SPECIFICATION FOR APPROVAL

Customer. _____

Description. DC FAN

Customer Part No. _____ REV.

Delta Model No. FFB0812XHXHC REV. 00

Sample Issue No. _____

Sample Issue Date. JUL-13-2015

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

APPROVED BY : _____

DATE: _____

Delta Electronics, Inc.
HeTianXia High-Tech Industrial Park.
Shi Jie Town, Dong Guan City.
Guangdong Province, China. P. R. C.
TEL : 86-769-86329008
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STATEMENT OF DEVIATION

****

☑ NONE

☐ DESCRIPTION :

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SPECIFICATION FOR APPROVAL

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Customer:

Description:	DC FAN		
Customer P/N:		REV:	
Delta Model NO.:	FFB0812XHXHC	Delta Safety Model NO:	FFB0812XH
Sample Rev:	00	Issue NO:	
Sample Issue Date:	JUL-13-2015	Quantity:	

1. SCOPE:

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

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12VDC
OPERATION VOLTAGE	7.0 - 15.0 VDC
INPUT CURRENT	1.00 (MAX. 1.20) A (CURRENT ON SAFETY LABEL : 2.00 A)
INPUT POWER	12.00 (MAX. 14.40) W
SPEED	9000 R.P.M. (REF.)
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	2.626 (MIN. 2.363) M^3/MIN. 92.69 (MIN. 83.42) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	28.00 (MIN. 22.68) mmH_2O 1.102 (MIN. 0.893) $inchH_2O$
ACOUSTICAL NOISE (AVG.)	59.0 (AVG.) dB-A
INSULATION TYPE	UL: CLASS A

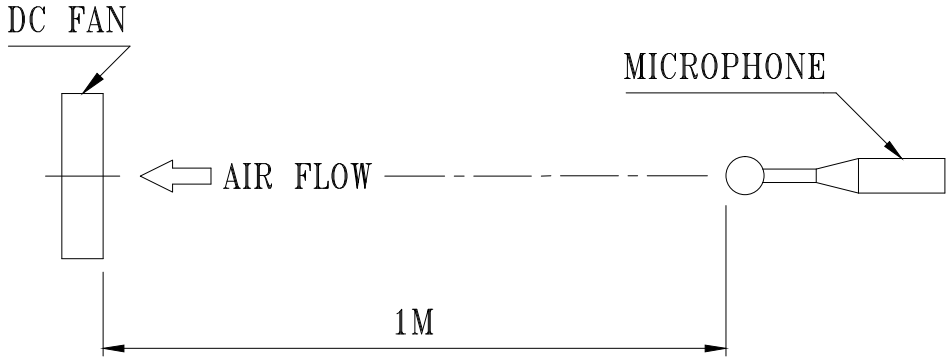
(continued)

PART NO:

DELTA MODEL: FFB0812XHXHC

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 (AT LABEL VOLTAGE)	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
AUTO-RESTART	LOCK ROTOR PROTECTED BY ELECTRONIC TIMER WITH AUTOMATIC RESTART FEATURE

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 ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

PART NO:

DELTA MODEL: FFB0812XHXHC

3. MECHANICAL:

3-1. DIMENSIONS ---------- SEE DIMENSIONS DRAWING

3-2. FRAME ---- PLASTIC UL: 94V-0(SECONDARY MATERIALS NOT ALLOWED)

3-3. IMPELLER -- PLASTIC UL: 94V-0(SECONDARY MATERIALS NOT ALLOWED)

3-4. BEARING SYSTEM ---------- TWO BALL BEARINGS

3-5. WEIGHT ---------- 115 GRAMS (REF.)

3-5-1. ROTOR WEIGHT ---------- 42 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ---------- -20 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:

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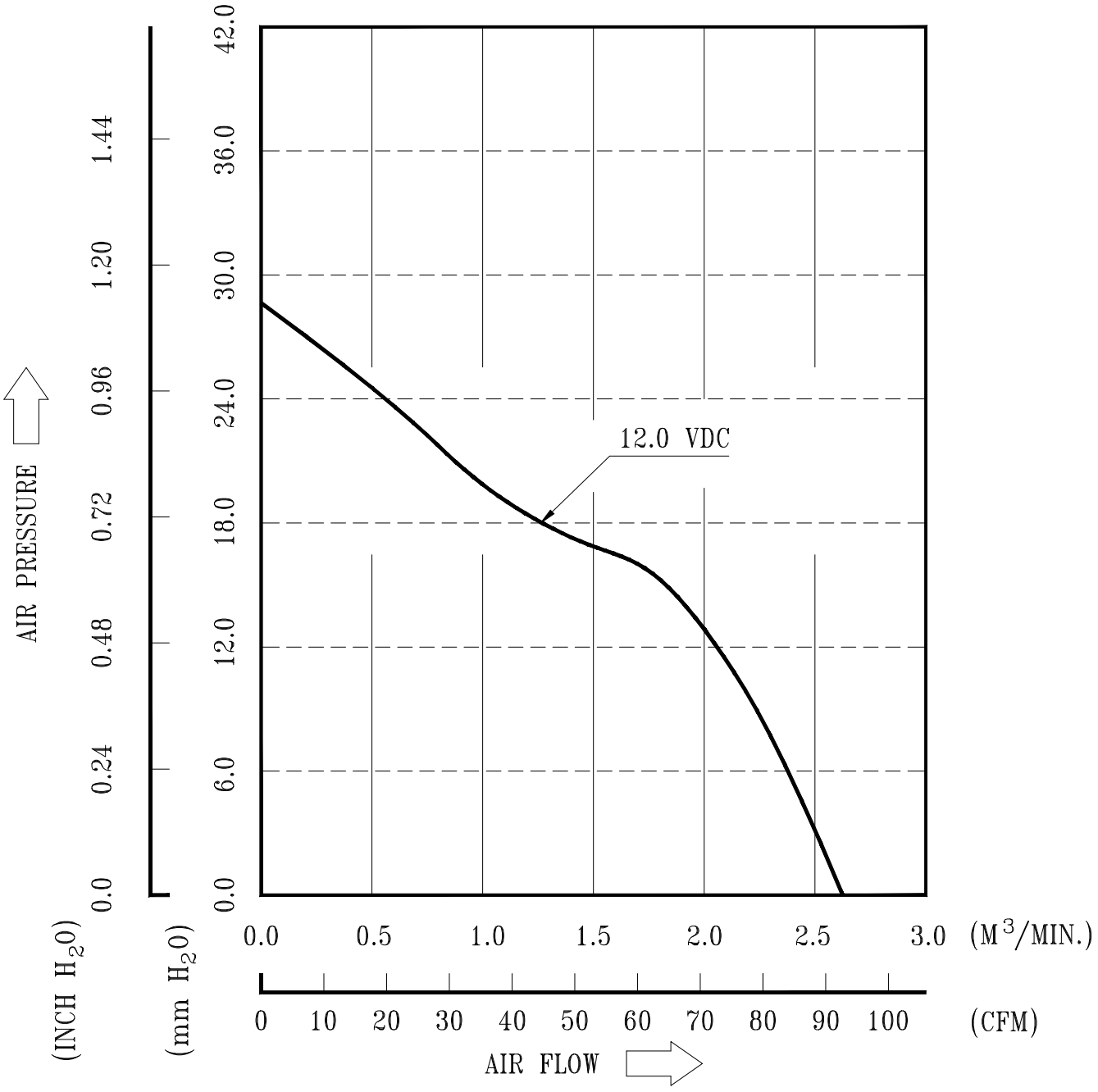
8. P & Q CURVE:



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

PART NO:

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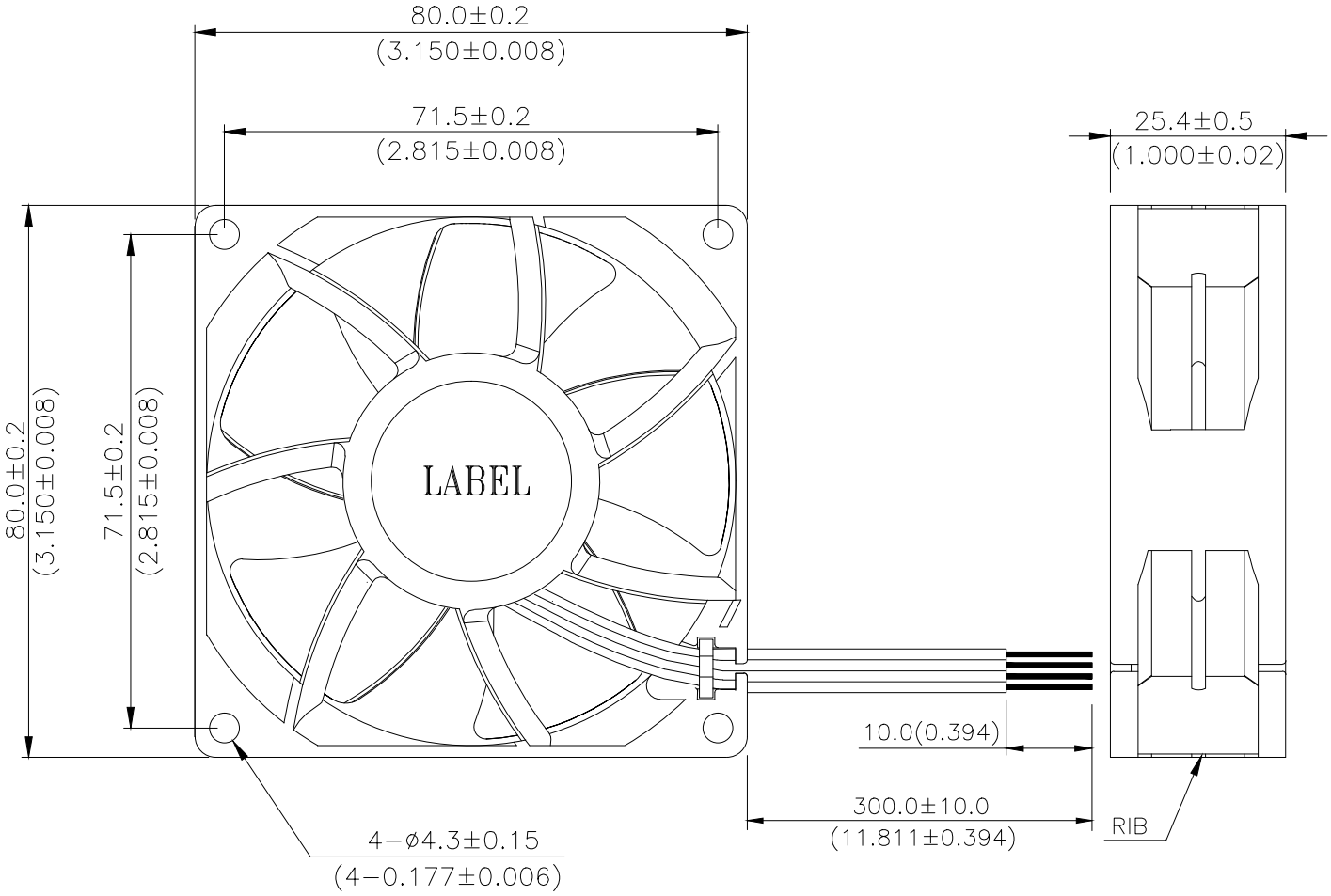
9. DIMENSION DRAWING:

LABEL:

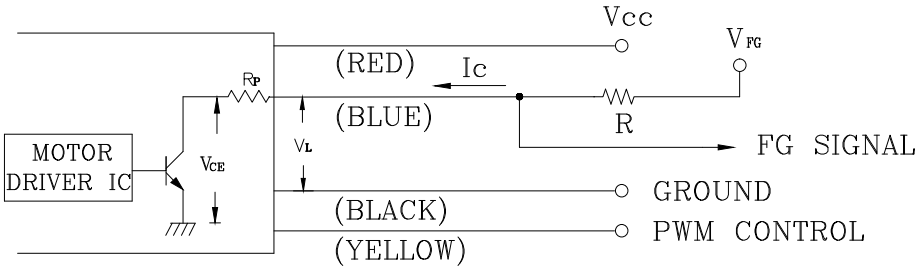


UNIT: mm(INCH)

NOTES: 1. LEAD WIRE: UL1430 AWG#26
RED WIRE----(+)
YELLOW WIRE----(PWM)
BLUE WIRE----(FOO)
BLACK WIRE-----(−)
2. THIS PRODUCT IS RoHS COMPLIANT.

10. FREQUENCY GENERATOR (FG) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



CAUTION:

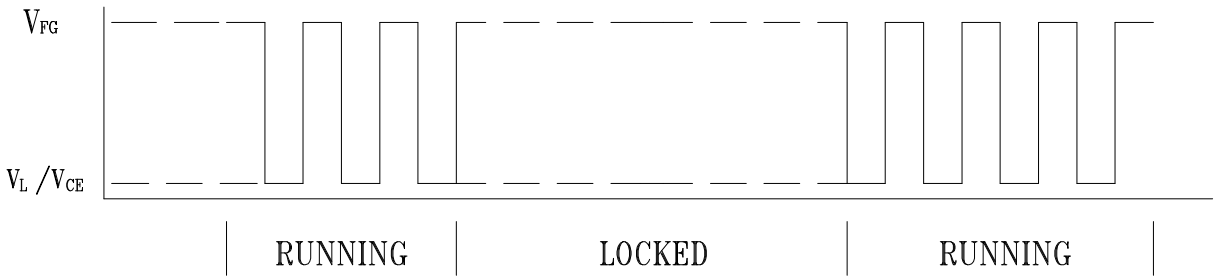
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

2. SPECIFICATION:

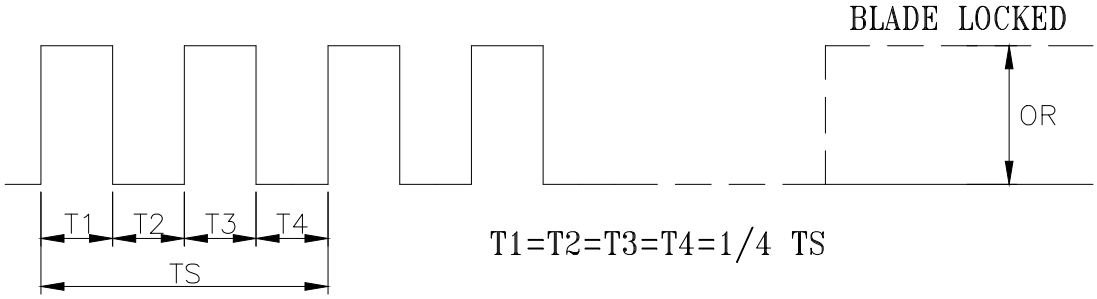
V_{CE} (sat)=0.5V MAX. V_{FG} =15 V MAX. I_C =10mA MAX.

$R_P \leq$ 100 ohm $R \geq V_{FG}/I_C$ V_L =1.5 V MAX.

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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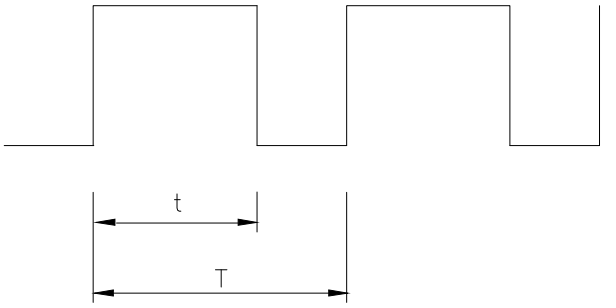
11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: -0.8~20VDC



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

- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 30HZ~300KHZ AT 12V.
- AT 12V, 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 12V, 0% DUTY CYCLE,THE ROTOR WILL STOP.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT 12V, 1KHZ, 30% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP .

12. SPEED VS PWM CONTROL SIGNAL: (AT 12V & PWM FREQUENCY=1KHZ) TEMP=25 DEGREEC)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A)
100	9000±10%	1.00
50	4125±10%	0.20
0	0	0.02

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE: