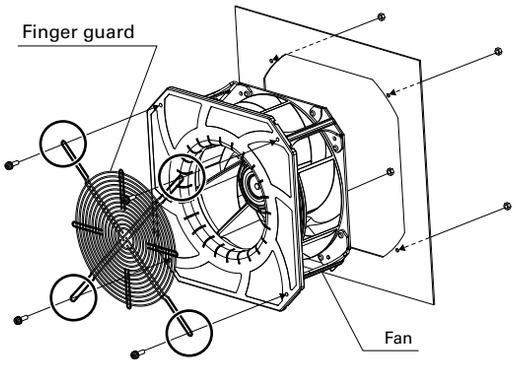
Finger guard 109-1146 and 109-1146H should be mounted with four holes as in the drawing.




## Options

Finger guards page: p. 602

Model no.: 109-1146, 109-1146H

# Long Life Fan

Cooling fan with Max. 180,000 hours of expected life.
Related product: Splash Proof Fan p. 368, 374, 380, 389, 393

## Model Numbering System

Not every combination of the following codes or characters is available. Contact us for an available combination.

| 9L | 04 | 12 | J | 3 | 01 |
|---|---|---|---|---|---|
| Type name | Frame size | Voltage | Speed code | Frame thickness | Sensor specifications |

Fans with PWM control

| 9LG | 06 | 12 | P | 4 | S | 001 |
|---|---|---|---|---|---|---|
| Type name | Frame size | Voltage | PWM control | Frame thickness | Speed code | Individual customer's spec (2 to 3 digits) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Type name | 9CRL | 9L | 9LG | etc. | | | | |
| Frame size (mm) | 04 | 06 | 08 | 09 | 12 | 14 | 17 | 57 |
| | 40×40 | 60×60 | 80×80 | 92×92 | 120×120 | 140×140 | ø172 | ø172×150 (sidecut) |
| Voltage (V) | 12 | 24 | 48 | | | | | |
| | 12 | 24 | 48 | etc. | | | | |
| Speed code | E | F | G | H | J | L | M | S etc. |
| Frame thickness (mm) | 0 | 1 | 3 | 4 | 5 | 8 | | |
| | 76 | 38 | 28 | 25 | 51 | 80 | | |
| Sensor specifications | 01, 001 | | 02, 002 | | D01, D001 | | | |
| | With a pulse sensor | | Without a sensor | | With a lock sensor | | | |

## How to Read Specifications (DC fan)

The following is a sample. See respective product pages for detailed information.

| Model no. | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min⁻¹] | Max. airflow [m³/min] | Max. airflow [CFM] | Max. static pressure [Pa] | Max. static pressure [inchH₂O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9GA0412G7001** | 12 | 7 to 13.8 | 0.17 | 2.04 | 13100 | 0.36 | 12.7 | 192 | 0.77 | 42 | -20 to +70 | 40000/60°C (70000/40°C) |

Rated voltage ····· This is the necessary voltage to drive the fan. E.g.) 12 VDC, 24 VDC, 48 VDC
Operating voltage range ····· The voltage range over which fan operation is guaranteed.
Rated current ····· The current when the fan is operating at rated voltage (at free air).
Rated input ····· The power value when the fan is operating at rated voltage (at free air).
Rated speed ····· The speed when the fan is operating at rated voltage (at free air).
Max. airflow ····· The airflow at 0 Pa static pressure when the fan is operating at rated voltage. (Measured using the double chamber method)
Max. static pressure ····· The static pressure at 0 $m^3$/min airflow when the fan is operating at rated voltage. (Measured using the double chamber method)
SPL ····· A-weighted sound pressure level (SPL) when the fan operates at the rated speed.
For the measurement method, see the Technical Materials section in the catalog.
Operating temperature ····· The temperature range over which fan operation is guaranteed (Non-condensing).
Expected life ····· Service life hours that 90% of bearings will survive without failing when continuously operated at the rated voltage and 60°C temperature. Expected life at 40°C is for reference only.
For more information, please refer to the technical material section.

# 40×40×28 mm

## San Ace 40L 9LG type


## General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
- Expected life ..... See the table below. (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 For details, please refer to p. 616.
- 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.
- Storage temperature ..... -30 to +70˚C (Non-condensing)
- Lead wire ..... ⊕Red ⊖Black Sensor Yellow Control Brown
- Mass ..... 60 g

## Specifications

The models listed below **have a pulse sensor with PWM control.**

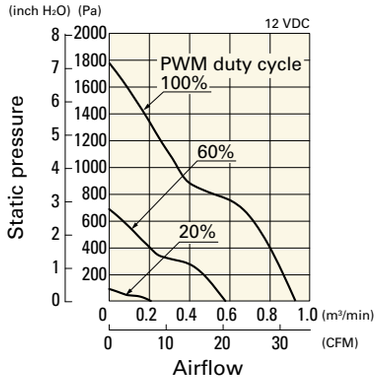
| Model no. | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min⁻¹] | Max. airflow [m³/min] | Max. airflow [CFM] | Max. static pressure [Pa] | Max. static pressure [inchH₂O] | SPL [dB (A)] | Operating temperature [˚C] | Expected life [h] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **9LG0412P3G001** | 12 | 10.2 to 13.8 | 100 | 1.9 | 22.8 | 33500 | 0.93 | 32.9 | 1780 | 7.15 | 68 | -20 to +70 | 80000/60˚C (115000/40˚C) |
| | | | 20 | 0.09 | 1.08 | 7500 | 0.2 | 7.07 | 89 | 0.36 | 33 | | |
| **9LG0412P3S001** | | | 100 | 1.23 | 14.8 | 28000 | 0.77 | 27.2 | 1290 | 5.18 | 65 | | 100000/60˚C (135000/40˚C) |
| | | | 20 | 0.07 | 0.84 | 5700 | 0.15 | 5.3 | 53 | 0.21 | 28 | | |
| **9LG0412P3H001** | | | 100 | 0.69 | 8.28 | 22500 | 0.62 | 21.9 | 830 | 3.33 | 62 | | |
| | | | 20 | 0.07 | 0.84 | 5700 | 0.15 | 5.3 | 53 | 0.21 | 28 | | |
| **9LG0424P3G001** | 24 | 21.6 to 26.4 | 100 | 0.95 | 22.8 | 33500 | 0.93 | 32.9 | 1780 | 7.15 | 68 | | 80000/60˚C (115000/40˚C) |
| | | | 20 | 0.07 | 1.68 | 6800 | 0.18 | 6.36 | 73 | 0.29 | 32 | | |
| **9LG0424P3S001** | | | 100 | 0.61 | 14.6 | 28000 | 0.77 | 27.2 | 1290 | 5.18 | 65 | | 100000/60˚C (135000/40˚C) |
| | | | 20 | 0.05 | 1.2 | 5000 | 0.13 | 4.59 | 41 | 0.16 | 27 | | |
| **9LG0424P3H001** | | | 100 | 0.34 | 8.16 | 22500 | 0.62 | 21.9 | 830 | 3.33 | 62 | | |
| | | | 20 | 0.05 | 1.2 | 5000 | 0.13 | 4.59 | 41 | 0.16 | 27 | | |

* 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.

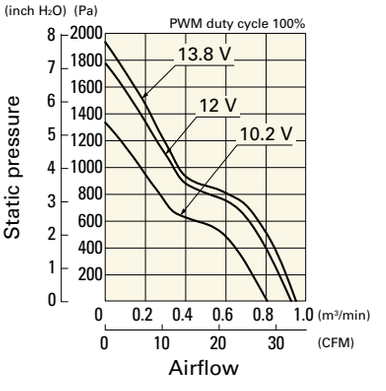
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9LG0412P3G001** With pulse sensor with PWM control

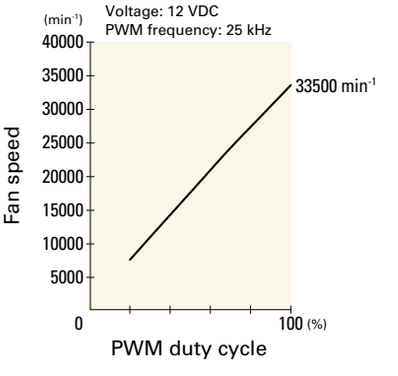
PWM duty cycle




Operating voltage range

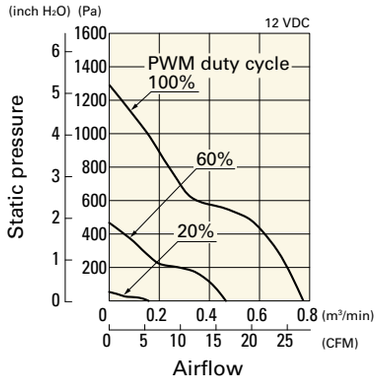



PWM duty - Speed characteristics example

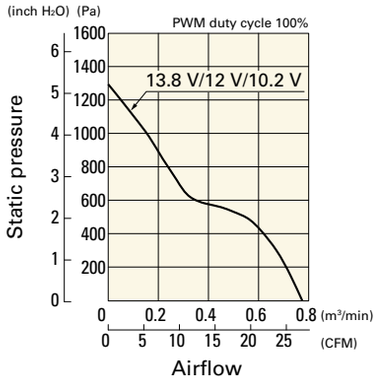


## 9LG0412P3S001 With pulse sensor with PWM control

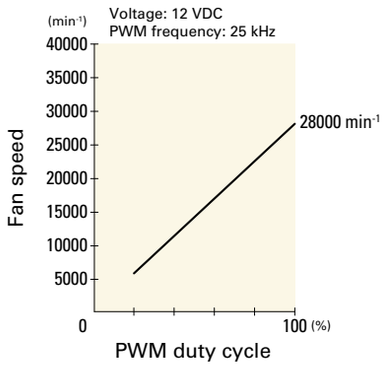
PWM duty cycle




Operating voltage range

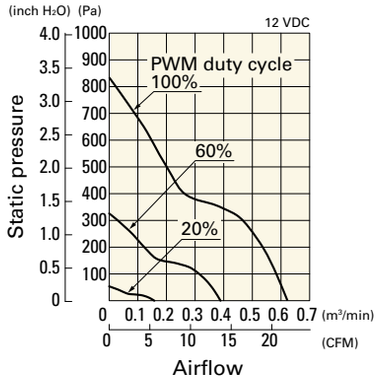



PWM duty - Speed characteristics example

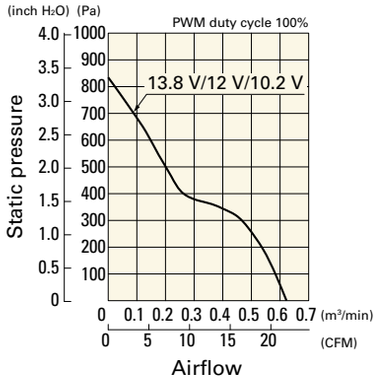



## 9LG0412P3H001 With pulse sensor with PWM control

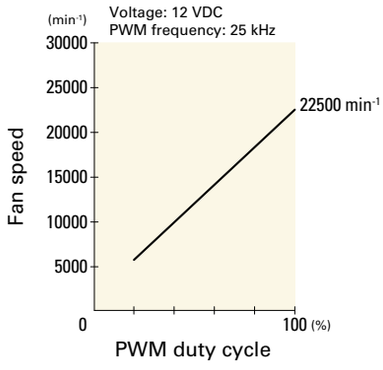
PWM duty cycle




Operating voltage range

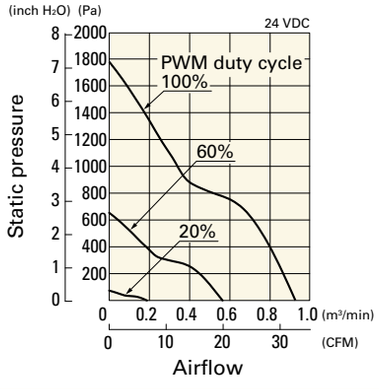



PWM duty - Speed characteristics example

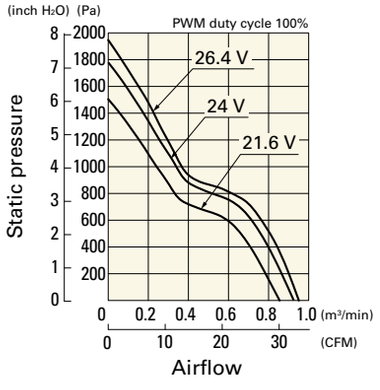



## 9LG0424P3G001 With pulse sensor with PWM control

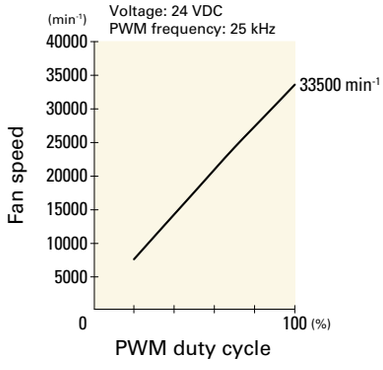
PWM duty cycle




Operating voltage range

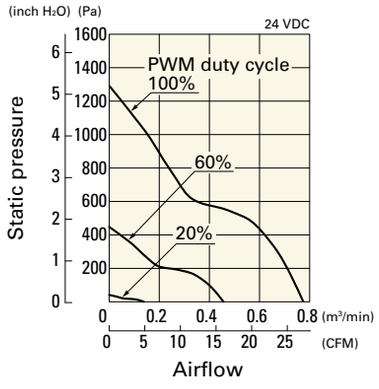



PWM duty - Speed characteristics example

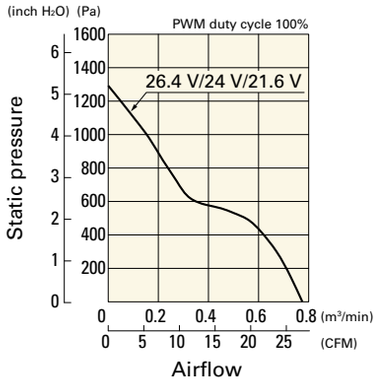



## 9LG0424P3S001 With pulse sensor with PWM control

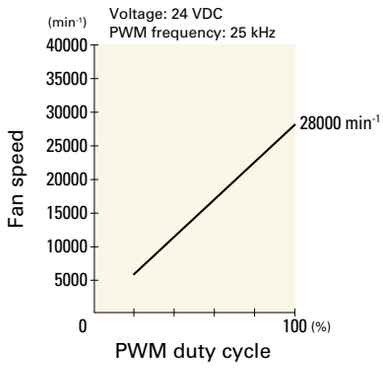
PWM duty cycle




Operating voltage range

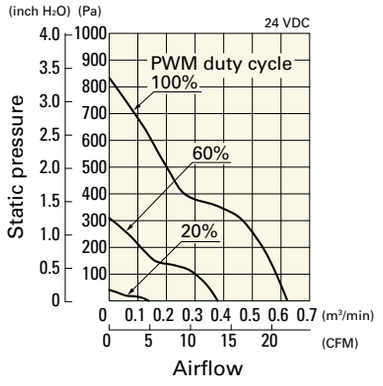



PWM duty - Speed characteristics example

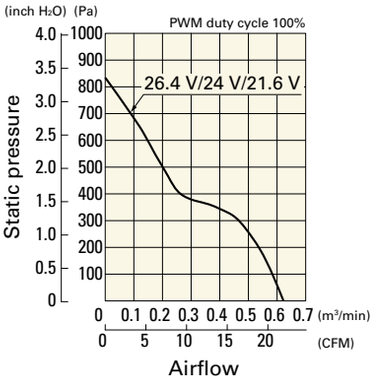


**9LG0424P3H001** With pulse sensor with PWM control

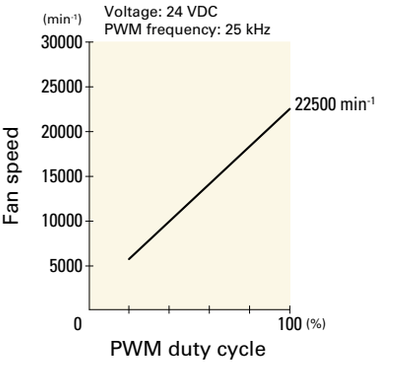
PWM duty cycle



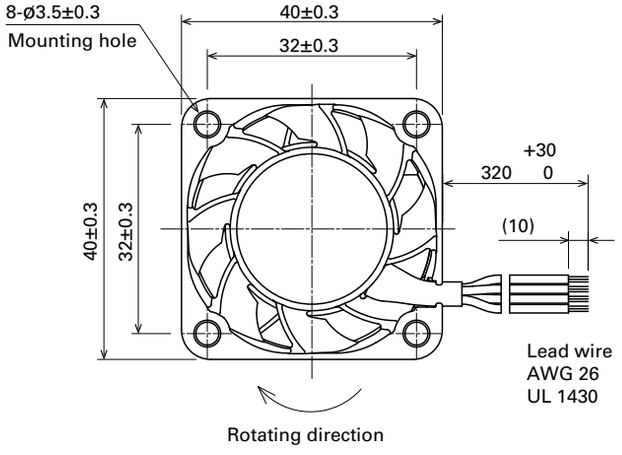

Operating voltage range

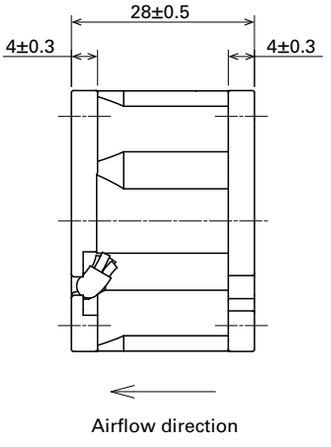



PWM duty - Speed characteristics example



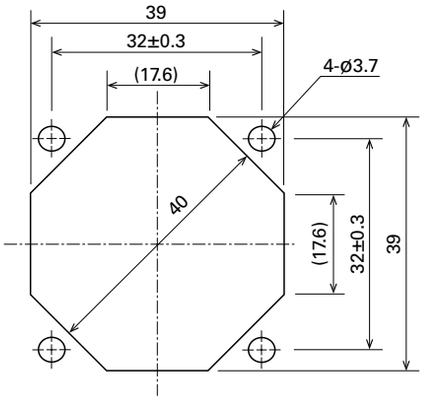

## Dimensions (unit: mm)




## Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Inlet side, Outlet side




## Options

Finger guards page: p. 598

Model no.: 109-059, 109-059H