

1. SCOPE

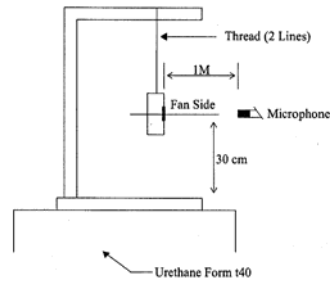
THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS FAN.

2. CHARACTERS

ITEM	DESCRIPTION
RATED VOLTAGE	12 VDC
OPERATING VOLTAGE	5 ~ 13.8 VDC
STARTING VOLTAGE	5 VDC (POWER ON/OFF AT 25°C)
RATED CURRENT (AVG.)	0.190 / MAX. 0.219 A
RATED POWER (AVG.)	2.28 / MAX. 2.63 W
RATED SPEED	2400 RPM \pm 10% IN FREE AIR AT RATED VOLTAGE
MAX AIRFLOW AT ZERO STATIC PRESSURE	71.1 / MIN. 63.2 CFM
MAX STATIC PRESSURE AT ZERO AIRFLOW	0.16 / MIN. 0.12 inch-H ₂ O
ACOUSTICAL NOISE (AVG.)	38.9 / MAX. 42.0 dB(A)
INSULATION TYPE	UL CLASS A
INSULATION RESISTANCE	10M OHM MIN. AT 500 VDC BETWEEN FRAME AND (+) TERMINAL
DIELECTRIC STRENGTH	5mA MAX. AT AC 500 VAC 50/60 Hz ONE MINUTE BETWEEN FRAME AND (+) TERMINAL
LIFE EXPECTANCY	60,000 HOURS AT 40 °C WITH 15~65% RH.
DIRECTION OF ROTATION	COUNTER-CLOCKWISE FROM BLADE SIDE

NOTE: ACOUSTICAL NOISE

MEASURED IN A SEMI-ANECHOIC CHAMBER WITH BACKGROUND NOISE LEVEL BELOW 15dB(A).



1 METER FROM MICROPHONE TO FAN INTAKE

THE FAN IS RUNNING IN FREE AIR UNDER SHAFT HORIZONTAL CONDITION WITH THE MICROPHONE AT DISTANCE OF ONE METER FROM THE FAN INTAKE.

3. MECHANICAL

- | | |
|----------------------------|---------------------------------|
| 3.1 BEARING SYSTEM | : VAPO BEARING SYSTEM |
| 3.2 MATERIALS OF FRAME | : THERMOPLASTIC PBT OF UL 94V-0 |
| 3.3 MATERIALS OF FAN BLADE | : THERMOPLASTIC PBT OF UL 94V-0 |
| 3.4 WEIGHT | : 168 GRAMS |

4. ENVIRONMENTAL

- | | |
|---------------------------------|------------------------|
| 4.1 OPERATING TEMPERATURE RANGE | : -10 TO + 70 DEGREE C |
| 4.2 STORAGE TEMPERATURE RANGE | : -40 TO + 70 DEGREE C |

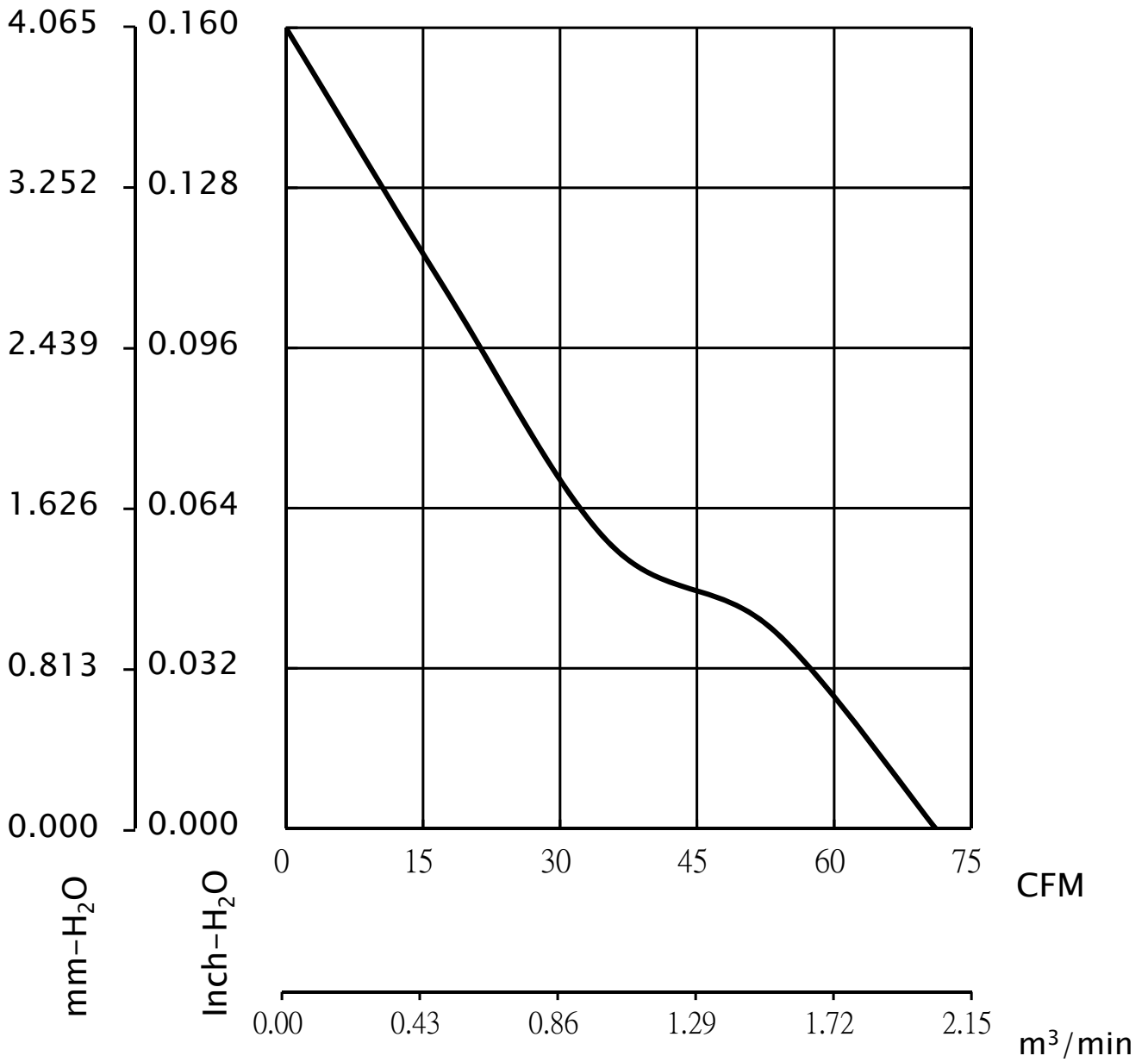
5. PROTECTION

AUTOMATIC RESTART

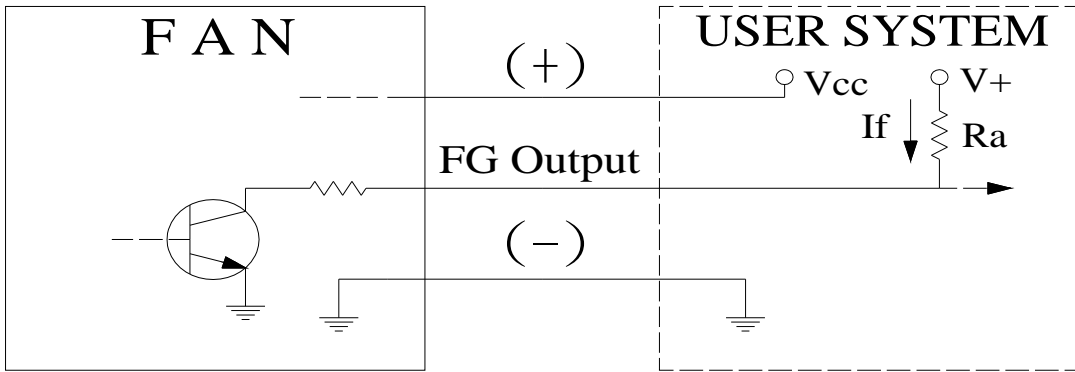
NOTE: IN A SITUATION WHERE THE FAN IS LOCKED BY AN EXTERNAL FORCE WHILE THE ELECTRICITY IS ON, AN INCREASE IN COIL TEMPERATURE WILL BE PREVENTED BY TEMPORARILY TURNING OFF THE ELECTRICAL POWER TO THE MOTOR. THE FAN WILL AUTOMATICALLY RESTART WHEN THE LOCKED ROTOR CONDITION IS RELEASED.

POLARITY PROTECTION

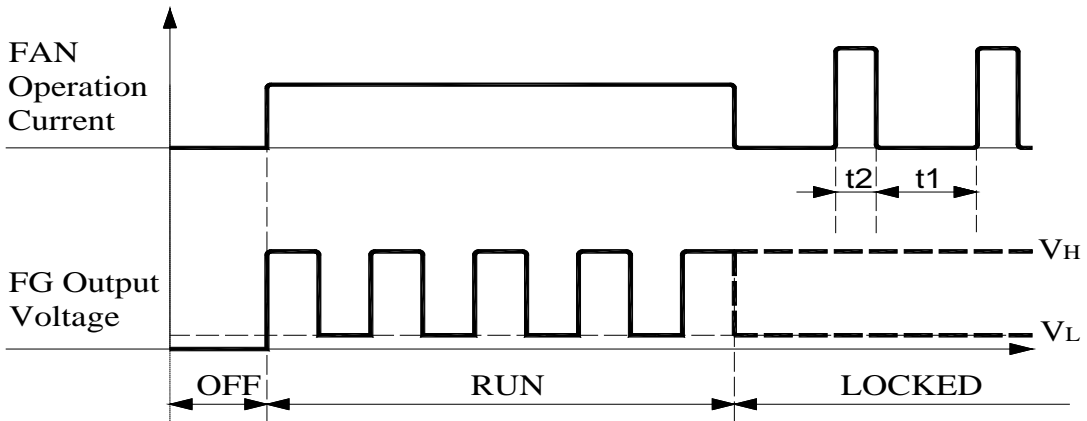
6. AIR FLOW & STATIC PRESSURE CURVE



9. FREQUENCY GENERATOR (FG) SIGNAL

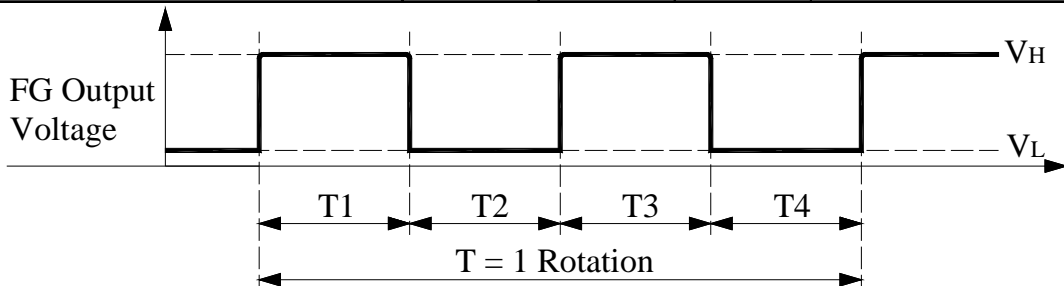


$$*R_a \geq V^+ / I_f (\text{max})$$



★Electrical Characteristics : (at $T_a = 25^\circ\text{C}$, $V_{cc} = \text{Rated Volt.}$)

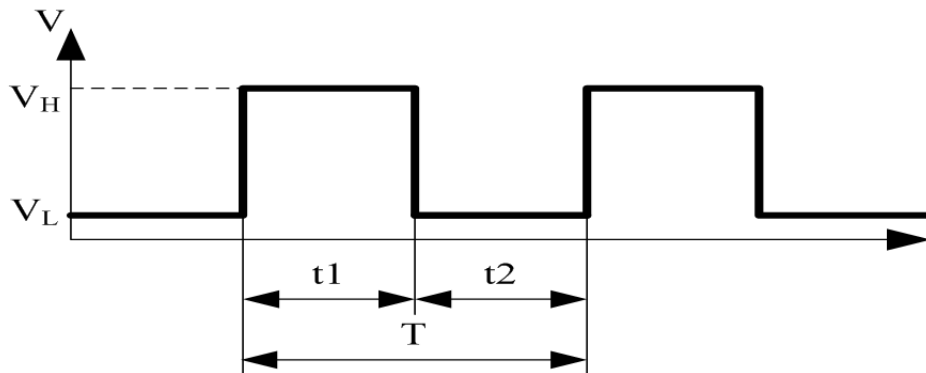
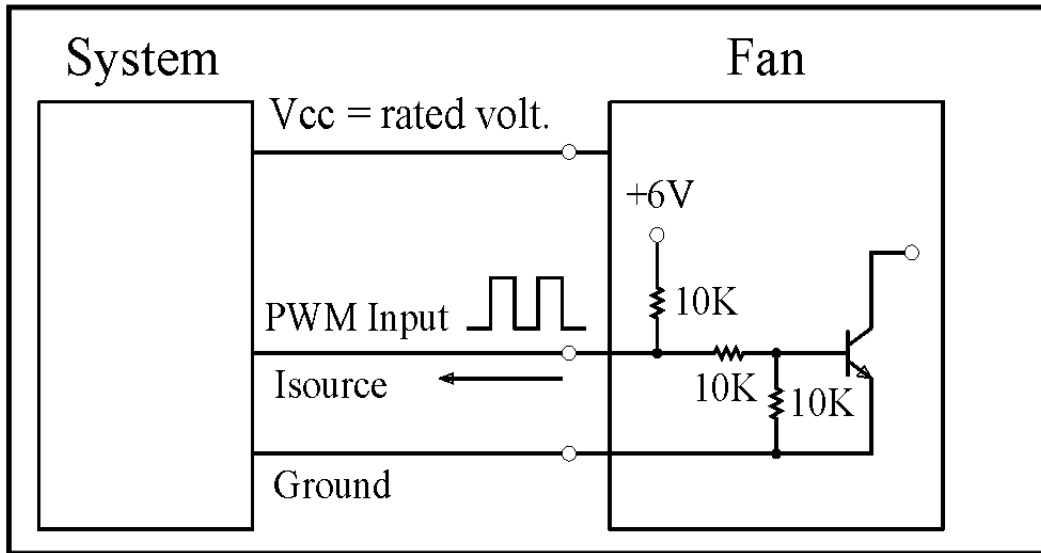
Parameter	Ratings			Unit
	min.	typ.	max.	
FG Supply Voltage (V_+)	2.7	--	13.8	Voltage
FG Output Current (I_f)	--	--	5	mA
FG Output (V_L)	0	--	0.8	Voltage
FG Output (V_H)	--	--	V_+	Voltage
t_1 (OFF)	--	6.1	--	S
t_2 (ON)	--	600	--	mS



$$T = T_1 + T_2 + T_3 + T_4 = 1 \text{ Rotation}$$

$$T = \frac{60}{\text{rpm}}$$

10. PWM CONTROL SIGNAL



1. PERIOD :
$$T = \frac{1}{f_{PWM}} = t_1 + t_2(\text{sec})$$

2. DUTY CYCLE (D.C.) :
$$\frac{t_1}{t_1+t_2} * 100 = \frac{t_1}{T} * 100(\%)$$

3. PWM DUTY CYCLE VS SPEED (AT $T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $f_{PWM} = 25\text{KHz}$)

PWM Duty Cycle (%)	FAN Speed (R.P.M.)
50	1300rpm \pm 250rpm
10-0	0rpm

Parameter	Min	Typical	Max	Unit
f pwm	21K	25K	28K	Hz
V_H	2.8	--	5.5	V
V_L	0	--	0.8	V
Isource	--	--	1	mA
D.C.	0	--	100	%

* The speed is default to be maximum if PWM input pin is unconnected.

* Min. start up duty cycle is 40%.