

## SPECIFICATION FOR APPROVAL

### ★ 1. SCOPE:

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

### ★ 2. CHARACTERS:

NO	ITEM	SPECIFICATION
2--1	Rated Voltage	<input checked="" type="checkbox"/> 5V <input type="checkbox"/> 12V <input type="checkbox"/> 24V <input type="checkbox"/> 48V
2--2	Starting Voltage	3V(25deg.C Power ON/OFF)
2--3	Operating Voltage Range	3V~5.5V
2--4	Rated Current	0.60Amp (MAX.0.60Amp) <span style="float: right;">Duty cycle =100%</span>
2--5	Rated Power	3.00W (MAX.3.00W) <span style="float: right;">Duty cycle =100%</span>
2--6	Rated Speed	4500RPM $\pm$ 15% 0 RPM <span style="float: right;">Duty cycle =100% Duty cycle =0%</span> (Testing Speed After Continuous 3Minute Operation At Ambient Temperature Of 25°C)
2--7	Air Flow	4.20CFM 0.12m3/min(REF) <span style="float: right;">Duty cycle =100%</span>
2--8	Static Pressure	19.00mmH2O (REF) <span style="float: right;">Duty cycle =100%</span>
2--9	Sound Level	MAX.43 dB(A) <span style="float: right;">Duty cycle =100%</span>
2--10	Product Type	<input checked="" type="checkbox"/> Rohs <input type="checkbox"/> HF <input type="checkbox"/> GP
2--11	Life Expectancy	<input type="checkbox"/> 40,000hours at 40°C <input checked="" type="checkbox"/> 30,000hours at 20°C
2--12	Bearing Type	<input type="checkbox"/> Two Ball <input type="checkbox"/> Ball And Sleeve <input checked="" type="checkbox"/> EBR <input type="checkbox"/> One Ball
2--13	Protection	<input type="checkbox"/> Impedance Protection <input checked="" type="checkbox"/> Auto-Restart <input type="checkbox"/> Current-Limit
2--14	Pole	<input type="checkbox"/> 2 Pole <input type="checkbox"/> 4Pole <input type="checkbox"/> 8Pole <input checked="" type="checkbox"/> Three Phase
2--15	IP Grade	N/A
2--16	Safety Approval	<input checked="" type="checkbox"/> TUV <input checked="" type="checkbox"/> UL <input checked="" type="checkbox"/> CE

## SPECIFICATION FOR APPROVAL

### ★ 3. MECHANICAL:

3--1	DIMENSIONS	SEE DIMENSIONS DRAWING
3--2	FRAME	■ SECC (BLACK)
3--3	IMPELLER	■ LCP (BLACK)
3--4	WEIGHT	40 GRAMS (REF)
3--5	INSULATION TYPE	UL:CLASS A

### ★ 4. ENVIRONMENTAL:

4--1. OPERATING TEMPERATURE----- -10°C~70°C

4--2. STORAGE TEMPERATURE----- -40°C~70°C

4-3. Fan motor storage limitation -----Storage under the standard environmental condition is 1 year.

※ **Standard environmental condition**

**BF095/.Environmental temperature...20°C**

**Relative humidity..65%**

However,It there is no problem in the judgement the environmental temperature and relative humidity range are taken to be 15°C~35°C and 25%~75%.

Storage period in the non-standard environmental conditions is 6 months.

4-4. DIRECTION OF ROTATION----- ☒CLOCKWISE  
☐COUNTER-CLOCKWISE  
(VIEWED FROM LABEL SIDE)

4-5. DIELECTRIC STRENGTH ----- APPLIED AC 500V FOR ONE MINUTE OR  
AC 600V FOR SECONDS BETWEEN HOUSING  
AND LEAD WIRE(+)

4-6. INSULATION STRENGTH-----MORE THAN 10 M OHM INTERNAL STATOR  
AND LEAD WIRE(+) MEASURED AT DC 500V

4--7. Vibration test (No Power) ----- Vibration of acceleration  $60 \text{ m/s}^2$  and frequency  $20\sim 2000\text{Hz}$  is applied in the 3 directions, each direction at the cycle of 5 minute.

4--8. Thermal shock test(No Power)-----Fan is stored 500 time cycles in the following conditions:- $20^{\circ}\text{C}$  30min and  $70^{\circ}\text{C}$  30min. Switch between cold and hot environments should not exceed 5min.

4--9. NOISE TEST ----- MEASURED IN A SEMI-ANECHOIC CHAMBER WITH BACKGROUND NOISE LEVEL BELOW 19DB(A). THE FAN IS RUNNING IN FREE AIR WITH THE MICROPHONE AT A DISTANCE OF 0.5 METER FROM THE FAN INTAKE

4--10. Locked rotor-Test -----The rotor is kept locking for 72 hours at the range of operating temperature and operating voltage.

★ 5. NOTES:

5--1. THE ABOVE STANDARD SHOULD BE THE SPECIFIED VALUE AT NORMAL TEMPERATURE ( $25^{\circ}\text{C}$ ) AND NORMAL HUMIDITY (60~65%) UNLESS OTHERWISE NOTICED.

5--2. SPECIFICATION CHANGE:  
ANY CHANGES TO THE PARAMETERS SPECIFIED IN THIS DOCUMENT WILL BE DETERMINED BY MUTUAL AGREEMENT ON BOTH PARTIES.

5--3. IT IS VERY IMPORTANT TO CHECK THE POLARITY CORRECTLY BEFORE CONNECTING THE FAN TO THE POWER SOURCE. POSITIVE (+) AND NEGATIVE (-). DAMAGE MAY BECAUSE 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.



## SPECIFICATION FOR APPROVAL

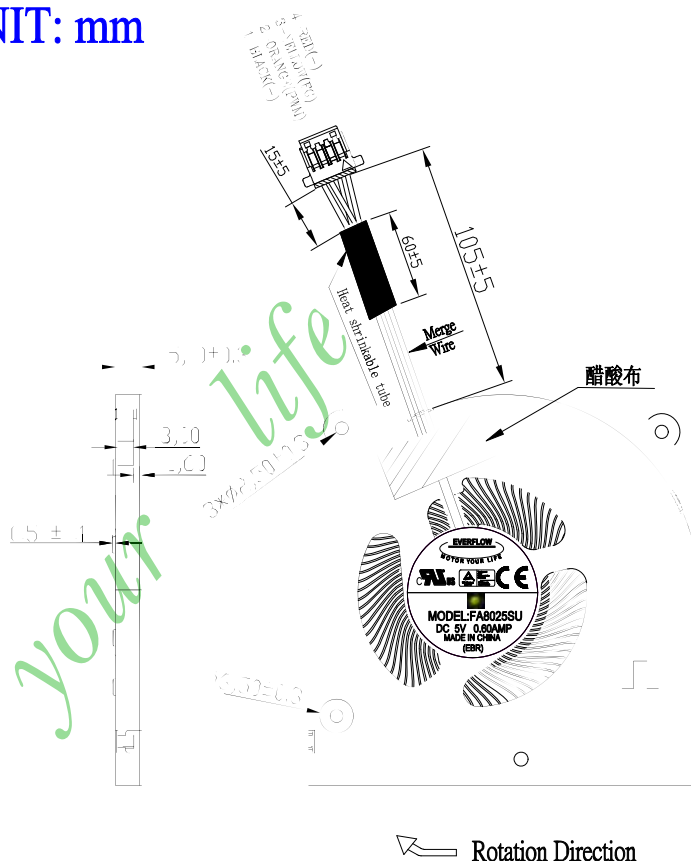
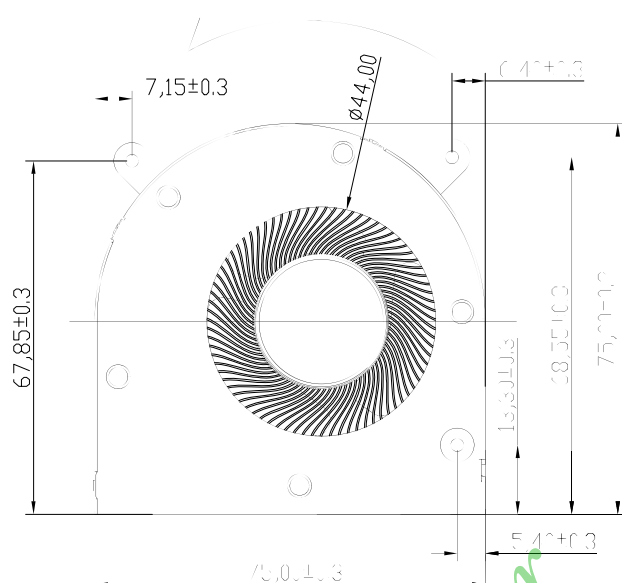
- 5--4. PLEASE BE CAUTIOUS WHEN MOUNTING THE FAN . INCORRECT MOUNTING OF FANS MAY CAUSE EXCESS RESONANCE, VIBRATION AND SUBSEQUENT NOISE, EVEN SCREW HOLE BROKEN.
- 5--5. PLEASE EXERCISE CAUTION WHEN HANDLING FANS. DAMAGE MAY BE CAUSED BY OUTSIDE ABNORMAL PRESSURE OR ENVIRONMENT STRESS DURING MOVING.
- 5--6. All THE FANS SHALL MEET THE QUALITY INSPECTION UNDER SAMPLING PLAN MIL-STD-105E AS FOLLOW, 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 CASSED BY THE INVADING OF POWDER, DROP LOTS OF WATER OR ENCROACHMENT OF INSECT INTO THE HUB.
- |          |       |
|----------|-------|
| CRITICAL | 0.25% |
| MAJOR    | 1.00% |
- 5--7. CUSTOMER SHALL CONFIRM THE MATCHING AND RELIABILITY OF FAN ON ACTUAL SET OR UNIT APPLICATION.THIS INCLUDE CONFIRMATION ON SET OR UNIT LIFE, ELECTRICAL NOISE, MECHANICAL NOISE, VIBRATION, STATIC ELECTRICITY, ELECTRIC POWER NOISE, DRIFT,ELECTRIC RESONANCE BETWEEN MOTOR AND CONTROL CIRCUIT, MECHANICAL RESONANCE BETWEEN MOTOR AND CHASSIS, IRREGULAR MOVEMENT OF SET DUE TO MOTOR NOISE, IRREGULAR MOVEMENT OF SET INSTRONG ELECTROMAGNETIC FIELD, DAMAGED BY LIGHTNING SURGE EARTHING METHOD ETC.
- 5--7. ANY REVISIONS ON THE SPECIFICATION SHALL BE DONE BASED ON MUTUAL DISCUSSION AND AGREEMENT.
- 5--8. IN ORDER TO IMPROVE THE PERFORMANCE WITHIN THE SCOPE OF SPECIFICATION, PARTS OR MATERIAL CHANGES ARE SUBJECT TO PRIOR NOTICE TO CUSTOMER.
- 5--9. ANY ITEM WHICH IS NEEDED TO ADD INTO SPECIFICATION SHALL BE DETERMINED ON CUSTOMER'S PRIOR WRITTEN REQUEST. IF NO INFORMATION GIVEN, FAN WILL BE DELIVERED BASED ON OUR STANDARD JUDGMENT.
- 5--10. WHEN ANY TROUBLE OCCURS, BOTH PARTIES SHALL DISCUSS ON THIS SPECIFICATION TO SOLVE THE MATTERS. IN THIS CASE, OUR GUARANTEE IS ONLY LIMITED TO FANS.

REVISE

A

F058025SUAF 48BaR

## ★ 6. DIMENSION DRAWING. UNIT: mm

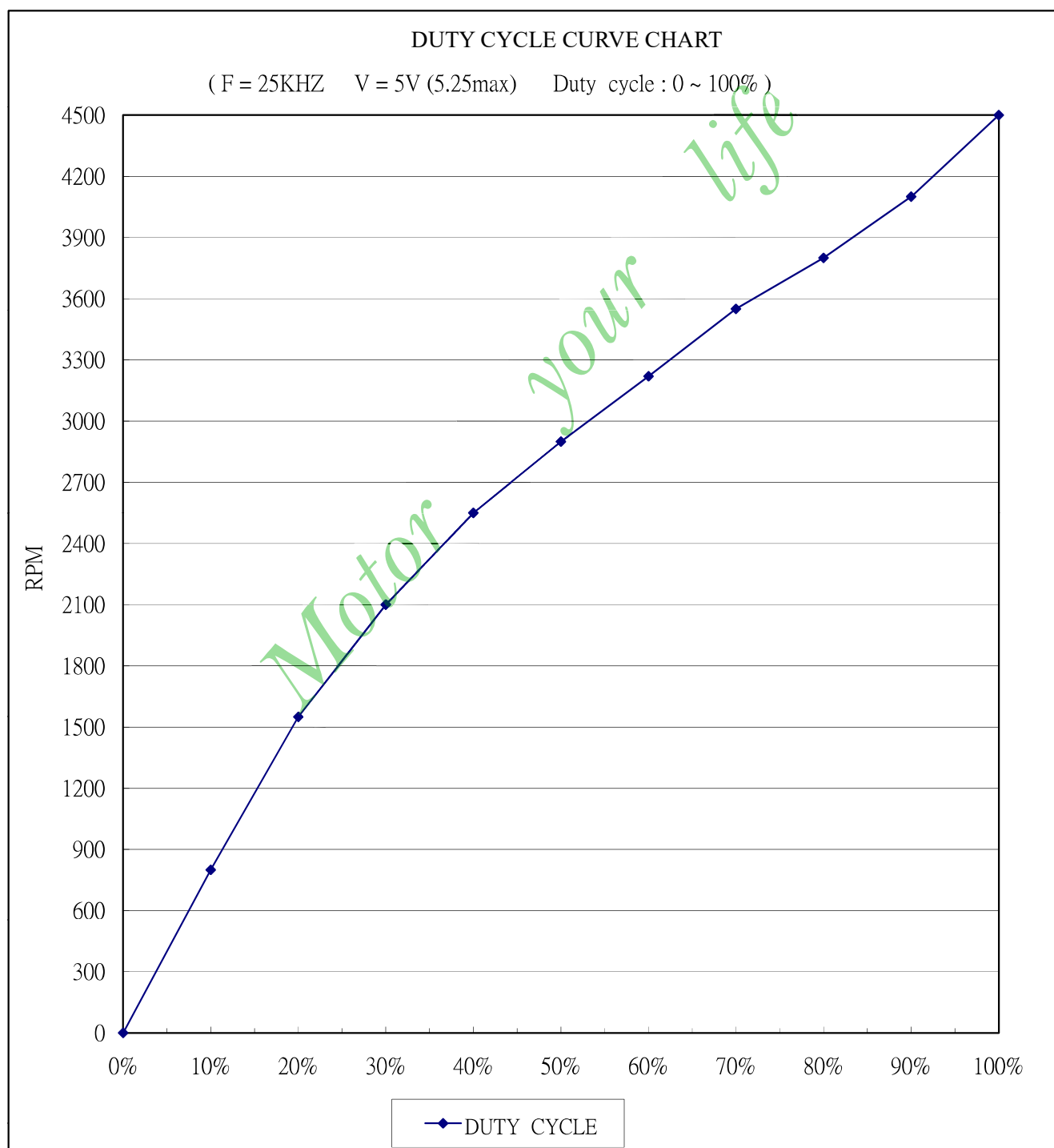


### NOTES:

1. LEAD WIRE UL 1571 AWG 30#  
PIN 1: BLACK WIRE—(-)  
PIN 2: ORANGE WIRE—(PWM INPUT)  
PIN 3: YELLOW WIRE—(SIGNAL)  
PIN 4: RED WIRE—(+)
2. HOUSING: JST-SHR-4P (白色) OR EQUIVALENT

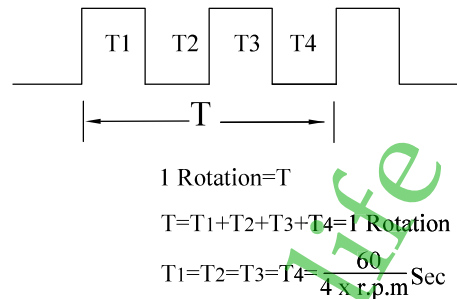
★ 7. DUTY CYCLE CURVE CHART

DUTY CYCLE	SPEED (RPM)	RANGE	CURRENT
0	0	0	<0.02A
100%	4500	±15%	<0.60A



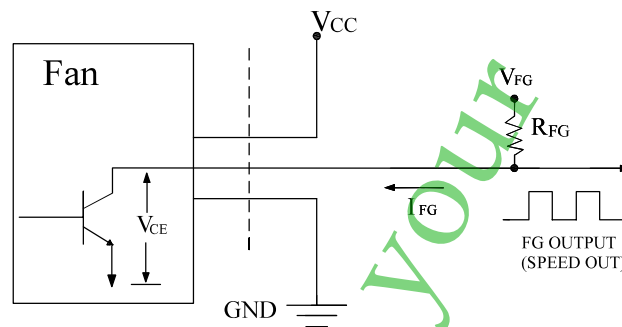
## ★ 8. CHARACTERISTICS & DEFINITION

- 4 Pole Motor: Fan with 4 pole motor.



- FG(Frequency Generator)Signal External Circuit:

Open-collector output for rotation frequency detection

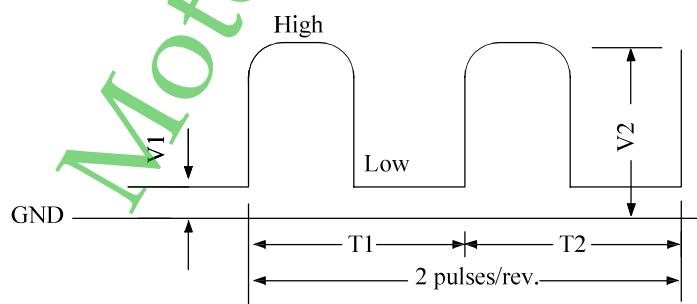


Note: Max.  $V_{FG} = 5.5 \text{ VDC}$ , Max.  $I_{FG} = 5 \text{ mA}$ ,  $\Rightarrow R_{FG} \geq V_{FG} / I_{FG}$

When  $V_{FG} = 3.3 \text{ V}$  We Recommend  $R_{FG} = 4.7 \text{ K}\Omega$

- FG(Frequency Generator)Type Output Waveform:

1. Motor Rotating Condition (at  $25^\circ \text{C}$ ,  $V = 5 \text{ VDC}$ )



$V1$ : within  $0.5 \text{ V}$  when  $I_{FG}$  less Than  $3 \text{ mA}$

$V2$ :  $V_{FG}$ , FG signal output voltage, maximum rating:  $5.5 \text{ VDC}$   $V2 \text{ min} = V_{FG} - 0.8 \text{ V}$

Duty =  $T1 / (T1 + T2) \times 100 = 50 \pm 20\%$  (measured between  $0.3 \times V2 \sim 0.7 \times V2$ )

$V1 \sim V2$  rise time: less than  $1.0 \text{ ms}$

$V2 \sim V1$  fall time: less than  $1.0 \text{ ms}$

Rotation Speed (RPM) =  $(60/2) \times f_{FG} = 30 \times f_{FG}$

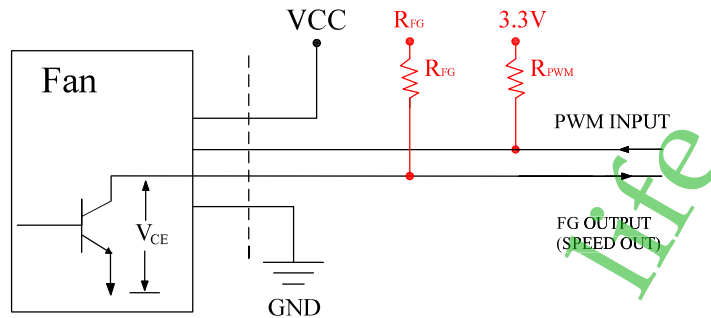
$f_{FG}$ : frequency of FG output waveform (Hz)

2. Motor locked condition (at  $V_{cc} = 5.0 \text{ VDC}$ )

Output is fixed at low or high when motor is locked.

## ★ 9. CHARACTERISTICS & DEFINITION

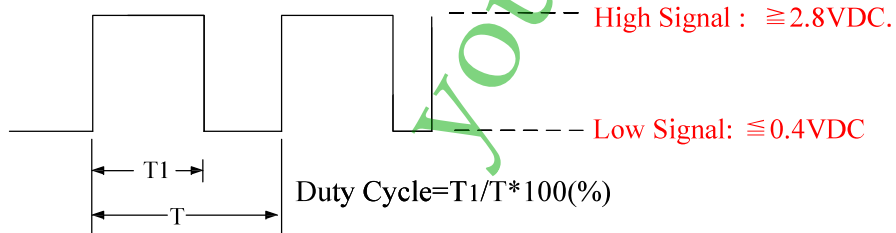
- PWM Circuit:(for reference)



When  $V_{RPM} = 3.3V$  We Recommend  $R_{PWM} = 4.7K\Omega$

- PWM Control Signal Input:

Signal Voltage Range :DC 0V ~5.5V ( $V = 5V$ )



- 1.The 25KHz operating frequency(customer preferred)has been tested and checked.
- 2.At 100% duty cycle, The fan will operate at maximum speed.
- 3.The fan will default to operate at maximum speed when the speed control input(PWM input)is left unconnected.



