NO. : Jun. 15 2006 08:45PT P1

春源鋼鐵 品質證明書
CHUN YUAN STEEL TEST CERTIFICATE

春源鋼鐵工業股份有限公司
CHUN YUAN STEEL INDUSTRY CO., LTD.
臺中區西區新豐路八段一二五號
TAICHUNG WEST DISTRICT SEC. 8, RENFENG RD. 125
TAICHUNG CITY 400002, TAIWAN
TEL. (86)42131 FAX. (86)42134

品名 SP. SK5		規格 SK5		尺寸 20 X 450 X 10	
材料 SP5C		厚薄 2.0		重量 450.0	
產地 中國		廠名 春源鋼鐵		數量 2	
用途 CYS Rolling Plant Inspection		材料規格 SK5		重量 200.0	
備註 CYS Rolling Plant Inspection		CYS 檢驗日期 2005/11/20		數量 450.0	

產品名稱 ER SHHT-COIL	證號 20040726-05
公司編號 238-6707	客戶編號 1047146
製造日期 2005/11/20	說明書日期 2005/08/25

C	Min	P	S	Si	Cu	Ni	C	Min	Max	REMARKS
83	75	14	2	27	2	3	2	3	4	
83	75	14	2	27	2	3	2	3	4	

品質證明書所列之產品，均係材料經檢驗合格及試驗，並符合規格之要求。
WE HEREBY CERTIFY THAT THE MATERIAL INSPECTED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION

品質證明書所列之產品，均係材料經檢驗合格及試驗，並符合規格之要求。
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WE HEREBY CERTIFY THAT THE MATERIAL INSPECTED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION



4.08. SUS304 (Clip)

70. E.S.
Yuan G. H. 2

品质证明书 CERTIFICATE OF QUALITY

客户名称 Customer		SUS304		订单编号 Order No.	AH070414001	客户编号 Customer No.	HY0688	证明书编号 Certificate No.	JH070528		
钢种名称 Grade		SUS304		依据规范 By Standard	JIS	开立日期 Issue Date	JULY 01, 2007				
项目 Item	钢卷编号 Coil No.	炉号 Heat No.	表面加工 Surface	厚度 (mm) Thickness	宽度 (mm) Width	长度 (m) Length	数量 Quantity	重量 (Kgs) Weight			
1	705280103		2B	2.00	200	5000	10	5000			
2											
3											
4											
5											
6											
化学成分 (Chemical Analysis, wt%)											
规格 Spec.	C	SI	Mn	P	S	NI	Cr	Cu	N		
范围 Range	0.08	0.75	2.00	0.045	0.030	8.00	18.00				
试验 Test	max.	max.	max.	max.	max.	10.00	20.00				
1	0.072	0.620	1.212	0.026	0.003	8.012	18.310				
2											
3											
4											
5											
6											
兹证明本表所列产品, 均按材料规格制造及试验, 并符合规格之要求。 We hereby certify that the products described herein have been manufactured and tested with satisfactory results in accordance with the requirement of the above material specification. 本产品无锈蚀污染, 并且不有害。 The material described											
规格 Spec.			硬度 Hardness			抗拉强度 (N/mm ²) Tensile Strength			降伏强度 (N/mm ²) Yield Strength		
说片编号 Specimen No.			HV			520			205		
JH07102			200A			n/a			n/a		
			1/2H			n			/		
伸长率 (%) Elongation			弯曲试验 Bend Test								
40											
n/a											
/											
备注: (Remarks) 技术部经理 Manager, Technology Department											

FORM :
P.O. 箱 号 : 7896852
A.U. 17 2007 11:55PM



4.09. Dow Corning 7783D(Interface)

X-23-7783D
Thermal Interface Material

Description of Use

Thermal grease (X-23-7783D) 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)	1500 Poise
Bulk Thermal Conductivity	More than 4 W/mK (with solvent) More than 6 W/mK (w/o solvent, as X-23-7783)
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-23-7783D contains 2wt% of solvent as a diluted component for application of screen-printing. Therefore, require removing solvent after putting 7783D on substrate. Recommendable curing condition: 60 deg C x 30min



4.10. C1008(Grill)

品質證明書
TEST CERTIFICATE (FOR REFERENCE)
CERTIFICATE OF INSPECTION

NO. 1008 LITON 2011 PLATA
200 CAYMAN ROAD, U.S.A.
COLUMBIA, MISSISSIPPI

中國鋼鐵
CHINA STEEL CORPORATION
1. China Steel, Inc. 2. Steel Area, DeShang 41001
Tel: 886-2-2701-1111 Fax: 886-2-2701-2018
E-mail: cs@steel.com.tw

Product Name: 1008 LITON 2011 PLATA
Material: 1008 LITON 2011 PLATA
Quantity: 1008 LITON 2011 PLATA
Inspection Date: 10/11/2011
Inspection Location: 1008 LITON 2011 PLATA

項目	規格	檢驗結果	備註
化學成分	ASTM A1008	符合	
機械性能	ASTM A1008	符合	
尺寸公差	ASTM A1008	符合	
表面品質	ASTM A1008	符合	
包裝	ASTM A1008	符合	
其他	ASTM A1008	符合	

Y. C. Yang
Sales Manager

IN READY CERTIFY THAT MATERIAL DESCRIBED ABOVE HAS BEEN MANUFACTURED AND TESTED INTO SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE NATIONAL SPECIFICATION



5. Package

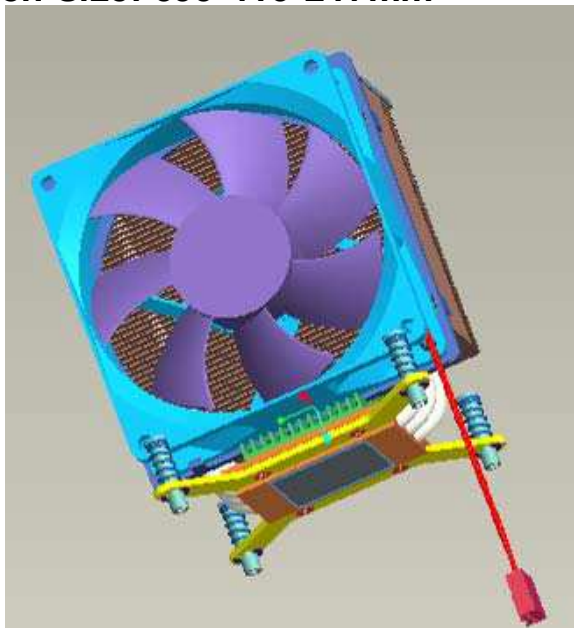
Individual carton details

Bulk package demonstration:

Bulk package :

8 pcs in one layer,
total two layers in one carton, 16 pcs/ctn

Carton Size: 555*413*217mm





6. Thermal Test Report

Model No:HP6-00002-N1-GP

Date : 11/10/2011

Test Equipment

Heat source : Intel LGA 1156 TTV

M/B : TTV MB

Fin Specification

Material : AL 1100

Dimension-1 : L73.8*W43*H68.9mm

Interface Specification

Material : 7783D

Thickness : 0.1~0.2mm

Size : 30*30mm

Fan Specification

Bearing : 1B1S

Dimension(mm) : 92*92*25

Air Volume (CFM) : 35.49~39.45

Noise Level dB(A) : 43.4~47.4

RPM : 5000 ± 10% rpm

Test System : Open System

Test Result :


Ta(°C)	Tc(°C)	ΔT(°C)	Q(w)	Rca (°C/w)	Fan (RPM)	Clip force(Lb)
32.65	58.43	25.78	131	<u>0.1964</u>	5000	40±5 IBF



7.FAN

Green Product
綠色產品



Model No. VI
單號: 1209/p15




SPECIFICATION FOR APPROVAL

Customer.	COOLERMMASTER	
Description.	DC FAN	
Part No.	200022960-GP	REV.
Delta Model No.	AFB0912SH-BU35	REV: 01
Sample Issue No.		
Sample Issue Date.	AUG-17-2011	

PLEASE SEND ONE COPY OF THIS SPECIFICATION BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGEMENT.

APPROVED BY:  

DATE: 2011.8.29



Delta Electronics, Inc.
HeTianXia High-Tech Industrial Park.
Shi Jie Town, Dong Guan City.
Guangdong Province, China. P. R. C.
TEL : 86-769-86329008
FAX : 86-769-86631589



新增文字文件

DCFAN-WIRE CU-CU-GP3-S-M00440
DCFAN-SOLDER WIRE-SAC305-GP3-S-M00440
DCFAN-SOLDER BAR-SAC305-GP3-S-M00440
DAFAN-SLEEVE-CU-GP-S-M00440
DCFAN-SI-STEEL-35A440(35CS440)-GP-S-M00440
DCFAN-SHAFT-SUS420F-GP3-S-M00440
DCFAN-PWB-OSP-透明-GP3-S-M00440
DCFAN-LABEL-INK-黑色-GP3-S-M00440
DCFAN-FASTENER-SUS-GP3-S-M00440
DCFAN-FASTENER-MYLAR-透明-GP3-S-M00440
DCFAN-CASE-SPCD-GP-S-M00440
DCFAN-WIRE-PVC-黑色-GP2-S-M00440
DCFAN-WIRE CP-STEEL-GP-S-M00440
DCFAN-TRANSISTOR-PURE TIN-銀色-GP-S-M00440
DCFAN-TRANSISTOR-LEAD FRAME-銀色-GP-S-M00440
DCFAN-TERMINAL-鍍錫層-GP-S-M00440
DCFAN-SPRING-SWPA-GP-S-M00440
DCFAN-RING-SK5-GP-S-M00440
DCFAN-IC HALL ELEMENT-PURE TIN-銀色-GP-S-M00440
DCFAN-IC HALL ELEMENT-LEAD FRAME-銀色-GP-S-M00440
DCFAN-IC DRIVER-WAFER-金色-GP-S-M00440
DCFAN-HOUSHING-PA66-米黃色-GP-S-M00440
DCFAN-FASTENER-SWP-GP-S-M00440
DCFAN-FASTENER-MYLAR-透明-GP3-S-M00440
DCFAN-CHIP RESISTOR-PURE TIN-銀色-GP-S-M00440
DCFAN-CHIP RESISTOR-METAL-銀色-GP-S-M00440
DCFAN-CHIP RESISTOR-Ni-Cr-銀色-GP-S-M00440
DCFAN-CHIP CAPACITOR_MLCCY5V-棕色-GP-S-M00440
DCFAN-CASE-Cr3+藍鍍-GP-S-M00440
DCFAN-BUSHING-C3604-金黃色-GP-S-M00440
DCFAN-BEARING-SHIELD-GP-S-M00440
DCFAN-TUBE-黑色-GP-S-M00440
DCFAN-TERMINAL-鍍錫層-GP-S-M00440
DCFAN-FRAME-PBT F202G30BK-黑色-GP3-S-M00440
DCFAN-IMPELLER-PBT F202G30BK-黑色-GP3-S-M00440



Delta Electronics, Inc.
HeTianXia High-Tech Industrial Park.
Shi Jie Town, Dong Guan City.
Guangdong Province, China, P. R. C.

TEL : 86-769-86329008
FAX : 86-769-86631589

SPECIFICATION FOR APPROVAL

Customer: COOLERMMASTER

Description: DC FAN

Customer P/N: 200022960-GP REV:

Delta Model NO.: AFB0912SH-BU35 Delta Safety Model NO.: AFB0912SH-A

Sample Rev: 01 Issue NO:

Sample Issue Date: AUG-17-2011 Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH SINGLE PHASE AND FOUR POLES.

2. CHARACTERS:

ALL CHARACTERS ARE MEASURED UNDER THE STANDARD ENVIRONMENTAL CONDITION (25°C AND 1 ATM).

ITEM	DESCRIPTION
RATED VOLTAGE	12.0 VDC
OPERATION VOLTAGE	10.8 - 12.6 VDC
INPUT CURRENT	0.75 (MAX. 1.00) A (SAFETY CURRENT 1.00A)
INPUT POWER	9.0 (MAX. 12.00) W
SPEED (REF.)	5000 R.P.M.±10%
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	3.002 (MIN. 2.756) M ³ /MIN. 108.08 (MIN. 97.27) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	13.57 (MIN.10.99) mmH ₂ O 0.534 (MIN. 0.433) inchH ₂ O
ACOUSTICAL NOISE (AVG.)	55.0 (MAX. 59.0) dB-A
INSULATION TYPE	UL: CL1

(continued)

page: 1

A00





Cooler Master Co., Ltd.

www.coolermaster.com



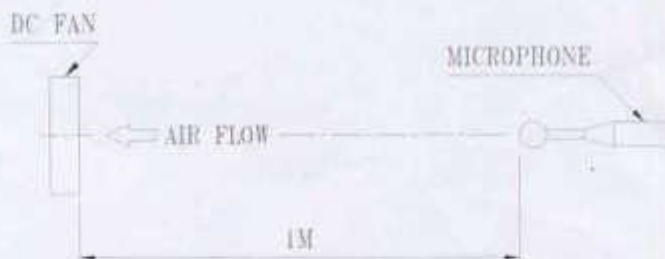
PART NO: 200022960-GP

DELTA MODEL: AFB0912SH-BU35

INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 60 Hz ONE MINUTE. (BETWEEN FRAME AND (+) TERMINAL)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
OVER CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR
LEAD WIRE	UL 1061 -F- AWG #26 BLACK WIRE: NEGATIVE(-) RED WIRE: POSITIVE(+) YELLOW WIRE: FREQUENCY BLUE WIRE: FREQUENCY (PW)



- NOTES:
1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
 2. THE VALUES WRITTEN IN PARENS , () , ARE LIMITED SPEC.
 3. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.



PART NO: 200022960-GP

DELTA MODEL: AFB0912SH-BU35

3. MECHANICAL:

- 3-1. DIMENSIONS ----- SEE DIMENSIONS DRAWING
- 3-2. FRAME ----- PLASTIC UL- 94V-0
- 3-3. IMPELLER ----- PLASTIC UL- 94V-0
- 3-4. BEARING SYSTEM ----- TWO BALL BEARINGS
- 3-5. WEIGHT ----- 120 GRAMS

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE ----- -10 TO +70 DEGREE C
- 4-2. STORAGE TEMPERATURE ----- -40 TO +75 DEGREE C
- 4-3. OPERATING HUMIDITY ----- 5 TO 90 % RH
- 4-4. STORAGE HUMIDITY ----- 5 TO 95 % RH

5. PROTECTION:

5-1. LOCKED ROTOR PROTECTION

IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE
HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE

5-2. POLARITY PROTECTION

BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR POSITIVE
AND NEGATIVE LEADS.

5-3. SOFT-START/REDUCE FUNCTION FOR PWM (ENVIRONMENT TEMPERATURE AT 25°C)

WHEN IT CHANGE PWM DUTY FROM 0% TO 100%, THE SOFT START TIME
IS LARGER THAN 13 SECS TO MAXIMUM SPEED.

6. RE OZONE DEPLETING SUBSTANCES:

- 6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBREs, PBDPEs AND HCFCs.

7. PRODUCTION LOCATION

- 7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND.





PART NO: 200022060-GP

DELTA MODEL: AFB0912SH-BU35

8. BASIC RELIABILITY REQUIREMENT:

8-1. THERMAL CYCLING
 LOW TEMPERATURE: -40°C
 HIGH TEMPERATURE: +80°C
 SOAK TIME: 30 MINUTES
 TRANSITION TIME < 5 MINUTES
 DUTY CYCLES: 5

8-2. HUMIDITY EXPOSURE
 TEMPERATURE: +25°C ~ +65°C
 HUMIDITY: 90-98% RH @ +65°C
 FOR 4 HOURS/CYCLE
 POWER: NON-OPERATING
 TEST TIME: 168 HOURS

8-3. VIBRATION
 TEMPERATURE: +25°C
 ORIENTATION: X, Y, Z
 POWER: NON-OPERATING
 VIBRATION LEVEL: OVERALL gRMS=3.2

FREQUENCY(Hz)	PSD(G ² /Hz)
10	0.040
20	0.100
40	0.100
800	0.002
1000	0.002



TEST TIME: 2 HOURS ON EACH ORIENTATION

8-4. MECHANICAL SHOCK
 TEMPERATURE: +25°C
 ORIENTATION: X, Y, Z
 POWER: NON-OPERATING
 ACCELERATION: 20 G MIN.
 PULSE: 11 ms HALF-SINE WAVE
 NUMBER OF SHOCKS: 5 SHOCKS
 FOR EACH DIRECTION

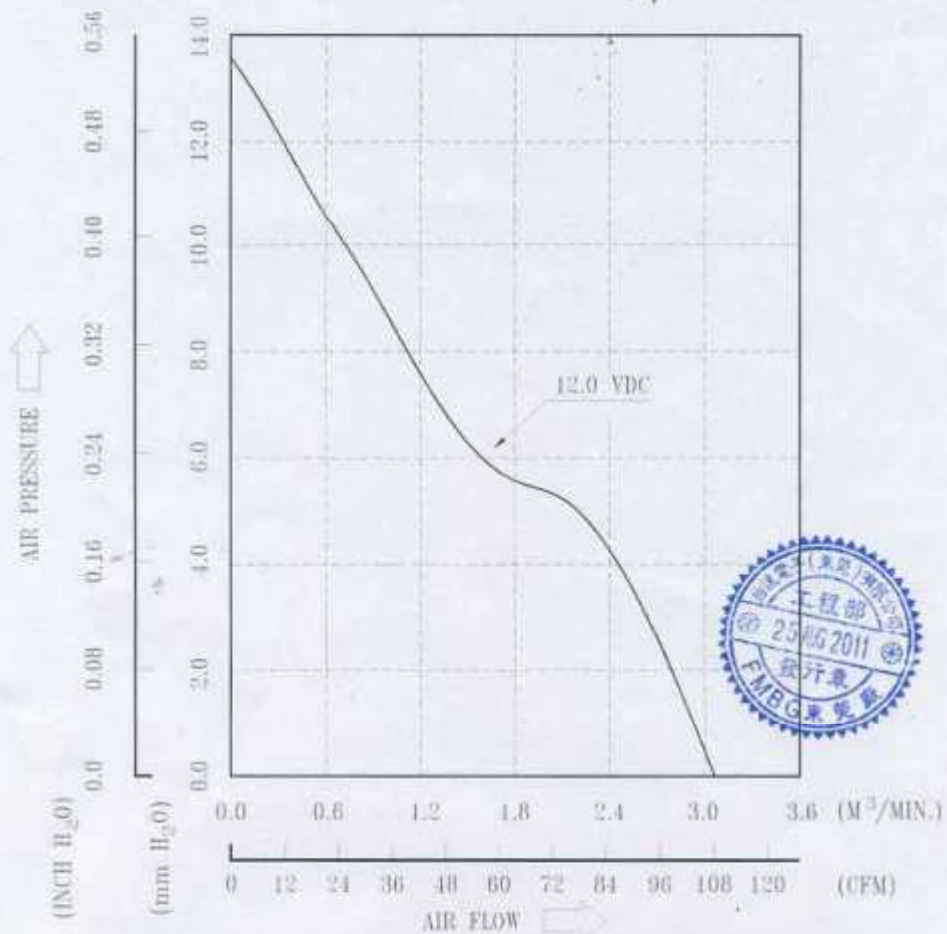
8-5. LIFE
 TEMPERATURE: MAX , OPERATING TEMPERATURE
 POWER: OPERATING
 DURATION: 1000 HOURS MIN.



PART NO: 200022960-GP

DELTA MODEL: AFB0912SH-BU35

9. P & Q CURVE:



* TEST CONDITION: INPUT VOLTAGE ——— OPERATION VOLTAGE
TEMPERATURE ——— ROOM TEMPERATURE
HUMIDITY ——— 65%RH



PART NO: 200022960-GP

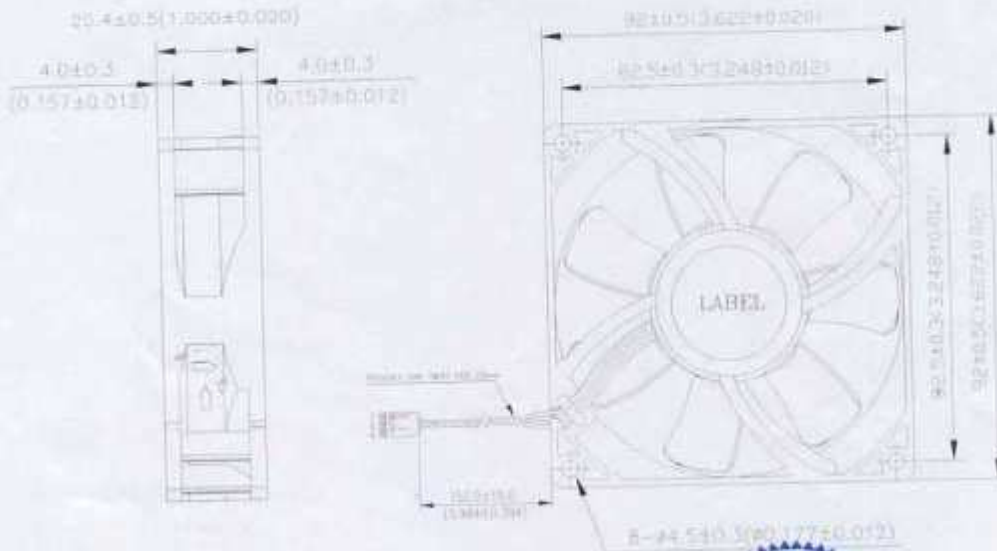
DELTA MODEL: AFD0912SH-BU35

10. DIMENSION DRAWING:

LABEL:



CR



NOTES:

- LEAD WIRE: UL1001 AWG#26
 PIN 1: BLACK WIRE---(-)
 PIN 2: RED WIRE---(+)
 PIN 3: YELLOW WIRE---(FOO)
 PIN 4: BLUE WIRE---(PWM)
- HOUSING: MOLEX 47054-1000 OR EQUIVALENT (color white)
- TERMINAL: MOLEX 2759T 08-50-0113 OR EQUIVALENT
- THIS PRODUCT IS RoHS COMPLIANT



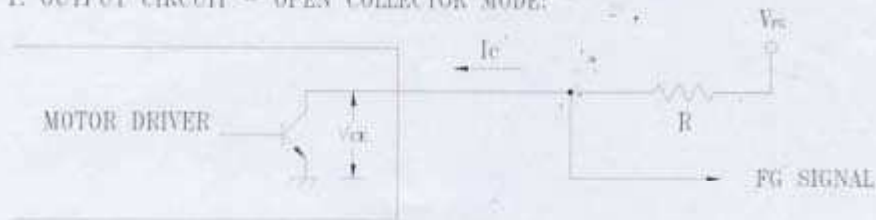


PART NO: 200022960-GP

DELTA MODEL: AFB0912SH-BU35

11. FREQUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



CAUTION:

THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH THE LEAD WIRE OF POSITIVE OR NEGATIVE.

2. SPECIFICATION:

$V_{d(sat)} = 0.5V$ MAX

$V_{cc} = 12.6V$ MAX

$I_c = 5mA$ MAX.

$R = V_{cc} / I_c$

3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



$N = R.P.M$

$TS = 60 / N (SEC)$

*VOLTAGE LEVEL AFTER BLADE LOCKED

*4 POLES

page: 7

A00



PART NO: 200022960-GP

DELTA MODEL: AFB0912SH-BU35

12. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~12.6 VDC



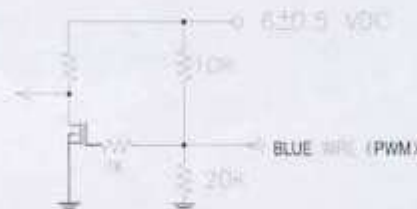
- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 20KHZ~30KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.

13. SPEED VS PWM CONTROL SIGNAL: (AT RATED VOLTAGE & PWM FREQUENCY=25KHZ)

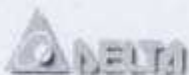
DUTY CYCLE (%)	SPEED R.P.M.	CURRENT (A) TYP.
100	5000±10%	0.75
70	2600±300	0.15(REF)
0-30	1400±300	0.05(REF)

* PWM SIGNAL
PWM FREQUENCY = 25KHz
5 VDC
0 VDC

14. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



14-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROL INPUT IS LEFT UNCONNECTED.



Application Notice

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fan was hard-dropped to the production floor.
4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. It is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, if there is no foolproof method to protect against such error specifically mentioned in this spec.
7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.
8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.
9. 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.
10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.
11. 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.
12. Except where specifically stated, all tests are carried out at room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.
13. Be certain to connect an "4.7µF or greater" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.





8.CE



CSA INTERNATIONAL

Master Contract 158102 (LR 91949)
Report 2294542
Project 2294542

April 6, 2010

Ms. Tammy Chen
Delta Electronics Inc
252 Shang Ying Rd
Kuei San
Taoyuan Hsien 333
Taiwan

E-mail: tammy.chen@delta.com.tw

Subject: Component Fans, D.C. (Brushless), Models QFR0812VHE, QFR0812SHE,
QFR0812EHE, QFR0812GHE, QFR0812UHE and QFR0812DE
(CSA) (Converted from CPC Report LR 91949C-304)

Dear Ms. Chen:

We are pleased to confirm that the subject project has been completed and the final documentation has been made available to you electronically.

Please note that it is your responsibility to forward a copy of the Descriptive Report and Test Results to the applicable factories, as listed on the Profile of Reports.

Our Accounting Department will, in due course, forward a statement of your account.

On behalf of CSA International, I would like to thank you for your business and offer our services for your future needs.

Yours truly,

Maggie Lam, Technical Assistant
CSA International - Vancouver

Encl. Updated Certification Record
Updated Profile of Reports
Certificate of Compliance
Descriptive Report and Test Results



CERTIFICATION RECORD

The company named below has been authorized by CSA International to represent the products listed in this record as "CSA Certified" and to affix the CSA Mark to these products according to the terms and conditions of the CSA Service Agreement and applicable CSA program requirements (including additional Markings).

File No: 091949_0_000
Class No: 3812 01 FANS AND BLOWERS

SUBMITTOR

4510824 Delta Electronics Inc
252 Shang Ying Rd
Kuei San
Taoyuan Hsien, 333
Taiwan

FACTORIES

4510824 Delta Electronics Inc
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Taiwan

4665119 Delta Electronics (Jiang Su) Ltd.
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4678360 Delta Electronics (Thailand) Public
Co., Ltd.
111 Moo 9 Wellgrow Ind Estate
Bangna-Trad Road, Tambon Bangwua

Amphur Bangpakong
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Thailand

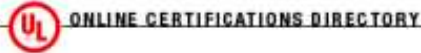
4753103 Delta Electronics
(Dongguan) Co Ltd
HeTianXia High Tech Industrial Pk



FFB1448HHG	48	540	0 to 9, A to Z
FFB1448SHG	48	1660	0 to 9, A to Z
FFB1448UHE-M	48	2160	0 to 9, A to Z
FFB1448VHG	48	750	0 to 9, A to Z
FFB1548GHG-A	48	1200	0 to 9, A to Z, blank or "-"
FFB1548UHG-A	48	2340	0 to 9, A to Z, blank or "-"
FFB1724HHG	24	3600	0 to 9, A to Z
FFB1724SHG	24	5780	0 to 9, A to Z
FFB1724VHG	24	4500	0 to 9, A to Z
FFB1748HHG	48	1680	0 to 9, A to Z
FFB1748SHG	48	3000	0 to 9, A to Z
FFB1748VHG	48	2280	0 to 9, A to Z
FFB2024LT-4K1T	24	1800	0 to 9, A to Z
FFC SERIES:			
FFC0612DE	12	1200	STD, F00, R00
FFC0612DE-5C2K	12	1200	F00, R00, STD
FFC0812DE	12	1800	0 to 9, A to Z
FFC0848CE	48	300	0 to 9, A to Z
FFC0912CE	12	1500	STD, F00, R00
FFC0912D	12	1050	0 to 9, A to Z
FFC0912DE	12	1500	STD, F00, R00
FFC0924A	24	600	0 to 9, A to Z
FFC0924B	24	600	0 to 9, A to Z
FFC0924DE	24	750	STD, F00, R00
FFC0948B	48	370	0 to 9, A to Z, blank or "-"
FFC0948D	48	370	0 to 9, A to Z
FFC1012DE	12	2640	0 to 9, A to Z
FFC1212D	12	1680	0 to 9, A to Z
FFC1212DE	12	3000	F00, R00, STD
FFC1224DE	24	1500	STD, F00, R00
FFC1248CE	48	750	STD, F00, R00
FFC1248DE	48	750	STD, F00, R00



9.UL



GPWV2.E132003 Fans, Electric - Component

[Page Bottom](#)

Fans, Electric - Component

[See General Information for Fans, Electric - Component](#)

DELTA ELECTRONICS INC
252 SHANG YING RD
KUEI SHAN
TAOYUAN HSIEN, 333 TAIWAN

E132003

DC fans. Model AFB followed by 0405, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0505, followed by HB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0512, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by H, L or M, followed by R00, R05, RRD or RR05, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0805, followed by H, L or M, followed by (Y); Model AFB followed by 0612, 0624, followed by EH, SH, VH, followed by (Y); Model AFB0612LB followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612, 0624, 0812, 0824, 0912 or 0924, followed by H, HB, HH, HHB, LB, LLL, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Models ASB0412MA, ASB0412LA, ASB0405MA followed by (Y); Model ASB followed by 0405, 0412, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0505, followed by HB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0512, 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0612, 0624, followed by HB, HHB, LB, LLL, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0812, 0824, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0912 or 0924, followed by H, L or M, followed by (Y); Model ASB followed by 0912 or 0924, followed by H, L or M, followed by (Y); Model AUB followed by 0505, 0512 or 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0612, 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0912, 0924, followed by H, HH, L, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0612 or 0624, followed by L, M, H or HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0812 or 0824, followed by HB, HHB, LB, LLL, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0912, 0924, followed by L, M, H, HH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1212, followed by H, HH, L, LL, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1224, followed by H, HH, L, LL, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1248, followed by H, HH, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFC followed by 1012, followed by A, B or C, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0405 or 0412, followed by H, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0812, 0912, 0824 or 0924 followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0812, 0824, 0912 or 0924, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0424, followed by H, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFC followed by 0612, 0812 or 0912, followed by "A" or "B", followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFD followed by 0612 or 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0412, followed by H, L, LL or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, 0812, 0824, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, followed by HD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0812, 0824, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0812, followed by MSA or MSG, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFC0612D(Y) where (Y) may be A through Z, 0 through 9, "-" or blank; Models AFB0612DH-8G33(Y), E47199(Y), E47159(Y), DTC-CD(A)(Y), DTC-CD(C)(Y), FFR1212DHE(Y), FFR8812DHE(Y), KFB0612HD-8K16(Y), BFB0712HB-8A97(Y), KUC1012D(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Models TFA1424AG(Y), TFA1424AGL(Y), TFA1448(X)G(Y), TFA1448AGL(Y) series, where (X) may be A, B or C, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model AFB followed by 02505, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 02512, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0305, followed by -HA, -LA, -LLA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0312, followed by -HA, LA, LLA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 03505, followed by HA, LA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0405, followed by HD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 03512, followed by LA, MA or HA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0405, 0412 or 0424, followed by HD, HHD, LD, MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0412 or 0424, followed by HD, HHD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0505, 0512, followed by HA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HB, HHB, LB, LLD, MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by LLD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612, followed by HA, HB, HHB, LA, MA or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612 or 0624, followed by HD, HHD, LB, LD, LLD, MD, VHB or VHD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0624, followed by HB, HHB, LB, MB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0648, followed by EH, H, HH, L, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0705, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0712 or 0724, followed by H, HA, HH, HHA, L, LA, M, MA, VH or VHA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0748, followed by H, HH, L or MM, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0812 or 0824, followed by LL, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0812 or 0824, followed by H, L, LL, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0812 or 0824, followed by HB, HHB, LB, LLL, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.



Cooler Master Co., Ltd.

www.coolermaster.com

AFC1212D-8B30(Y), AFB1212M-8B42(Y), TFA0948AE(Y) Series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model FUB followed by 0412, 0424, followed by HH, HHN, MN or VHN.

Model KFB followed by 1712, 1724, 1748, followed by HT, LT or MT; Models KFB1024MS, KFB1024HS, KFB1024HHS, KFB1024VHS(Y), KFB1748SHT(Y), KFB1748VHT(Y), KFB1012MS, KFB1012HS, KFB1012HHS, KFB1048MS, KFB1048HS, KFB1048HHS, KFC1012DS, KFC1024DS, KFC1048DS, KFB1724SHT(Y), KFB1724VHT(Y), KFC1724DT(Y), NFC0812D(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models KFB1024HHS, KFB1024HS, KFB1024MS.

Model EFB followed by 0805, followed by H, HH, L, LL or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model EFB followed by 0812 or 0824, followed by EH, H, HH, L, LL, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model EFB followed by 0848, followed by EH, H, HH, L, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models VHD/AFB08(W)(Z), AUB0824(Z), AUB0812SHD, AUB0812LLD, AUB0812(X)(Y) Series, where (W) may be 12 or 24, (Z) may be SHD, VHD, HHD, HD, MD, LD or LLD, (X) may be VHD, HHD, HD, MD or LD, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model EFC followed by 0812 or 0912, followed by A or B.

Models EFB, EUB followed by 0605, followed by HB, HHB, LB or MB; Models EFB, EUB followed by 0612 or 0624, followed by HB, HHB, LB, MB or VHB.

Models FFC1224DE(Y), FFC1248CE(Y), FFC1248DE(Y), FFC0812DE(Y), FFB1248XHE-M(Y), FFC1248DE-M(Y), FFB1448GHE-M(Y), FFB1448UHE-M(Y), FFB1424GHE-M(Y), FFB1424UHE-M(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models FFB0412(X)(Y), FFB0424(X)(Y) Series, where (X) may be MN, HN, HHN or VHN, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models FFB0612GHE(Y), FFB0612(X)E(Y), FFB0624(X)E(Y), FFB0648SHE(Y), where (X) may be HH, VH, SH or EH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model FFB0624EHE-SV61.

Model FFB followed by 0412 or 0424, followed by HHN, HN, MN or VHN, may be followed by F00, R00 or STD.

Model ASB or AUB followed by 0505, followed by HD, LD or MD; Model ASB or AUB followed by 0512 or 0524, followed by HD, HHD, LD, MD or VHD.

Model EFC followed by 0612BA, 0612AA.

Model AFB followed by 0612 or 0624, followed by LC, MC, HC, HHC, VHC; Model AFB followed by 0605, followed by LC, MC, HC; Model AUB or ASB followed by 1212 or 1224, followed by L, M, H, HH, VH, SH; Model EUB or ESB followed by 0912 or 0924, followed by L, M, H, HH, VH.

Models TYF 300, BFB followed by 0712, followed by HD(Y) or LD(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models X0405(Y), X0412(Y), ASB0405(Y), ASB0412(Y), EFB0412MA-SM(Y), EFB0405MA-T6AC(Y), where X may be EFB, ESB or EUB, Y may be HA, HHA, LA or MA, Q may be HA, HHA, LA, MA or VHA, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models (T)0405(X)B(Y), (T)04(Y)U(B)(Y), (T)04505LA(Y), (T)04505MA(Y), (T)04512LA(Y), (T)04512MA(Y), (T)04512HA(Y), (Z)0512(X)(Y), ADB0612(X)(Y), BUB0524(W)D(Y), ASB02505LLA(Y), ASB02505(W)A(Y), ASB0424(A)A-A(Y) Series, where (T) may be AFB, AUB or ASB, (A) may be H, HH or VH, (T) may be AFB, AUB or ASB, (V) may be 12 or 24, (U) may be L, M, H, HH, VH, SH, (X) may be L, M, H or HH, (Z) may be ADB or AUB, (W) may be L, M, H, HH or VH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model SF175.

Models AFB0712(Z)C(Y), AFB0724(Z)C(Y), (X)0712(W)B(Y), (X)0724(W)B(Y) series, where (X) may be AFB, AUB or ASB, (Z) may be L, M, H or HH, (W) may be LL, L, M, H or HH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models HUB0705Y, HUB0712Q, HUB0724Q, HUB0805Y, HUB0812Q, HUB0824Q, where Y may be H, L or M, Q may be H, HH, L or M.

Models AFC12(X)(W)E(Y), AFC1212DE-SP(Y) Series, where (X) may be 12, 24, 48, (W) may be A, B or D, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models AFB0605(X)C, AFB06(Y)(Z)C Series, where(X) may be L, M, H, (Y) may be 12, 24, (Z) may be L, M, H, HH, VH.

Models AUB12(X)(Y), ASB12(X)(Y) Series, where (X) may be 12 or 24, (Y) may be L, M, H, HH, VH.

Models GFB0405Y, GSB0405Y, GUB0405Y, GFB0412Q, GSB0412Q, GUB0412Q, GFB0424Q, GSB0424Q, GUB0424Q, where Y may be HF, HHF or MF, Q may be HF, HHF, MF or VHF, may be suffixed with alphanumeric characters.

Models AFB1248(W)E-M(Y), GFC0412DS-C(Y), GFB0412(X)S-C(Y), QFR0412(X)N(Y), ASB0305(C)P(Y), FFB1212(B)E(Y), AFB0824LF-7G66(Y), GFB0812HHG(Y), GUB0812HHG(Y), GSB0812HHG(Y), GFB0812VHG(Y), GUB0812VHG(Y), GSB0812VHG(Y), GFB0812SHG(Y), GUB0812SHG(Y), GSB0812SHG(Y), GFB0824HHG(Y), GUB0824HHG(Y), GSB0824HHG(Y), GFB0824VHG(Y), GUB0824VHG(Y), GSB0824VHG(Y), GFB0824SHG(Y), GUB0824SHG(Y), GSB0824SHG(Y), GFC0812CG(Y), GUC0812CG(Y), GSC0812CG(Y), GFC0824CG(Y), GUC0824CG(Y), GSC0824CG(Y), GFB0612UHW(Y), GFC0612DW(Y), GFB0412GHS(Y), GFC0412DS(Y), GFB0912UHE(Y), GFC0912DE(Y), GFB0912DHU(Y), GFC0912DHU(Y), QFR0412GHN(Y), QFR0412EHN(Y), QFR0412SHN(Y), FFB0412VHN-6J41R(Y), AFB1248GHE-M(Y), AFB1248UHE-M(Y), AFB1248DHE-M(Y), GFB0412SHS-C(Y), GFB0412EHS-C(Y), GFB0412GHS-C(Y), GFC0412DS-C(Y), ASB0305HP(Y), ASB0305HHP(Y), FFB1212GHE(Y), FFB1212UHE(Y), FFB1212DHE(Y), AFB0824LF-7G66(Y), GFB0812SHS(Y) Series, (B) may be GH, UH or DH, (C) may be HH or H, where (W) may be DH, UH or GH, (X) may be GH, EH or SH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model **FFC0912D(Y)**, FFC0924A (Y), FFC0924B (Y), FFB0912HH (Y), FFB0912VH (Y), FFB0912SH (Y), FFB0924HH (Y), FFB0924VH (Y), FFC0948B(Y),



VDE Prüf- und Zertifizierungsinstitut

GUTACHTEN MIT FERTIGUNGSÜBERWACHUNG CERTIFICATE OF CONFORMITY WITH FACTORY SURVEILLANCE

Delta Electronics Inc.
6F, No. 186, Ruyi Kuang Road
11491 NEIHU, TAIPEI
TAIWAN

ist berechtigt, für ihr Produkt /
is authorized to use for their product

Einbauventilator für IT-Geräte
Fan for building-in, IT-equipment

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oder/for VDE-REG-Nr. 1764

REG-Nr. 1764

Geprüft und zertifiziert nach /
Tested and certified according to

DIN EN 60950-1:2006 + A11 (VDE 0805 Teil 1 + A11):2009-11; EN 60950-1:2006 + A11:2009-03
IEC 60950-1(ed.2)



VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Zertifizierungsstelle / Certification

Aktenzeichen: 1164100-2611-0009 / 130050

File ref.:

Ausweis-Nr. 40007223

Blatt 1

Certificate No.

Page

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Offenbach, 2003-08-01

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2010-06-08 2003-08-01

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 40007223.
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endif

AFB1248L/M/H/HH/VH/SH	DC 48V
AFC0712DB	DC 12V
AFC0712DD	DC 12V
AFB1212SH-SV15	DC 12V
FFC1212DE	DC 12V
TFB0412VHN/SHN/EHN	DC 12V
GFB0412SHG	DC 12V
AFB0612LE/ME/HE/HHE	DC 12V
AFB0612VHE/SHE/EHE	DC 12V
AFB0624LE/ME/HE/HHE	DC 24V
AFC0812D	DC 12V
AFC0912D	DC 12V
EFB0624HHA	DC 24V
EFB0612HHA-S42X	DC 24V
FFB0812GHE/UHE	DC 12V
BFB0612MB-N/HB-N	DC 12V
FFB0648SHE	DC 48V
KFB1024VHS	DC 24V
TFB0512SHF	DC 12V
TFB0612EHE/GHE	DC 12V
GFB0412SHS/EHS	DC 12V
FFB0624EHE-SV61	DC 18V
FFB0824EHE-SV09	DC 18V
TFB0912EHE/GHE/UHE	DC 12V
AFC0612D	DC 12V
AFC0712D	DC 12V
BFB0512LD/MD/HD/HHD/VHD	DC 12V
AFC1212DE-SP	DC 12V
DSB0824L/M/H	DC 24V
GFB1248SHG	DC 48V
EFC0812DB	DC 12V
FFC0912D	DC 12V
ASB0405LA/MA/HA/HHA	DC 5V
ASB0412LA/MA/HA/HHA	DC 12V
FFB0948EHE-SV62	DC 48V
BFB0512MA-SM	DC 12V
AFB0912SH/SH-SP16/SH-SP20	DC 12V
AFC0612DB	DC 12V
KFB0412HA	DC 12V
GFB0412EHG	DC 12V
AFB0624EH	DC 24V

Fortsetzung siehe Blatt 4 /
continued on page 4

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10.MTTF



DC FAN LIFE EXPERIMENT REPORT

Available for these models with lower speed and same physical structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to FFC92x92x20 mm series as the right table.

Representative Test P/N : FFC0912D-PWM

Equipment: 1.Oven: E24-F0053

On/Off Cycles: Every 500 hours

© **L₁₀ Expectancy: 70,000 hours minimum @ fan rated voltage and the temperature of 40°C**
 According to the equation for Weibull distribution, **MTTF ≈ 7×L₁₀ = 490,000 hours**
 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.

$$t = 1.036 \times \text{MTTF} \times [(B_{r;c}) + n]^{0.91} \div A_F, \text{ and } A_F = 2^{(T_s - T_u)/10}$$

where, (B_{r;c}) is Poisson distribution factor with the failure number of r equal to 0 and the decimal confidence level of c equal to 0.90(90%), and

Stress/Elevated Temperature T _s (°C)	Unstress Temperature T _u (°C)	Acceleration Factor A _F	Quantity of Test Devices n (pcs)	Poisson Distribution Factor B _{r;c}	Required test time with zero failure t (hours)	Actual test time with zero failure t (hours)	Verified MTTF 40 °C (hours)	Verified L ₁₀ 40 °C (hours)
60	40	4.00	56	2.303	6,956	6,956.0	490,031	70,004

Test Progress:

Date for Test Beginning	Date for Test Termination (at least)	Current Test Status			Current Total Test Time (hours)
2004/2/20 5:00 PM	2005/2/4 3:33 PM	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested)	<input checked="" type="checkbox"/> Termination	6956.0

Herewith, we could assume as right on the basis of above test result. Besides, if the actual test time exceed the required, it comes out that those fans' L₁₀ expectancy and MTTF are greater than the warrant. (MTTF : means Mean Time To Failures, it should be used in a non-repairable system setting. Now we show the MTTF in our life report, that's because we will not repair the failed fans during life experiment. MTBF: means Mean Time Between failures, it should be used in a repairable system setting.)

Temperature for MTTF Estimation (°C)	Acceleration Factor A _F	Estimated MTTF (hours)	Estimated L ₁₀ (hours)
25	11.31	1,386,017	198,002
30	8.00	980,062	140,009
40	4.00	490,031	70,004
50	2.00	245,015	35,002
60	1.00	122,508	17,501

- Fan permission criteria for the measurement after test :
1. For current, the limit is less than spec.(max.).
 2. For speed, the allowable decrease is less than 15%.
 3. For noise, the limit is less than spec.(max.). + 3 dB

Test Result
 Accept
 Reject

QE File No.	Time-out for function test or others (hours)	Issued Date	Reported By	Approved By
DG04FNL027	1443.00	2005/2/4 4:00 PM	Guie.Lin	Even.Liu

Note: The test sample equivalent to STD, Part number: FFC0912D-PWM.



DC FAN FUNCTION TEST RECORD FOR LIFE EXPERIMENT

Available for these models with lower speed and same physical structure. All model may be followed by Rxx or Fxx series suffixes. This test report applies to FFC92x92x20 mm series as the right table

Required Test Time (hrs)	Date for Test Beginning	Date for Test Termination	Sample Size (pcs):	Failure (pcs):	Current Total Test Time (hrs)				
6,956	2004/2/20 5:00 PM	2005/2/4 3:33 PM	56	0	6956.0				
Representative Test P/N :FFC0912D-PWM			Current Test Status	<input type="checkbox"/> In process	<input type="checkbox"/> In process (exceed requested) <input checked="" type="checkbox"/> Termination				
Equipment: 1.Oven: E24-F0053				On/Off Cycles: Every 500 hours					
Test Data Between Initial Test and Final Test									
Sample No.	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)	Initial Test	Final Test	Deviation (%)
	Current Spec. (A)	Current Spec. (A)		Speed Spec. (RPM)	Speed Spec. (RPM)		Noise Spec. (dB A)	Noise Spec. (dB A)	
	1.05Max.	1.05Max.		4600-5400	4600-5400		62.0Max	62.0Max	
36	1.00	0.97	-3.0	5066	5077	0.2	55.4	56.9	2.7
37	0.95	0.95	0.0	5052	5003	-1.0	56.3	56.2	-0.2
38	0.97	0.96	-1.0	5029	5032	0.1	56.5	56.6	0.2
39	0.96	0.96	0.0	5024	4991	-0.7	56.5	56.7	0.4
40	0.97	0.96	-1.0	5018	4986	-0.6	56.5	56.5	0.0
41	0.93	0.92	-1.1	5050	5088	0.8	56.2	56.4	0.4
42	0.99	0.96	-3.0	5083	5042	-0.8	56.6	56.3	-0.5
43	0.89	0.88	-1.1	4954	4896	-1.2	56.6	56.8	0.4
44	0.93	0.91	-2.2	4975	4949	-0.5	56.5	56.4	-0.2
45	0.94	0.93	-1.1	5010	4995	-0.3	56.3	56.5	0.4
46	0.96	0.95	-1.0	5046	5025	-0.4	55.5	56.5	1.8
47	0.93	0.93	0.0	5005	5027	0.4	56.5	56.7	0.4
48	0.98	0.95	-3.1	5011	5034	0.5	55.9	56.8	1.6
49	0.96	0.92	-4.2	5018	5017	0.0	56.6	56.4	-0.4
50	0.95	0.94	-1.1	4984	5039	1.1	56.3	56.6	0.5
51	0.95	0.94	-1.1	5041	5013	-0.6	56.8	56.5	-0.5
52	0.97	0.96	-1.0	5021	5062	0.8	55.8	56.4	1.1
53	0.98	0.96	-2.0	5021	4974	-0.9	56.7	56.5	-0.4
54	0.92	0.91	-1.1	4991	5007	0.3	56.2	56.2	0.0
55	0.95	0.91	-4.2	5062	5067	0.1	55.7	56.4	1.3
56	1.00	0.96	-4.0	5050	5072	0.4	56.8	56.7	-0.2
X-Bar	0.943	0.935	-	5006.5	5002.9	-	56.30	56.55	-
σ	0.031	0.026	-	54.834	52.016	-	0.385	0.189	-
QE File No.	Time-out for function test or others (hrs)		Issued Date	Reported By		Approved By			
DG04FNL027	1443.00		2005/2/4 4:00 PM	Guic.Lin		Even.Liu			