



## Model No.

**ECC-00243-02-GP**

### 1. Whole Photo

### 2. BOM

### 3. Specification & Dimension

- Heat Sink-Al fin
- Heat Sink-Cu heart
- Bracket
- Fan cover
- Screw
- Spring
- Fan
- Interface
- Back Plate
- Insulator

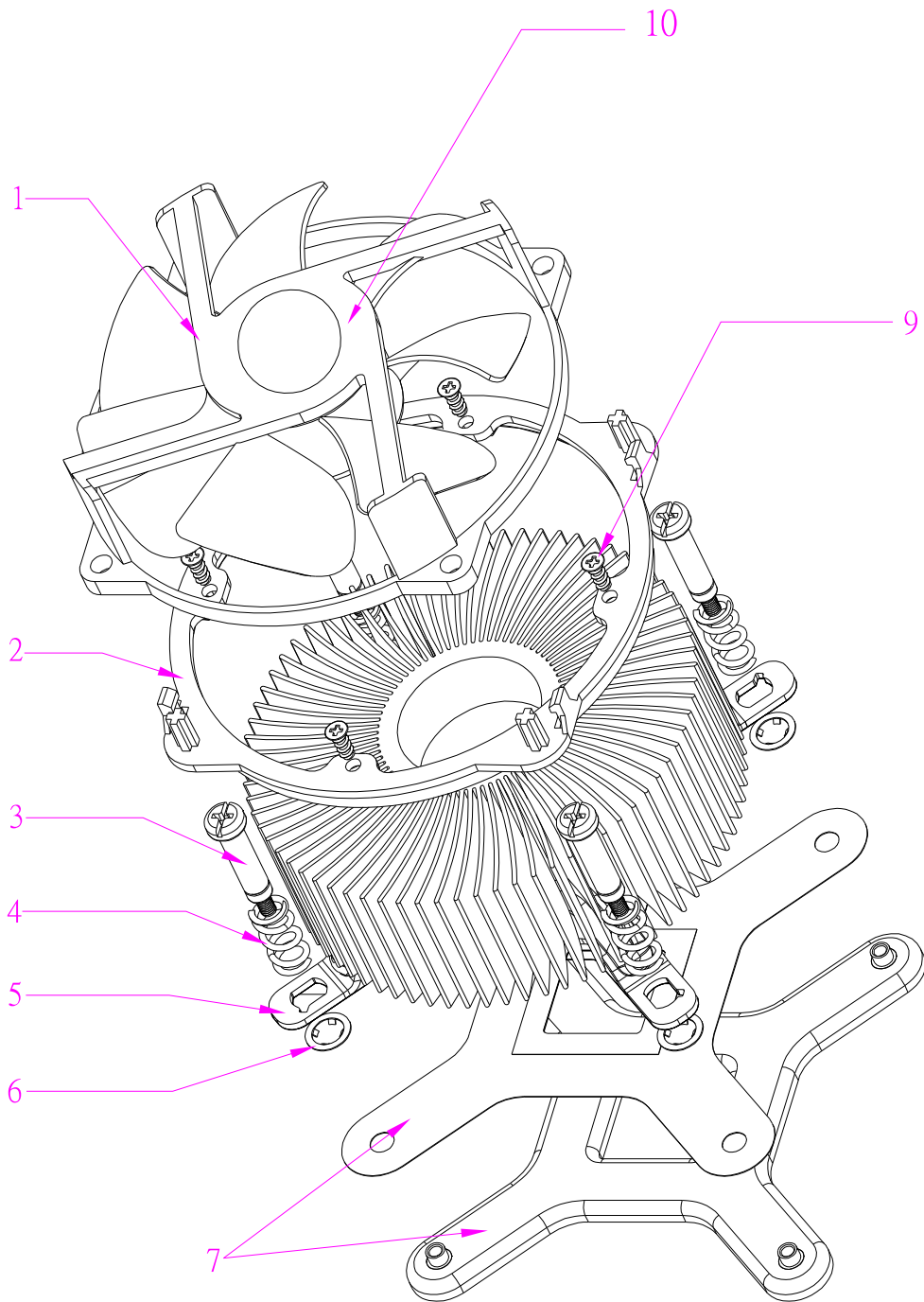
### 4. Package

### 5. Drop Report



**Whole Photo**







## BOM

NO.	PART NO	PART NAME	QTY	WEIGHT(g/PCS)
1	200007180-GP	FAN	1	190
2	310011620-GP	FAN COVER	1	6
3	150008810-GP	SCR	4	18
4	450001570-GP	SPRING	4	0.8
5	601014980-GP	HS	1	422
6	300003000-GP	O-RING	4	0.28
7	600012300-GP	PLATE	1	49.49
8	520000080-GP	THERMAL GREASE	0.25	0.25
9	150013140-GP	SCR	4	1
10	359004120-GP	FAN LABER	1	
11	104005270-GP	TRAY	1	36
12	104005250-GP	TRAY	1	36
13	360003970-GP	EPE	2	2
14	102002610-GP	BOX	1	82
15	112001180-GP	PARITION	3/16	246
16	111001430-GP	CARTON	1/16	976
17	358007230-GP	LABEL	1	
18	500000380-GP	DRIER	1	1
18	358004510-GP	ROHS LABEL	3/16	



## Specification & Dimension

### Heat Sink-Al Fin

**Material : Aluminum Alloy 6063 T5**

AL- BASE Global Calibration of Al Base 6063

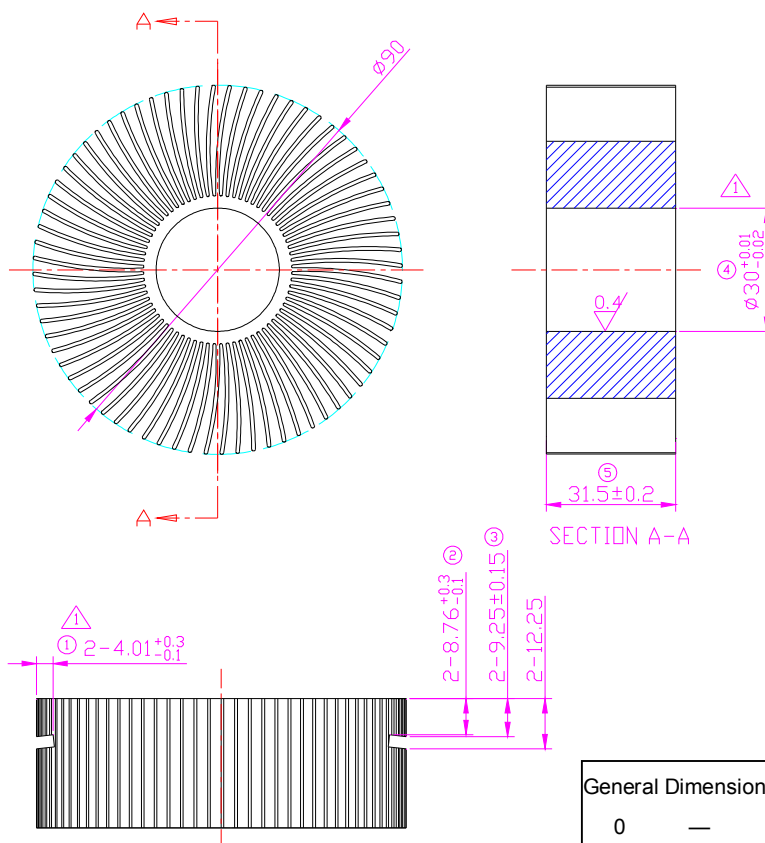
Note : Chemistry Ingredient Criterion CNS 2068 H3021

**Mechanical Characteristics :**

Alloy No.	Designation	Cutting Area Surface	Extension Rate
6063	T5	Over 15 kgf/mm <sup>2</sup>	7 %

**Chemistry Ingredient & Temper Designation :**

Value	Si	Fe	Cu	Mn	Cr	Mg	Zn	Ti	Flatness
<b>SPECIFIED</b>	0.4258	0.2037	0.0032	0.0059	0.0028	0.5147	0.0000	0.00263	0.1mm ↓
<b>VALUES</b>									



0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°



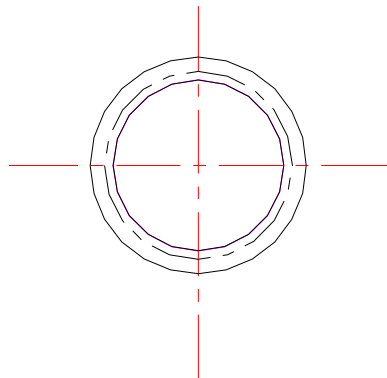
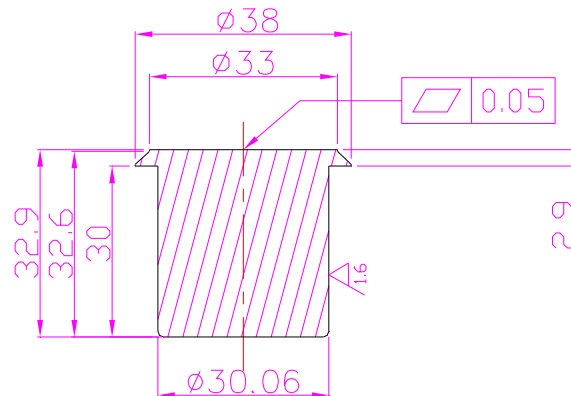
## Heat Sink-Cu Heart

**Material : Copper Alloy C1100**

**Mechanical Characteristics :**

Alloy No.	Tensile strength	Hardness test	Extension
C1100	27.23(kgf/mm <sup>2</sup> )	86.2~87.5 HV	31.12 %

**Chemistry Ingredient Characteristics :Cu 99.967 %**



General Dimension Tolerances (Unit : mm )			
0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°

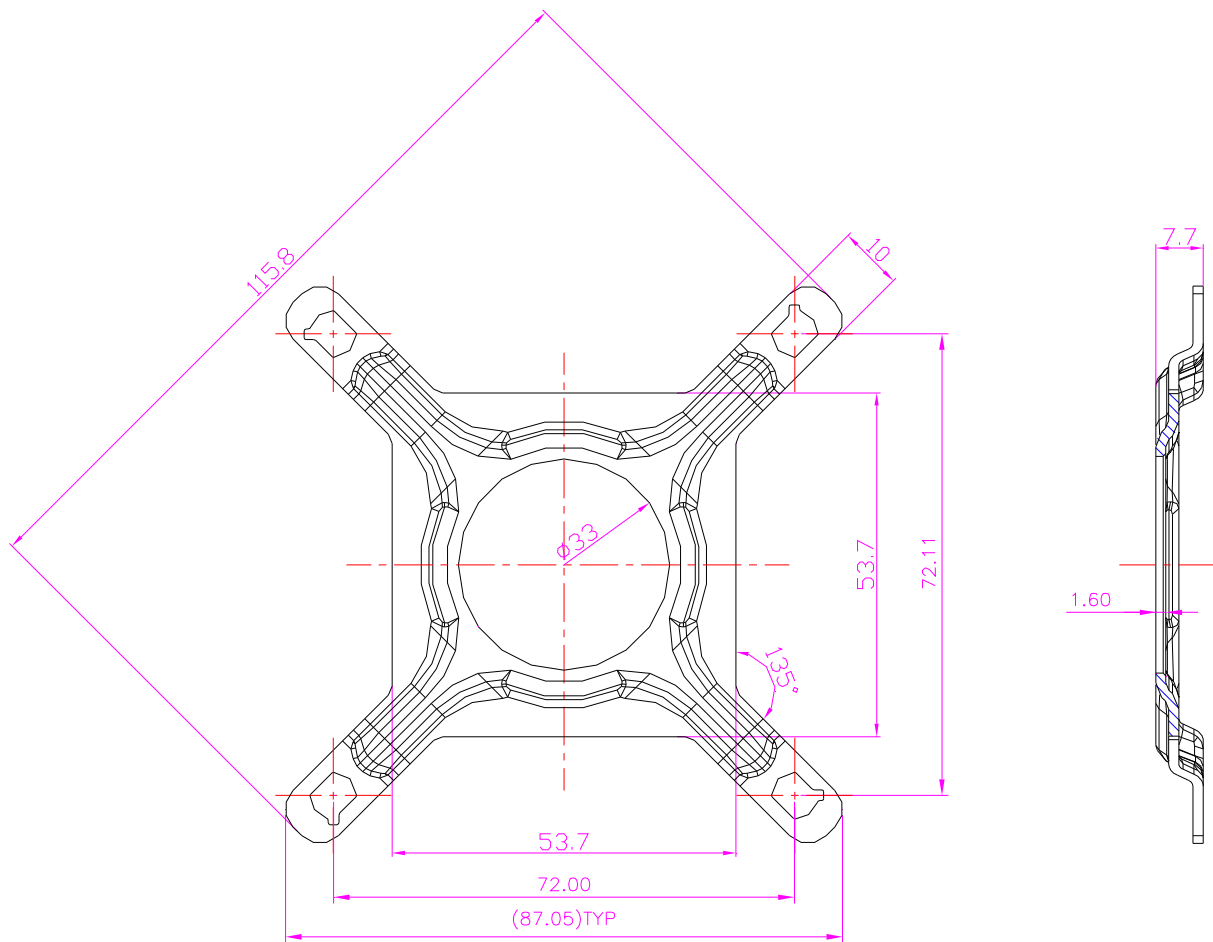


## Bracket

Material : S50C

Chemistry Ingredient & Temper Designation :

COMPONENT	C	Si	Mn	P	S
SPECIFIED VALUE	0.52	0.21	0.72	0.015	0.004



0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°

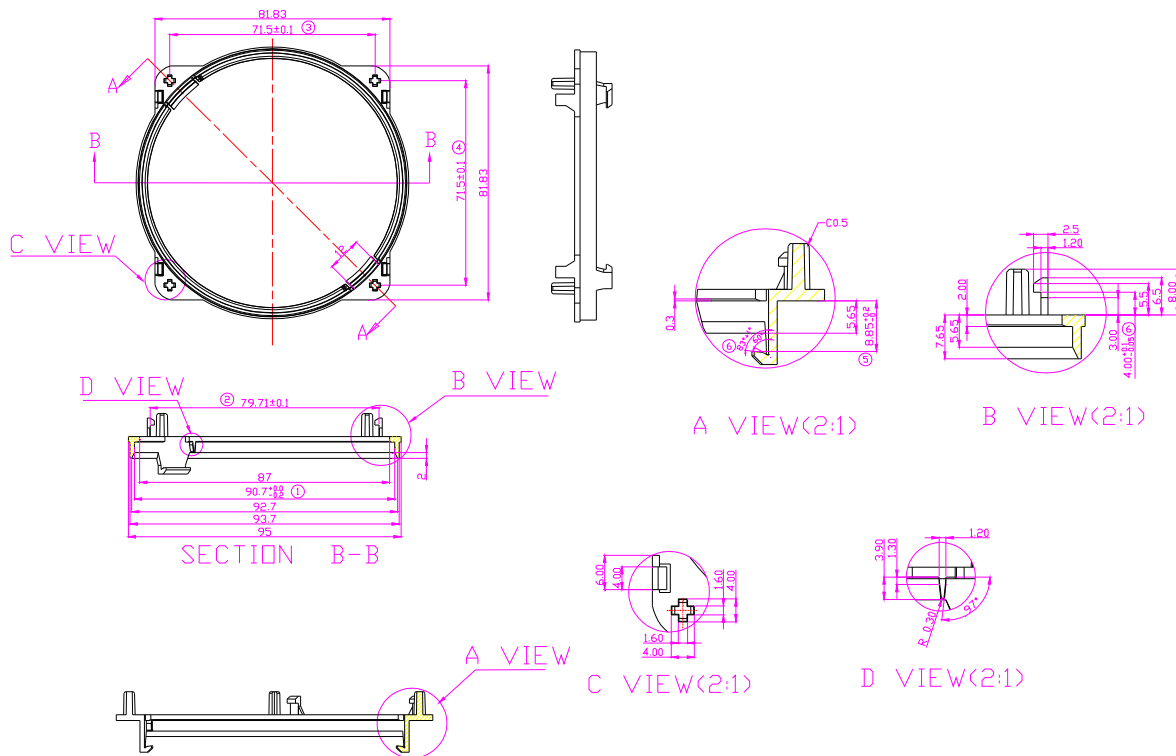


## Fan Cover

Material : PC

Mechanical Characteristics :

Item		Flame – Class (3.05mm)		
IR2200		UL 94V-2		
<b>IZOD Impact Strength</b> (1/4"kg-cm/cm)	<b>IZOD Impact Strength</b> (1/8"kg-cm/cm)	<b>Tensile Strength</b> (kgf/cm <sup>2</sup> )	<b>Tensile Modulus</b> (kgf/cm <sup>2</sup> )	<b>Elongation</b> (%)
73	76	572	9517	28
<b>Rockwell Hardness</b> (Rockwell)	<b>Melt Index</b> (g/10 <sub>min</sub> )	<b>H.D.T.</b> (°C)	<b>Specific Gravity</b>	
116	15	132	1.2	



0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°





## Screw

Material : AISI 1018

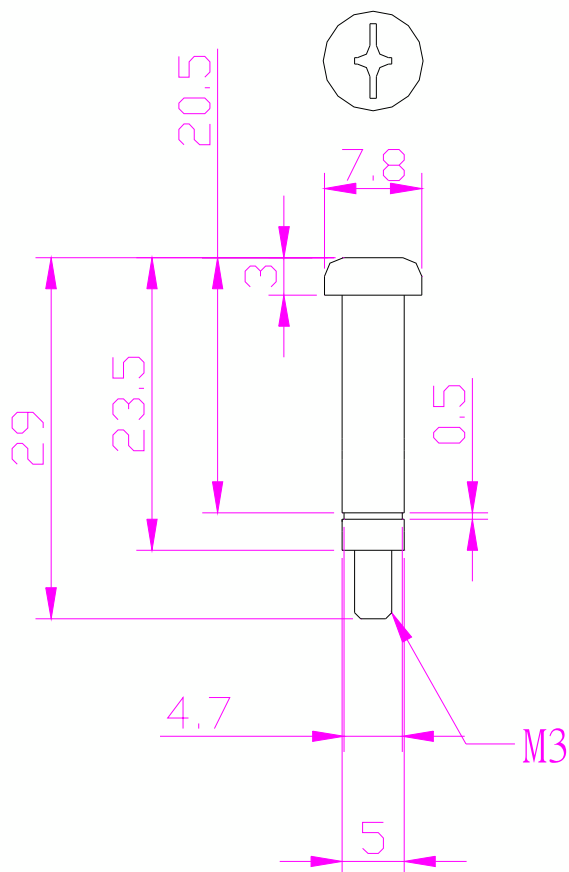
Physical Characteristics :

Product : ROD CARBON STEEL

### Chemistry Ingredient Characteristics : (%)

Value	C	Mn	P	S	Si
SPECIFIED VALUES	0.16	0.78	0.24	0.8	0.2

Finished : Nickel-Plating



### General Dimension Tolerances (Unit : mm )

0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°



## Spring

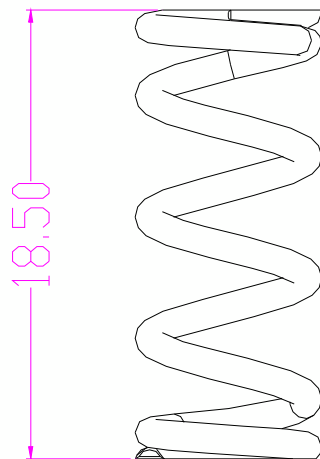
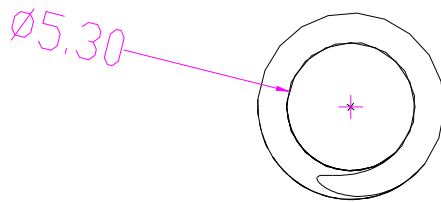
### Mechanical Characteristics :

Material of Metal Wire	Size
SWP-B	Ø1.2mm

### Chemistry Ingredient Characteristics : (%)

Value	C	Si	Mn	P	S
SPECIFIED VALUES	0.82	0.21	0.49	0.017	0.004

Finished : Nickel-Plating



General Dimension Tolerances (Unit : mm )			
0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°



## Fan

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

### SPECIFICATION FOR APPROVAL

Customer:	COOLERMMASTER	
Description:	DC FAN	
Customer P/N:	200007180-GP	REV:
Delta Model NO.:	AFB0912VH-9R72	
Sample Rev:	00	Issue NO:
Sample Issue Date:	JUN-10-2009	Quantity:

#### 1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH TWO PHASES AND FOUR POLES. FOLLOWING DATA IS BASED ON PROTOTYPE SAMPLES, ONLY FOR REFERENCE.

#### 2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12.0 VDC
OPERATION VOLTAGE	7.0 - 12.5 VDC
INPUT CURRENT	0.40 (MAX. 0.60) A
INPUT POWER	4.80 (MAX. 7.20) W
SPEED (REF.)	4500±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	1.634 (MIN. 1.471 ) M <sup>3</sup> /MIN. 57.70 (MIN. 51.93 ) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	8.60 (MIN. 6.97 ) mmH <sub>2</sub> O 0.338 (MIN. 0.274 ) inchH <sub>2</sub> O
ACOUSTICAL NOISE (AVG.)	47.5 (MAX. 51.5) dB-A
INSULATION TYPE	UL: CLASS A

(continued)

A00

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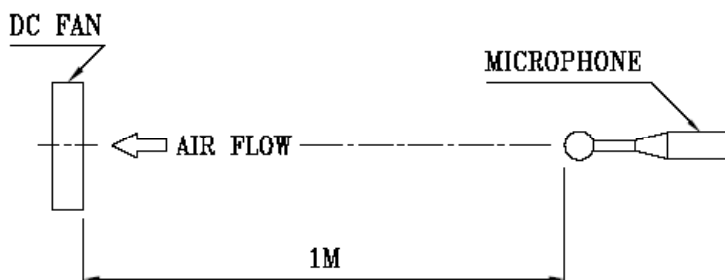


PART NO: 200007180-GP

DELTA MODEL: AFB0912VH-9R72

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:TACHOMETER OUTPUT (FOO) BLUE WIRE:SPEED CONTROL (PWM)

- 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.



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PART NO: 200007180-GP  
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DELTA MODEL: AFB0912VH-9R72  
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### 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 ----- 90 GRAMS

### 4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE ----- -10 TO +60 DEGREE C
- 4-2. STORAGE TEMPERATURE ----- -40 TO +70 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 IN 96 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.

### 6. RE OZONE DEPLETING SUBSTANCES:

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

### 7. PRODUCTION LOCATION

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



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DELTA MODEL: AFB0912VH-9R72

## 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  $g_{RMS}=3.2$ 

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

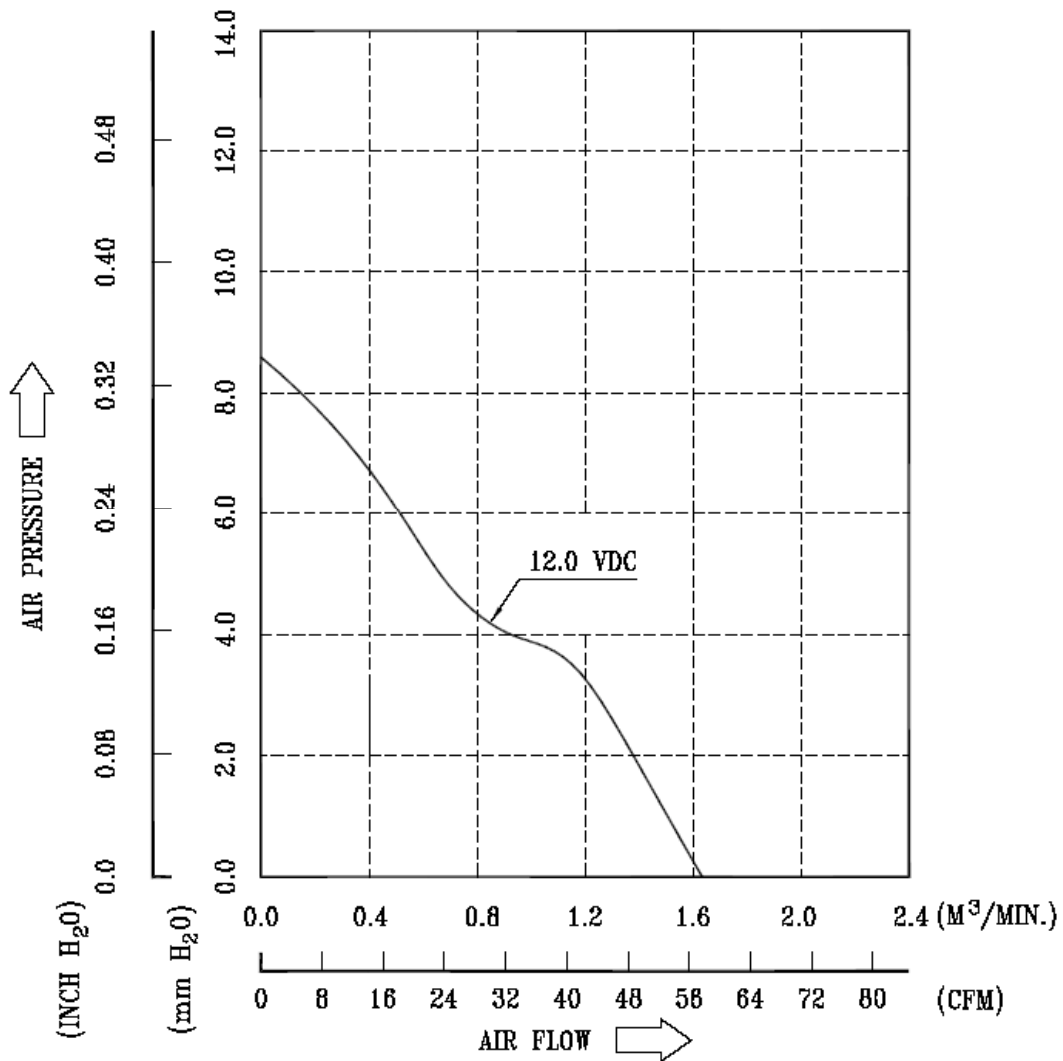
TEST TIME: 2 HOURS ON EACH ORIENTATION
  
- 8-4. MECHANICAL SHOCK      TEMPERATURE: +20°C  
ORIENTATION: X, Y, Z  
POWER: NON-OPERATING  
ACCELERATION: 20 G MIN.  
PULSE: 11 ms HALF-SINE WAVE  
NUMBER OF SHOCKS: 5 SHOCKS  
FOR EACH DIRECTION
  
- 8-5. LIFE      TEMPERATURE: MAX , OPERATING TEMPERATURE  
POWER: OPERATING  
DURATION: 1000 HOURS MIN.



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DELTA MODEL: AFB0912VH-9R72

### 9. P & Q CURVE:



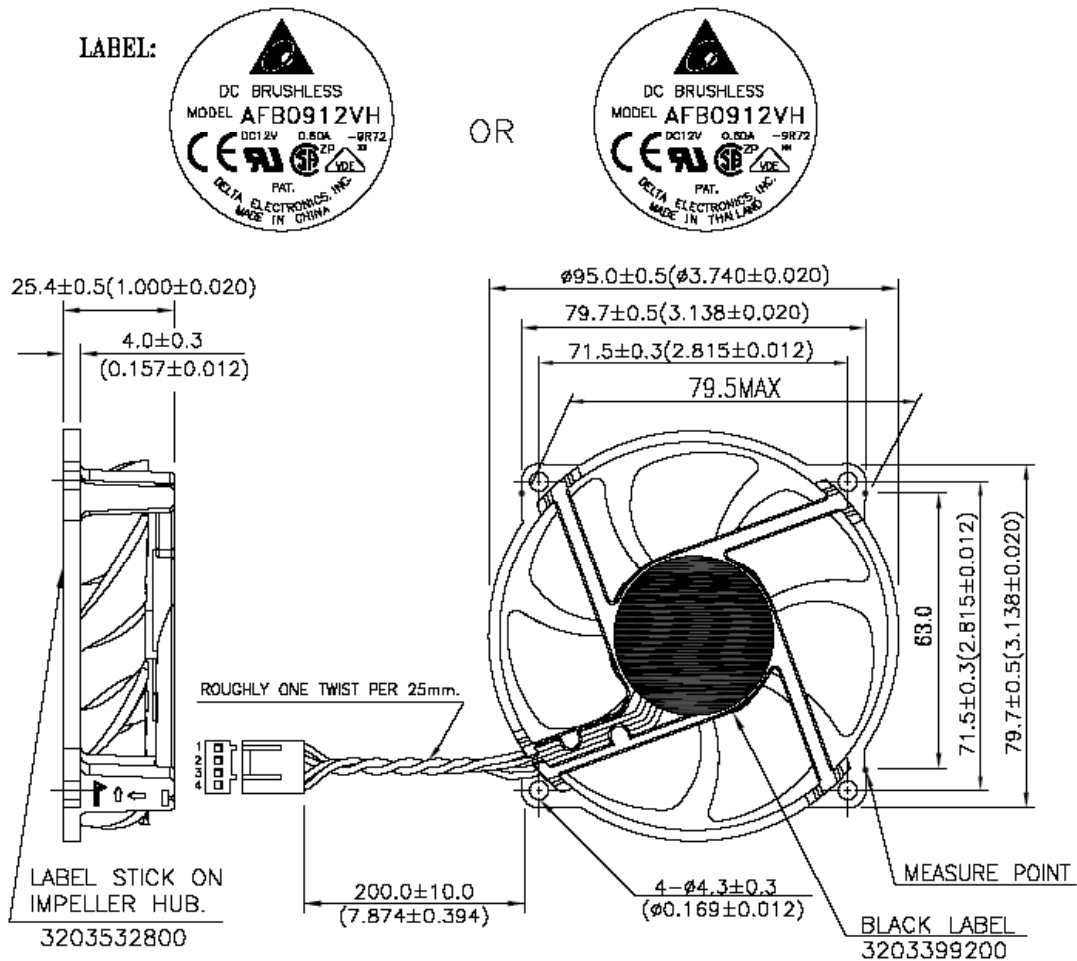
\* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE  
 TEMPERATURE ----- ROOM TEMPERATURE  
 HUMIDITY ----- 65%RH



PART NO: 200007180-GP

DELTA MODEL: AFB0912VH-9R72

### 10. DIMENSION DRAWING:



#### NOTE:

1. LEAD WIRE UL 1061 AWG #26  
 PIN 1 : BLACK WIRE-----(-)  
 PIN 2 : RED WIRE-----(+)  
 PIN 3 : YELLOW WIRE----- (FO)  
 PIN 4 : BLUE WIRE----- (PWM)
2. HOUSING : WIESON G2510C888-001
3. TERMINAL : WIESON G2255-001003
4. THIS PRODUCT IS ROHS COMPLIANT

UNIT: MM(INCH)

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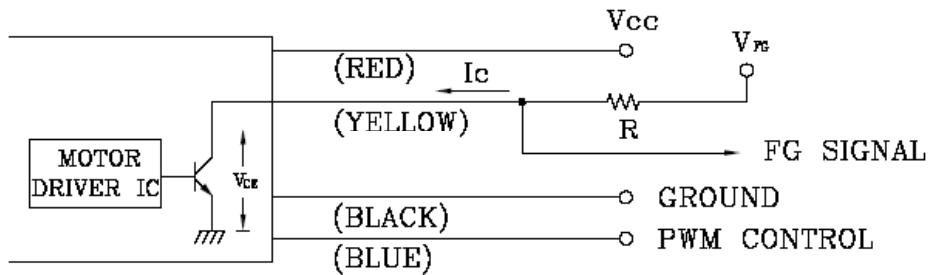


PART NO: 200007180-GP

DELTA MODEL: AFB0912VH-9R72

## 11. ROTATION DETECT (FG) SIGNAL:

### 1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "-" LEAD WIRE.

### 2. SPECIFICATION:

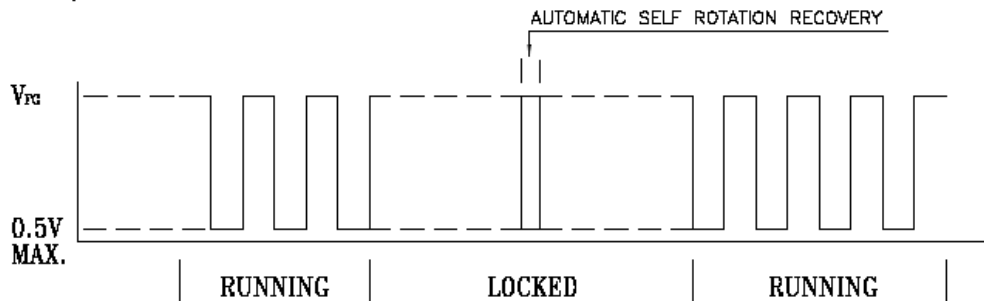
$V_{ce(sat)} = 0.5V \text{ MAX}$

$V_{rc} = 13.8V \text{ MAX}$

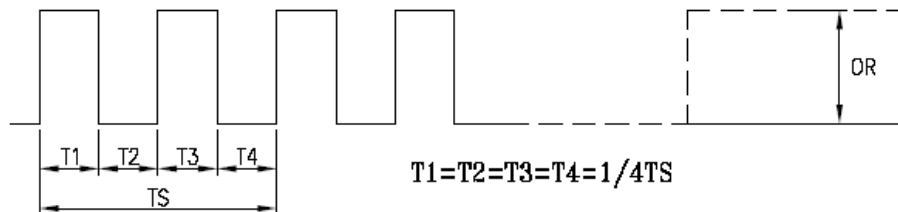
$I_c = 5mA \text{ MAX.}$

$R \geq V_{rc} / I_c$

### 3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



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

$N = \text{R.P.M}$

$TS = 60/N(\text{SEC})$

\*VOLTAGE LEVEL AFTER BLADE LOCKED

\*4 POLES

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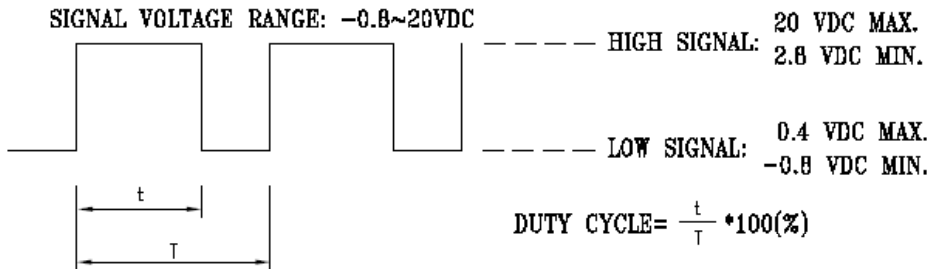
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PART NO: 200007180-GP

DELTA MODEL: AFB0912VH-9R7Z

12. PWM CONTROL SIGNAL:

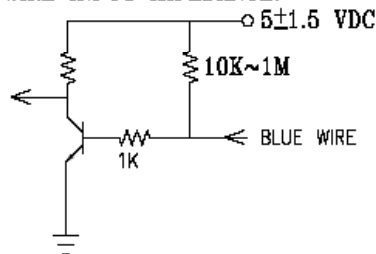


- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 30HZ~300 KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 20K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL STOP SPIN .
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT 20K HZ 30% DUTY CYCLE ,THE FAN WILL BE ABLE TO STAR FROM A DEAD STOP .

13. SPEED VS PWM CONTROL SIGNAL: (AT RATED VOLTAGE & PWM FREQUENCY=20KHZ)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A) TYP.
100	4500±10%	0.40
75	3600±10%	0.22
50	2500±10%	0.10
25	1200±150	0.04
0	0	0.01

14. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



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



## Descriptions:

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 fans are 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, as there is no foolproof method to protect against such error.
7. Delta fans 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 relative (ambient) temperature and humidity conditions of 25°C, 65%. The test value is only for fan performance itself.
13. Be certain to connect an “over 4.7 $\mu$ F” capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.



## Interface

SIZE(mm): 31\*31(mm)

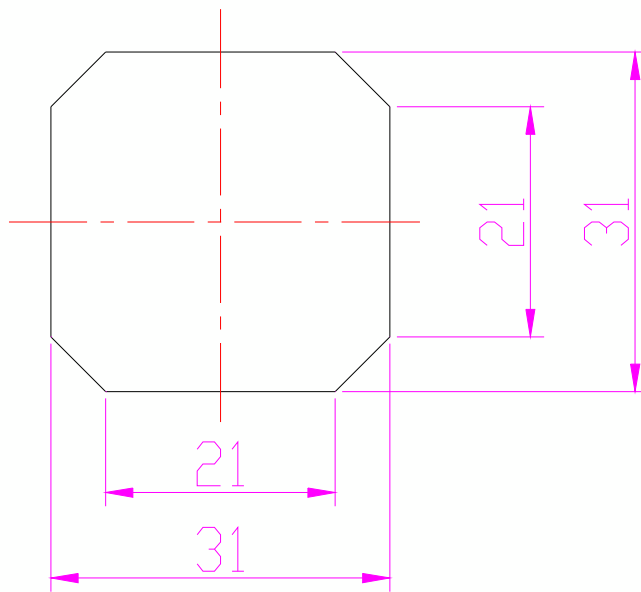
Thickness : 0.1 ~ 0.15 mm

Specification

Brand

X-23-7762

ShinEtsu



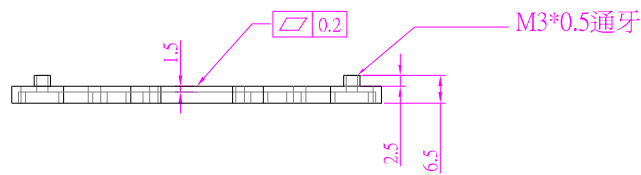
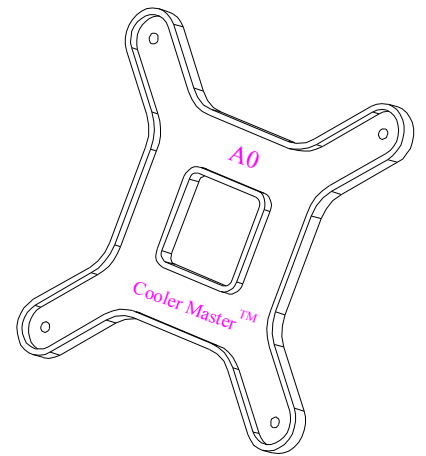
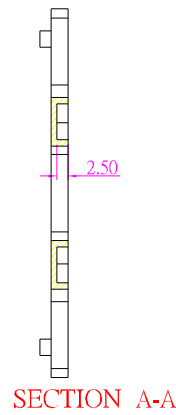
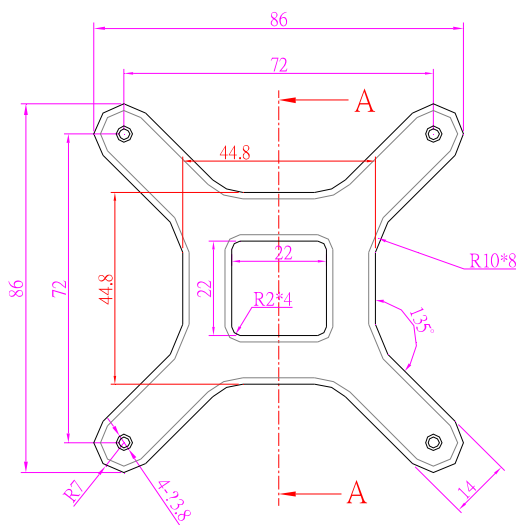
### General Dimension Tolerances (Unit : mm )

0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°



## Back Plate

Material : SPCC  
 Thickness : 1.6mm  
 Finished: Nickel-Plated



General Dimension Tolerances (Unit : mm )			
0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°



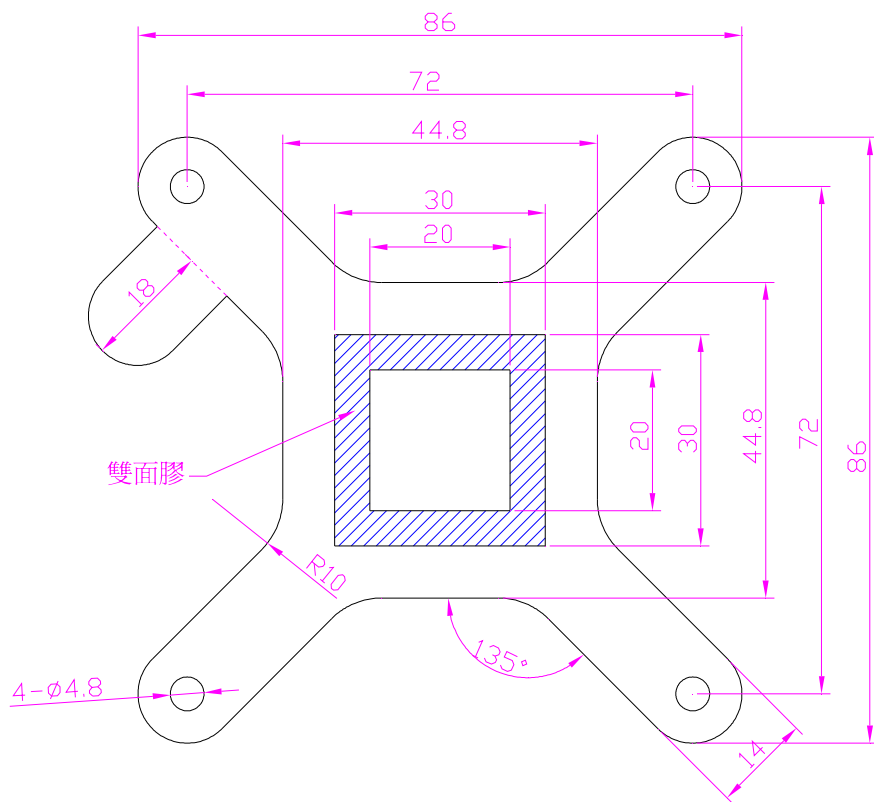
## Insulator

**Model No. :D272**

**Color : Green**

**Mechanical Characteristics :**

Thickness (mm)	Tensile Strength (N/10mm)	Dielectric Strength (KV/mm)
0.2	Cross section :100 Axial section : 120	9.0



General Dimension Tolerances (Unit : mm )			
0	—	30	± 0.2
31	—	60	± 0.3
61	—	100	± 0.4
101	and	Over	± 0.5
Angles			± 2°



## Package

### Gift box Size

142\*142\*110(mm)

Weight = 700g



### Gift box in carton



8 pcs in one layer.  
Total 2 layers in one  
carton 16 pcs/ctn.

### Carton Size

593\*300\*250(mm)

Gross Weight = 12.5kg





## Drop Report



### Cooler Master Co., Ltd.

www.cooler-master.com

### Drop 检测 报告

报告编号: CMTC-C2012031601

页码: 第 1 页 共 2 页

#### 一· 样品基本信息:

样品名称: 成品                      样品料号: ECC-00243-02-GP

样品数量: 1 箱                      样品重量: 12.7KG

送测日期: 2012/3/16                送测单位: 品保部

测试单位: 品保实验室

检测目的: 模拟运输过程中整箱成品受到坠落情况

检测标准: 产品不可有损坏, 变形, 导热膏不可有脏污, 破损, 风扇不可有异音等

#### 现象

#### 二· 样品测试条件:

1. 一角三棱六面

2. 落摔高度: 60 cm

#### 三· 检测设备:

序号	仪器名称	规格型号	仪器编号	校准有效期
1	Drop 测试仪	KD-128A	VD101101991	2012/4/14

#### 四· 样品测试前图片:



讯强电子(惠州)有限公司实验室 Cooler Master Co., Ltd  
 地址: 广东省惠州市仲恺高新区技术产业开发区和畅东四路 18 号  
 电话: TEL: 0752-2608824 传真 FAX: 0752-2629468 邮编: 516006

CMTC-QR-D-055





## Cooler Master Co., Ltd.

www.coolermaster.com

### Drop 检测 报告

报告编号: CMTC-C2012031601

页码: 第 2 页 共 2 页

#### 五· 测试过程:

样品测试图片一



样品测试图片二



样品测试图片三



#### 六· 样品测试后图片:



#### 七. 测试结果描述:

测试后产品无刮压伤变形, 导热膏无破损, 脏污等现象, 结果判定 OK.

批准签字人: 李和平      审核签字人: 李和平      测试人: 刘敏

注释 Remark:

1. 室内环境温度 25±5℃ 湿度 50%±20%, 本报告只对来样负责。
2. 检测报告发出后三天, 无异议, 对检测报告结果视同默认。
3. 受检样品务必在收到本检测报告三天内取回, 否则, 实验室可自行处理。

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