San Ace 38 9HVA type

DC Fan

■ Features

High Static Pressure

This fan achieves a maximum static pressure of 2,100 Pa,[1] increasing by a factor of about 2.6 over our current model.[2]

High Airflow

The fan delivers a maximum airflow of 0.91 m^3/min,[1] improving by a factor of about 1.5 compared to the current model.[2]

Contribution to SDGs

This fan uses a lead-free brass material and is RoHS Directive-compliant.[3]
Using eco-friendly resources and technologies, it is certified as an Eco Product.[4]

(1) For a model 9HVA0312P3K001
(2) Current model: 38 × 38 × 28 mm *San Ace 38* 9GA type DC Fan (model: 9GA0312P3K001)
(3) The RoHS (Restriction of Hazardous Substances) Directive restricts the use of certain hazardous substances in electrical and electronic equipment distributed within the European Union.
(4) Eco Products are eco-friendly products designed to reduce the environmental impact of the product and its packaging materials compared to our existing products and conventional products on the market. Our products are assessed over the product's life cycle against our own eco-design requirements including product size, weight, power consumption, and CO_2 emissions, and those meeting our standards and higher standards qualify as Eco Products and Eco Products Plus, respectively.

ECO PRODUCTS

c UL US

38 × 38 × 28 mm

■ Specifications

The models listed below **have ribs and pulse sensors with PWM control function.** For models without ribs, append "1" to the end of model numbers.

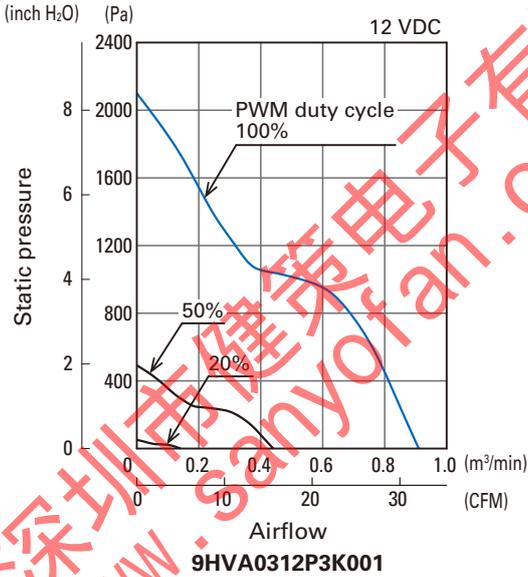| Model no.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	[CFM]	Max. static pressure [Pa]	[inchH₂O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9HVA0312P3K001	12	10.8 to 13.2	100	2.1	25.2	38500	0.91	32.2	2100	8.40	69	-20 to +70	30000/60°C (53000/40°C)
			20	0.06	0.72	6000	0.14	4.9	51.0	0.204	29		
9HVA0312P3G001			100	1.1	13.2	30000	0.71	25.1	1300	5.20	64		40000/60°C (70000/40°C)
			20	0.05	0.60	5000	0.11	3.8	36.1	0.144	25		

* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.
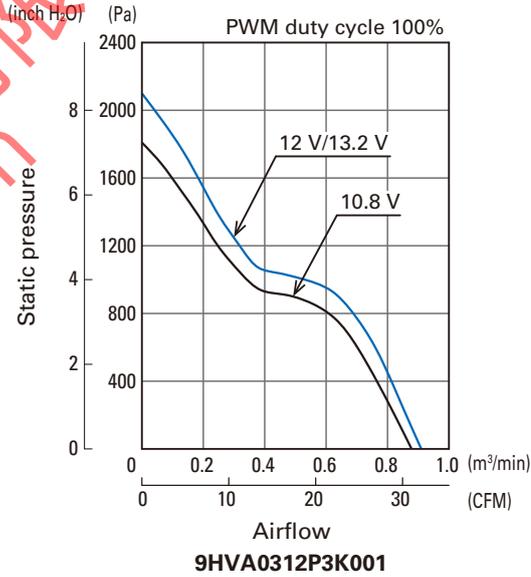
■ Common Specifications

☐ Material ······························· Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
☐ Expected life ···························· Refer to specifications
(L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
Expected life at 40°C is for reference only.
☐ Motor protection function ················ Locked rotor burnout protection, Reverse polarity protection
☐ Dielectric strength ······················ 50/60 Hz, 500 VAC, for 1 minute (between lead wire conductors and frame)
☐ Insulation resistance ···················· 10 MΩ min. at 500 VDC (between lead wire conductors and frame)
☐ Sound pressure level (SPL) ·············· A-weighted sound pressure level (SPL) at 1 m away from the air inlet.
☐ Operating temperature ················· Refer to specifications (Non-condensing)
☐ Storage temperature ··················· -30 to +70°C (Non-condensing)
☐ Lead wire ······························· ⊕ Red ⊖ Black [Sensor] Yellow [Control] Brown
☐ Mass ································· 53 g

Airflow - Static Pressure Characteristics

PWM duty cycle

9HVA0312P3K001

Operating voltage range

9HVA0312P3K001

PWM duty cycle

9HVA0312P3G001

Operating voltage range

9HVA0312P3G001
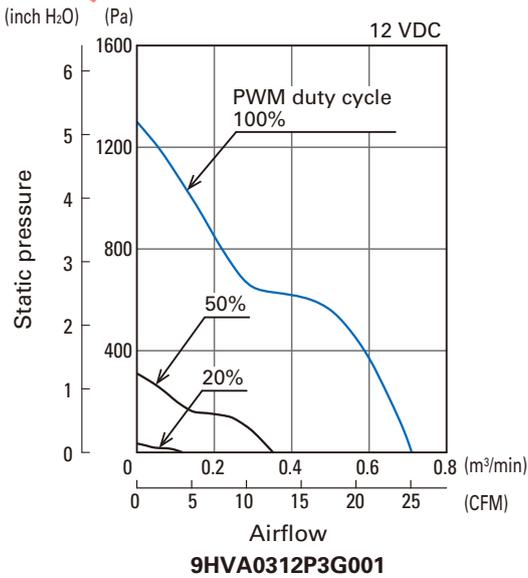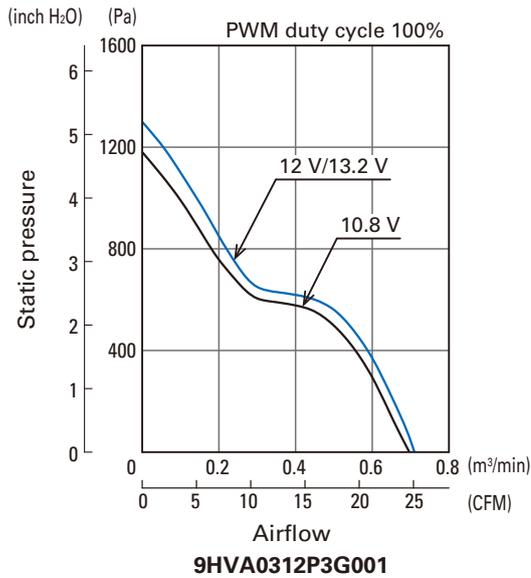
PWM Duty - Speed Characteristics Example

Voltage: 12 VDC
PWM frequency: 25 kHz
38500 min⁻¹

9HVA0312P3K001

Voltage: 12 VDC
PWM frequency: 25 kHz
30000 min⁻¹

9HVA0312P3G001
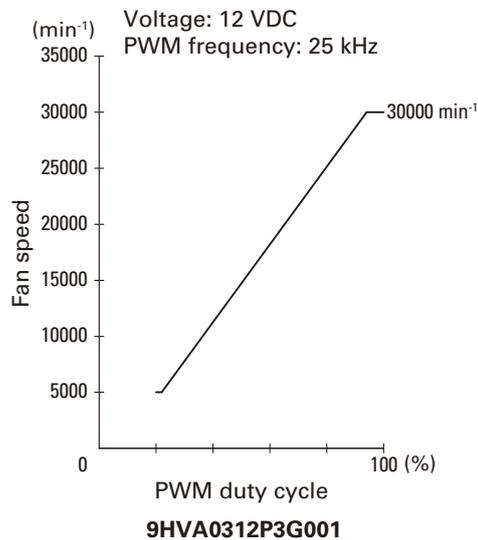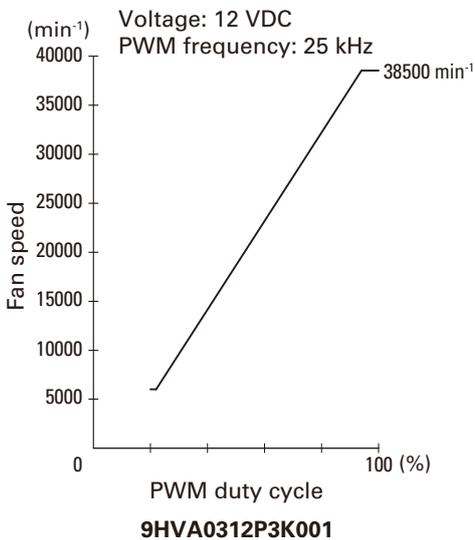
■ PWM Input Signal Example

Input signal waveform
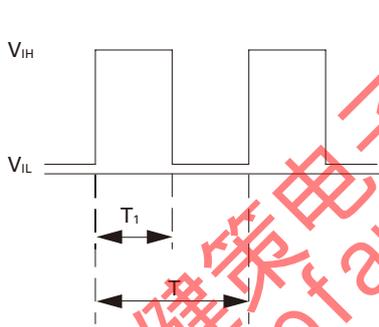
V_{IH} = 2.8 to 5.25 V V_{IL} = 0 to 0.4 V

PWM duty cycle (%) = $\dfrac{T_1}{T}$ ×100   PWM frequency 25 (kHz) = $\dfrac{1}{T}$

Current source (Isource) = 1.0 mA max. (when control voltage is 0 V)

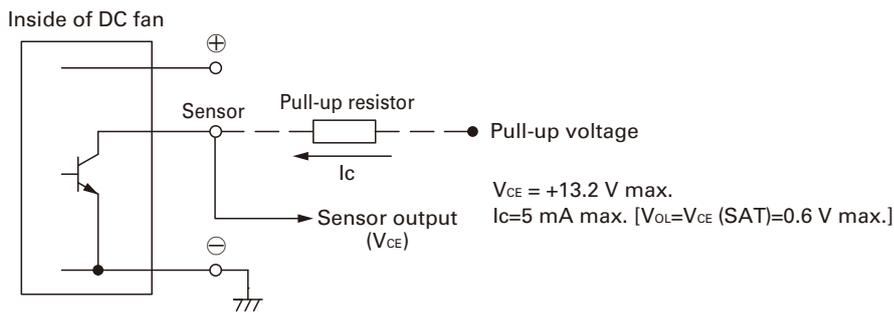Current sink (Isink) = 1.0 mA max. (when control voltage is 5.25 V)

When the PWM control terminal is open,
the fan speed is the same as the speed at 100% PWM duty cycle.
The PWM signal can be used with open collector or drain input.
Note that when using an open collector or drain input,
or inputting a different voltage or frequency,
the speed relative to the PWM duty cycle may differ from this specification.

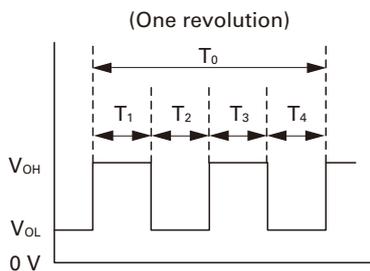## ■ Example of Connection Schematic

DC fan input voltage

Inside of DC fan

5 V

10 kΩ

Isource

Isink

PWM input signal

22 Ω

20 kΩ
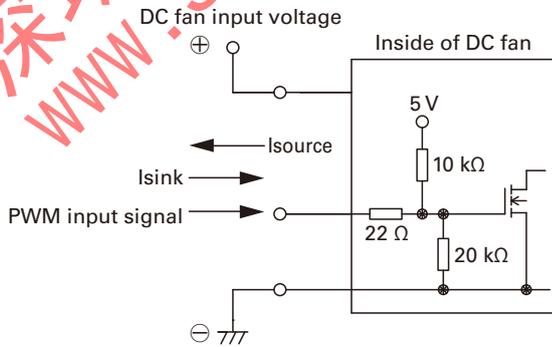
■ Specifications for Pulse Sensors

Output circuit: Open collector

Inside of DC fan

Sensor

Pull-up resistor

Pull-up voltage

Ic

Sensor output
(V_{CE})

V_{CE} = +13.2 V max.
Ic=5 mA max. [$V_{OL}=V_{CE}$ (SAT)=0.6 V max.]

Output waveform (Need pull-up resistor)

In case of steady running

(One revolution)

T_0

T_1 T_2 T_3 T_4

V_{OH}

V_{OL}

0 V

$T_{1\,to\,4}$ ≒ (1/4) T_0
$T_{1\,to\,4}$ ≒ (1/4) T_0=60/4N (s)
N=Fan speed (min^{-1})

■ Dimensions (unit: mm) (With ribs)

4xø3.5±0.3
Mounting hole

38±0.4
30±0.3

38±0.4
30±0.3

320 +30 0

(10)

Lead wire
AWG26
UL 1430

Rotating direction

28±0.5

(4)   (4)

Airflow direction
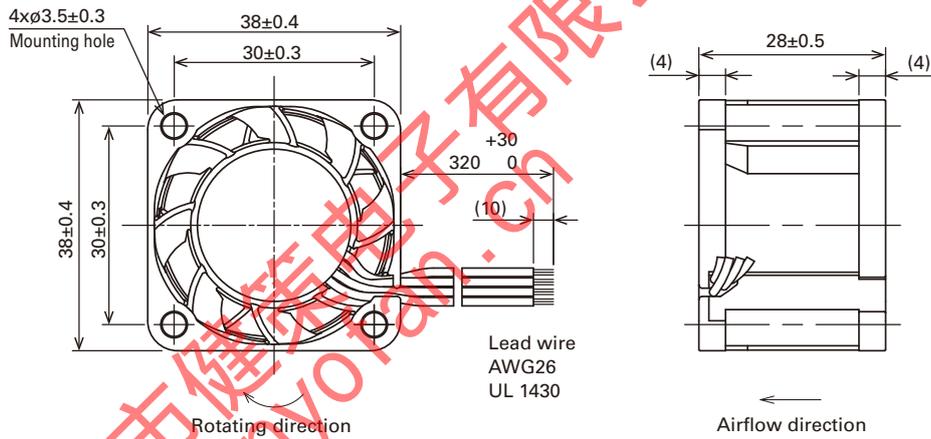
■ Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side

37

30±0.3

(16)

4-ø3.7

37.5

(16)

30±0.3

37
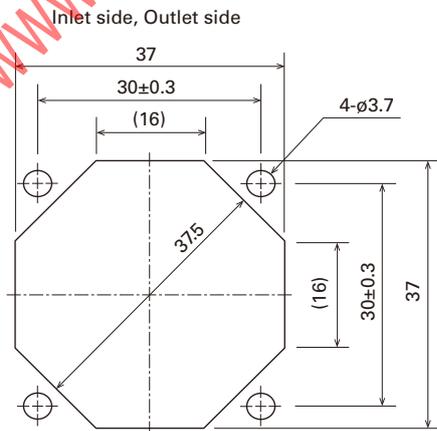
■ Options

Finger guards

Model no.: 109-1065