



SPECIFICATION FOR APPROVAL

Customer. DPC

Description. DC FAN

Part No. _____ REV. _____

Delta Model No. GFM0412SS-DE1PB7Q REV. 00

Sample Issue No. _____

Sample Issue Date. Sep.18 2015

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
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STATEMENT OF DEVIATION

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

DELTA ELECTRONICS, INC.
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 TAOYUAN HSIEN 333, TAIWAN, R. O. C.

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SPECIFICATION FOR APPROVAL

Customer: DPC

 Description: DC FAN

 Customer P/N: REV:

 Delta Model NO.: GFM0412SS-DE1PB7Q Delta safety model NO.: GFM0412SS-DE1P

 Sample Rev: 00 Issue NO:

 Sample Issue Date: Sep.18 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	12 VDC
OPERATION VOLTAGE	10.8 - 12.6 VDC
INPUT CURRENT (AVG) (FREE AIR)	1.10 (MAX. 1.40) A SAFETY CURRENT ON LABEL: 1.40A
INPUT POWER (AVG)	12.60 (MAX. 16.80) W
SPEED	FRONT 19000±10% R.P.M. REAR 19250±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.610 (MIN. 0.549) M ³ /MIN. 21.56 (MIN. 19.40) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	86.78 (MIN. 70.29) mmH ₂ O 3.416 (MIN. 2.767) inchH ₂ O
ACOUSTICAL NOISE (AVG.)	68.5 (MAX. 72.5) dB-A
INSULATION TYPE	UL: CLASS A

(continued)

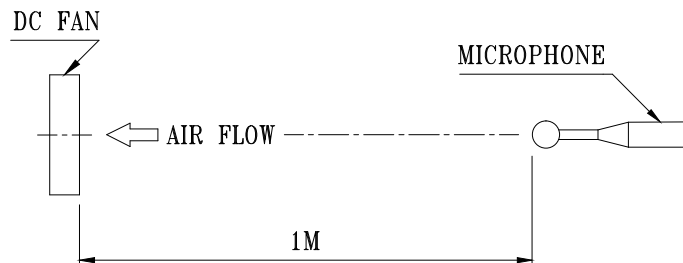
PART NO:

DELTA MODEL: GFM0412SS-DE1PB7Q

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 EXPECTANCY (AT LABEL VOLTAGE)	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NEME PLATE SIDE.
OVER CURRENT SHUT DOWN	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. THE CHARACTERS SHOWED IN PAGE 1 IS THE CONDITION OF BOTH FANS RUN.
5. 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.

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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 (FAN) ----- 102 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.

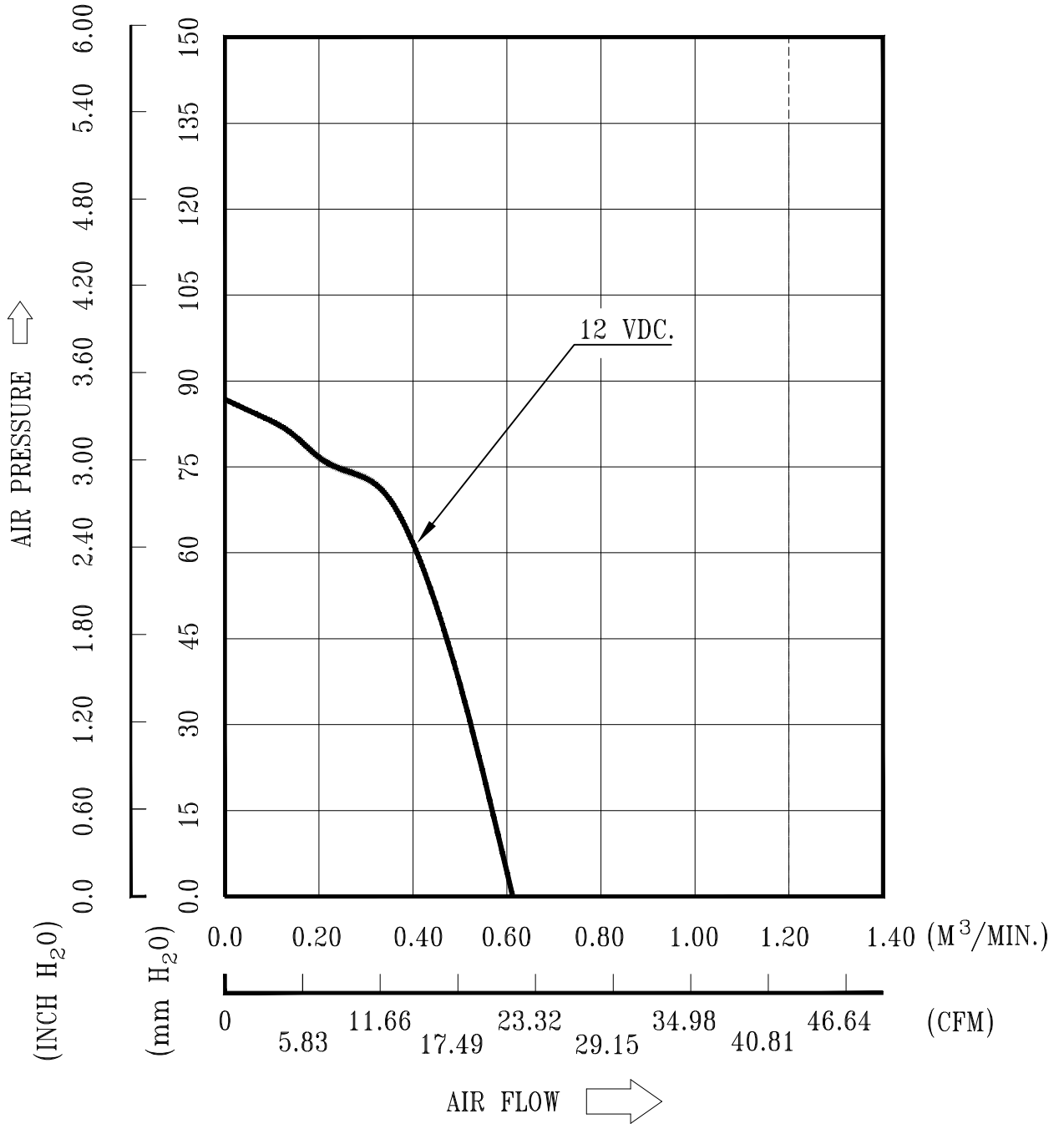
7. PRODUCTION LOCATION

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

PART NO:

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8. P & Q CURVE:



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

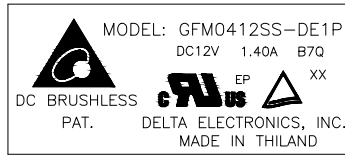
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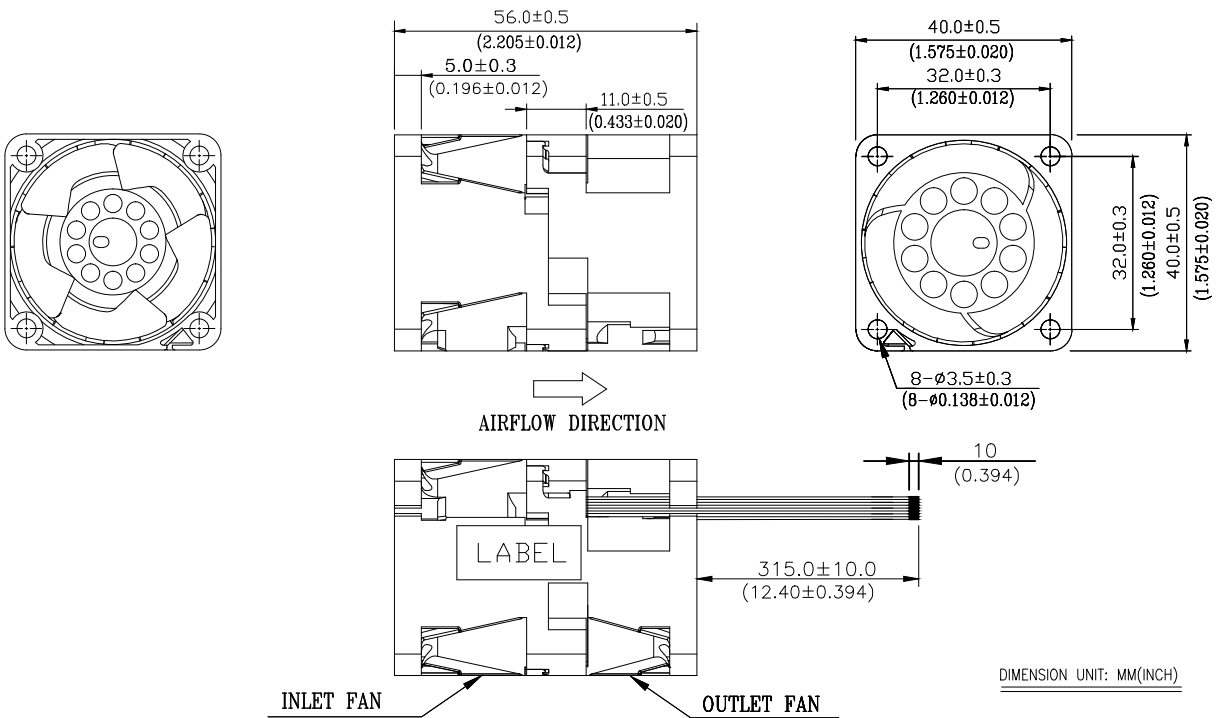
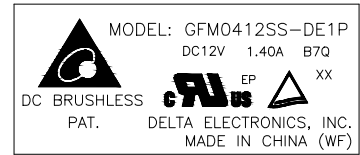
9. DIMENSION DRAWING:



OR



OR



NOTES:

1. CABLE WIRE UL:1061 AWG#28

- RED WIRE ----- 12V (FRONT FAN / 5 BLADES)
- YELLOW WIRE ----- F00 (FRONT FAN / 5 BLADES)
- BLACK WIRE ----- GND (FRONT FAN / 5 BLADES)
- BLUE WIRE ----- PWM (FRONT FAN / 5 BLADES)
- GRAY WIRE ----- GND (REAR FAN / 3 BLADES)
- GREEN WIRE ----- PWM (REAR FAN / 3 BLADES)
- ORANGE WIRE ----- 12V (REAR FAN / 3 BLADES)
- WHITE WIRE ----- F00 (REAR FAN / 3 BLADES)

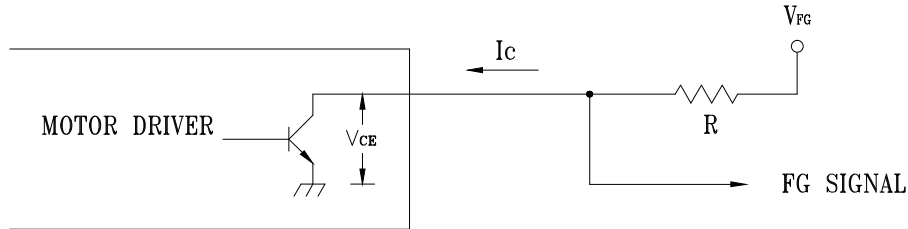
2. THIS PRODUCT IS RoHS COMPLIANT

PART NO:

DELTA MODEL: GFM0412SS-DE1PB7Q

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:

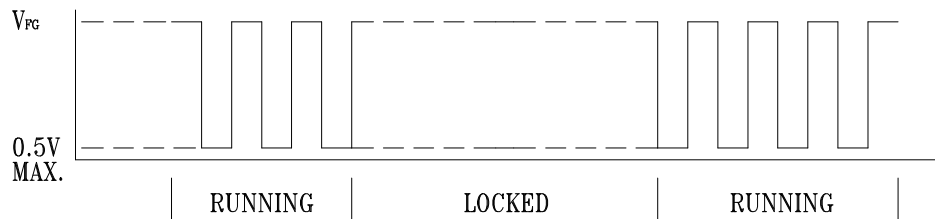
$$V_{CE} (\text{sat}) = 0.5V \text{ MAX.}$$

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

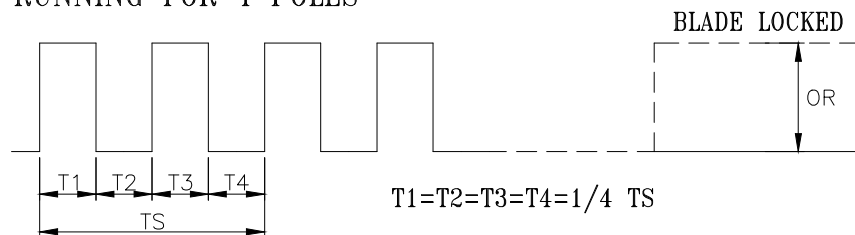
$$I_c = 5mA \text{ MAX.}$$

$$R \geq V_{FG} / I_c$$

10-3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



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

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

*VOLTAGE LEVEL AFTER BLADE LOCKED

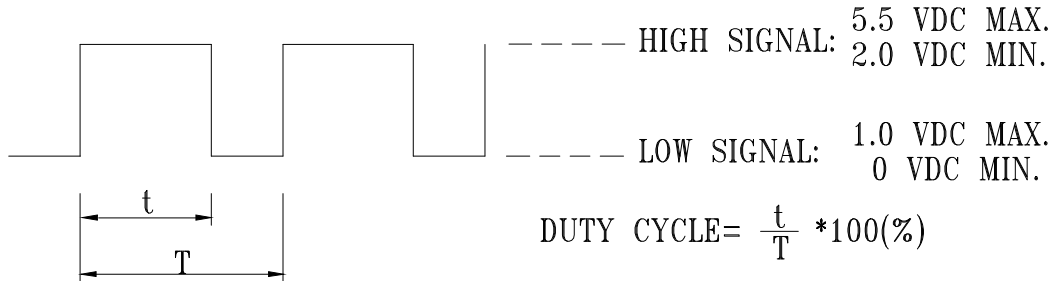
*4 POLES

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11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~5.5VDC



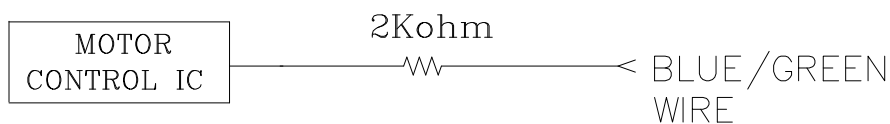
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL SPIN AT MINMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

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

DUTY CYCLE (%)	SPEED R.P.M. (REF.)		CURRENT (A) TYP. TOTAL
	FRONT	REAR	
100	19000±10%	19250±10%	1.10 (1.40 max.)
50	10450±10%	10400±10%	0.28
0	1800±800	1600±700	0.065

(FREE AIR)

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



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