

## General Specifications

Motor Type: DC Brushless Motor

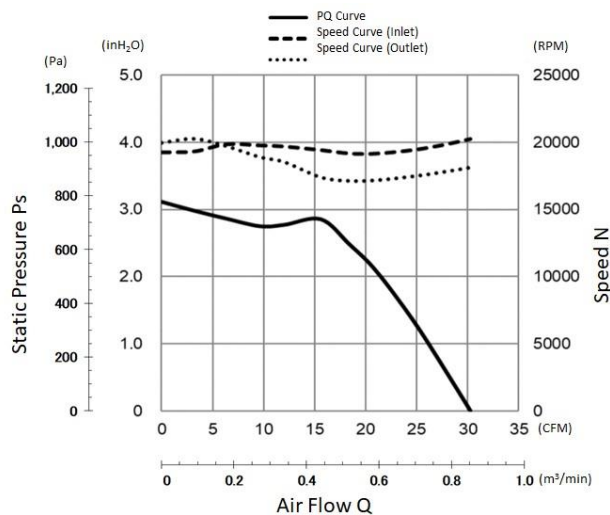
Motor Protection: Auto Restart/Polarity Protection

Insulation Resistance:  
10M Ω by 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

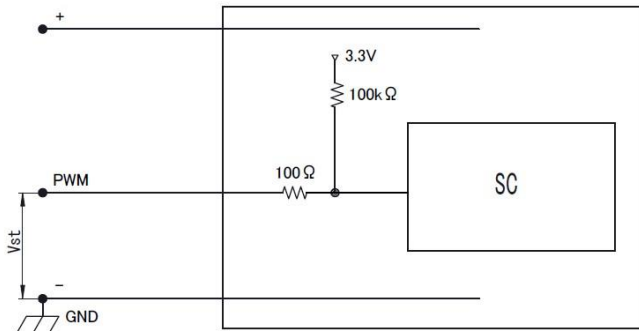
40°C 70,000 Hours

## Specifications

MODEL	Rated Voltage	Operating Voltage	Current		Input Power		Speed		Max. Air Flow		Max. Static Pressure		Noise	Mass
			Avg	Max	Avg	Max	Inlet	Outlet	(CFM) <sup>*1</sup>	(m³/min) <sup>*1</sup>	(inH <sub>2</sub> O) <sup>*1</sup>	(Pa) <sup>*1</sup>		
04056EA-12R-EUB-2	(V) 12	(V) 10.8 ~ 12.6	(A) <sup>*1</sup> 1.30	(A) <sup>*1</sup> 1.70	(W) <sup>*1</sup> 15.60	(W) <sup>*1</sup> 20.40	(min <sup>-1</sup> ) <sup>*1</sup> 20000	(min <sup>-1</sup> ) <sup>*1</sup> 18000	(CFM) <sup>*1</sup> 30.3	(m³/min) <sup>*1</sup> 0.86	(inH <sub>2</sub> O) <sup>*1</sup> 3.10	(Pa) <sup>*1</sup> 771	(dB) <sup>*1</sup> 69.0	(g) 90

## PWM Specifications

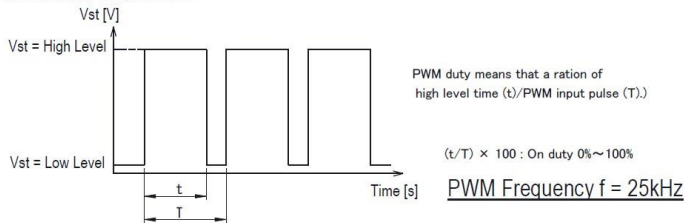
PWM CONTROL  
● CONNECTION



1. Vst : PWM CONTROL VOLTAGE

Vst = Low Level (0V ~ 0.4V) → Stop (On Duty 0%)  
 Vst = High Level (4.0V ~ 5.0V) → Full Speed (On Duty 100%)  
 Vst = OPEN → Full Speed

2. PWM Duty & Input Pulse



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.

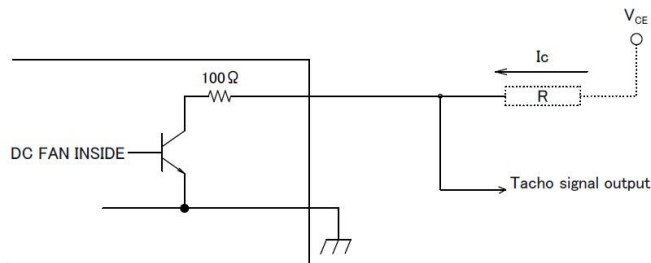
To run at Rating Voltage

- Please use the start with Duty 20% or more at 25kHz.  
[At rated voltage input, Ambient temperature 25°C]

## TACHO Specifications

TACHO SIGNAL

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

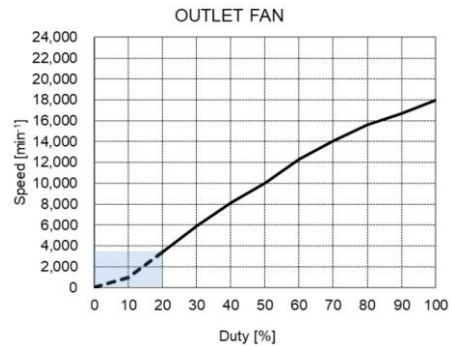
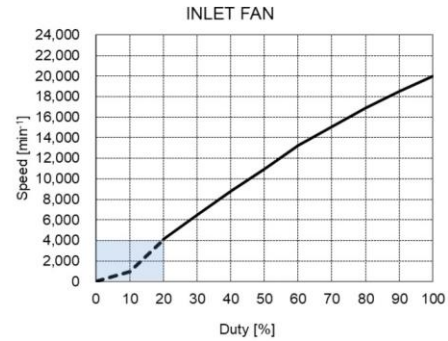


TACHO SIGNAL CIRCUIT

## PWM Characteristics Curve

REFERENCE PWM Duty VS Speed

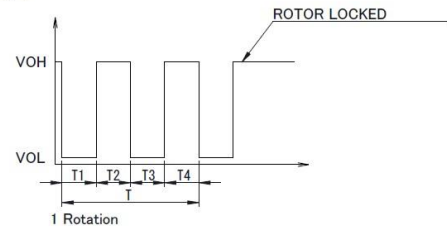
Condition : at rating voltage, Vst=5V, F=25kHz, Ta=25°C



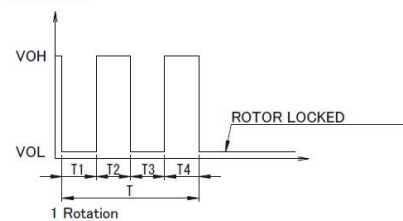
3. OUTPUT WAVEFORM : AT RATED VOLTAGE

4. OUTPUT SIGNAL VOLTAGE

3-1



3-2 Case-2

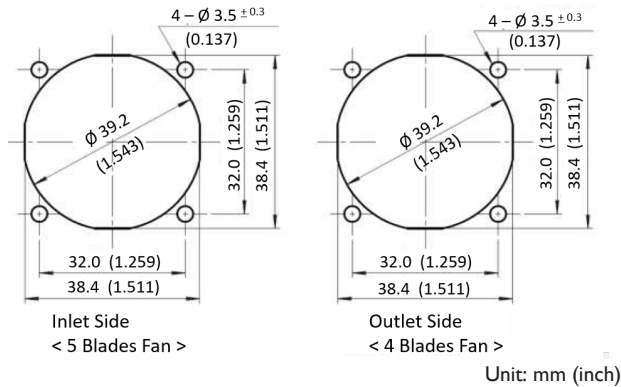


- When the rotor is locked at VOH position of signal, signal keeps VOH position.
- When the rotor is locked at VOL position of signal, signal keeps VOL position.
- $T = T1 + T2 + T3 + T4 = 60/m = 1$  rotation

m : min<sup>-1</sup>

Tach Duty Cycle = 50% ± 10%

## Panel Cut-Outs



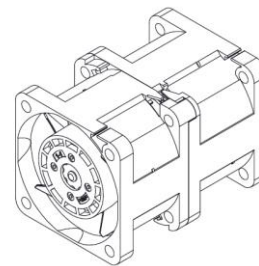
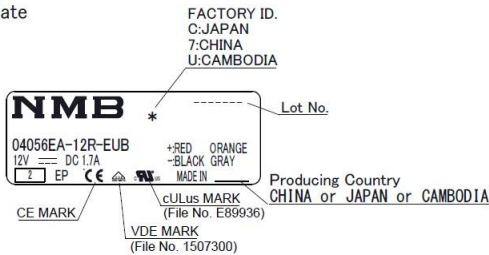
## Materials

**Inlet FAN**  
 Casing : Plastic (Black UL94V-0)  
 Impeller : Plastic (Black UL94V-0)  
 Bearing : Ball Bearing  
 Lead Wire : UL10368 AWG26 or AWG28  
 or Equivalent  
 (+) : Red (-) : Black  
 PWM : Brown Tach : White

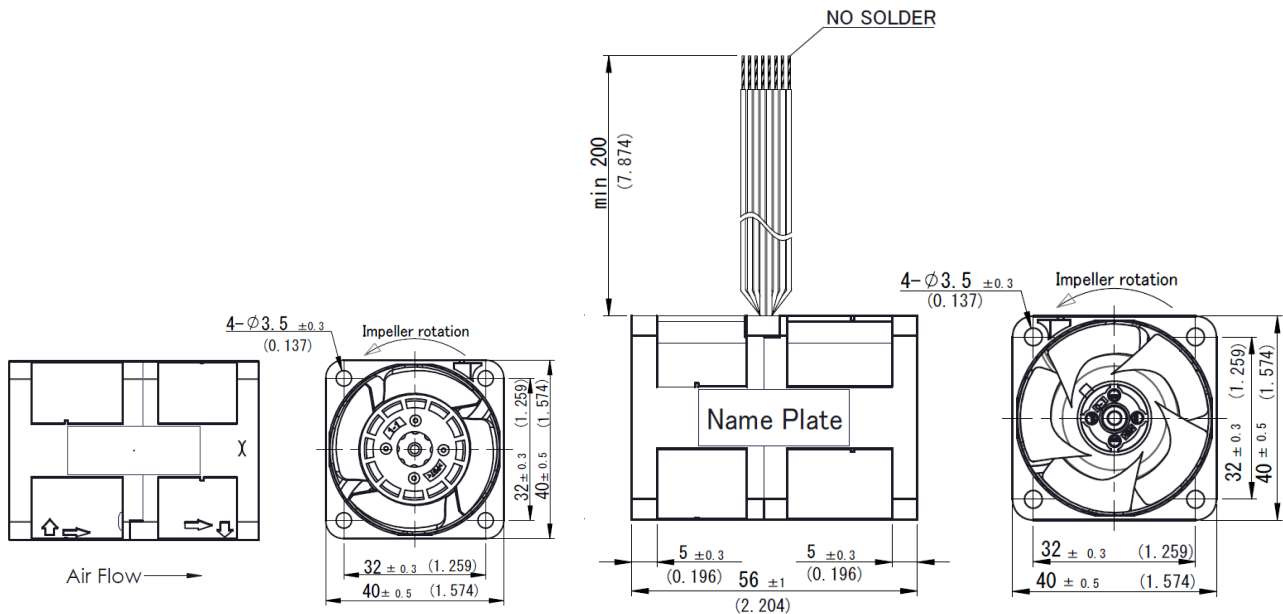
**Outlet FAN**  
 Casing : Plastic (Black UL94V-0)  
 Impeller : Plastic (Black UL94V-0)  
 Bearing : Ball Bearing  
 Lead Wire : UL10368 AWG26 or AWG28  
 or Equivalent  
 (+) : Orange (-) : Gray  
 PWM : Blue Tach : Yellow

## Outline

Name Plate



Flange Casing



Unit: mm (inch)