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.
TAOYUAN PLANT
252, SHANG YING ROAD, KUEI SAN INDUSTRIAL ZONE TAOYUAN SHIEN, TAIWAN, R.O.C.
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333, TAIWAN, R. O. C.

TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

STATEMENT OF DEVIATION

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■ NONE

□ DESCRIPTION :

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333, TAIWAN, R. O. C.
TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

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_2O 3.416 (MIN. 2.767) $inchH_2O$
ACOUSTICAL NOISE (AVG.)	68.5 (MAX. 72.5) dB-A
INSULATION TYPE	UL: CLASS A

(continued)

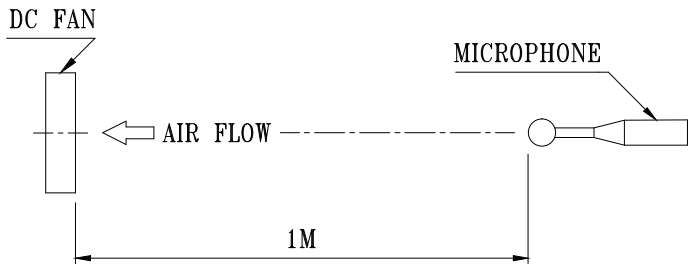
PART NO:

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.

PART NO:

DELTA MODEL: GFM0412SS-DE1PB7Q

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.

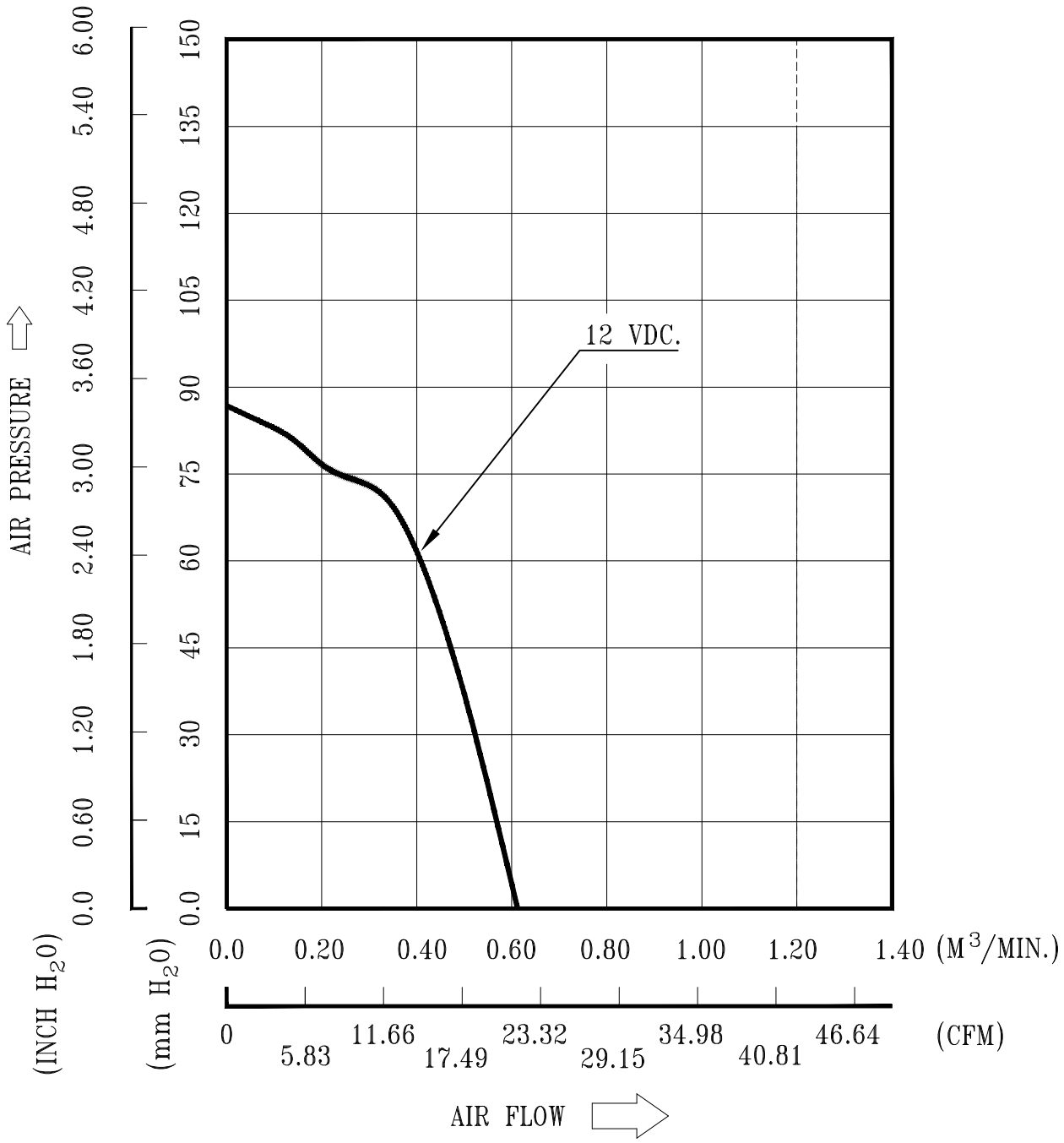
7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA.

PART NO:

DELTA MODEL: GFM0412SS-DE1PB7Q

8. P & Q CURVE:



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

PART NO:

DELTA MODEL: GFM0412SS-DE1PB7Q

9. DIMENSION DRAWING:

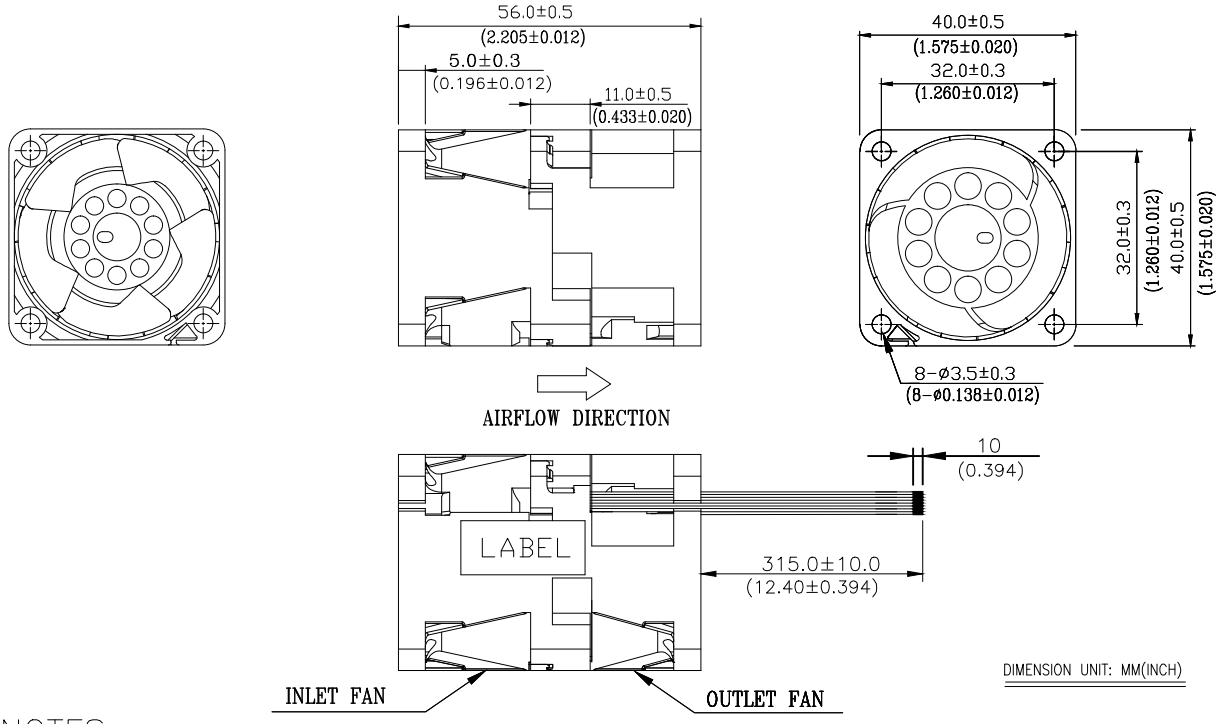


OR



OR





NOTES:

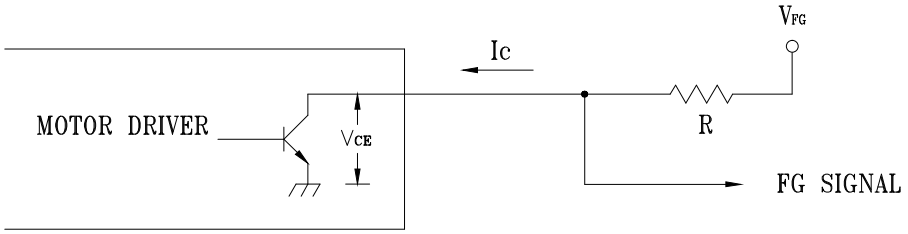
1. CABLE WIRE UL:1061 AWG#28

   RED WIRE ----- 12V (FRONT FAN / 5 BLADES)
   YELLOW WIRE ----- FOO (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 ----- FOO (REAR FAN / 3 BLADES)

2. THIS PRODUCT IS RoHS COMPLIANT

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



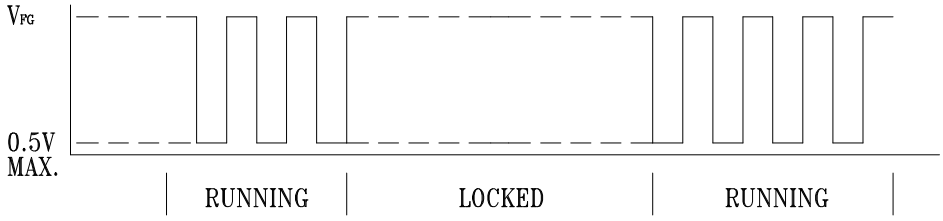
CAUTION:
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

10-2. SPECIFICATION:

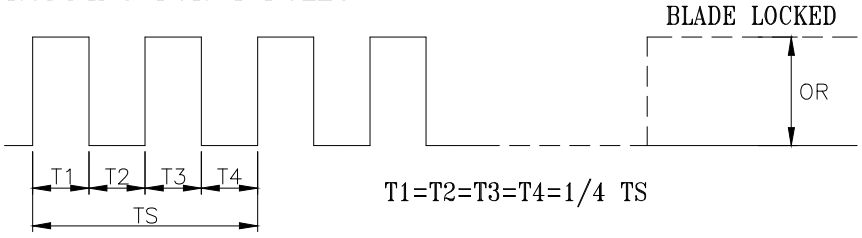
V_{CE} (sat)=0.5V MAX. V_{FG} =13.2VDC MAX.

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

10-3. FREQUENCY GENERATOR WAVEFORM:

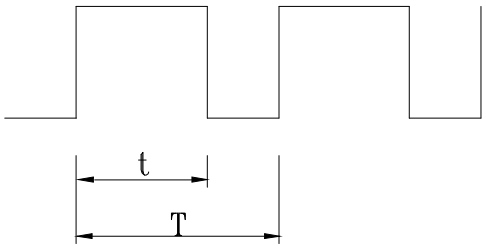


FAN RUNNING FOR 4 POLES



N=R.P.M
TS=60/N(SEC)
*VOLTAGE LEVEL AFTER BLADE LOCKED
*4 POLES

11. PWM CONTROL SIGNAL:
SIGNAL VOLTAGE RANGE: 0~5.5VDC



HIGH SIGNAL: 5.5 VDC MAX. 2.0 VDC MIN.

LOW SIGNAL: 1.0 VDC MAX. 0 VDC MIN.

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

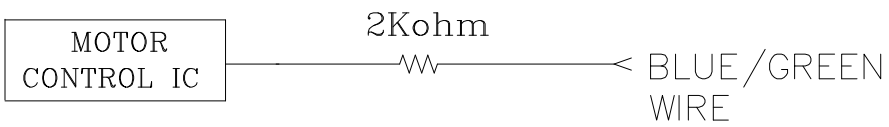
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL SPIN AT MINMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

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

DUTY CYCLE (%)	SPEED R.P.M. (REF.)		CURRENT (A) TYP.
	FRONT	REAR	TOTAL
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.

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. It 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.

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Global Electronic Components Distributor

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DELTA Electronics:

06BEEG3G AFL12AUHE-C DTC1000C FFB1224SHE M55339/14-00306 PL01S4805A PMT-48V75W2BA S24SP05012PDFA 03GEEG3E 06AN2 AFB0624VH-A PJT-12V40WBAA PMC-24V075W1AA 02BEEG3H ASB02505SHA-AY6B DSOL-0844-24 DSOL-1341-12 FFB0912HHE 30DPGS5C FFB0824SHE-F00 PFB1224UHEP0 15GENG3E BFB1248GH-A SK-1015-STD AFB0524HHD MDS-400APB24AA PM05S050A ACS3-CNTB0600 AFB0724VH-AF00 CTA4100A