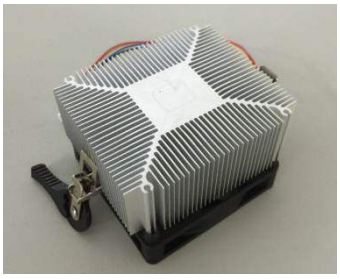
DELTA ELECTRONICS, INC.

Model Name: FHS-A7015B62

Application:

- AMD 85W/95W/100W CPU
- (Socket AM2/Socket AM2+/Socket AM3+/ Socket FM1/Socket FM2/Socket FM2+)

Pictures



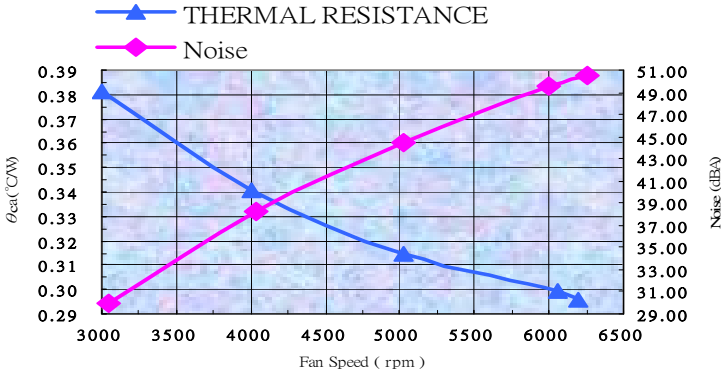
Thermal & Mechanical Spec.:

- Thermal performance for 100/95/80W CPU
- HSK Assembly Weight: 230 g (ref.)
- Clipping Force: 50 lbf (ref.)

Component Specification:

1. Heat Sink Type: Al-Extruded HSK
   Material: Aluminum A6063-T5 or Equivalent.
   Dimension: 77*68*49 mm
2. Thermal Interface Material
   Material: Dow-Corning TC-5121C or Equivalent.
3. Fan *(70x70x15 mm with PWM/Thermistor Control)*
   Rated Voltage: 12 V
   Life Time:
   Two ball bearing 70000 hrs
   Connector:
   a. Lead wire:UL1061 AWG#26
      Pin 1: Black Wire--------(-)
      Pin 2: Red Wire----------(+)
      Pin 3: Blue Wire---------(F00)
      Pin 4: Yellow Wire------------(PWM)
   b. Housing: Molex 47054-1000 or Equivalent
   c. Terminal: Molex 2759T 08-50-0113 or Equivalent

Performance Curve:



* All readings are typical values at rated voltage.

** Specifications are subject to change without notice*

DELTA ELECTRONICS, INC.
252, Shang Ying Road, Kuei San
TAOYUAN SHIEN 333,
TAIWAN,R.O.C.
TEL: 886-3-3591968 EXT 2073
FAX: 886-3-3591991

DELTA PRODUCTS CORPORATION
4405 CUSHING PARKWAY
FREMONT, CA 94538, U.S.A.
TEL: 1-510-668-5100
FAX: 1-510-668-0680

DELTA ELECTRONICS(JAPAN), INC.
DELTA SHIBADAIMON BLDG.
2-1-14 SHIBADAIMON, MINATO-KU,
TOKYO, 105-0012, JAPAN
TEL: 81-3-5733-1111
FAX: 81-3-5733-1211

DELTA ELECTRONICS EUROPE LTD.
2 YOUNG PLACE
KELVIN INDUSTRIAL ESTATE
EAST KILBRIDE, GLASGOW G75 OTD, U.K.
TEL: 44-1355-588888
FAX: 44-1355-588889

Date: 27-Apr-07

Delta Electronics Corp.

APPROVAL SHEET

Customer Name .: STD

Model Name.: COOLER

Delta Part No.: FHS-A7015B62

Customer Part No.: FHS-A7015B62

Spec Issue Date .: 2015/08/06

Spec Revision : 04

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

Approved By: _____

Date: _____

Approval	Check	Designer
Charles Chen	Charles Chen	Skyler Huang

Delta Electronics Corp.

REV.	Description	Drawn	Checked	Approved	Issue Date
00	ISSUE SPEC	07/09'09	07/09'09	07/09'09	
01	1. The HSK is changed height from 30mm to 28mm. 2. The fan is changed from 8M72 to BJ02. 3. Delete PC cover.	12/13'11	12/13'11	12/14'11	
02	1. The fan is changed from BJ02 to CF78. 2. Grease type from solid to mesh. 3. Delete box and add PE-bag.	Pin Chen	Nick Tan	Nick Tan	9/24'13
03	1. Modify the specification on page 5 2. Modify the pallet material on page 11	Skyler Huang	Charles Chen	Charles Chen	3/12'14
04	1. Change the heatsink P/N to 3347380700 2. Change the metal clip to 3468530500 3. Change the grease to TC-5121C	Skyler Huang	Charles Chen	Charles Chen	8/06'15

Description: SAMPLE REVISION CODE LIST		
Part No.		REV
DELTA MODEL : FHS-A7015B62	TOTAL 21 PAGE	04

Delta Electronics Corp.

CONTENTS

Delta Electronics Corp.

1. SPECIFICATION

Characters

Item	Description
Scope	THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE FAN HEATSINK
Application	AMD K8 COOLER
Specification	
a: Thermal Resistance	0.31 (℃/W) (REF.)
b: total weight	230g (REF.)
c: clip force	50 lbf (REF.)

BOM

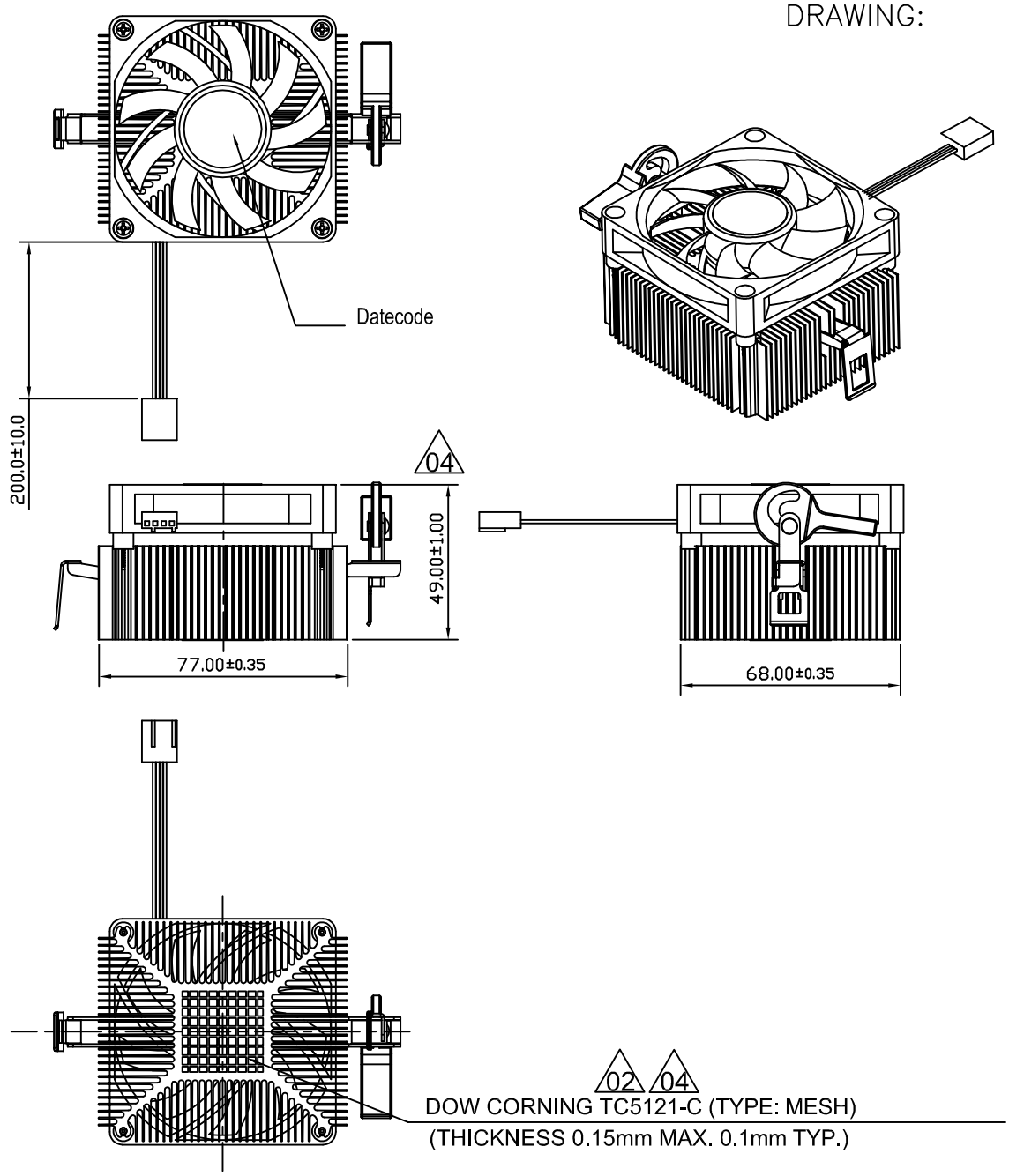
Item	Part Name	Material	Part NO.	Q'TY	Remark
1	HEATSINK	AL6063-T5	3347380700	1 PCE	Rev04
2	FAN ASSY	PBT + 30%GF	3620750511	1 PCE	Rev02
3	METAL CLIP	SK7	3468530500	1 PCE	Rev04
4	GREASE	TC-5121C	TBD	1 SET	Rev04
5	SCREW	S18C	3109141900	4 PCE	
6	COOLER LABEL	POLYESTER	3267113700	1 PCE	

2. PRINT

Assembly Drawing

Parts Drawing

DRAWING:



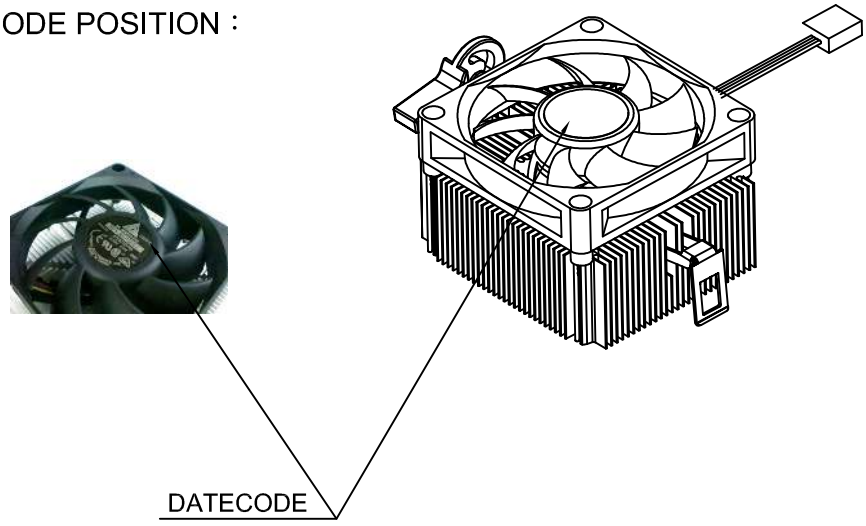
UNIT : mm

台達電子工業股份有限公司 DELTA ELECTRONICS, INC.		DELTA MODEL: FHS-A7015B62	Drawn: Skyler 8/6'15
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)
( ) DECIMALS ( ) ( ) ( )		A4 SIZE	Part No. FHS-A7015B62 REV. 04
SCALE 1 / 1 UNIT mm USED ON COOLER		SHEET 1 OF 2	ISSUE DATE:

<30	:±0.25	X	:±0.3	UP~100	:±0.2	250~300	:±0.4	UP~600	:±1.5
>30~100	:±0.35	X.X	:±0.2	100~150	:±0.25	300~350	:±0.45	600~900	:±2.4
>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				

FRAME NAME : DF-PSLA4V-3R01.DWG

DATECODE POSITION：

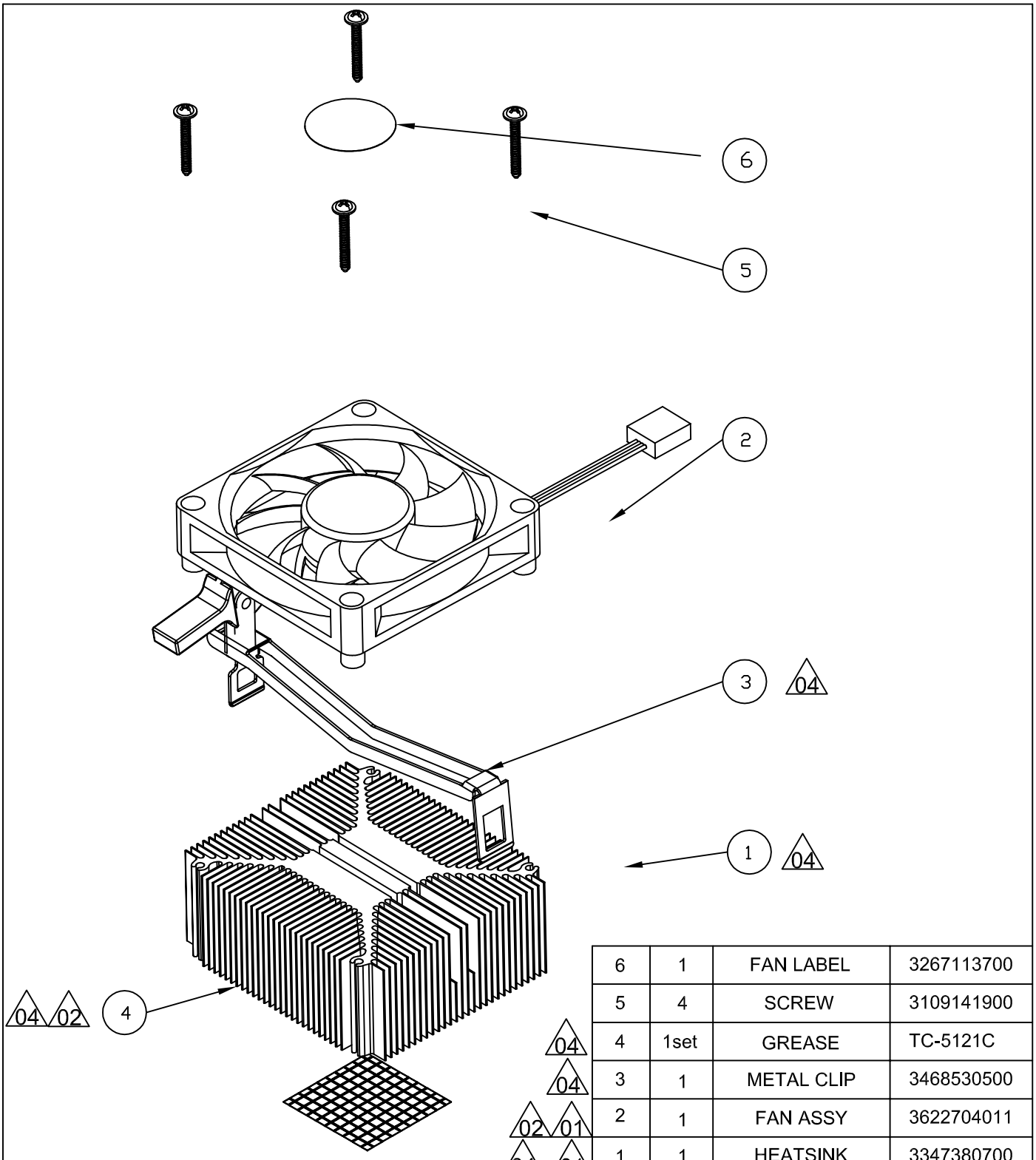


NOTE：

1. DATECODE ON FAN LABEL.
2. PLEASE REFER TO CP10S-00345 WHILE PRINTING DATECODE.

台達電子工業股份有限公司 DELTA ELECTRONICS, INC.		DELTA MODEL: FHS-A7015B62	Drawn: Skyler 8/6'15
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-A7015B62 REV. 04
SCALE 1 / 1	UNIT mm	USED ON COOLER	SHEET 2 OF 2 ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG



	ITEM	QTY	DESCRIPTION	PART NO.
	6	1	FAN LABEL	3267113700
	5	4	SCREW	3109141900
04	4	1set	GREASE	TC-5121C
04	3	1	METAL CLIP	3468530500
02 01	2	1	FAN ASSY	3622704011
04 01	1	1	HEATSINK	3347380700

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A7015B62

Drawn: Skyler 8/06'15

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
>30~100	:±0.35	X.X	:±0.2	100~150	:±0.25	300~350	:±0.45	600~900	:±2.4
>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. (ASSEMBLY ORDER)

A4 SIZE

Part No. FHS-A7015B62

REV. 04

SCALE --- UNIT --- USED ON COOLER

SHEET 1 OF 1 ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

3. PACKING PLAN

Packing Specification

PART NO.	FHS-A7015B62			
BASIC DATA	QUANTITY/CARTON	45PCS (3 LAYERS/CARTON, 15 PCS/LAYER)		
	PRODUCTION NET WEIGHT	10.4 Kg (REF) 03		
	PRODUCTION GROSS WEIGHT	13.3 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

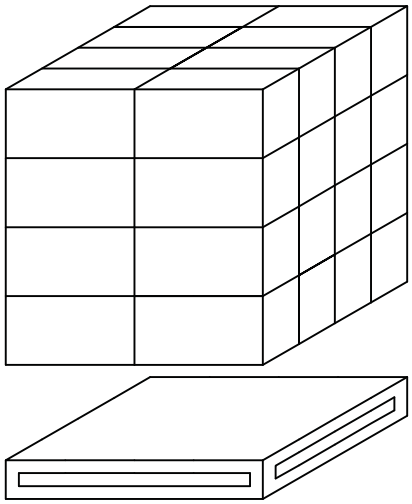
PALLET	PALLET
PALLET	PALLET

FRONT VIEW

PALLET LOADING ILLUSTRATE	SIZE	120(L)*106(w)*13(H)cm	PACKING QUANTITY	32 CARTONS/PALLET
	PALLET	~~PAPER~~ WOOD 03		

PALLET ILLUSTRATE

PALLET LOADING MATHOD



台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A7015B62

Drawn:

CUSTOMER NAME: STD

CUSTOMER P/N: FHS-A7015B62

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
>30~100	:±0.35	X.X	:±0.2	100~150	:±0.25	300~350	:±0.45	600~900	:±2.4
>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-A7015B62-PA

REV. 03

SCALE — — — | UNIT — — — | USED ON COOLER

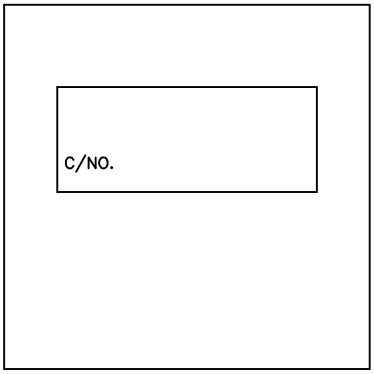
SHEET — OF — | ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

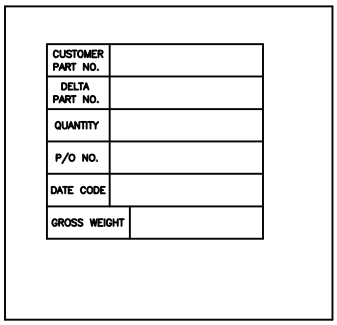
CARTON ILLUSTRATE	SIZE	557(L)*225(w)*188(H)(mm)	PACKING QUANTITY	3 LAYERS/CARTON
	MATERIAL	3 LAYERS"AB" FLUTE	CARTON WEIGHT	0.8 kg (REF.)

CARTON OUTSIDE DEMONDTRATE

FRONT



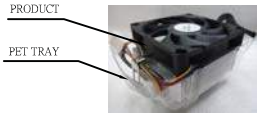
BACK



(ONE LABEL PER CARTON)

TRAY PACKING ILLUSTRATE	SIZE	110(L)*75.4(w)*43(H)(mm)	PACKING QUANTITY	1 PCS/TRAY
	MATERIAL	PET		
	MATERIAL WEIGHT	30g (REF.)		

02



台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A7015B62

Drawn:

CUSTOMER NAME: STD

CUSTOMER P/N: FHS-A7015B62

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. (PACKING ASSEMBLY)

A4 SIZE

Part No. FHS-A7015B62-PA

REV. 03

SCALE	---	UNIT	---	USED ON	COOLER

SHEET – OF – ISSUE DATE:

FRAME NAME : DF-PSLA4V-3R01.DWG

4. FAN

Fan Specification

DELTA ELECTRONICS, INC.
252, HSANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 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:		REV:	
Delta Model NO.:	AFB0712VHB-CF78	Delta Safety Model No.:	AFB0712VHB
Sample Rev:	00	Issue NO:	
Sample Issue Date:	**JUL.05.2012**	Quantity:	

1. SCOPE:

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

2. CHARACTERS:

ITEM	DESCRIPTION	
SPEED CONTROL TYPE	PWM & SENSOR CONTROL	
SENSOR TEMPURATURE.	32°C	42°C
RATED VOLTAGE	12 VDC	
OPERATION VOLTAGE	10.8-12.6 VDC	
INPUT CURRENT	0.10 (MAX. 0.18) A	0.45 (MAX. 0.55) A
INPUT POWER	1.20 (MAX. 2.16) W	5.40 (MAX. 6.60) W
SPEED (PWM DUTY IS 100%)	3300 R.P.M. ±10%	6400 R.P.M. ±10%
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.624 (MIN. 0.561) M^3/MIN. 22.02 (MIN. 19.81) CFM	1.261 (MIN. 1.135) M^3/MIN. 44.54 (MIN. 40.08) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	2.790(MIN. 2.259) mmH_2O 0.109 (MIN. 0.088) $inchH_2O$	10.09 (MIN. 8.17) mmH_2O 0.397(MIN. 0.321) $inchH_2O$
ACOUSTICAL NOISE (AVG.)	30.2 (MAX. 34.2) dB-A	48.2 (MAX. 52.2) dB-A
INSULATION TYPE	UL: CLASS A	

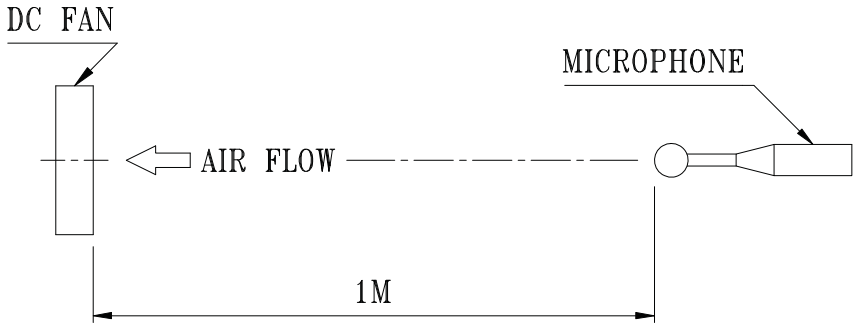
(continued)

PART NO:

DELTA MODEL: AFB0712VHB-CF78

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)**	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(+) BLUE WIRE: TACHOMETER OUTPUT (F00) YELLOW 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:

DELTA MODEL: AFB0712VHB-CF78

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 BEARING

3-5. WEIGHT ---------- 47 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 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.

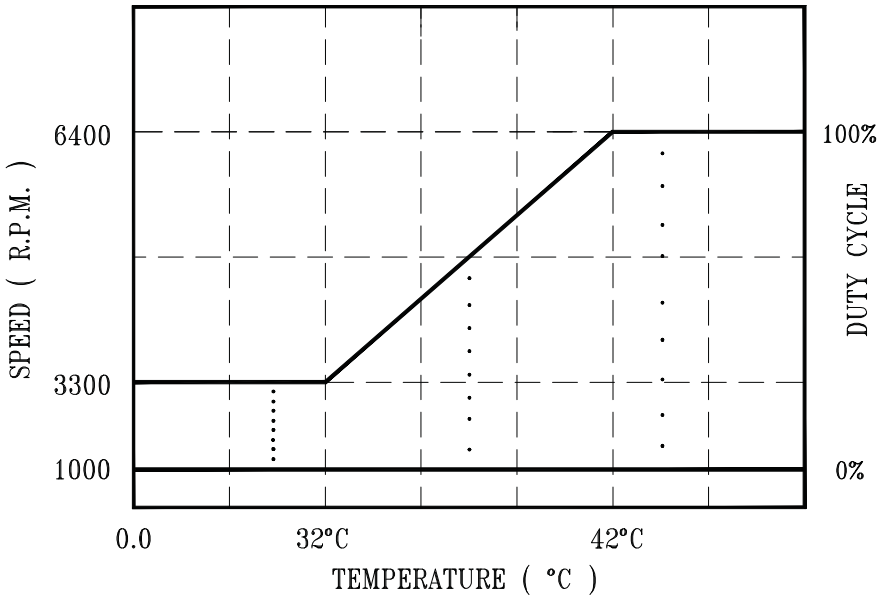
7. PRODUCTION LOCATION

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

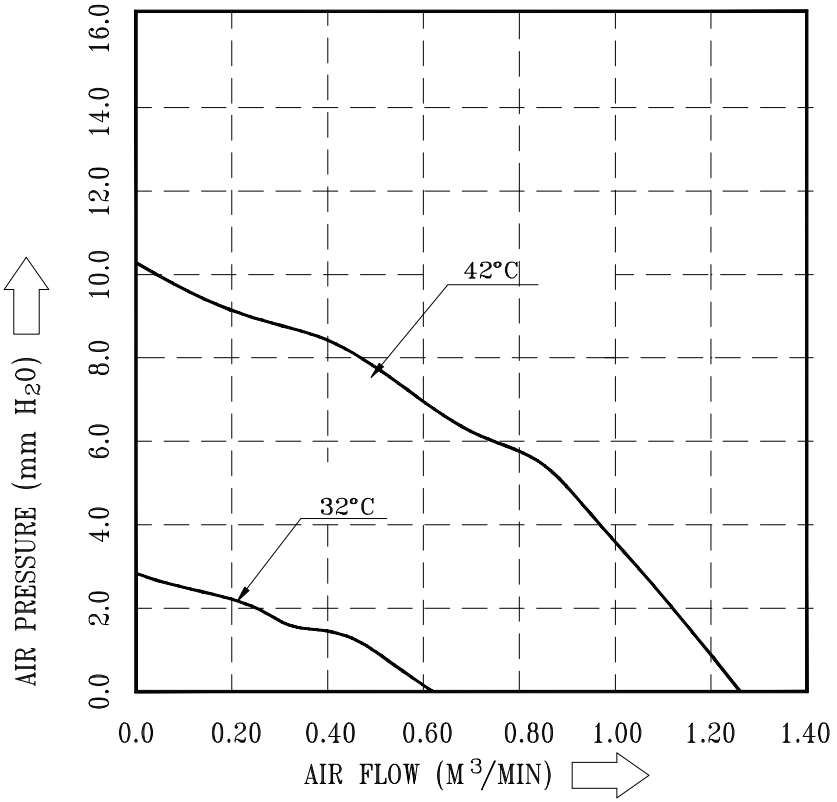
PART NO:

DELTA MODEL: AFB0712VHB-CF78

8. PWM & SENSOR FAN CURVE



9. P & Q CURVE:
PWM 100% DUTY CYCLE



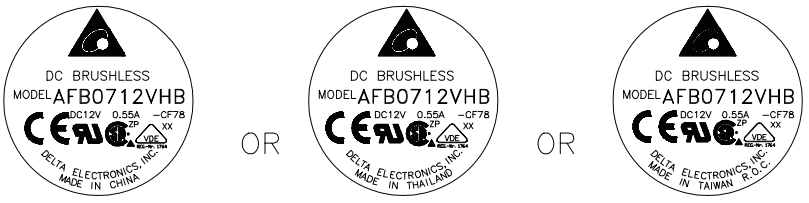
* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ------ ROOM TEMPERATURE
HUMIDITY ---------- 65%RH

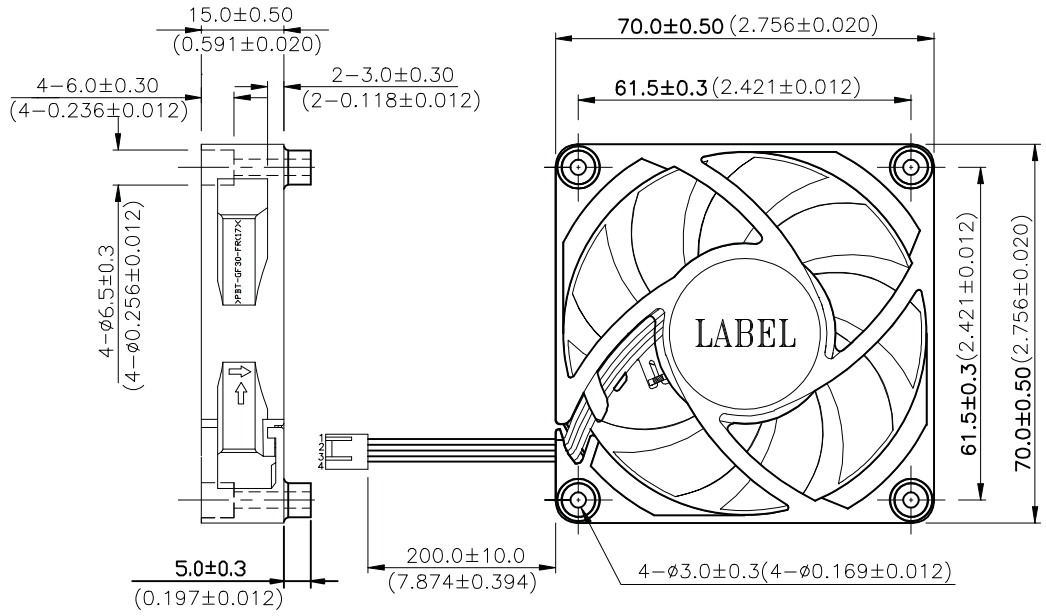
PART NO:

DELTA MODEL: AFB0712VHB-CF78

10. DIMENSION DRAWING:

LABEL:





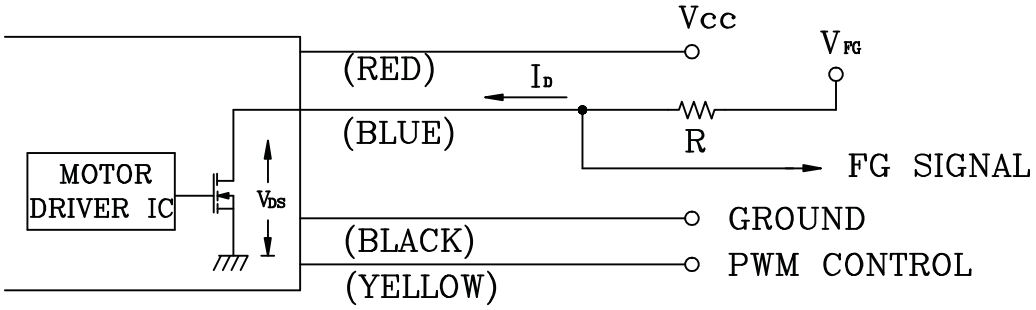
UNIT: mm(INCH)

NOTES:

1. LEAD WIRE: UL1061 AWG#26
   PIN 1 : BLACK WIRE: NEGATIVE(-)
   PIN 2 : RED WIRE: POSITIVE(+)
   PIN 3 : BLUE WIRE: TACHOMETER OUTPUT (FOO)
   PIN 4 : YELLOW WIRE: SPEED CONTROL (PWM)
2. HOUSING: EST 25403H00-0400 OR MOLEX 47054-1000 OR EQUIVALENT
3. TERMINAL: EST 25402T0P-0200 OR MOLEX 2759T 08-50-0113 OR EQUIVALENT
4. THIS PRODUCT IS RoHS COMPLIANT

11. FERUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN DRAIN MODE:



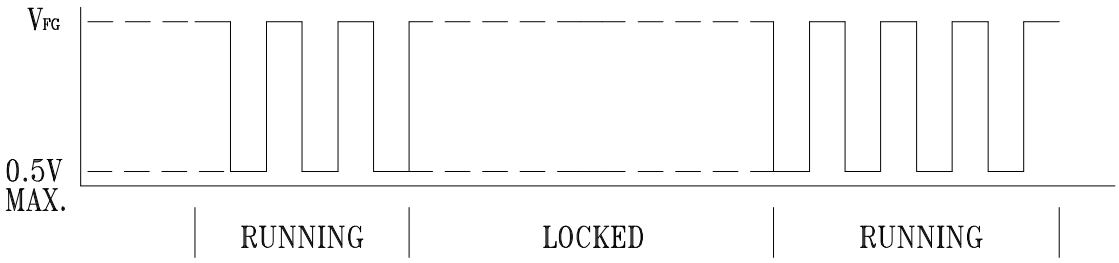
CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "-" LEAD WIRE.

2. SPECIFICATION:

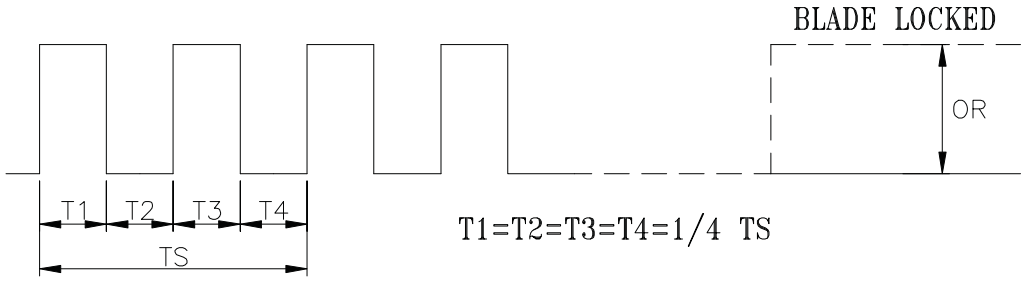
V_{DS} (linear)=0.5V MAX. V_{FG} =5.0V TYP. (Vcc MAX.)

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

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

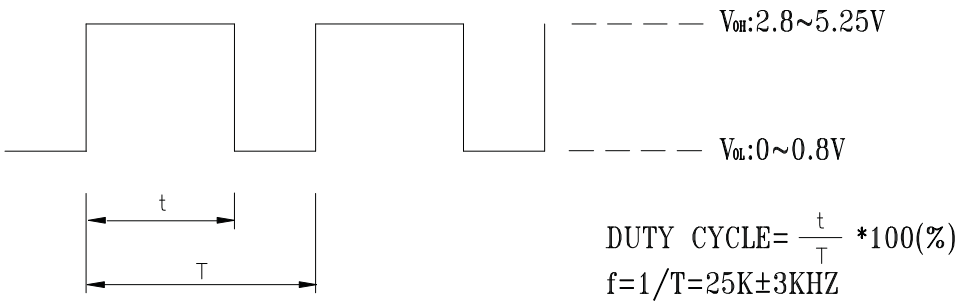
*4 POLES

PART NO:

DELTA MODEL: AFB0712VHB-CF78

12. PWM CONTROL FUNCTION:

12-1 SIGNAL DESCRIPTION:



- AT 25K HZ 30% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP .

12-2 SPEED CONTROL

TEST CONDITION : INPUT VCC=12V
PWM FREQUENCY=25KHZ

12-2-1 TEMPERATURE CONTROL

BELOW 32 DEGREE C,THE FAN SPEED IS 3300RPM.
ABOVE 42 DEGREE C,THE FAN SPEED IS 6400RPM.
BETWEEN 32~42 DEGREE C,THE FAN SPEED IS 3300RPM~6400RPM.

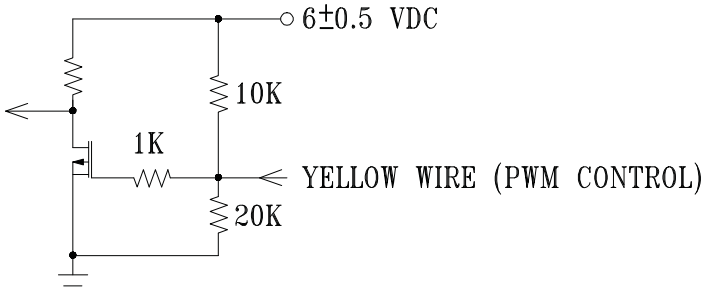
12-2-2 PWM CONTROL

BELOW 32 DEGREE C
BETWEEN 0%~100% DUTY CYCLE,THE FAN SPEED IS 1000RPM~3300RPM.
ABOVE 42 DEGREE C
BETWEEN 0%~100% DUTY CYCLE,THE FAN SPEED IS 1000RPM~6400RPM.

TEMPERATURE(°C)	DUTY CYCLE (%)	SPEED R.P.M.	CURRENT (A) TYP.
32°C	0	1000±250	0.04
32°C	100	3300±10%	0.10
42°C	0	1000±250	0.04
42°C	100	6400±10%	0.45

- IF THE CONTROL SIGNAL IS DISCONNECT THE FAN WILL GO TO TEMPERATURE CONTROL SPEED.

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. 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.