



SPECIFICATION FOR APPROVAL

Customer : STD

Description : DC FAN

Customer Part No. _____

REV. : _____

Delta Model No. : ASB0305HP-00

REV. : 00

Sample Issue No. : _____

Sample Issue Date : AUG.25 2020

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

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.

TAOYUAN PLANT

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STATEMENT OF DEVIATION

NONE

DESCRIPTION:

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Specification For Approval

Customer : STD

Description : DC FAN

Customer P/N : _____ rev. : _____

Delta model no. : ASB0305HP-00 Delta Safety Model No.: ASB0305HP-00

Sample revision. : 00 Issue no.: _____

Sample issue date : AUG.25 2020 Quantity : _____

1. SCOPE:

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

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	5.0V
OPERATION VOLTAGE	4.5 - 5.5 VDC
INPUT CURRENT(AVG.) #	0.20 (MAX 0.50) A (SAFETY CURRENT ON LABEL : 0.50A)
INPUT POWER(AVG.)	1.00 (MAX 1.3) W
SPEED	9500±15%R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.144 (MIN. 0.123) M3 /MIN. 5.10 (MIN. 4.34) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	3.96 (MIN. 2.86) mmH2O 0.156 (MIN. 0.113) inchH2O
ACOUSTICAL NOISE (AVG.)	29.0 (MAX. 33.0) dB-A
INSULATION TYPE	UL: CLASS A
INSULATION STRENGT	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)

THE MAX VALUE OF CONSUMING CURRENT DOES NOT REPRESENT THE PEAK VALUE
THE PEAK VALUE NEED MEASURE BY OSCILLOSCOPE.

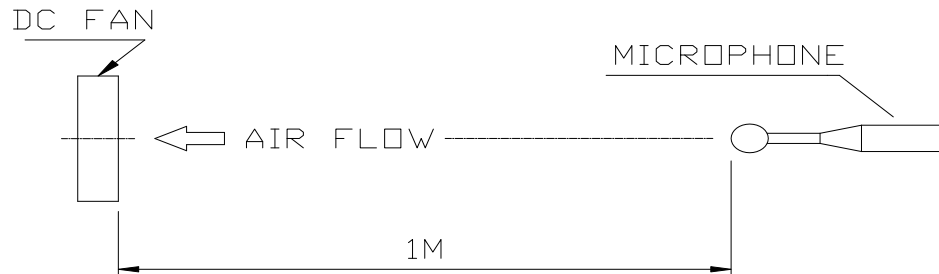
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LIFE EXPECTANCE (L10) (AT LABEL VOLTAGE)	50,000 HOURS CONTINUOUS OPERATION AT 40 ° C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
LOCKED PROTECTION	THE FAN WILL SHUT DOWN WHEN LOCKED ROTOR.

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 ONE METER FROM THE FAN INTAKE.

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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----- SUPERFLO BEARING
- 3-5. WEIGHT----- 4.5 GRAMS(REF.)

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE----- -10 TO +70 DEGREE C
- 4-2. STORAGE TEMPERATURE----- -40 TO +70 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.

6. RE OZONE DEPLETING SUBSTANCES:

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

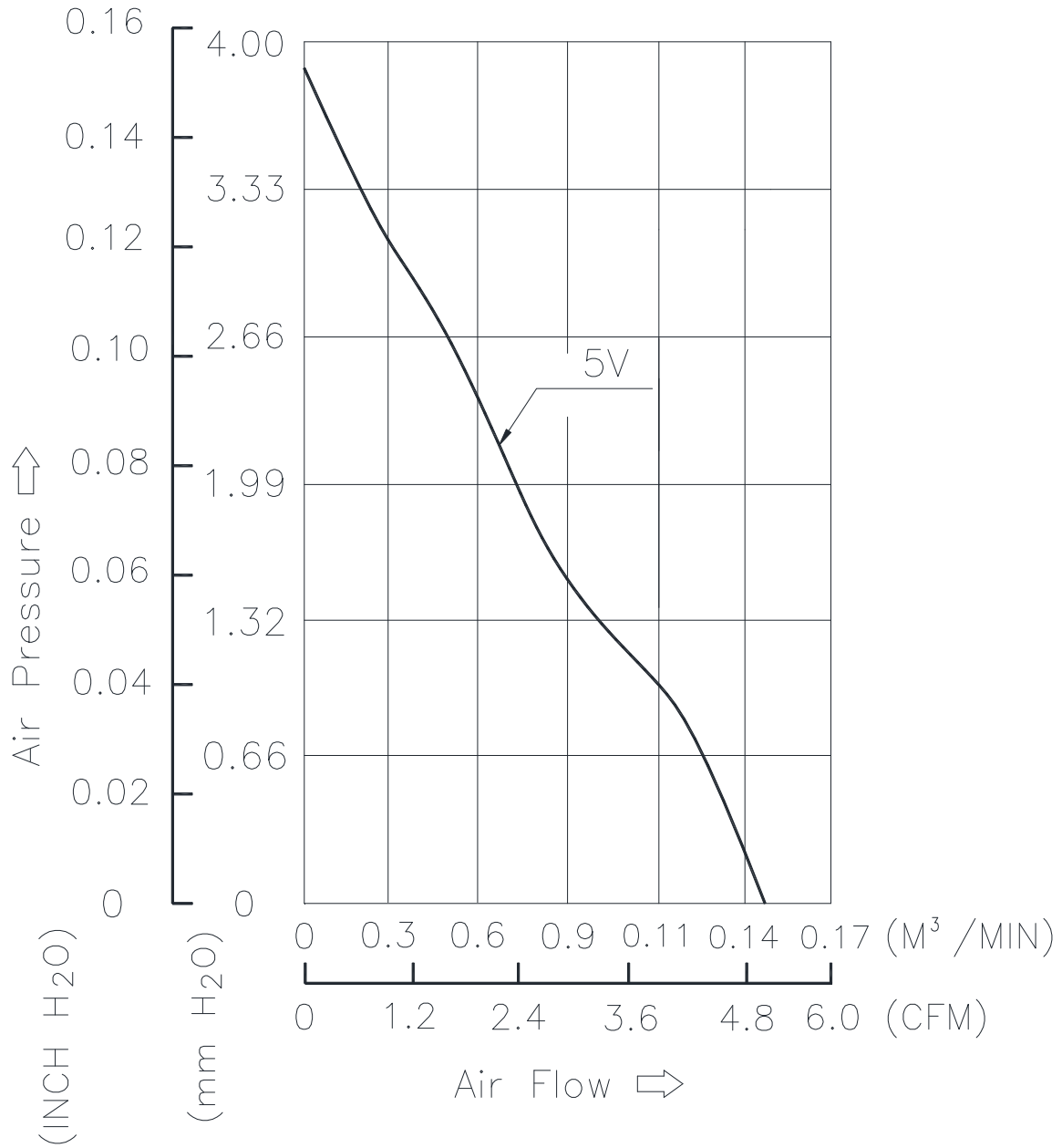
7. PRODUCTION LOCATION

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

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8. P & Q CURVE:



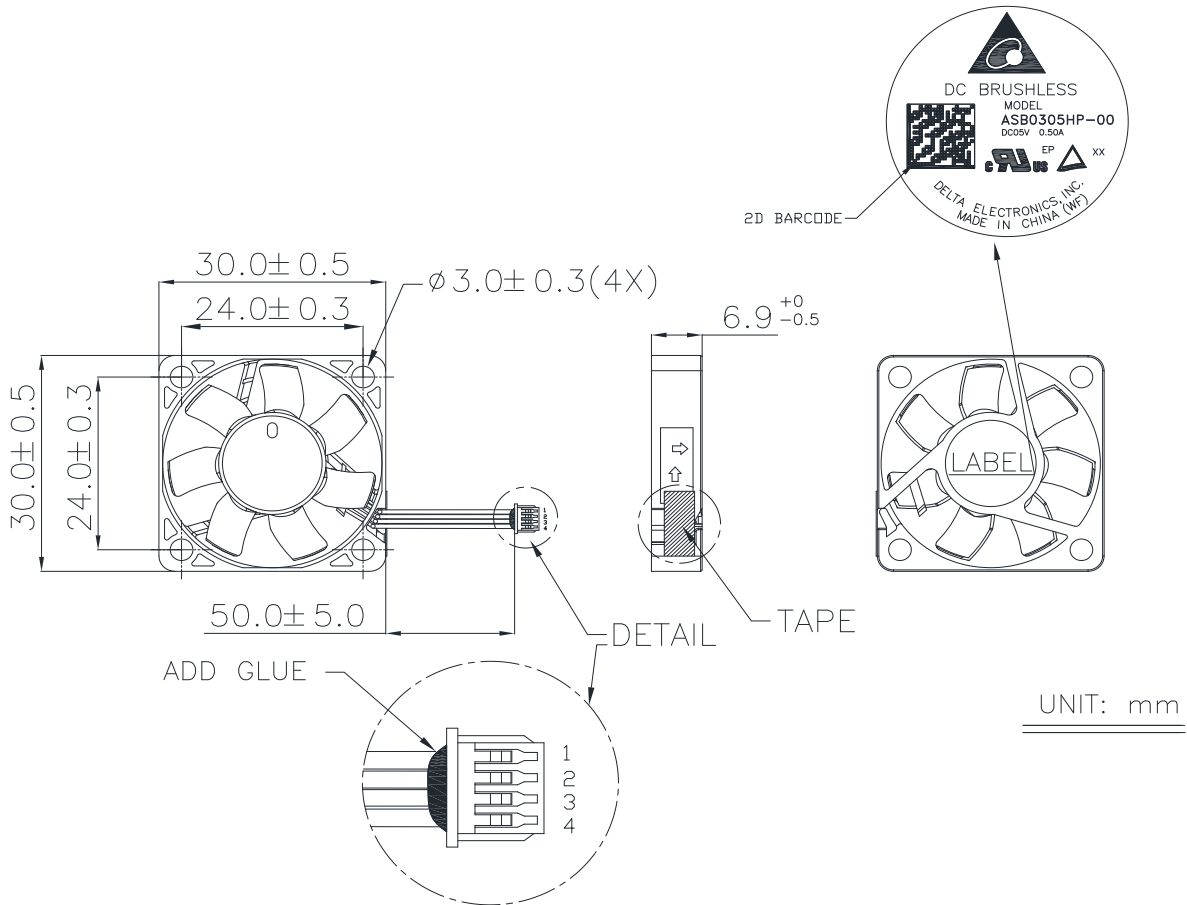
*TEST CONDITION: INPUT VOLTAGE-----OPERATION VOLTAGE
TEMPERATURE-----ROOM TEMPERATURE
HUMIDITY-----65%RH

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9. DIMENSION DRAWING:

LABEL DRAWING:



NOTES :

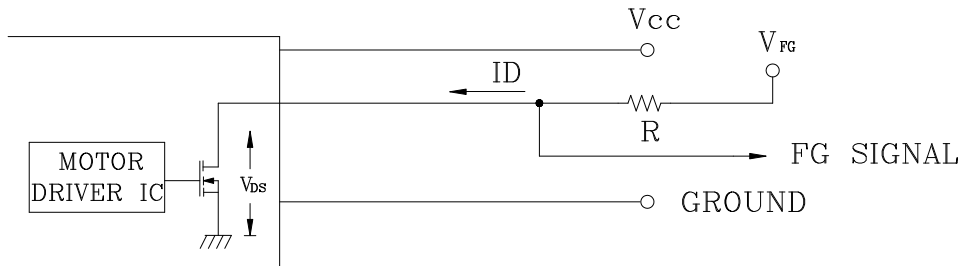
1. HOUSING: JWT A1251H02-4P-HF OR EQUIVALENT ----- 1PC
2. TERMINAL: JWT A1251TOP-2 OR EQUIVALENT MATERIAL ----- 4PCS
3. LEAD WIRE: UL10064 AWG#32
PIN 1: BLUE WIRE----- (PWM)
PIN 2: YELLOW WIRE----- (FOO)
PIN 3: RED WIRE----- (+)
PIN 4: BLACK WIRE----- (-)
4. THIS PRODUCT IS RoHS COMPLIANT.
5. DELTA'S RESTRICTIONS ON HALOGEN APPLY ONLY TO BROMINATED AND CHLORINATED COMPOUNDS. NO OTHER HALOGEN IS RESTRICTED. SUBSTANCES RESTRICTIONS FOR HALOGEN-FREE (INCLUDE FAN PLASTIC PARTS, PWB BOARD, IC, ELECTRICAL MATERIALS & CABLE ASSY),
 - a. BROMINE (Br) < 900 PPM,
 - b. CHLORINE (Cl) < 900 PPM
 - c. (Br) + (Cl) < 1500 PPM.

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10.FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN DRAIN MODE:



CAUTION:

THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "-" LEAD WIRE.

10-2. SPECIFICATION:

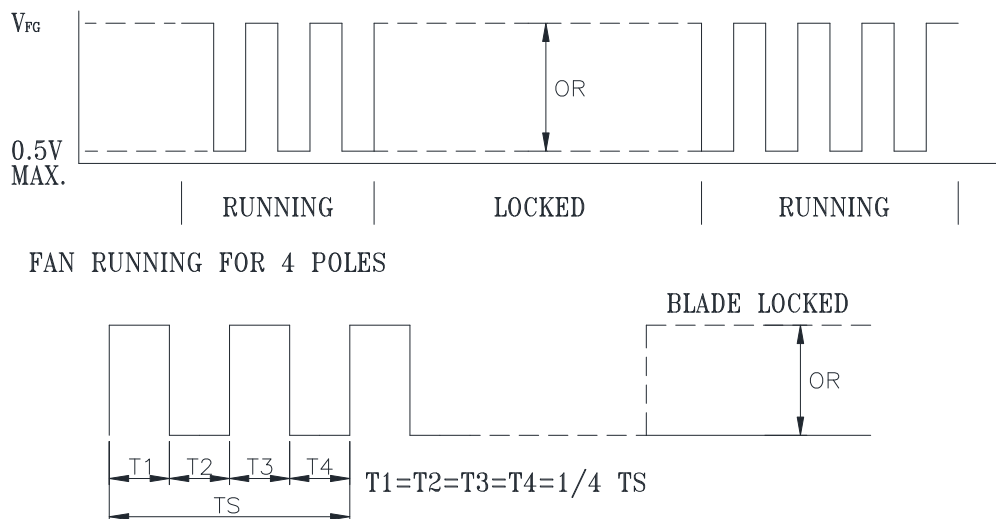
$V_{FG} = 5V$ TYP. (V_{CC} MAX.)

$I_D = 5mA$ MAX.

$R \geq V_{FG} / I_D$

THE RESISTOR R IS NOT INCLUDED IN FAN CIRCUIT AND NEEDS TO BE PROVIDED BY FAN USER

10-3. FREQUENCY GENERATOR WAVEFORM:



$N = R.P.M$

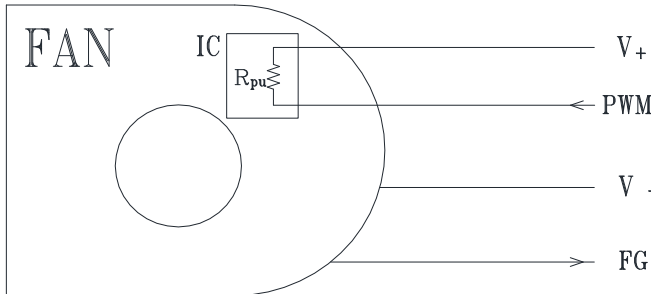
$T_S = 60/N(SEC)$

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11. PWM CONTROL FUNCTION

11-1. PWM CONTROL INTERFACE



SIGNAL VOLTAGE RANGE: $0 \sim (V_+ - 0.5)$ VDC

--- HIGH LEVEL
--- LOW LEVEL

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

Frequency = $\frac{1}{T}$

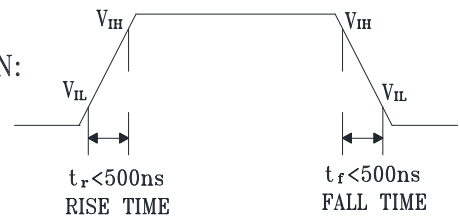
- HIGH LEVEL : $(V_+ - 0.5)$ VDC max.
2.8 VDC min.
- LOW LEVEL : 0.6 VDC max.
0 VDC min.
- R_{pu} : 200Kohm ~ 500Kohm.

- THE R_{pu} IS A SEMICONDUCTING RESISTOR BUILD IN THE IC WAFER OF THE FAN DRIVER FOR THE DEFAULT SETTING.
- THE FREQUENCY FOR CONTROL SIGNAL OF THE FAN SHALL BE ABLE TO ACCEPT A 20KHZ~50KHZ.
- THE PREFERRED OPERATING FREQUENCY OF PWM SIGNAL IS 25KHz.
- AT 100% DUTY CYCLE, THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0% DUTY CYCLE, THE ROTOR WILL STOP TO SPIN.
- DUE TO PULL UP RESISTOR(R_{pu}), WHEN THE PWM CONTROL LEAD WIRE IS DISCONNECTED, THE ROTOR WILL SPIN AT MAXIMUM SPEED.

11-2. THE REQUIREMENT OF WAVEFORM QUALITY OF PWM SIGNAL

- THE RECOMMENDED PWM SIGNAL FROM SYSTEM IS TTL ($t_r=50ns$, $t_f=50ns$), EVEN IF THE PWM LEAD OF FAN IS DISCONNECTED.
- THE MAXIMUM PERMISSIBLE OF WAVEFORM DISTORTION:

$V_{IH} : (V_+ - 0.5) \times 90\%$ RISE TIME : $t_r < 500ns$
 $V_{IL} : (V_+ - 0.5) \times 10\%$ FALL TIME : $t_f < 500ns$



11-3. FAN CHARACTERISTICS

TEST CONDITION : AT 25°C, $V^+ = 5.0VDC$ & PWM SIGNAL AS FOLLOW

* PWM SIGNAL
PWM FREQUENCY = 25 KHz

DUTY CYCLE (%)	SPEED R.P.M.	CURRENT (A) TYP.
100	9500±15%(REF)	0.2(A) (REF)
0	0	0.2(mA)

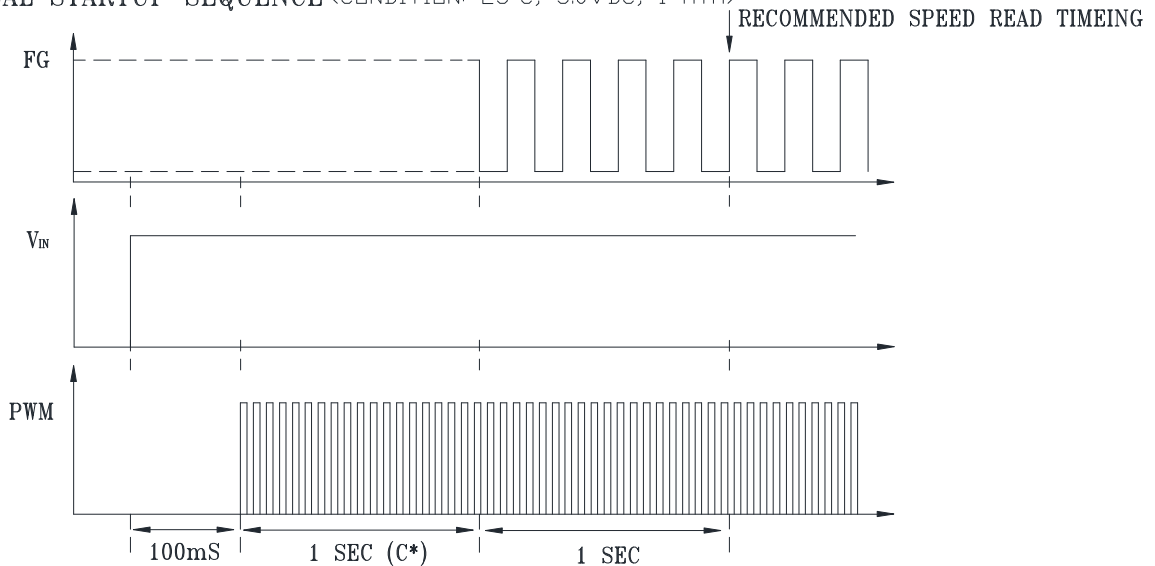


- MIN. STARTED DUTY CYCLE : 30%
WHEN DUTY CYCLE IS SET FOR MORE THAN 30% , THE FAN WILL BE ABLE TO START FROM A DEAD STOP.

PART NO:

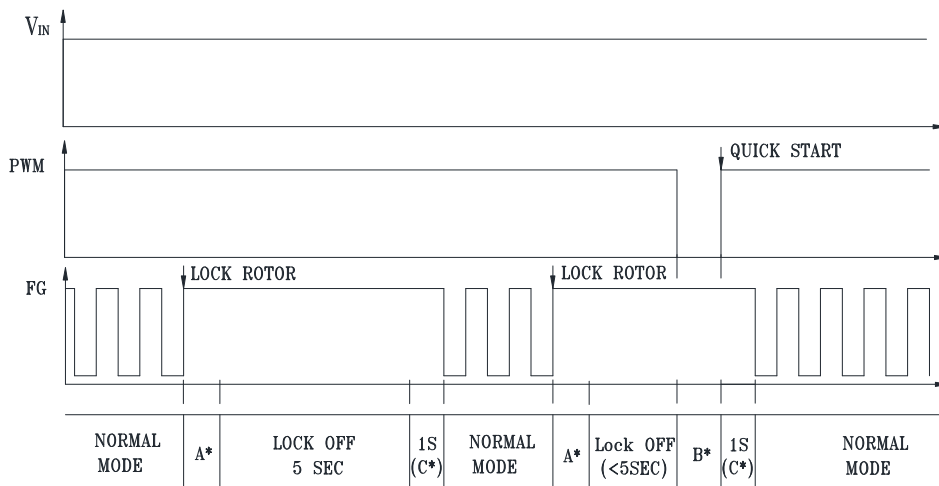
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12. TYPICAL STARTUP SEQUENCE (CONDITION: 25°C, 5.0VDC, 1 ATM)



- THE FIRST 100mS IS USED TO WAIT FOR VCC SETTling.
- THE PWM SIGNAL CAN NOT INPUT BEFORE VCC.

13. DEFINITION OF LOCK DETECTION, LOCK-OFF TIME, AND QUICK START FUNCTION



- A* : TYPICALLY 0.5 SEC FOR LOCK DETECTION.
- B* : COMMONLY 100mS DETECTION TIME FOR LOCK-OFF RELEASE.
- C* : FG OUTPUT DELAY TIME.
- THE 5SEC LOCK-OFF TIME IS ALSO A TYPICAL VALUE AND THE MAXIMUM TOLERANCE IS 10 SECONDS.