PWM and Tach Output Brushless DC Fan

04056EA (J-Type)

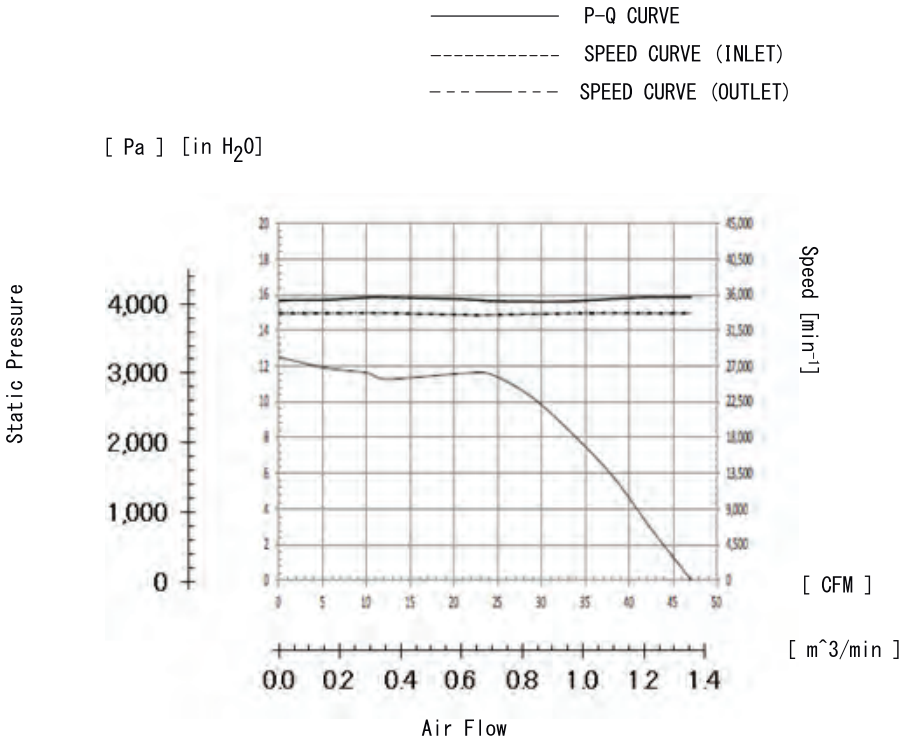
NMB

General Specifications

Motor Type:
DC Brushless Three Phase Motor
Motor Protection:
Auto Restart / Polarity Protection (Motor withstands reverse connection for positive and negative leads.)
Insulation Resistance:
10MΩ or over with a DC 500V Megger
Dielectric Withstand Voltage:
AC 700V 1sec or 500V 1min
Allowable Ambient Temperature Range:
-10°C ~ + 70°C (Operating)
-30°C ~ + 70°C (Storage)
(non-condensing environment)

For reference only. Please see fan outline for details

Characteristic Curves



Features

- High performance counter rotating fan with eight wires and PWM with tach signal
- Efficient three phase motor technology
  Energy saving, low vibration, and increased life expectancy
- Outfitted with NMB precision machined ball bearings for long life
- Utilizes in-house Mitsumi ICs

Life Expectancy L10

70,000 Hours at 40°C

Fan life expectation is based on free air operation at 40°C, rated voltage, and indoor benign lab environment

Specifications

Model	Rated Voltage	Operating Voltage	Current		Input Power		Speed		Max Air Flow		Max Static Pressure		Noise	Mass
	V	V	Avg	Max	Avg	Max	Inlet	Outlet	m^3/min*	CFM*	Pa	In H2O	dB*	g
			A*	A*	W*	W*	min-1*							
04056EA-12V-E6J-8	12	10.8 to 13.2	5.00	6.00	60.00	72.00	35,500	33,500	1.30	46.0	3,110	12.50	80.5	115

*: Values in Free Air

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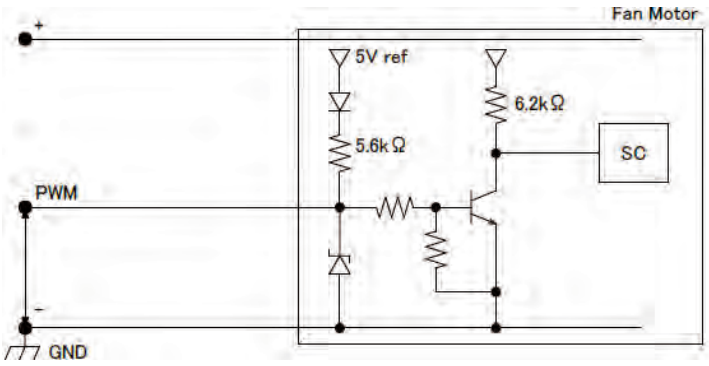
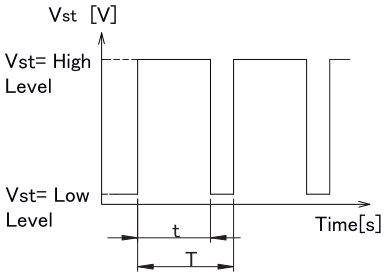
PWM Specifications

Connection



1. PWM Control
   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 & PWM Input Pulse



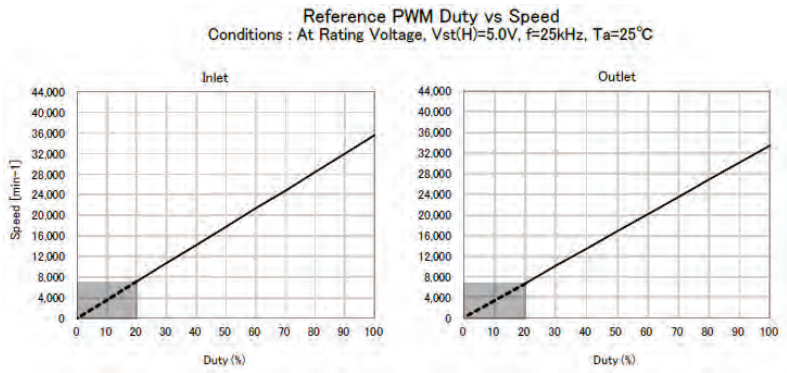
PWM Duty means that a ratio of high level time (t)/PWM Input Pulse(T).

(t/T) × 100 : On Duty 0%~100%

PWM Frequency f = 25±5[kHz]

3. The condition for PWM control are as follows
Please install the fan in your system when testing the PWM function. If the PWM duty cycle is very low, the fan might not start up.
Run the fan at rated voltage only
Please start the fan with duty cycle of 20% or more at 25kHz.[At rated voltage input, Ambient temperature 25C]

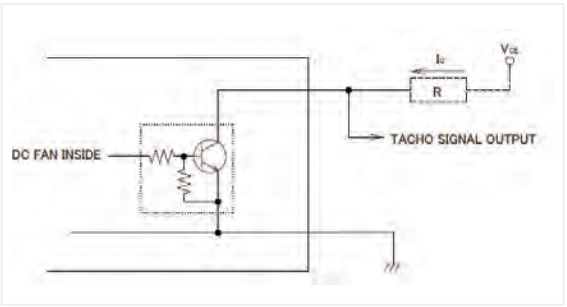
PWM Characteristic Curve



TACHO Specifications

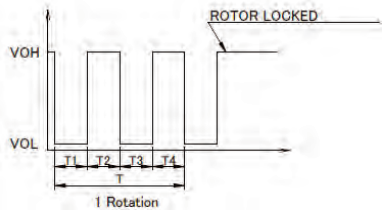
Tachometer Signal

1. Output Circuit: Open Collector
2. Specification
   Absolute Maximum Ratings at Ta=25°C
   V_{CE}max: +15V
   $I_C$max: 5mA[V_{CE}(sat)max=1.5V]

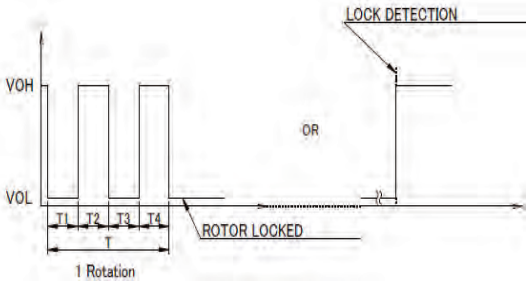


3. Output Waveform: At Rated Voltage
   Output Signal Voltage

Case–1



Case–2



1) When the rotor is locked at VOH position of signal, signal keeps VOH position.
2) When the rotor is locked at VOL position of signal, signal keeps VOL position or signal keeps VOL position under locked rotor protect function.
3) T=T1+T2+T3+T4=60/m=1 rotation
   m: Fan Speed (min^{-1})
   Tacho Duty Cycle=50%±10%

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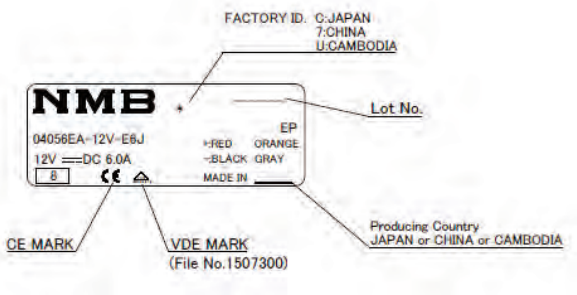
Outlines

(Name Plate)

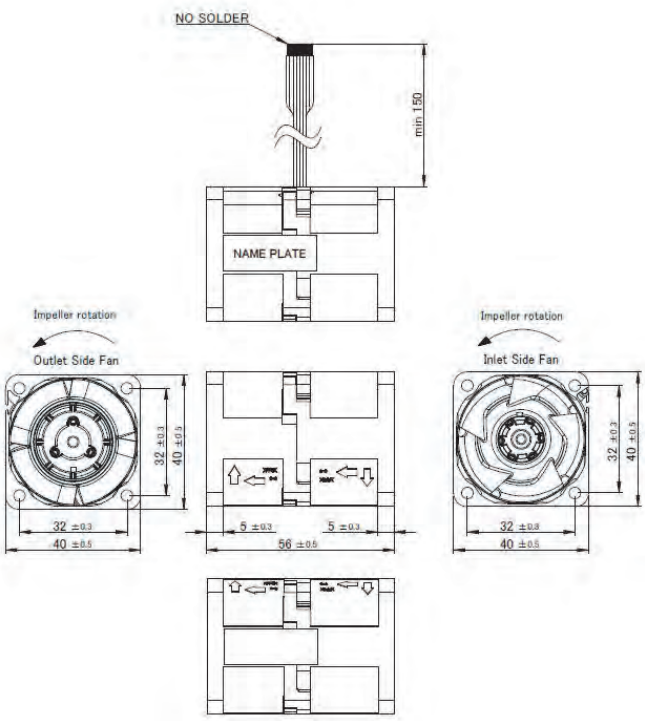


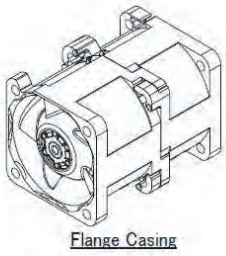
Materials

Casing: Plastic (Black UL94V-0)
Impeller: Plastic (Black UL94V-0)
Bearing: Ball Bearing
Lead Wire: UL10368 AWG24 AWG26 or AWG28 or Equivalent

[INLET FAN]	[OUTLET FAN]
(+)/Red	(+)/Orange
(-)/Black	(-)/Gray
(TACH)/White	(TACH)/Yellow
(PWM)/Brown	(PWM)/Blue

(Outline)





Flange Casing