



SPECIFICATION FOR APPROVAL

Customer. _____

Description. DC FAN

Part No. _____ REV. _____

Delta Model No. EFB0512VHBBN REV. 04

Sample Issue No. _____

Sample Issue Date. FEB.14 2017

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

STATEMENT OF DEVIATION

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

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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SPECIFICATION FOR APPROVAL

Customer:

Description:	DC FAN	
Customer P/N:		REV:
Delta Model NO.:	EFB0512VHBBBN	Delta safety model NO.: N/A
Sample Rev:	04	Issue NO:
Sample Issue Date:	FEB.14 2017	Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	13.5 VDC
OPERATION VOLTAGE	9.0 - 16.0 VDC
INPUT CURRENT (AVG)	0.13 (MAX. 0.16) A
INPUT POWER (AVG)	1.76 (MAX. 2.16) W
SPEED	7600 ±15% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.369 (MIN. 0.325) M ³ /MIN. 13.03 (MIN. 11.47) CFM
MAX.AIR PRESSURE (AT ZERO AIRFLOW)	5.65 (MIN. 4.35) mmH ₂ O 0.222 (MIN. 0.171) inchH ₂ O
ACOUSTICAL NOISE (AVG.)	35.0 (MAX. 39.0) dB-A

(continued)

PART NO:

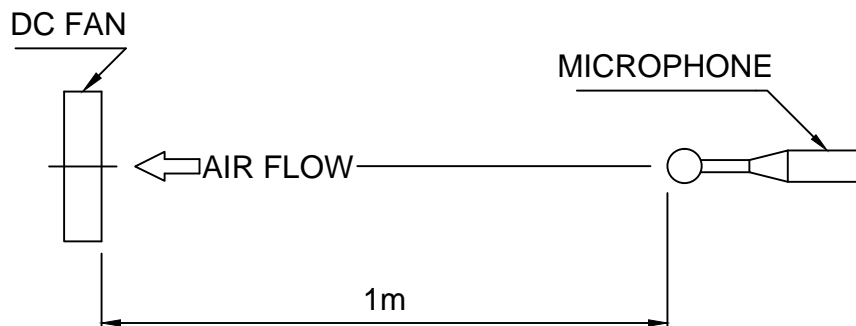
DELTA MODEL: EFB0512VHBBBN

LIFE EXPECTANCE(L10) (AT LABEL VOLTAGE)	8000 HOURS, THE TEMPERATURE PROFILE AS TABLE 1
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
PROTECTION	FAN LOCKED, OVERVOLTAGE AND REVERSE POLARITY PROTECTION

Ambient operating temperature [°C]	Operating time [%]
-40	6
23	20
80	65
100	8
105	1

TABLE 1

- 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 ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF 1M FROM THE FAN INTAKE.

PART NO:

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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 ————— 35 GRAMS (REF)

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE ————— -40 TO +105 DEGREE C
- 4-2. STORAGE TEMPERATURE ————— -40 TO +105 DEGREE C
- 4-3. OPERATING HUMIDITY ————— 5 TO 95 % 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.

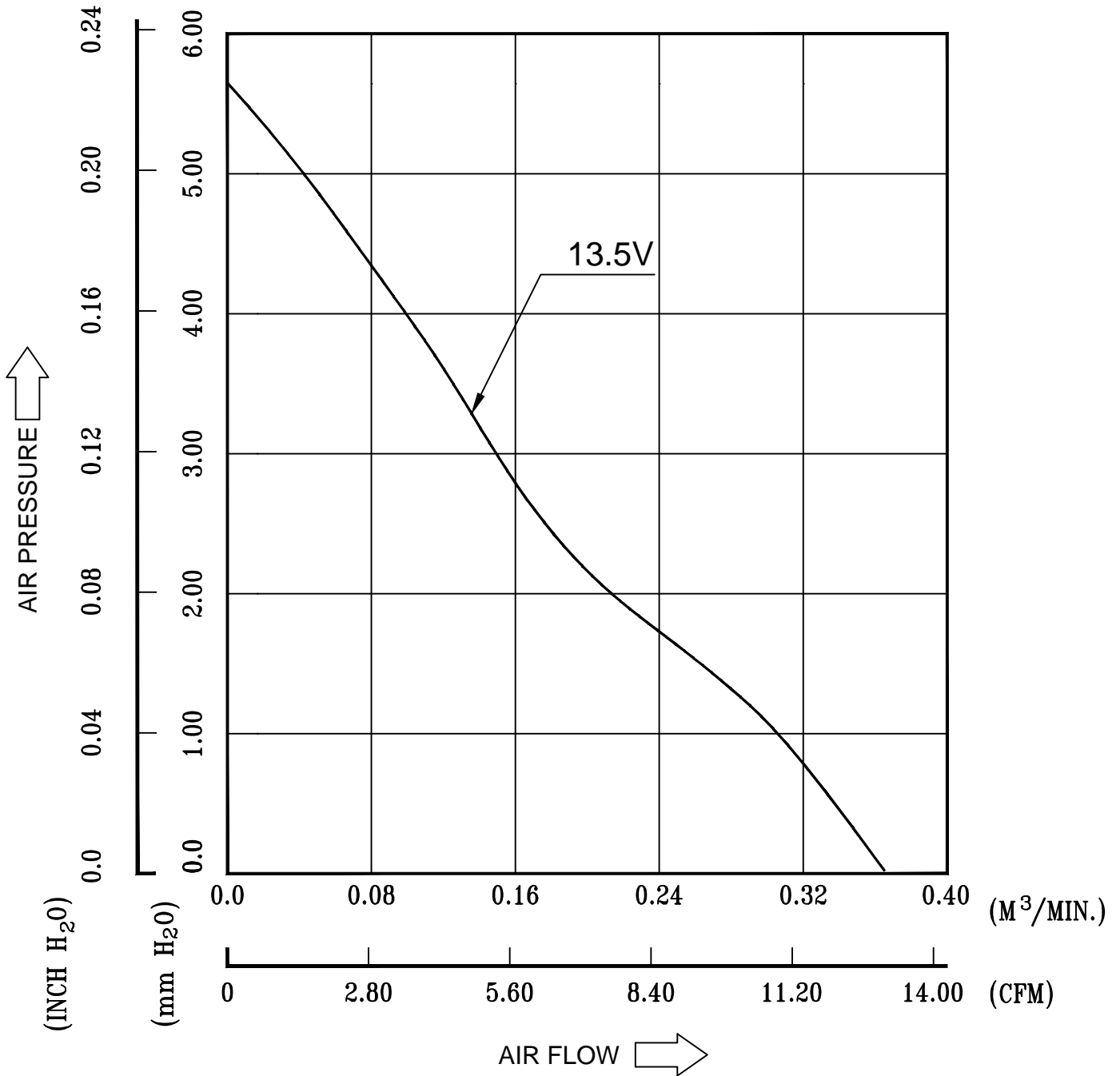
7. PRODUCTION LOCATION

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

PART NO:

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8. P & Q CURVE:



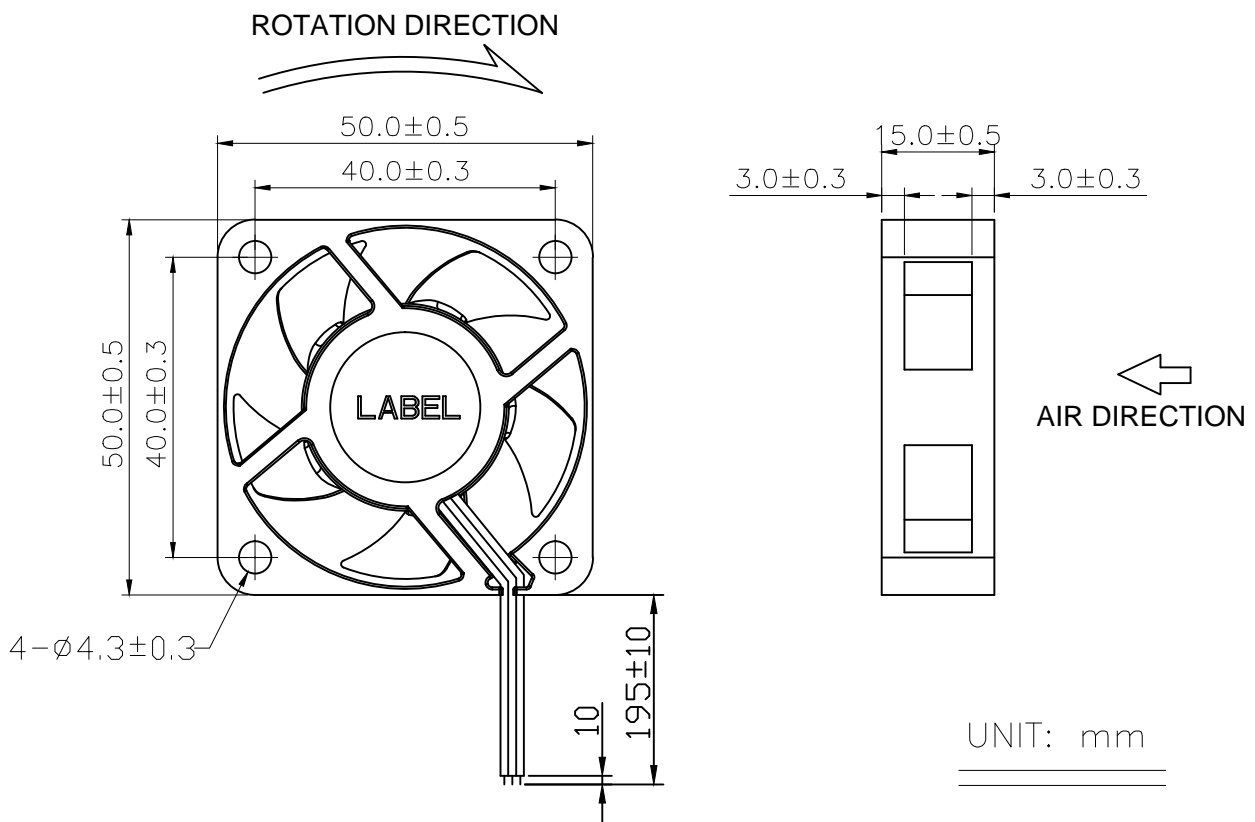
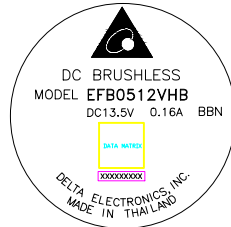
* TEST CONDITION: INPUT VOLTAGE — OPERATION VOLTAGE
TEMPERATURE — ROOM TEMPERATURE
HUMIDITY — 65%RH

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9. DIMENSION DRAWING:

LABEL:



NOTE:

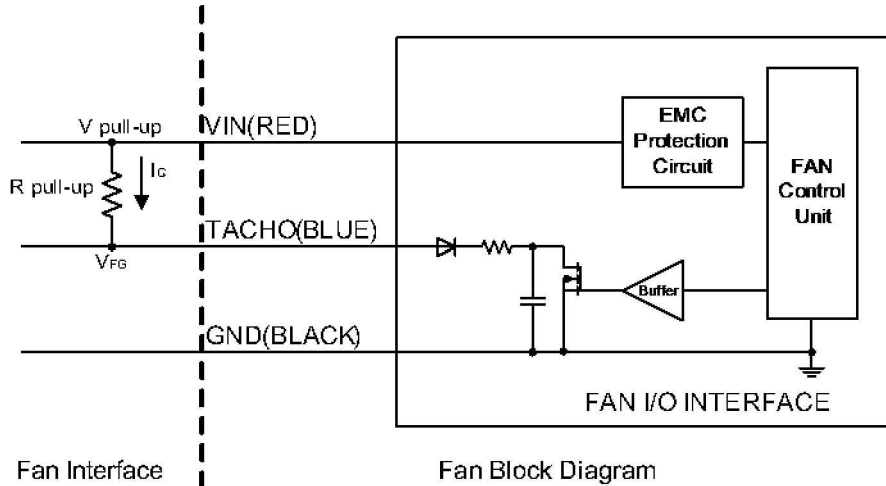
1. LEAD WIRE: FLR2X-A--0.35
RED WIRE : Positive (+)
BLACK WIRE : Negative (-)
BLUE WIRE : F00
2. THIS PRODUCT IS RoHS COMPLIANCE

PART NO:

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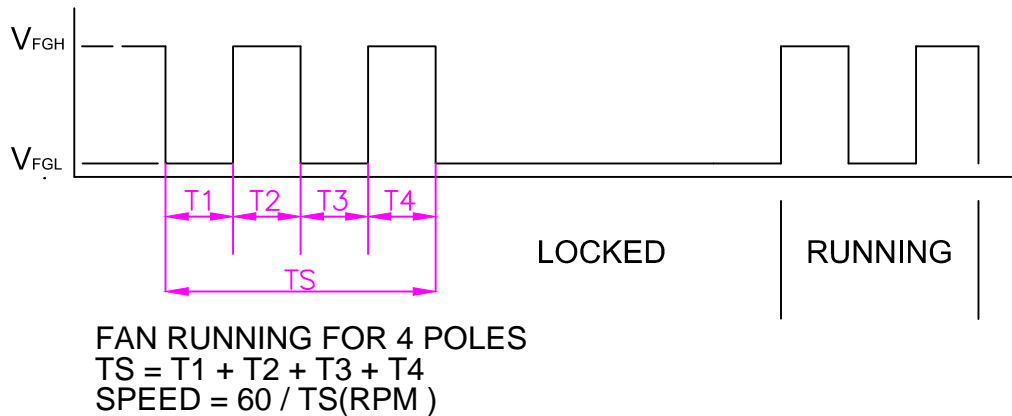
10. FAN INTERFACE:

10-1. FAN BLOCK DIAGRAM



NOTE: THE EXTERNAL PULL UP RESISTANCE (Rpull-up) SHALL NOT EXCEED 3.6K OHM.

10-2. TACHO SIGNAL WAVEFORM:



10-3. TACHO SIGNAL OUTPUT RANGE AND OUTPUT LOGIC LEVEL

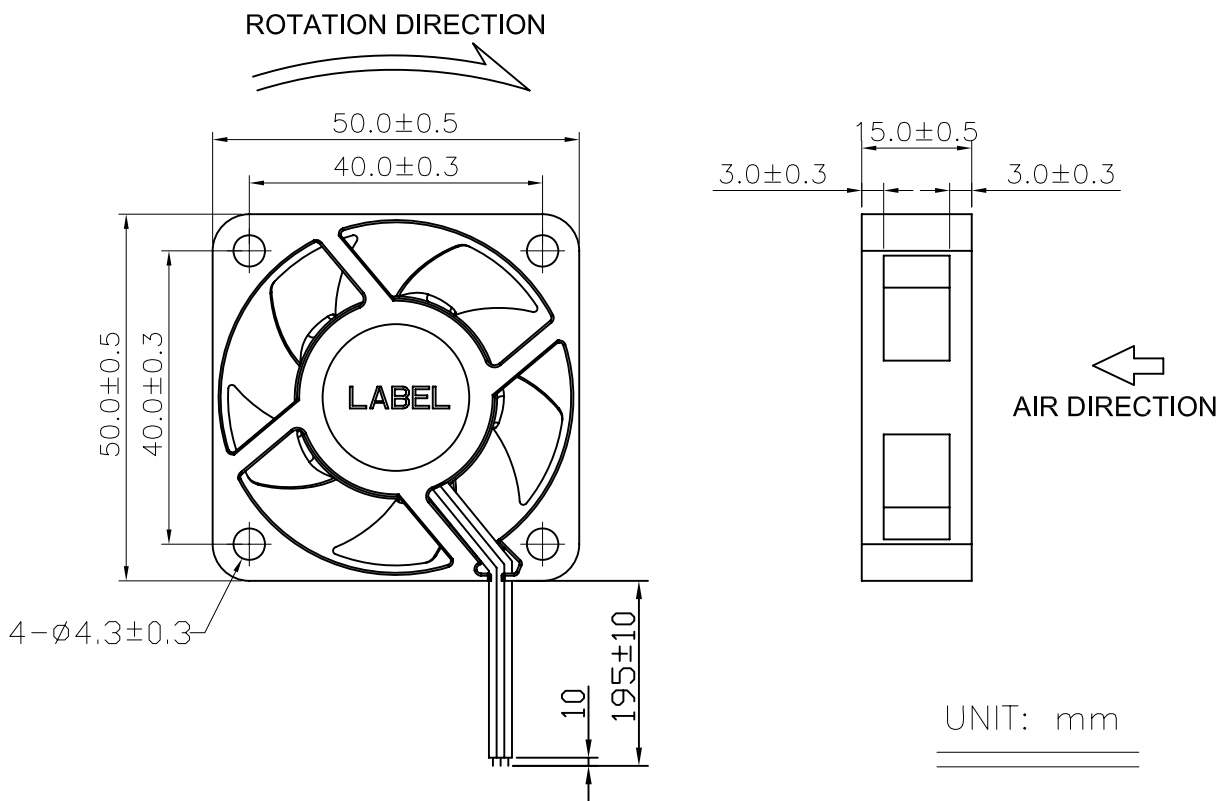
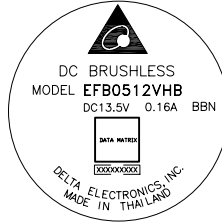
PARAMETERS	MIN	TYP	MAX
$V_{PULL\ UP}$	9.0 V	13.5 V	16.0V
V_{FGH}	0.8 V_{FG}	-	1.0 V_{FG}
V_{FGL}	1.0 V	-	2.0V
$I_{C\ min}$ (WHEN FG WIRE HIGH STATUS)	1.0 mA	-	-
$I_{C\ max}$ (WHEN FG WIRE SHORT TO BATTERY +)	-	-	30.0 mA

PART NO:

DELTA MODEL: EFB0512VHBBBN

9. DIMENSION DRAWING:

LABEL:



NOTE:

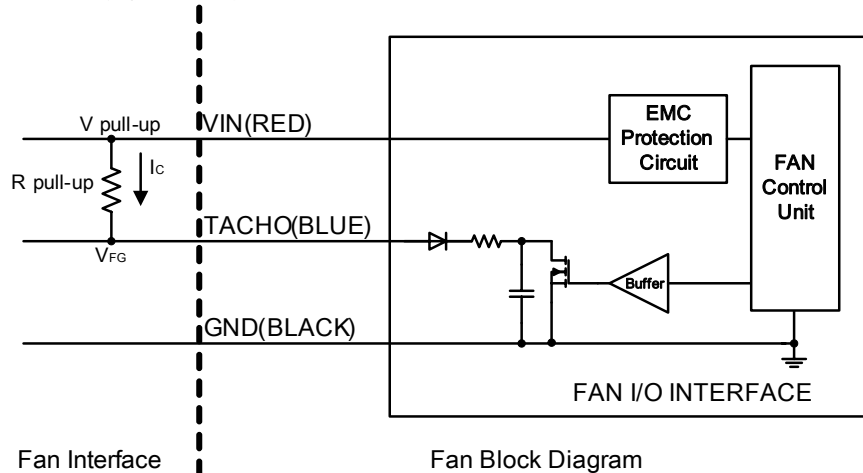
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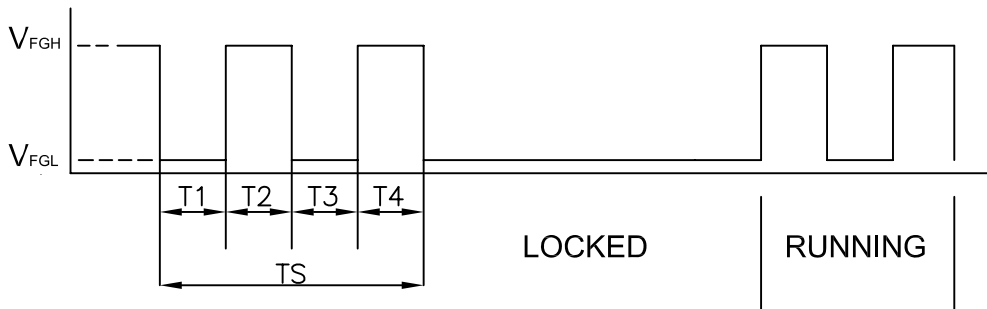
10. FAN INTERFACE:

10-1. FAN BLOCK DIAGRAM



NOTE: THE EXTERNAL PULL UP RESISTANCE (Rpull-up) SHALL NOT EXCEED 3.6K OHM.

10-2. TACHO SIGNAL WAVEFORM:



FAN RUNNING FOR 4 POLES
 $TS = T1 + T2 + T3 + T4$
 $SPEED = 60 / TS(RPM)$

10-3. TACHO SIGNAL OUTPUT RANGE AND OUTPUT LOGIC LEVEL

PARAMETERS	MIN	TYP	MAX
$V_{PULL\ UP}$	9.0 V	13.5 V	16.0V
V_{FGH}	0.8 V_{FG}	-	1.0 V_{FG}
V_{FGL}	1.0 V	-	2.0V
$I_{C\ min}$ (WHEN FG WIRE HIGH STATUS)	1.0 mA	-	-
$I_{C\ max}$ (WHEN FG WIRE SHORT TO BATTERY +)	-	-	30.0 mA



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.**