



## SPECIFICATION FOR APPROVAL

---

---

**Customer** STD

**Description** DC FAN

**Part No.** \_\_\_\_\_ **Rev.** \_\_\_\_\_

**Delta Model No.** GFC0812DW-TD2G **Rev.** 01

**Sample Issue No.** \_\_\_\_\_

**Sample Issue Date.** Nov 04, 13

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

APPROVED BY : \_\_\_\_\_

DATE : \_\_\_\_\_

**DELTA ELECTRONICS (THAILAND) PUBLIC COMPANY LIMITED.**  
111 MOO 9 WELLGROW INDUSTRIAL ESTATE  
BANGNA-TRAD ROAD, TAMBON BANGWUA,  
AMPHUR BANGPAKONG, CHACHOENSAO 24180 THAILAND  
TEL. +66-(0)-38522455, FAX. +66-(0)-38522477

DELTA ELECTRONICS (THAILAND) PCL.  
 111 MOO 9, WELLGROW INDUSTRIAL ESTATE,  
 BANGNA-TRAD ROAD, BANGWUA, BANGPAKONG,  
 CHACHEONGSAO 24180 THAILAND.

TEL : +66-(0)38-522455  
 FAX : +66-(0)38-522477

SPECIFICATION FOR APPROVAL  
 \*\*\*\*\*

Customer: STD  
 -----  
 Description: DC FAN  
 -----  
 Customer P/N: REV:  
 -----  
 Delta Model NO.: GFC0812DW-TD2G Delta Safety Model NO.: GFC0812DW-SM01  
 -----  
 Sample Rev: 01 Issue NO:  
 -----  
 Sample Issue Date: Nov 04, 13 Quantity:  
 -----

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH THREE PHASE AND FOUR POLES.

2. CHARACTERS:

UNLESS SPECIFIED, ALL READINGS AND TESTS ARE BASED ON 25 DEG C, 65% RH.

ITEM	DESCRIPTION
RATED VOLTAGE	12 VDC
OPERATION VOLTAGE	10.8 - 12.6 VDC
INPUT CURRENT	8.27 (MAX. 9.92) A (SAFETY CURRENT 12.00A)
INPUT POWER	99.24W (MAX. 119.09) W
SPEED	FRONT 13500/REAR 11000 R.P.M. ±10%
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	5.015 (MIN. 4.514) M <sup>3</sup> /MIN. 177.10 (MIN. 159.39) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	114.35 (MIN. 92.62) mmH <sub>2</sub> O 4.502 (MIN. 3.646) inchH <sub>2</sub> O
ACOUSTICAL NOISE (AVG.)	80.0 (MAX. 84.0) dB-A
INSULATION TYPE	UL:CLASS A
CURRENT ON LABEL	12.00A

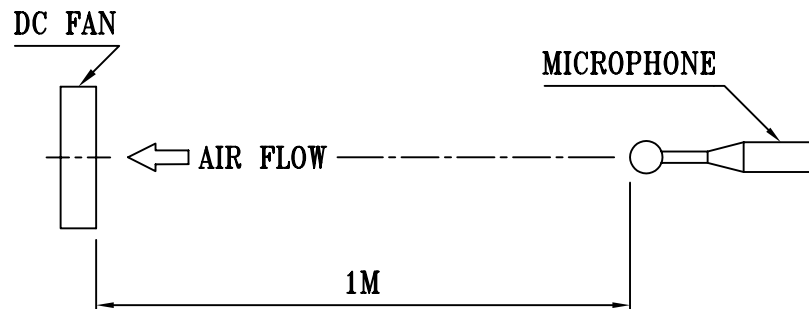
(continued)

PART NO:

DELTA MODEL: GFC0812DW-TD2G

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 VOLATAGE)	L10, 70,000 HOURS AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	TWO FANS ROTATE IN COUNTER DIRECTIONS SHOWED IN THE NAME PLATE SIDE
OVER CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR.
LEAD WIRE	UL 1007 -F- AWG #24 FRONT FAN(SEVEN BLADES): RED WIRE POSITIVE(+) BLACK WIRE NEGATIVE(-) UL 1061 -F- AWG #24 FRONT FAN(SEVEN BLADES): BLUE WIRE FREQUENCY(-F00) GREEN WIRE (-PWM) REAR FAN(FIVE BLADES): ORANGE WIRE POSITIVE(+) BROWN WIRE NEGATIVE(-) REAR FAN(FIVE BLADES): YELLOW WIRE FREQUENCY(-F00) WHITE WIRE(-PWM)

- 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: GFC0812DW-TD2G  
-----

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 ----- BALL BEARINGS
- 3-5. WEIGHT ----- 388 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

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.

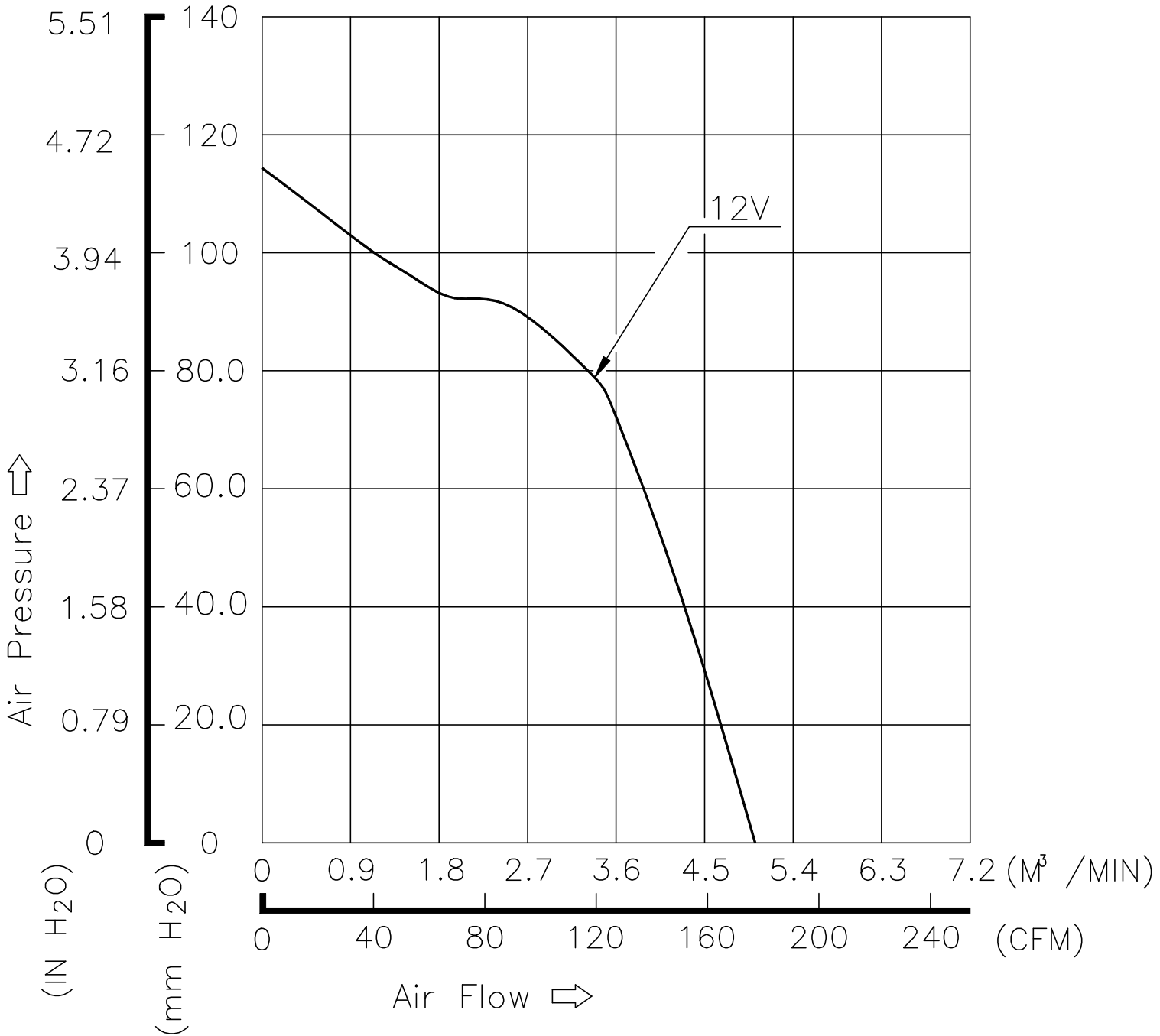
7. PRODUCTION LOCATION

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

PART NO:

DELTA MODEL: GFC0812DW-TD2G

8. P & Q CURVE:



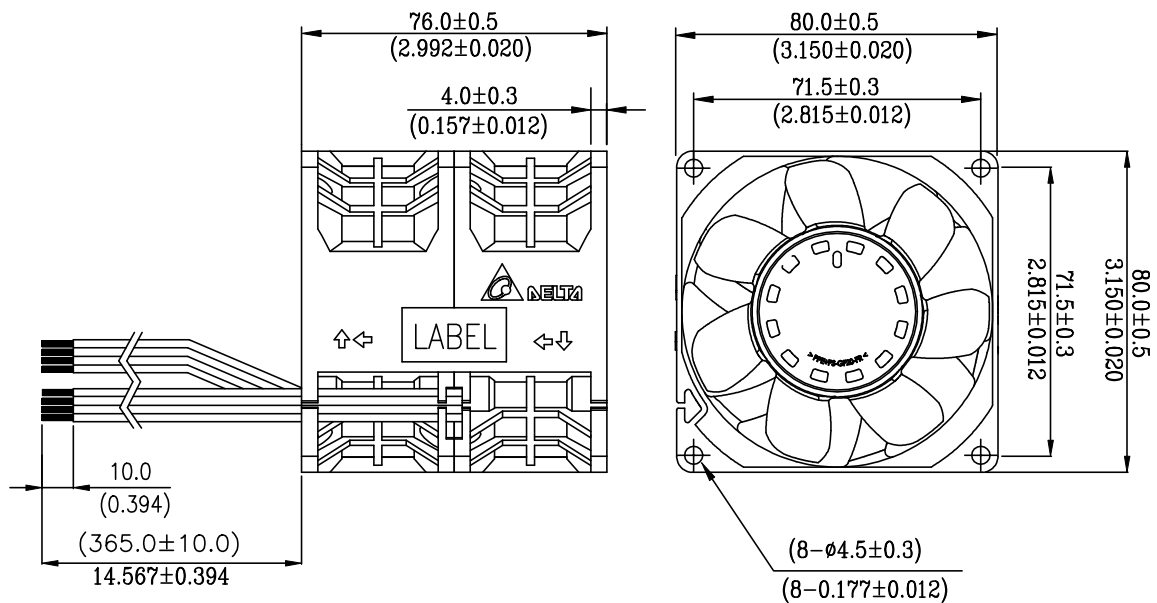
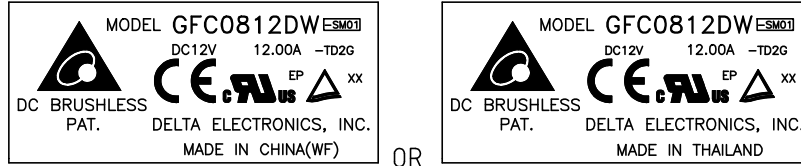
\* TEST CONDITION: INPUT VOLTAGE ----- RATED VOLTAGE  
TEMPERATURE ----- ROOM TEMPERATURE  
HUMIDITY ----- 65%RH

PART NO:

DELTA MODEL: GFC0812DW-TD2G

9. DIMENSION DRAWING:

LABEL:



NOTES

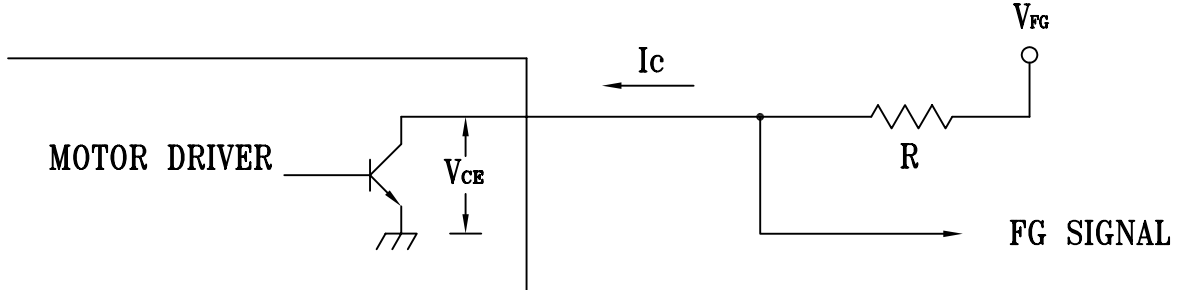
1. WIRE: UL1007 AWG#24  
FRONT FAN(SEVEN BLADES):  
RED WIRE POSITIVE(+)  
BLACK WIRE NEGATIVE(-)  
REAR FAN(FIVE BLADES):  
ORANGE WIRE POSITIVE(+)  
BROWN WIRE NEGATIVE(-)
2. WIRE: UL1061 AWG#24  
FRONT FAN(SEVEN BLADES):  
BLUE WIRE FREQUENCY(-F00)  
GREEN WIRE (-PWM)  
REAR FAN(FIVE BLADES):  
YELLOW WIRE FREQUENCY(-F00)  
WHITE WIRE(-PWM)
3. THIS PRODUCT IS RoHS COMPLIANT

PART NO:

DELTA MODEL: GFC0812DW-TD2G

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:

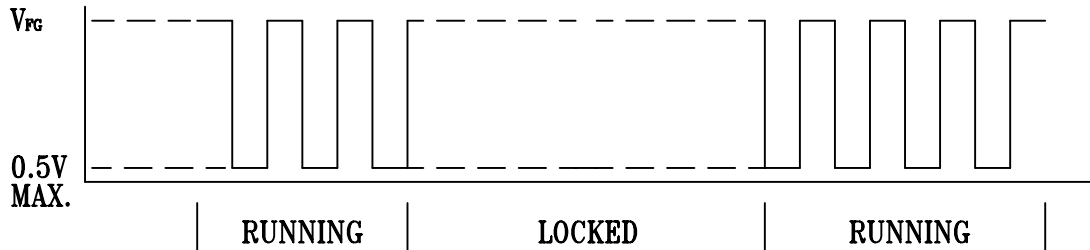
$V_{CE} (sat) = 0.5V \text{ MAX.}$

$V_{FG} = 12.6VDC \text{ MAX.}$

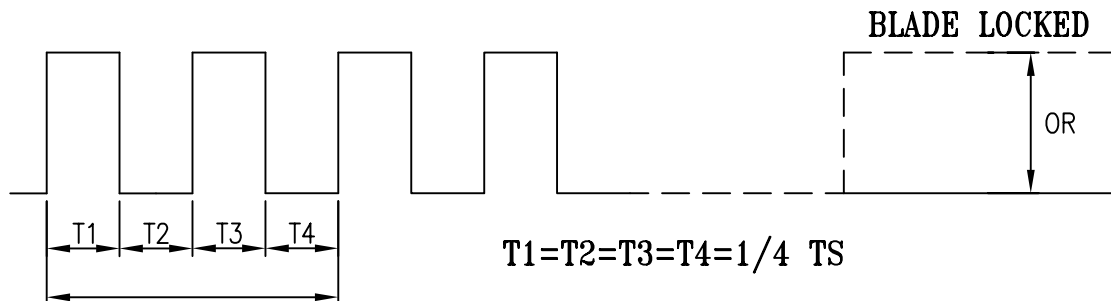
$I_c = 5mA \text{ MAX.}$

$R \geq V_{FG} / I_c$

3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



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

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

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

\*TWO PULSES PER REVOLUTION

\*VOLTAGE LEVEL AFTER BLADE LOCKED

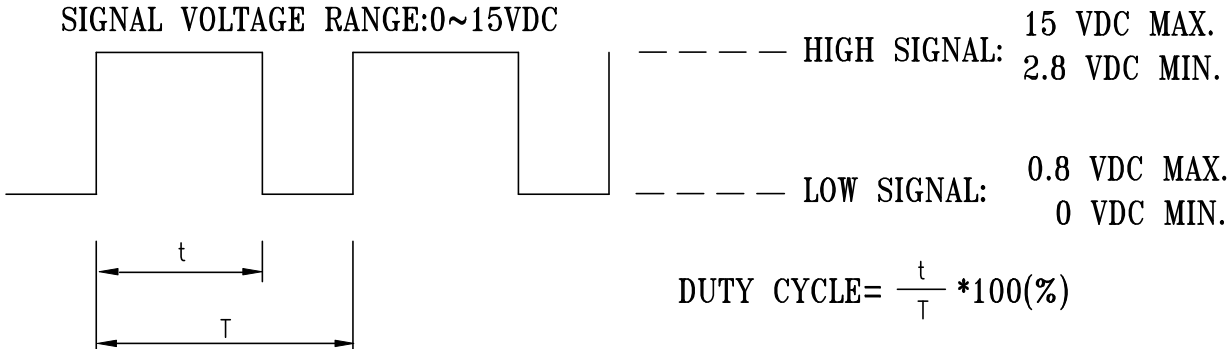
\*4 POLES

PART NO:

DELTA MODEL: GFC0812DW-TD2G

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE:0~15VDC

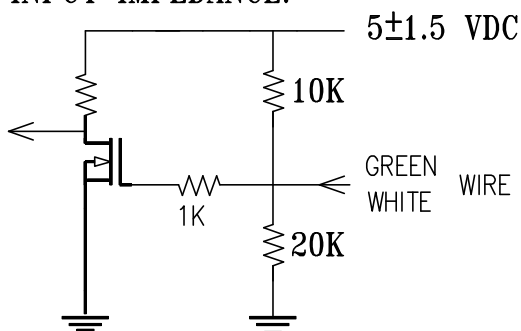


- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT AT 20KHZ~30KHZ.
- THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE,THE ROTOR WILL SPIN AT STOP.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.
- AT RATED VOLTAGE, 25K HZ 30% DUTY CYCLE, THE FAN WILL BE ABLE TO START FROM A DEAD STOP .

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

DUTY CYCLE (%)	SPEED R.P.M. (REF.)		CURRENT (A) TYP.
	FRONT	REAR	TOTAL
100	13500±10%	11000±10%	8.27A
0	0	0	0.03A

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.**



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.