



SPECIFICATION FOR APPROVAL

Customer. DPC

Description. DC FAN

Part No. REV.

Delta Model No. AFB0824SHBAV1 REV. 00

Sample Issue No.

Sample Issue Date. MAY.26 2015

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
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STATEMENT OF DEVIATION

<input checked="" type="checkbox"/> NONE
<input type="checkbox"/> DESCRIPTION :

DELTA ELECTRONICS, INC.
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 TAOYUAN HSIEN 333, TAIWAN, R. O. C.

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SPECIFICATION FOR APPROVAL

Customer:	DPC	
Description:	DC FAN	
Customer P/N:		REV:
Delta Model NO.:	AFB0824SHBAV1	Delta Safety Model No: AFB0824SHB
Sample Rev:	00	Issue NO:
Sample Issue Date:	MAY.26 2015	Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	24 VDC
OPERATION VOLTAGE	14.0 - 26.0 VDC
INPUT CURRENT (AVG.)	0.16 (MAX. 0.26) A SAFETY CURRENT ON LABEL: 0.26A
INPUT POWER (AVG.)	3.84 (MAX. 6.24) W
SPEED	4000±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	1.210 (MIN. 1.090) M ³ /MIN 42.73 (MIN. 38.49) CFM
MAX.AIR PRESSURE (AT ZERO AIR FLOW)	5.490 (MIN. 4.470) mmH ₂ O 0.216 (MIN. 0.176) inchH ₂ O
ACOUSTICAL NOISE (AVG.)	42.5 (MAX. 45.0) dB-A
INSULATION TYPE	UL: CLASS A

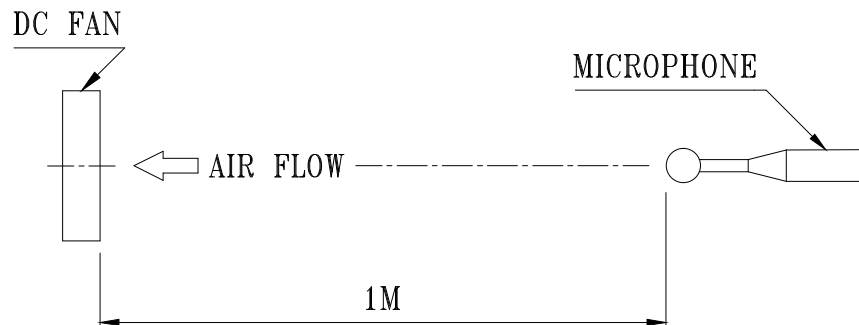
(continued)

PART NO:

DELTA MODEL: AFB0824SHBAV1

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)
LIFE EXPECTANCE(L10) (AT LABEL VOLTAGE)	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
LOCKED ROTOR PROTECTION	THE CURRENT WILL SHUT DOWN, WHEN ROTOR LOCKED AND FIXED.

- NOTES:
1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 2 MINUTES.
 2. STANDARD AIR PROPERTY IS AIR AT (Td) 25°C TEMPERATURE, (RH) 65% RELATIVE HUMIDITY, AND (Pb) 760 mmHg BAROMETRIC PRESSURE.
 3. THE VALUES WRITTEN IN PARENS , (), ARE LIMITED SPEC.
 4. 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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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 ----- 58 GRAMS

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE ----- -10 TO +60 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.

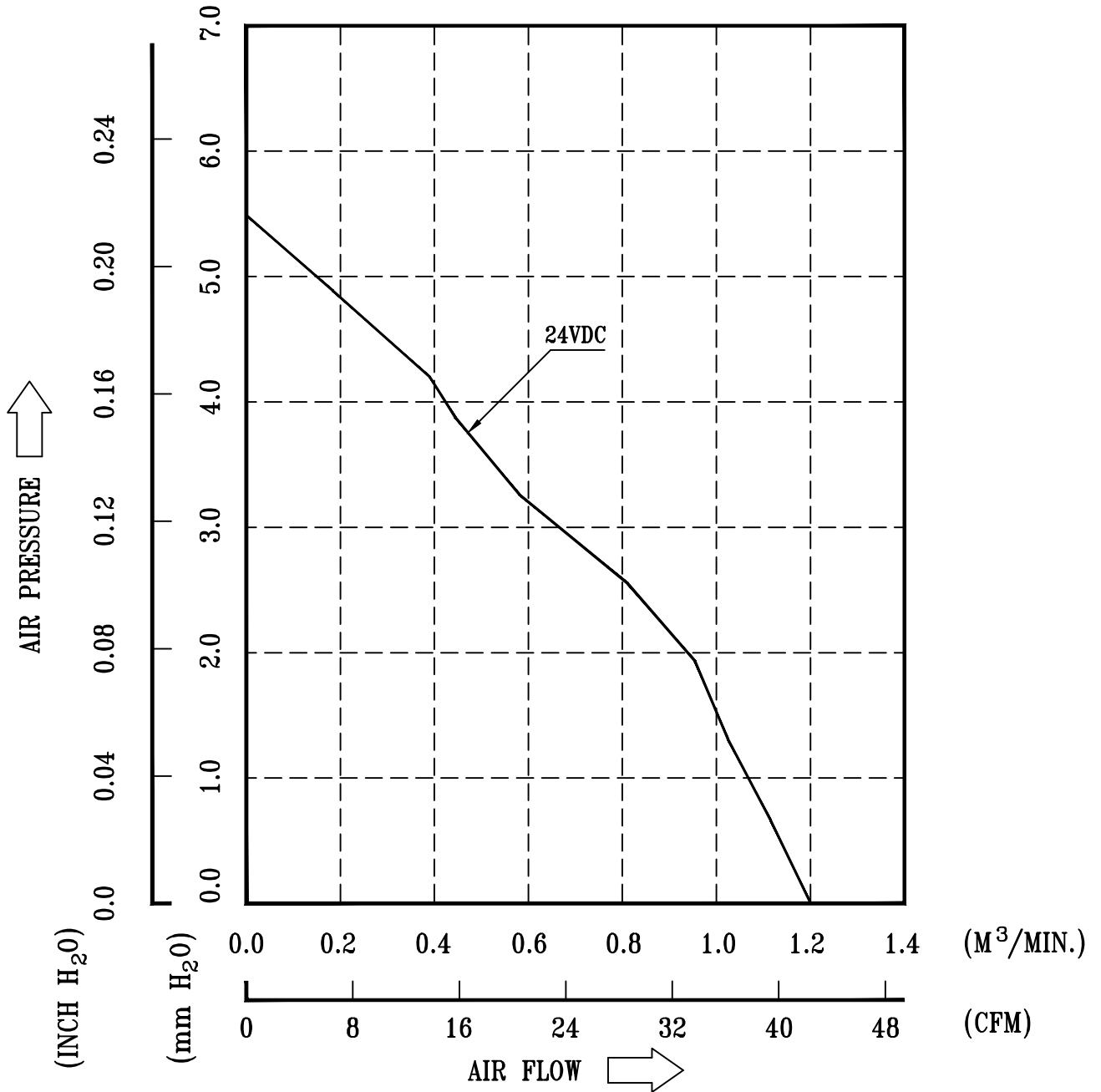
7. PRODUCTION LOCATION

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

PART NO:

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8. P & Q CURVE:



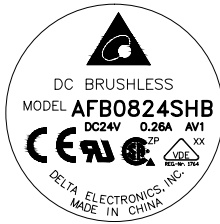
* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ----- ROOM TEMPERATURE
HUMIDITY ----- 65%RH

PART NO:

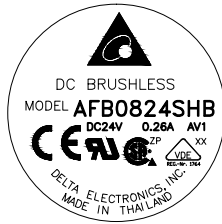
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9. DIMENSIONS DRAWING:

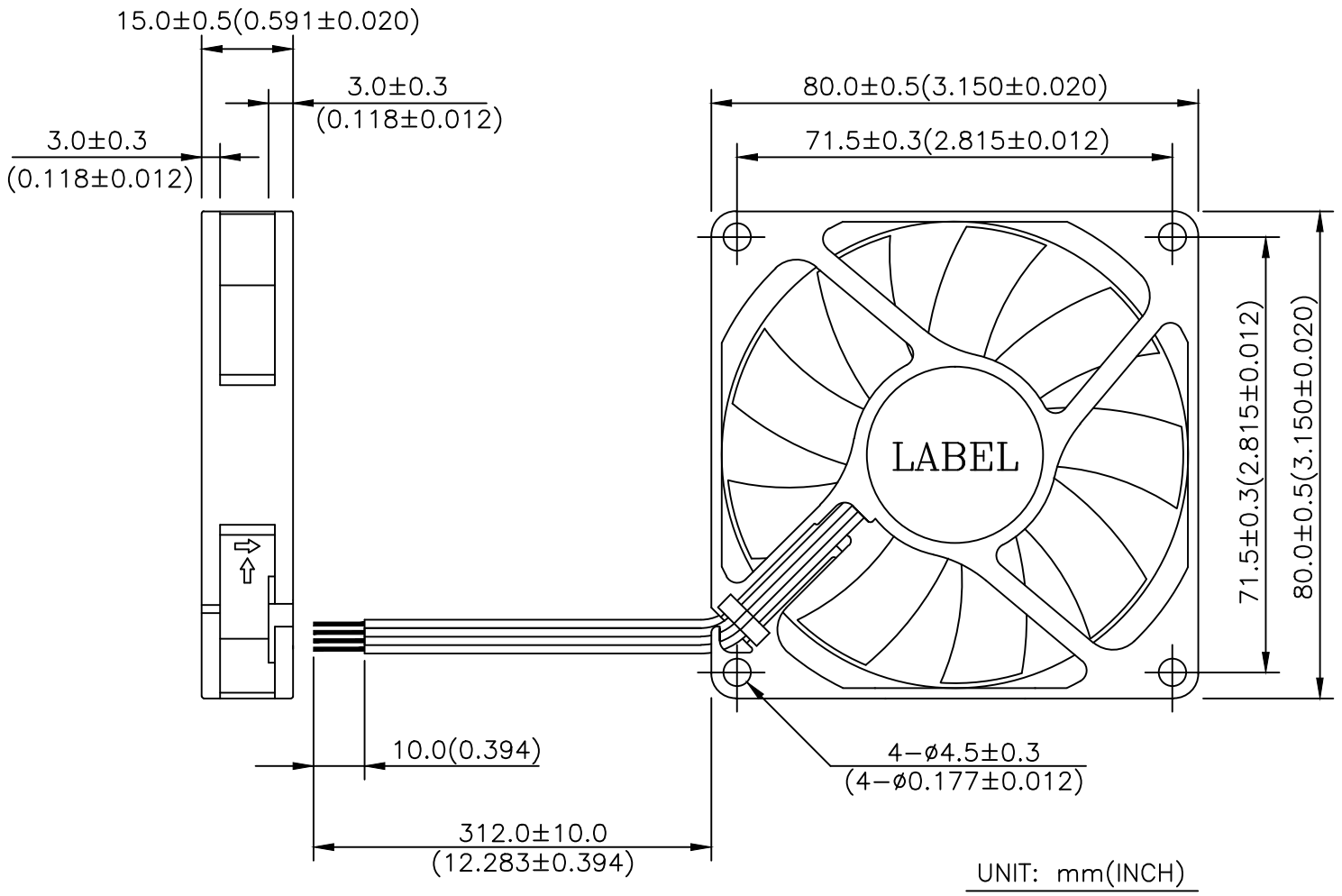
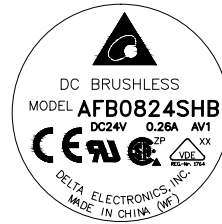
LABEL:



OR



OR



NOTE.

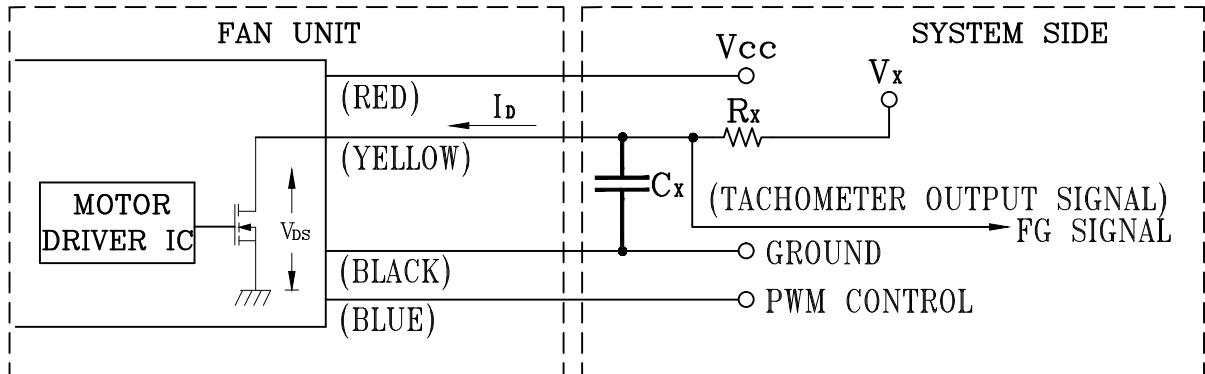
- 1.LEAD WIRE UL 1061 -F- AWG #24
PIN1: BLACK WIRE --- (-)
PIN2: RED WIRE --- (+)
PIN3: YELLOW WIRE --- (F00)
PIN4: BLUE WIRE --- (PWM)
- 2.THIS PRODUCT IS RoHS COMPLIANT.

PART NO:

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10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT – OPEN DRAIN MODE:



GENERAL CONDITION: V_x is 3.3V, R_x is 8.2Kohm, and C_x is 4nF.

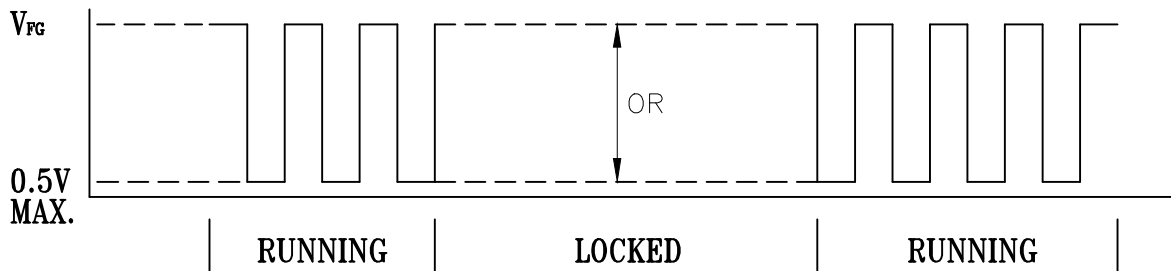
CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "-" LEAD WIRE.

10-2. SPECIFICATION:

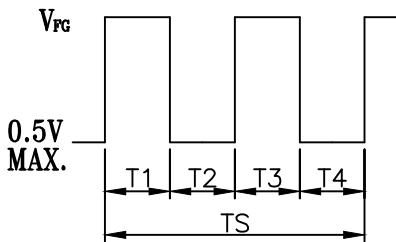
V_{DS} (LINEAR)=0.5V MAX. V_x =3.3V TYP. (V_{CC} MAX.)

I_D =5mA MAX. $R_x \geq V_x / I_D$

10-3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



$$T1 = T2 = T3 = T4 = (1/4) T_S$$

$$T1 / (T1 + T2) * 100\% = T2 / (T1 + T2) * 100\% = 50 \pm 10\%$$

$$T3 / (T3 + T4) * 100\% = T4 / (T3 + T4) * 100\% = 50 \pm 10\%$$

$N = R.P.M.; T_S = 60/N(SEC); FG = 1/T_S(HZ)$

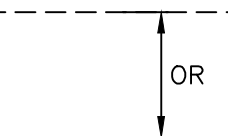
DC FAN SPEED = $60 * FG(R.P.M)$

*VOLTAGE LEVEL AFTER BLADE LOCKED

*4 POLES

*2 PULSES PER REVOLUTION

BLADE LOCKED

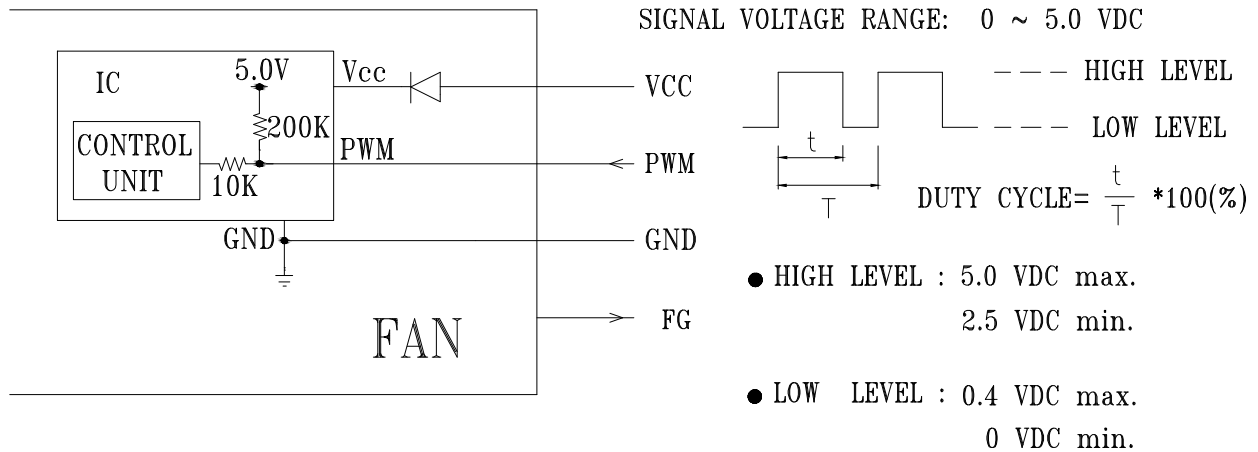


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11. PWM CONTROL FUNCTION

11-1. PWM CONTROL INTERFACE



- THE PREFERRED OPERATING FREQUENCY OF PWM SIGNAL IS 25KHz.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE, THE ROTOR WILL STOP SPIN.
- WHEN THE PWM CONTROL LEAD WIRE IS DISCONNECTED, THE ROTOR WILL SPIN AT MAXIMUM SPEED.

11-2. FAN CHARACTERISTICS

TEST CONDITION : AT 25°C, VCC=24.0VDC & PWM SIGNAL AS FOLLOW

DUTY CYCLE (%)	SPEED R.P.M.	CURRENT (A) TYP.
100	4000±10%	0.16
30	TBD	TBD
0	0	0.01

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

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



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.**