

## General Specifications

Motor Type: DC Brushless Motor

Motor Protection: Auto Restart/Polarity Protection

Motor withstands reverse connection for positive and negative leads.

Insulation Resistance:

10M  $\Omega$  or over with a DC500V Megger

Dielectric Withstand Voltage:

AC 700V 1s or 500V 1min

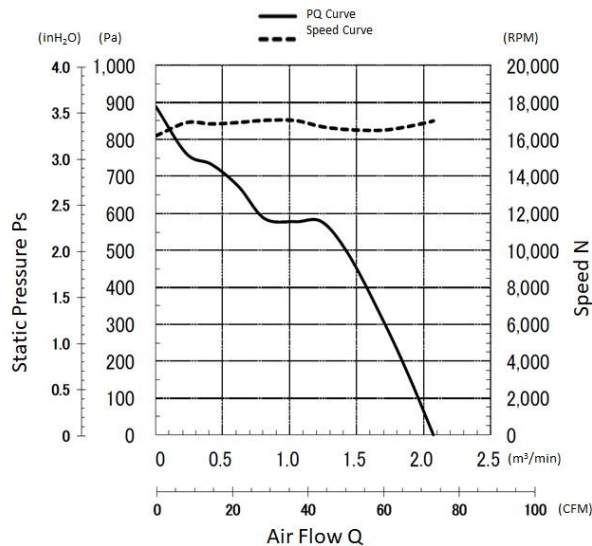
Allowable Ambient Temperature Range:

-10°C ~ +60°C (Operating)

-30°C ~ +70°C (Storage)

(non-condensing environment)

## Characteristics Curves



## PWM Benefits & Applications

### PWM Benefits

- Increased Life Expectancy
- Energy Saving
- Lower Vibration
- Lower Noise
- Current Spike Prevention

### PWM Applications

- Routers
- Switches
- Storage
- Data Centers
- Optical Repeaters
- Broadcast Equipment
- Inverters
- UPS
- Battery Chargers
- Fuel Cells
- Industrial Power Supplies
- Welders
- Plasma Cutters
- Instrumentation
- Test Equipment
- Enclosures and more

- Customized fan performances at multiple operating points.
- Peak efficiency resulting in lower total ownership costs.
- Cost effective and better reliability.

## Life Expectancy L10

40°C 70,000 Hours

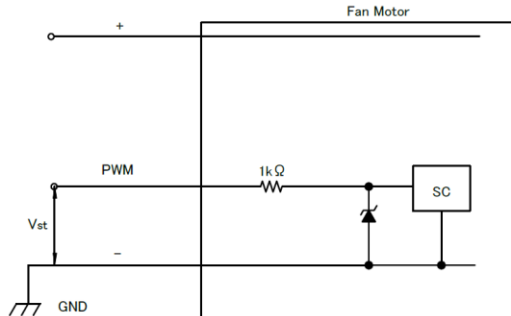
## Specifications

MODEL	Rated Voltage	Operating Voltage	Current		Input Power		Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
	(V)	(V)	Avg	Max	Avg	Max	( $\text{min}^{-1}$ ) <sup>1</sup>	(CFM)	( $\text{m}^3/\text{min}$ )	( $\text{inH}_2\text{O}$ )	(Pa)	(dB) <sup>1</sup>	(g)
	(V)	(V)	(A) <sup>1</sup>	(A) <sup>1</sup>	(W) <sup>1</sup>	(W) <sup>1</sup>	( $\text{min}^{-1}$ ) <sup>1</sup>	(CFM)	( $\text{m}^3/\text{min}$ )	( $\text{inH}_2\text{O}$ )	(Pa)	(dB) <sup>1</sup>	(g)
06038DA-12S-EWF-D	12	10.8 ~ 13.2	2.30	2.80	27.60	33.60	17000	73.1	2.07	3.56	887	66.5	125

\*1: Values in Free Air

## PWM Specifications

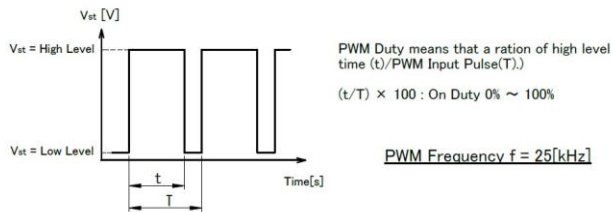
### PWM CONTROL CONNECTION



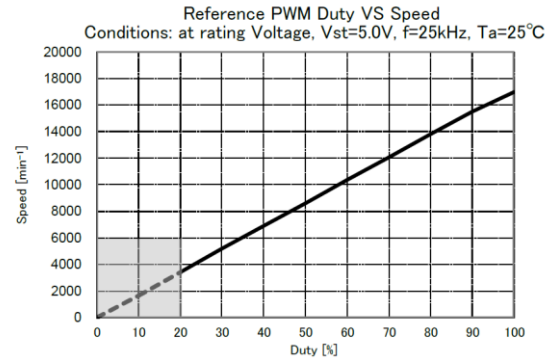
#### 1. PWM Control

- V<sub>st</sub> = Low Level (0V~0.4V) → Low Speed (On Duty 0%)
- V<sub>st</sub> = High Level (3.0V~5.0V) → Full Speed (On Duty 100%)
- V<sub>st</sub> = Open → Full Speed

#### 2. PWM Duty & PWM Input Pulse



## PWM Characteristics Curve



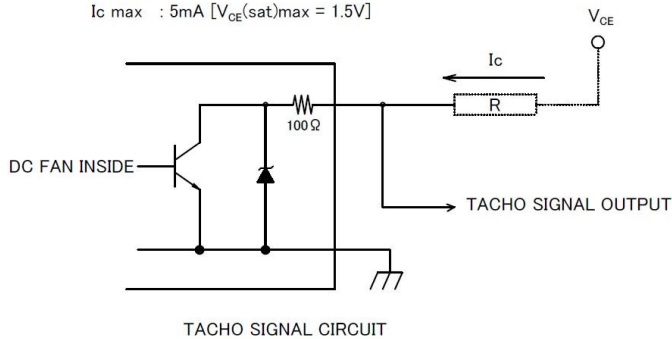
#### 3. The condition for PWM control are as follows.

- When you use this under PWM control, always be sure the motor's operation under practical mounting state. Fan motor may not start up caused by PWM control at very low speed condition.
- To run at Rating Voltage.
- Please use the start with Duty 20% or more at 25kHz. [At rated voltage input, Ambient temperature 25°C]

## TACHO Specifications

### TACHO SIGNAL

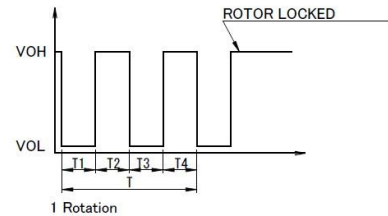
1. OUTPUT CIRCUIT : OPEN COLLECTOR
2. SPECIFICATION
  - Ta=25°C
  - Absolute Maximum Ratings at Ta=25°C
  - V<sub>CE</sub> max : +15V
  - I<sub>c</sub> max : 5mA [V<sub>CE(sat)</sub>max = 1.5V]



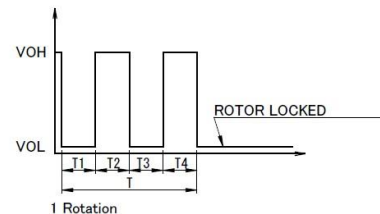
#### 3. OUTPUT WAVEFORM : AT RATED VOLTAGE

##### OUTPUT SIGNAL VOLTAGE

##### 3-1 Case-1



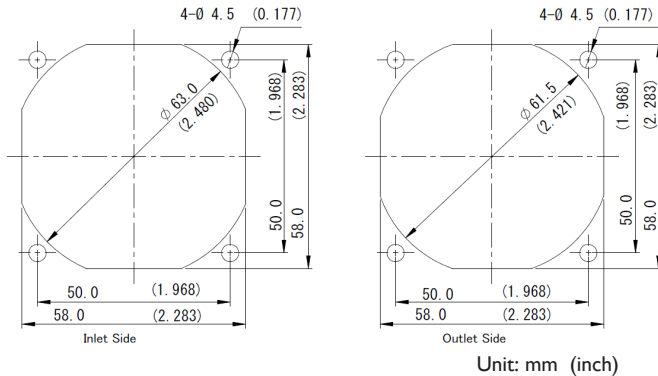
##### 3-2 Case-2



- 1) When the rotor is locked at V<sub>OH</sub> position of signal, signal keeps V<sub>OH</sub> position.
- 2) When the rotor is locked at V<sub>OL</sub> position of signal, signal keeps V<sub>OL</sub> position.
- 3) T = T<sub>1</sub> + T<sub>2</sub> + T<sub>3</sub> + T<sub>4</sub> = 60 / m = 1 rotation

Tach Duty Cycle = 50% ± 10%

## Panel Cut-Outs

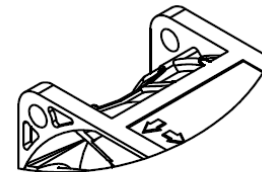
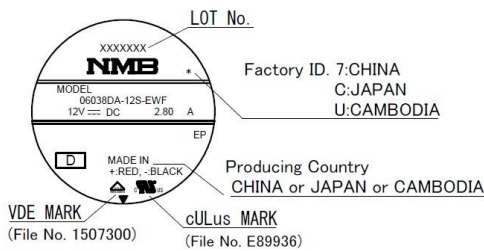


## Materials

- Casing : Plastic (Black UL94V-0)
- Impeller : Plastic (Black UL94V-0)
- Bearing : Ball Bearing
- Lead Wire : UL10368 AWG24
  - (+) : Red (-) : Black
  - PWM : Brown Tach : White

## Outline

Name Plate



FLANGE TYPE

