SPECIFICATION FOR APPROVAL

Customer : STD
Description : DC FAN
Customer Part No. _____ REV. : _____
Delta Model No. : FFB03612VN-00 REV. : X00
Sample Issue No. : _____
Sample Issue Date : FEB.20 2024

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
NO.252, SHANGYING RD., GUISHAN DIST.,
TAOYUAN CITY 33341, TAIWAN
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NO.252, SHANGYING RD., GUISHAN DIST., TEL:886-(0)3-3591968
TAOYUAN CITY 33341, TAIWAN FAX:886-(0)3-3591991

STATEMENT OF DEVIATION

■ NONE

☐ DESCRIPTION:

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Specification For Approval

Customer : STD

Description : DC FAN

Customer P/N : rev. :

Delta model no. : FFB03612VN-00 Delta Safety Model No.: FFB03612VN-00

Sample revision. : X00 Issue no.:

Sample issue date : FEB.20 2024 Quantity :

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

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12 VDC
OPERATION VOLTAGE	10.8 - 13.2 VDC
INPUT CURRENT(AVG.)	0.39 (MAX 0.47) A SAFETY CURRENT ON LABEL：0.75A
INPUT POWER(AVG.)	4.68(MAX. 5.64) W
SPEED	14500 ± 8% RPM
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.461 (MIN. 0.415) M^3 /MIN. 16.30 (MIN. 14.67) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	25.40 (MIN. 20.57) mmH_2O 1.000 (MIN. 0.810) inchH_2O
ACOUSTICAL NOISE (AVG.)	52.0 (MAX. 56.0) dB-A
INSULATION TYPE	UL: CLASS A
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)

(continued)

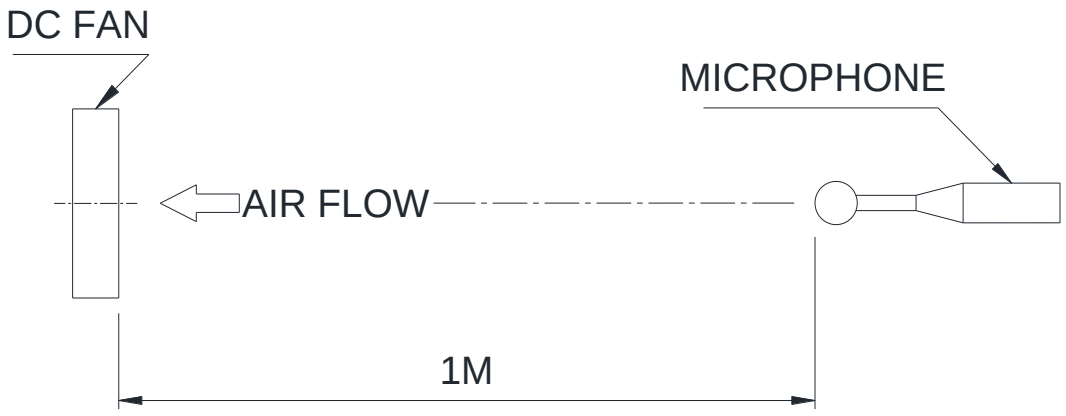
PART NO:

DELTA MODEL: FFB03612VN-00

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 10 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 SEMI-ANECHOIC CHAMBER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

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----------32 GRAMS (REF.)

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.

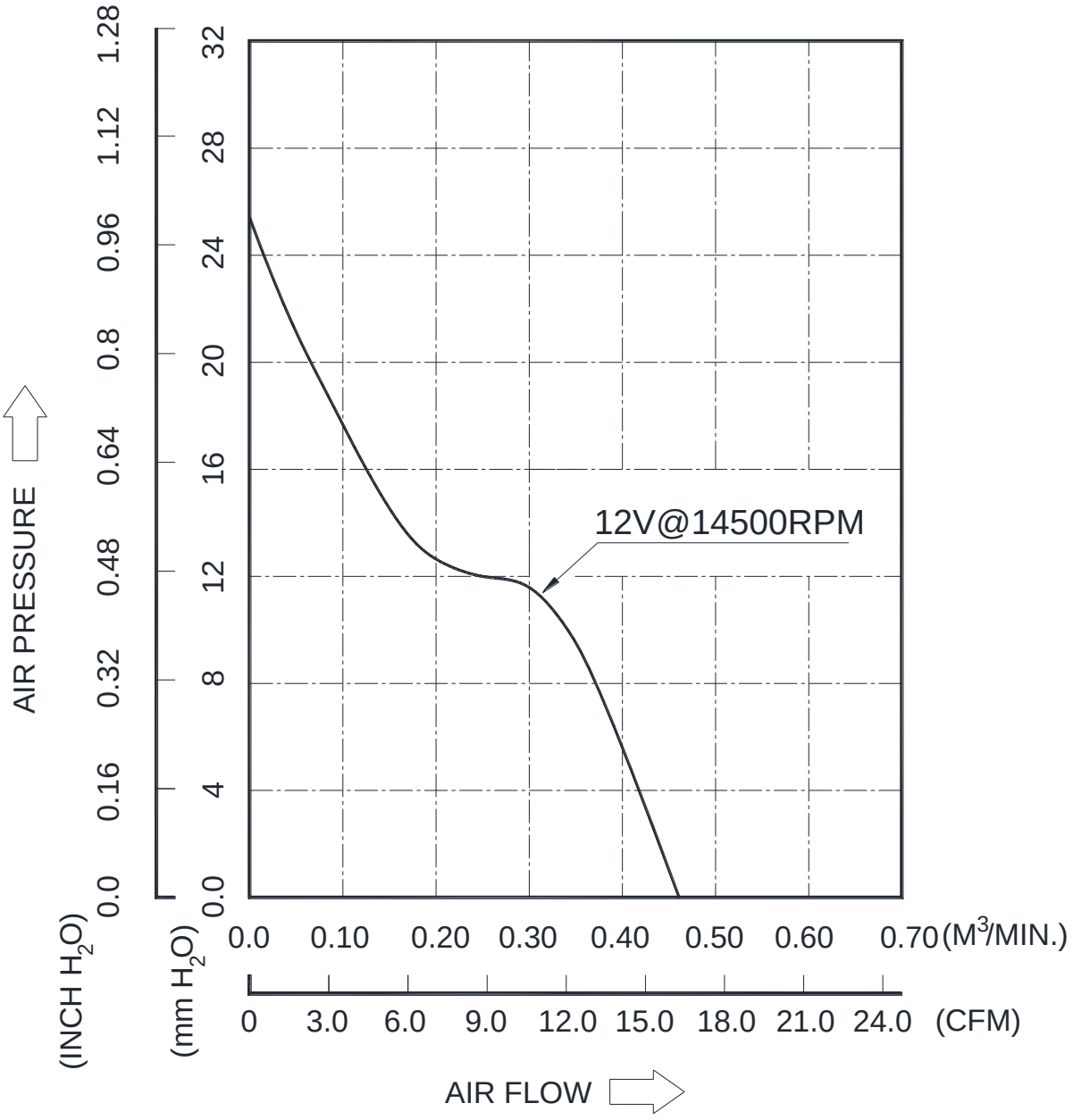
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: FFB03612VN-00

8. P & Q CURVE:



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

PART NO:

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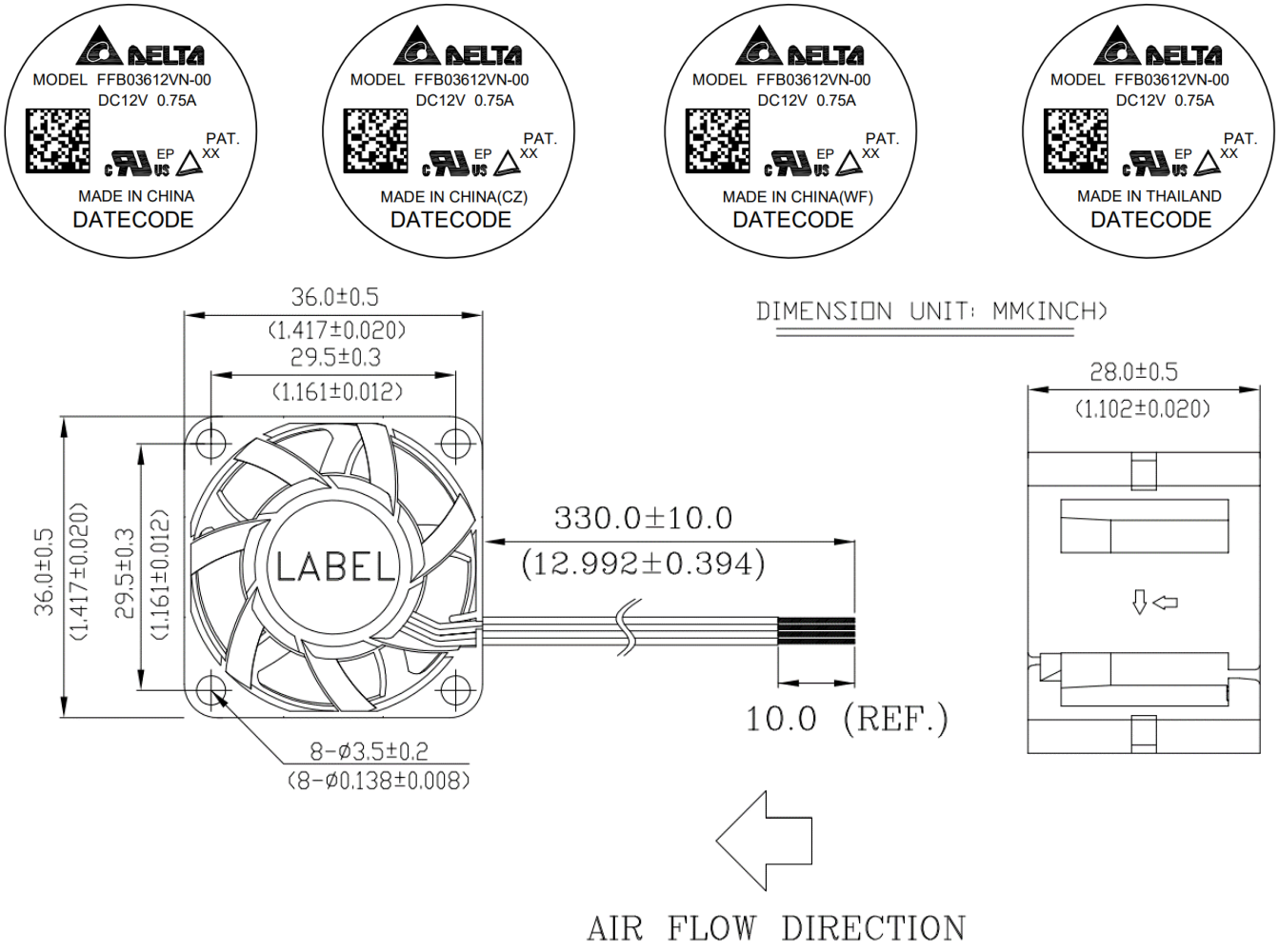
9. DIMENSION DRAWING:



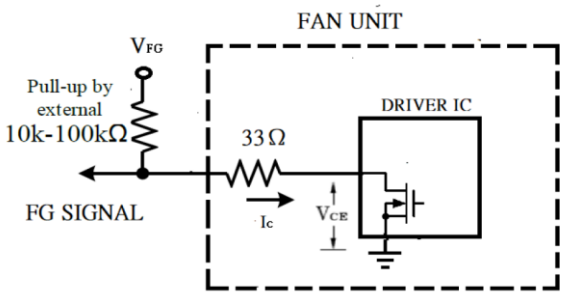
DIMENSION UNIT: MM(INCH)

NOTE:

1. CABLE WIRE: UL1061 AWG#28
   PIN 1: RED WIRE ----(+)
   PIN 2: BLACK WIRE ----(-)
   PIN 3: BLUE WIRE ----(F00)
   PIN 4: YELLOW WIRE ----(PWM)
2. BARCODE SHOWS PRODUCTION INFORMATION.
   (IT IS NOT AVAILABLE ON ENGINEERING SAMPLE)
3. THIS PRODUCT IS RoHS COMPLIANT.

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



CAUTION:

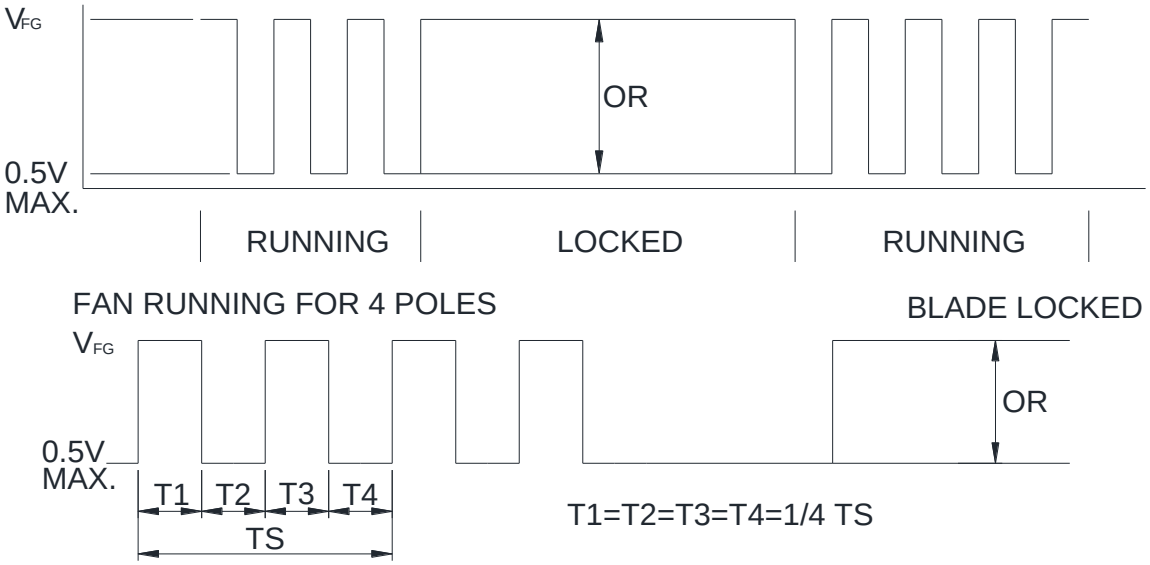
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSTIVE OR NEGATIVE.

10-2. SPECIFICATION:

V_{CE}(sat)= 0.5V MAX. V_{FG} = 13.2VDC MAX.

I_C= 3mA MAX.

10-3. FREQUENCY GENERATOR WAVEFORM:



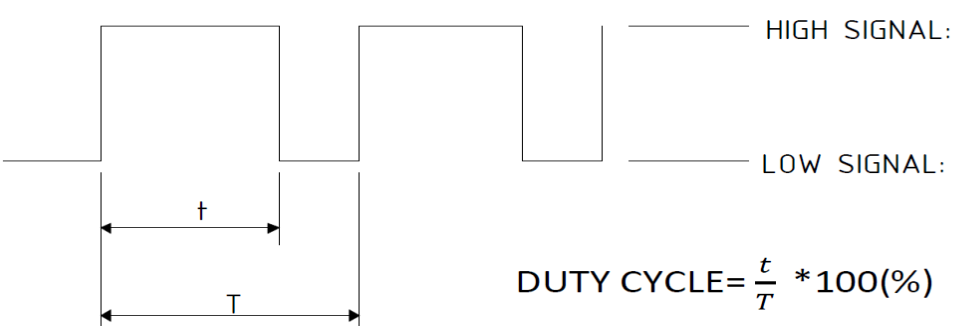
N=RPM

TS=60/N(SEC)

*VOLTAGE LEVEL AFTER BLADE LOCKED

*4 POLES

11. PWM CONTRON SIGNAL:
SIGNAL VOLTAGE RANGE: 0~5.0VDC

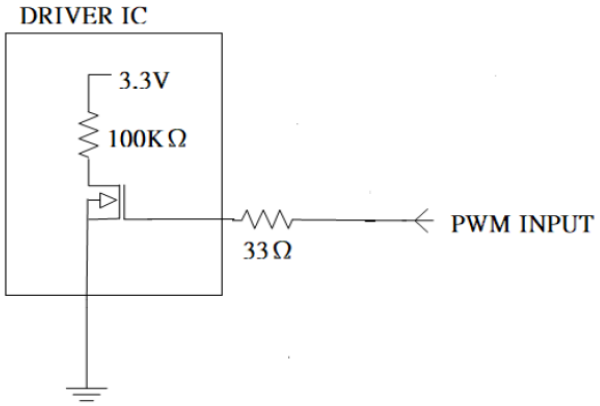


- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 1KHz~50KHz.
- THE PREFERRED OPERATION POINT FOR THE FAN IS 25KHz.
- AT 100% & 12VDC DUTY CYCLE, THE POTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% & 12VDC DUTY CYCLE, THE ROTOR WILL STOP SPINNING.
- WHEN CONTROL SIGNAL LEAD DISCOINNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT 12V AND 25KHZ 30% DUTY CYCLE PWM INPUT, THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

12. SPEED VS PWM CONTROL SIGNAL:
(AT 12VDC & PWM FREQUENCY=25KHZ & 25 DEGREE C)

DUTY CYCLE (%)	SPEED RPM	CURRENT (A) TYP.
100	14500±8%	0.39
50	6900±10%	0.06
0	0	0.01

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.