Delta Electronics Corp.

APPROVAL SHEET

Customer Name .: **STD**

Model Name.: **Heatsink**

Delta Part No.: **FHS-A6025B02A**

Customer Part No.: **---**

Spec Issue Date .: **12/31/2015**

Spec Revision : **01**

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

Approved By: _____

Date: _____

Approval	Check	Designer
Alex-Hsia	Alex-Hsia	Charles Chen

Delta Electronics Corp.

REV.	Description	Drawn	Checked	Approved	Issue Date
00	**ISSUE SPEC**	Sheila.Hu 8/15'12	Charles.Chen 8/15'12	Charles.Chen 8/15'12	
01	Change TIM from TC-1996 to TC-5630	Charles.Chen 12/31'15	Alex-Hsia 12/31'15	Alex-Hsia 12/31'15	

Description: SAMPLE REVISION CODE LIST		
Part No.		REV
DELTA MODEL : FHS-A6025B02A	TOTAL 22 PAGE	01

Delta Electronics Corp.

CONTENTS

Delta Electronics Corp.

1. SPECIFICATION

1.1 Characters

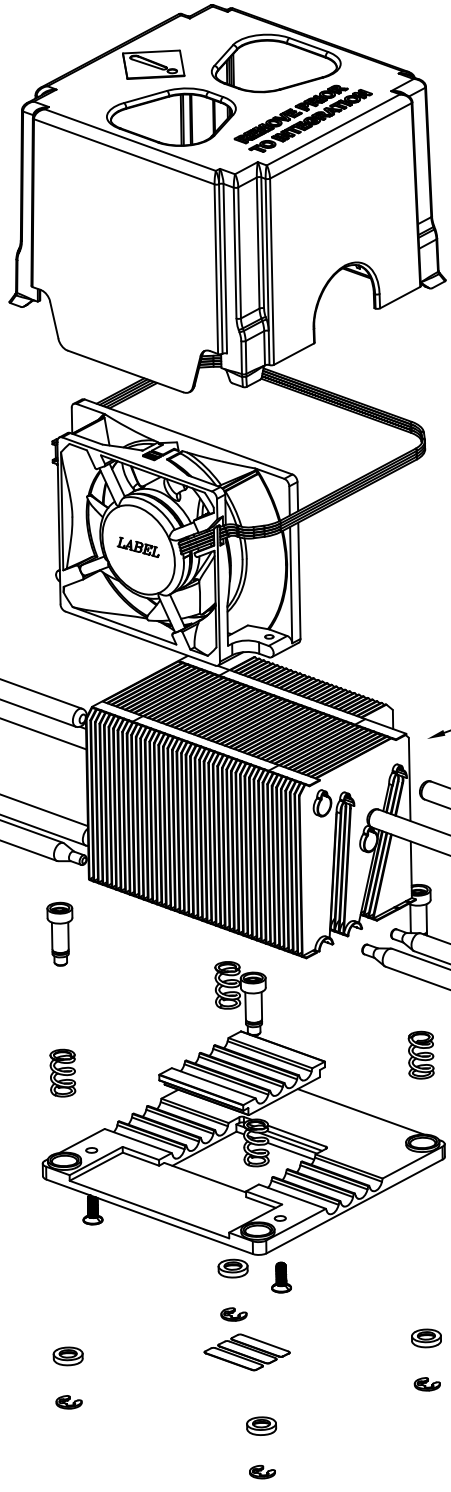
Item	Description
Scope	THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE FAN HEATSINK
Application	INTEL LGA2011 CPU HEATSINK
Specification	
a: Thermal Resistance	0.18 (°C/W)(REF.)
b: total weight	535 g (REF.)
c: clip force	29.5 Kgf (REF.)

1.2 BOM

Item	Part Name	Material	Part NO.	Q'TY	Remark
1	FAN	PBT	3620936511	1PCE	
2	FAN SCREW	SUS 302	3109182300	2PCE	
3	FAN LABEL	POLYESTER	3267299800	1PCE	
4	FIN	A1050 / C1100	3346397100	1PCE	
5	AL BASE	ADC12	3346814700	1PCE	
6	CU BASE	CU 1100	3346397300	1PCE	
7	HEATPIPE	CU 1020	3460037000/ 3460037600~3460037800	4PCE	
8	SOLDER	SN / BI	4090207800	14.5 g	
9	SCREW	SUS 304	3105359900	4PCE	
10	SPRING	ASTM A228	3462028800	4PCE	
11	E CLIP	SK7	3110264700	4PCE	
12	SPACER	POM	3244747000	4PCE	
13	COVER	ABS	3321044300	1PCE	
14	GREASE	TC-5630	4021107300	0.2 g	Rev01
15	BOX LABEL	PAPER	3261447400	0.031PCE	
16	TRAY	PET	3503125200	1PCE	
17	BOX	PAPER	3518141900	1PCE	
18	PAD PAPER	PAPER	3516275100	0.125PCE	
19	CARTON	PAPER	3513743100	0.042PCE	

2. PRINT

2.1 Assembly Drawing



3

2

1

COVER
3321044300

FAN ASSY
3620936511

FAN LABEL
3267299800

FIN
3346397100

HEATPIPE (4X)
3460037000/
3460037600~
3460037800

SCREW (4X)
3105359900

SPRING(4X)
3462028800

CU BASE
3346397300

AL BASE
3346814700

FAN SCREW(2X)
3109182300

TC-5630 ⚠1
4021107300

SPACER(4X)
3244747000

E CLIP(4X)
3110264700

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A6025B02A

Drawn: Charles Chen

CUSTOMER NAME: STD

CUSTOMER P/N: - - -

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

( )		( )		( )				( )	
<30	:±0.25	DECIMALS		UP~100	:±0.2	250~300	:±0.4	UP~600	:±1.5
>30~100	:±0.35	X	:±0.3	100~150	:±0.25	300~350	:±0.45	600~900	:±2.4
>100~300	:±0.5	X.X	:±0.2	150~200	:±0.3	350~400	:±0.5	900~OVER	:±3.1
ABOVE 300	:±0.6	X.XX	:±0.1	200~250	:±0.35				

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (ASSEMBLY ORDER)

A4 SIZE

Part No. FHS-A6025B02A-AS

REV. 01

SCALE	---	UNIT	---	USED ON	COOLER

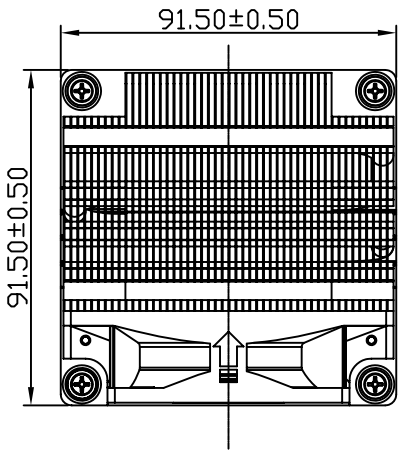
SHEET 1 OF 1

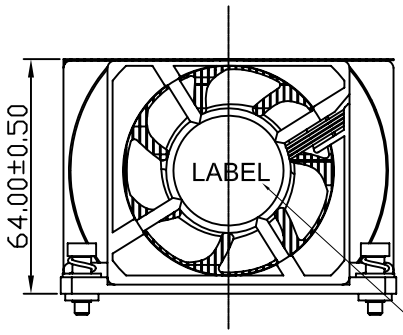
ISSUE DATE:

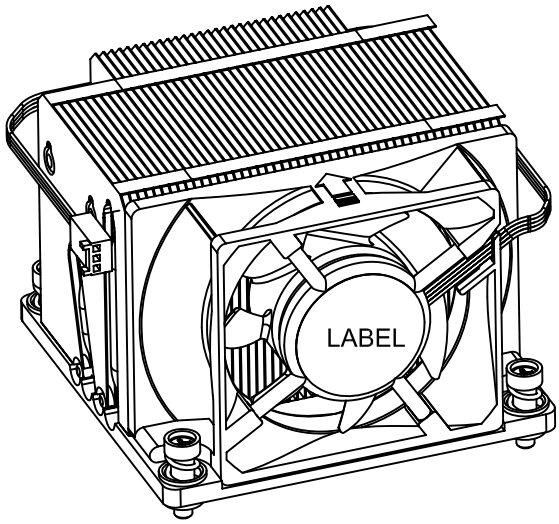
FRAME NAME : DF-PSLA4V-3R01.DWG

DRAWING:

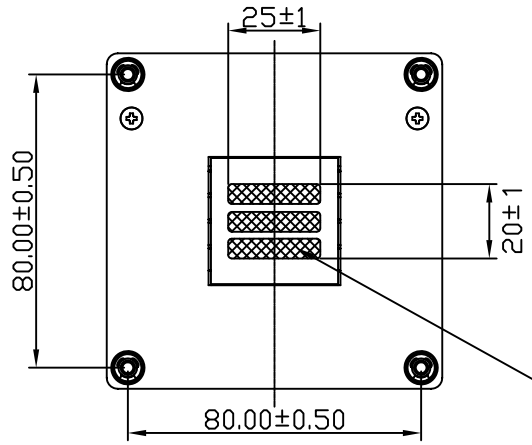
UNIT: mm (INCH)







FAN LABEL P/N:3267299800



1 Dow Corning TC-5630 P/N:4021107300

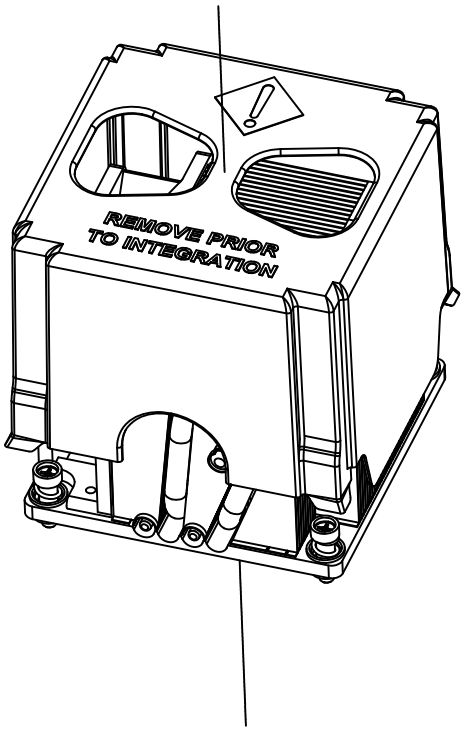
TIM WEIGHT ON HSK MUST BE 200mg±30mg

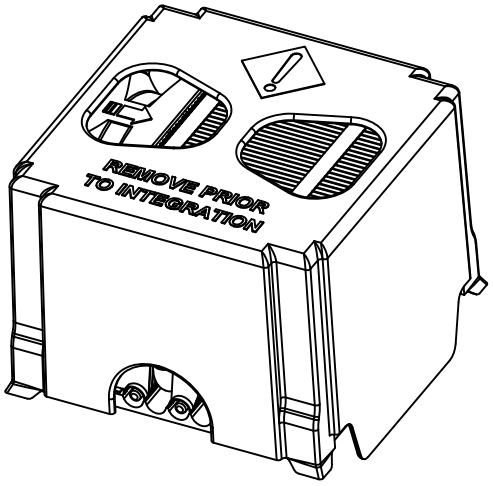
台達電子工業股份有限公司 DELTA ELECTRONICS, INC.		DELTA MODEL: FHS-A6025B02A	Drawn: Charles Chen
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.		CUSTOMER NAME: STD	
		CUSTOMER P/N: ---	
DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°		THIRD ANGLE PROJECTION	Description: PRODUCTION SPEC. (PHYSICAL DIMENSION)
( ) <30 :±0.25 >30~100 :±0.35 >100~300 :±0.5 ABOVE 300 :±0.6	( ) DECIMALS X :±0.3 X.X :±0.2 X.XX :±0.1	( ) UP~100 :±0.2 100~150 :±0.25 150~200 :±0.3 200~250 :±0.35	250~300 :±0.4 300~350 :±0.45 350~400 :±0.5	( ) UP~600 :±1.5 600~900 :±2.4 900~OVER :±3.1	A4 SIZE	Part No. FHS-A6025B02A-PD	REV. 01
SCALE --- UNIT --- USED ON COOLER					SHEET 1 OF 2	ISSUE DATE:	

FRAME NAME : DF-PSLA4V-3R01.DWG

DRAWING:

UNIT: mm (INCH)





台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

( )		DECIMALS		( )				( )	
<30	:±0.25	X	:±0.3	UP~100	:±0.2	250~300	:±0.4	UP~600	:±1.5
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>100~300	:±0.5	X.XX	:±0.1	150~200	:±0.3	350~400	:±0.5	900~OVER	:±3.1
ABOVE 300	:±0.6			200~250	:±0.35				

SCALE	---	UNIT	---	USED ON	COOLER

THIRD ANGLE PROJECTION

A4 SIZE

DELTA MODEL:	Drawn:
FHS-A6025B02A	Charles Chen
CUSTOMER NAME:	STD
CUSTOMER P/N:	- - -
Description:	PRODUCTION SPEC. (PHYSICAL DIMENSION)
Part No.	FHS-A6025B02A-PD
REV.	01
SHEET 2 OF 2	ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

3. Packing Plan

PART NO.	FHS-A6025B02A			
BASIC DATA	QUANTITY/CARTON	24 PCS		
	PRODUCTION NET WEIGHT	14.7 Kg (REF)		
	PRODUCTION GROSS WEIGHT	16.5 Kg (REF)		
20(ft)CONTAINER ILLUSTRATE	SIZE	5.889(L)*2.352(w)*2.386(H)m	PACKING QUANTITY	20 PALLETS/CONTAINER
	CONTAINER	STEEL		

CONTAINER FORM

CONTAINER LOADING MATHOD

PALLET	PALLET	PALLET	PALLET	PALLET
PALLET	PALLET	PALLET	PALLET	PALLET

TOP VIEW

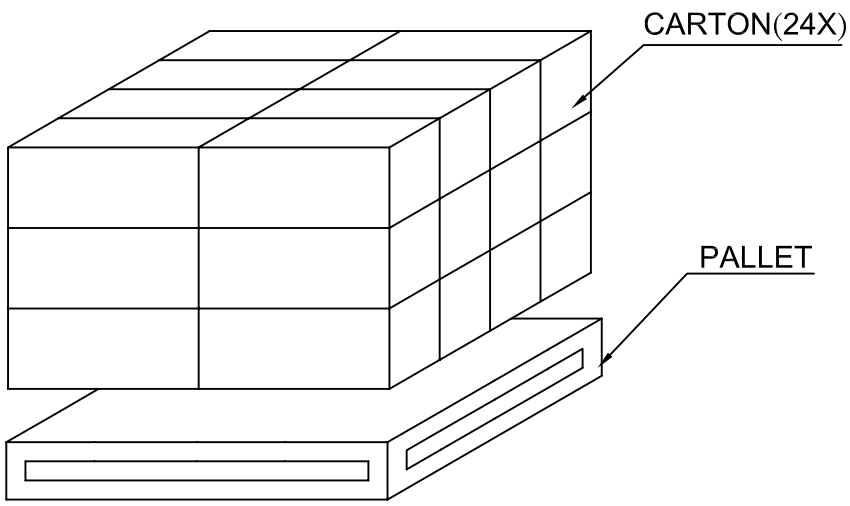
PALLET	PALLET
PALLET	PALLET

FRONT VIEW

PALLET LOADING ILLUSTRATE	SIZE	120(L)*100(w)*13.5(H)cm	PACKING QUANTITY	24 CARTONS/PALLET
	PALLET	WOOD		

PALLET ILLUSTRATE

PALLET LOADING METHOD



台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A6025B02A

Drawn: SHEILA

CUSTOMER NAME: STD

CUSTOMER P/N: - - -

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

( )		DECIMALS		( )				( )	
<30	:±0.25	X	:±0.3	UP~100	:±0.2	250~300	:±0.4	UP~600	:±1.5
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>100~300	:±0.5	X.XX	:±0.1	150~200	:±0.3	350~400	:±0.5	900~OVER	:±3.1
ABOVE 300	:±0.6			200~250	:±0.35				

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PACKING ASSEMBLY)

A4 SIZE

Part No. FHS-A6025B02A-PA

REV. --

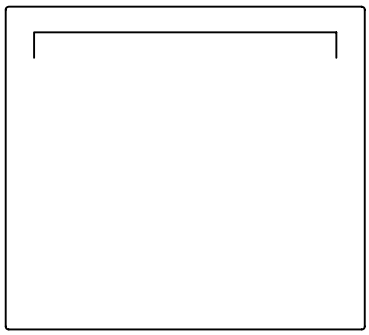
SCALE	---	UNIT	---	USED ON	COOLER	SHEET 1 OF 2	ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

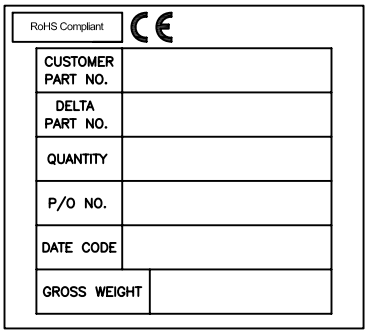
CARTON ILLUSTRATE	SIZE	450(L)*337(w)*196(H)(mm)	PACKING QUANTITY	2 LAYERS/CARTON
	MATERIAL	3 LAYERS"AB" FLUTE	CARTON WEIGHT	0.9 kg (REF.)

CARTON OUTSIDE DEMONSTRATE

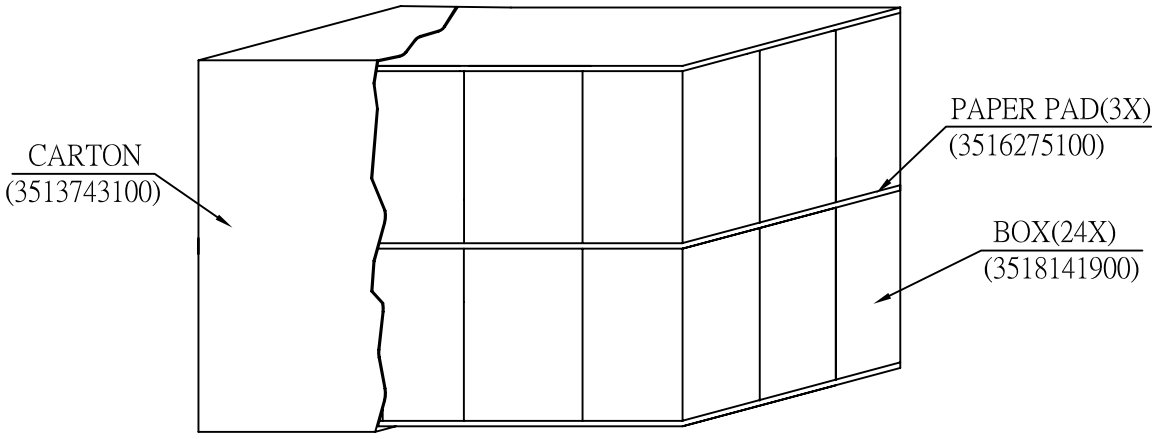
FRONT



BACK



BOX PACKING ILLUSTRATE	SIZE	109(L)*109(w)*83(H)(mm)	PACKING QUANTITY	1 PCS/BOX
	MATERIAL	PAPER	MATERIAL WEIGHT	40g (REF.)



台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A6025B02A

Drawn: SHEILA

CUSTOMER NAME: STD

CUSTOMER P/N: - - -

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

( )		DECIMALS		( )		( )		( )	
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ABOVE 300	:±0.6			200~250	:±0.35				

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (PACKING ASSEMBLY)

A4 SIZE

Part No. FHS-A6025B02A-PA

REV. --

SCALE	---	UNIT	---	USED ON	COOLER

SHEET 2 OF 2

ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

4. FAN

4.1 Fan Specification

SPECIFICATION FOR APPROVAL

Customer TMPBU

Description DC FAN

Part No. 3620936511 REV.

Delta Model No. AFB0612DH-BC01 REV. 01

Sample Issue No.

Sample Issue Date AUG.13.2012

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
252, SHANG YING ROAD, KUEI SAN INDUSTRIAL ZONE TAOYUAN SHIEN, TAIWAN, R.O.C.
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333, TAIWAN, R. O. C.

TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

STATEMENT OF DEVIATION

****

■ NONE

☐ DESCRIPTION :

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN SHIEN 333, TAIWAN, R. O. C.
TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

SPECIFICATION FOR APPROVAL

****

Customer:	TMPBU		
Description:	DC FAN		
Customer P/N:	3620936511	REV:	
Delta Model NO.:	AFB0612DH-BC01	**Delta Safety Model NO: N/A**	
Sample Rev:	01	Issue NO:	
Sample Issue Date:	AUG.13.2012	Quantity:	

1. SCOPE:

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

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12.0 VDC
OPERATION VOLTAGE	10.8 - 13.2 VDC
INPUT CURRENT	0.31 (MAX. 1.20) A **(CURRENT ON SAFETY LABEL 1.20A)**
INPUT POWER	3.72 (MAX. 14.40) W
SPEED (FAN ONLY)	7300±10% R.P.M.
SPEED (ON SINK)	7200±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.878 (MIN. 0.790) M^3/MIN. 31.01 (MIN. 27.91) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	13.79 (MIN. 11.17) mmH_2O 0.543 (MIN. 0.440) $inchH_2O$
ACOUSTICAL NOISE (AVG. ON SINK)	61.0 (MAX. 65.0) dB-A
INSULATION TYPE	UL: CLASS A

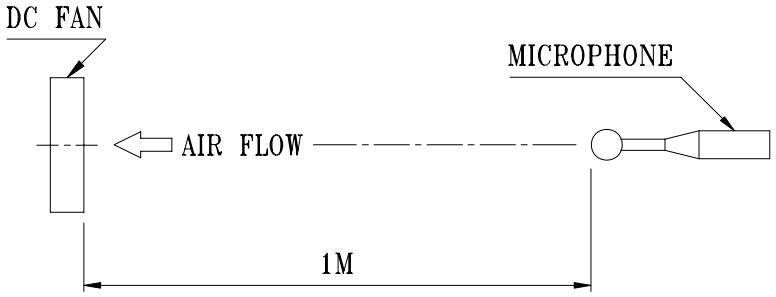
(continued)

PART NO: 3620936511

DELTA MODEL: AFB0612DH-BC01

INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE (AT LABEL VOLTAGE)	80,000 HOURS CONTINOUS OPERATION AT 45 °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 10368 -F- AWG #24 BLACK WIRE:NEGATIVE (-) YELLOW WIRE:POSITIVE (+) GREEN 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.

PART NO: 3620936511

DELTA MODEL: AFB0612DH-BC01

3. MECHANICAL:

3-1. DIMENSIONS ---------- SEE DIMENSIONS DRAWING

3-2. FRAME ---------- PLASTIC UL: 94V-0

(THE CONTACT OF HALOGEN LESS THAN 1500 PPM FOR USING EDX ...ETC)

3-3. IMPELLER ---------- PLASTIC UL: 94V-0

(THE CONTACT OF HALOGEN LESS THAN 1500 PPM FOR USING EDX ...ETC)

3-4. BEARING SYSTEM ---------- TWO BALL BEARING

3-5. WEIGHT ---------- 85 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ---------- -10 TO +70 DEGREE C

4-2. STORAGE TEMPERATURE ---------- -30 TO +85 DEGREE C

4-3. OPERATING HUMIDITY --- 85% RELATIVE HUMIDITY WITH 55 DEGREE C

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, PBBEs, PBDPEs AND HCFCs.

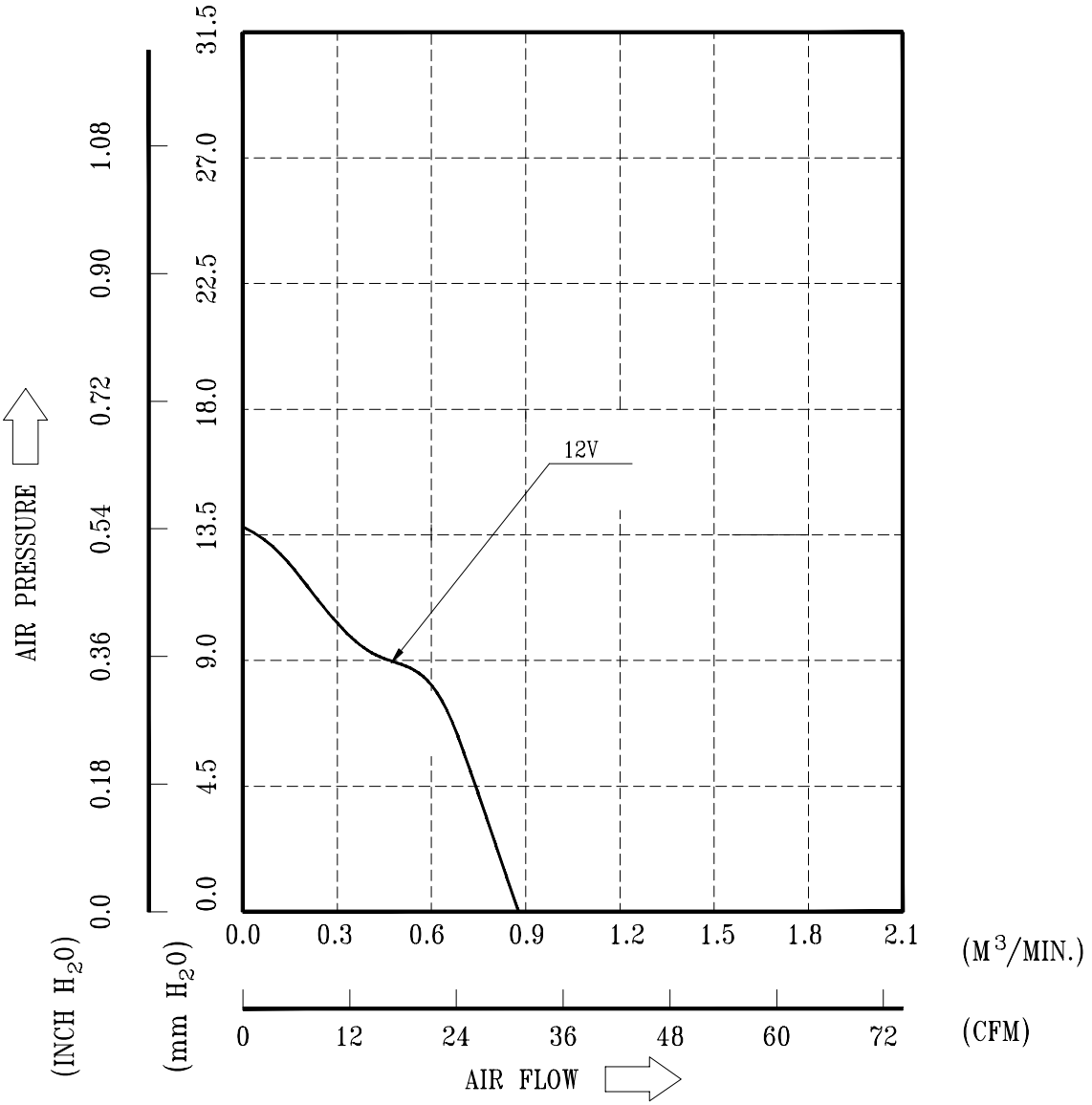
7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR TAILAND OR TAIWAN.

PART NO: 3620936511

DELTA MODEL: AFB0612DH-BC01

8. P & Q CURVE:



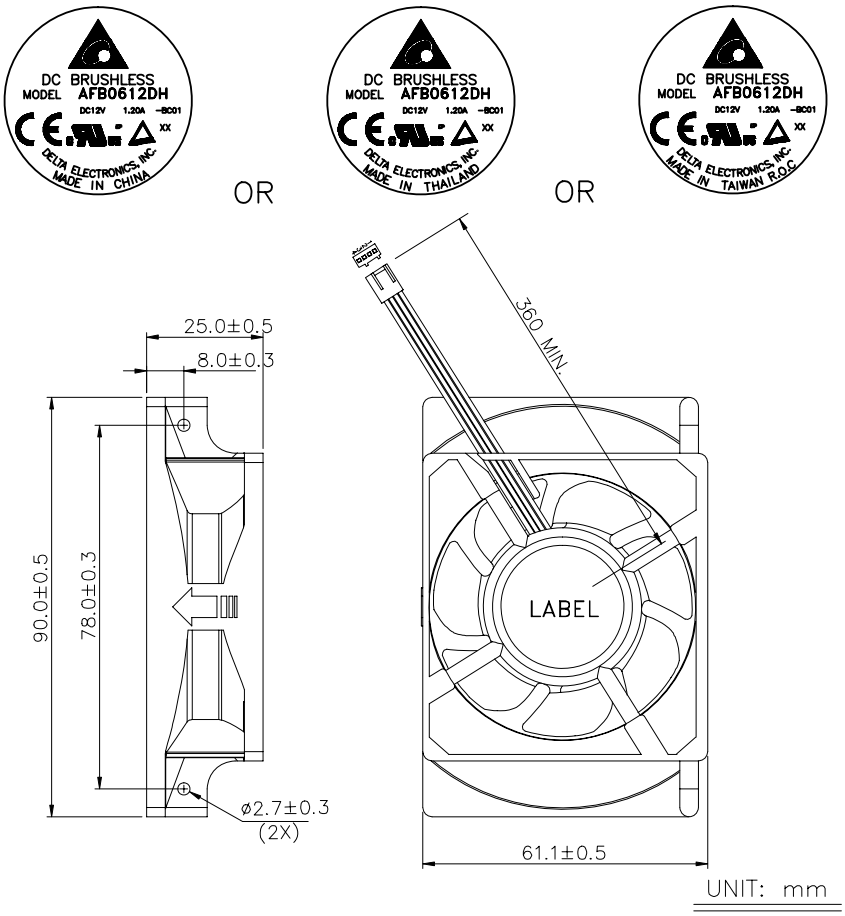
* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ------ ROOM TEMPERATURE
HUMIDITY ---------- 65%RH

PART NO: 3620936511

DELTA MODEL: AFB0612DH-BC01

9. DIMENSION DRAWING:

LABEL:

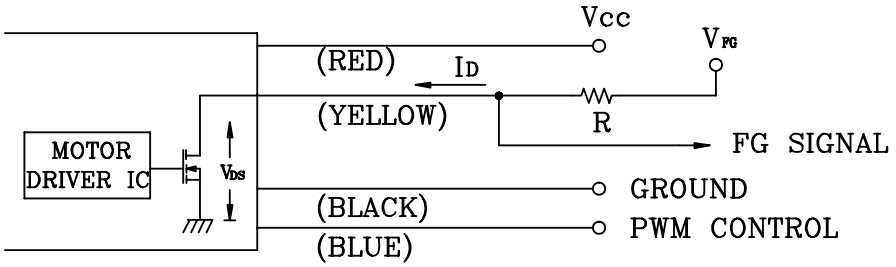


NOTES : 1. LEAD WIRE: UL 10368 -F- AWG #24
PIN 1: BLACK WIRE: NEGATIVE (-)
PIN 2: YELLOW WIRE: POSITIVE (+)
PIN 3: GREEN WIRE: TACHOMETER OUTPUT (F00)
PIN 4: BLUE WIRE: SPEED CONTROL (PWM)

2. HOUSING : MOLEX 47054-1000 OR EQUIVALENT
3. TERMINAL : MOLEX 2759T 08-50-0113 OR EQUIVALENT
4. THIS PRODUCT IS RoHS COMPLIANT
5. DELTA'S RESTRICTIONS ON HALOGEN APPLY ONLY TO BROMINATED AND CHLORINATED COMPOUNDS. NO OTHER HALOGEN IS RESTRICTED. SUBSTANCES RESTRICTIONS FOR HALOGEN-FREE (INCLUDE FAN PLASTIC PARTS, PWB BOARD, IC, ELECTRICAL MATERIALS & CABLE ASSY),
a. BROMINE(Br) < 900 PPM,
b. CHLORINE(Cl) < 900 PPM
c. (Br) + (Cl) < 1500 PPM.

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN DRAIN MODE:



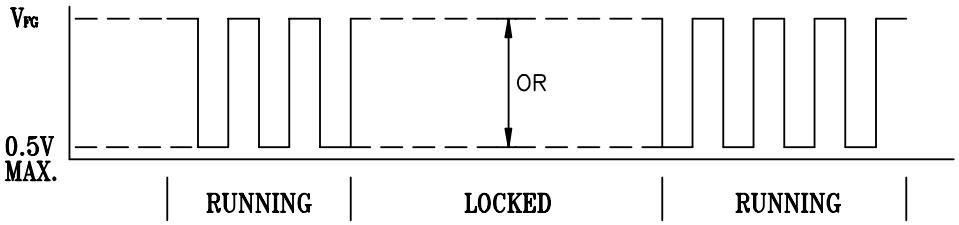
CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "−" LEAD WIRE.

10-2. SPECIFICATION:

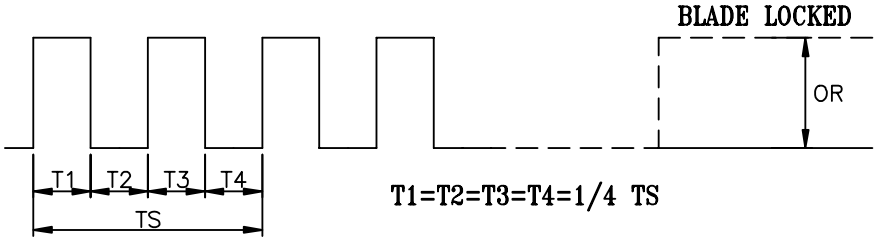
V_{DS} (LINEAR)=0.5V MAX. V_{FG} =5.0V TYP. (Vcc MAX.)

I_D =5mA MAX. $R \geq V_{FG}/I_D$

10-3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



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

N=R.P.M
TS=60/N(SEC)
*VOLTAGE LEVEL AFTER BLADE LOCKED
*4 POLES

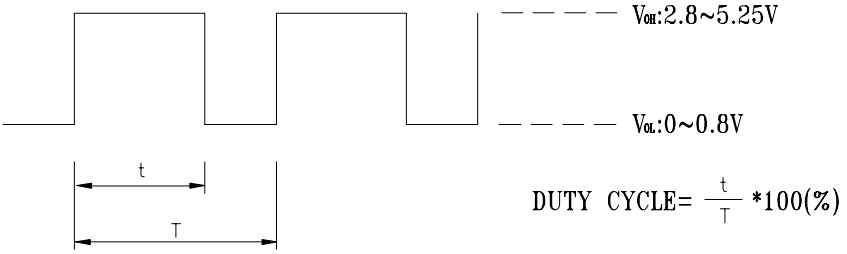
A00

PART NO: 3620936511

DELTA MODEL: AFB0612DH-BC01

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~5.25 VDC



- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 21KHZ~28KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0~10% DUTY CYCLE,THE ROTOR WILL SPIN AT MINIIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

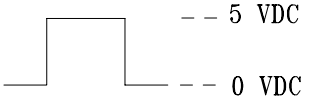
12. SPEED VS PWM CONTROL SIGNAL:

(AT 25°C, RATED VOLTAGE & PWM SIGNAL AS FOLLOW)

DUTY CYCLE (%)	FAN ONLY		FAN ON SINK	
	SPEED (R.P.M.)	CURRENT (A) TYP.	SPEED (R.P.M.)	CURRENT (A) TYP.
100	7300±10%	0.31	7200±10%	0.31
0~10	1000±250	0.03	1000±250	0.03

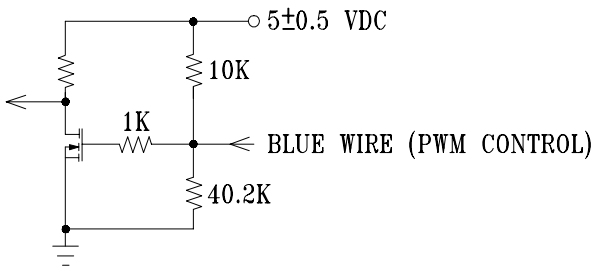
* PWM SIGNAL

PWM FREQUENCY = 25KHz



- MIN. START DUTY CYCLE : 30%.
  WHEN DUTY CYCLE IS SET FOR MORE THAN 30%, THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



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. **lt 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.**

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