SPECIFICATION FOR APPROVAL

Customer : STD
Description : DC FAN
Customer Part No. _____ REV. : _____
Delta Model No. : QFR0624DHP0 REV. : 03
Sample Issue No. : _____
Sample Issue Date : 2021/4/23

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE,
TAOYUAN CITY 33341, TAIWAN
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

*** SAMPLE HISTORY***

CUSTOMER: STD
CUSTOMER P/N:
DELTA MODEL: QFR0624DHP0

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	陳彥夆 08/26'19	陳彥夆 08/26'19	楊至軒 08/26'19	---	吳俊男 08/26'19	08/27'19
01	MODIFY OPERATING TEMPERATURE FROM 85℃ TO 70℃	陳彥夆 11/18'19	陳彥夆 11/18'19	林諺鴻 11/18'19	---	吳俊男 11/18'19	11/19'19
02	DELETE POINT 13 IN PAGE 7.	林諺鴻 6/05'20	陳彥夆 6/05'20	林諺鴻 6/05'20	---	吳俊男 6/05'20	6/05'20
03	CHANGE LEAD WIRE TYPE FROM UL1430 TO UL1061; ADD NOTE.3 ON DRAWING PAGE	陳彥夆 4/23'21	陳彥夆 4/23'21	林諺鴻 4/23'21	---	吳俊男 4/23'21	4/23'21

DELTA ELECTRONICS, INC.
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE, TEL : 886-(0)3-3591968
TAOYUAN CITY 33341, TAIWAN FAX : 886-(0)3-3591991

STATEMENT OF DEVIATION

■ NONE

□ DESCRIPTION:

DELTA ELECTRONICS, INC.
252, SHANGYING ROAD, GUISHAN INDUSTRIAL ZONE, TEL : 886-(0)3-3591968
TAOYUAN CITY 33341, TAIWAN FAX : 886-(0)3-3591991

Specification For Approval

Customer : STD

Description : DC FAN

Customer P/N : rev. :

Delta model no. : QFR0624DHP0 Delta Safety Model No.: QFR0624DH

Sample revision. : 03 Issue no.:

Sample issue date : 2021/4/23 Quantity :

1. SCOPE:
THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN.
2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	24.0 VDC
OPERATION VOLTAGE	16.0 - 26.4 VDC
INPUT CURRENT(AVG.)★ (AT RATED VOLTAGE / FREE AIR)	0.35 (MAX. 0.41) A SAFETY CURRENT ON LABEL : 0.52A
INPUT POWER(AVG.)★ (AT RATED VOLTAGE / FREE AIR)	8.40 (MAX. 9.84) W
SPEED (AT RATED VOLTAGE / FREE AIR)	10600 ± 10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	1.402 (MIN. 1.262) M^3/MIN. 49.50 (MIN. 44.55) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	26.50 (MIN. 21.46) mmH_2O 1.043 (MIN. 0.845) inchH_2O
ACOUSTICAL NOISE (AVG.)	55.0 (MAX. 59.0) dB-A
INSULATION TYPE	UL: CLASS A
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)

★AVG. IS THE AVERAGE VALUE DURING STEADY OPERATION, AND MAX. IS MAXIMUM AVERAGE VALUE INCLUDED PRODUCTION TOLERANCE. ABOUT THE PEAK VALUE, NEED TO USE OSCILLOSCOPE TO MEASURE.

(continued)

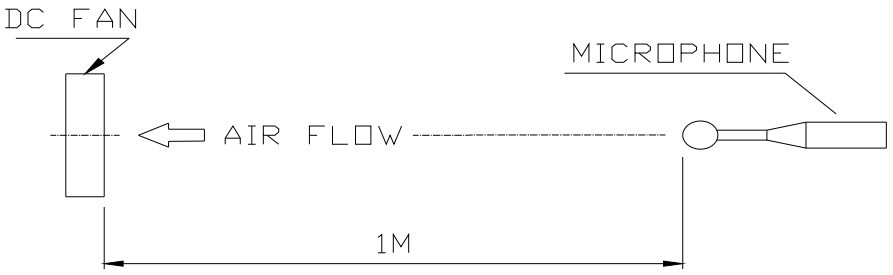
PART NO:

DELTA MODEL: QFR0624DHP0

LIFE EXPECTANCE (L10) (AT LABEL VOLTAGE)	40,000 HOURS CONTINUOUS OPERATION AT 60 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
LOCKED ROTOR PROTECTION	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. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN SEMI-ANECHOIC CHAMBER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

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---------- 90 GRAMS(REF.)

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 POSITIVEAND NEGATIVE LEADS.

6. RE OZONE DEPLETING SUBSTANCES:

6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBBEs, PBDPEs AND HCFCs.

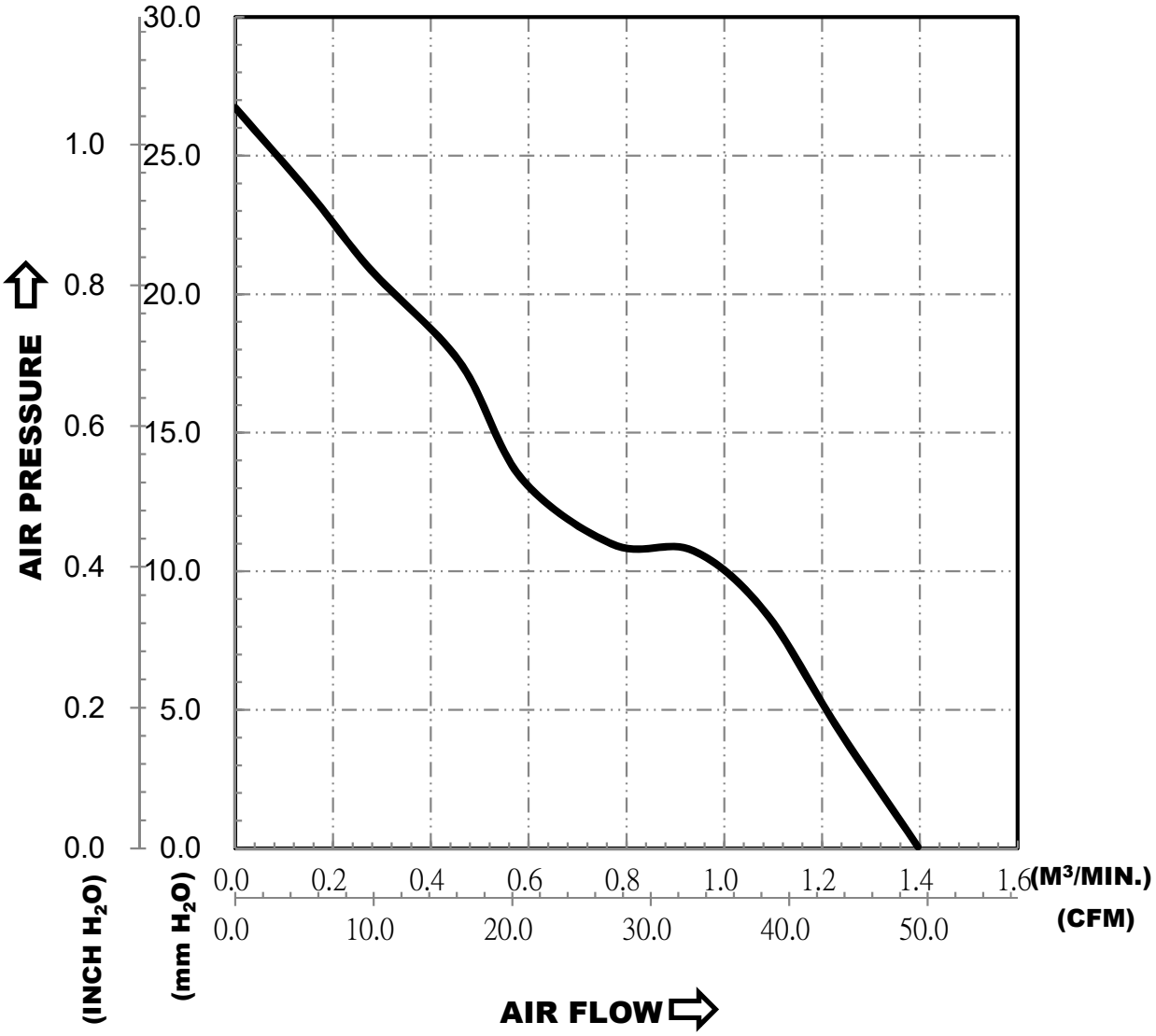
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: QFR0624DHP0

8. P & Q CURVE:



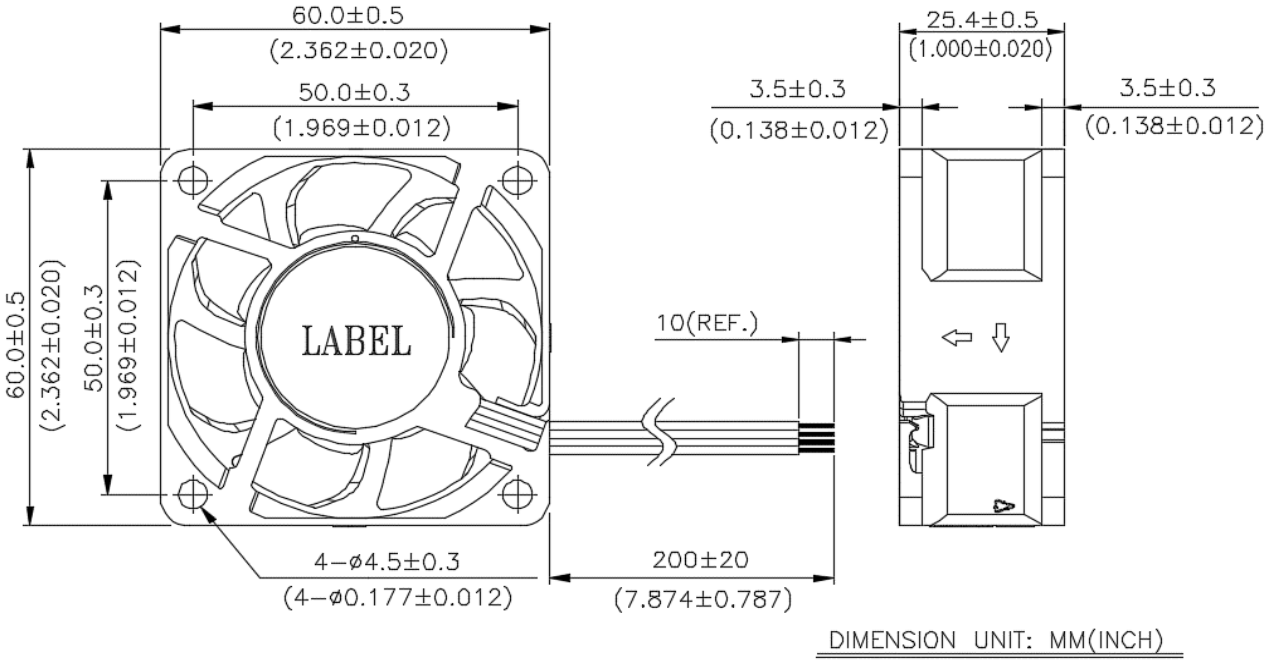
*TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE
TEMPERATURE-----ROOM TEMPERATURE
HUMIDITY-----65%RH

PART NO:

DELTA MODEL: QFR0624DHP0

9. DIMENSION DRAWING:

LABEL:



NOTES:

1. THIS PRODUCT IS RoHS COMPLIANT
2. CABLE WIRE: UL1061 AWG#26
   RED WIRE ------ (+)
   BLACK WIRE ----- (-)
   BLUE WIRE ------ (F00)
   YELLOW WIRE ----- (PWM)

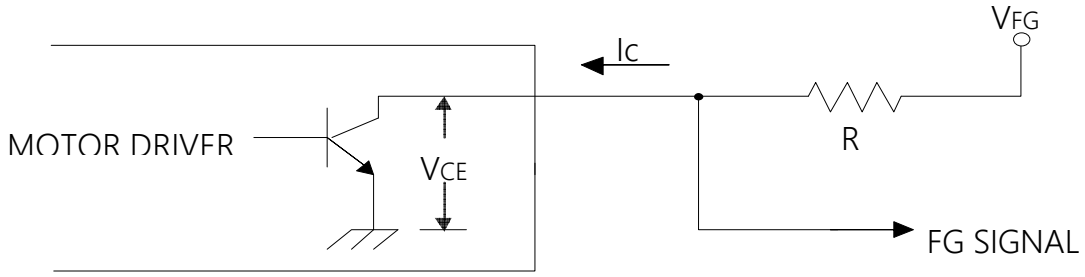
★ 3. RECOMMENDED OPERATING SEQUENCE
   FAN START : VCC ON --> PWM INPUT
   FAN STOP: PWM 0% DUTY --> VCC OFF

PART NO:

DELTA MODEL: QFR0624DHP0

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



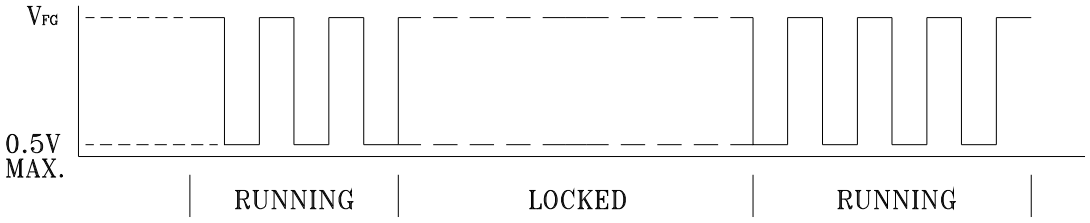
CAUTION:

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

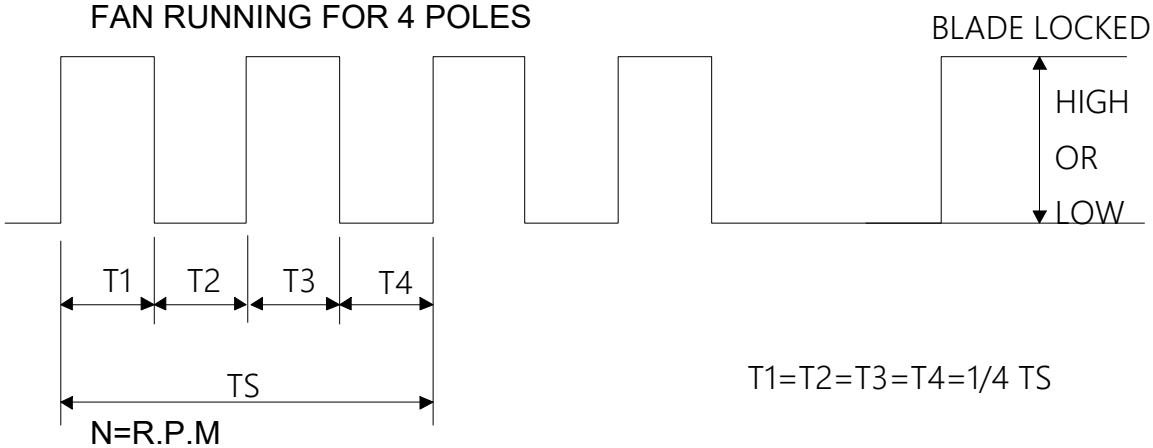
10-2. SPECIFICATION:

V_{FG}= 5.0 TYP.(Vcc MAX.) Ic = 5mA MAX.
V_{CE}= 0.5V MAX. $R \geqq V_{FG}/Ic$

10-3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



T1=T2=T3=T4=1/4 TS

N=R.P.M

TS=60/N(SEC)

*VFG IS ALWAYS HIGH OR LOW LEVEL AFTER BLADE LOCKED

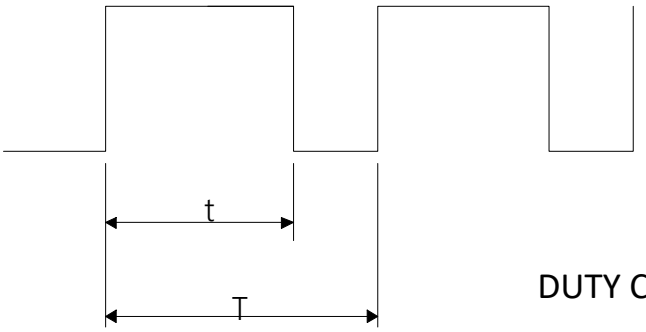
*4 POLES

PART NO:

DELTA MODEL: QFR0624DHP0

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~15 VDC



HIGH SIGNAL: 15 VDC MAX. 3.3 VDC MIN.

LOW SIGNAL: 0.8 VDC MAX. 0 VDC MIN.

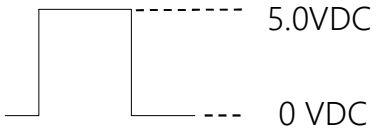
DUTY CYCLE= $\frac{t}{T}$ *100(%)

* THE OPERATING FREQUENCY IS 25KHz.
* AT 100% DUTY CYCLE, THE FAN WILL SPIN AT MAXIMUM SPEED.
* AT 0% DUTY CYCLE,THE FAN WILL STOP SPINNING.
* THE FAN WILL SPIN AT MAXIMUM SPEED WHILE CONTROL SIGNAL LEAD IS DISCONNECTED.
* THE FAN WILL BE ABLE TO START FROM A DEAD STOP WHILE PWM SET AT 25KHZ 30% DUTY CYCLE & RATED VOLTAGE .

12. SPEED VS PWM CONTROL SIGNAL:
(AT 25°C, RATED VOLTAGE & PWM SIGNAL AS FOLLOW)

DUTY CYCLE (%)	SPEED (R.P.M.)	CURRENT(A) (AVG.)★
100	10600±10%	0.35 (MAX. 0.41)
0	0	0.02 (MAX. 0.03)

*PWM SIGNAL
PWM FREQUENCY = 25KHz



★AVG. IS THE AVERAGE VALUE DURING STEADY OPERATION, AND MAX. IS MAXIMUM AVERAGE VALUE INCLUDED PRODUCTION TOLERANCE. ABOUT THE PEAK VALUE, NEED TO USE OSCILLOSCOPE TO MEASURE.