



SPECIFICATION FOR APPROVAL

Customer _____

Description DC FAN

Part No. _____ REV. _____

Delta Model No. FFB03812VN-SPC REV. 00

Sample Issue No. _____

Sample Issue Date OCT.15.2012

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

APPROVED BY: _____

DATE : _____

DELTA ELECTRONICS, INC.

TAOYUAN PLANT

252, SHANG YING ROAD, KUEI SAN INDUSTRIAL ZONE TAOYUAN
SHIEN, TAIWAN, R.O.C.

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TEL : 886-(0)3-3591968
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STATEMENT OF DEVIATION

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

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 252, SHANG YING ROAD, KUEI SAN
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SPECIFICATION FOR APPROVAL

Customer:

 Description: DC FAN

Customer P/N: REV:

Delta Model NO.: FFB03812VN-SPC Delta SAFETY Model:

Sample Rev: 00 Issue NO:

Sample Issue Date: OCT.15.2012 Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS BLOWER.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12 VDC
OPERATION VOLTAGE	10.8 - 13.2 VDC
START VOLTAGE	10.8 VDC
INPUT CURRENT	0.85 (MAX. 1.02) A
INPUT POWER	10.20 (MAX 12.24) W
SPEED (REF.)	23000 RPM ± 10%
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.65 (MIN. 0.586) M ³ /MIN. 23.00 (MIN. 20.700) CFM
MAX. AIR PRESSURE (AT ZERO AIR FLOW)	86.36 (MIN. 69.950) mm H ₂ O 3.40 (MIN. 2.754) inch H ₂ O
ACOUSTICAL NOISE (AVG.)	62.5 (MAX. 66.5) dB-A

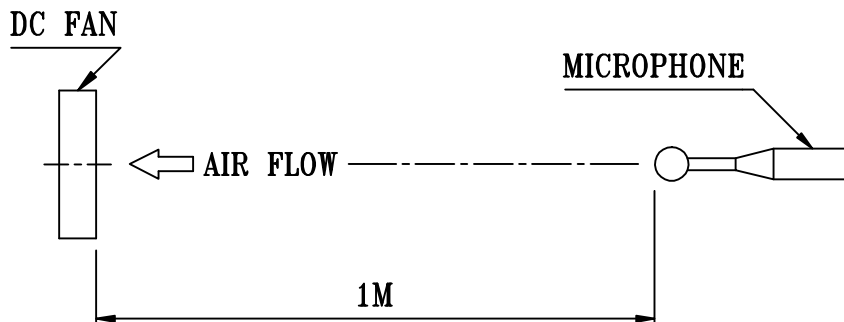
(continued)

PART NO:

DELTA MODEL: FFB03812VN-SPC

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)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE AT LABEL VOLTAGE	70,000 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 #28 BLACK WIRE NEGATIVE(-) RED WIRE POSITIVE(+) YELLOW WIRE FREQUENCY(-PWM) BLUE WIRE FREQUENCY(-F00)

- 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:

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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 ----- 48 GRAMS

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.

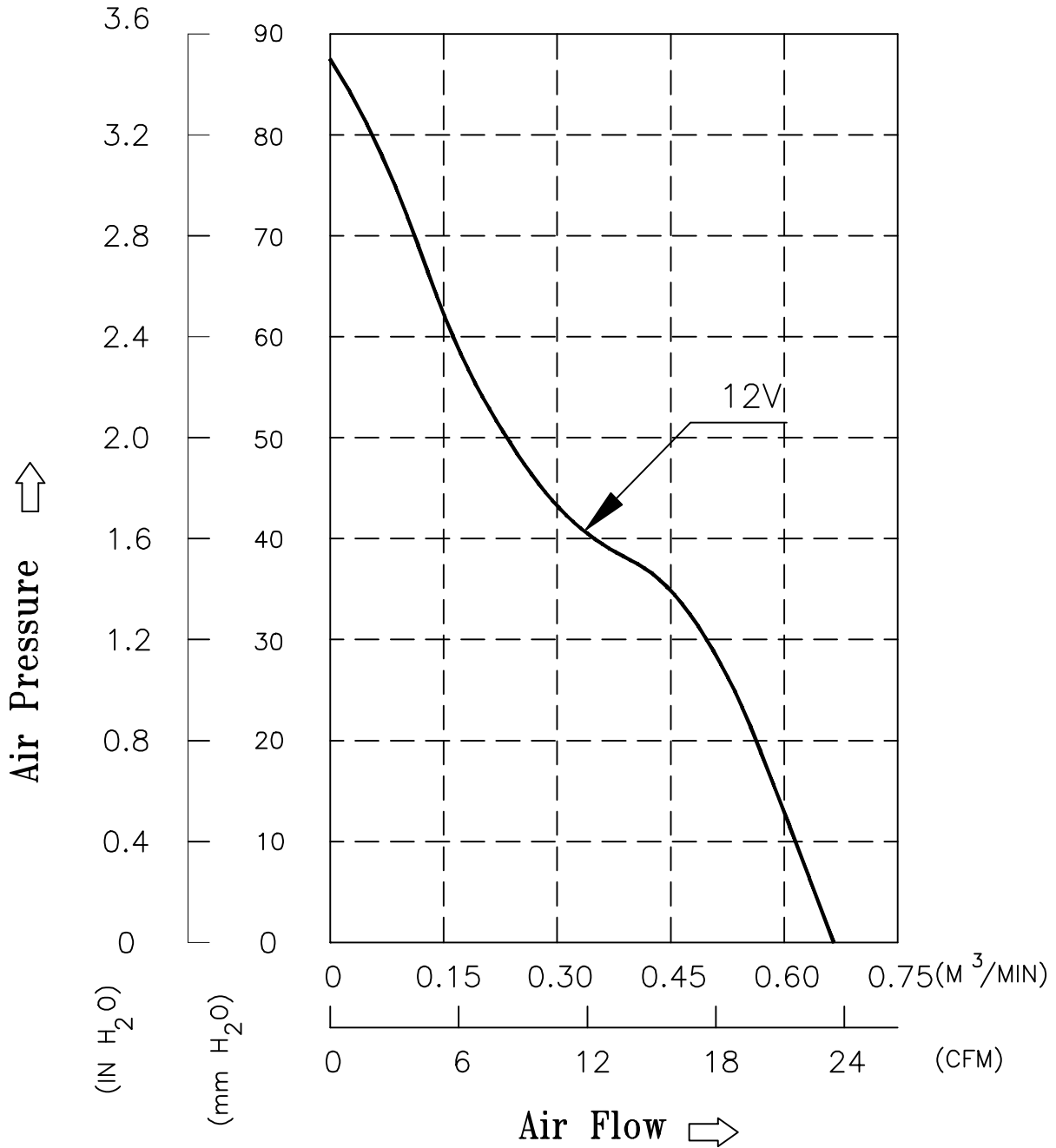
7. PRODUCTION LOCATION

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

PART NO:

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8. P & Q CURVE:



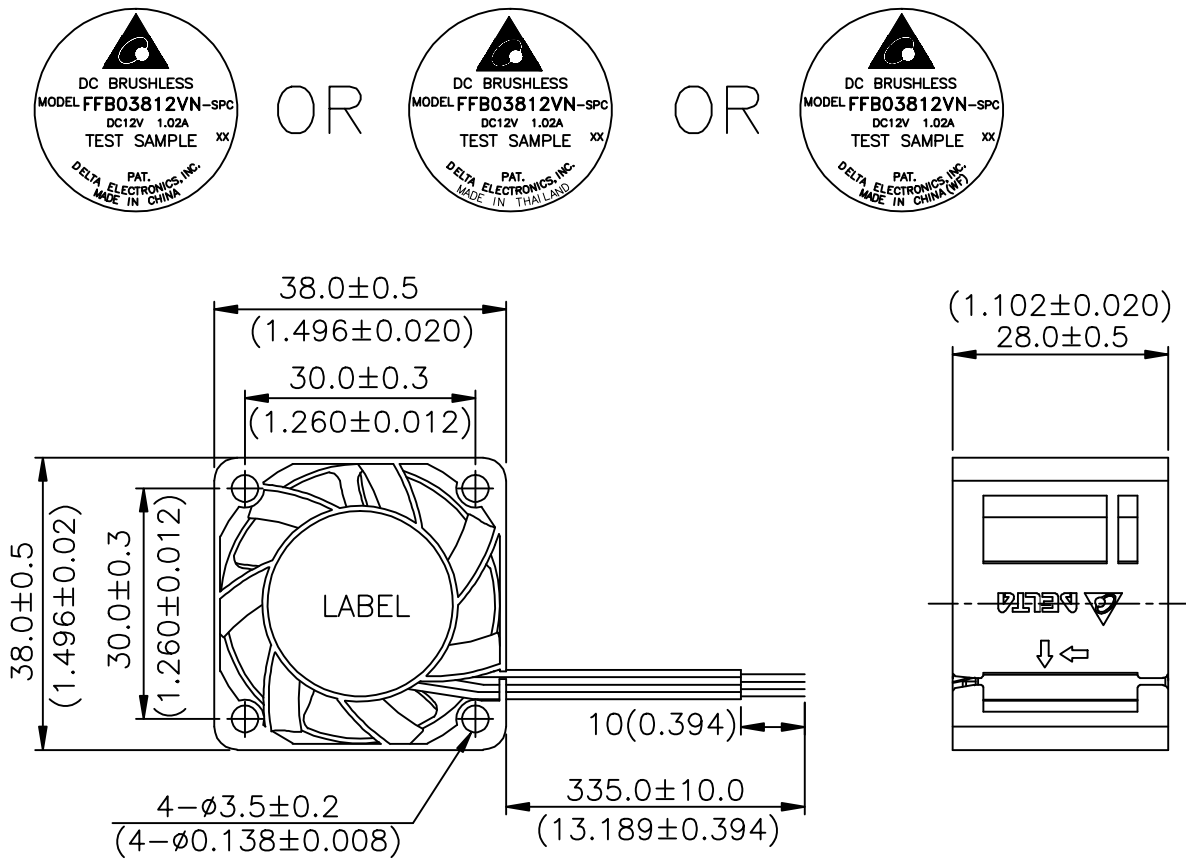
* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ----- ROOM TEMPERATURE
HUMIDITY ----- 65%RH

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9.DIMENSION DRAWING:

LABEL:



NOTES:

- A. LEAD WIRE UL:1061 AWG#28
 - BLACK WIRE -----(-)
 - RED WIRE -----(+)
 - YELLOW WIRE -----(PWM)
 - BLUE WIRE -----(FOO)

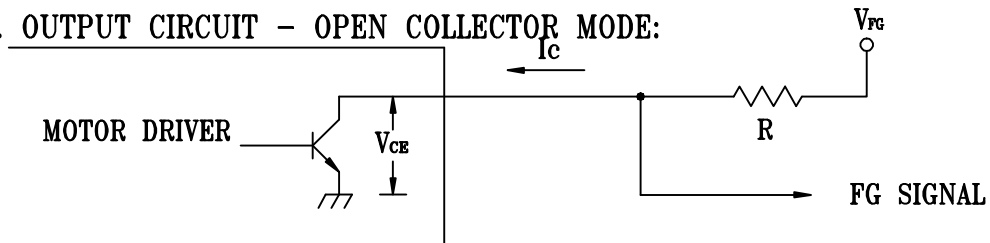
B. THIS PRODUCT IS RoHS COMPLIANT

PART NO:

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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:

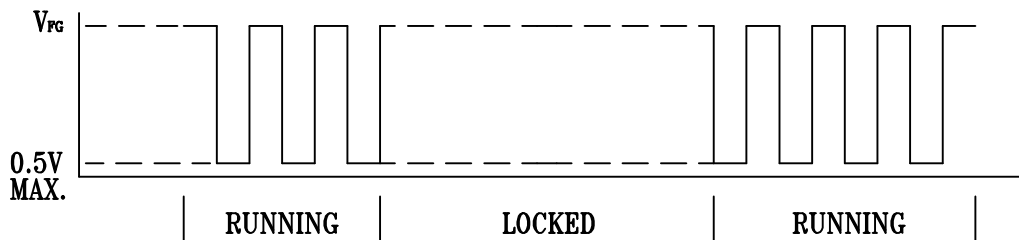
$V_{ce}(\text{sat}) = 0.5V \text{ MAX.}$

$V_{FG} = 13.2V \text{ MAX.}$

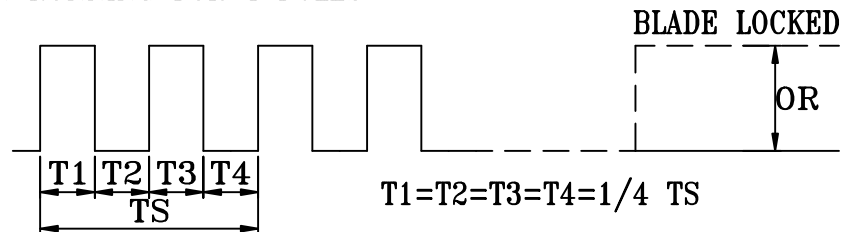
$I_c = 5mA \text{ MAX.}$

$R > V_{FG} / I_c$

3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



$N = \text{R.P.M}$

$TS = 60 / N (\text{SEC})$

*VOLTAGE LEVEL AFTER BLADE LOCKED

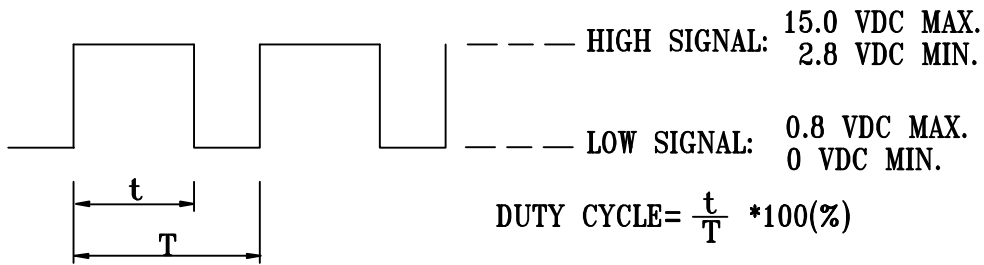
*4 POLES

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11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~15VDC



- THE PREFERRED OPERATING POINT FOR THE FAN IS 25KHZ.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE, THE ROTOR WILL STOP.
- WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT 25K HZ, RATED VOLTAGE, 30% DUTY CYCLE, THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

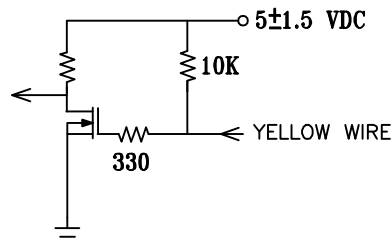
12. SPEED VS PWM CONTROL SIGNAL:

(AT RATED 12V & PWM FREQUENCY=25KHZ)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)	CURRENT (A) TYP.
100	23000±10%	0.85
10	1500±250	0.03
0~3	0	0.02

DUTY 4~9% : STOP OR ROTATION

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



13-1. THE FAN SPEED WILL DEFAULT TO MAXIMUM WHEN THE SPEED CONTROL INPUT IS LEFT UNCONNECTED.