

# 04020VA (1608VL)

## DC Axial Fan

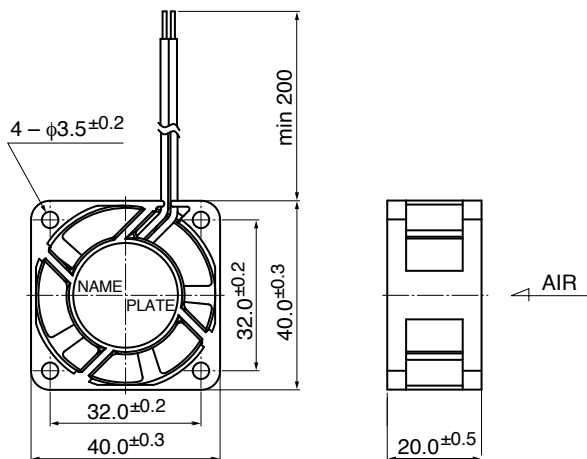
# 40<sup>□</sup>X20<sup>L</sup>



### General Specifications

Motor Protection : Auto Restart / Polarity Protection  
 Insulation Resistance : 10M $\Omega$  or over with a DC500V Megger  
 Dielectric Withstand Voltage : AC700V 1s  
 : -10 $^{\circ}$ C ~ + 70 $^{\circ}$ C (Operating)  
 Allowable Ambient Temperature Range : -40 $^{\circ}$ C ~ + 70 $^{\circ}$ C (Storage)  
 : non-condensing environment

### Outline



### Expected Life

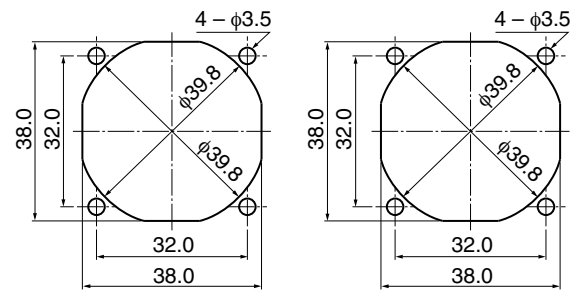
※ Failure Rate: 10% (L10 Life)

60 $^{\circ}$ C 40,000 (Hours)

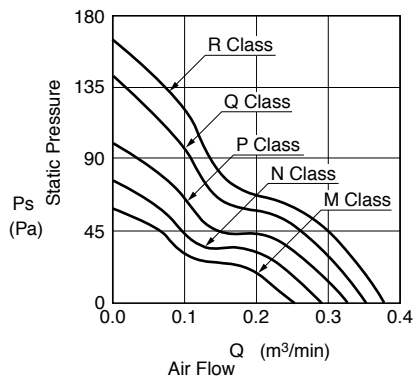
### Panel Out-cuts

(Inlet Side)

(Outlet Side)



### Characteristic Curves



### Material

Casing : Plastic (Black) UL94V-0  
 Impeller : Plastic (Black) UL94V-0  
 Bearing : Ball Bearing  
 Lead Wire : UL1007 AWG26 + : Red, - : Black

Customize service for IP compatible type and Oil-proof type is available for this item. Please contact to our sales representative for more detail.

### Specifications

Model	Product No.	Rating Voltage	Operating Voltage	Current	Input Power	Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
		(V)	(V)	(A)*1	(W)*1	(min <sup>-1</sup> )*1	(m <sup>3</sup> /min)*1	(CFM)*1	(Pa)*1	(In H <sub>2</sub> O)*1	(dB)*1	(g)
04020VA-12M-AA-	00	12	7.0 ~ 13.2	0.085	1.02	7500	0.25	8.8	58.8	0.24	29.0	40
04020VA-12N-AA-	00			0.11	1.32	8500	0.29	10.2	76.6	0.31	32.5	
04020VA-12P-AA-	00			0.13	1.56	9500	0.32	11.3	99.3	0.40	37.0	
04020VA-12Q-AA-	00			0.21	2.52	11000	0.35	12.4	142.0	0.57	42.0	
04020VA-12R-AA-	00			0.18	2.16	12000	0.38	13.4	165.0	0.66	46.0	
04020VA-24M-AA-	00	24	14.0 ~ 26.4	0.05	1.20	7500	0.25	8.8	58.8	0.24	29.0	
04020VA-24N-AA-	00			0.07	1.68	8500	0.29	10.2	76.6	0.31	32.5	
04020VA-24P-AA-	00			0.10	2.40	9500	0.32	11.3	99.3	0.40	37.0	
04020VA-24Q-AA-	00			0.11	2.64	11000	0.35	12.4	142.0	0.57	42.0	
04020VA-24R-AA-	00			0.11	2.64	11000	0.35	12.4	142.0	0.57	42.0	

Rotation: Clockwise as seen from the label side  
 Airflow Outlet: Label side

\*1: Average Values in Free Air

## General Specifications

### Motor Protection:

Auto Restart/Polarity Protection

### Insulation Resistance:

10M Ω or over with a DC500V Megger

### Dielectric Withstand Voltage: AC 700V 1s

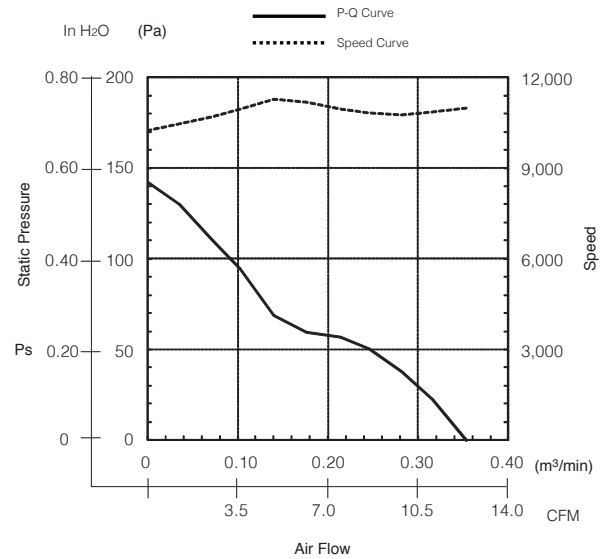
### Allowable Ambient Temperature Range:

-10°C ~ +70°C (Operating)

-40°C ~ +70°C (Storage)

IP Code: IP69K

## Characteristic Curves



## Expected Life

25°C 100,000 Hours (L10)

## Material

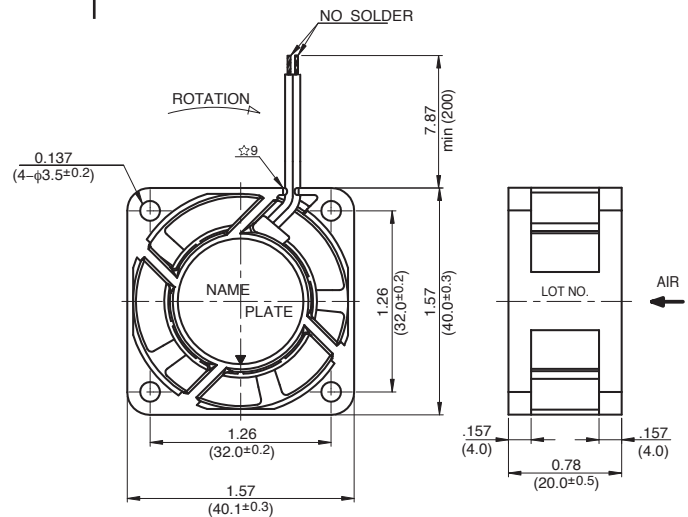
Casing : Plastic (Black) UL94V-0

Impeller : Plastic (Black) UL94V-0

Bearing : Ball Bearing

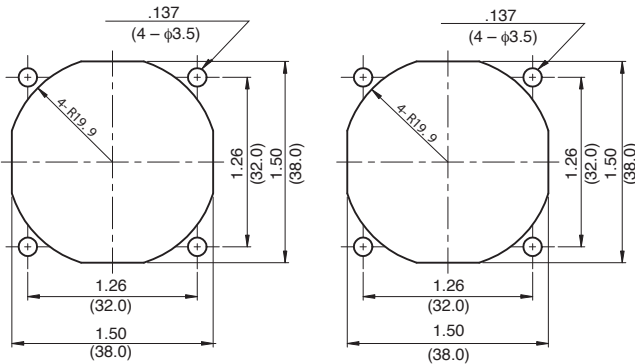
Lead Wire : UL3385, AWG26, +Red, -Black

## Outline



## Panel Cut-Outs

Units:  $\frac{\text{inch}}{\text{mm}}$



INLET SIDE

OUTLET SIDE

## Specifications

MODEL	Rated Voltage	Operating Voltage	Current	Input Power	Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
	(V)	(V)	(A) <sup>*1</sup>	(W) <sup>*1</sup>	(min <sup>-1</sup> ) <sup>*1</sup>	CFM <sup>*1</sup>	(m <sup>3</sup> /min) <sup>*1</sup>	in H <sub>2</sub> O	(Pa) <sup>*1</sup>	(dB) <sup>*1</sup>	(g)
04020VA-12Q-CA-00	12	9.0 ~ 13.2	0.13	1.56	11000	12.36	0.35	.57	142	42.0	40
04020VA-24Q-CA-00	24	14.0 ~ 26.4	0.09	2.16	11000	12.36	0.35	.57	142	42.0	40

Rotation: Clockwise

Airflow Outlet: Air Out Over Struts

\*1: Average Values in Free Air

Note: PWM/Locked Rotor/Tach Available

# PWM and Tach Output Brushless DC Fan

## 04020VA-12R-AU-01

# NMB

### General Specifications

**Motor Type:**

DC Brushless Single 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)

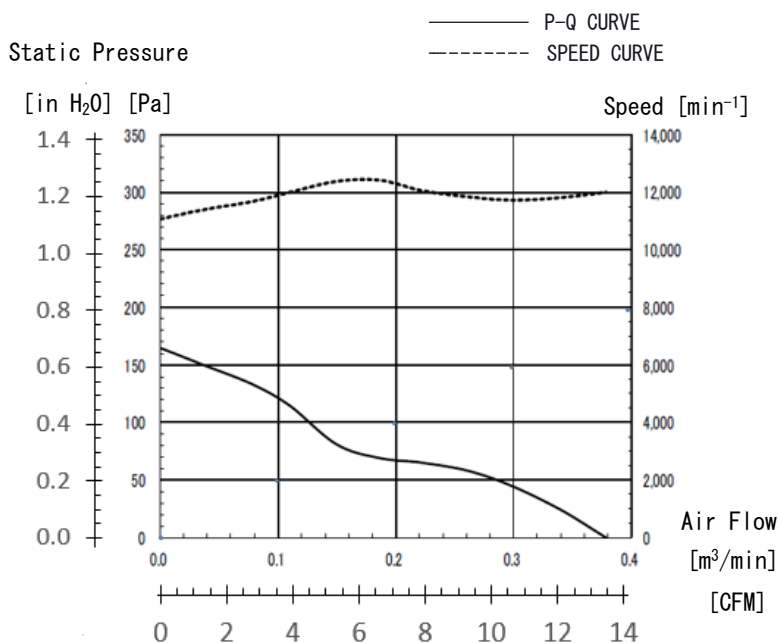
-40°C ~ + 70°C (Storage)

(non-condensing environment)



\*For reference only. Please refer to fan outline for details

### Characteristic Curves



### Features

- High Performance, four wire, PWM fan with tach signal
- Efficient motor technology, high torque, and aerodynamic impeller design
- Energy saving, low vibration, and increased life expectancy
- Available in 12 volts with tach output and PWM speed control
- Outfitted with NMB precision machined ball bearings for long life
- Single phase motor design for high speed and efficient cooling

### Life Expectancy L10

40,000 Hours at 60°C

\*Fan life expectation is based on free air operation at 60°C, rated voltage, and indoor benign lab environment

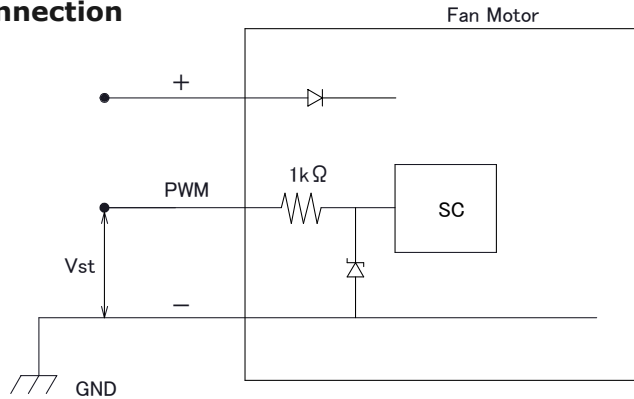
\*1: Values in Free Air

### Specifications

MODEL	Rating Voltage (V)	Operating Voltage (V)	Current		Input Power		Speed (min <sup>-1</sup> )*1	Max. Air Flow		Max. Static Pressure		Noise (dB)**1	Mass (g)
			Avg (A)*1	Max (A)*1	Avg (W)*1	Max (W)*1		(CFM)	(m <sup>3</sup> /min)	(in H <sub>2</sub> O)	(Pa)		
04020VA-12R-AU-01	12	10.8 to 13.2	0.18	0.30	2.16	3.60	12,000	13.4	0.38	0.66	165	46.0	40.0

### PWM Specifications

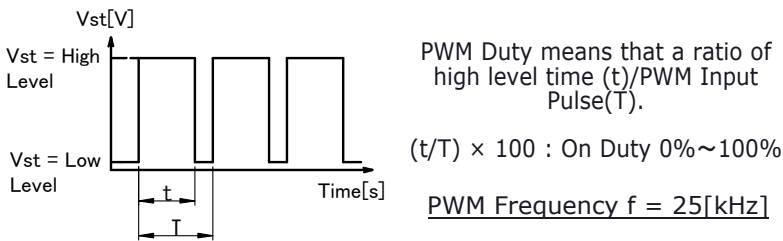
#### Connection



#### 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

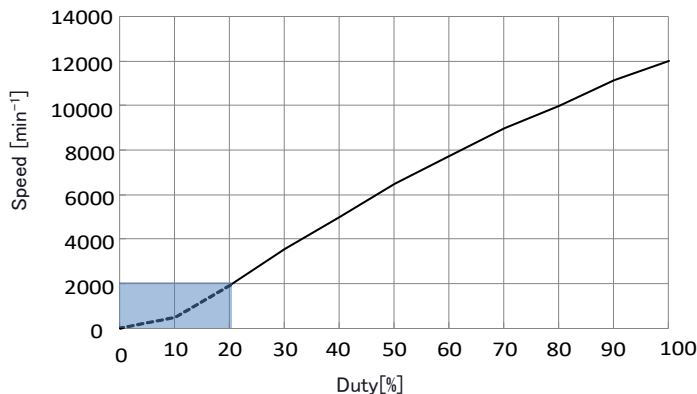


#### 3. The condition for PWM control are as follows

- 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]

### PWM Characteristic Curve

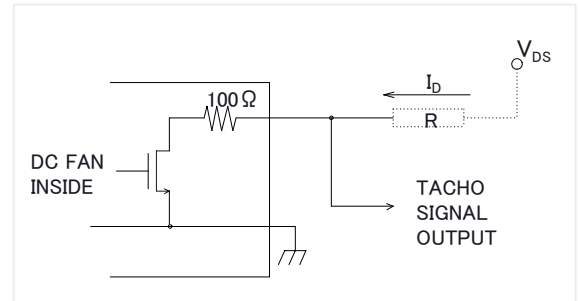
Reference PWM Duty VS Speed  
Conditions : At Rating Voltage, Vst(H)=5.0V, f=25kHz, Ta=25°C



### TACHO Specifications

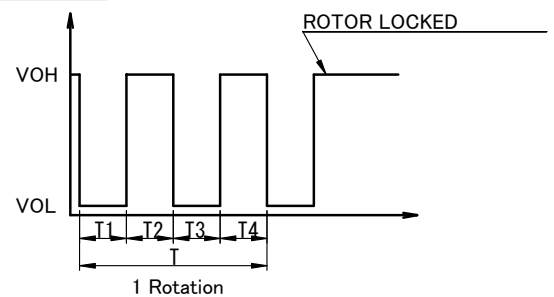
#### Tachometer Signal

- Output Circuit: Open Drain
- Specification  
Absolute Maximum Ratings at Ta=25°C  
V<sub>DSmax</sub>: +15V  
I<sub>Dmax</sub>: 5mA[V<sub>DS(sat)</sub>max=1.5V]

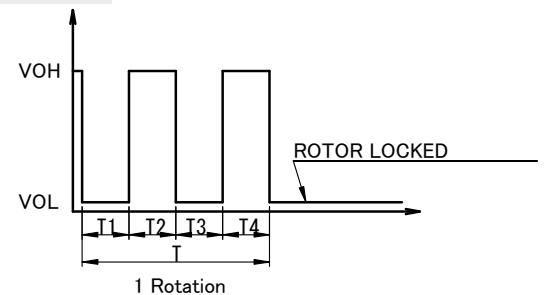


#### 3. Output Waveform: At Rated Voltage Output Signal Voltage

##### Case-1



##### 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: Fan Speed (min<sup>-1</sup>)

Tacho Duty Cycle=50%±10%