# SPECIFICATION FOR APPROVAL

Customer : STD
Description : DC FAN
Customer Part No. _____ REV. : _____
Delta Model No. : QFR0624DHP0 REV. : 03
Sample Issue No. : _____
Sample Issue Date : 2021/4/23

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, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE,
TAOYUAN CITY 33341, TAIWAN
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

# *** SAMPLE HISTORY***

CUSTOMER: STD
CUSTOMER P/N:
DELTA MODEL: QFR0624DHP0

| REV. | DESCRIPTION | DRAWN | CHECKED | | | APPROVED | ISSUE DATE |
|---|---|---|---|---|---|---|---|
| | | | ME | EE | CE | | |
| 00 | ISSUE SPEC | 陳彥夆 08/26'19 | 陳彥夆 08/26'19 | 楊至軒 08/26'19 | --- | 吳俊男 08/26'19 | 08/27'19 |
| 01 | MODIFY OPERATING TEMPERATURE FROM 85℃ TO 70℃ | 陳彥夆 11/18'19 | 陳彥夆 11/18'19 | 林諺鴻 11/18'19 | --- | 吳俊男 11/18'19 | 11/19'19 |
| 02 | DELETE POINT 13 IN PAGE 7. | 林諺鴻 6/05'20 | 陳彥夆 6/05'20 | 林諺鴻 6/05'20 | --- | 吳俊男 6/05'20 | 6/05'20 |
| 03 | CHANGE LEAD WIRE TYPE FROM UL1430 TO UL1061; ADD NOTE.3 ON DRAWING PAGE | 陳彥夆 4/23'21 | 陳彥夆 4/23'21 | 林諺鴻 4/23'21 | --- | 吳俊男 4/23'21 | 4/23'21 |
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DELTA ELECTRONICS, INC.
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE, TEL : 886-(0)3-3591968
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# STATEMENT OF DEVIATION

■ NONE

□ DESCRIPTION:

DELTA ELECTRONICS, INC.
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE, TEL : 886-(0)3-3591968
TAOYUAN CITY 33341, TAIWAN FAX : 886-(0)3-3591991

# Specification For Approval

Customer : STD

Description : DC FAN

Customer P/N : rev. :

Delta model no. : QFR0624DHP0 Delta Safety Model No.: QFR0624DH

Sample revision. : 03 Issue no.:

Sample issue date : 2021/4/23 Quantity :

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

| ITEM | DESCRIPTION |
|---|---|
| RATED VOLTAGE | 24.0 VDC |
| OPERATION VOLTAGE | 16.0 - 26.4 VDC |
| INPUT CURRENT(AVG.)★<br>(AT RATED VOLTAGE / FREE AIR) | 0.35 (MAX. 0.41) A<br>SAFETY CURRENT ON LABEL : 0.52A |
| INPUT POWER(AVG.)★<br>(AT RATED VOLTAGE / FREE AIR) | 8.40 (MAX. 9.84) W |
| SPEED<br>(AT RATED VOLTAGE / FREE AIR) | 10600 ± 10% R.P.M. |
| MAX. AIR FLOW<br>(AT ZERO STATIC PRESSURE) | 1.402 (MIN. 1.262) $M^3$/MIN.<br>49.50 (MIN. 44.55) CFM |
| MAX. AIR PRESSURE<br>(AT ZERO AIRFLOW) | 26.50 (MIN. 21.46) mm$H_2O$<br>1.043 (MIN. 0.845) inch$H_2O$ |
| ACOUSTICAL NOISE (AVG.) | 55.0 (MAX. 59.0) dB-A |
| INSULATION TYPE | UL: CLASS A |
| INSULATION STRENGTH | 10 MEG OHM MIN. AT 500 VDC<br>(BETWEEN FRAME AND (+) TERMINAL) |
| DIELECTRIC STRENGTH | 5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE,<br>(BETWEEN FRAME AND (+) TERMINAL) |

★AVG. IS THE AVERAGE VALUE DURING STEADY OPERATION, AND MAX. IS MAXIMUM AVERAGE VALUE INCLUDED PRODUCTION TOLERANCE. ABOUT THE PEAK VALUE, NEED TO USE OSCILLOSCOPE TO MEASURE.

(continued)

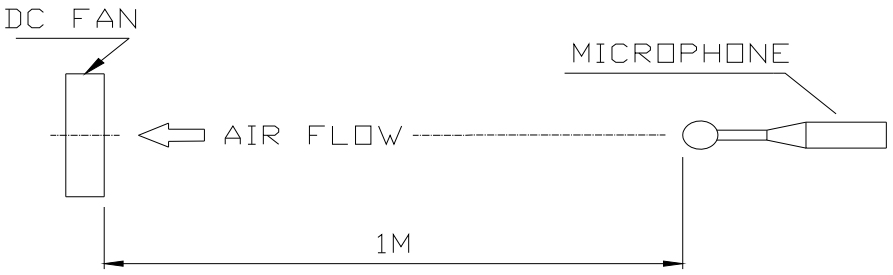
PART NO:

DELTA MODEL: QFR0624DHP0

| | |
|---|---|
| LIFE EXPECTANCE (L10)<br>(AT LABEL VOLTAGE) | 40,000 HOURS CONTINUOUS OPERATION AT 60 °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.

PART NO:

DELTA MODEL: QFR0624DHP0

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(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 POSITIVEAND NEGATIVE LEADS.

6. RE OZONE DEPLETING SUBSTANCES:

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

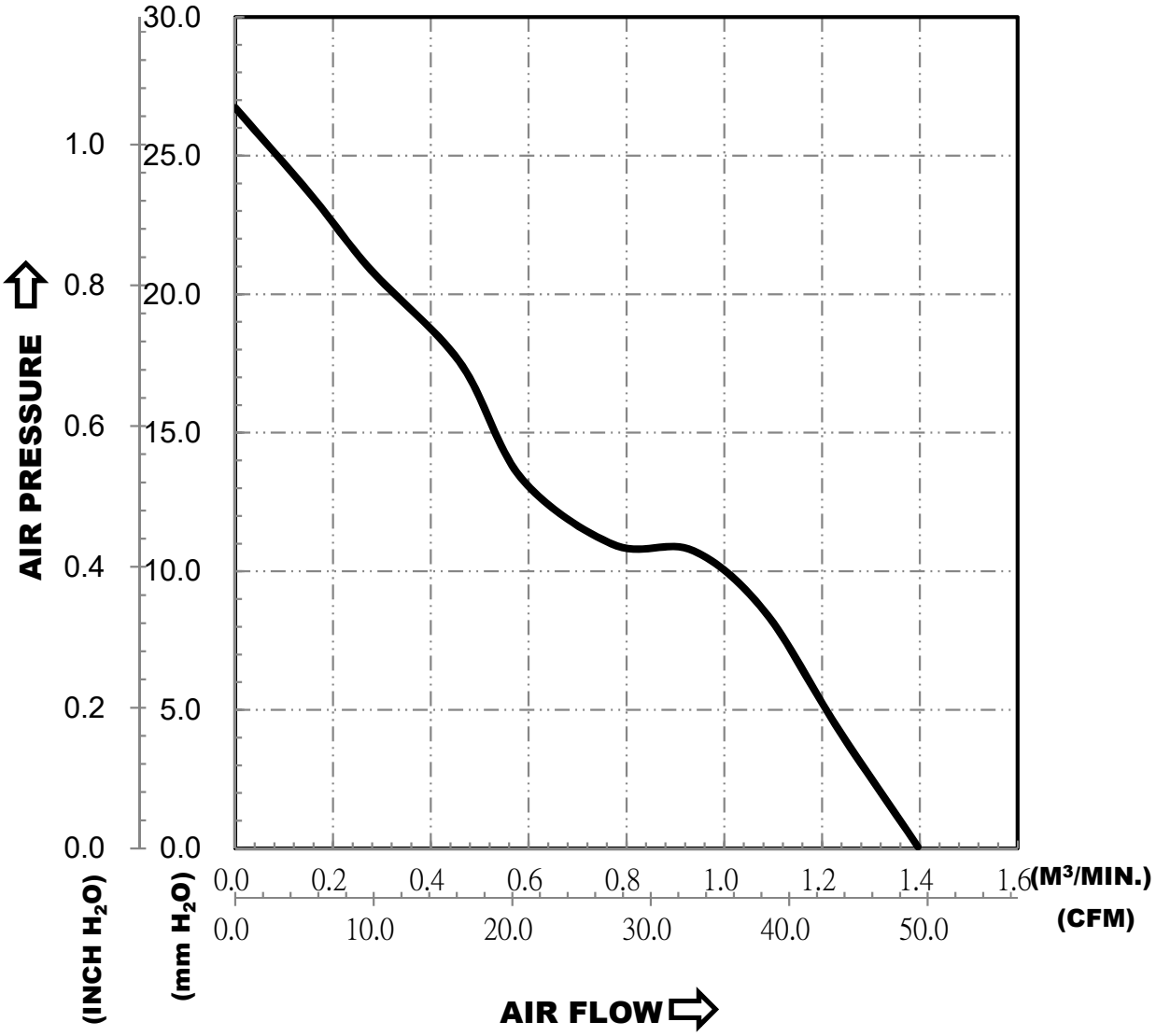
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: QFR0624DHP0

8. P & Q CURVE:



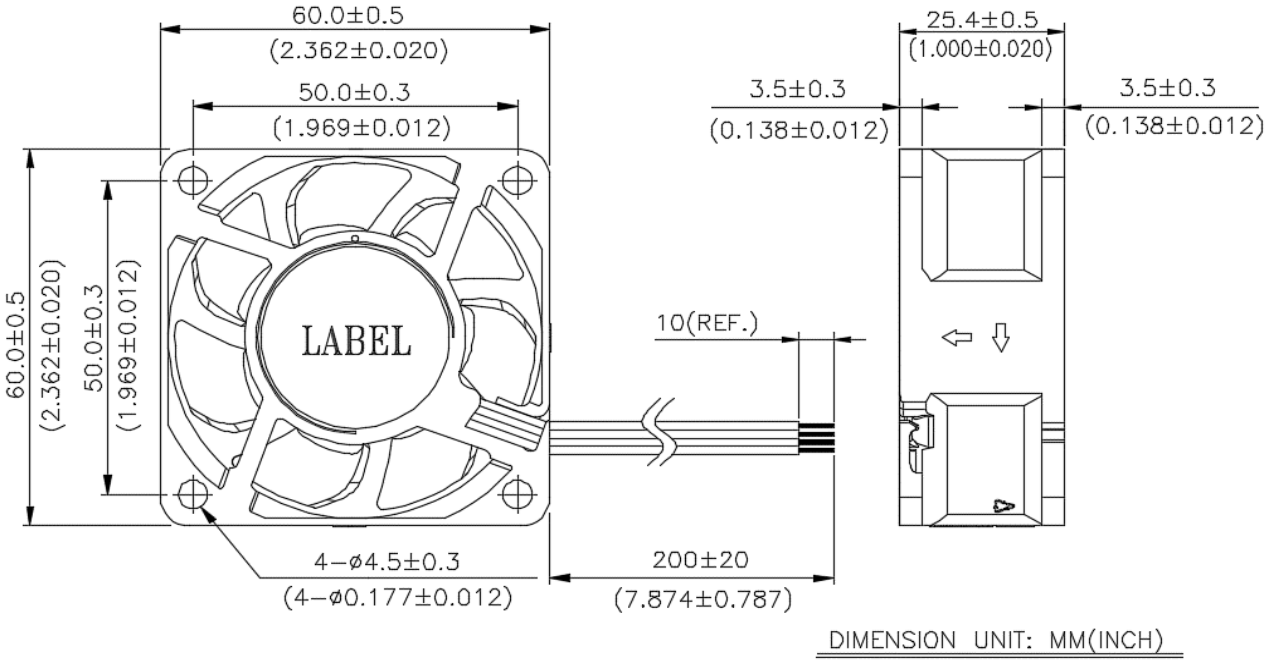

*TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE
TEMPERATURE-----ROOM TEMPERATURE
HUMIDITY-----65%RH

PART NO:

DELTA MODEL: QFR0624DHP0

9. DIMENSION DRAWING:

LABEL:

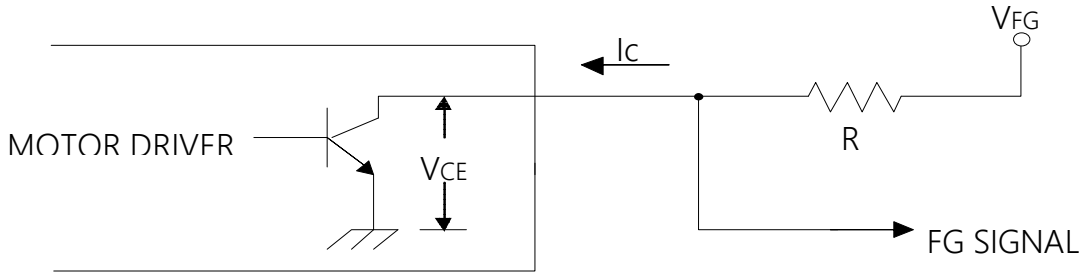




NOTES:

1. THIS PRODUCT IS RoHS COMPLIANT
2. CABLE WIRE: UL1061 AWG#26
   RED WIRE ------ (+)
   BLACK WIRE ----- (-)
   BLUE WIRE ------ (F00)
   YELLOW WIRE ----- (PWM)
★ 3. RECOMMENDED OPERATING SEQUENCE
   FAN START : VCC ON --> PWM INPUT
   FAN STOP: PWM 0% DUTY --> VCC OFF

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:




CAUTION:

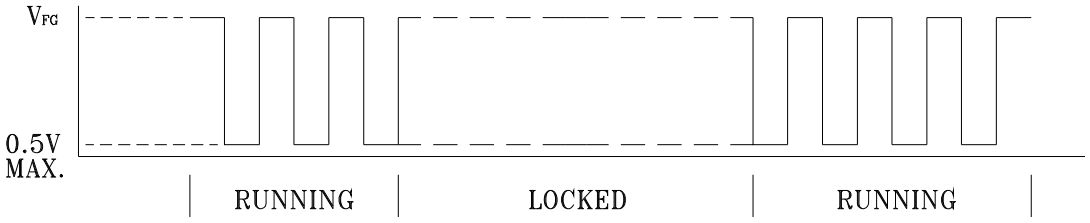
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH THE LEAD WIRE OF POSITIVE OR NEGATIVE.

10-2. SPECIFICATION:

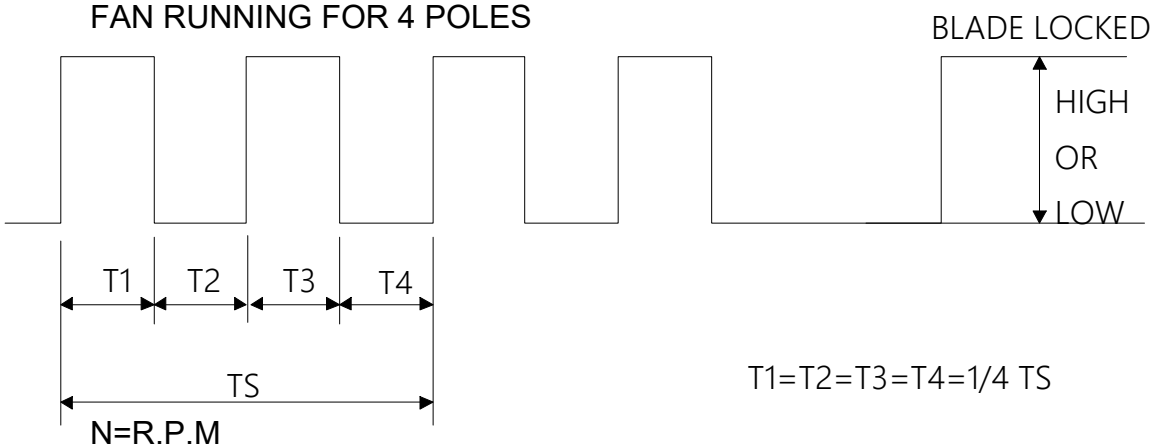
$V_{FG}$= 5.0 TYP.(Vcc MAX.) Ic = 5mA MAX.

$V_{CE}$= 0.5V MAX. $R \geqq V_{FG}/Ic$

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)

*VFG IS ALWAYS HIGH OR LOW LEVEL AFTER BLADE LOCKED

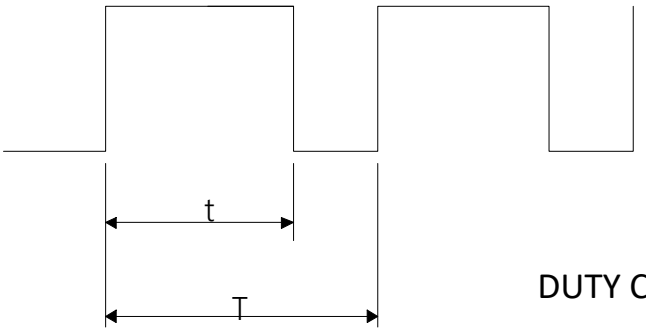
*4 POLES

PART NO:

DELTA MODEL: QFR0624DHP0

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~15 VDC




HIGH SIGNAL: 15 VDC MAX. 3.3 VDC MIN.

LOW SIGNAL: 0.8 VDC MAX. 0 VDC MIN.

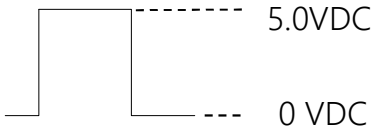
DUTY CYCLE= $\frac{t}{T}$ *100(%)

* THE OPERATING FREQUENCY IS 25KHz.
* AT 100% DUTY CYCLE, THE FAN WILL SPIN AT MAXIMUM SPEED.
* AT 0% DUTY CYCLE,THE FAN WILL STOP SPINNING.
* THE FAN WILL SPIN AT MAXIMUM SPEED WHILE CONTROL SIGNAL LEAD IS DISCONNECTED.
* THE FAN WILL BE ABLE TO START FROM A DEAD STOP WHILE PWM SET AT 25KHZ 30% DUTY CYCLE & RATED VOLTAGE .

12. SPEED VS PWM CONTROL SIGNAL:
(AT 25°C, RATED VOLTAGE & PWM SIGNAL AS FOLLOW)

| DUTY CYCLE (%) | SPEED (R.P.M.) | CURRENT(A) (AVG.)★ |
|---|---|---|
| 100 | 10600±10% | 0.35 (MAX. 0.41) |
| 0 | 0 | 0.02 (MAX. 0.03) |

*PWM SIGNAL
PWM FREQUENCY = 25KHz

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# 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.