# SPECIFICATION FOR APPROVAL

Customer _____

Description D C F A N

Part No. _____ R E V . _____

Delta Model No. PFC0612DE-F00 REV. 02

Sample Issue No. _____

Sample Issue Date FEB.26.2007

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

APPROVED BY: _____

DATE : _____

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# SPECIFICATION FOR APPROVAL
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Customer:

Description: DC FAN

Customer P/N: REV:

Delta Model NO.: PFC0612DE-F00

Sample Rev: 02 Issue NO:

Sample Issue Date: FEB.26.2007 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 VDC |
| OPERATION VOLTAGE | 10.8 - 13.2 VDC |
| INPUT CURRENT | 1.40 (MAX. 1.68) A |
| INPUT POWER | 16.80 (MAX. 20.16) W |
| SPEED | 12000 R.P.M. ±10% |
| MAX. AIR FLOW (AT ZERO STATIC PRESSURE) | 1.922 (MIN. 1.729 ) $M^3$/MIN. 67.85 (MIN. 61.06) CFM |
| MAX. AIR PRESSURE (AT ZERO AIRFLOW) | 54.10(MIN. 43.82 ) $mmH_2O$ 2.129(MIN. 1.725) $inchH_2O$ |
| ACOUSTICAL NOISE (AVG.) | 61.5(65.50 MAX.) dBA |
| INSULATION TYPE | UL: CLASS A |

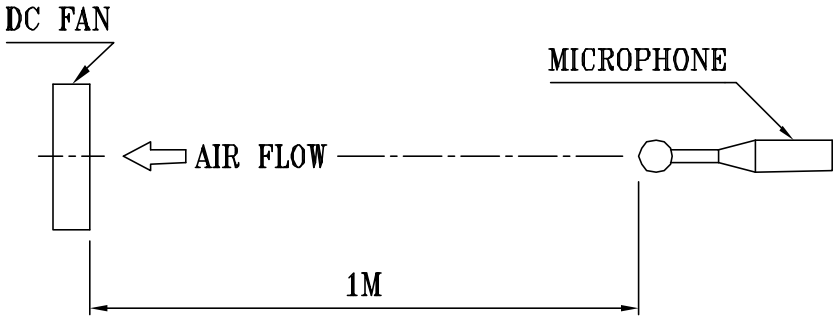
(continued)

PART NO:

DELTA MODEL: PFC0612DE-F00

| | |
|---|---|
| INSULATION STRENGTH | 10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL) |
| DIELECTRIC STRENGTH | 5 mA MAX. AT 500 VAC 60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL) |
| EXTERNAL COVER | OPEN TYPE |
| LIFE EXPECTANCE | 50,000 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 #24<br>RED WIRE POSITIVE(+)<br>BLACK WIRE NEGATIVE(-)<br>BLUE WIRE TACH OUTPUT(F00)<br>YELLOW WIRE 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: PFC0612DE-F00

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 ---------- 130 GRAMS

4. ENVIRONMENTAL:

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

4-2. STORAGE TEMPERATURE ---------- -40 TO +70 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 OR TAIWAN.

PART NO:

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8. BASIC RELIABILITY REQUIREMENT:

8-1. THERMAL CYCLING
LOW TEMPERATURE: -40°C
HIGH TEMPERATURE: +80°C
SOAK TIME: 30 MINUTES
TRANSITION TIME < 5 MINUTES
DUTY CYCLES: 5

8-2. HUMIDITY EXPOSURE
TEMPERATURE: +25°C ~ +65°C
HUMIDITY: 90-98% RH @ +65°C
FOR 4 HOURS/CYCLE
POWER: NON-OPERATING
TEST TIME: 168 HOURS

8-3. VIBRATION
TEMPERATURE: +25°C
ORIENTATION: X, Y, Z
POWER: NON-OPERATING
VIBRATION LEVEL: OVERALL gRMS=3.2

| FREQUENCY(Hz) | PSD(G^2/Hz) |
|---|---|
| 10 | 0.040 |
| 20 | 0.100 |
| 40 | 0.100 |
| 800 | 0.002 |
| 1000 | 0.002 |

TEST TIME: 2 HOURS ON EACH ORIENTATION

8-4. MECHANICAL SHOCK
TEMPERATURE: +20°C
ORIENTATION: X, Y, Z
POWER: NON-OPERATING
ACCELERATION: 20 G MIN.
PULSE: 11 ms HALF-SINE WAVE
NUMBER OF SHOCKS: 5 SHOCKS
FOR EACH DIRECTION

8-5. LIFE
TEMPERATURE: MAX , OPERATING TEMPERATURE
POWER: OPERATING
DURATION: 1000 HOURS MIN.

PART NO:

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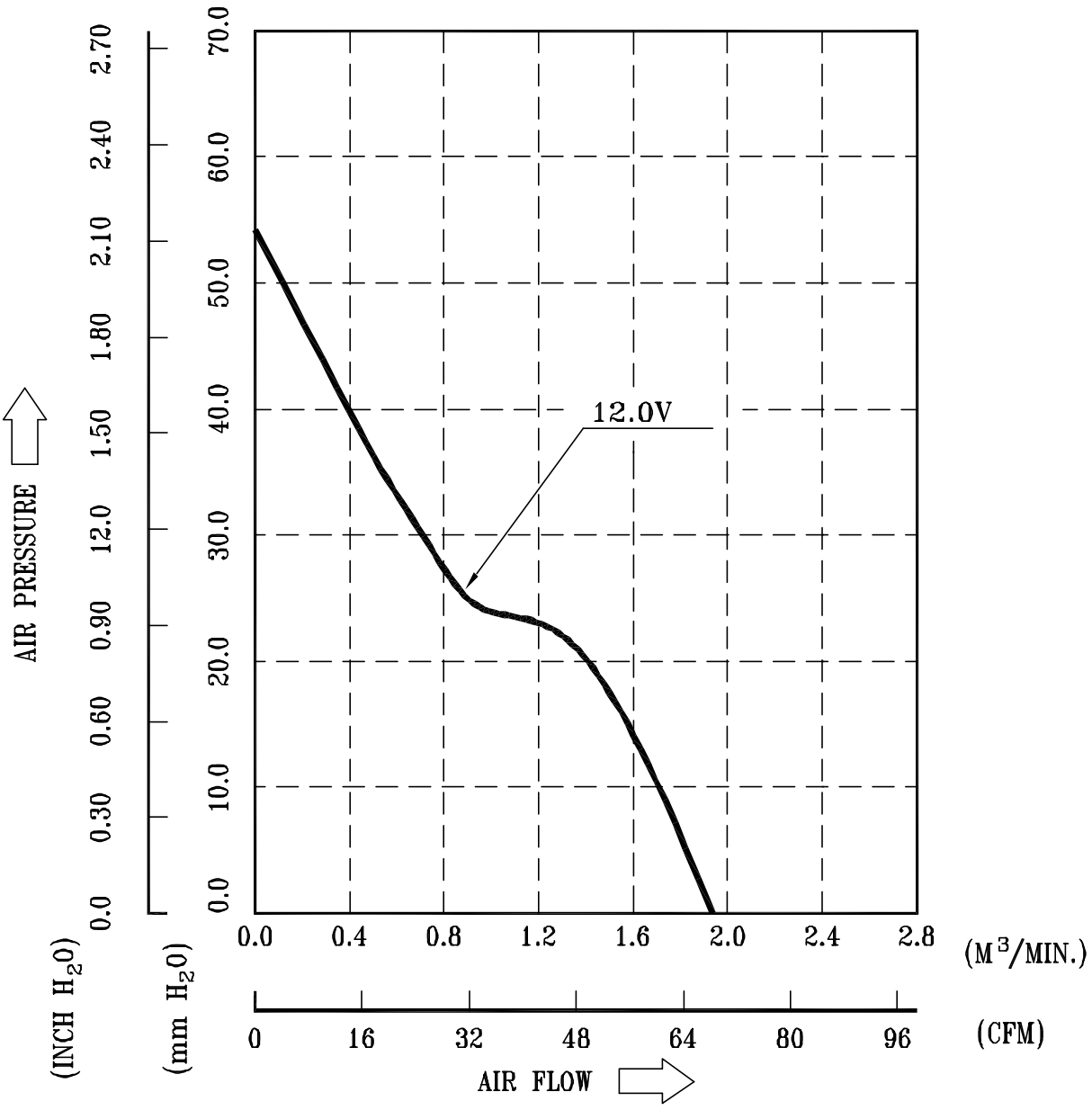
9. P & Q CURVE:




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

A00

PART NO:

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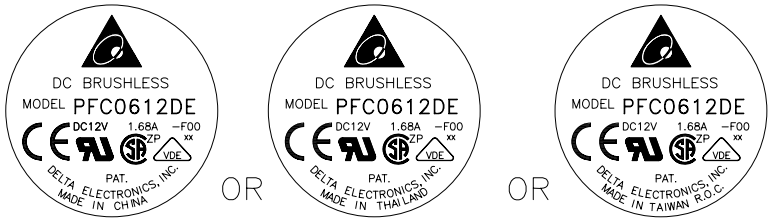
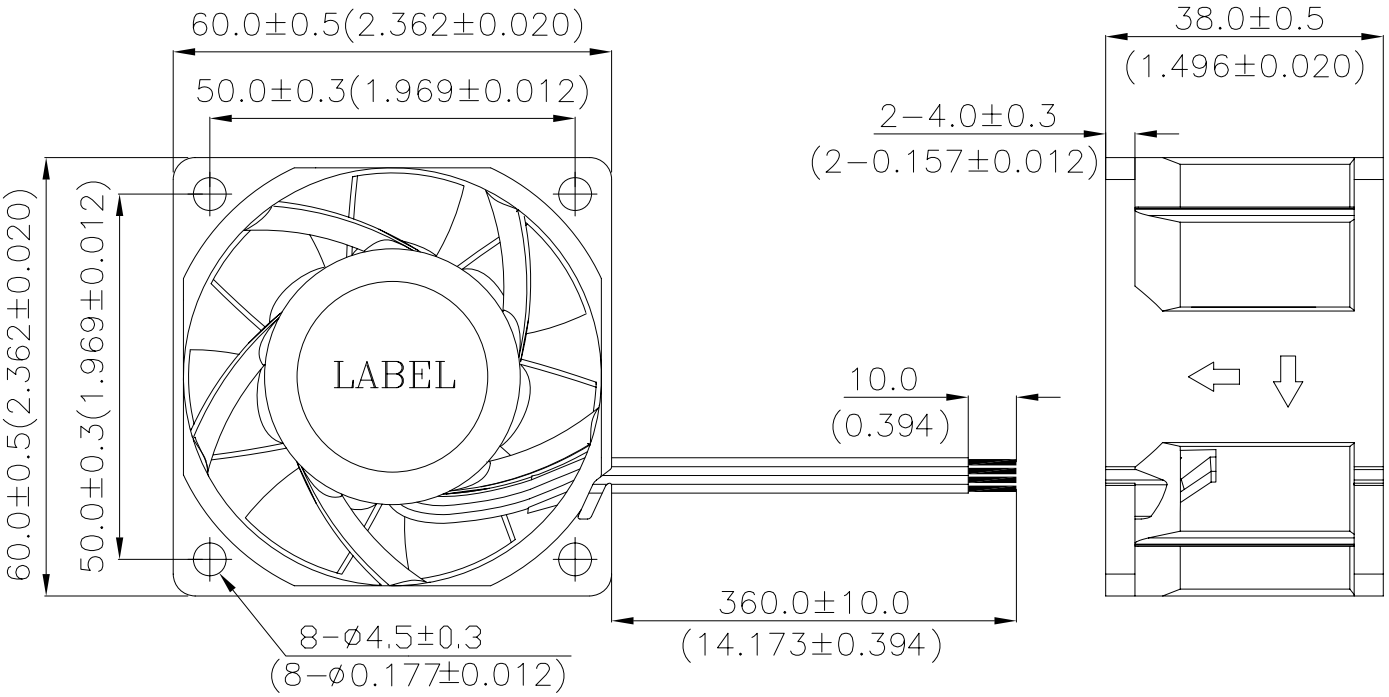
10. DIMENSION DRAWING:

LABEL:




UNIT: mm (INCH)

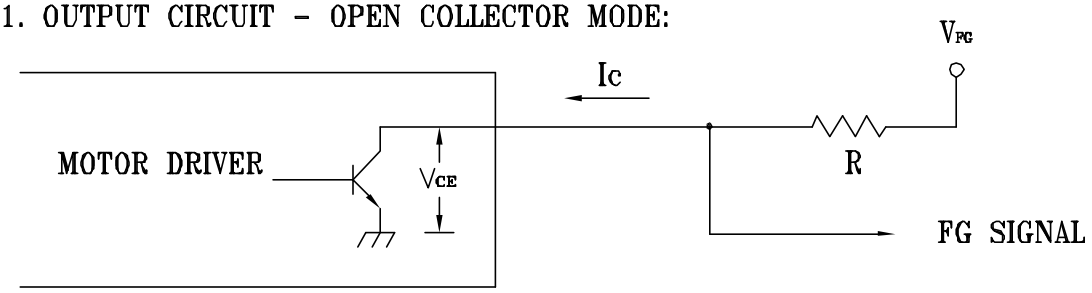
UL 1061 -F- AWG #24
RED WIRE POSITIVE(+)
BLACK WIRE NEGATIVE(-)
BLUE WIRE TACH OUTPUT(F00)
YELLOW WIRE CONTROL(PWM)

PART NO:

DELTA MODEL: PFC0612DE-F00

11. FREQUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



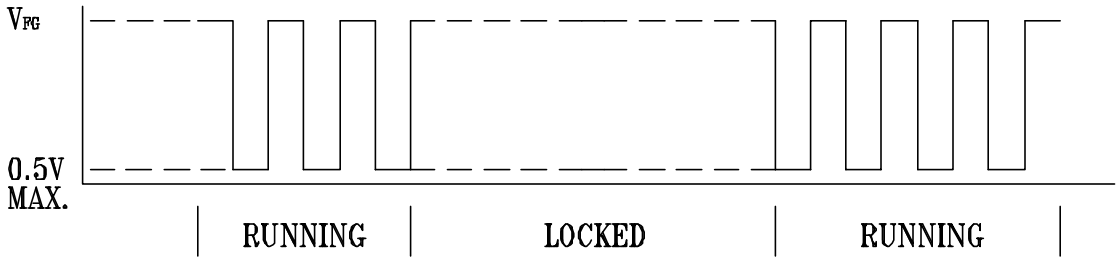

CAUTION:
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

2. SPECIFICATION:

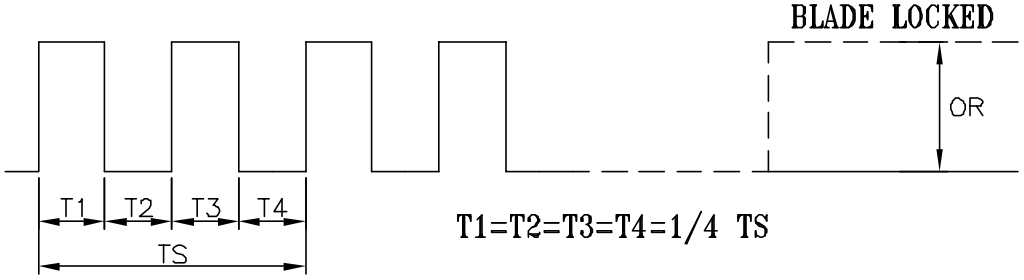
$V_{CE}$ (sat)=0.5V MAX. $V_{FG}$ =13.2VDC MAX.

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

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:

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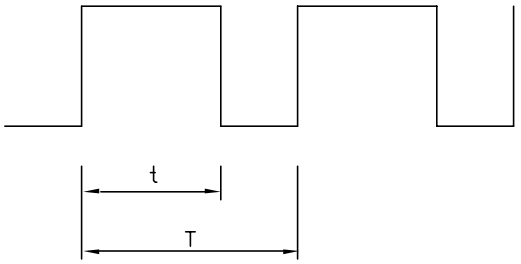
12. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: -0.8~20VDC




HIGH SIGNAL: 20 VDC MAX. 2 VDC MIN.

LOW SIGNAL: 0.4 VDC MAX. -0.8 VDC MIN.

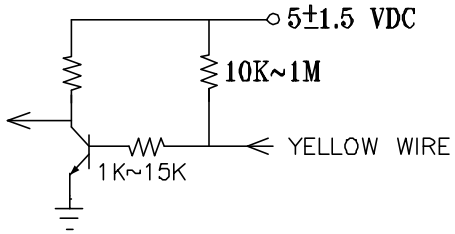
DUTY CYCLE= $\frac{t}{T}$ *100(%)

- THE FREQUENCY FOR CONTROL SINGAL OF THE FAN SHALL BE ABLE TO ACCEPT A 30~300K HZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL STOP SPIN.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT 12V 25K HZ 30% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP .

13. SPEED VS PWM CONTROL SIGNAL: (AT RATED VOLTAGE & PWM FREQUENCY=25KHZ)

| DUTY CYCLE (%) | SPEED R.P.M. (REF.) | CURRENT (A) REF. |
|---|---|---|
| 100 | 12000±10% | 1.40 |
| 50 | 6000±10% | 0.26 |
| 0 | 0 | 0.01 |

14. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:




14-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROLL INPUT IS LEFT UNCONNECTED.