SPECIFICATION FOR APPROVAL

Customer. _____

Description. DC FAN

Part No. _____ REV. _____

Delta Model No. GFC0412DS-SM06B0G REV. 01

Sample Issue No. _____

Sample Issue Date. JUL.29 2016

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

*** SAMPLE HISTORY***

CUSTOMER:

CUSTOMER P/N:

DELTA MODEL: GFC0412DS-SM06B0G

REV.	DESCRIPTION	DRAWN	CHECKED			APPROVED	ISSUE DATE
			ME	EE	CE		
00	ISSUE SPEC	田灝	田灝	吳明憶	---	許家銘 陳榮源	07/23'15
01	REMOVE CE MARK ON LABEL.	田灝	田灝	吳明憶	---	許家銘 陳榮源	07/29'16

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

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

****

■ 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:

Description: DC FAN

Customer P/N: REV:

Delta Model NO.: GFC0412DS-SM06B0G Delta safety model NO.: GFC0412DS-SM06

Sample Rev: 01 Issue NO:

Sample Issue Date: JUL.29 2016 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.)	2.27 (MAX. 2.80) A SAFETY CURRENT ON LABEL: 2.80A
INPUT POWER (AVG.)	27.24 (MAX. 33.6) W
SPEED	FRONT 23000±10% R.P.M. REAR 20500±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	1.065 (MIN. 0.959) M^3/MIN. 37.61 (MIN. 33.85) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	104.39 (MIN. 84.56) mmH_2O 4.110 (MIN. 3.329) inchH_2O
ACOUSTICAL NOISE (AVG.)	69.0 (MAX. 73.0) dB-A
INSULATION TYPE	UL: CLASS A

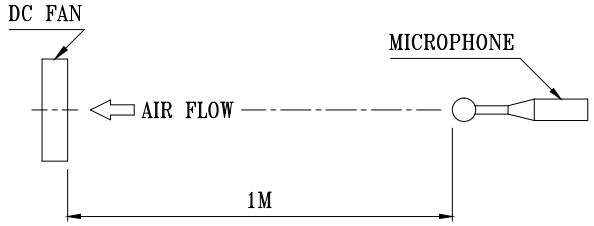
(continued)

PART NO:

DELTA MODEL: GFC0412DS-SM06B0G

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 (L10) AT LABEL VOLTAGE	70,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	TWO FANS ROTATE IN COUNTER DIRECTIONS SHOWED IN THE NAME PLATE SIDE
LOCKED ROTOR 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: GFC0412DS-SM06B0G

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. TOTAL WEIGHT ---------- 83 GRAMS

3-6. FRONT ROTOR WEIGHT ---------- 16 GRAMS

3-7. REAR ROTOR WEIGHT ---------- 14 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ---------- -10 TO +60 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.

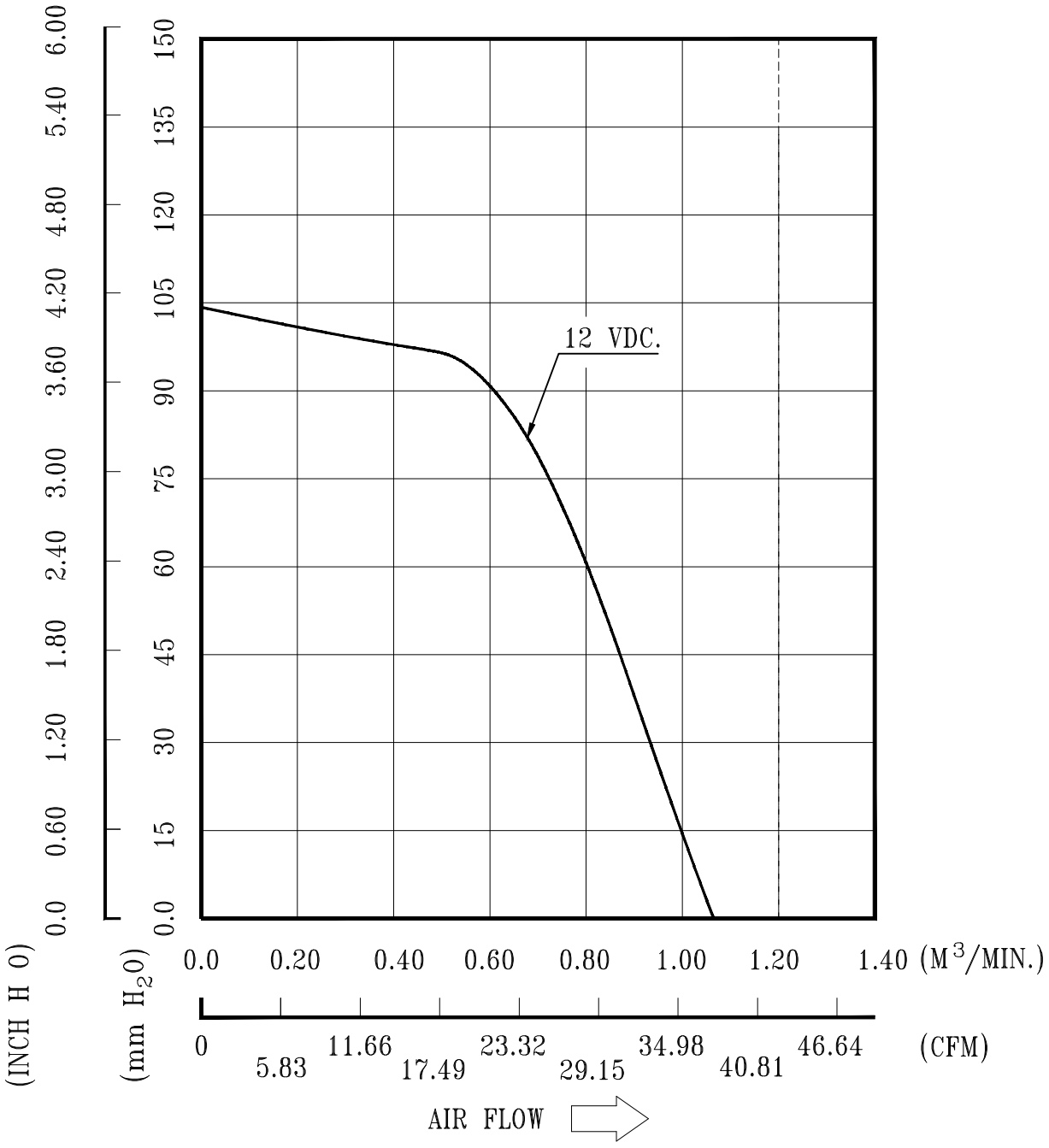
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: GFC0412DS-SM06B0G

8. P & Q CURVE:



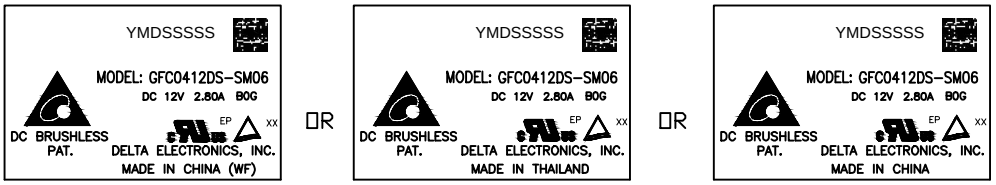
* TEST CONDITION: INPUT VOLTAGE ------- OPERATION VOLTAGE
TEMPERATURE -------- ROOM TEMPERATURE
HUMIDITY ---------- 65%RH

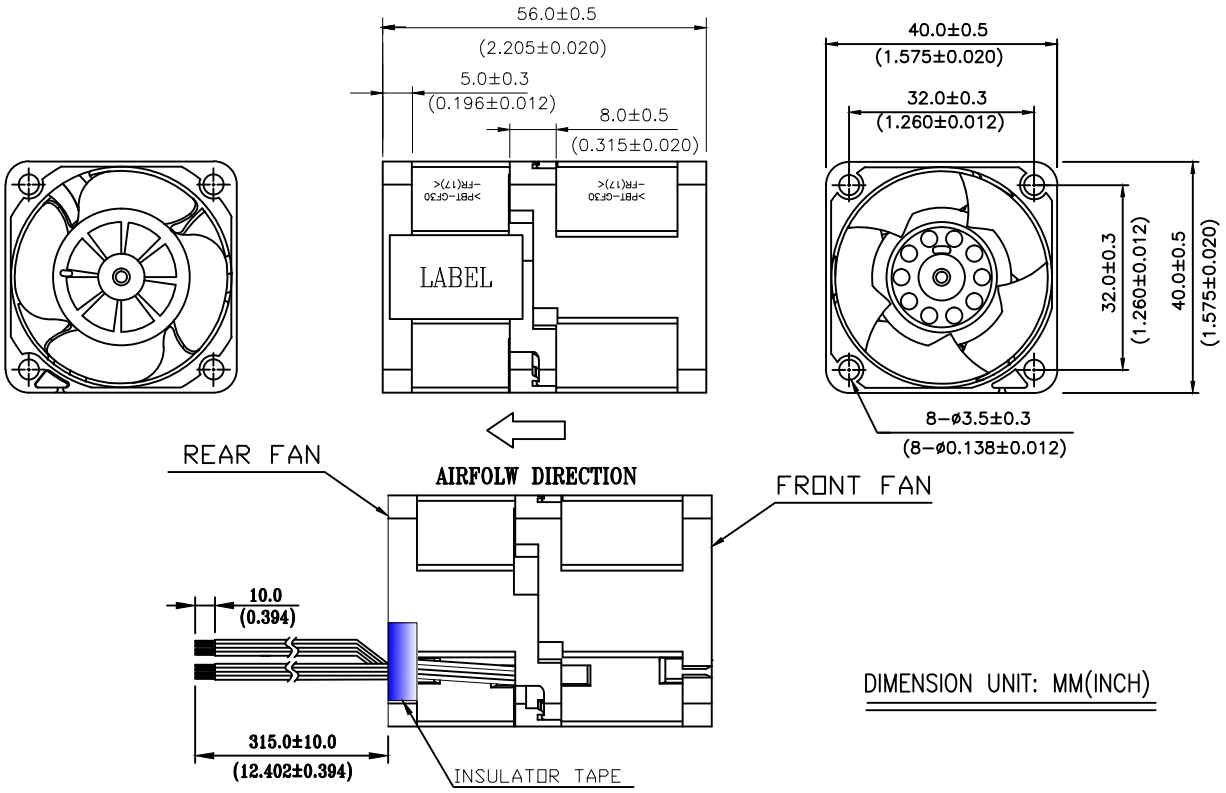
PART NO:

DELTA MODEL: GFC0412DS-SM06B0G

9. DIMENSION DRAWING:

LABEL:





NOTES:

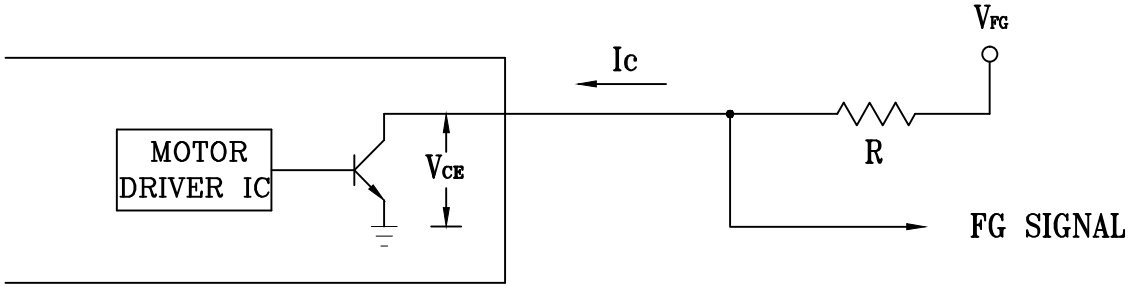
1. LEAD WIRE UL:1061 AWG#28

FRONT FAN (5BLADES)	RED WIRE ------(+)
	BLACK WIRE ------(-)
	WHITE WIRE ------(FOO)
	GREEN WIRE ------(PWM)
REAR FAN (4BLADES)	ORANGE WIRE ------(+)
	GREY WIRE ------(-)
	BLUE WIRE ------(FOO)
	YELLOW WIRE ------(PWM)

2. THIS PRODUCT IS RoHS COMPLIANT.

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



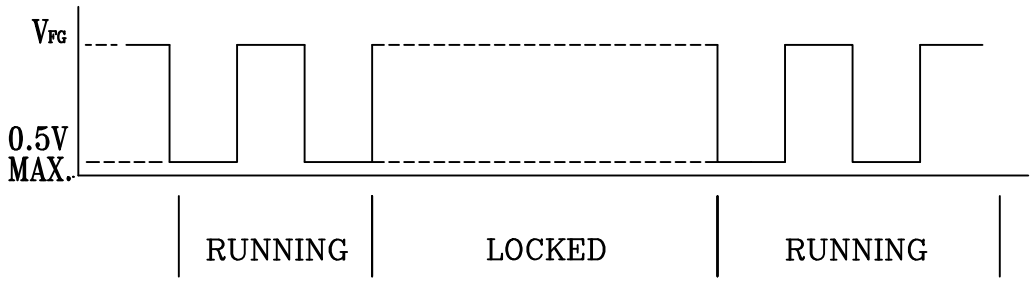
CAUTION:
THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

10-2. SPECIFICATION:

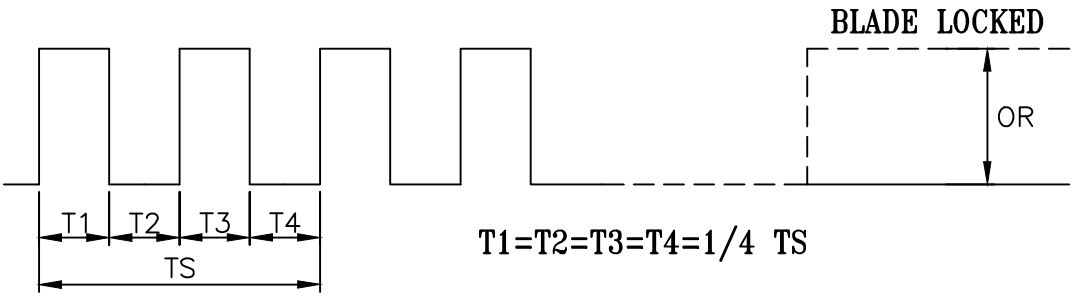
V_{FG} = 12.6V MAX. I_C = 5mA MAX.

V_{CE} = 0.5V MAX. $R \geq V_{FG}/I_C$

10-3. FREQUENCY GENERATOR WAVEFORM:



2 PULSES PER ROTATION

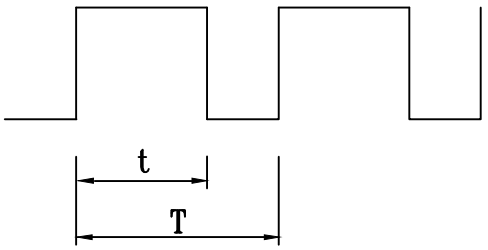


T1=T2=T3=T4=1/4 TS

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

11. PWM CONTROL SIGNAL: (AT RATED VOLTAGE , TEMP=25 DEG.C)

SIGNAL VOLTAGE RANGE: 0~10VDC



HIGH SIGNAL: 10.0 VDC MAX. 3.3 VDC MIN.

LOW SIGNAL: 0.4 VDC MAX. 0.0 VDC MIN.

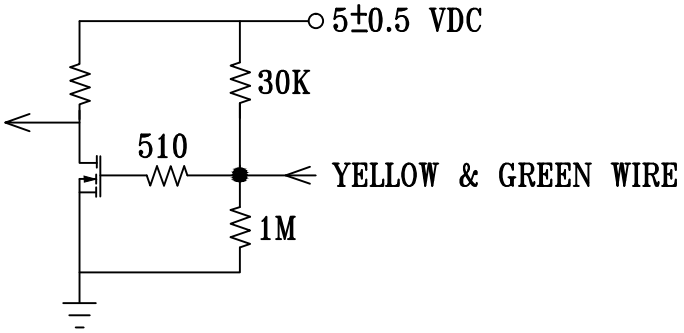
DUTY CYCLE= $\frac{t}{T}$ *100(%)

- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 20KHZ ~ 30KHZ(REF.) WITH DIFFERENT SPEED PERFORMANCE.
- PWM SIGNAL WITH 5VDC TTL OR CMOS LEVELS. THE PREFERRED OPERATING POINT FOR THE FAN IS 25KHZ.
- AT 12V & 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 12V & 0% DUTY CYCLE, THE ROTOR WILL BE STOPPED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED, THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT RATED VOLTAGE & 25KHZ & 20% DUTY CYCLE ,THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

12. SPEED VS PWM CONTROL SIGNAL:
(AT RATED VOLTAGE & PWM FREQ.=25KHZ & TEMP=25 DEG.C)

DUTY CYCLE (%)	SPEED R.P.M. (REF.)		CURRENT (A) TYP.
	FRONT	REAR	TOTAL
100	23000±10%	20500±10%	2.27
50	T.B.D.	T.B.D.	T.B.D.
0	0	0	0.04

13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



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