

## General Specifications

Motor Type: DC Brushless Motor

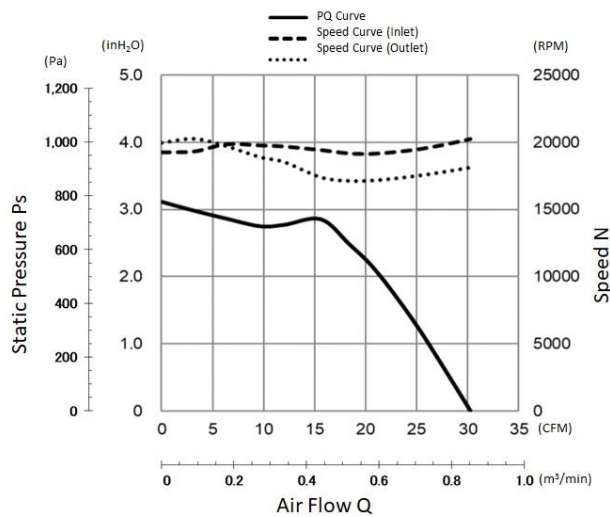
Motor Protection: Auto Restart/Polarity Protection

Insulation Resistance:  
10M  $\Omega$  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

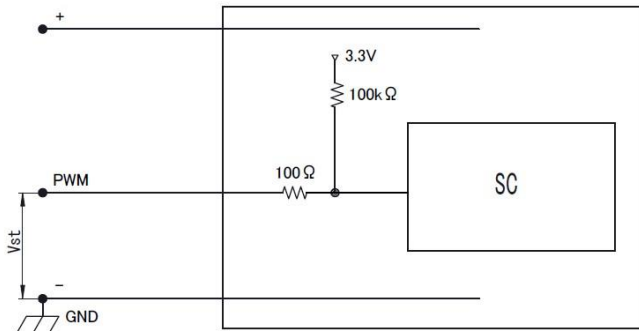
40°C 70,000 Hours

## 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

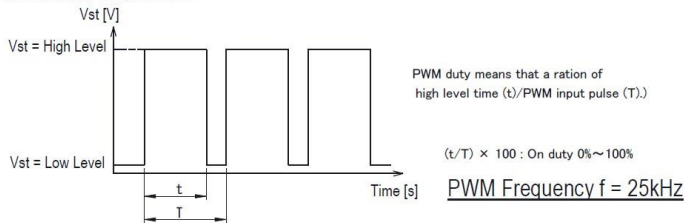
PWM CONTROL  
● CONNECTION



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.

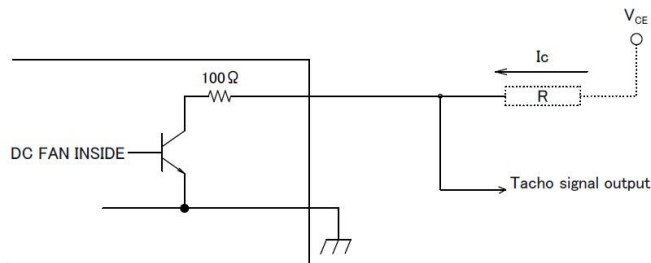
To run at Rating Voltage

- 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]

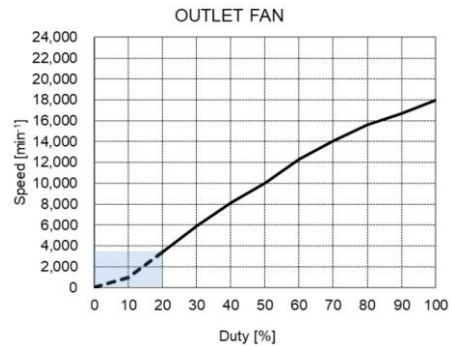
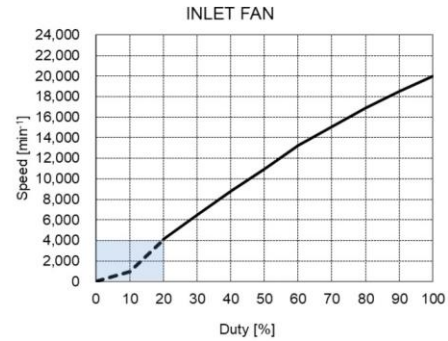


TACHO SIGNAL CIRCUIT

## PWM Characteristics Curve

REFERENCE PWM Duty VS Speed

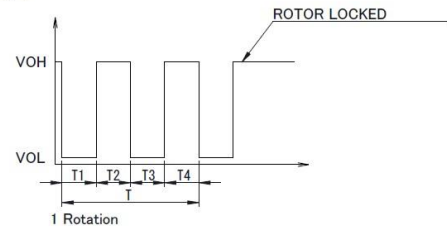
Condition : at rating voltage, Vst=5V, F=25kHz, Ta=25°C



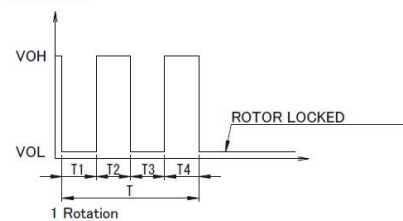
3. OUTPUT WAVEFORM : AT RATED VOLTAGE

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%