

# DC Fan

Wide lineup including low power consumption fans (9GA type), silent fans (9S type), and high airflow and high static pressure fans.

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

|            |            |           |            |                 |                       |            |
|------------|------------|-----------|------------|-----------------|-----------------------|------------|
| <b>9GV</b> | <b>12</b>  | <b>12</b> | <b>J</b>   | <b>1</b>        | <b>01</b>             | <b>1</b>   |
| Type name  | Frame size | Voltage   | Speed code | Frame thickness | Sensor specifications | Frame form |

Fans with PWM control function

|            |            |           |                      |                 |            |                                               |            |
|------------|------------|-----------|----------------------|-----------------|------------|-----------------------------------------------|------------|
| <b>9GV</b> | <b>12</b>  | <b>12</b> | <b>P</b>             | <b>4</b>        | <b>G</b>   | <b>01</b>                                     |            |
| Type name  | Frame size | Voltage   | PWM control function | Frame thickness | Speed code | Individual customer's spec<br>(2 to 4 digits) | Frame form |

|                       |                               |       |       |       |                  |        |                              |         |                    |         |      |                                     |                       |                       |      |
|-----------------------|-------------------------------|-------|-------|-------|------------------|--------|------------------------------|---------|--------------------|---------|------|-------------------------------------|-----------------------|-----------------------|------|
| Type name             | 9GA 9GV 9HV etc.              |       |       |       |                  |        |                              |         |                    |         |      |                                     |                       |                       |      |
| Frame size (mm)       | 03                            | 04    | 05    | 06    | 08               | 09     | 12                           | 13      | 14                 | 15      | 17   | 36                                  | 47                    | 57                    | 20   |
|                       | 38×38                         | 40×40 | 52×52 | 60×60 | 80×80            | 92×92  | 120×120                      | 127×127 | 140×140            | 150×150 | ∅172 | 36×36                               | ∅172×147<br>(sidecut) | ∅172×150<br>(sidecut) | ∅200 |
| Voltage (V)           | 05                            | 12    | 24    | 48    |                  |        |                              |         |                    |         |      |                                     |                       |                       |      |
|                       | 5                             | 12    | 24    | 48    | etc.             |        |                              |         |                    |         |      |                                     |                       |                       |      |
| Speed code            | A                             | B     | C     | D     | E                | F      | G                            | H       | J                  | K       | L    | M                                   | S                     | W                     | etc. |
| Frame thickness (mm)  | 0                             | 1     | 2     | 3     | 4                | 5      | 6                            | 7       | 9                  |         |      |                                     |                       |                       |      |
|                       | 70                            | 38    | 32    | 28    | 25               | 50, 51 | 20                           | 15      | 10                 |         |      |                                     |                       |                       |      |
| Sensor specifications | 01 or 001                     |       |       |       | 02 or 002        |        |                              |         | D01 or D001        |         |      |                                     |                       |                       |      |
|                       | With a pulse sensor           |       |       |       | Without a sensor |        |                              |         | With a lock sensor |         |      |                                     |                       |                       |      |
| Frame form            | Nil                           |       |       |       |                  |        | 1                            |         |                    |         |      | 3                                   |                       |                       |      |
|                       | Plastic frame: Ribbed frame   |       |       |       |                  |        | Plastic frame: Ribless frame |         |                    |         |      | 40 × 40 × 28 mm for 1U applications |                       |                       |      |
|                       | Aluminum frame: Ribless frame |       |       |       |                  |        |                              |         |                    |         |      | Plastic frame: Ribbed frame         |                       |                       |      |

**How to Read Specifications** (DC fan) The following is a sample. See respective product pages for detailed information.

| Model no.           | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min]<br>[CFM] | Max. static pressure<br>[Pa]<br>[inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---------------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|------------------------------------------------|--------------------------------------------------------|-----------------|-------------------------------|----------------------------|
| <b>9GA0412G7001</b> | 12                   | 7 to 13.8                      | 0.17                 | 2.04               | 13100                               | 0.36 12.7                                      | 192 0.77                                               | 42              | -20 to +70                    | 40000/60°C<br>(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<sup>3</sup>/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.

## DC Fan

# 36×36×28 mm

San Ace 36 9HV type    



## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 53 g

## Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage<br>[V] | Operating voltage range<br>[V] | PWM duty cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---------------|----------------------|--------------------------------|--------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| 9HV3612P3K001 | 12                   | 10.8 to 13.2                   | 100                | 1.75                 | 21.0               | 32500                               | 0.72 25.4                                   | 1400 5.62                                           | 67              | -20 to +60                    | 30000/60°C<br>(53000/40°C) |
|               |                      |                                | 20                 | 0.05                 | 0.6                | 6000                                | 0.12 4.2                                    | 47.2 0.19                                           | 26              |                               |                            |

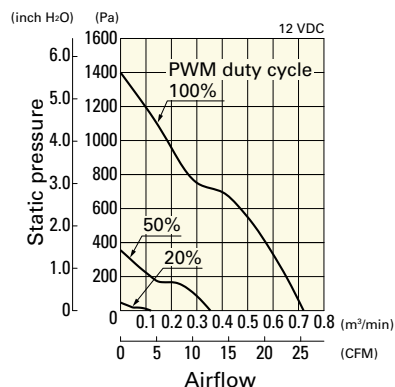
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

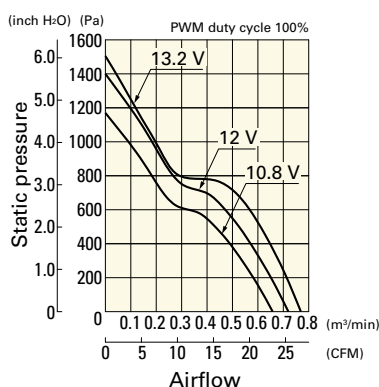
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV3612P3K001** With pulse sensor with PWM control function

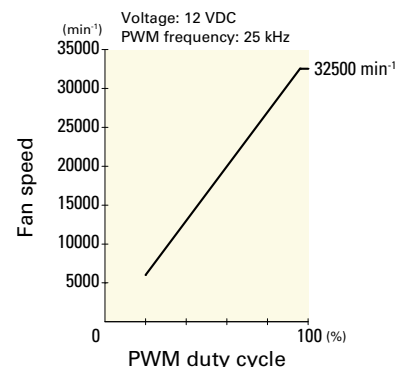
PWM duty cycle



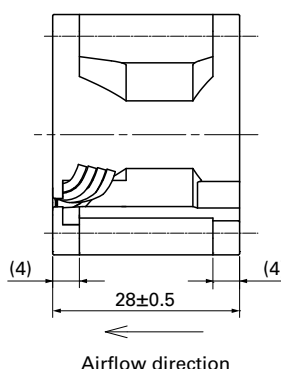
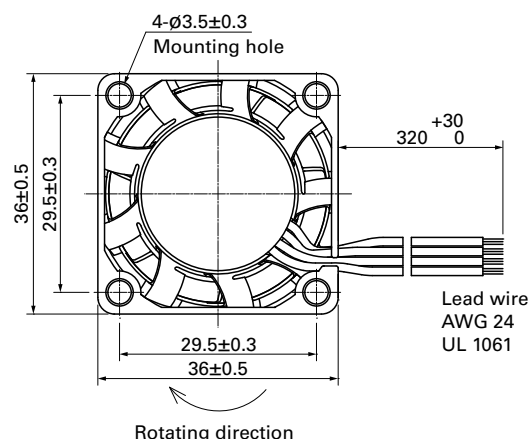
Operating voltage range



PWM duty - Speed characteristics example

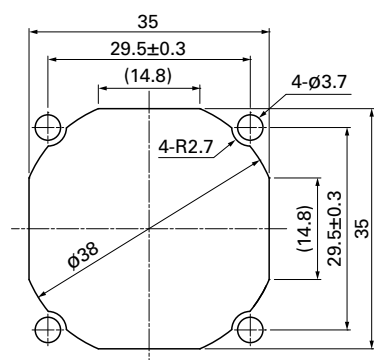


## Dimensions (unit: mm)



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

Inlet side, Outlet side



## Options

Finger guards

page: p. 564

Model no.: 109-1050

## DC Fan

# 36×36×28 mm

## San Ace 36 9GX type



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 46 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GX3612P3K001 | 12                | 10.8 to 13.2                | 100                | 1.3               | 15.6            | 24000                            | 0.69 24.4                                | 838 3.367                                        | 66           | -10 to +60                 | 40000/60°C<br>(70000/40°C) |
|               |                   |                             | 0                  | 0.07              | 0.84            | 3200                             | 0.09 3.2                                 | 14.0 0.056                                       | 32           |                            |                            |

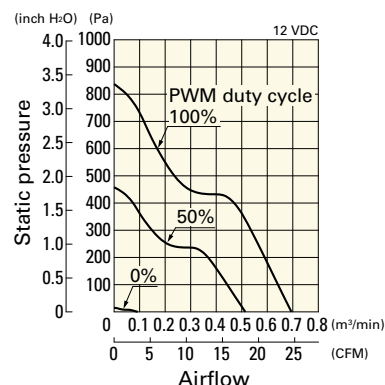
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 612.

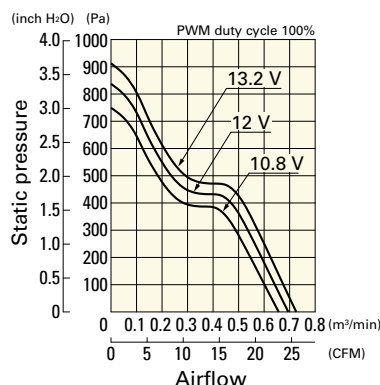
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

#### 9GX3612P3K001 With pulse sensor with PWM control function

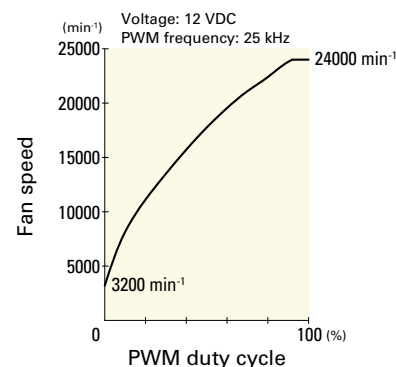
PWM duty cycle



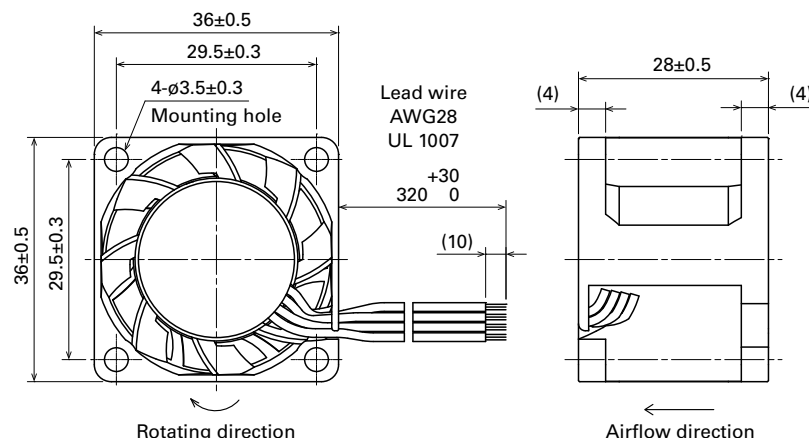
Operating voltage range



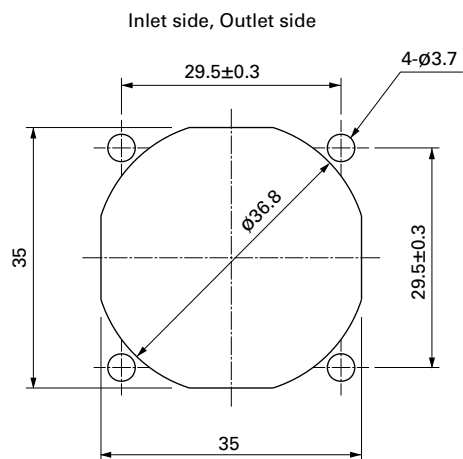
PWM duty - Speed characteristics example



### Dimensions (unit: mm)



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



## Options

Finger guards

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Model no.: 109-1050

# DC Fan

# 38×38×28 mm

## San Ace 38 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 52 g

### 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9GA0312P3K001 | 12                | 10.8 to 13.2                | 100                 | 0.62              | 7.4             | 25000                            | 0.6 21.2                                 | 800 3.21                                         | 59.0         | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                 |                   |                             | 0                   | 0.06              | 0.7             | 3000                             | 0.07 2.5                                 | 11 0.04                                          | 15.0         |                            |                            |
| » 9GA0312P3J001 |                   |                             | 100                 | 0.52              | 6.2             | 23500                            | 0.57 20.1                                | 720 2.89                                         | 57.5         |                            |                            |
|                 |                   |                             | 0                   | 0.06              | 0.7             | 3000                             | 0.07 2.5                                 | 11 0.04                                          | 15.0         |                            |                            |
| » 9GA0312P3G001 |                   |                             | 100                 | 0.33              | 4.0             | 19000                            | 0.45 15.9                                | 460 1.85                                         | 53.0         |                            |                            |
|                 |                   |                             | 0                   | 0.06              | 0.7             | 3000                             | 0.07 2.5                                 | 11 0.04                                          | 15.0         |                            |                            |

\* 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.

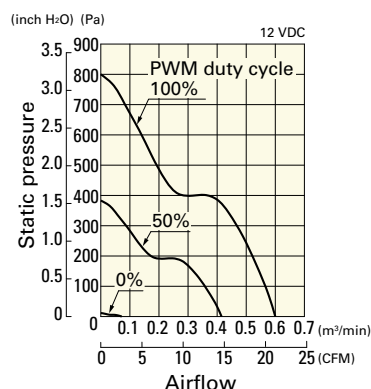
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 606 to 607.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

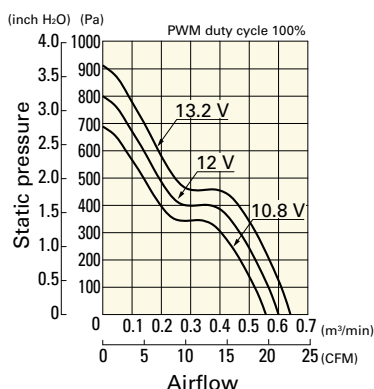
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0312P3K001** With pulse sensor with PWM control function

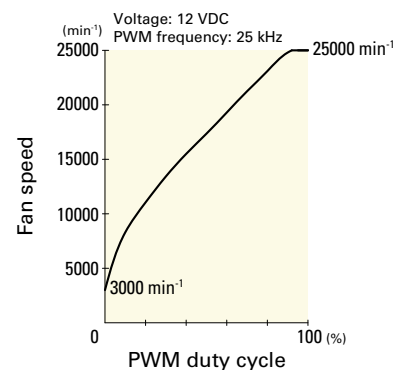
PWM duty cycle



Operating voltage range



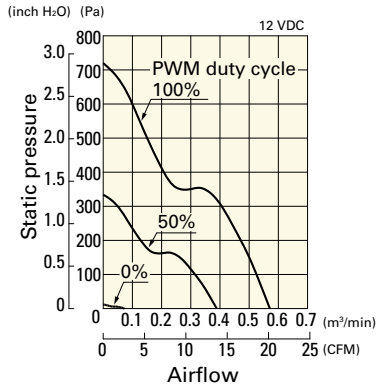
PWM duty - Speed characteristics example



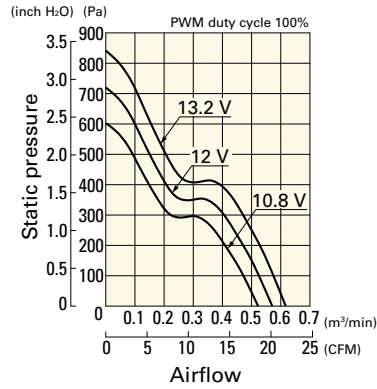
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0312P3J001** With pulse sensor with PWM control function

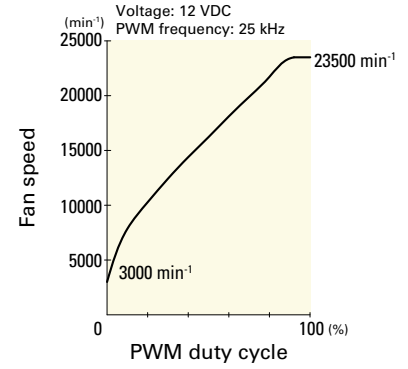
PWM duty cycle



Operating voltage range

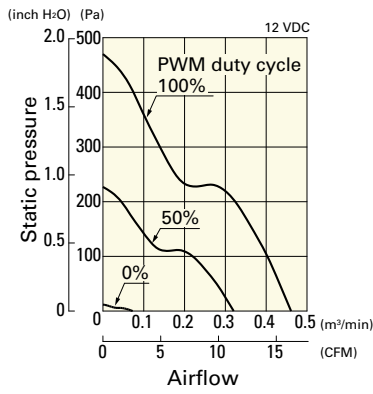


PWM duty - Speed characteristics example

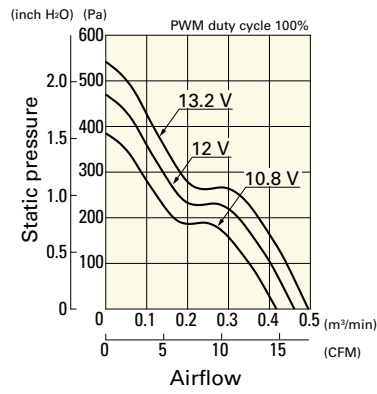


**9GA0312P3G001** With pulse sensor with PWM control function

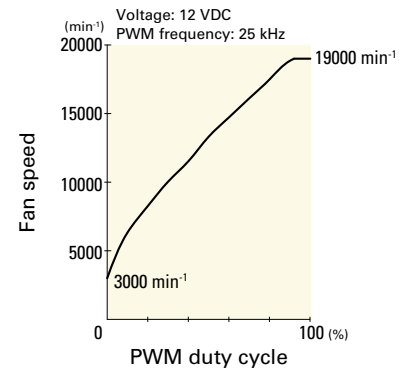
PWM duty cycle



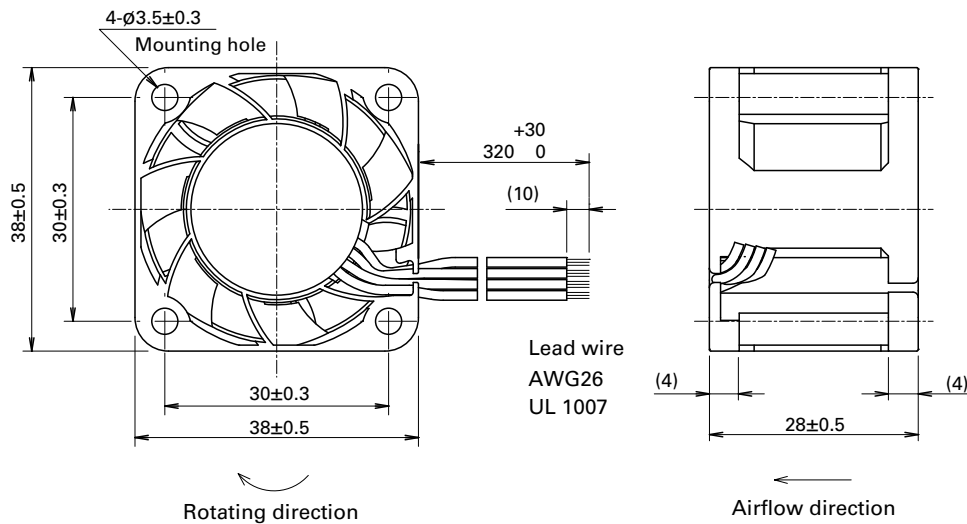
Operating voltage range



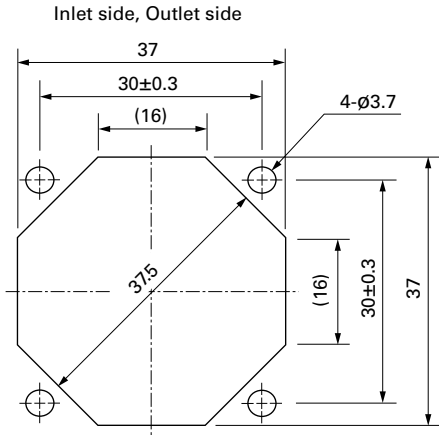
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

## Finger guards

page: p. 564

Model no.: 109-1065



# 40×40×10 mm

**San Ace 40 9P** type   


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 19 g

## Specifications

The models listed below **have ribs and pulse sensors.**

| Model no.       | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| ▶▶ 109P0405H901 | 5                    | 4.5 to 5.5                     | 0.16                 | 0.8                | 6200                                | 0.15 5.3                                    | 41.2 0.165                                          | 25              | -10 to +60                    | 40000/60°C<br>(70000/40°C) |
| ▶▶ 109P0405M901 |                      |                                | 0.11                 | 0.55               | 5000                                | 0.12 4.2                                    | 27 0.108                                            | 21              |                               |                            |
| ▶▶ 109P0412H901 | 12                   | 7 to 13.8                      | 0.07                 | 0.84               | 6200                                | 0.15 5.3                                    | 41.2 0.165                                          | 25              |                               |                            |
| ▶▶ 109P0412M901 |                      |                                | 0.06                 | 0.72               | 5000                                | 0.12 4.2                                    | 27 0.108                                            | 21              |                               |                            |
| 109P0424H901    | 24                   | 20.4 to 27.6                   | 0.04                 | 0.96               | 6200                                | 0.15 5.3                                    | 41.2 0.165                                          | 25              |                               |                            |

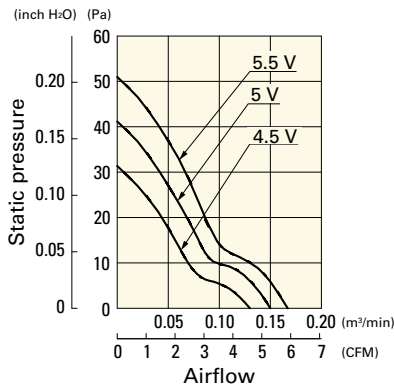
Note 1: Sensor and control options are available for selection. Refer to the table on p. 603.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

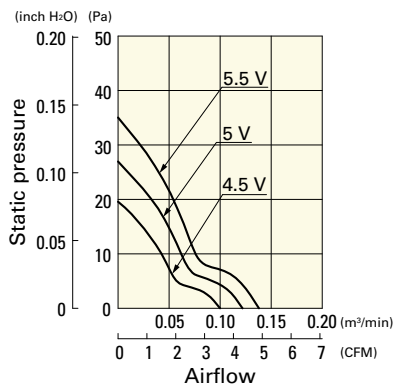
## Airflow - Static Pressure Characteristics

**109P0405H901** With pulse sensor

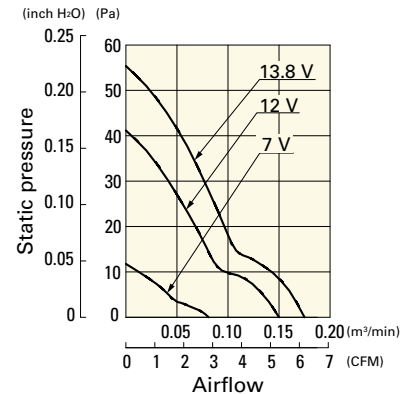
Operating voltage range


**109P0405M901** With pulse sensor

Operating voltage range


**109P0412H901** With pulse sensor

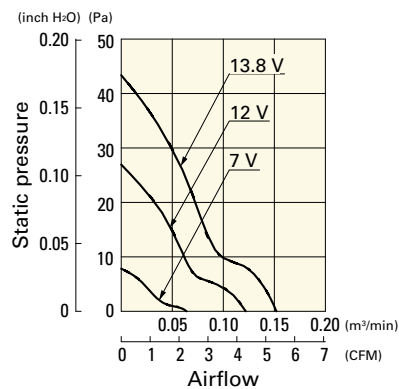
Operating voltage range



## Airflow - Static Pressure Characteristics

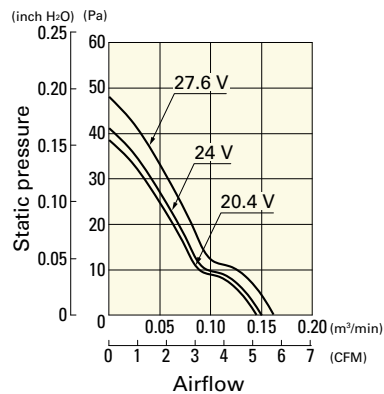
### 109P0412M901 With pulse sensor

Operating voltage range

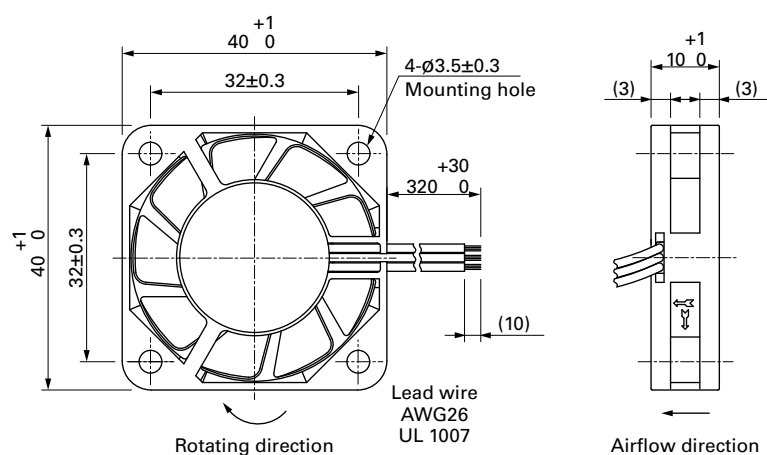


### 109P0424H901 With pulse sensor

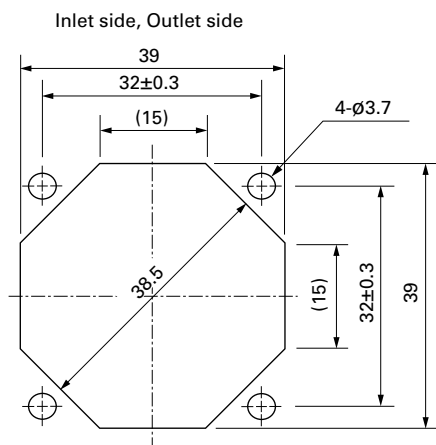
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

# 40×40×15 mm

## San Ace 40 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 28 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0412P7G001 | 12                | 10.2 to 13.8                | 100                | 0.17              | 2.04            | 13100                            | 0.36 12.7                                | 192 0.77                                         | 42           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |

\* 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.

The models listed below **have ribs and pulse sensors.**

| Model no.    | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | 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<br>(70000/40°C) |
| 9GA0412H7001 |                   |                             | 0.06              | 0.72            | 7300                             | 0.2 7.1                                  | 59.6 0.24                                        | 28           |                            |                            |

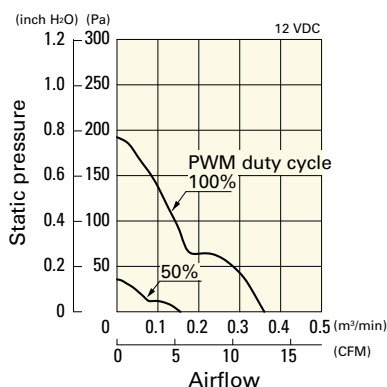
Note 1: Sensor and control options are available for selection. Refer to the table on p. 607.

Note 2: The ♻️ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

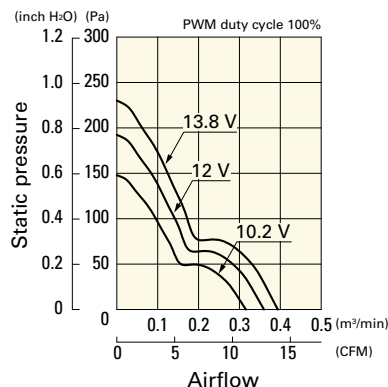
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0412P7G001** With pulse sensor with PWM control function

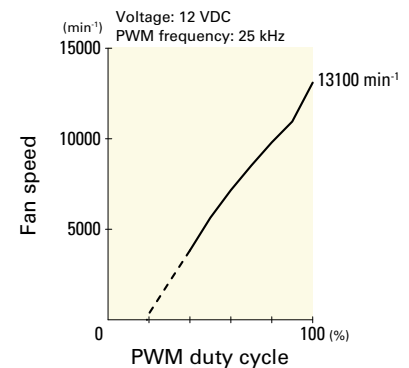
PWM duty cycle



Operating voltage range



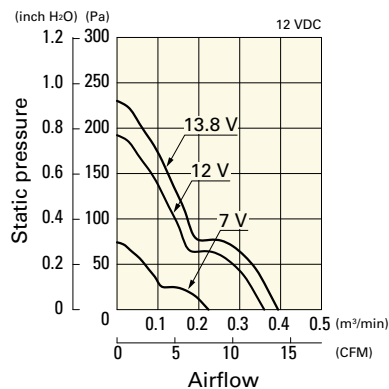
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

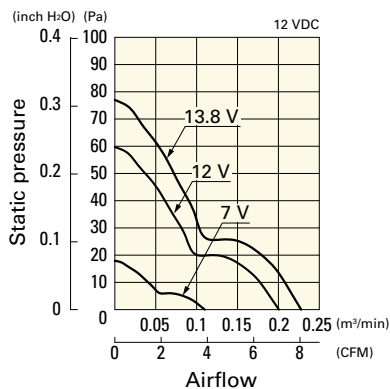
**9GA0412G7001** With pulse sensor

Operating voltage range

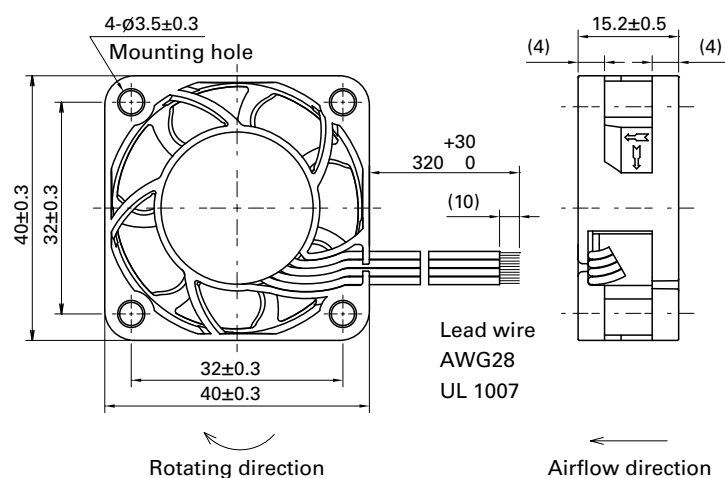


**9GA0412H7001** With pulse sensor

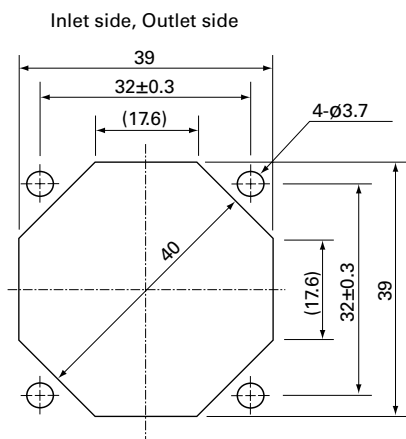
Operating voltage range



## Dimensions (unit: mm) (With pulse sensor with PWM control function)



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



## Options

Finger guards

page: p. 564

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

# 40×40×15 mm

## San Ace 40 9P<sub>type</sub>



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 32 g

### Specifications

The models listed below **have ribs and pulse sensors.**

| Model no.       | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| ▶▶ 109P0405H701 | 5                 | 4.5 to 5.5                  | 0.28              | 1.4             | 7700                             | 0.18 6.4                                 | 75.5 0.303                                       | 28           | -20 to +60                 | 60000/60°C<br>(90000/40°C) |
| ▶▶ 109P0405M701 |                   |                             | 0.21              | 1.05            | 6500                             | 0.15 5.3                                 | 52.9 0.213                                       | 24           |                            |                            |
| ▶▶ 109P0412H701 | 12                | 10.2 to 13.8                | 0.13              | 1.56            | 7700                             | 0.18 6.4                                 | 75.5 0.303                                       | 28           |                            |                            |
| ▶▶ 109P0412M701 |                   |                             | 0.095             | 1.14            | 6500                             | 0.15 5.3                                 | 52.9 0.213                                       | 24           |                            |                            |
| ▶▶ 109P0424H701 | 24                | 20.4 to 27.6                | 0.08              | 1.92            | 7700                             | 0.18 6.4                                 | 75.5 0.303                                       | 28           |                            |                            |

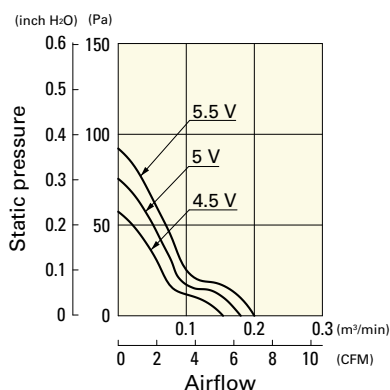
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 603 to 604.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

### Airflow - Static Pressure Characteristics

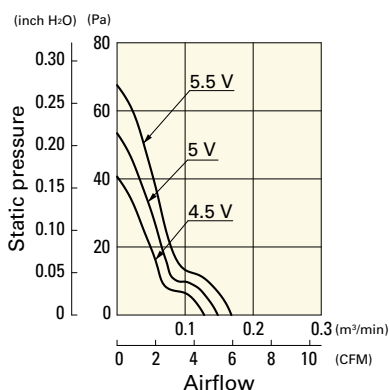
**109P0405H701** With pulse sensor

Operating voltage range



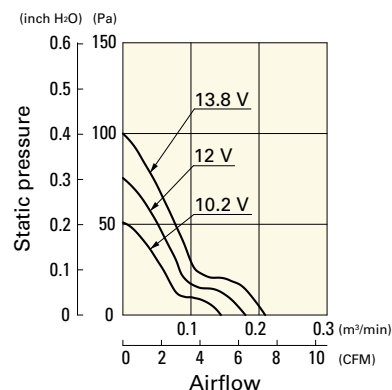
**109P0405M701** With pulse sensor

Operating voltage range



**109P0412H701** With pulse sensor

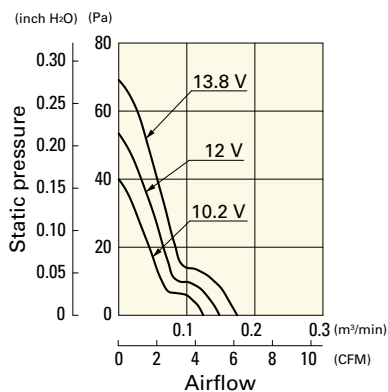
Operating voltage range



## Airflow - Static Pressure Characteristics

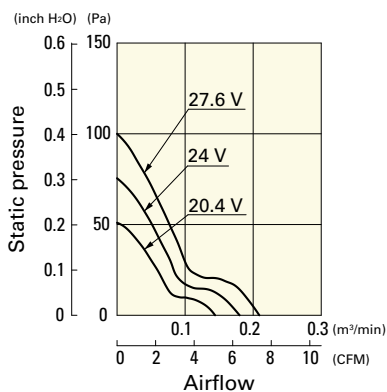
**109P0412M701** With pulse sensor

Operating voltage range

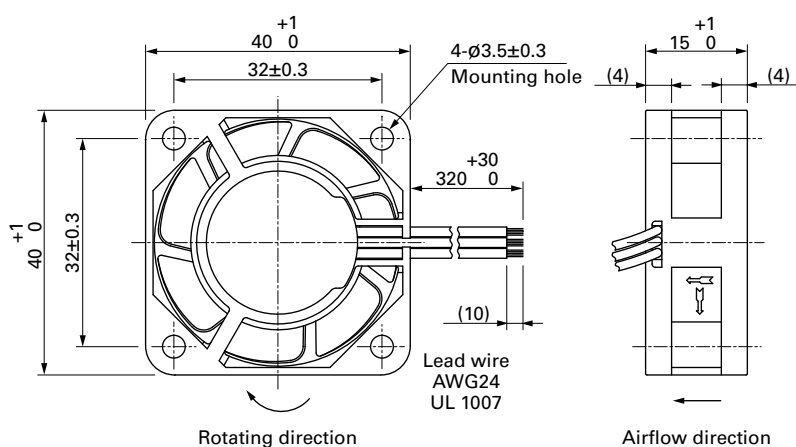


**109P0424H701** With pulse sensor

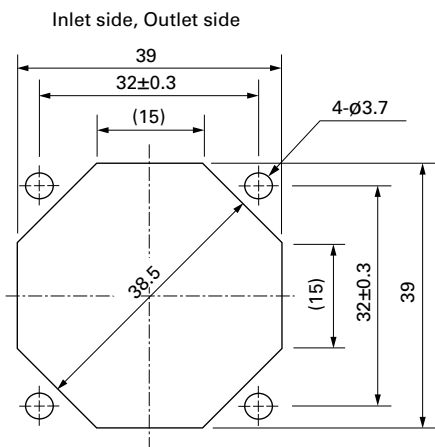
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

# 40×40×20 mm


**San Ace 40 9GA type** Low Power Consumption Fan 

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 35 g

## Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]       |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|-------------------------|
| 9GA0405P6H001 | 5                 | 4.5 to 5.5                  | 100                | 0.35              | 1.75            | 12400                            | 0.33 11.7                                | 191 0.77                                         | 40           | -20 to +70                 | 60000/60°C (90000/40°C) |
| 9GA0405P6F001 |                   |                             | 100                | 0.18              | 0.9             | 8000                             | 0.21 7.4                                 | 79.5 0.32                                        | 28           |                            |                         |
| 9GA0412P6G001 | 12                | 10.2 to 13.8                | 100                | 0.23              | 2.76            | 16000                            | 0.42 14.8                                | 318 1.28                                         | 47           |                            | 40000/60°C (70000/40°C) |
|               |                   |                             | 0                  | 0.04              | 0.48            | 3800                             | 0.1 3.5                                  | 17.9 0.07                                        | 14           |                            |                         |
| 9GA0412P6H001 |                   |                             | 100                | 0.14              | 1.68            | 12400                            | 0.33 11.7                                | 191 0.77                                         | 40           |                            | 60000/60°C (90000/40°C) |
|               |                   |                             | 0                  | 0.04              | 0.48            | 3800                             | 0.1 3.5                                  | 17.9 0.07                                        | 14           |                            |                         |
| 9GA0412P6F001 |                   |                             | 100                | 0.08              | 0.96            | 8000                             | 0.21 7.4                                 | 79.5 0.32                                        | 28           |                            |                         |
|               |                   |                             | 0                  | 0.03              | 0.36            | 2200                             | 0.06 2.1                                 | 6.0 0.02                                         | 10           |                            |                         |
| 9GA0424P6G001 | 24                | 20.4 to 27.6                | 100                | 0.13              | 3.12            | 16000                            | 0.42 14.8                                | 318 1.28                                         | 47           |                            | 40000/60°C (70000/40°C) |
| 9GA0424P6H001 |                   |                             | 100                | 0.08              | 1.92            | 12400                            | 0.33 11.7                                | 191 0.77                                         | 40           |                            | 60000/60°C (90000/40°C) |
| 9GA0424P6F001 |                   |                             | 100                | 0.04              | 0.96            | 8000                             | 0.21 7.4                                 | 79.5 0.32                                        | 28           |                            |                         |

\* 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.

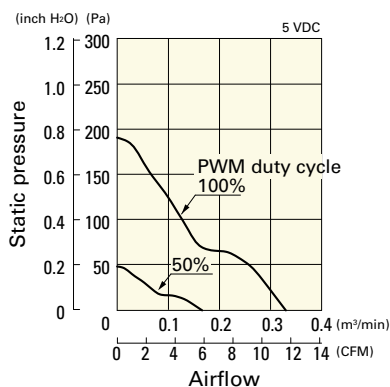
Note 1: Sensor and control options are available for selection. Refer to the table on p. 607.

Note 2: The  mark indicates Short LeadTime Service applicable models. See p. 630 for details.

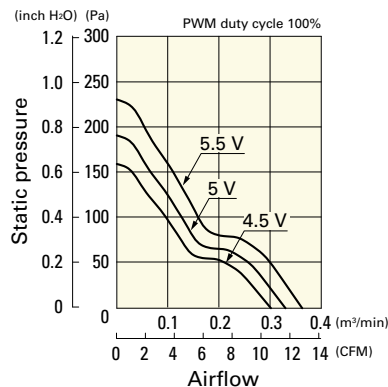
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0405P6H001** With pulse sensor with PWM control function

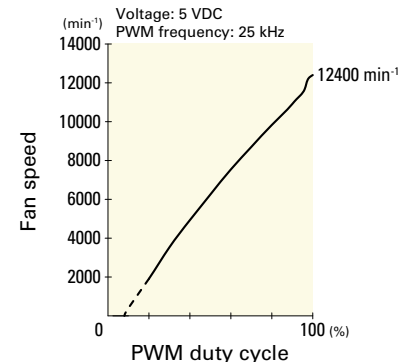
PWM duty cycle



Operating voltage range



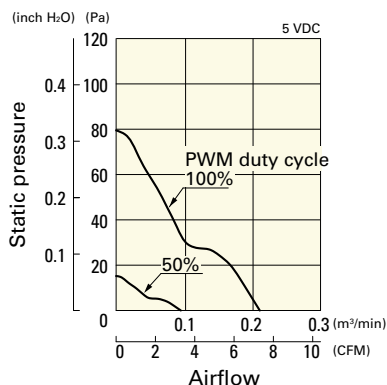
PWM duty - Speed characteristics example



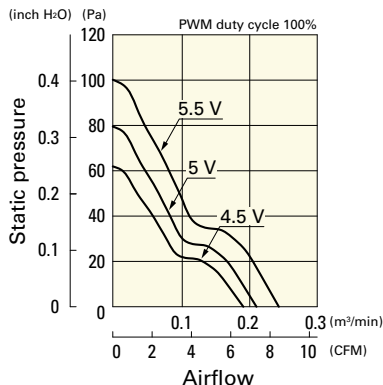
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0405P6F001** With pulse sensor with PWM control function

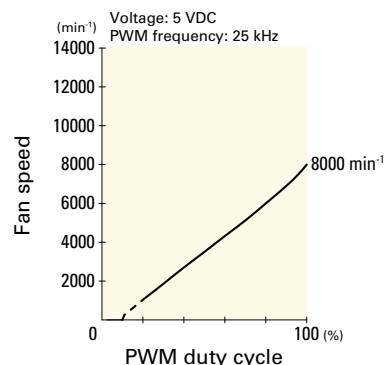
PWM duty cycle



Operating voltage range

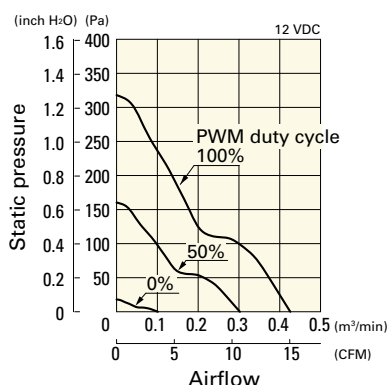


PWM duty - Speed characteristics example

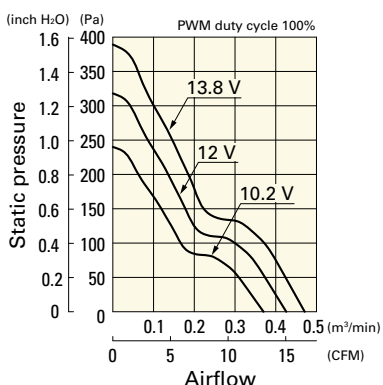


**9GA0412P6G001** With pulse sensor with PWM control function

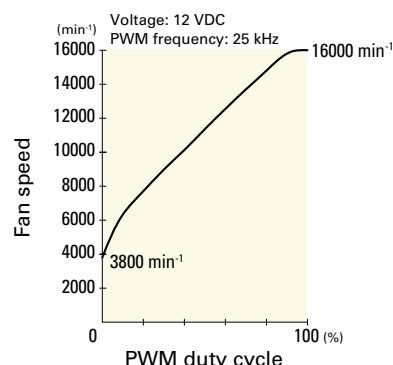
PWM duty cycle



Operating voltage range

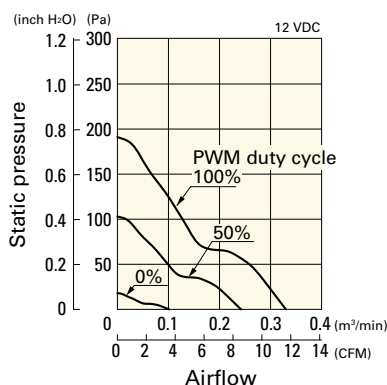


PWM duty - Speed characteristics example

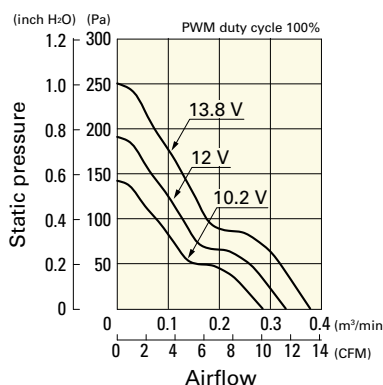


**9GA0412P6H001** With pulse sensor with PWM control function

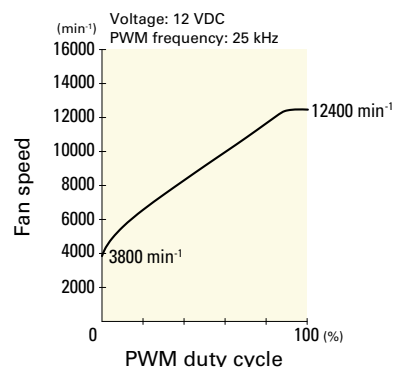
PWM duty cycle



Operating voltage range

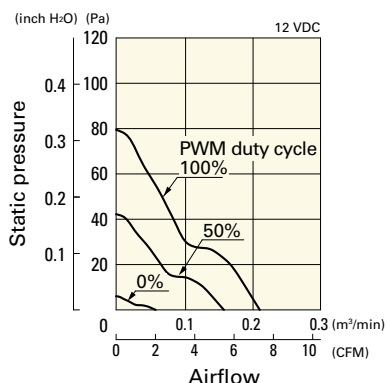


PWM duty - Speed characteristics example

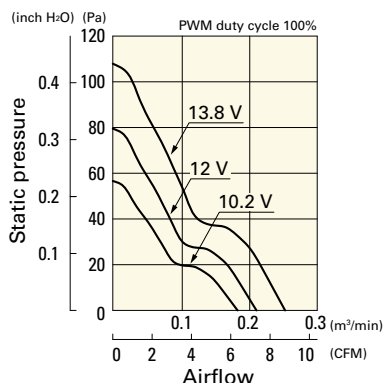


**9GA0412P6F001** With pulse sensor with PWM control function

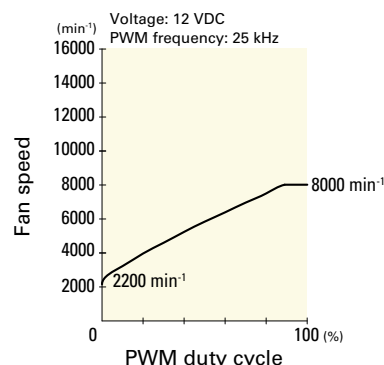
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

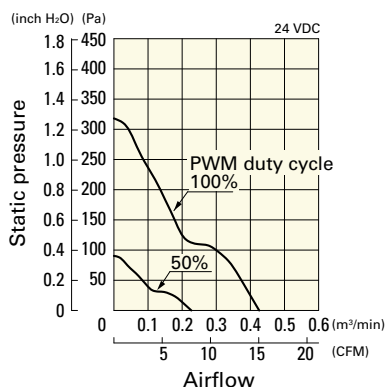




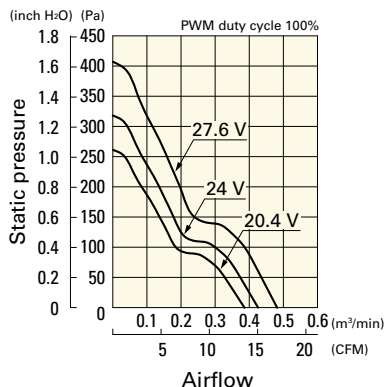
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0424P6G001** With pulse sensor with PWM control function

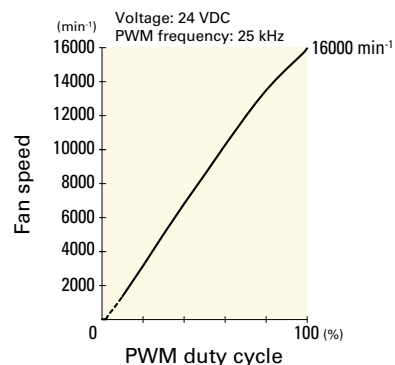
PWM duty cycle



Operating voltage range

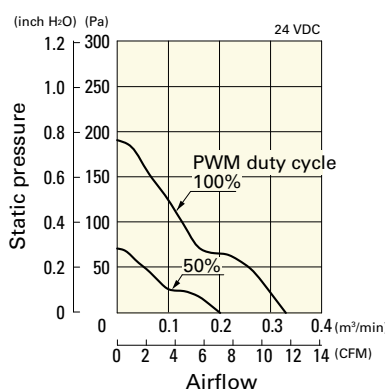


PWM duty - Speed characteristics example

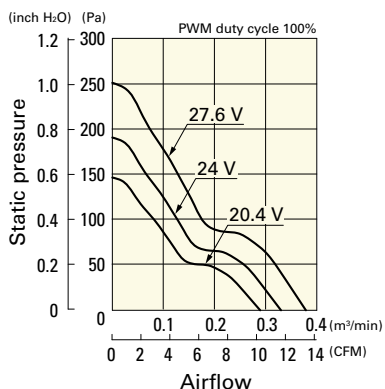


**9GA0424P6H001** With pulse sensor with PWM control function

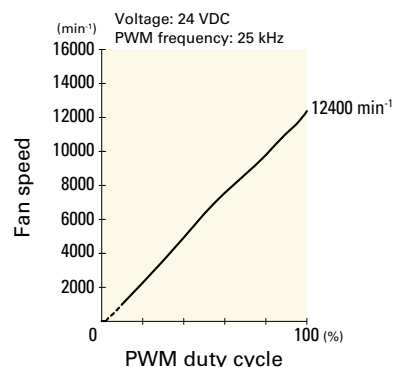
PWM duty cycle



Operating voltage range

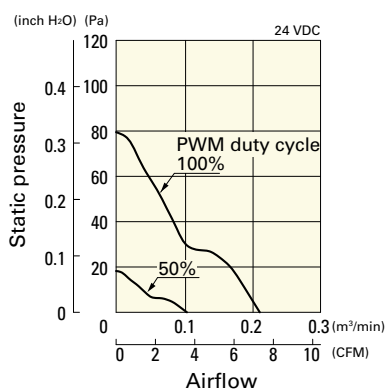


PWM duty - Speed characteristics example

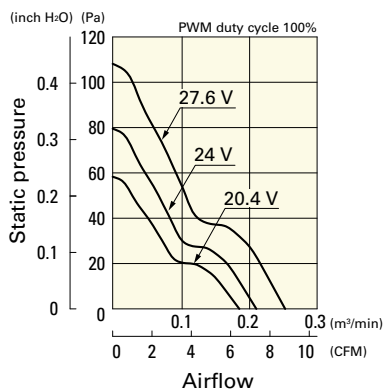


**9GA0424P6F001** With pulse sensor with PWM control function

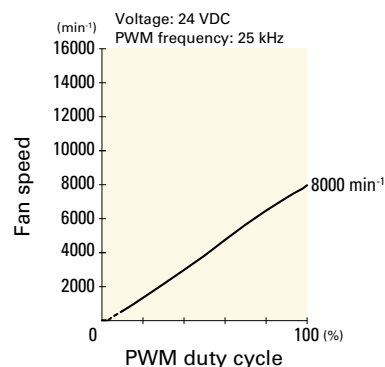
PWM duty cycle



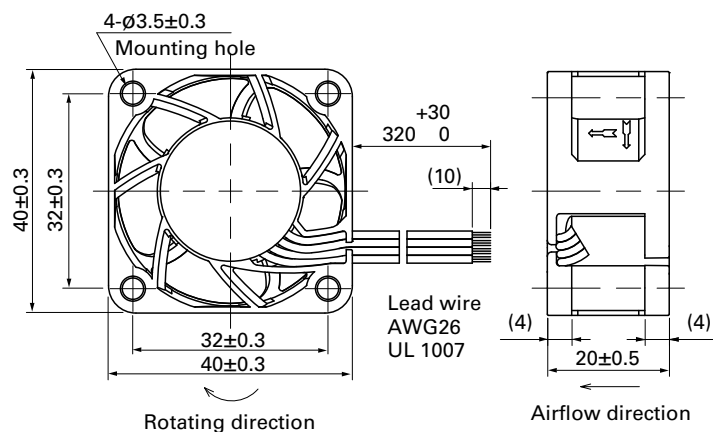
Operating voltage range



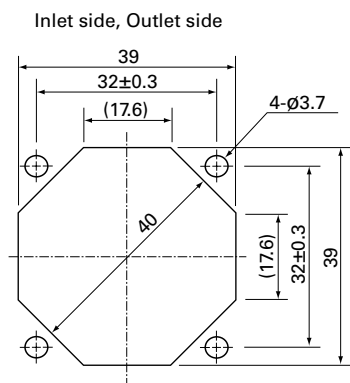
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

# 40×40×20 mm

**San Ace 40 9P** type   


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 45 g

## Specifications

The models listed below **have ribs and pulse sensors**.

| Model no.       | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| ▶▶ 109P0405F601 | 5                    | 4.5 to 5.5                     | 0.25                 | 1.25               | 6500                                | 0.183 6.5                                   | 45.1 0.181                                          | 28              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
| ▶▶ 109P0405M601 |                      |                                | 0.12                 | 0.6                | 5000                                | 0.136 4.8                                   | 26.5 0.106                                          | 24              |                               |                            |
| ▶▶ 109P0412F601 | 12                   | 7 to 13.8                      | 0.09                 | 1.08               | 6500                                | 0.183 6.5                                   | 45.1 0.181                                          | 28              |                               |                            |
| ▶▶ 109P0412M601 |                      | 8 to 13.8                      | 0.06                 | 0.72               | 5000                                | 0.136 4.8                                   | 26.5 0.106                                          | 24              |                               |                            |
| ▶▶ 109P0424F601 | 24                   | 14 to 27.6                     | 0.06                 | 1.44               | 6500                                | 0.183 6.5                                   | 45.1 0.181                                          | 28              |                               |                            |
| ▶▶ 109P0424B601 |                      | 20.4 to 27.6                   | 0.06                 | 1.44               | 5200                                | 0.14 4.9                                    | 28.3 0.114                                          | 25              |                               |                            |

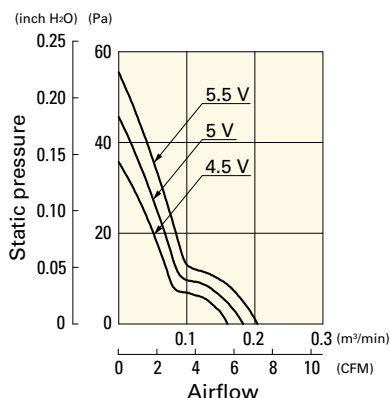
Note 1: Sensor and control options are available for selection. Refer to the table on p. 603.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

## Airflow - Static Pressure Characteristics

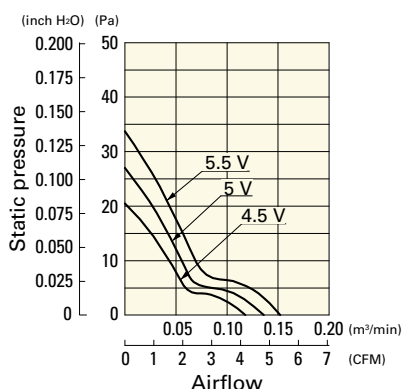
**109P0405F601** With pulse sensor

Operating voltage range



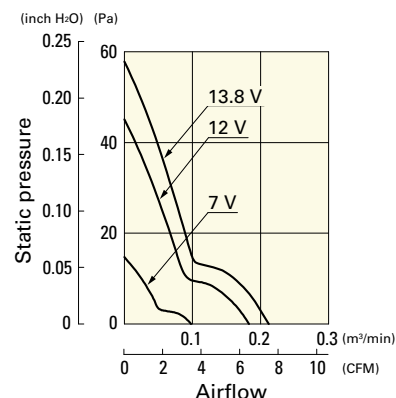
**109P0405M601** With pulse sensor

Operating voltage range



**109P0412F601** With pulse sensor

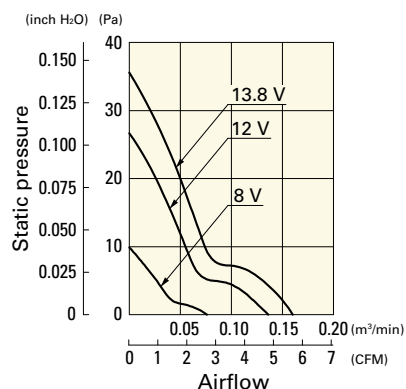
Operating voltage range



## Airflow - Static Pressure Characteristics

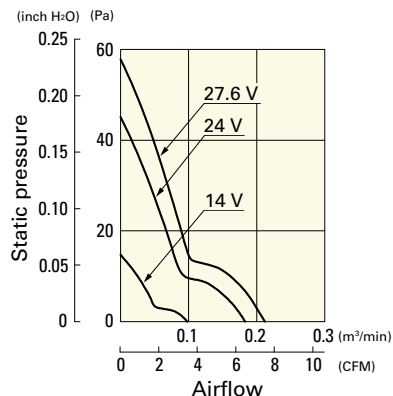
**109P0412M601** With pulse sensor

Operating voltage range



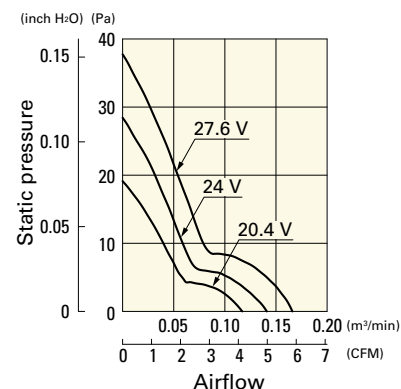
**109P0424F601** With pulse sensor

Operating voltage range

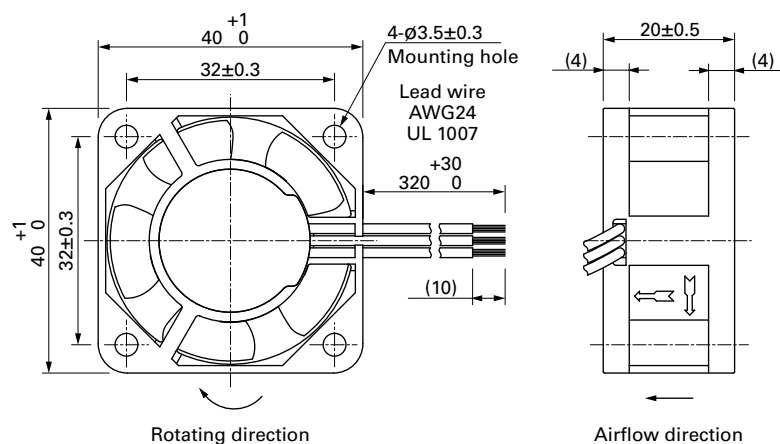


**109P0424B601** With pulse sensor

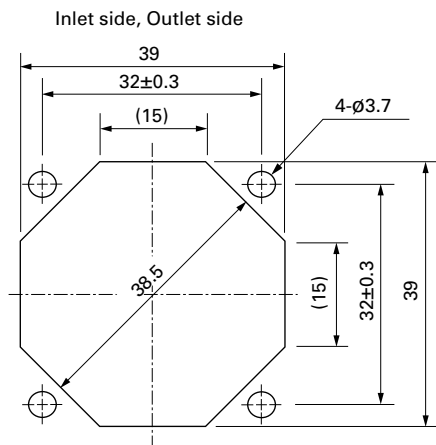
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

# 40×40×28 mm

## San Ace 40 9HVA type US



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 57 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.      | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9HVA0412P3J001 | 12                | 10.2 to 13.8                | 100                | 2.6               | 31.2            | 38000                            | 1.05 37.1                                | 2300 9.24                                        | 71           | -20 to +70                 | 30000/60°C<br>(53000/40°C) |
|                |                   |                             | 20                 | 0.12              | 1.4             | 8000                             | 0.22 7.8                                 | 101 0.41                                         | 34           |                            |                            |
| 9HVA0424P3G001 | 24                | 21.6 to 26.4                | 100                | 0.88              | 21.1            | 33000                            | 0.92 32.5                                | 1650 6.63                                        | 68           |                            |                            |
|                |                   |                             | 20                 | 0.05              | 1.2             | 6750                             | 0.18 6.4                                 | 74 0.30                                          | 31           |                            |                            |

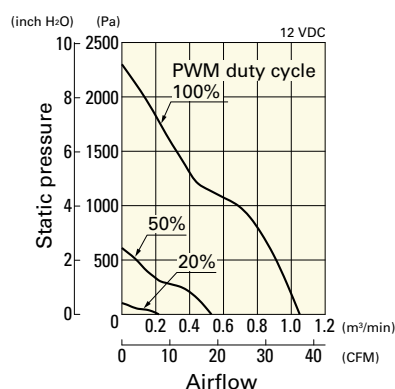
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

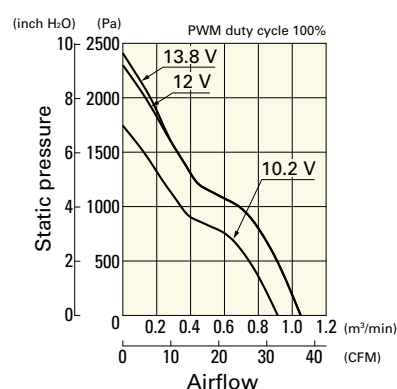
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HVA0412P3J001** With pulse sensor with PWM control function

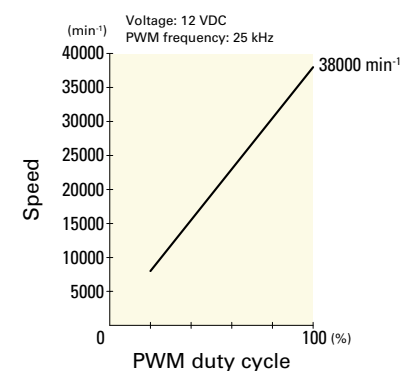
PWM duty cycle



Operating voltage range



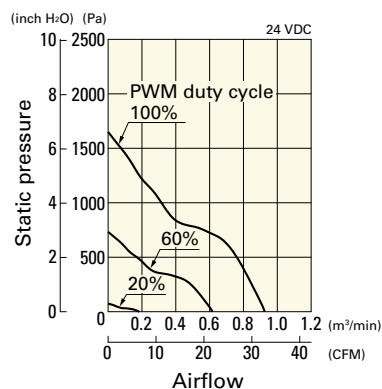
PWM duty - Speed characteristics example



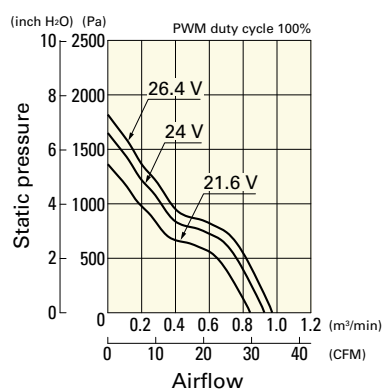
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HVA0424P3G001** With pulse sensor with PWM control function

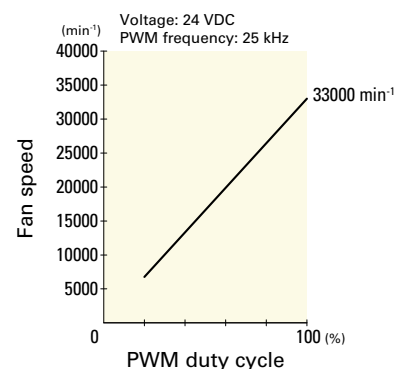
PWM duty cycle



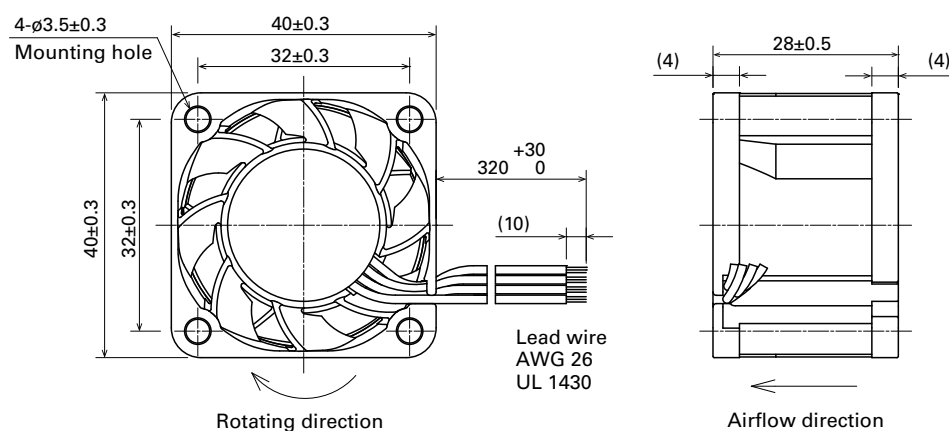
Operating voltage range



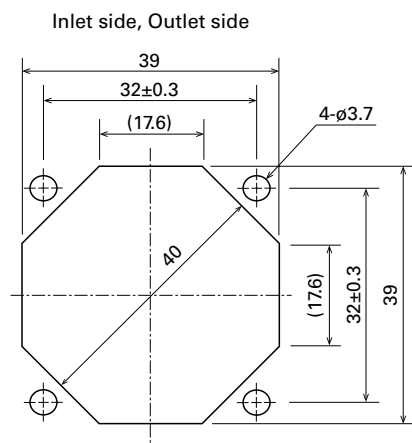
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

# 40×40×28 mm

**San Ace 40 9GAX** type Low Power Consumption Fan 


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 53 g

## 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |      | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|------|-----------------------------------------------------|------|-----------------|-------------------------------|----------------------------|
| 9GAX0412P3S001 | 12                   | 10.8 to 12.6                   | 100                   | 1.3                  | 15.6               | 25000                               | 0.9                            | 31.8 | 1000                                                | 4.02 | 64              | -20 to +60                    | 30000/60°C<br>(53000/40°C) |
| 20             |                      |                                | 0.07                  | 0.84                 | 4400               | 0.155                               | 5.5                            | 32   | 0.125                                               | 21.5 |                 |                               |                            |
| 9GAX0412P3S003 |                      |                                | 100                   | 1.3                  | 15.6               | 25000                               | 0.9                            | 31.8 | 1000                                                | 4.02 | 64              |                               |                            |
| 0              |                      | 0.11                           | 1.32                  | 7800                 | 0.26               | 9.2                                 | 87                             | 0.35 | 38                                                  |      |                 |                               |                            |
| 9GAX0412P3K001 |                      | 10.8 to 13.2                   | 100                   | 0.92                 | 11.04              | 22000                               | 0.81                           | 28.6 | 800                                                 | 3.21 | 61              |                               |                            |
|                |                      |                                | 20                    | 0.07                 | 0.84               | 4200                                | 0.15                           | 5.3  | 28                                                  | 0.11 | 21              |                               |                            |
| 9GAX0412P3K003 |                      |                                | 100                   | 0.92                 | 11.04              | 22000                               | 0.81                           | 28.6 | 800                                                 | 3.21 | 61              |                               |                            |
|                |                      |                                | 0                     | 0.1                  | 1.2                | 6500                                | 0.24                           | 8.5  | 70                                                  | 0.28 | 32              |                               |                            |

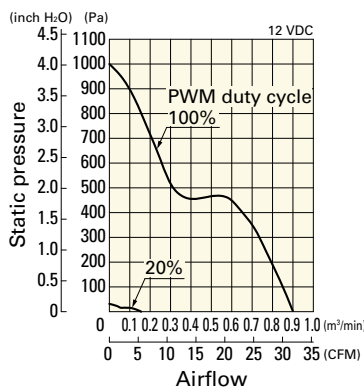
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

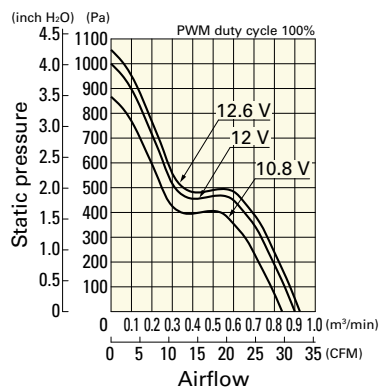
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GAX0412P3S001** With pulse sensor with PWM control function

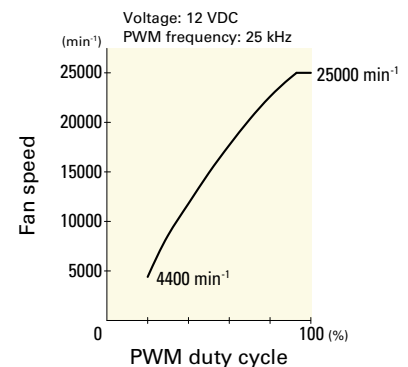
PWM duty cycle



Operating voltage range



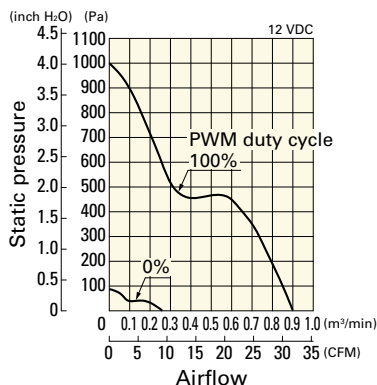
PWM duty - Speed characteristics example



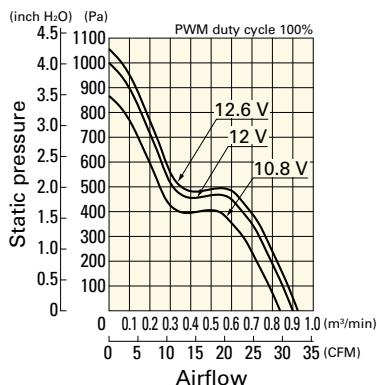
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GAX0412P3S003** With pulse sensor with PWM control function

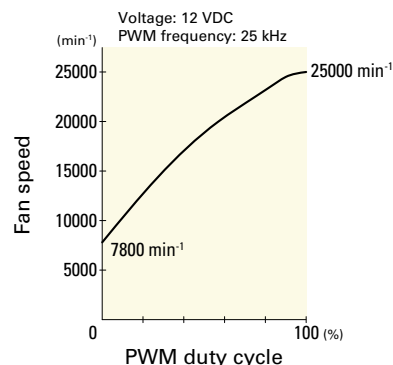
PWM duty cycle



Operating voltage range

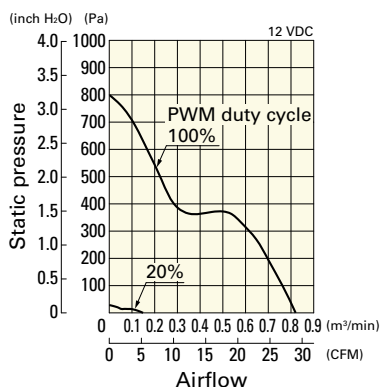


PWM duty - Speed characteristics example

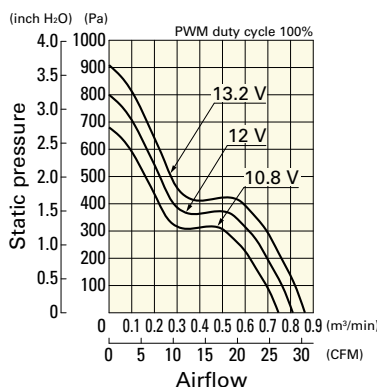


**9GAX0412P3K001** With pulse sensor with PWM control function

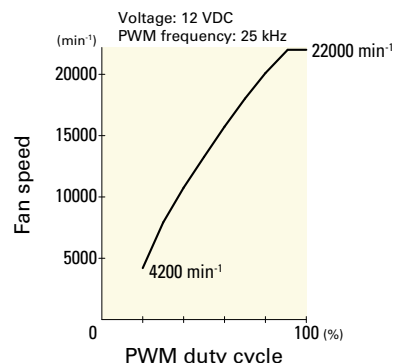
PWM duty cycle



Operating voltage range

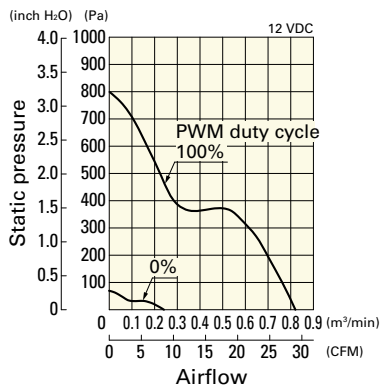


PWM duty - Speed characteristics example

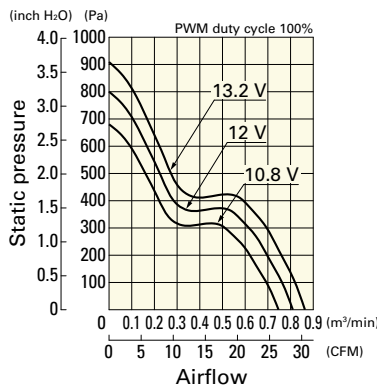


**9GAX0412P3K003** With pulse sensor with PWM control function

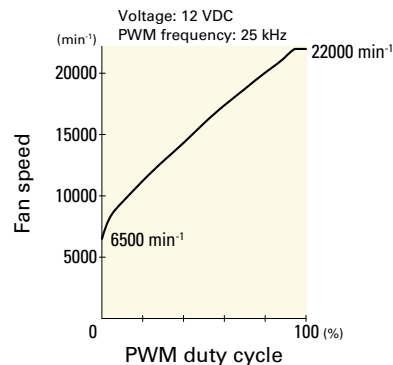
PWM duty cycle



Operating voltage range

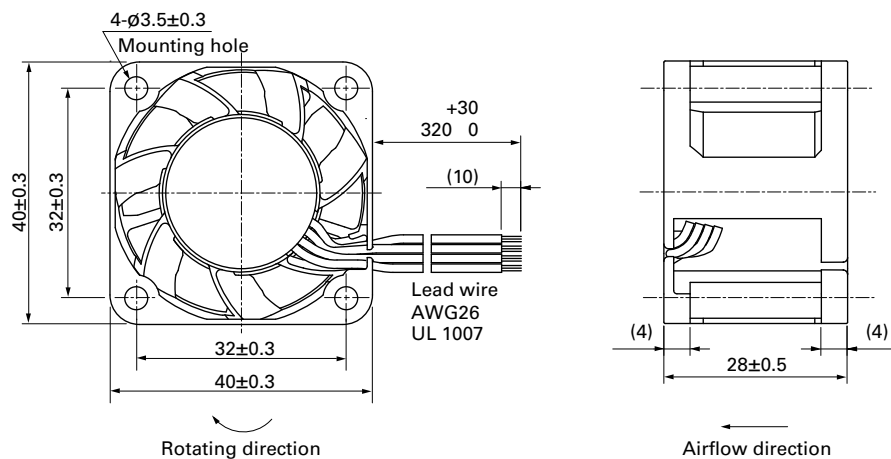


PWM duty - Speed characteristics example

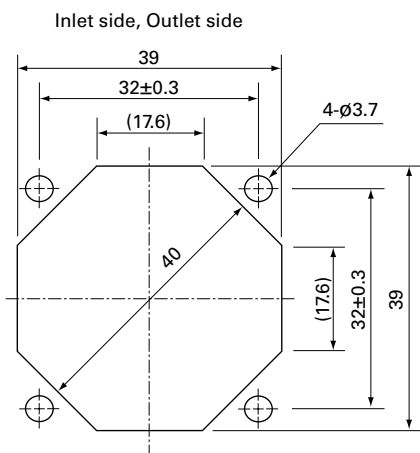




## Dimensions (unit: mm) (With ribs)



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



## Options

Finger guards

page: p. 564

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

# 40x40x28 mm

San Ace 40 9HV type   



## General Specifications

- Material ..... Frame: Aluminum, 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. 580.
- 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 pulse sensors with PWM control function.**

| Model no.     | Rated voltage<br>[V] | Operating voltage range<br>[V] | PWM duty cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---------------|----------------------|--------------------------------|--------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| 9HV0412P3K001 | 12                   | 10.8 to 12.6                   | 100                | 1.52                 | 18.3               | 25000                               | 0.83 29.3                                   | 1100 4.42                                           | 65              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |
|               |                      |                                | 0                  | 0.2                  | 2.4                | 7500                                | 0.25 8.8                                    | 99 0.4                                              | 37              |                               |                            |

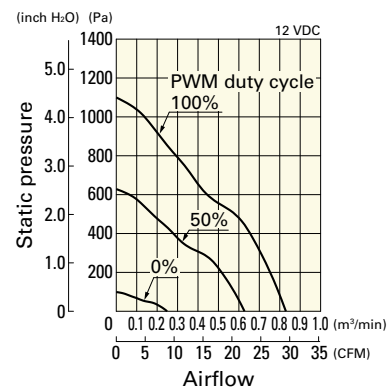
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

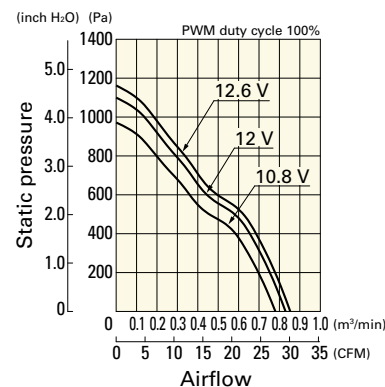
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0412P3K001** With pulse sensor with PWM control function

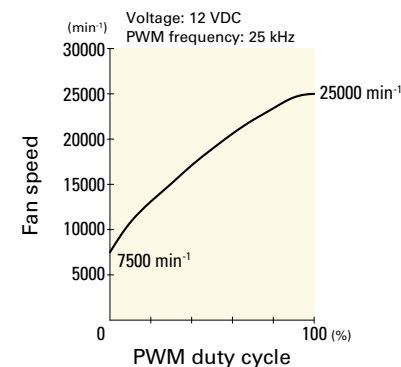
PWM duty cycle



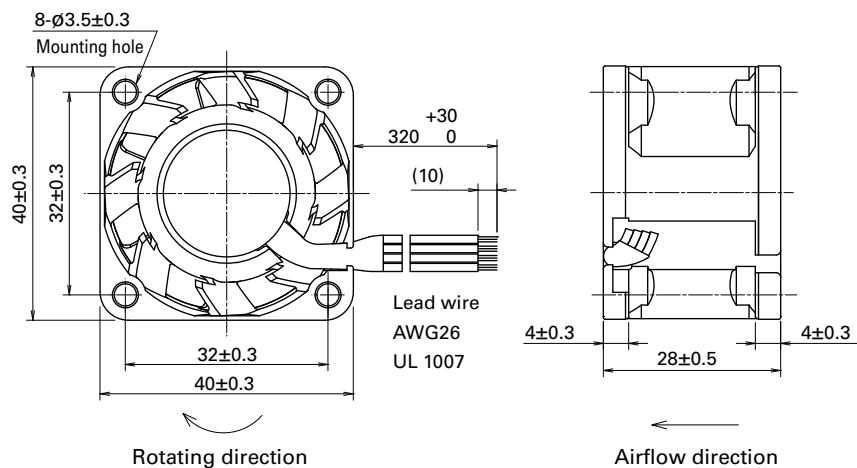
Operating voltage range



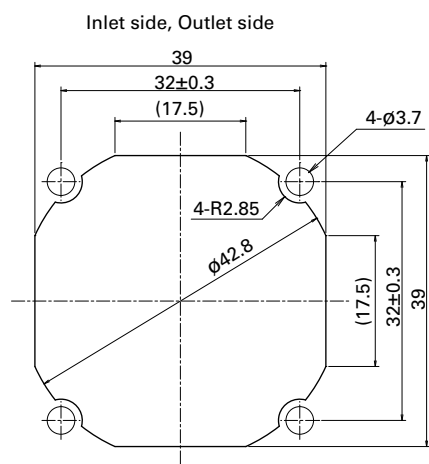
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

## DC Fan

# 40×40×28 mm


**San Ace 40 9GA** type Low Power Consumption Fan 

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 53 g

## 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow |      | Max. static pressure |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|------------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------|------|----------------------|------|-----------------|-------------------------------|----------------------------|
| ▶▶ 9GA0412P3K01  | 12                   | 10.8 to 13.2                   | 100                   | 0.92                 | 11.04              | 22000                               | 0.81         | 28.6 | 799                  | 3.21 | 61              | -20 to +60                    | 30000/60°C<br>(53000/40°C) |
|                  |                      |                                | 0                     | 0.1                  | 1.2                | 6500                                | 0.23         | 8.12 | 68                   | 0.27 | 32              |                               |                            |
| ▶▶ 9GA0412P3J01  |                      |                                | 100                   | 0.49                 | 5.88               | 18000                               | 0.67         | 23.7 | 535                  | 2.15 | 54              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|                  |                      |                                | 0                     | 0.05                 | 0.6                | 4500                                | 0.16         | 5.7  | 33                   | 0.13 | 22              |                               |                            |
| ▶▶ 9GA0412P3G01  |                      |                                | 100                   | 0.39                 | 4.68               | 16500                               | 0.61         | 21.5 | 450                  | 1.81 | 53              |                               |                            |
|                  |                      |                                | 0                     | 0.05                 | 0.6                | 4500                                | 0.16         | 5.7  | 33                   | 0.13 | 22              |                               |                            |
| ▶▶ 9GA0412P3H01  |                      |                                | 100                   | 0.28                 | 3.36               | 14500                               | 0.54         | 19.1 | 347                  | 1.39 | 50              |                               |                            |
|                  |                      |                                | 0                     | 0.04                 | 0.48               | 3500                                | 0.13         | 4.6  | 20                   | 0.08 | 17              |                               |                            |
| ▶▶ 9GA0412P3M01  |                      |                                | 100                   | 0.21                 | 2.52               | 12500                               | 0.46         | 16.2 | 258                  | 1.04 | 47              |                               |                            |
|                  |                      |                                | 0                     | 0.04                 | 0.48               | 3500                                | 0.13         | 4.6  | 20                   | 0.08 | 17              |                               |                            |
| ▶▶ 9GA0424P3J001 | 24                   | 21.6 to 26.4                   | 100                   | 0.27                 | 6.48               | 18000                               | 0.67         | 23.7 | 535                  | 2.15 | 54              |                               |                            |
| ▶▶ 9GA0424P3G001 |                      |                                | 100                   | 0.22                 | 5.28               | 16500                               | 0.61         | 21.5 | 450                  | 1.81 | 53              |                               |                            |
| ▶▶ 9GA0424P3H001 |                      |                                | 100                   | 0.16                 | 3.84               | 14500                               | 0.54         | 19.1 | 347                  | 1.39 | 50              |                               |                            |
| ▶▶ 9GA0424P3M001 |                      |                                | 100                   | 0.11                 | 2.64               | 12500                               | 0.46         | 16.2 | 258                  | 1.04 | 47              |                               |                            |

\* 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.

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

| Model no.   | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow |      | Max. static pressure |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------|------|----------------------|------|-----------------|-------------------------------|----------------------------|
| 9GA0412A301 | 12                   | 10.8 to 13.2                   | 0.13                 | 1.56               | 10500                               | 0.38         | 13.4 | 182                  | 0.73 | 43              | -10 to +70                    | 40000/60°C<br>(70000/40°C) |

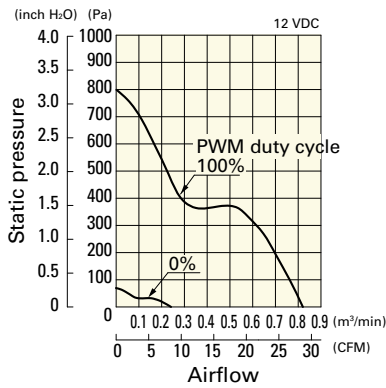
Note 1: Sensor and control options are available for selection. Refer to the table on p. 607.

Note 2: The ▶▶ mark indicates Short Lead Time Service applicable models. See p. 630 for details.

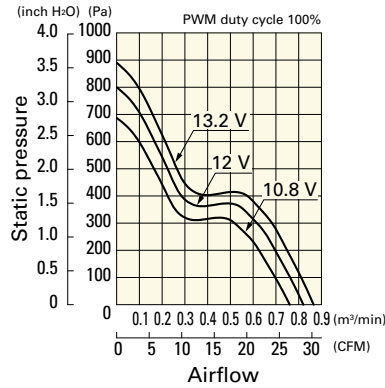
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0412P3K01** With pulse sensor with PWM control function

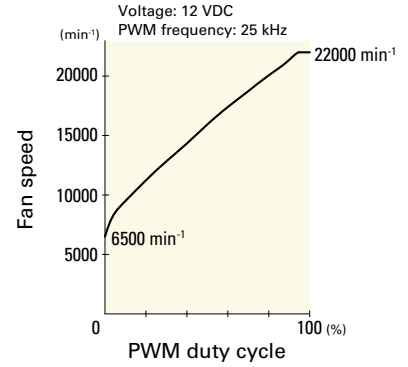
PWM duty cycle



Operating voltage range

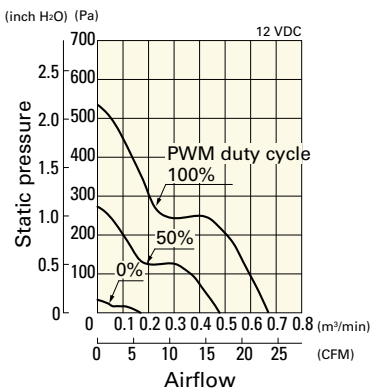


PWM duty - Speed characteristics example

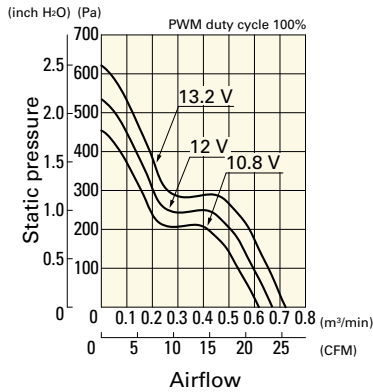


**9GA0412P3J01** With pulse sensor with PWM control function

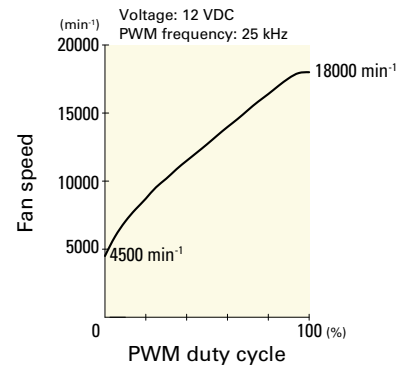
PWM duty cycle



Operating voltage range

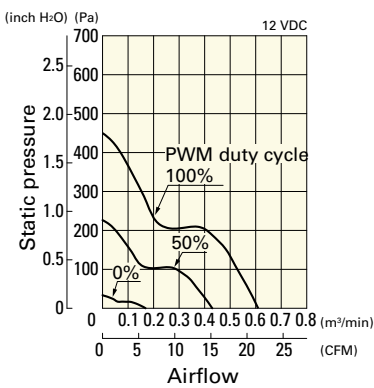


PWM duty - Speed characteristics example

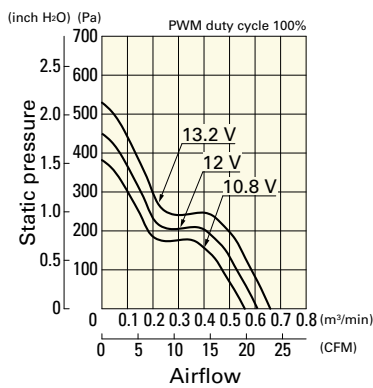


**9GA0412P3G01** With pulse sensor with PWM control function

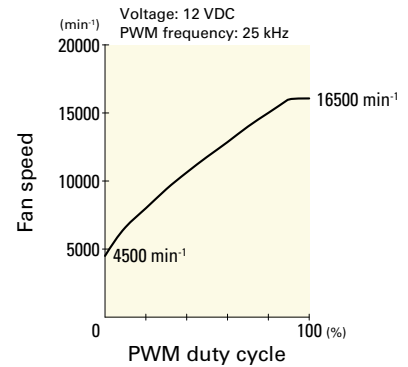
PWM duty cycle



Operating voltage range

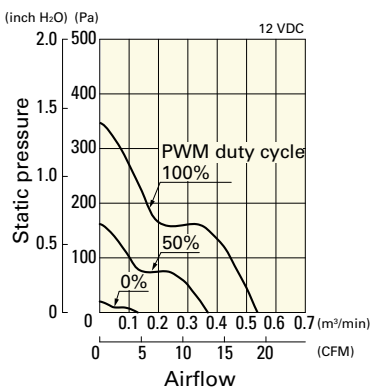


PWM duty - Speed characteristics example

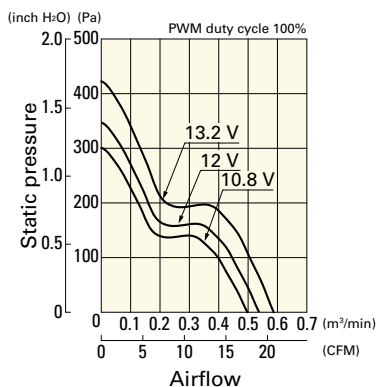


**9GA0412P3H01** With pulse sensor with PWM control function

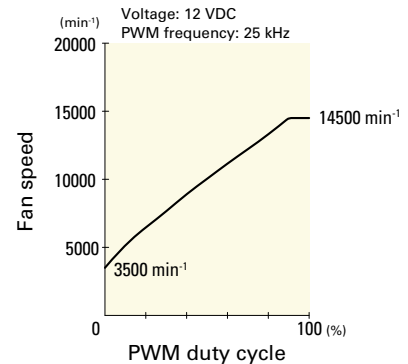
PWM duty cycle



Operating voltage range



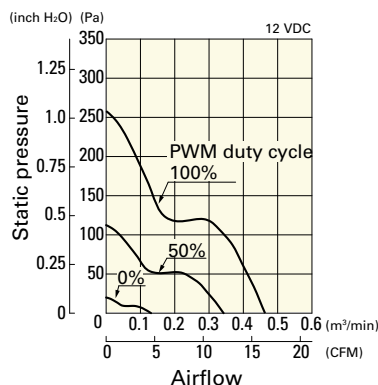
PWM duty - Speed characteristics example



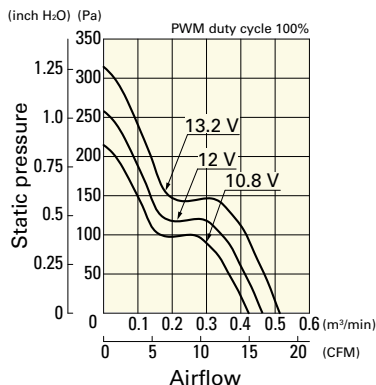
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0412P3M01** With pulse sensor with PWM control function

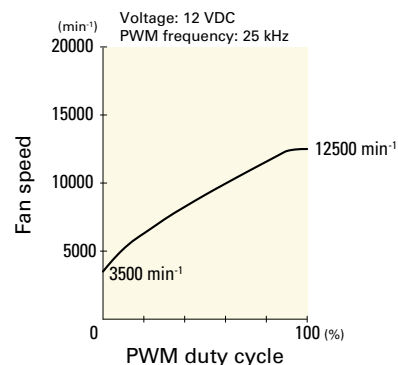
PWM duty cycle



Operating voltage range

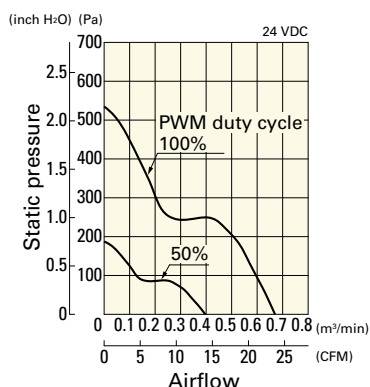


PWM duty - Speed characteristics example

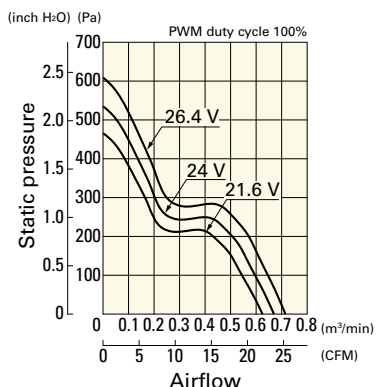


**9GA0424P3J001** With pulse sensor with PWM control function

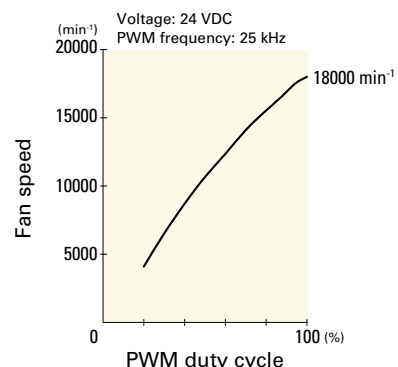
PWM duty cycle



Operating voltage range

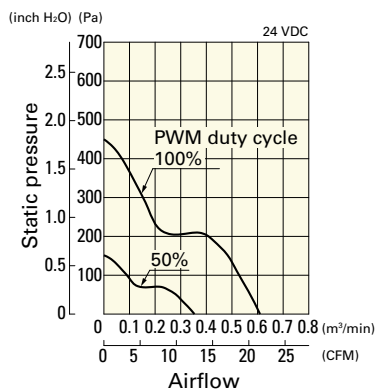


PWM duty - Speed characteristics example

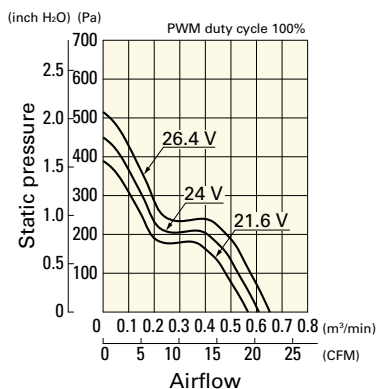


**9GA0424P3G001** With pulse sensor with PWM control function

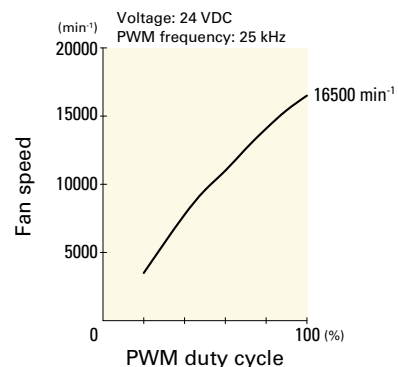
PWM duty cycle



Operating voltage range

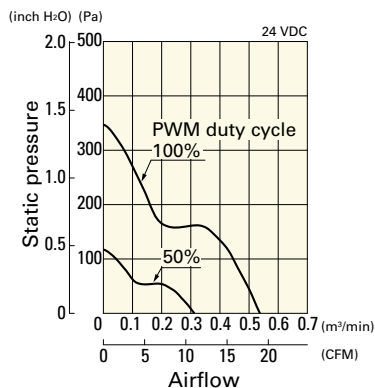


PWM duty - Speed characteristics example

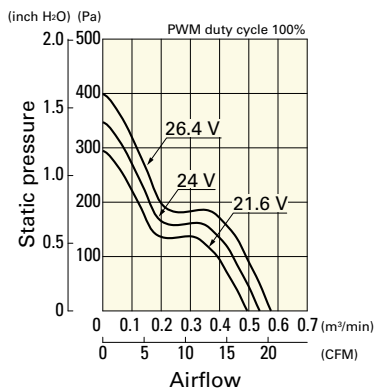


**9GA0424P3H001** With pulse sensor with PWM control function

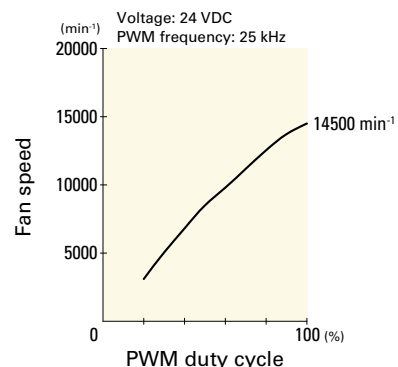
PWM duty cycle



Operating voltage range



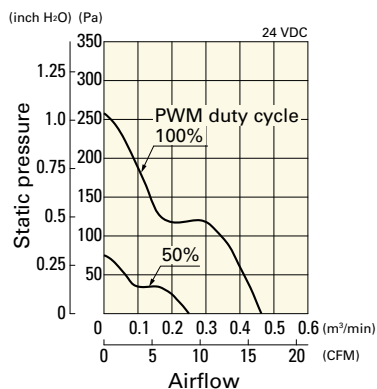
PWM duty - Speed characteristics example



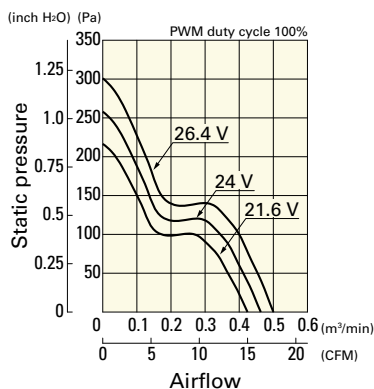
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0424P3M001** With pulse sensor with PWM control function

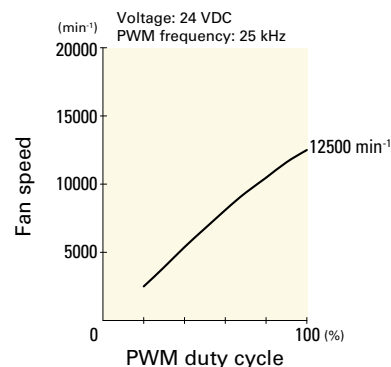
PWM duty cycle



Operating voltage range



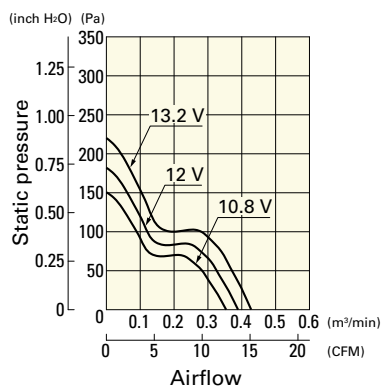
PWM duty - Speed characteristics example



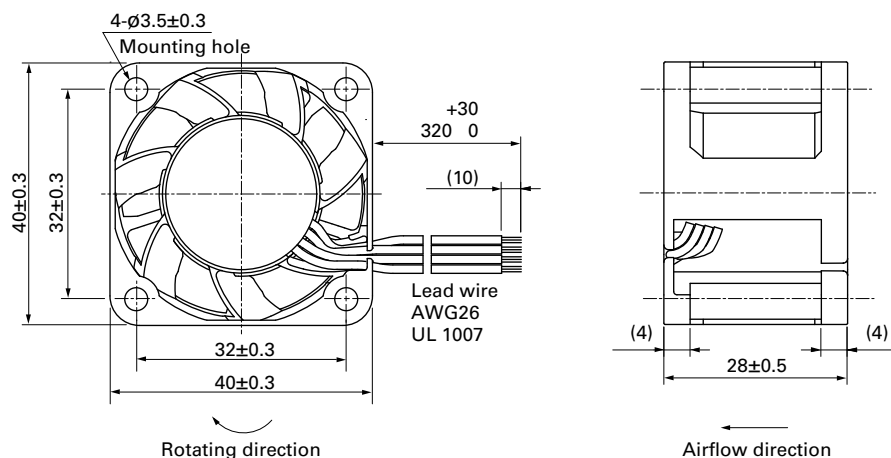
## Airflow - Static Pressure Characteristics

**9GA0412A301** With pulse sensor

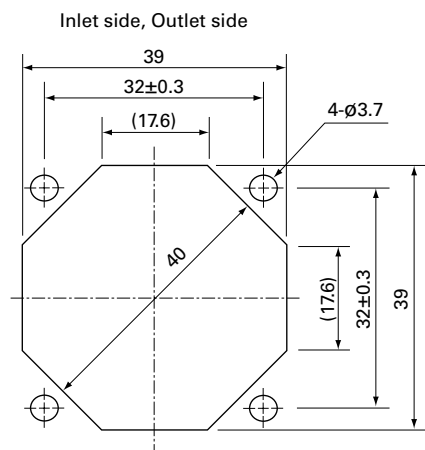
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

Finger guards

page: p. 564

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



# 40×40×28 mm

**San Ace 40 9GE** type Low Vibration Fan 


## General Specifications

- Material ..... Frame: Aluminum, 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. 580.
- 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 ..... 55 g

## Specifications

The models listed below **have pulse sensors with PWM control function.**

| Model no.    | Rated voltage<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |      | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |       | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |  |
|--------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|------|-----------------------------------------------------|-------|-----------------|-------------------------------|----------------------------|--|
| 9GE0412P3K03 | 12                   | 10.8 to 13.2                   | 100                   | 0.84                 | 10.08              | 16500                               | 0.76                           | 26.8 | 415                                                 | 1.666 | 58              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |  |
| 0            |                      |                                | 0.07                  | 0.84                 | 3000               | 0.13                                | 4.6                            | 13   | 0.052                                               | 17    |                 |                               |                            |  |
| 9GE0412P3J03 |                      |                                | 100                   | 0.65                 | 7.8                | 15000                               | 0.69                           | 24.4 | 343.0                                               | 1.378 | 56              |                               |                            |  |
|              |                      |                                | 0                     | 0.05                 | 0.6                | 2650                                | 0.12                           | 4.2  | 10.7                                                | 0.042 | 14              |                               |                            |  |
| 9GE0412P3G03 |                      |                                | 100                   | 0.47                 | 5.64               | 13000                               | 0.6                            | 21.2 | 260                                                 | 1.044 | 52              |                               |                            |  |
|              |                      |                                | 0                     | 0.05                 | 0.6                | 2400                                | 0.11                           | 3.9  | 8.2                                                 | 0.033 | 13              |                               |                            |  |

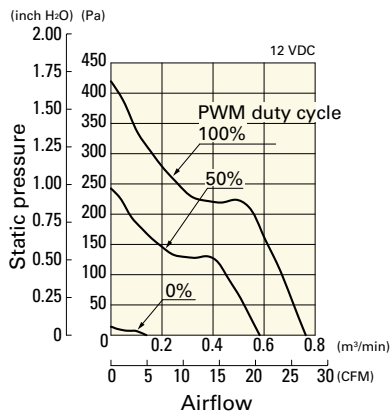
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 610.

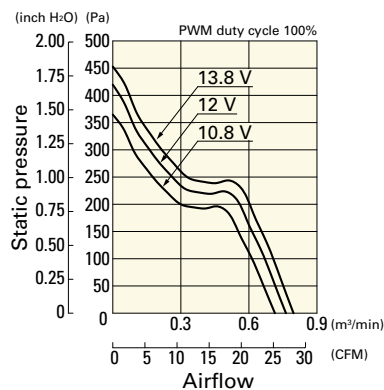
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GE0412P3K03** With pulse sensor with PWM control function

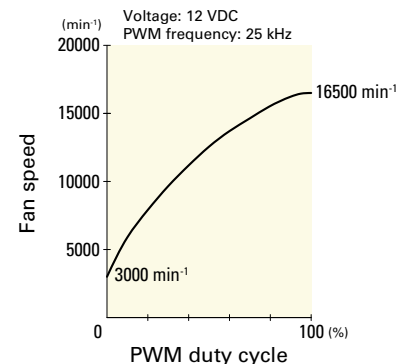
PWM duty cycle



Operating voltage range



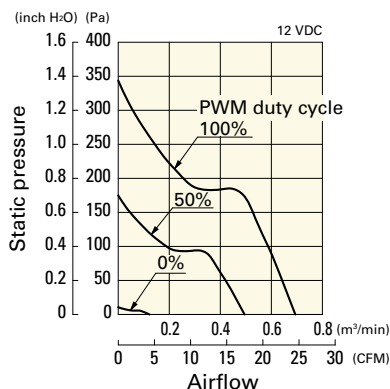
PWM duty - Speed characteristics example



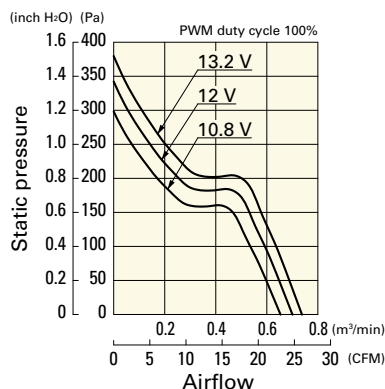
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GE0412P3J03** With pulse sensor with PWM control function

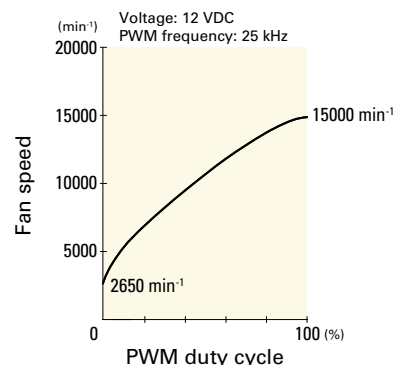
PWM duty cycle



Operating voltage range

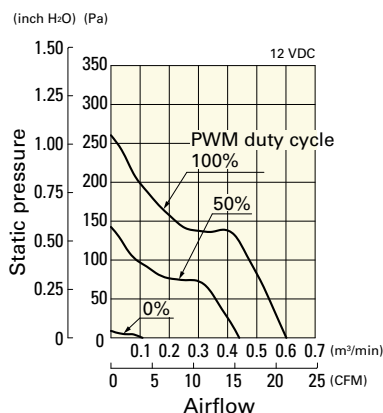


PWM duty - Speed characteristics example

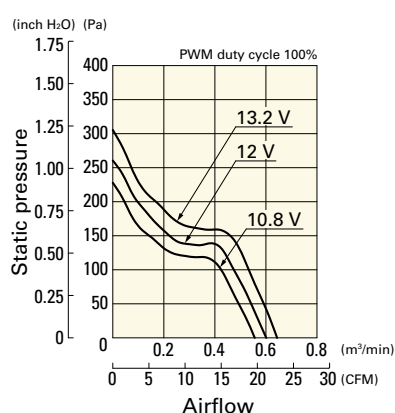


**9GE0412P3G03** With pulse sensor with PWM control function

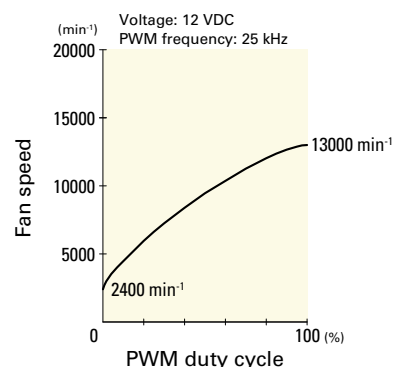
PWM duty cycle



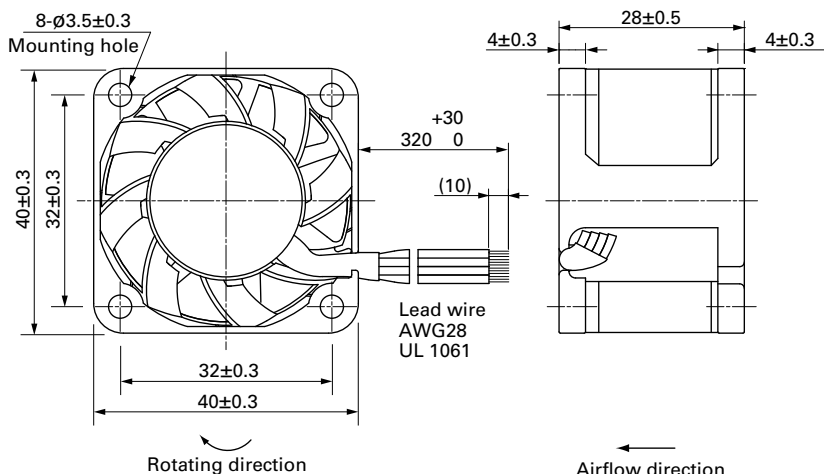
Operating voltage range



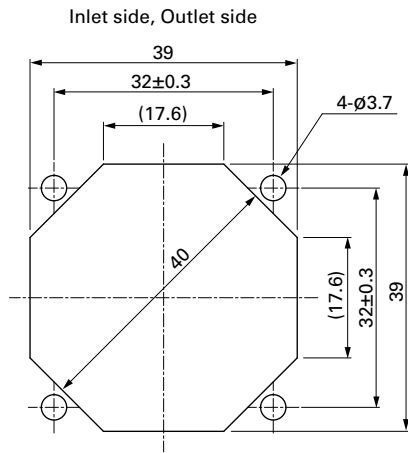
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



**DC Fan 40 mm sq.**



## Options

## Finger guards

page: p. 564

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

# 40×40×28 mm

**San Ace 40 9P** type   


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 52 g

## Specifications

The models listed below **have ribs and pulse sensors.**

| Model no.       | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 109P0405H3013 | 5                 | 4.5 to 5.5                  | 0.68              | 3.4             | 8700                             | 0.32 11.3                                | 102.9 0.414                                      | 37           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| » 109P0405F3013 |                   |                             | 0.28              | 1.4             | 6700                             | 0.244 8.6                                | 58.8 0.236                                       | 30           |                            | 60000/60°C<br>(90000/40°C) |
| » 109P0412G3013 | 12                | 7 to 13.2                   | 0.31              | 3.72            | 11500                            | 0.42 14.8                                | 179 0.719                                        | 42           | -20 to +60                 | 40000/60°C<br>(70000/40°C) |
| » 109P0412B3013 |                   | 7 to 13.8                   | 0.28              | 3.36            | 10300                            | 0.38 13.4                                | 143 0.574                                        | 40           |                            | 60000/60°C<br>(90000/40°C) |
| » 109P0412H3013 |                   |                             | 0.195             | 2.34            | 8700                             | 0.32 11.3                                | 102.9 0.414                                      | 37           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
| » 109P0412F3013 |                   | 10.2 to 13.8                | 0.105             | 1.26            | 6700                             | 0.244 8.6                                | 58.8 0.236                                       | 30           |                            | 60000/60°C<br>(90000/40°C) |
| » 109P0412M3013 | 24                | 12 to 26.4                  | 0.19              | 4.56            | 11500                            | 0.42 14.8                                | 179 0.719                                        | 42           | -20 to +60                 | 40000/60°C<br>(70000/40°C) |
| » 109P0424G3013 |                   | 12 to 27.6                  | 0.13              | 3.12            | 10300                            | 0.38 13.4                                | 143 0.574                                        | 40           |                            | 60000/60°C<br>(90000/40°C) |
| » 109P0424B3013 |                   |                             | 0.095             | 2.28            | 8700                             | 0.32 11.3                                | 102.9 0.414                                      | 37           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
| » 109P0424F3013 |                   | 14 to 27.6                  | 0.055             | 1.32            | 6700                             | 0.244 8.6                                | 58.8 0.236                                       | 30           |                            | 60000/60°C<br>(90000/40°C) |

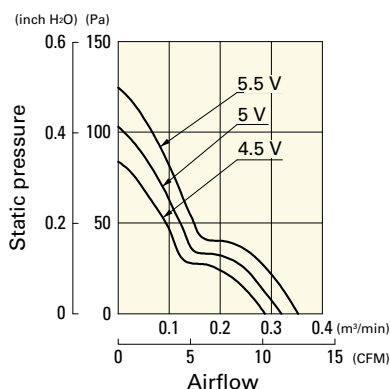
Note 1: Sensor and control options are available for selection. Refer to the table on p. 603.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

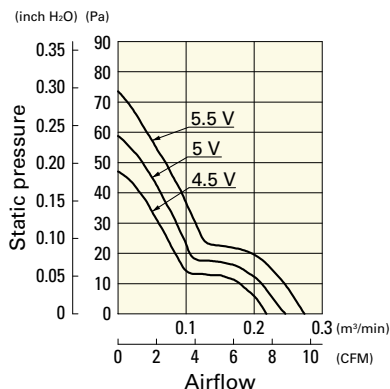
## Airflow - Static Pressure Characteristics

**109P0405H3013** With pulse sensor

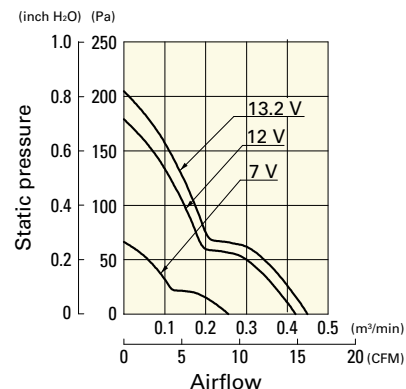
Operating voltage range


**109P0405F3013** With pulse sensor

Operating voltage range


**109P0412G3013** With pulse sensor

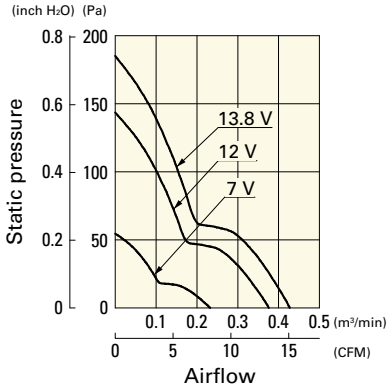
Operating voltage range



## Airflow - Static Pressure Characteristics

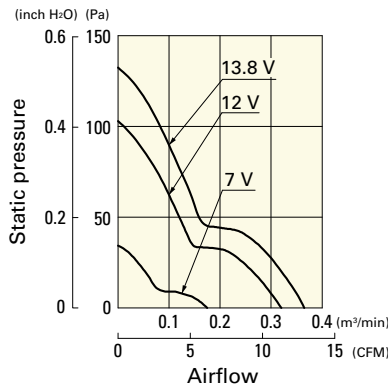
**109P0412B3013** With pulse sensor

Operating voltage range



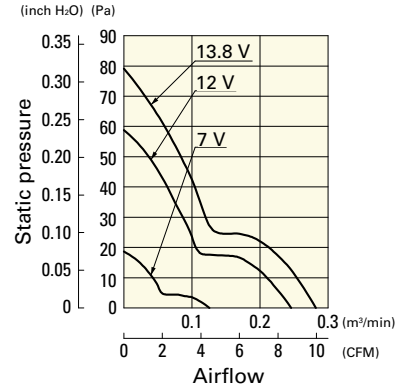
**109P0412H3013** With pulse sensor

Operating voltage range



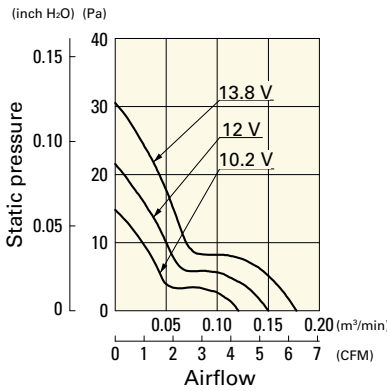
**109P0412F3013** With pulse sensor

Operating voltage range



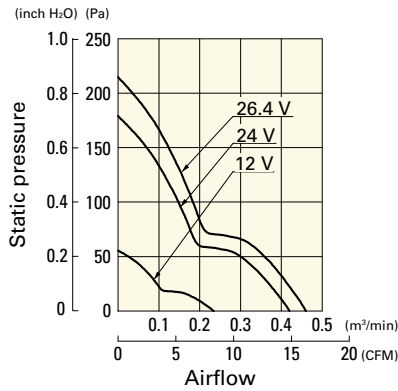
**109P0412M3013** With pulse sensor

Operating voltage range



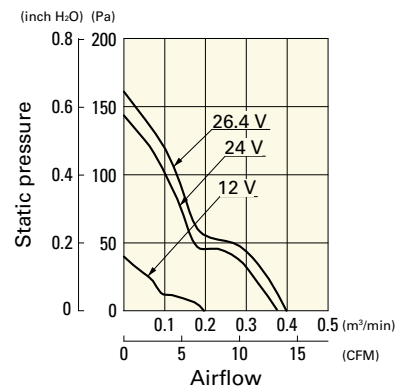
**109P0424G3013** With pulse sensor

Operating voltage range



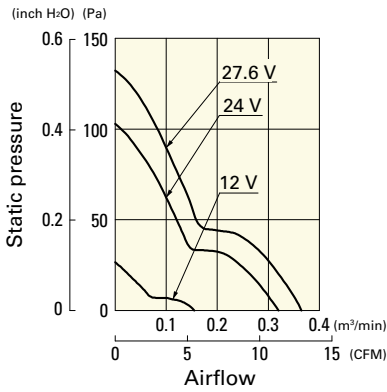
**109P0424B3013** With pulse sensor

Operating voltage range



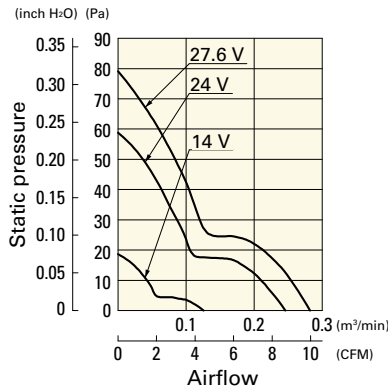
**109P0424H3013** With pulse sensor

Operating voltage range

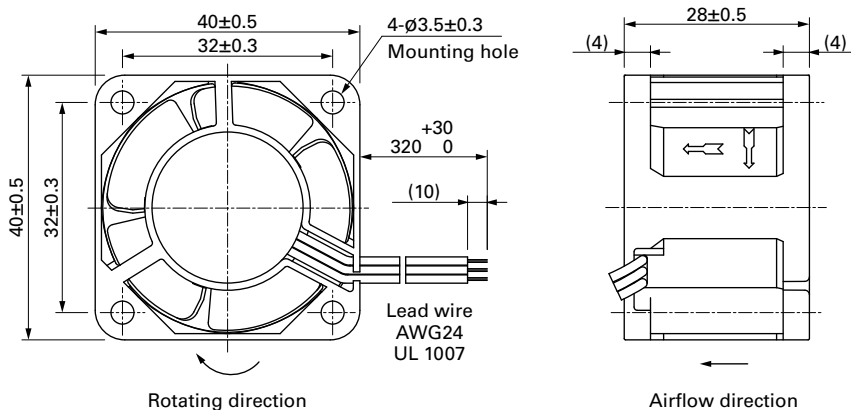


**109P0424F3013** With pulse sensor

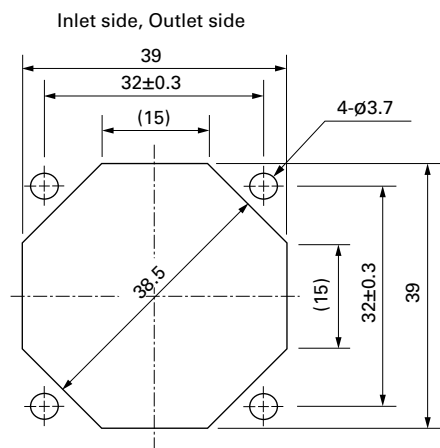
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

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

# 52x52x15 mm

## San Ace 52 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 40 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0512P7G001 | 12                | 10.2 to 13.8                | 100                | 0.13              | 1.56            | 7800                             | 0.5 17.7                                 | 91.5 0.367                                       | 38           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9GA0512P7A001 |                   |                             | 100                | 0.08              | 0.96            | 6300                             | 0.4 14.1                                 | 59 0.237                                         | 32           |                            |                            |
| 9GA0512P7H001 |                   |                             | 100                | 0.05              | 0.6             | 4300                             | 0.275 9.7                                | 27.5 0.11                                        | 22           |                            |                            |
| 9GA0512P7M001 |                   |                             | 100                | 0.04              | 0.48            | 3400                             | 0.215 7.6                                | 17 0.068                                         | 16           |                            |                            |
| 9GA0524P7G001 | 24                | 20.4 to 27.6                | 100                | 0.07              | 1.68            | 7800                             | 0.5 17.7                                 | 91.5 0.367                                       | 38           |                            |                            |
| 9GA0524P7A001 |                   |                             | 100                | 0.05              | 1.2             | 6300                             | 0.4 14.1                                 | 59.0 0.237                                       | 32           |                            |                            |
| 9GA0524P7H001 |                   |                             | 100                | 0.03              | 0.72            | 4300                             | 0.275 9.7                                | 27.5 0.11                                        | 22           |                            |                            |
| 9GA0524P7M001 |                   |                             | 100                | 0.02              | 0.48            | 3400                             | 0.215 7.6                                | 17.0 0.068                                       | 16           |                            |                            |

\* 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.

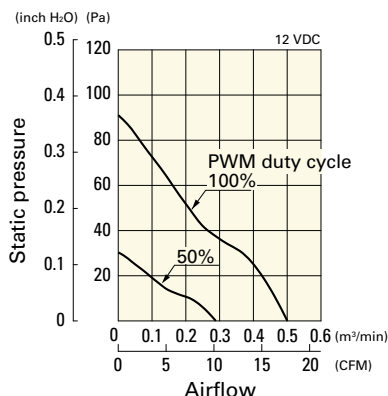
Note 1: Sensor and control options are available for selection. Refer to the table on p. 607.

Note 2: The  mark indicates Short LeadTime Service applicable models. See p. 630 for details.

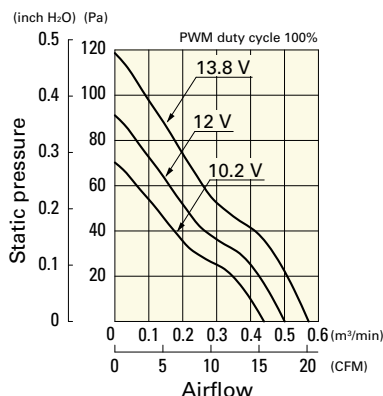
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0512P7G001** With pulse sensor with PWM control function

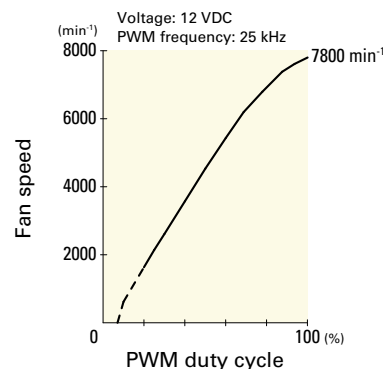
PWM duty cycle



Operating voltage range

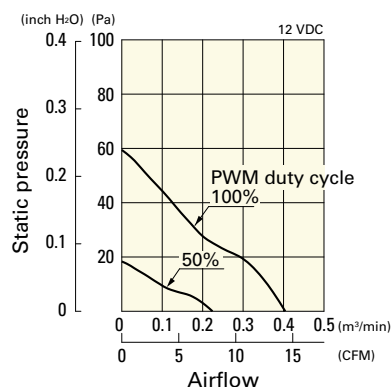
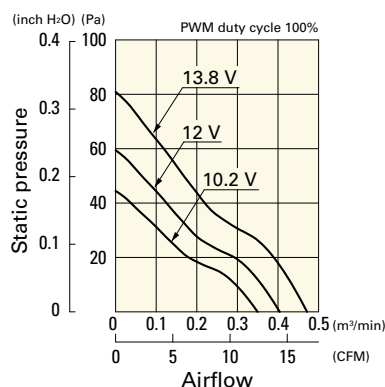
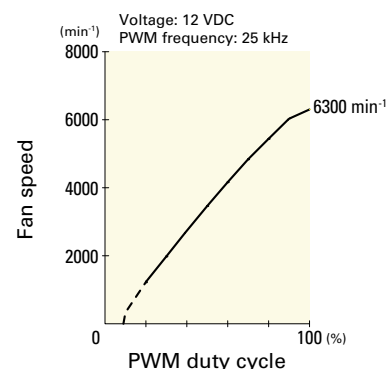


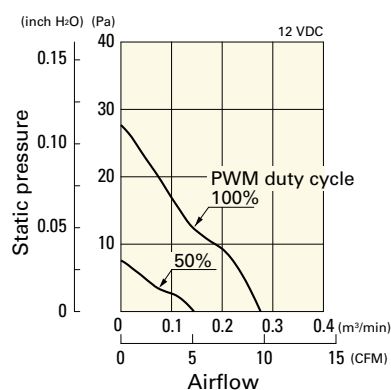
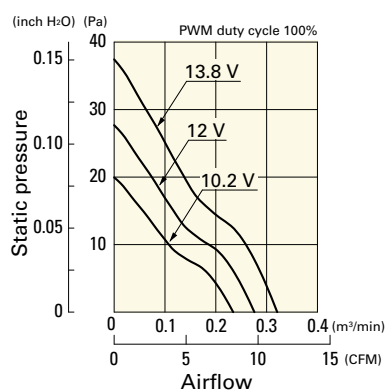
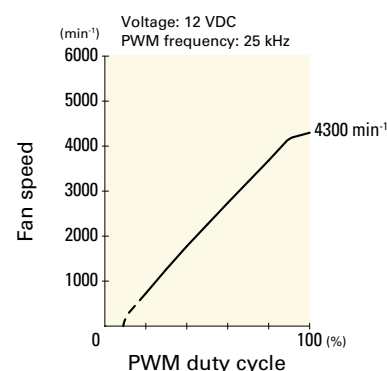
PWM duty - Speed characteristics example

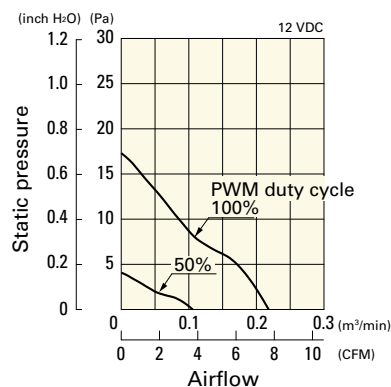
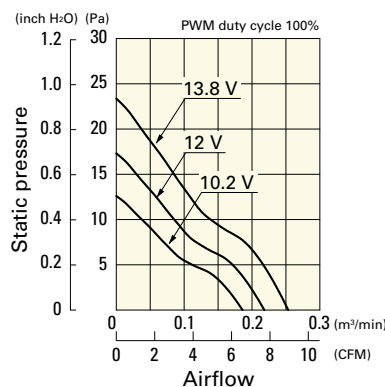
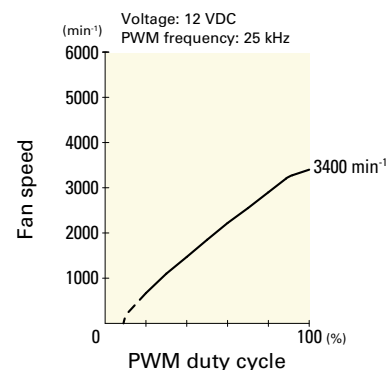


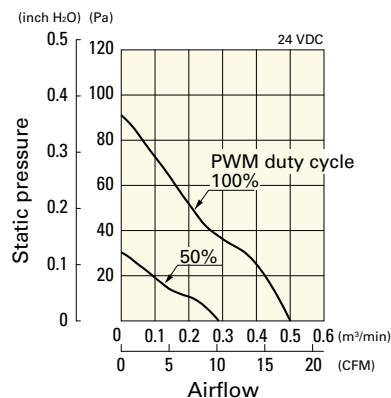
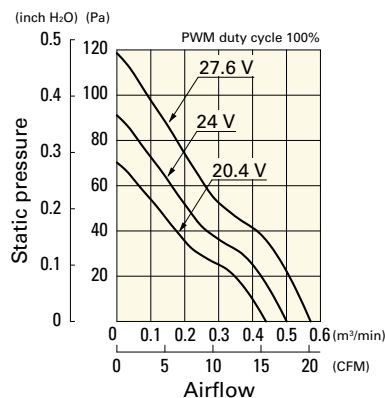
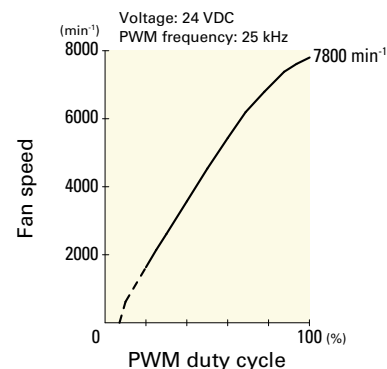
# **Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example**

**9GA0512P7A001** With pulse sensor with PWM control function

**PWM duty cycle**

**Operating voltage range**

**PWM duty - Speed characteristics example**

**9GA0512P7H001** With pulse sensor with PWM control function

**PWM duty cycle**

**Operating voltage range**

**PWM duty - Speed characteristics example**

**9GA0512P7M001** With pulse sensor with PWM control function

**PWM duty cycle**

**Operating voltage range**

**PWM duty - Speed characteristics example**

**9GA0524P7G001** With pulse sensor with PWM control function

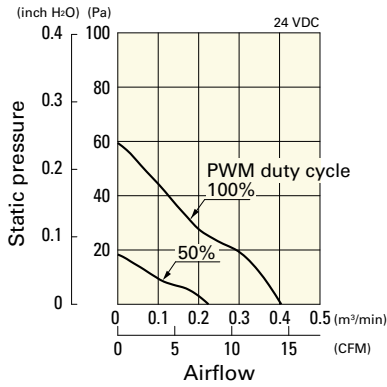
**PWM duty cycle**

**Operating voltage range**

**PWM duty - Speed characteristics example**




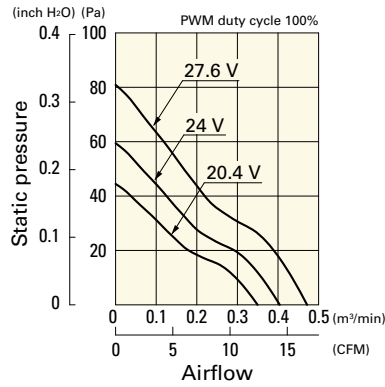
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0524P7A001** With pulse sensor with PWM control function

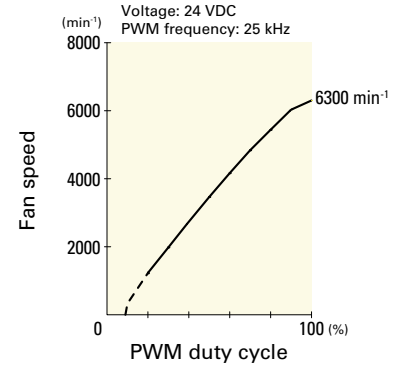
PWM duty cycle



Operating voltage range

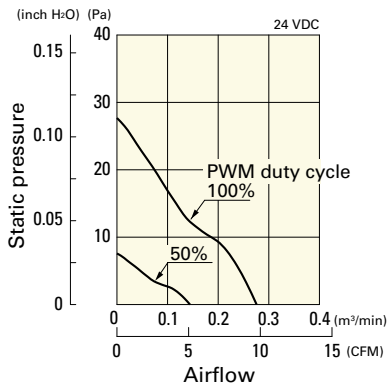


PWM duty - Speed characteristics example

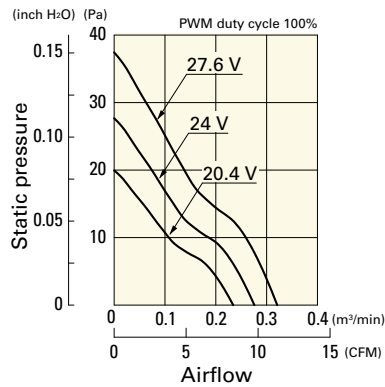


**9GA0524P7H001** With pulse sensor with PWM control function

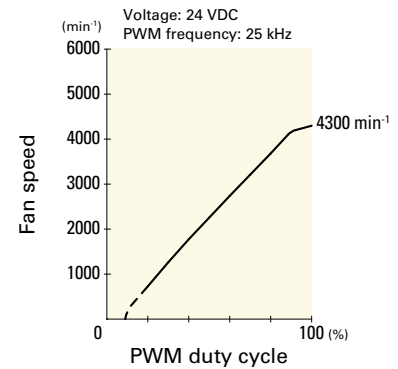
PWM duty cycle



Operating voltage range

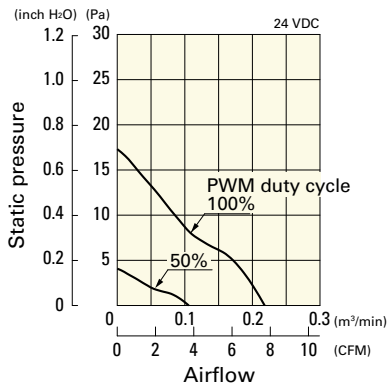


PWM duty - Speed characteristics example

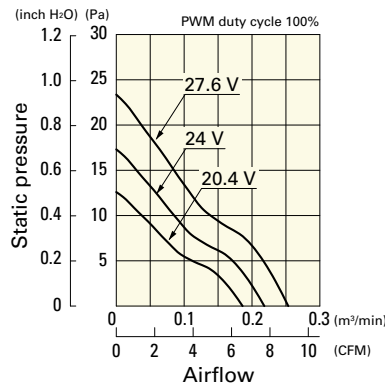


**9GA0524P7M001** With pulse sensor with PWM control function

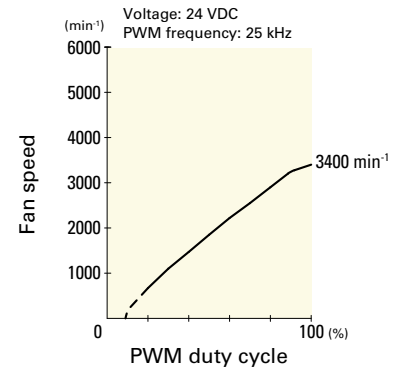
PWM duty cycle



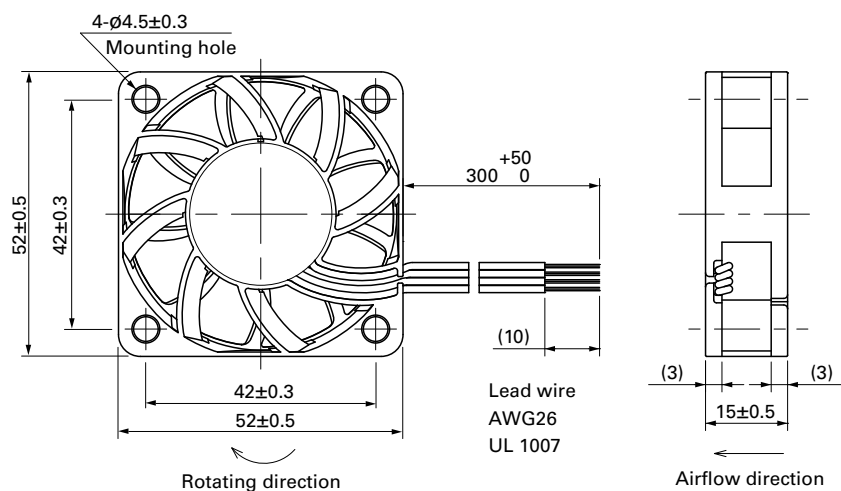
Operating voltage range



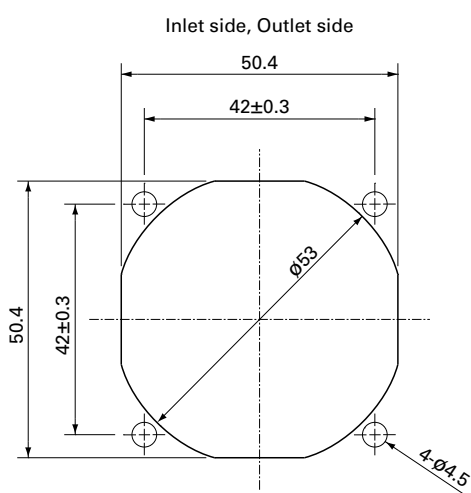
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

Model no.: 109-149, 109-149E

# 52x52x15 mm

## San Ace 52 9P<sub>type</sub>



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 55 g

### Specifications

The models listed below **have ribs and pulse sensors.**

| Model no.              | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|------------------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| ▶▶ <b>109P0505M701</b> | 5                    | 4.5 to 5.5                     | 0.15                 | 0.75               | 3700                                | 0.205 7.24                                  | 21.4 0.086                                          | 22              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |

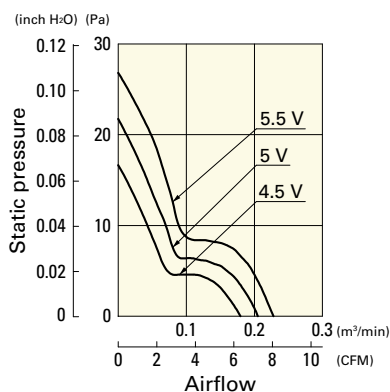
Note 1: Sensor and control options are available for selection. Refer to the table on p. 604.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

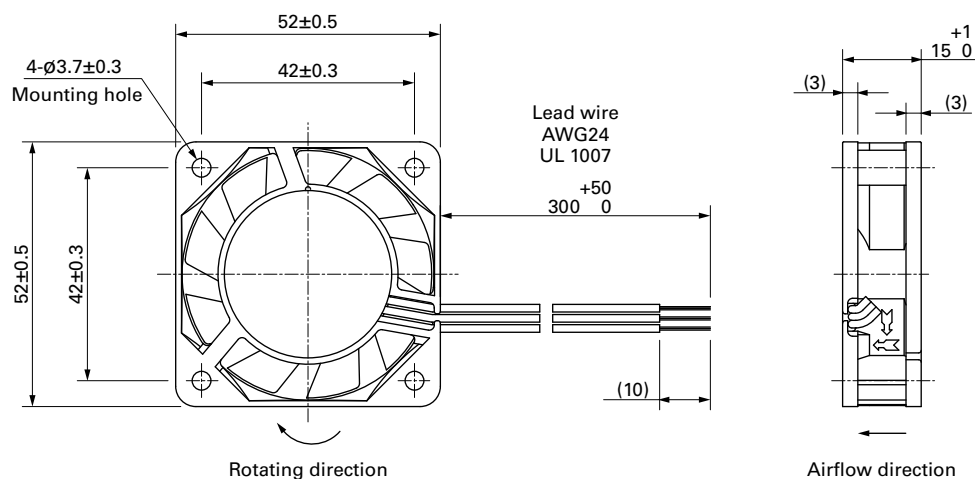
### Airflow - Static Pressure Characteristics

#### 109P0505M701 With pulse sensor

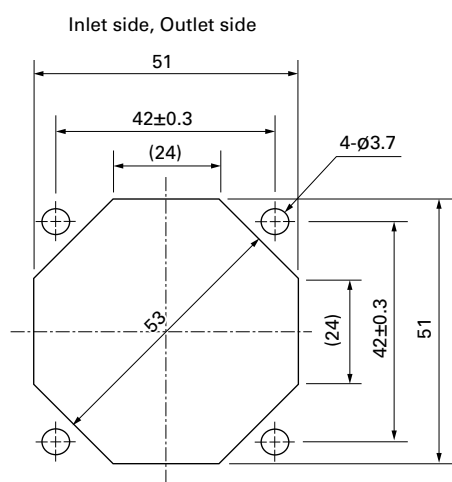
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 564

Model no.: 109-149, 109-149E



# 60×60×10 mm

## San Ace 60 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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
- Mass ..... 35 g

### Specifications

The models listed below **have ribs and pulse sensors**.

| Model no.    | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0612G9001 | 12                | 7.0 to 13.2                 | 0.27              | 3.24            | 6200                             | 0.62 21.9                                | 66 0.26                                          | 43           | -20 to +60                 | 40000/60°C<br>(70000/40°C) |
| 9GA0612H9001 |                   | 7.0 to 13.8                 | 0.14              | 1.68            | 5000                             | 0.5 17.6                                 | 42.9 0.17                                        | 37           | -20 to +70                 |                            |
| 9GA0612L9001 |                   |                             | 0.03              | 0.36            | 2300                             | 0.23 8.1                                 | 9.1 0.037                                        | 17           | -10 to +70                 |                            |

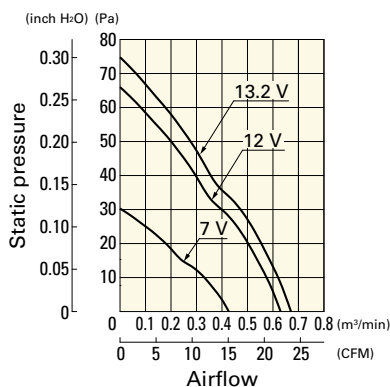
Note 1: Sensor and control options are available for selection. Refer to the table on p. 607.

Note 2: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

### Airflow - Static Pressure Characteristics

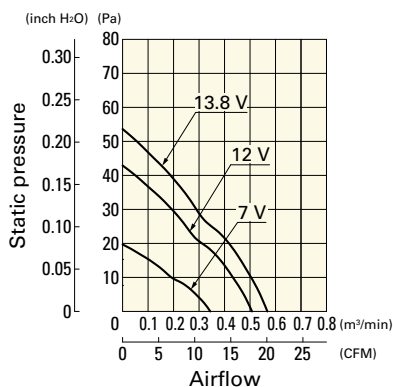
**9GA0612G9001** With pulse sensor

Operating voltage range



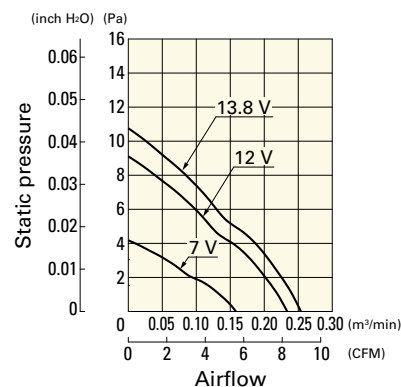
**9GA0612H9001** With pulse sensor

Operating voltage range

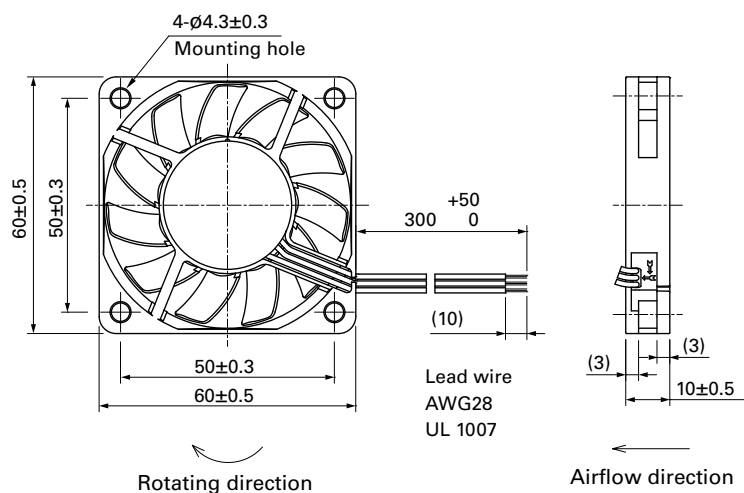


**9GA0612L9001** With pulse sensor

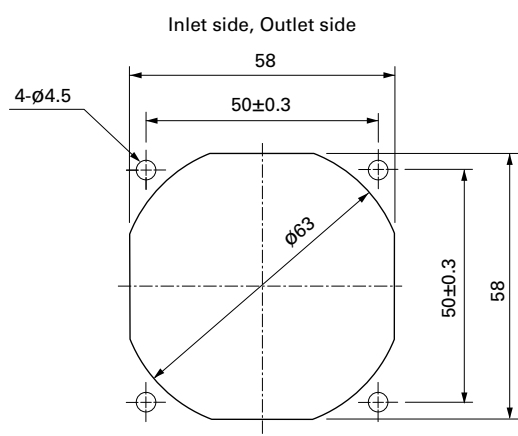
Operating voltage range



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)



# 60×60×15 mm

## San Ace 60 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 50 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.    | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0612P7G01 | 12                | 10.2 to 13.8                | 100                 | 0.16              | 1.92            | 5900                             | 0.68 24                                  | 80 0.32                                          | 38           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|              |                   |                             | 0                   | 0.05              | 0.6             | 1500                             | 0.17 6.0                                 | 5.2 0.02                                         | 10           |                            |                            |
| 9GA0612P7H01 |                   |                             | 100                 | 0.1               | 1.2             | 4900                             | 0.56 19.7                                | 55.6 0.223                                       | 34           |                            |                            |
|              |                   |                             | 0                   | 0.03              | 0.36            | 1300                             | 0.15 5.3                                 | 3.9 0.015                                        | 8            |                            |                            |
| 9GA0624P7G01 | 24                | 20.4 to 27.6                | 100                 | 0.08              | 1.92            | 5900                             | 0.68 24.0                                | 80 0.32                                          | 38           |                            |                            |

\* 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.

The models listed below **have ribs and pulse sensors.**

| Model no.   | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0612G701 | 12                | 6 to 13.8                   | 0.16              | 1.92            | 5900                             | 0.68 24                                  | 80 0.32                                          | 38           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9GA0612H701 |                   |                             | 0.1               | 1.2             | 4900                             | 0.56 19.7                                | 55.6 0.223                                       | 34           |                            |                            |
| 9GA0612M701 |                   |                             | 0.08              | 0.96            | 3900                             | 0.45 15.9                                | 35.3 0.142                                       | 28           |                            |                            |
| 9GA0612L701 |                   |                             | 0.03              | 0.36            | 2800                             | 0.31 10.9                                | 18 0.072                                         | 17           |                            |                            |
| 9GA0624M701 | 24                | 12 to 27.6                  | 0.05              | 1.2             | 3900                             | 0.45 15.9                                | 35.3 0.142                                       | 28           |                            | 40000/60°C<br>(70000/40°C) |

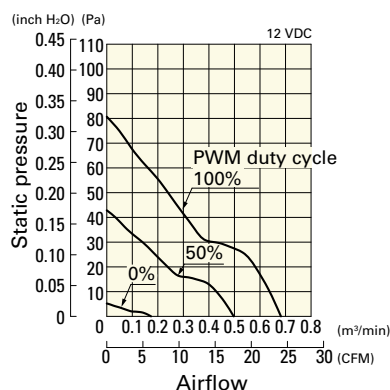
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 607 to 608.

Note 2: The ♫ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

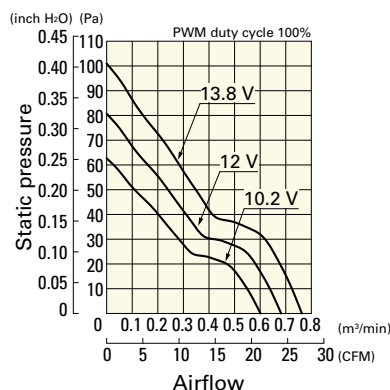
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0612P7G01** With pulse sensor with PWM control function

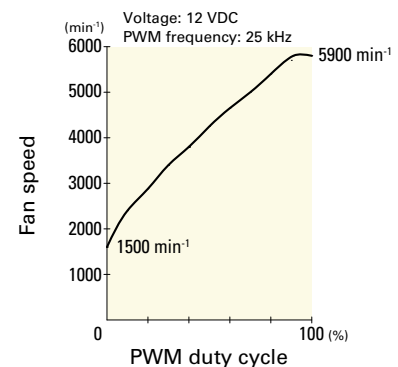
PWM duty cycle



Operating voltage range



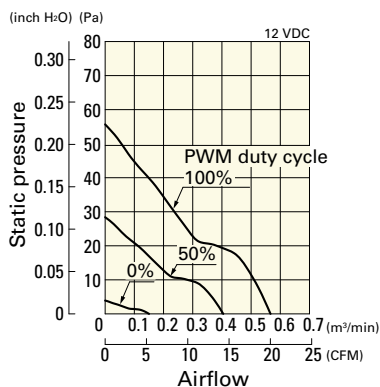
PWM duty - Speed characteristics example



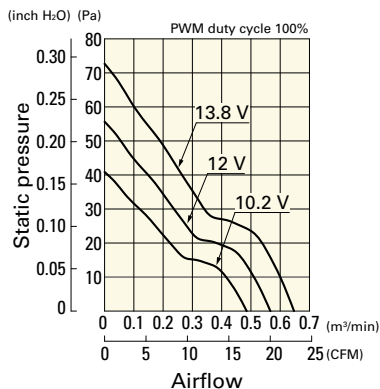
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0612P7H01** With pulse sensor with PWM control function

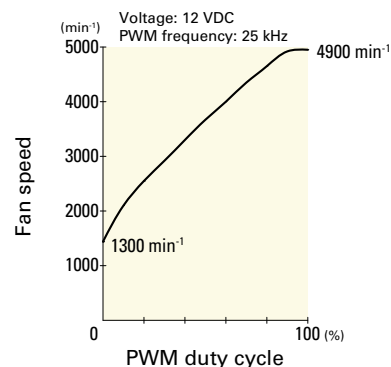
PWM duty cycle



Operating voltage range

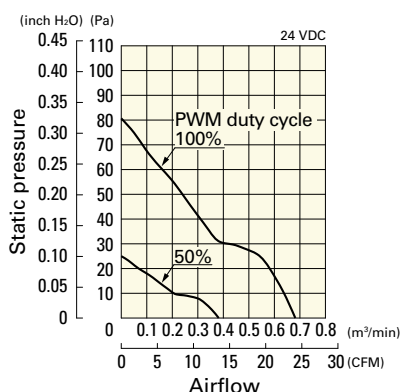


PWM duty - Speed characteristics example

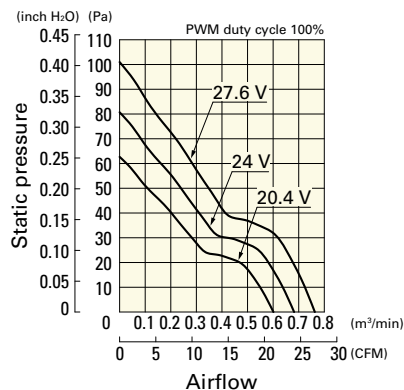


**9GA0624P7G01** With pulse sensor with PWM control function

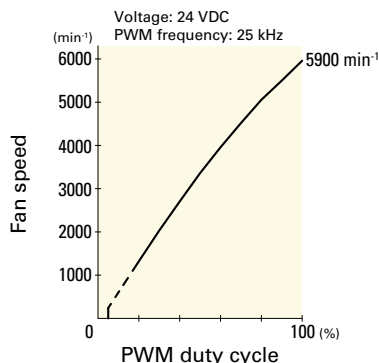
PWM duty cycle



Operating voltage range



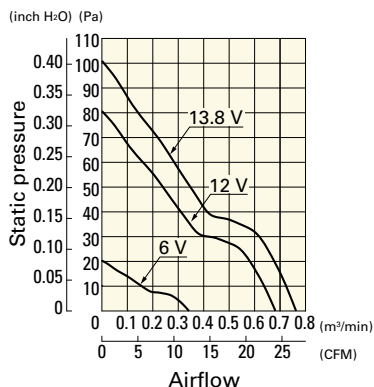
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

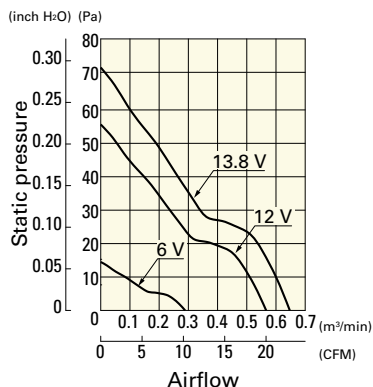
**9GA0612G701** With pulse sensor

Operating voltage range



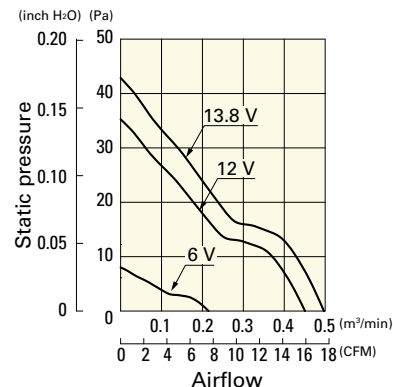
**9GA0612H701** With pulse sensor

Operating voltage range



**9GA0612M701** With pulse sensor

Operating voltage range

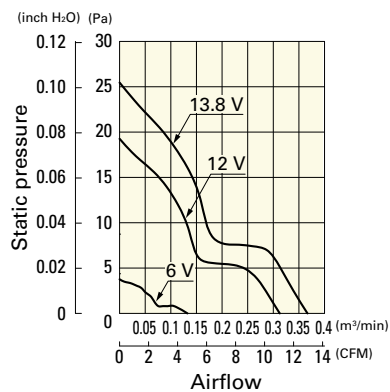




## Airflow - Static Pressure Characteristics

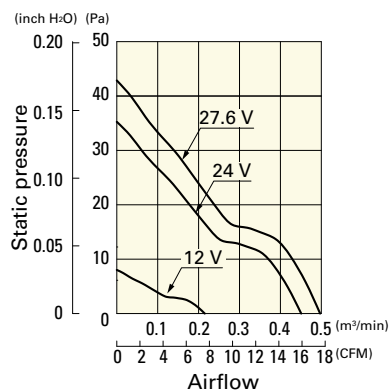
### 9GA0612L701 With pulse sensor

Operating voltage range

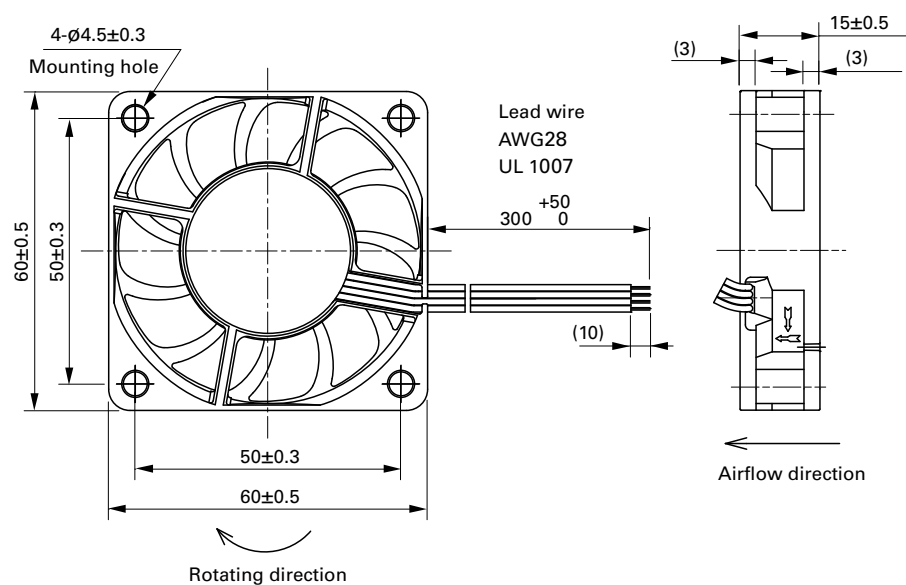


### 9GA0624M701 With pulse sensor

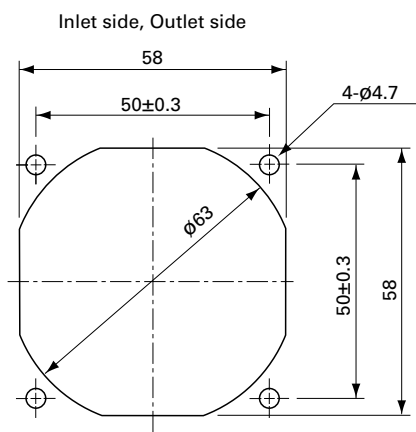
Operating voltage range



## Dimensions (unit: mm) (With pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

# 60×60×20 mm

## San Ace 60 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 70 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0612P6G001 | 12                | 10.8 to 13.2                | 100                | 0.26              | 3.12            | 6850                             | 0.88 31.1                                | 125 0.5                                          | 43           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9GA0612P6S001 |                   |                             | 100                | 0.15              | 1.8             | 5500                             | 0.7 24.7                                 | 81 0.33                                          | 36           |                            |                            |
| 9GA0624P6G001 | 24                | 21.6 to 26.4                | 100                | 0.12              | 2.88            | 6850                             | 0.88 31.1                                | 125 0.5                                          | 43           |                            |                            |
| 9GA0624P6S001 |                   |                             | 100                | 0.07              | 1.68            | 5500                             | 0.7 24.7                                 | 81 0.33                                          | 36           |                            |                            |

\* 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.

The models listed below **have ribs and pulse sensors.**

| Model no.    | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0612H6001 | 12                | 10.8 to 13.2                | 0.09              | 1.08            | 4100                             | 0.52 18.4                                | 45 0.18                                          | 29           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
| 9GA0612M6001 |                   |                             | 0.05              | 0.6             | 2700                             | 0.34 12.0                                | 20 0.08                                          | 18           |                            |                            |
| 9GA0624H6001 | 24                | 21.6 to 26.4                | 0.04              | 0.96            | 4100                             | 0.52 18.4                                | 45 0.18                                          | 29           |                            |                            |
| 9GA0624M6001 |                   |                             | 0.03              | 0.72            | 2700                             | 0.34 12.0                                | 20 0.08                                          | 18           |                            |                            |

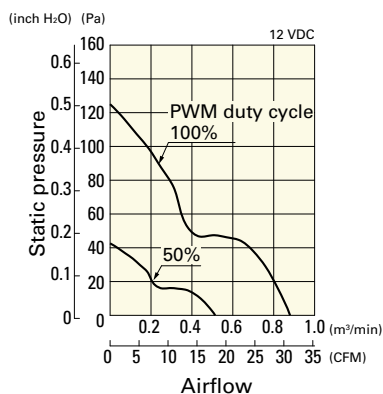
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 607 to 608.

Note 2: The ♫ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

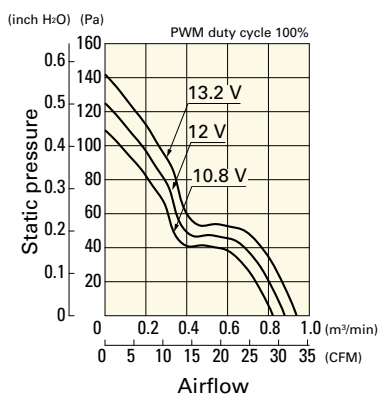
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0612P6G001** With pulse sensor with PWM control function

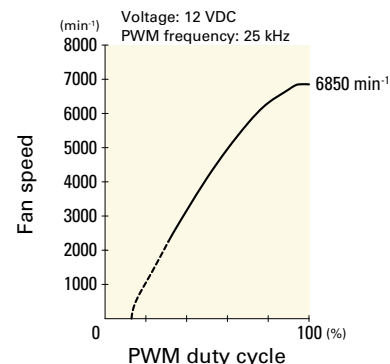
PWM duty cycle



Operating voltage range



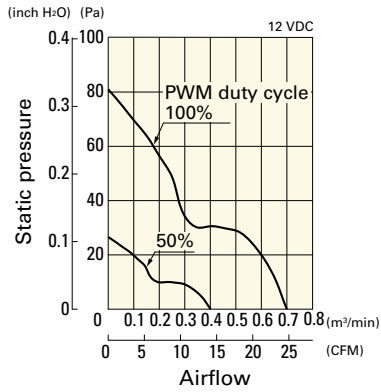
PWM duty - Speed characteristics example



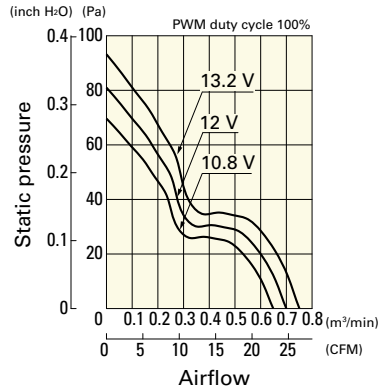
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0612P6S001** With pulse sensor with PWM control function

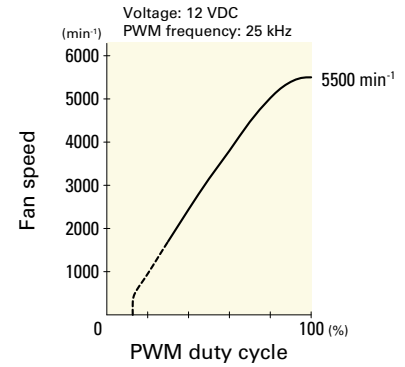
PWM duty cycle



Operating voltage range

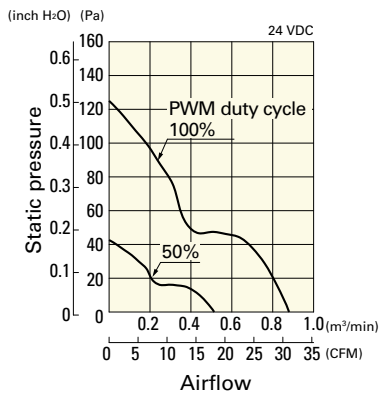


PWM duty - Speed characteristics example

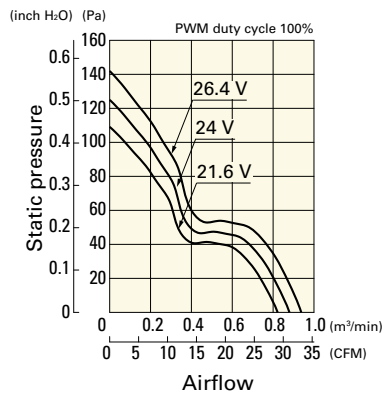


**9GA0624P6G001** With pulse sensor with PWM control function

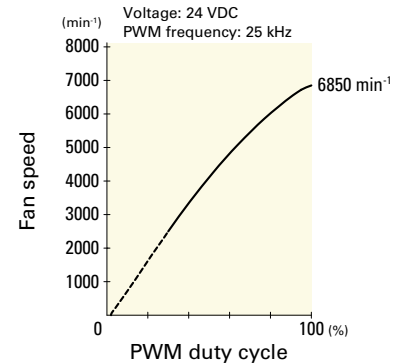
PWM duty cycle



Operating voltage range

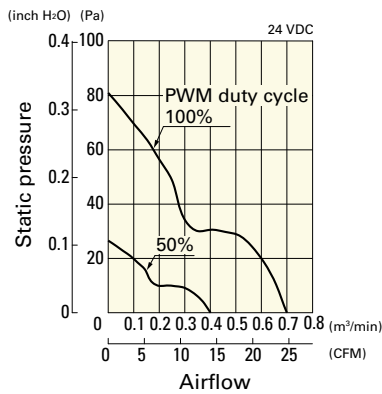


PWM duty - Speed characteristics example

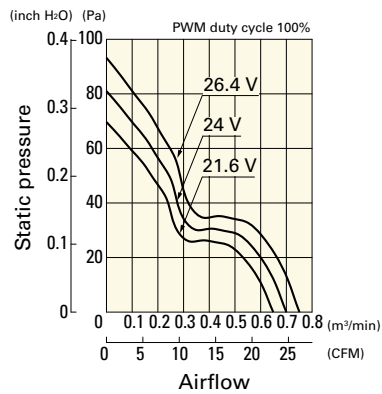


**9GA0624P6S001** With pulse sensor with PWM control function

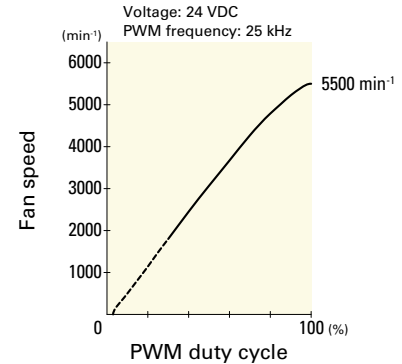
PWM duty cycle



Operating voltage range



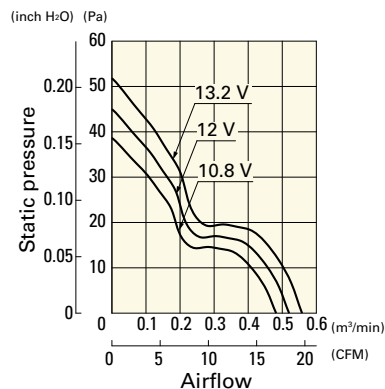
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

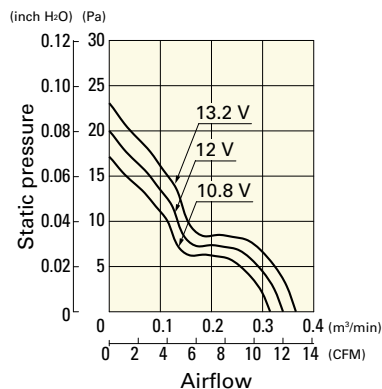
**9GA0612H6001** With pulse sensor

Operating voltage range



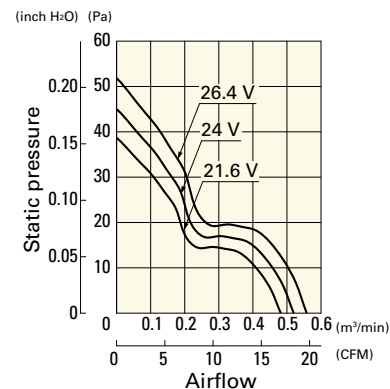
**9GA0612M6001** With pulse sensor

Operating voltage range



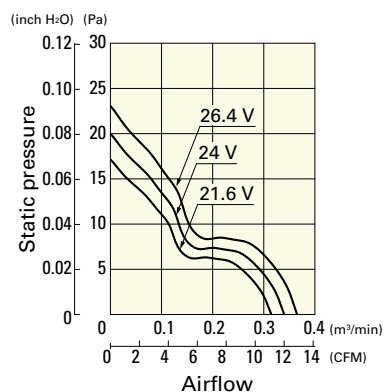
**9GA0624H6001** With pulse sensor

Operating voltage range

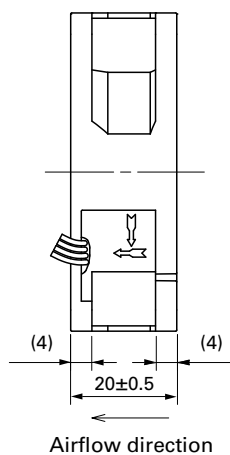
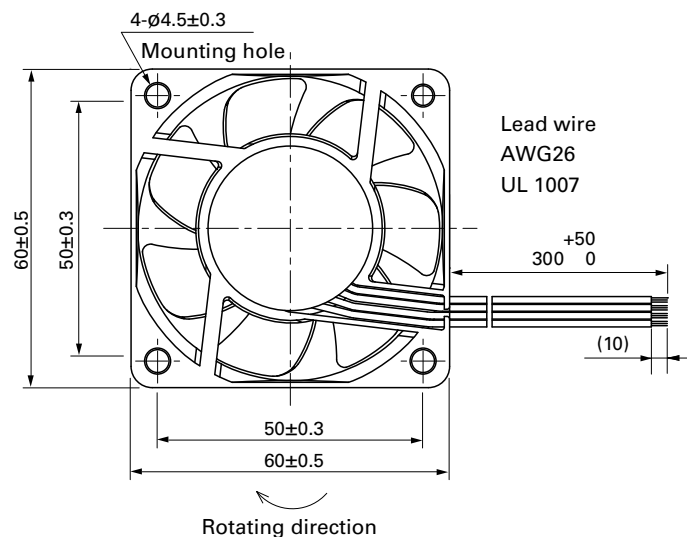


**9GA0624M6001** With pulse sensor

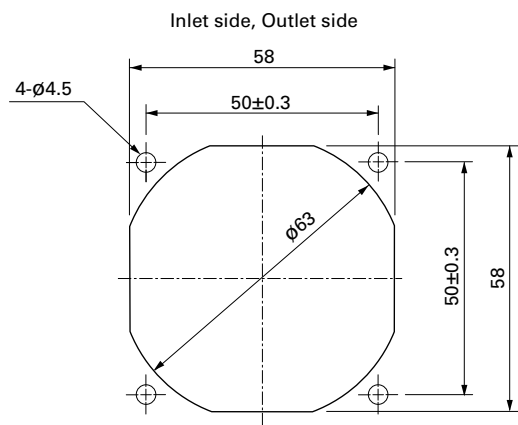
Operating voltage range



## Dimensions (unit: mm) (With pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

# DC Fan



# 60×60×25 mm

San Ace 60 9G type

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 90 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9G0612P4S001 | 12                | 10.2 to 13.8                | 100                | 0.67              | 8.04            | 11000                            | 1.4 49.4                                 | 300 1.2                                          | 53           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                |                   |                             | 0                  | 0.07              | 0.84            | 3300                             | 0.42 14.8                                | 27 0.11                                          | 19           |                            |                            |
| » 9G0612P4H001 | 12                | 10.2 to 13.8                | 100                | 0.5               | 6.0             | 9500                             | 1.21 42.7                                | 224 0.9                                          | 49           |                            |                            |
|                |                   |                             | 0                  | 0.06              | 0.72            | 2850                             | 0.36 12.7                                | 20.2 0.08                                        | 18           |                            |                            |
| » 9G0624P4S001 | 24                | 20.4 to 27.6                | 100                | 0.34              | 8.16            | 11000                            | 1.4 49.4                                 | 300 1.2                                          | 53           |                            |                            |
|                |                   |                             | 0                  | 0.04              | 0.96            | 3300                             | 0.42 14.8                                | 27 0.11                                          | 19           |                            |                            |
| » 9G0624P4H001 |                   |                             | 100                | 0.25              | 6.0             | 9500                             | 1.21 42.7                                | 224 0.9                                          | 49           |                            |                            |
|                |                   |                             | 0                  | 0.04              | 0.96            | 2850                             | 0.36 12.7                                | 20.2 0.08                                        | 18           |                            |                            |
| » 9G0624P4F001 |                   |                             | 100                | 0.17              | 4.08            | 7800                             | 1.0 35.3                                 | 150 0.6                                          | 43           |                            |                            |
|                |                   |                             | 20                 | 0.03              | 0.72            | 1800                             | 0.23 8.1                                 | 8 0.03                                           | 14           |                            |                            |
| » 9G0648P4S001 | 48                | 36 to 72                    | 100                | 0.18              | 8.64            | 11000                            | 1.4 49.4                                 | 305 1.22                                         | 53           |                            |                            |
|                |                   |                             | 0                  | 0.02              | 0.96            | 3300                             | 0.42 14.8                                | 27.4 0.11                                        | 19           |                            |                            |

\* 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.

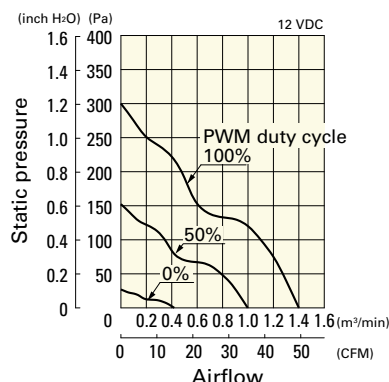
Note 1: Sensor and control options are available for selection. Refer to the table on p. 605.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

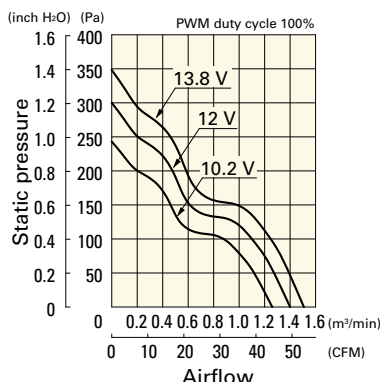
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

9G0612P4S001 With pulse sensor with PWM control function

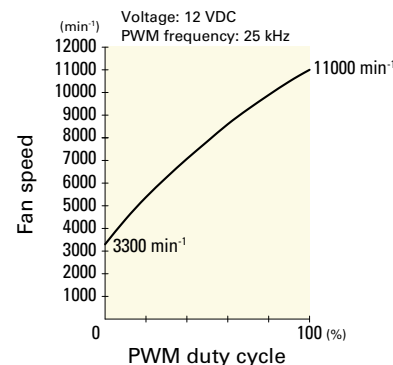
PWM duty cycle



Operating voltage range



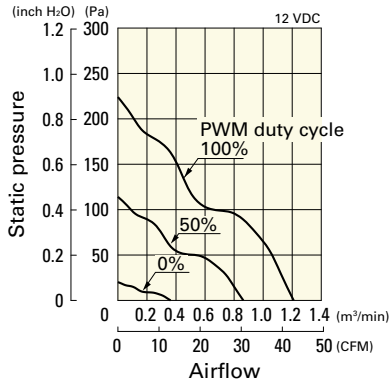
PWM duty - Speed characteristics example



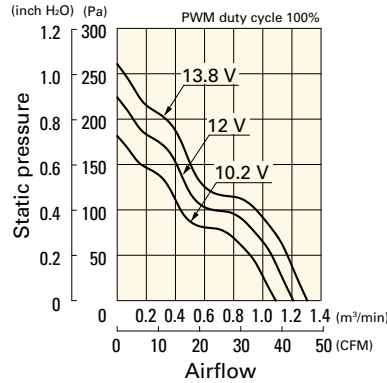
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9G0612P4H001** With pulse sensor with PWM control function

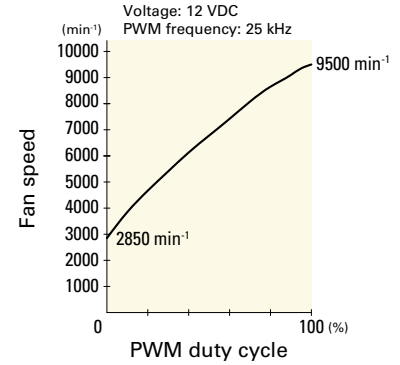
PWM duty cycle



Operating voltage range

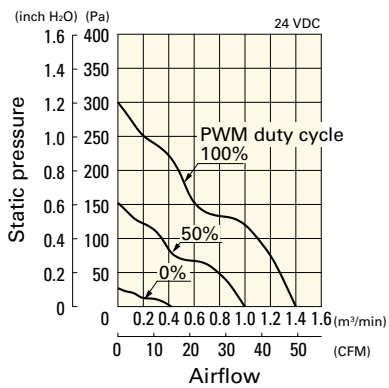


PWM duty - Speed characteristics example

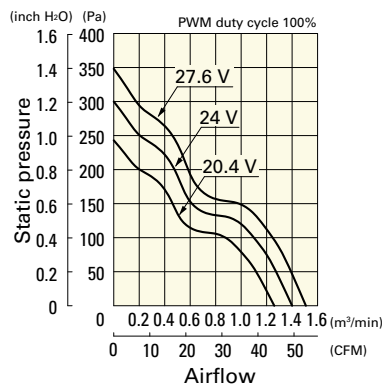


**9G0624P4S001** With pulse sensor with PWM control function

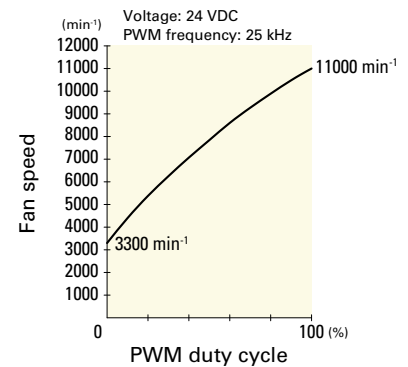
PWM duty cycle



Operating voltage range

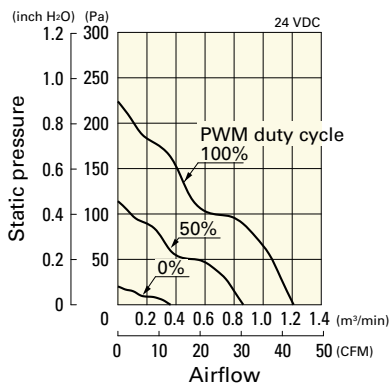


PWM duty - Speed characteristics example

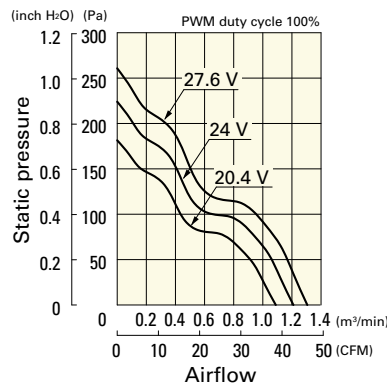


**9G0624P4H001** With pulse sensor with PWM control function

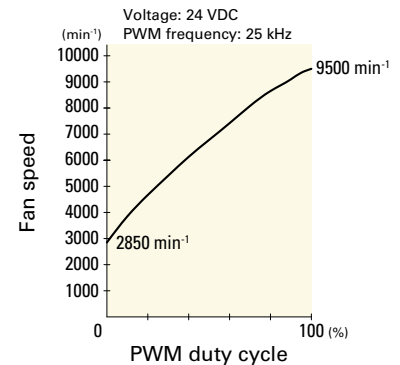
PWM duty cycle



Operating voltage range

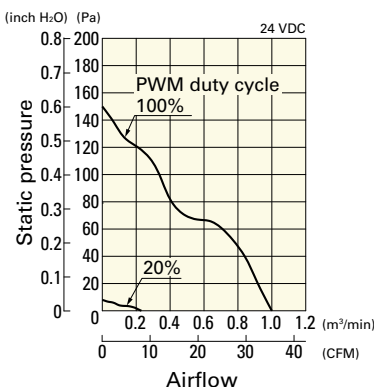


PWM duty - Speed characteristics example

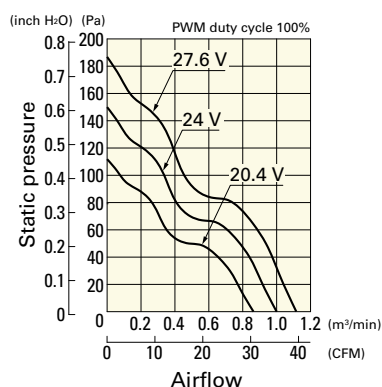


**9G0624P4F001** With pulse sensor with PWM control function

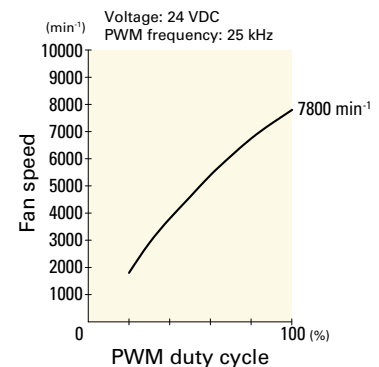
PWM duty cycle



Operating voltage range



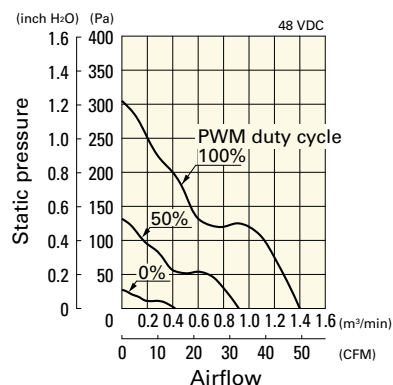
PWM duty - Speed characteristics example



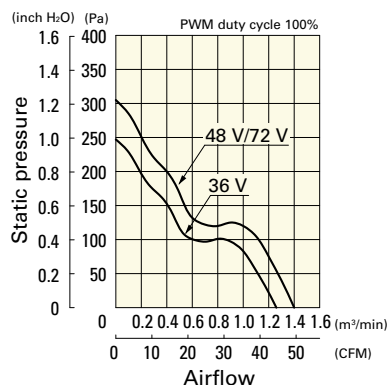
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9G0648P4S001** With pulse sensor with PWM control function

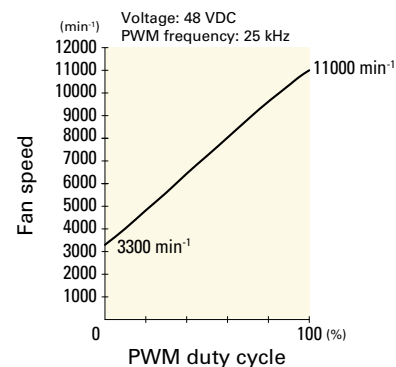
PWM duty cycle



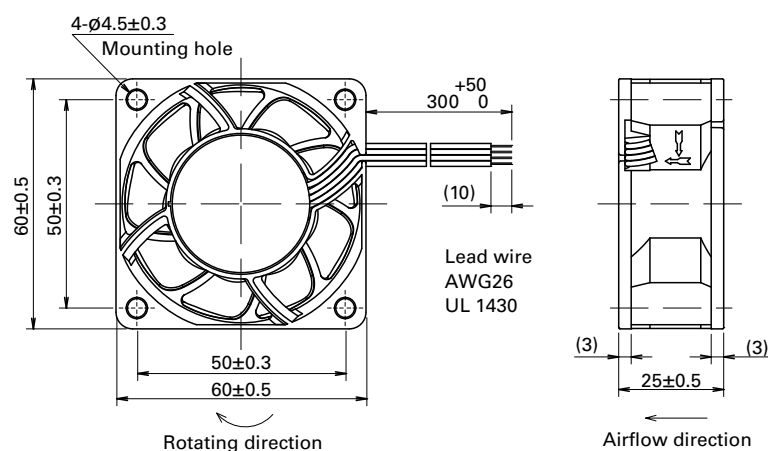
Operating voltage range



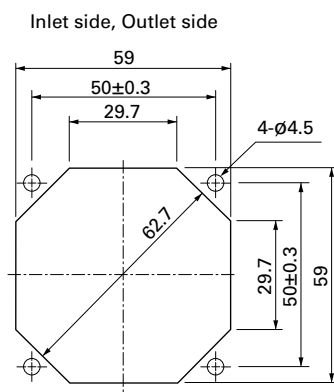
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)





# 60×60×25 mm

## San Ace 60 9RA type

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 70 g

### 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9RA0612P4J001 | 12                   | 10.8 to 13.2                   | 100                   | 0.35                 | 4.2                | 7700                                | 1.1 38.8                       | 130 0.52                                            | 41              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
|                 |                      |                                | 30                    | 0.05                 | 0.6                | 1900                                | 0.27 9.5                       | 8.1 0.03                                            | 13              |                               |                            |
| » 9RA0624P4J001 | 24                   | 21.6 to 26.4                   | 100                   | 0.18                 | 4.32               | 7700                                | 1.1 38.8                       | 130 0.52                                            | 41              |                               |                            |
|                 |                      |                                | 20                    | 0.03                 | 0.72               | 1700                                | 0.24 8.5                       | 6.5 0.02                                            | 11              |                               |                            |
| » 9RA0648P4J001 | 48                   | 43.2 to 52.8                   | 100                   | 0.1                  | 4.8                | 7700                                | 1.1 38.8                       | 130 0.52                                            | 41              |                               |                            |
|                 |                      |                                | 20                    | 0.03                 | 1.44               | 1800                                | 0.25 8.8                       | 7.1 0.03                                            | 12              |                               |                            |

\* 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.

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

| Model no.      | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9RA0612J4001 | 12                   | 7 to 13.8                      | 0.35                 | 4.2                | 7700                                | 1.1 38.8                       | 130 0.52                                            | 41              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
| » 9RA0612G4001 |                      |                                | 0.15                 | 1.8                | 5600                                | 0.8 28.2                       | 69 0.28                                             | 36              |                               |                            |
| » 9RA0612S4001 |                      |                                | 0.1                  | 1.2                | 4600                                | 0.66 23.3                      | 46 0.18                                             | 30              |                               |                            |
| » 9RA0612H4001 |                      |                                | 0.07                 | 0.84               | 3800                                | 0.54 19.1                      | 32 0.13                                             | 26              |                               |                            |
| » 9RA0624J4001 | 24                   | 14 to 27.6                     | 0.18                 | 4.32               | 7700                                | 1.1 38.8                       | 130 0.52                                            | 41              |                               |                            |
| » 9RA0624G4001 |                      |                                | 0.08                 | 1.92               | 5600                                | 0.8 28.2                       | 69 0.28                                             | 36              |                               |                            |
| » 9RA0624S4001 |                      |                                | 0.06                 | 1.44               | 4600                                | 0.66 23.3                      | 46 0.18                                             | 30              |                               |                            |
| » 9RA0624H4001 |                      |                                | 0.05                 | 1.2                | 3800                                | 0.54 19.1                      | 32 0.13                                             | 26              |                               |                            |
| » 9RA0648J4001 | 48                   | 36 to 55.2                     | 0.1                  | 4.8                | 7700                                | 1.1 38.8                       | 130 0.52                                            | 41              |                               |                            |
| » 9RA0648G4001 |                      |                                | 0.06                 | 2.88               | 5600                                | 0.8 28.2                       | 69 0.28                                             | 36              |                               |                            |

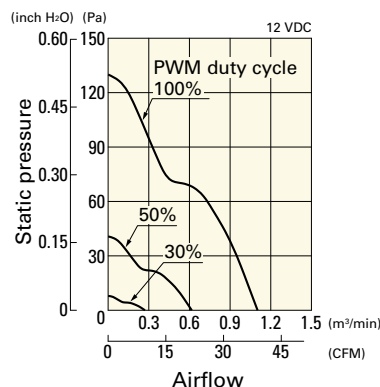
Note 1: Sensor and control options are available for selection. Refer to the table on p. 614.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

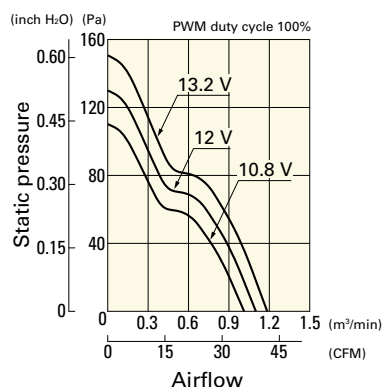
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9RA0612P4J001** With pulse sensor with PWM control function

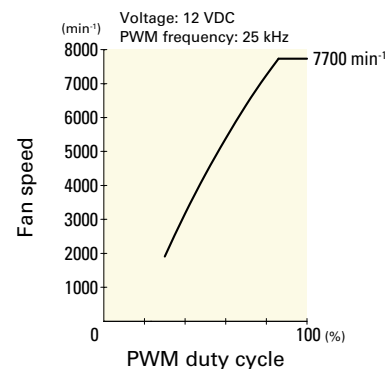
PWM duty cycle



Operating voltage range

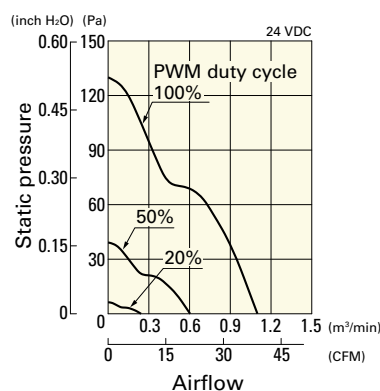


PWM duty - Speed characteristics example

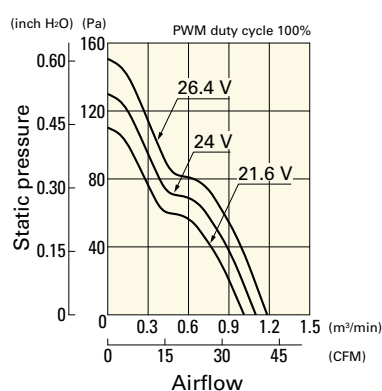


**9RA0624P4J001** With pulse sensor with PWM control function

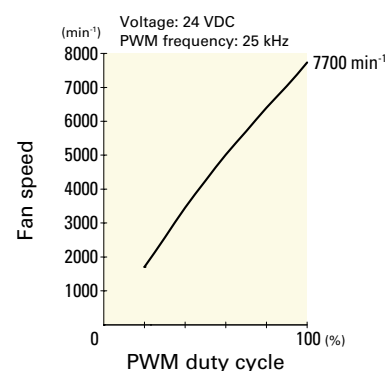
PWM duty cycle



Operating voltage range

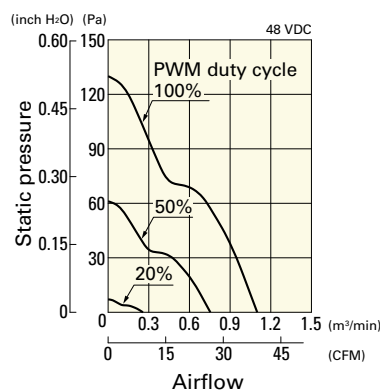


PWM duty - Speed characteristics example

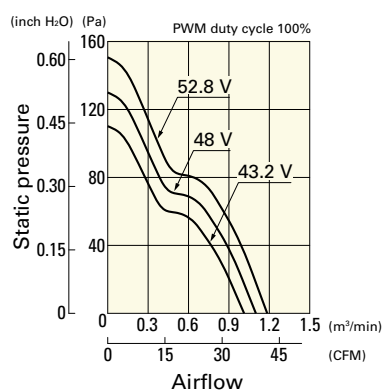


**9RA0648P4J001** With pulse sensor with PWM control function

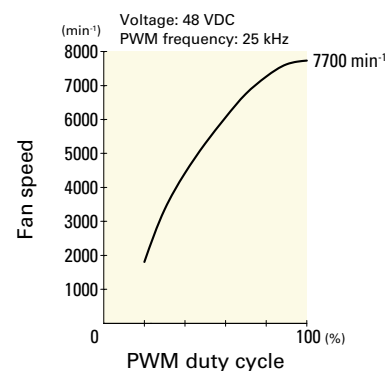
PWM duty cycle



Operating voltage range

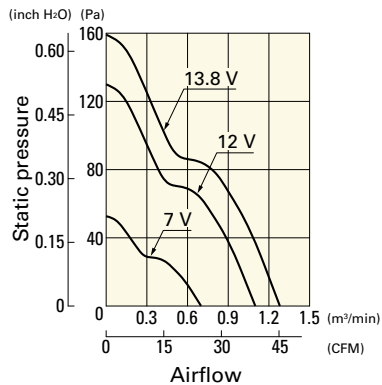


PWM duty - Speed characteristics example



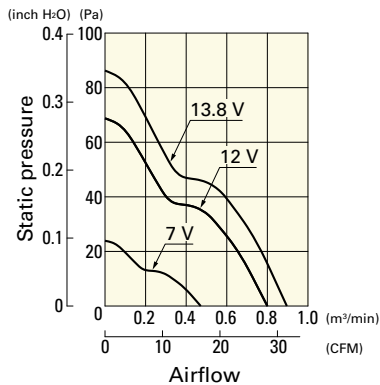
## 9RA0612J4001 With pulse sensor

Operating voltage range



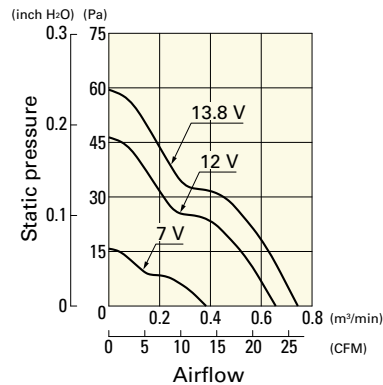
## 9RA0612G4001 With pulse sensor

Operating voltage range



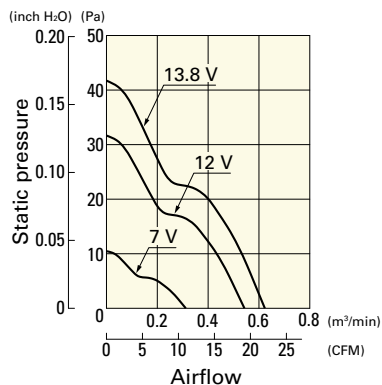
## 9RA0612S4001 With pulse sensor

Operating voltage range



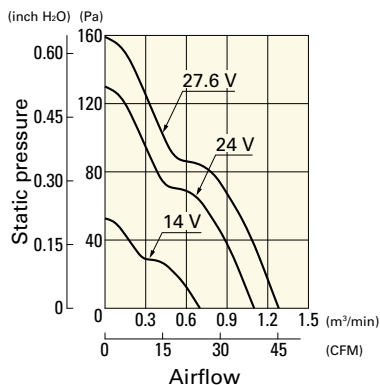
## 9RA0612H4001 With pulse sensor

Operating voltage range



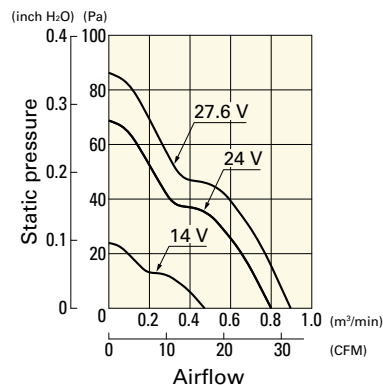
## 9RA0624J4001 With pulse sensor

Operating voltage range



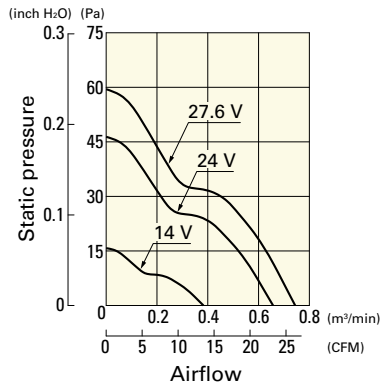
## 9RA0624G4001 With pulse sensor

Operating voltage range



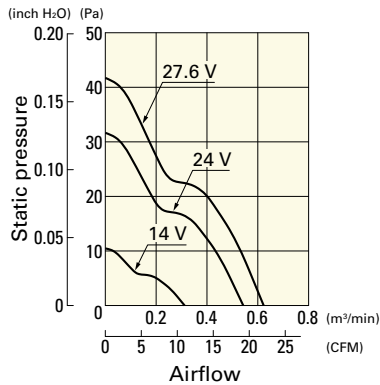
## 9RA0624S4001 With pulse sensor

Operating voltage range



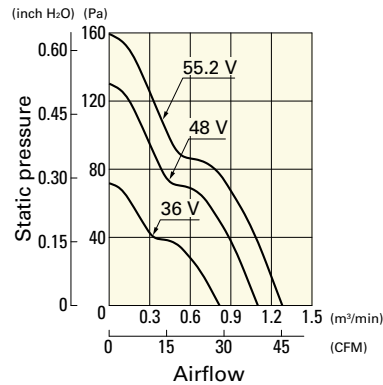
## 9RA0624H4001 With pulse sensor

Operating voltage range



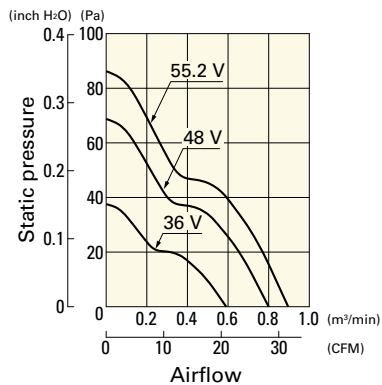
## 9RA0648J4001 With pulse sensor

Operating voltage range

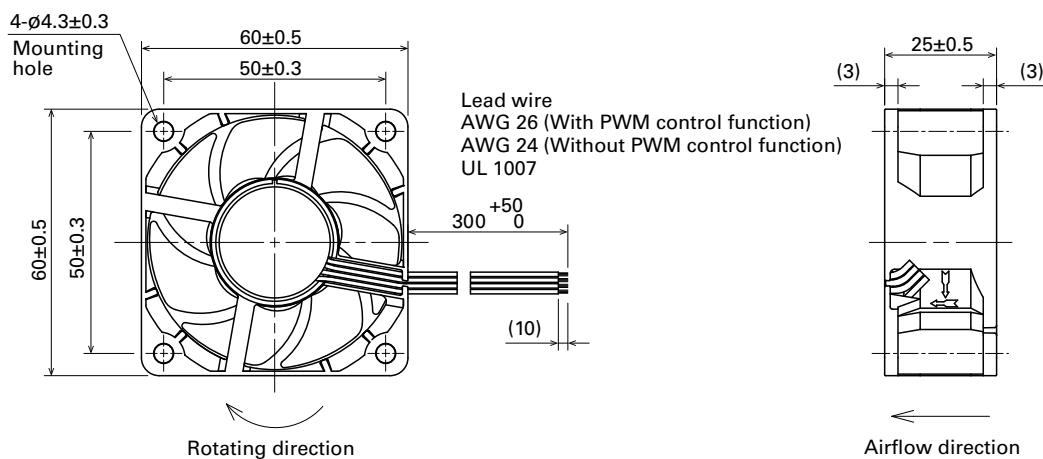


## 9RA0648G4001 With pulse sensor

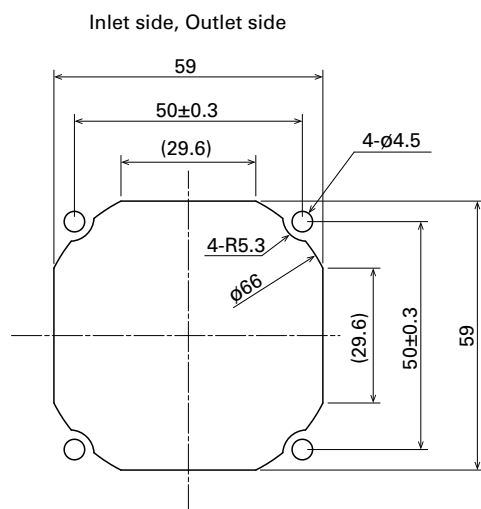
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

# 60×60×25 mm

**San Ace 60 9S** type Silent Fan 


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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
- Mass ..... 55 g

## Specifications

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

| Model no.            | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| ▶▶ <b>9S0612S401</b> | 12                   | 5.0 to 13.8                    | 0.2                  | 2.4                | 5000                                | 0.74 26.1                                   | 65.7 0.26                                           | 31              | -10 to +70                    | 40000/60°C<br>(70000/40°C) |
| ▶▶ <b>9S0612H401</b> |                      |                                | 0.11                 | 1.32               | 3900                                | 0.58 20.5                                   | 40.0 0.16                                           | 24              |                               |                            |
| ▶▶ <b>9S0612F401</b> |                      | 6.0 to 13.8                    | 0.08                 | 0.96               | 3300                                | 0.49 17.3                                   | 29.3 0.12                                           | 20              |                               |                            |
| ▶▶ <b>9S0612M401</b> |                      |                                | 0.07                 | 0.84               | 2700                                | 0.4 14.1                                    | 19.7 0.08                                           | 16              |                               |                            |

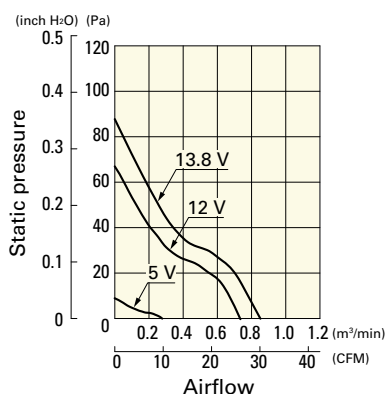
Note 1: Sensor and control options are available for selection. Refer to the table on p. 616.

Note 2: The ▶▶ mark indicates Short Lead Time Service applicable models. See p. 630 for details.

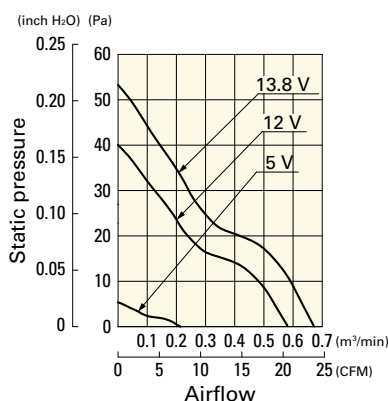
## Airflow - Static Pressure Characteristics

**9S0612S401** With pulse sensor

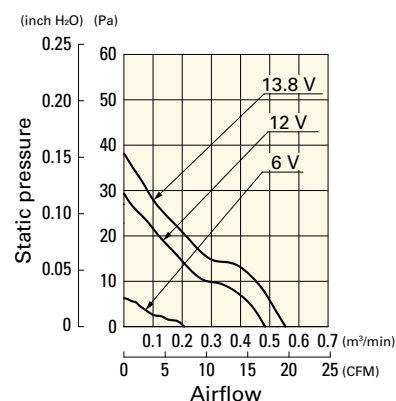
Operating voltage range


**9S0612H401** With pulse sensor

Operating voltage range


**9S0612F401** With pulse sensor

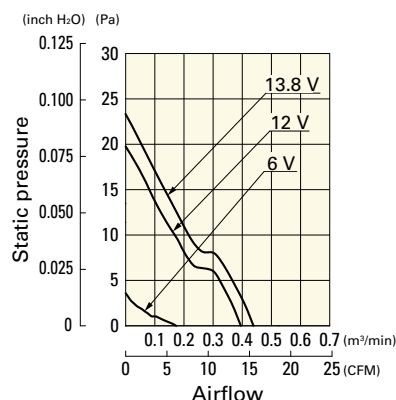
Operating voltage range



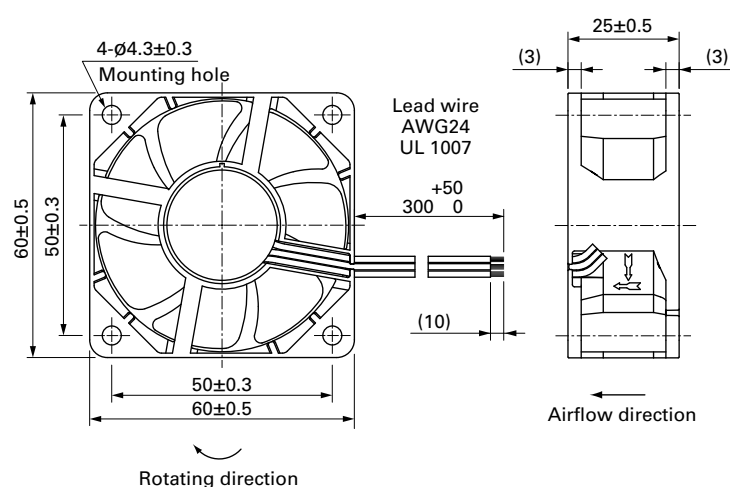
## Airflow - Static Pressure Characteristics

**9S0612M401** With pulse sensor

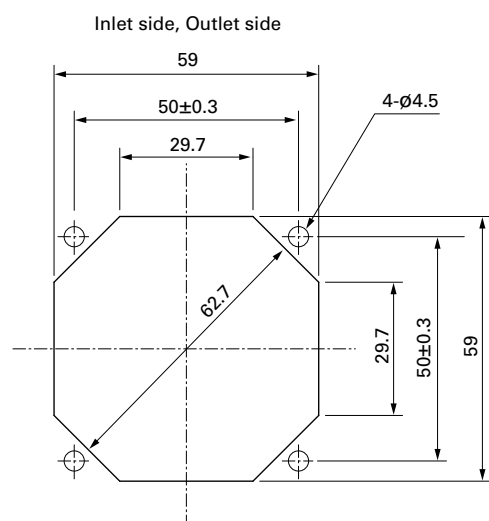
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

Resin finger guards

page: p. 571

Model no.: 109-1003G

Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)



# 60×60×38 mm

## San Ace 60 9HV type

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 135 g

### 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9HV0612P1J001 | 12                | 10.8 to 12.6                | 100                | 2.7               | 32.4            | 21700                            | 1.88 66.4                                | 1750 7.0                                         | 68           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|               |                   |                             | 20                 | 0.17              | 2.04            | 5300                             | 0.43 15.2                                | 102 0.41                                         | 34           |                            |                            |

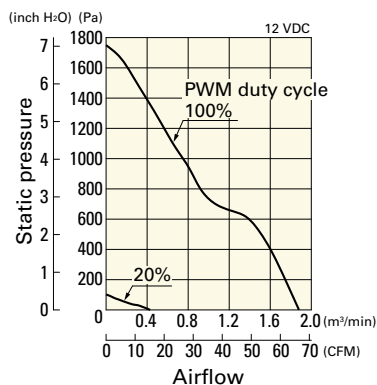
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

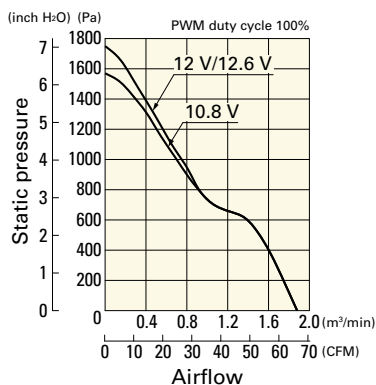
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0612P1J001** With pulse sensor with PWM control function

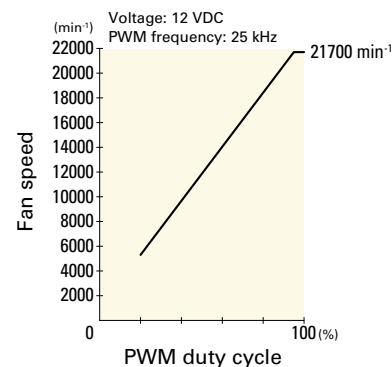
PWM duty cycle



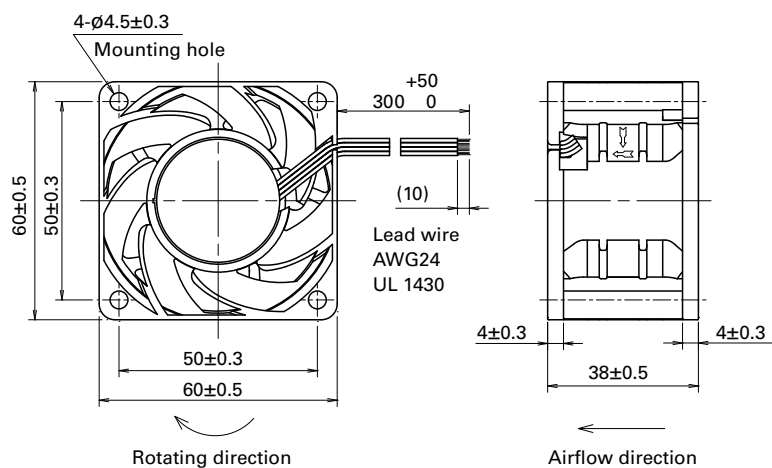
Operating voltage range



PWM duty - Speed characteristics example

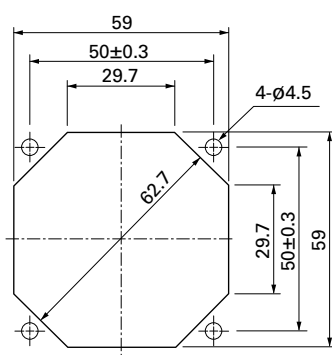


## Dimensions (unit: mm) (With ribs)



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

Inlet side, Outlet side



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)





# 60×60×38 mm

## San Ace 60 9GA type Low Power Consumption Fan

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 130 g

### 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle* [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |      | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |     | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---|--------------|----------------------|--------------------------------|------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|------|-----------------------------------------------------|-----|-----------------|-------------------------------|----------------------------|
| » | 9GA0612P1J03 | 12                   | 10.8 to 12.6                   | 100                    | 1.5                  | 18.0               | 17500                               | 1.75                           | 62   | 820                                                 | 3.3 | 63              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |
|   | 20           |                      |                                | 0.1                    | 1.2                  | 4000               | 0.4                                 | 14                             | 43   | 0.17                                                | 24  |                 |                               |                            |
| » | 9GA0612P1K03 |                      | 10.8 to 13.2                   | 100                    | 0.95                 | 11.4               | 14800                               | 1.5                            | 53   | 600                                                 | 2.4 | 59              | -20 to +70                    |                            |
|   | 20           |                      |                                | 0.1                    | 1.2                  | 4000               | 0.4                                 | 14                             | 43   | 0.17                                                | 24  |                 |                               |                            |
| » | 9GA0612P1K60 |                      |                                | 100                    | 0.95                 | 11.4               | 14800                               | 1.5                            | 53   | 675                                                 | 2.7 | 59              | -20 to +60                    |                            |
|   | 0            |                      |                                | 0.05                   | 0.6                  | 1480               | 0.134                               | 4.7                            | 8.3  | 0.03                                                | 16  |                 |                               |                            |
| » | 9GA0612P1H03 |                      |                                | 100                    | 0.55                 | 6.6                | 11500                               | 1.15                           | 40   | 375                                                 | 1.5 | 52              | -20 to +70                    |                            |
|   | 20           |                      |                                | 0.06                   | 0.72                 | 2600               | 0.27                                | 9.5                            | 20   | 0.08                                                | 19  |                 |                               |                            |
| » | 9GA0624P1J03 | 24                   | 21.6 to 25.2                   | 100                    | 0.75                 | 18.0               | 17500                               | 1.75                           | 62   | 820                                                 | 3.3 | 63              | -20 to +60                    |                            |
|   | 20           |                      |                                | 0.1                    | 2.4                  | 6200               | 0.63                                | 22                             | 104  | 0.42                                                | 35  |                 |                               |                            |
|   | 9GA0624P1K03 |                      | 21.6 to 26.4                   | 100                    | 0.5                  | 12                 | 14800                               | 1.5                            | 53.0 | 600                                                 | 2.4 | 59              | -20 to +70                    |                            |
|   | 20           |                      |                                | 0.06                   | 1.44                 | 5000               | 0.5                                 | 17.7                           | 70   | 0.28                                                | 28  |                 |                               |                            |
|   | 9GA0648P1K03 | 48                   | 43.2 to 52.8                   | 100                    | 0.24                 | 11.52              | 14800                               | 1.5                            | 53   | 600                                                 | 2.4 | 59              | -10 to +70                    |                            |
|   | 20           |                      |                                | 0.03                   | 1.44                 | 4000               | 0.4                                 | 14                             | 43   | 0.17                                                | 24  |                 |                               |                            |

\* 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.

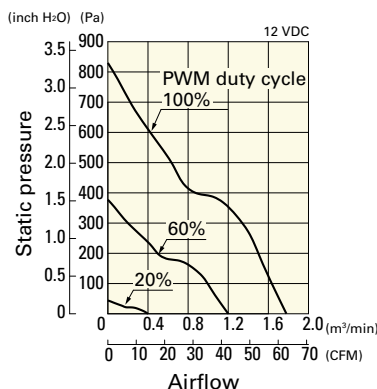
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 607 to 608.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

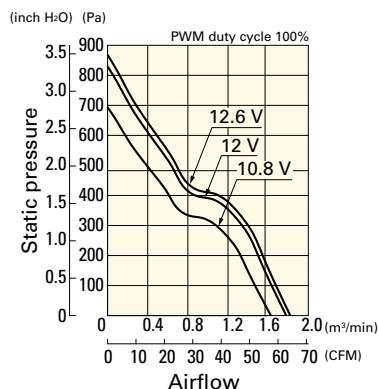
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0612P1J03** With pulse sensor with PWM control function

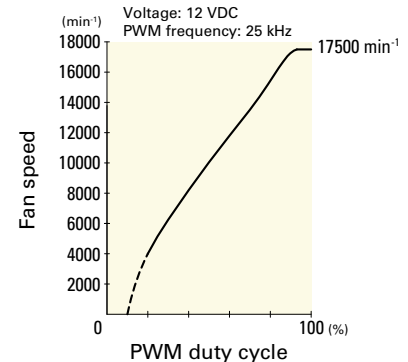
PWM duty cycle



Operating voltage range



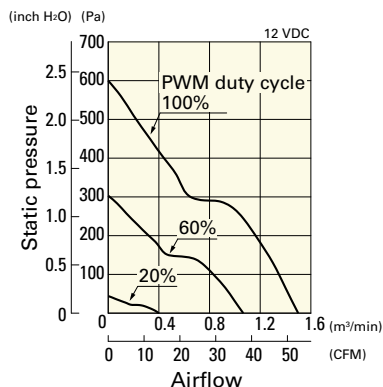
PWM duty - Speed characteristics example



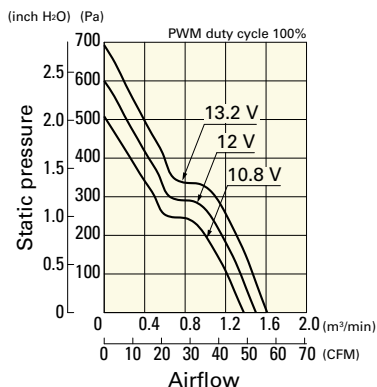
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0612P1K03** With pulse sensor with PWM control function

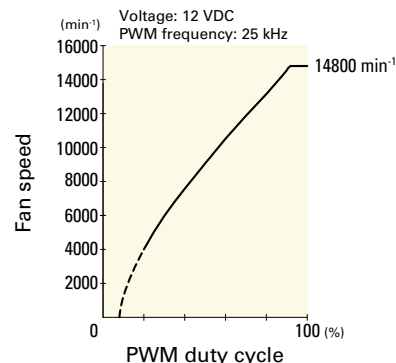
PWM duty cycle



Operating voltage range

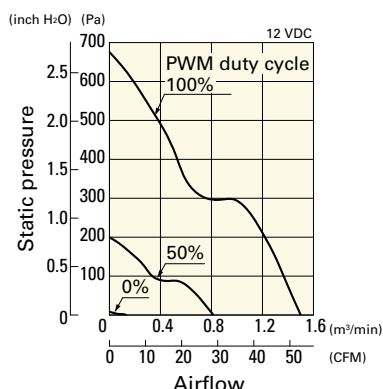


PWM duty - Speed characteristics example

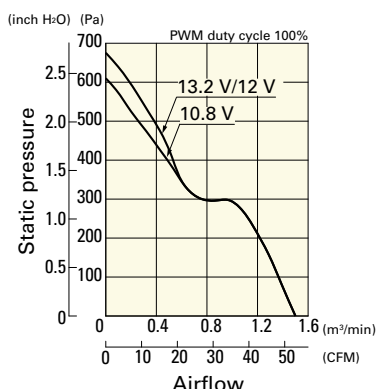


**9GA0612P1K60** With pulse sensor with PWM control function

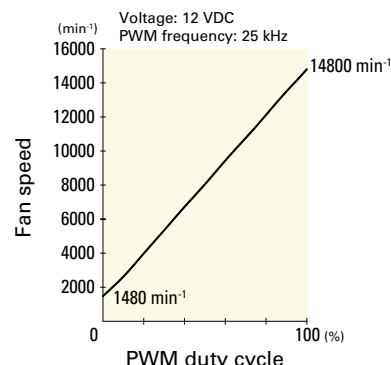
PWM duty cycle



Operating voltage range

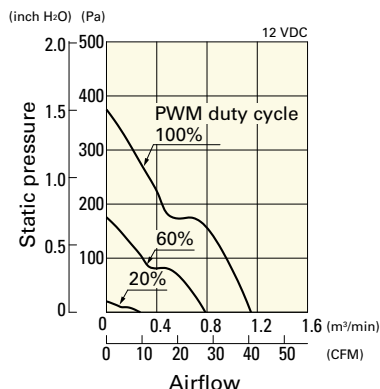


PWM duty - Speed characteristics example

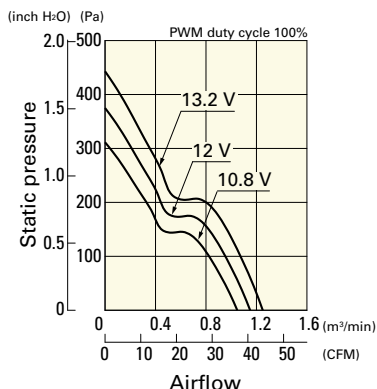


**9GA0612P1H03** With pulse sensor with PWM control function

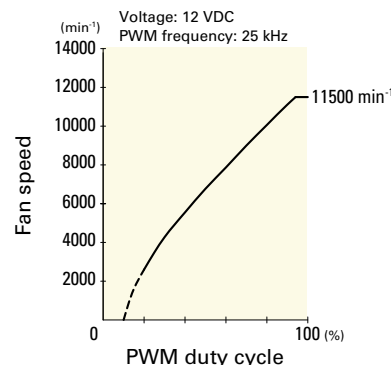
PWM duty cycle



Operating voltage range

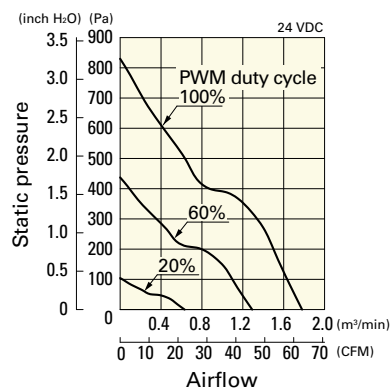


PWM duty - Speed characteristics example

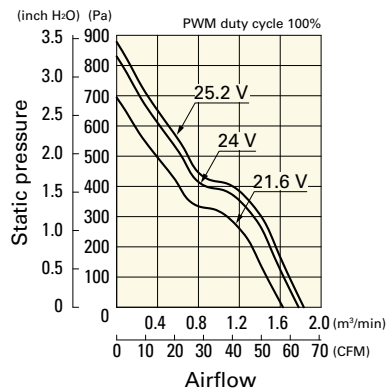


**9GA0624P1J03** With pulse sensor with PWM control function

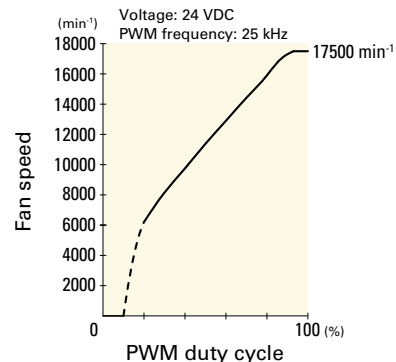
PWM duty cycle



Operating voltage range



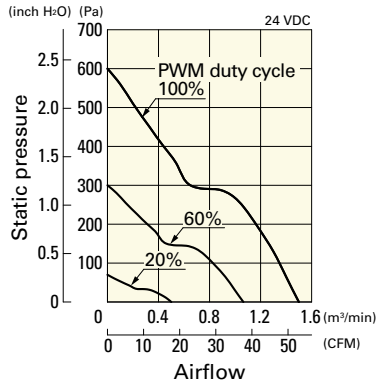
PWM duty - Speed characteristics example



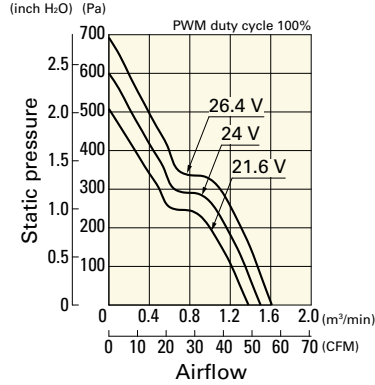
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0624P1K03** With pulse sensor with PWM control function

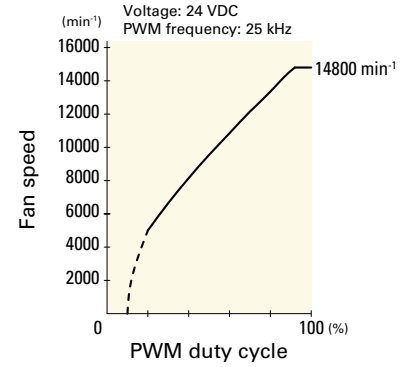
PWM duty cycle



Operating voltage range

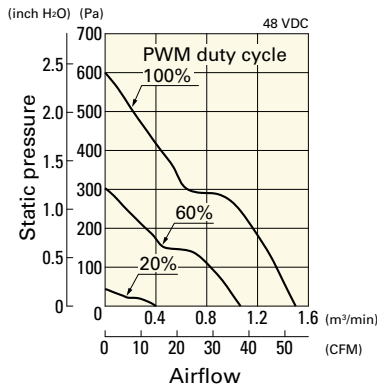


PWM duty - Speed characteristics example

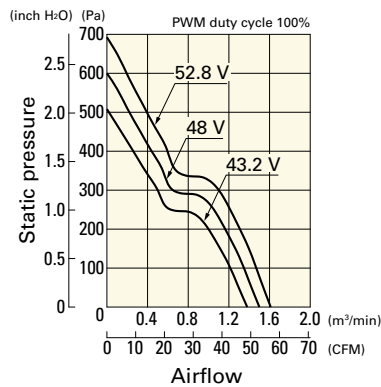


**9GA0648P1K03** With pulse sensor with PWM control function

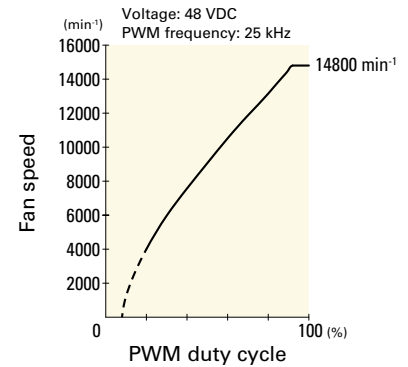
PWM duty cycle



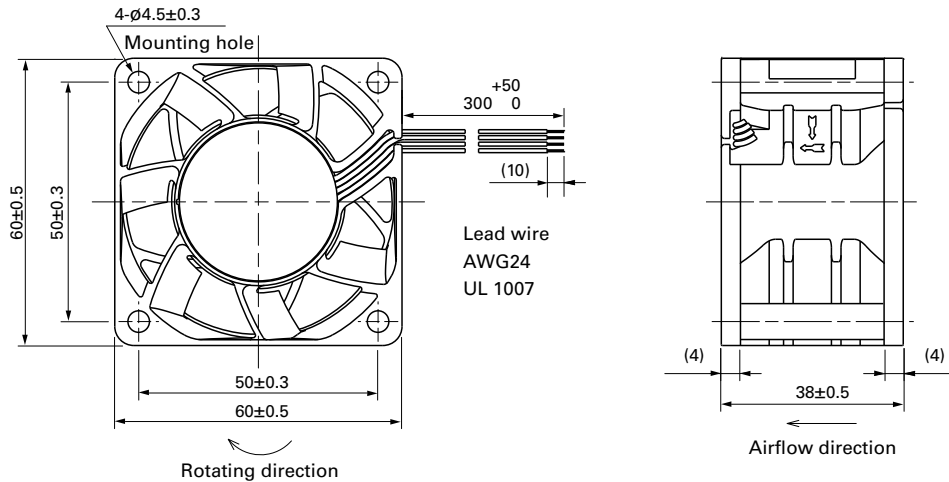
Operating voltage range



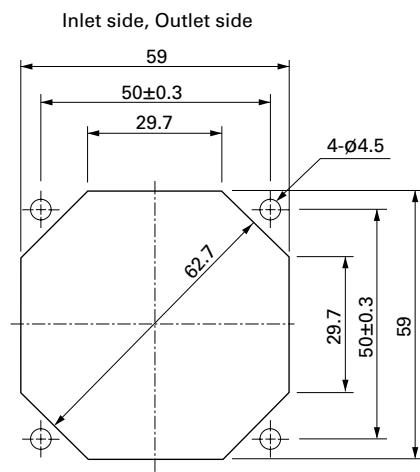
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)



# 60×60×38 mm

## San Ace 60 9GV type

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 130 g

### 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.

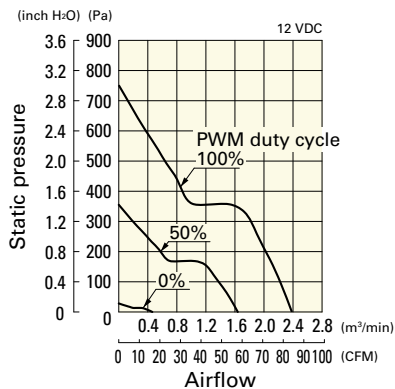
| Model no.    | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GV0612P1G03 | 12                | 8.0 to 13.8                 | 100                | 2.8               | 33.6            | 16000                            | 2.37 84                                  | 751 3.02                                         | 66           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|              |                   |                             | 0                  | 0.12              | 1.5             | 3100                             | 0.44 15                                  | 26 0.10                                          | 25           |                            |                            |
| 9GV0624P1G03 | 24                | 20.4 to 27.6                | 100                | 1.4               | 33.6            | 16000                            | 2.37 84                                  | 751 3.02                                         | 66           |                            |                            |
|              |                   |                             | 0                  | 0.12              | 2.88            | 6000                             | 0.89 31                                  | 105 0.42                                         | 38           |                            |                            |

\* 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.

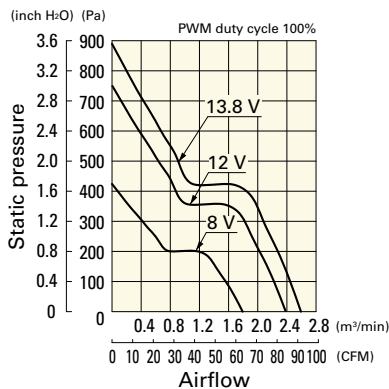
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

#### 9GV0612P1G03 With pulse sensor with PWM control function

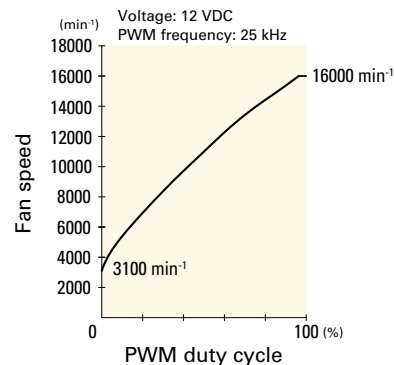
PWM duty cycle



Operating voltage range

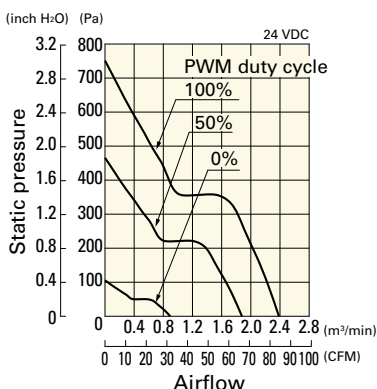


PWM duty - Speed characteristics example

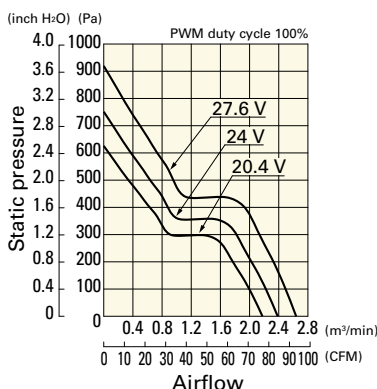


#### 9GV0624P1G03 With pulse sensor with PWM control function

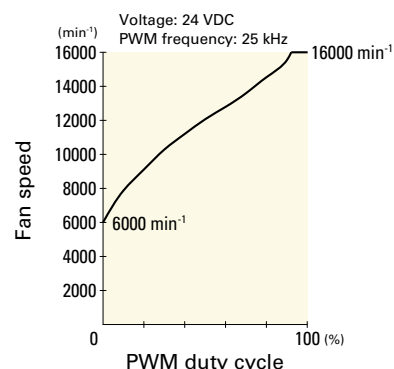
PWM duty cycle



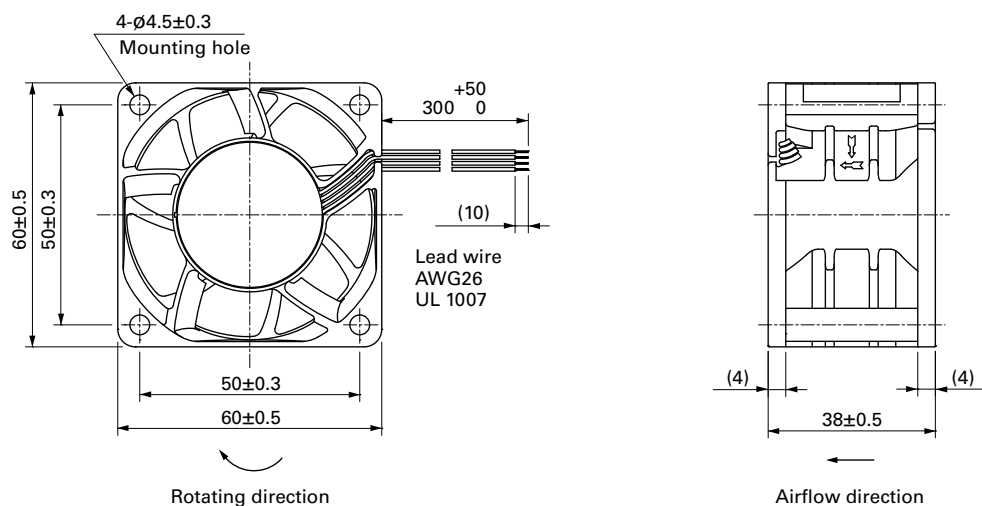
Operating voltage range



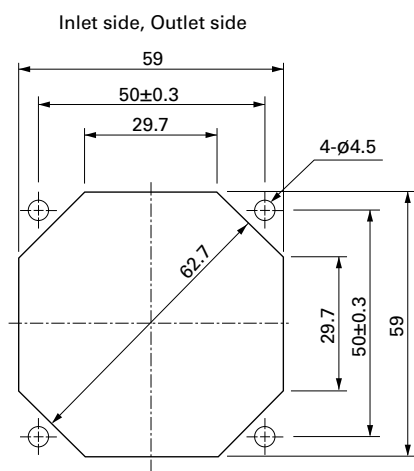
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-139E, 109-139H

### Resin finger guards

page: p. 571

Model no.: 109-1003G

### Resin filter kits

page: p. 572

Model no.: 109-1003F13 (13PPI), 109-1003F20 (20PPI),  
109-1003F30 (30PPI), 109-1003F40 (40PPI)

70×70×38 mm

San Ace 70 9GA type Low Power Consumption Fan **General Specifications**

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 170 g

**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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|------------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| ▶▶ 9GA0712P1G001 | 12                | 10.8 to 13.2                | 100                 | 2.6               | 31.2            | 16500                            | 2.65 93.6                                | 860 3.45                                         | 65           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                  |                   |                             | 0                   | 0.16              | 1.92            | 4400                             | 0.7 24.7                                 | 61 0.24                                          | 30           |                            |                            |
| ▶▶ 9GA0712P1H001 |                   |                             | 100                 | 1.1               | 13.2            | 12000                            | 1.92 67.8                                | 455 1.83                                         | 57           |                            |                            |
|                  |                   |                             | 0                   | 0.07              | 0.84            | 2500                             | 0.4 14.1                                 | 20 0.08                                          | 19           |                            |                            |

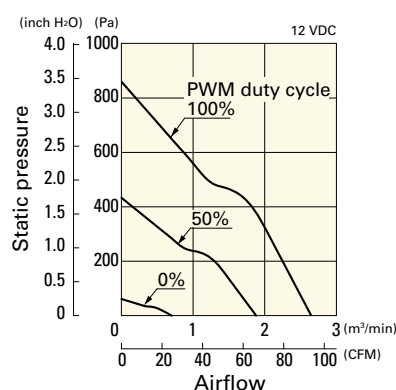
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

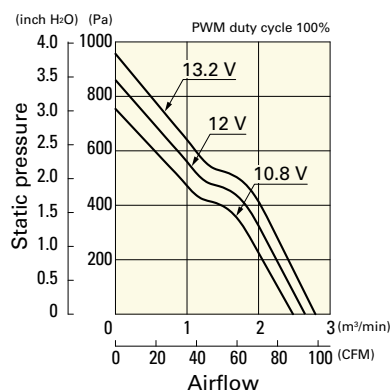
**Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example**

**9GA0712P1G001** With pulse sensor with PWM control function

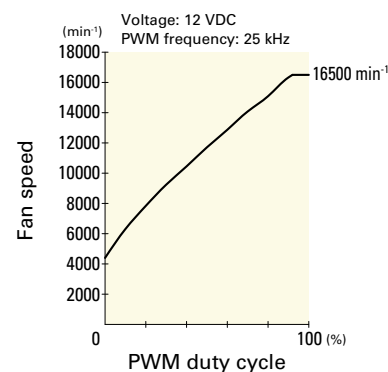
PWM duty cycle



Operating voltage range



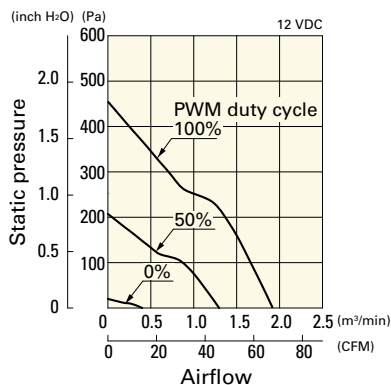
PWM duty - Speed characteristics example



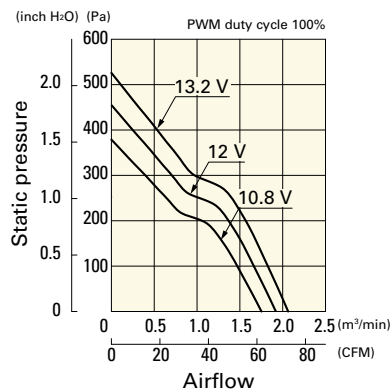
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0712P1H001** With pulse sensor with PWM control function

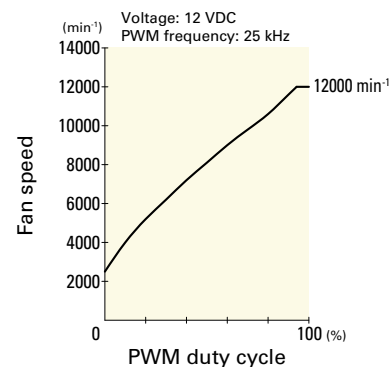
PWM duty cycle



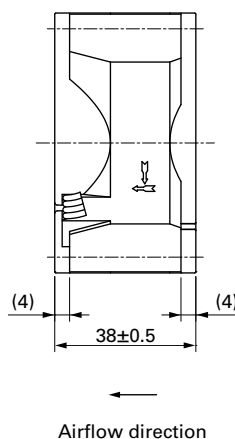
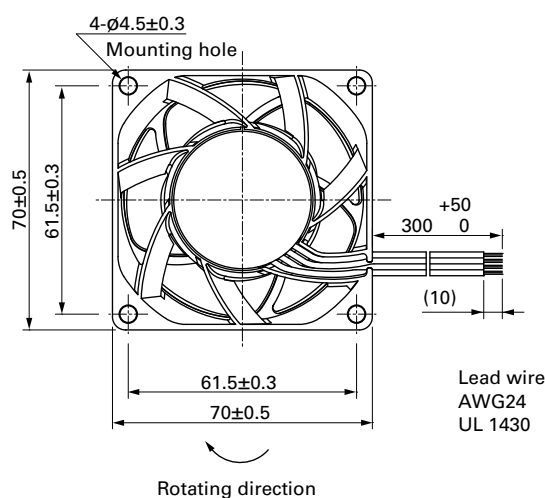
Operating voltage range



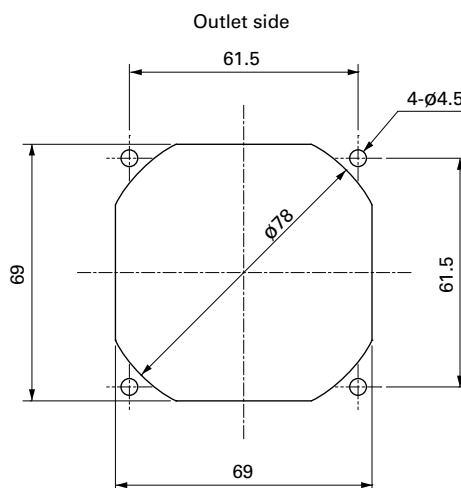
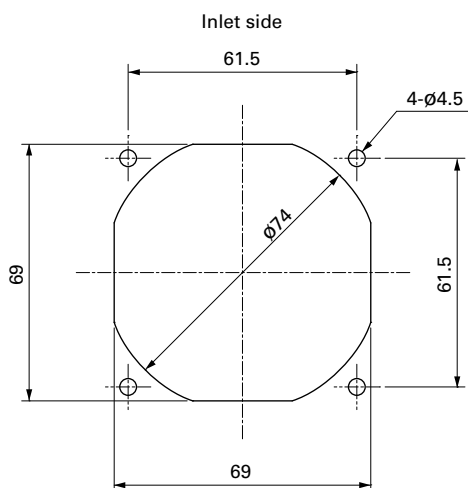
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

Finger guards

page: p. 564

Model no.: 109-1128



# 80×80×15 mm

**San Ace 80 9GA** type Low Power Consumption Fan 


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 65 g

## Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0812P7G001 | 12                | 10.2 to 13.8                | 100                | 0.29              | 3.48            | 6100                             | 1.44 50.9                                | 84.0 0.34                                        | 41           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9GA0812P7S001 |                   |                             | 100                | 0.17              | 2.04            | 5000                             | 1.18 41.7                                | 56.4 0.23                                        | 37           |                            |                            |
| 9GA0824P7G001 | 24                | 20.4 to 27.6                | 100                | 0.13              | 3.12            | 6100                             | 1.44 50.9                                | 84.0 0.34                                        | 41           |                            |                            |
| 9GA0824P7S001 |                   |                             | 100                | 0.08              | 1.92            | 5000                             | 1.18 41.7                                | 56.4 0.23                                        | 37           |                            |                            |

\* 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.

The models listed below **have ribs and pulse sensors.**

| Model no.    | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0812H7001 | 12                | 6 to 13.2                   | 0.09              | 1.08            | 3800                             | 0.89 31.4                                | 32.6 0.13                                        | 29           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9GA0824H7001 | 24                | 12 to 26.4                  | 0.05              | 1.2             | 3800                             | 0.89 31.4                                | 32.6 0.13                                        | 29           |                            |                            |

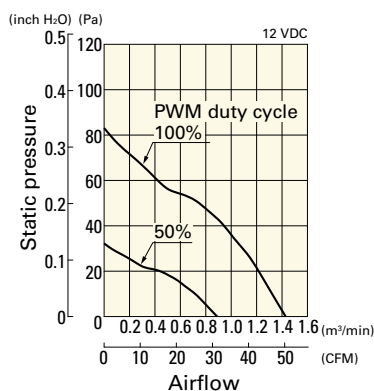
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 608 to 609.

Note 2: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

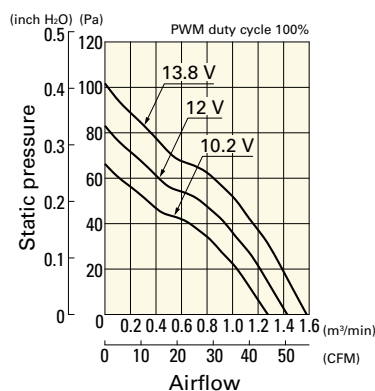
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P7G001** With pulse sensor with PWM control function

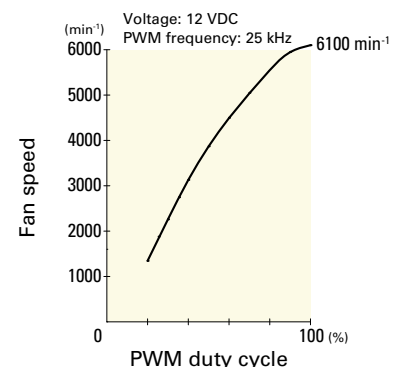
PWM duty cycle



Operating voltage range



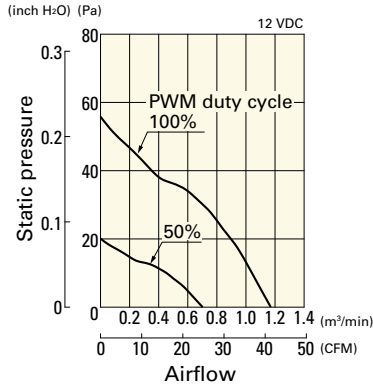
PWM duty - Speed characteristics example



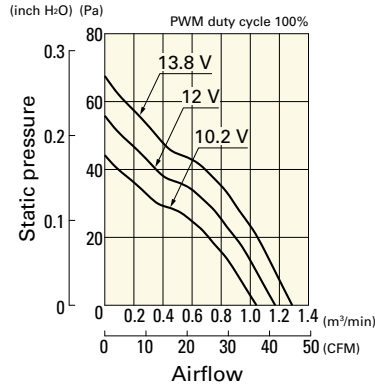
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P7S001** With pulse sensor with PWM control function

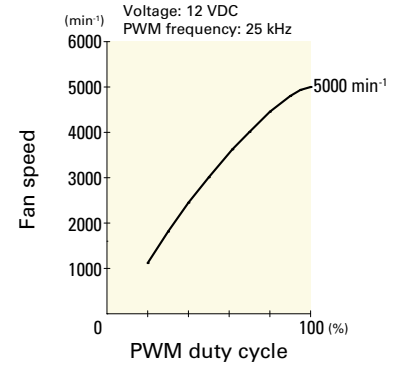
PWM duty cycle



Operating voltage range

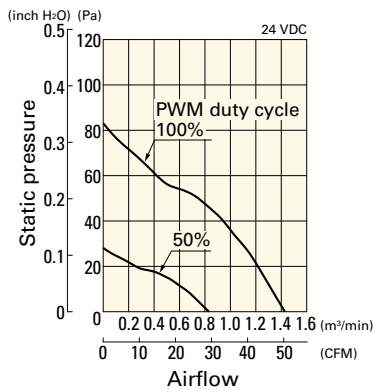


PWM duty - Speed characteristics example

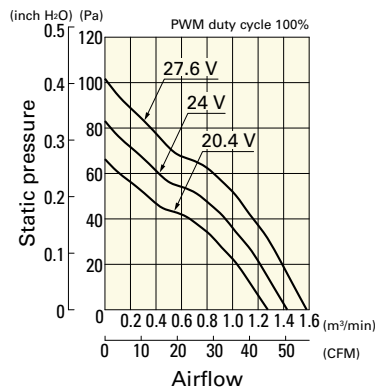


**9GA0824P7G001** With pulse sensor with PWM control function

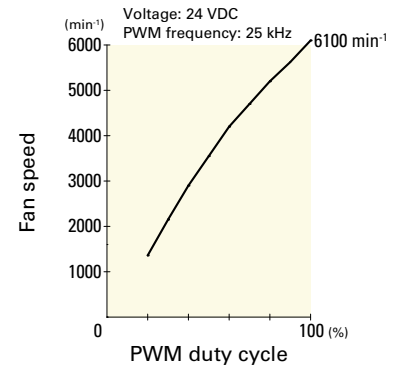
PWM duty cycle



Operating voltage range

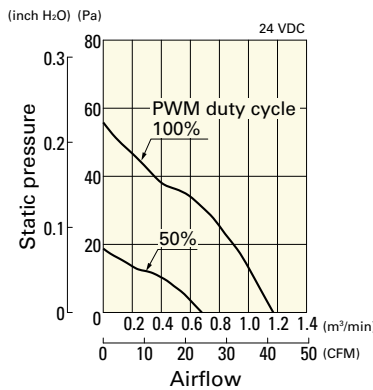


PWM duty - Speed characteristics example

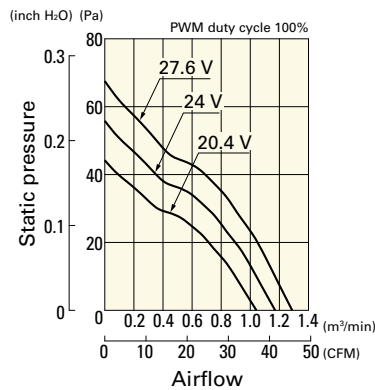


**9GA0824P7S001** With pulse sensor with PWM control function

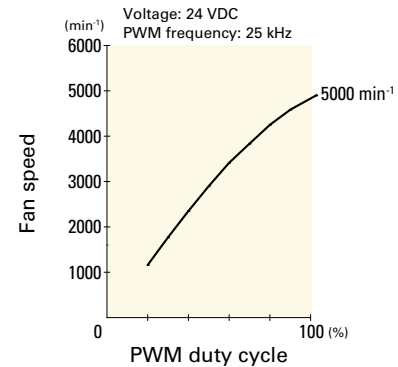
PWM duty cycle



Operating voltage range



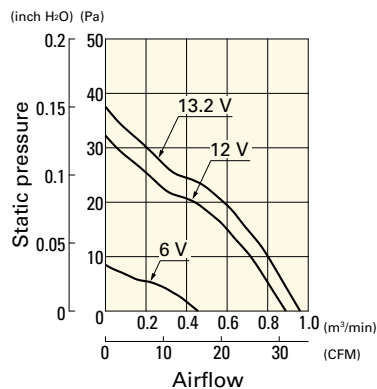
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

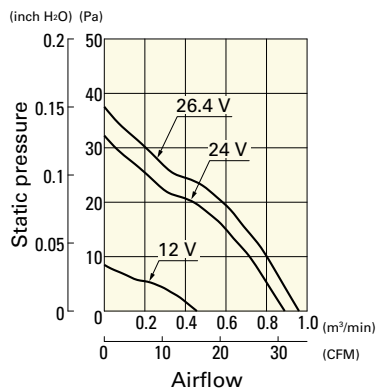
### 9GA0812H7001 With pulse sensor

Operating voltage range

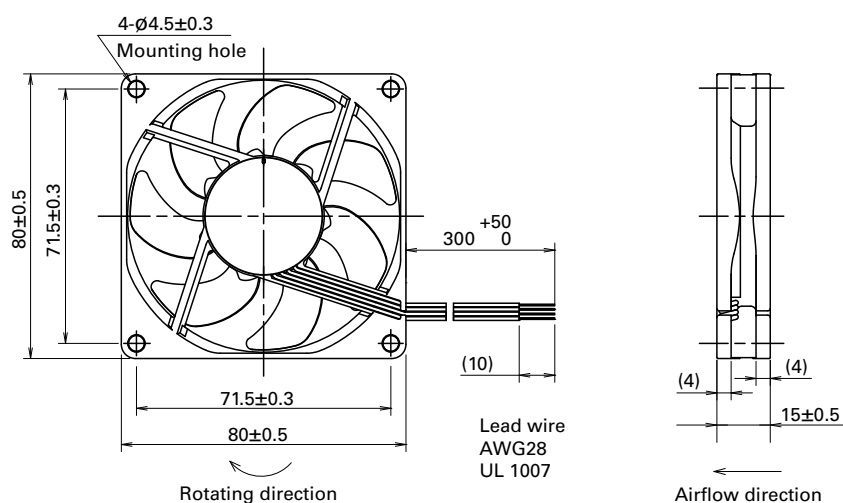


### 9GA0824H7001 With pulse sensor

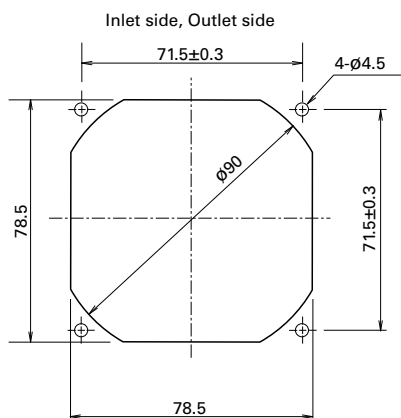
Operating voltage range



## Dimensions (unit: mm) (With pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

## DC Fan



# 80×80×20 mm

**San Ace 80 9GA** type Low Power Consumption Fan

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 80 g

### Specifications

The models listed below **have ribs and pulse sensors with PWM control function.**

| Model no.       | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9GA0812P6G001 | 12                | 10.2 to 13.8                | 100                | 0.3               | 3.6             | 5850                             | 1.72 60.78                               | 110 0.44                                         | 45           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| » 9GA0812P6M001 |                   |                             | 100                | 0.06              | 0.72            | 2900                             | 0.84 29.68                               | 27 0.11                                          | 26.5         |                            | 60000/60°C<br>(90000/40°C) |
| » 9GA0824P6G001 | 24                | 20.4 to 27.6                | 100                | 0.15              | 3.6             | 5850                             | 1.72 60.78                               | 110 0.44                                         | 45           |                            | 40000/60°C<br>(70000/40°C) |
| » 9GA0824P6M001 |                   |                             | 100                | 0.03              | 0.72            | 2900                             | 0.84 29.68                               | 27 0.11                                          | 26.5         |                            | 60000/60°C<br>(90000/40°C) |

\* 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.

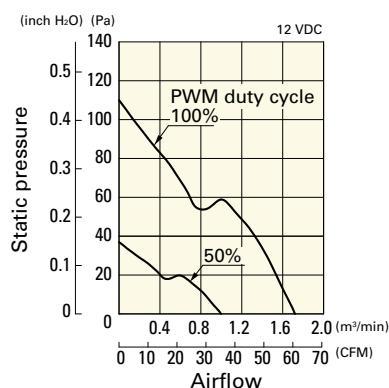
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 608 to 609.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

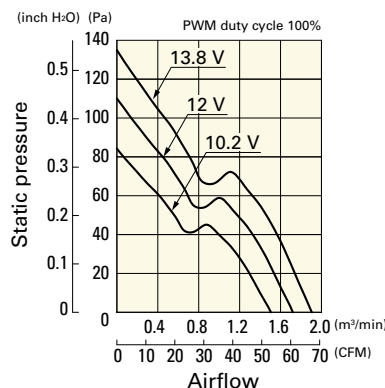
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P6G001** With pulse sensor with PWM control function

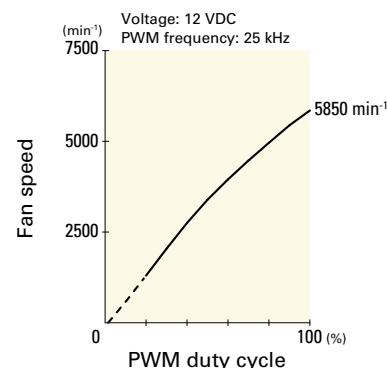
PWM duty cycle



Operating voltage range



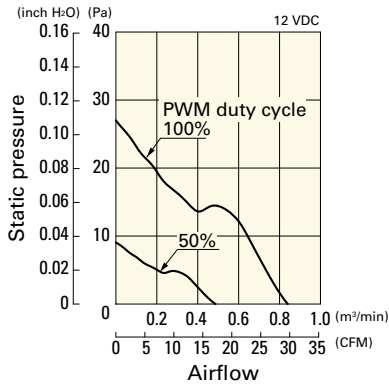
PWM duty - Speed characteristics example



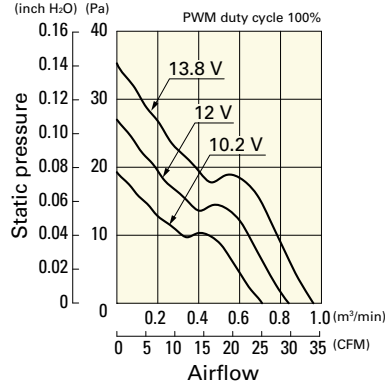
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P6M001** With pulse sensor with PWM control function

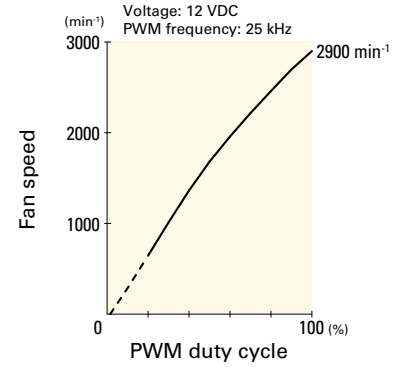
PWM duty cycle



Operating voltage range

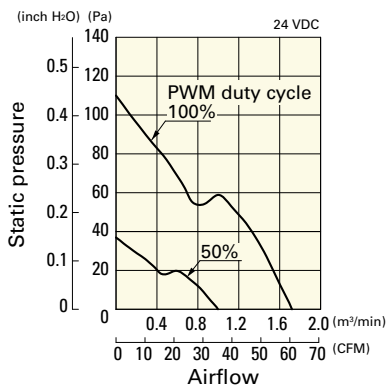


PWM duty - Speed characteristics example

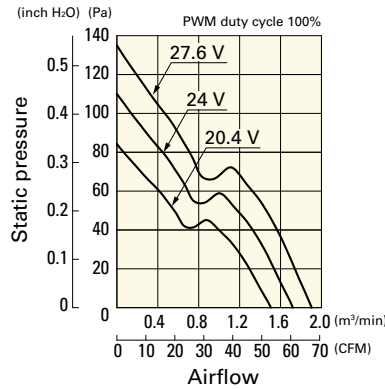


**9GA0824P6G001** With pulse sensor with PWM control function

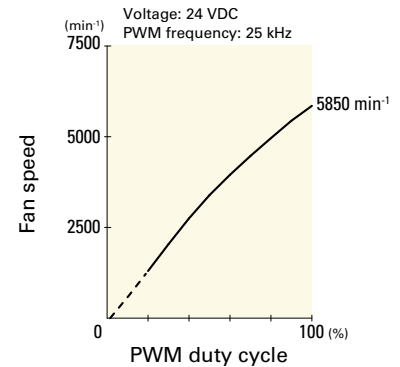
PWM duty cycle



Operating voltage range

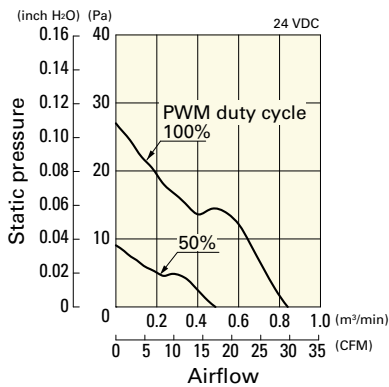


PWM duty - Speed characteristics example

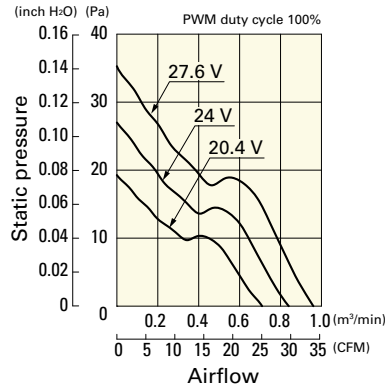


**9GA0824P6M001** With pulse sensor with PWM control function

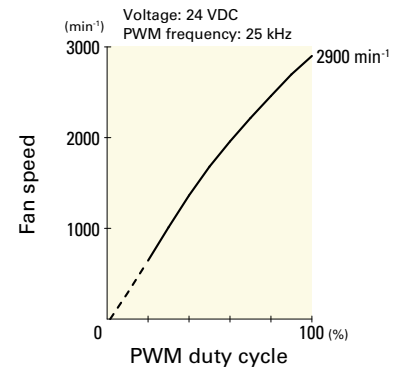
PWM duty cycle



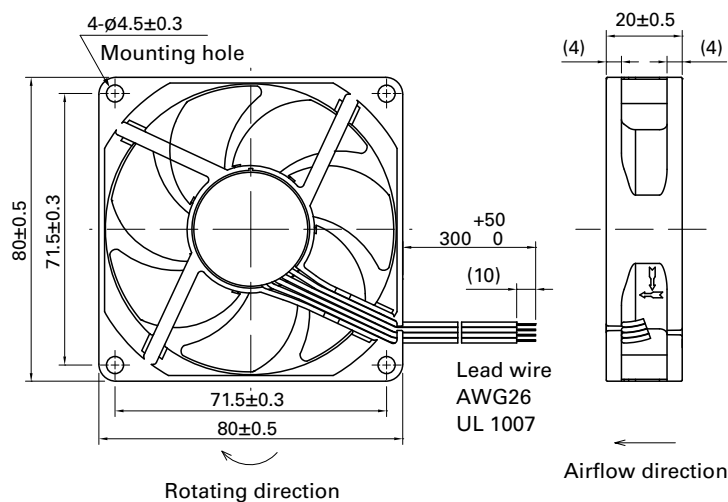
Operating voltage range



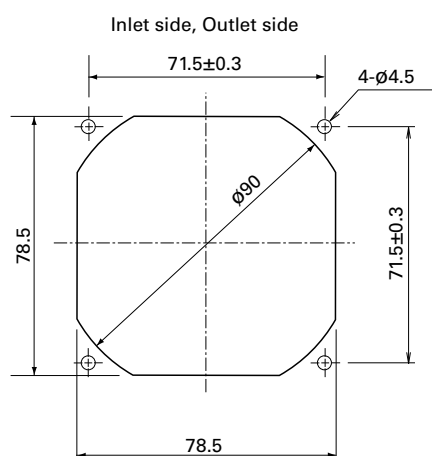
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)



# 80×80×20 mm

## San Ace 80 9P<sub>type</sub>

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 100 g

### Specifications

The models listed below **have ribs and pulse sensors.**

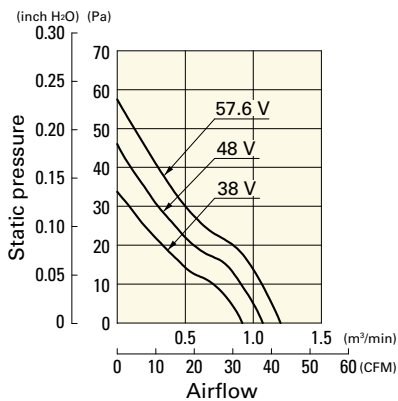
| Model no.           | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h] |
|---------------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------|
| <b>109P0848C601</b> | 48                   | 38 to 57.6                     | 0.08                 | 3.84               | 3700                                | 1.07 37.8                                   | 46 0.185                                            | 39              | -20 to +70                    | 40000/60°C           |
| <b>109P0848H601</b> |                      |                                | 0.05                 | 2.4                | 2900                                | 0.84 29.7                                   | 29.4 0.118                                          | 31              | -20 to +60                    | (70000/40°C)         |

Note: Sensor and control options are available for selection. Refer to the table on p. 604.

### Airflow - Static Pressure Characteristics

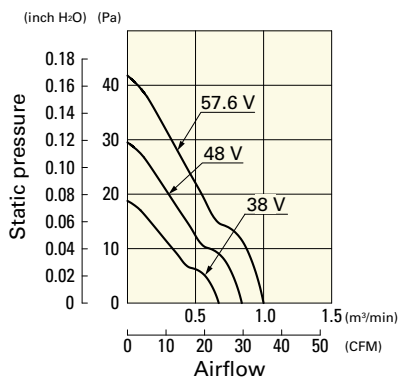
**109P0848C601** With pulse sensor

Operating voltage range

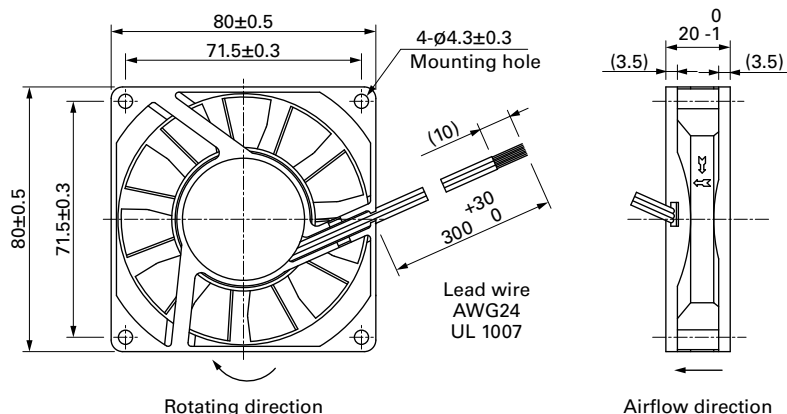


**109P0848H601** With pulse sensor

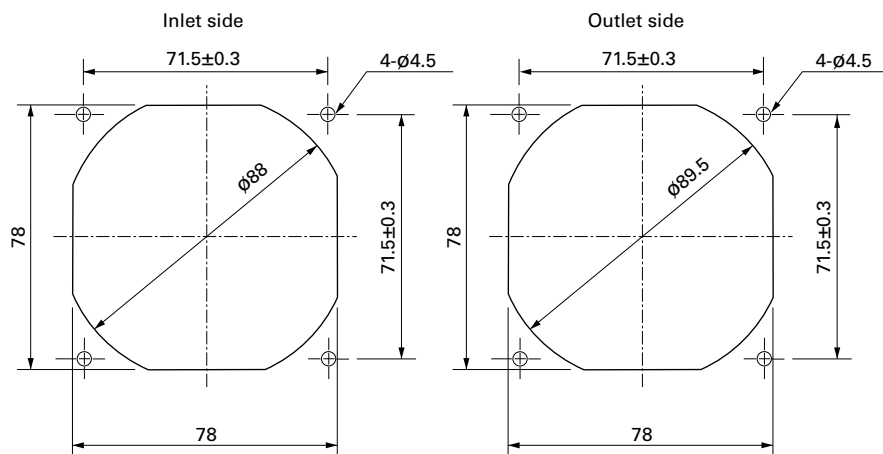
Operating voltage range



### Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)





# 80×80×25 mm

**San Ace 80 9GA type** Low Power Consumption Fan 

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 110 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0812P4J001 | 12                | 10.8 to 13.2                | 100                | 0.6               | 7.2             | 7400                             | 2.07 73.0                                | 177.6 0.7                                        | 48           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
|               |                   |                             | 25                 | 0.08              | 0.96            | 2500                             | 0.69 24.3                                | 20.2 0.08                                        | 21           |                            |                            |
| 9GA0812P4G001 |                   |                             | 100                | 0.48              | 5.76            | 6800                             | 1.91 67.4                                | 150 0.6                                          | 45           |                            |                            |
|               |                   |                             | 25                 | 0.06              | 0.72            | 1500                             | 0.42 14.8                                | 7.2 0.02                                         | 17           |                            |                            |
| 9GA0812P4H001 | 24                | 21.6 to 26.4                | 100                | 0.22              | 2.64            | 5200                             | 1.46 51.5                                | 87.7 0.35                                        | 37           |                            |                            |
|               |                   |                             | 25                 | 0.06              | 0.72            | 1600                             | 0.44 15.5                                | 8.3 0.03                                         | 17           |                            |                            |
| 9GA0824P4J001 |                   |                             | 100                | 0.28              | 6.72            | 7400                             | 2.07 73.0                                | 177.6 0.7                                        | 48           |                            |                            |
|               |                   |                             | 25                 | 0.06              | 1.44            | 2800                             | 0.78 27.5                                | 25.4 0.1                                         | 23           |                            |                            |
| 9GA0824P4G001 |                   |                             | 100                | 0.21              | 5.04            | 6800                             | 1.91 67.4                                | 150 0.6                                          | 45           |                            |                            |
|               |                   |                             | 25                 | 0.04              | 0.96            | 2100                             | 0.58 20.4                                | 14.3 0.05                                        | 19           |                            |                            |
| 9GA0824P4H001 |                   |                             | 100                | 0.1               | 2.4             | 5200                             | 1.46 51.5                                | 87.7 0.35                                        | 37           |                            |                            |
|               |                   |                             | 25                 | 0.02              | 0.48            | 1500                             | 0.42 14.8                                | 7.2 0.02                                         | 17           |                            |                            |

\* 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.

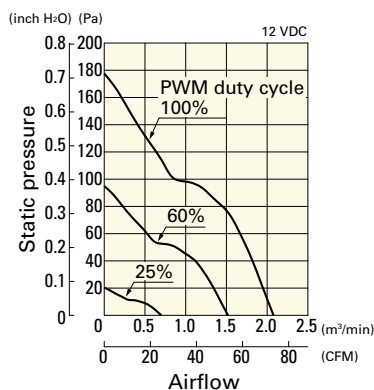
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 608 to 609.

Note 2: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

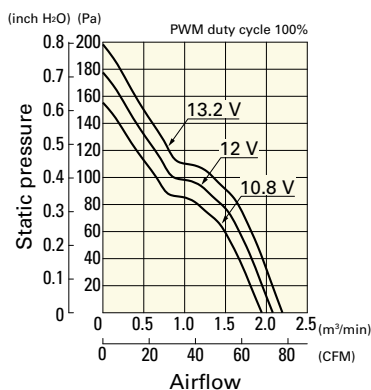
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P4J001** With pulse sensor with PWM control function

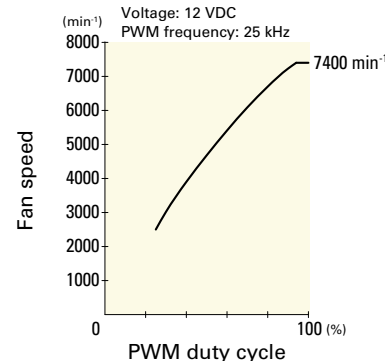
PWM duty cycle



Operating voltage range



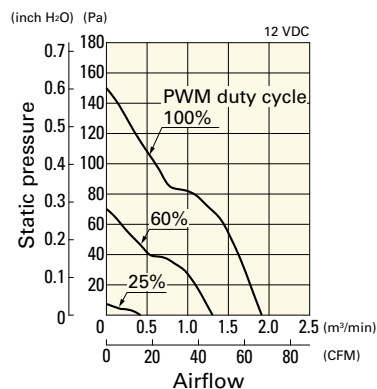
PWM duty - Speed characteristics example



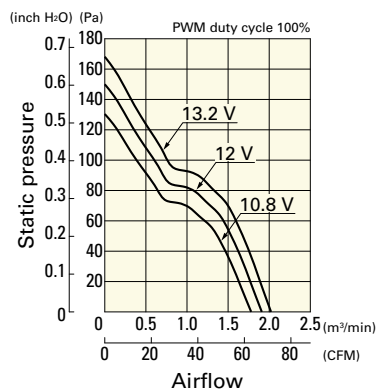
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P4G001** With pulse sensor with PWM control function

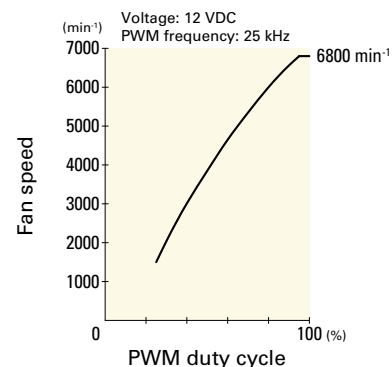
PWM duty cycle



Operating voltage range

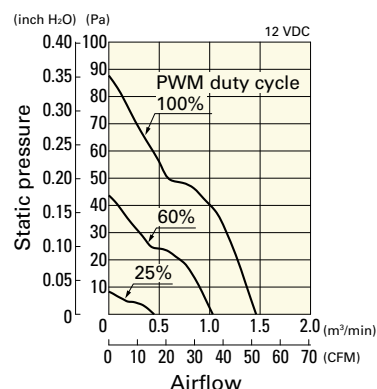


PWM duty - Speed characteristics example

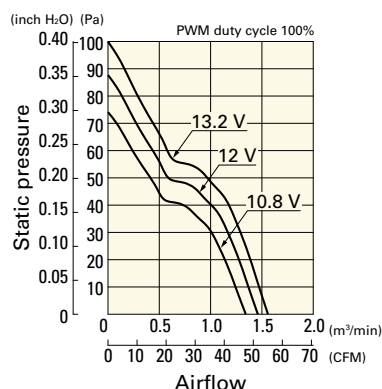


**9GA0812P4H001** With pulse sensor with PWM control function

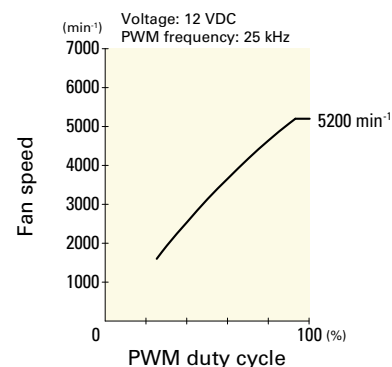
PWM duty cycle



Operating voltage range

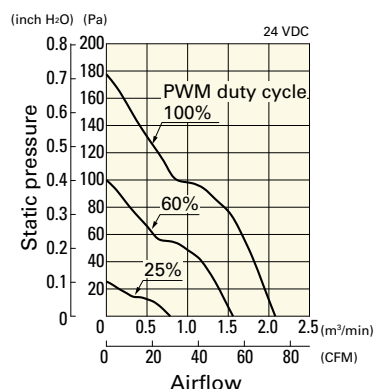


PWM duty - Speed characteristics example

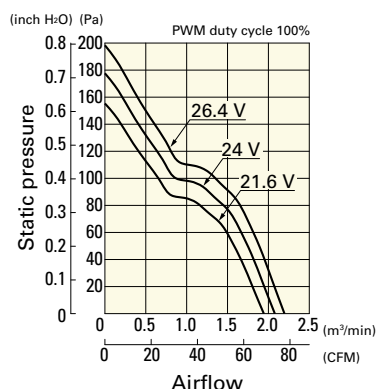


**9GA0824P4J001** With pulse sensor with PWM control function

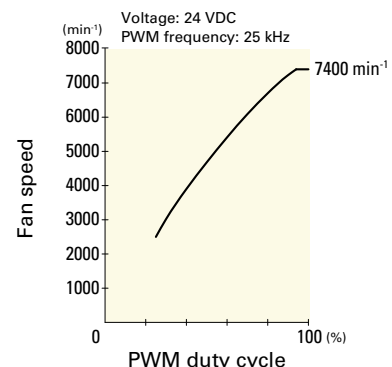
PWM duty cycle



Operating voltage range

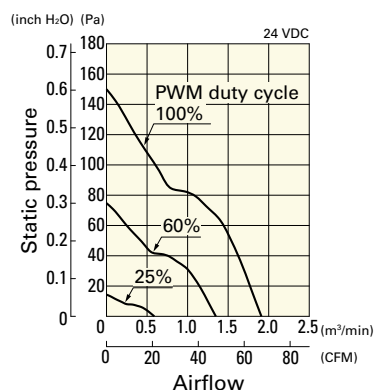


PWM duty - Speed characteristics example

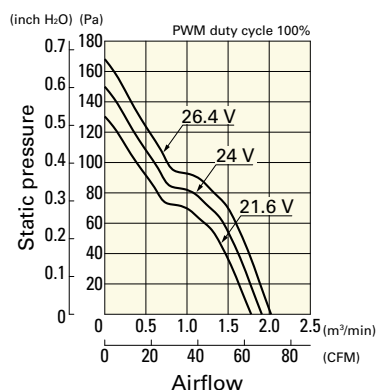


**9GA0824P4G001** With pulse sensor with PWM control function

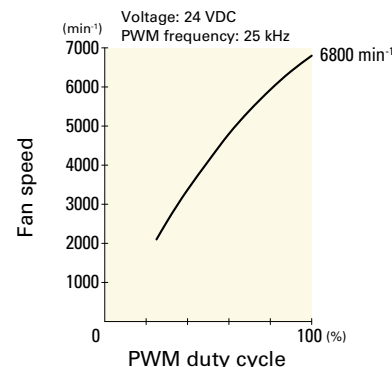
PWM duty cycle



Operating voltage range



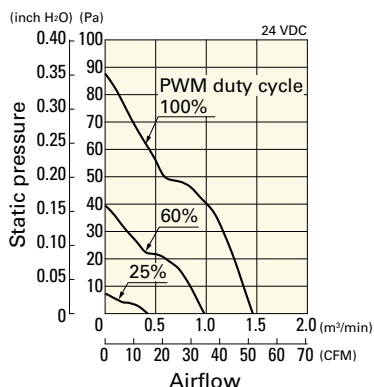
PWM duty - Speed characteristics example



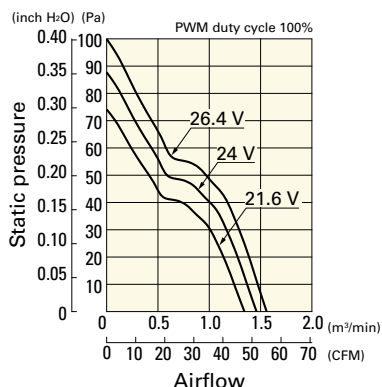
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0824P4H001** With pulse sensor with PWM control function

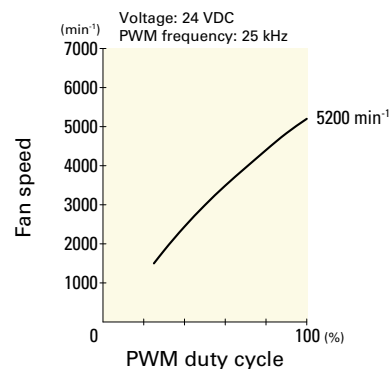
PWM duty cycle



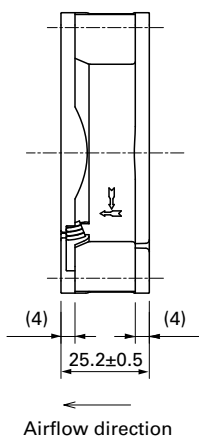
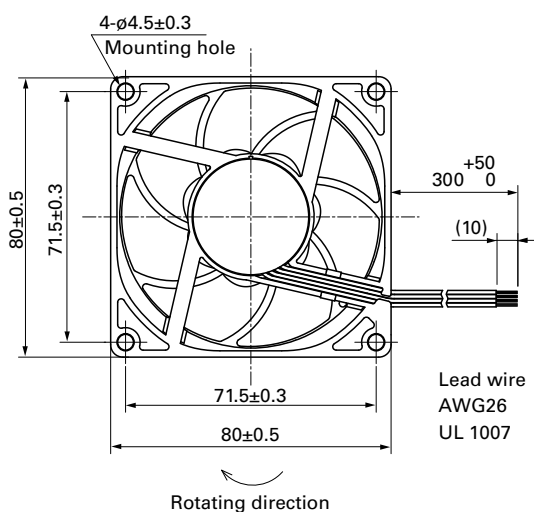
Operating voltage range



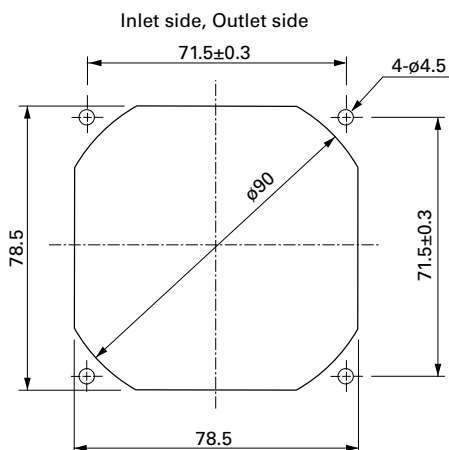
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# 80×80×25 mm

## San Ace 80 9RA type



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 110 g

### 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9RA0812P4G001 | 12                   | 10.8 to 13.2                   | 100                   | 0.22                 | 2.64               | 5000                                | 1.4 49.4                       | 83 0.33                                             | 37              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
|                 |                      |                                | 30                    | 0.03                 | 0.36               | 1100                                | 0.3 10.6                       | 4 0.01                                              | 11              |                               |                            |
| » 9RA0824P4G001 | 24                   | 21.6 to 26.4                   | 100                   | 0.11                 | 2.64               | 5000                                | 1.4 49.4                       | 83 0.33                                             | 37              |                               |                            |
|                 |                      |                                | 20                    | 0.02                 | 0.48               | 1000                                | 0.28 9.8                       | 3.3 0.01                                            | 10              |                               |                            |
| » 9RA0848P4G001 | 48                   | 43.2 to 52.8                   | 100                   | 0.07                 | 3.36               | 5000                                | 1.4 49.4                       | 83 0.33                                             | 37              |                               |                            |
|                 |                      |                                | 20                    | 0.02                 | 0.96               | 1700                                | 0.47 16.5                      | 9.6 0.04                                            | 14              |                               |                            |

\* 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.

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

| Model no.      | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]         |
|----------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|------------------------------|
| » 9RA0812G4001 | 12                   | 7 to 13.8                      | 0.22                 | 2.64               | 5000                                | 1.4 49.4                       | 83 0.33                                             | 37              | -20 to +70                    | 60,000/60°C<br>(90,000/40°C) |
| » 9RA0812S4001 |                      |                                | 0.12                 | 1.44               | 3900                                | 1.09 38.5                      | 50 0.21                                             | 31              |                               |                              |
| » 9RA0812H4001 |                      |                                | 0.08                 | 0.96               | 3300                                | 0.92 32.5                      | 36 0.14                                             | 27              |                               |                              |
| » 9RA0812M4001 |                      |                                | 0.06                 | 0.72               | 2650                                | 0.74 26.1                      | 23 0.09                                             | 22              |                               |                              |
| » 9RA0824G4001 | 24                   | 14 to 27.6                     | 0.11                 | 2.64               | 5000                                | 1.4 49.4                       | 83 0.33                                             | 37              |                               |                              |
| » 9RA0824S4001 |                      |                                | 0.06                 | 1.44               | 3900                                | 1.09 38.5                      | 50 0.21                                             | 31              |                               |                              |
| » 9RA0824H4001 |                      |                                | 0.05                 | 1.2                | 3300                                | 0.92 32.5                      | 36 0.14                                             | 27              |                               |                              |
| » 9RA0824M4001 |                      |                                | 0.04                 | 0.96               | 2650                                | 0.74 26.1                      | 23 0.09                                             | 22              |                               |                              |
| » 9RA0848G4001 | 48                   | 36 to 55.2                     | 0.07                 | 3.36               | 5000                                | 1.4 49.4                       | 83 0.33                                             | 37              |                               |                              |
| » 9RA0848S4001 |                      |                                | 0.05                 | 2.4                | 3900                                | 1.09 38.5                      | 50 0.21                                             | 31              |                               |                              |

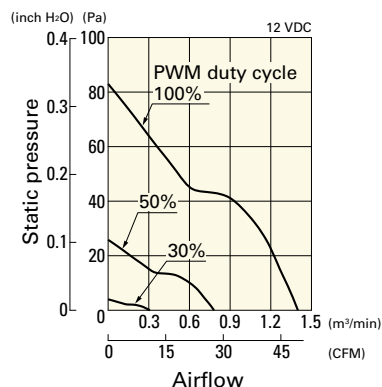
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 614 to 615.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

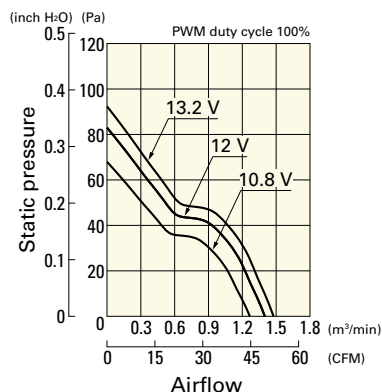
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9RA0812P4G001** With pulse sensor with PWM control function

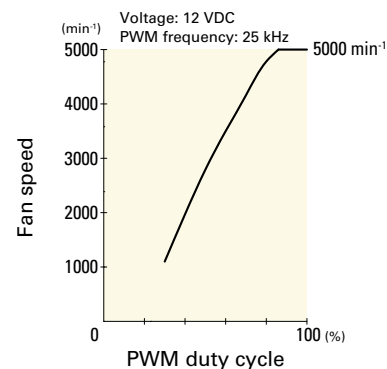
PWM duty cycle



Operating voltage range

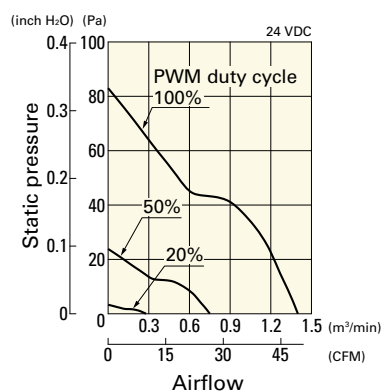


PWM duty - Speed characteristics example

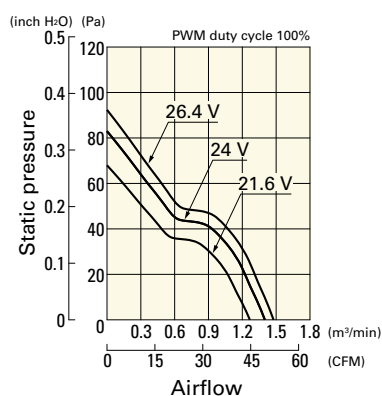


**9RA0824P4G001** With pulse sensor with PWM control function

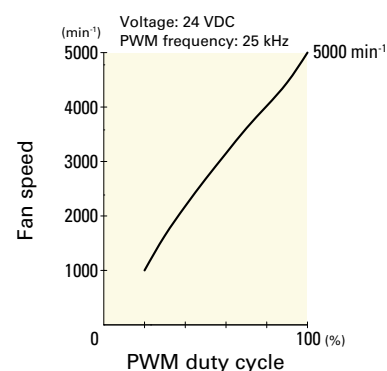
PWM duty cycle



Operating voltage range

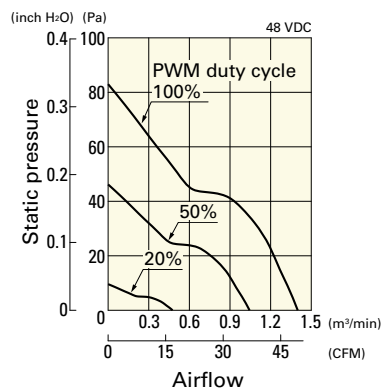


PWM duty - Speed characteristics example

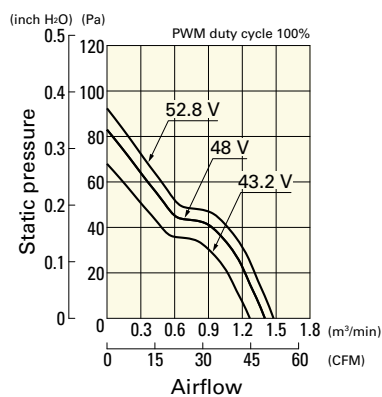


**9RA0848P4G001** With pulse sensor with PWM control function

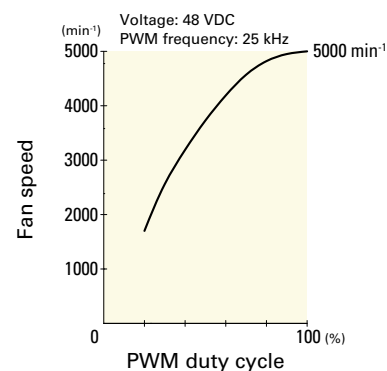
PWM duty cycle



Operating voltage range



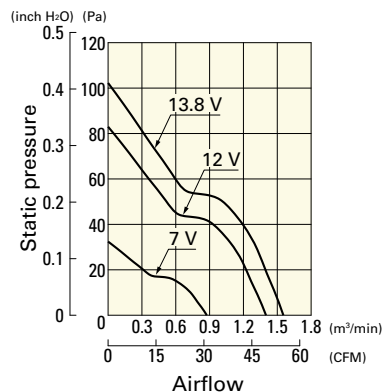
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

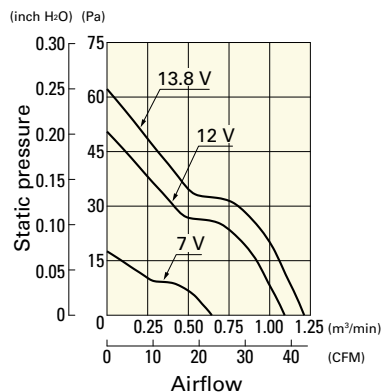
**9RA0812G4001** With pulse sensor

Operating voltage range



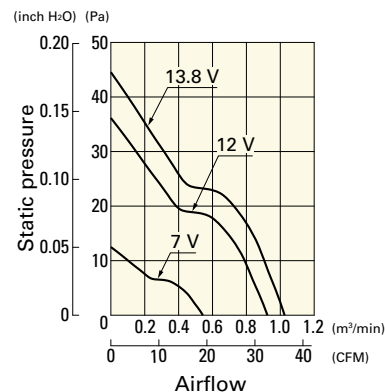
**9RA0812S4001** With pulse sensor

Operating voltage range



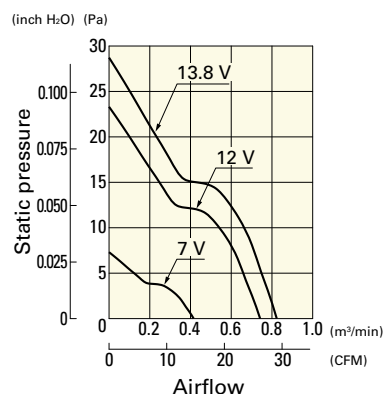
**9RA0812H4001** With pulse sensor

Operating voltage range



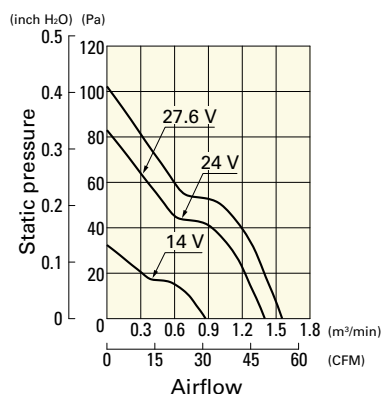
**9RA0812M4001** With pulse sensor

Operating voltage range



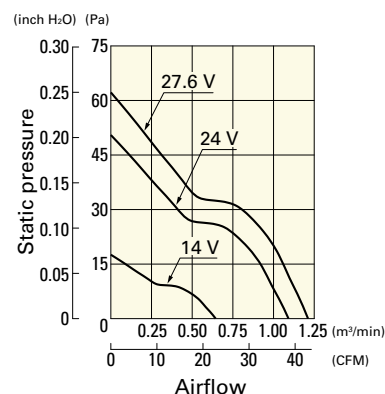
**9RA0824G4001** With pulse sensor

Operating voltage range



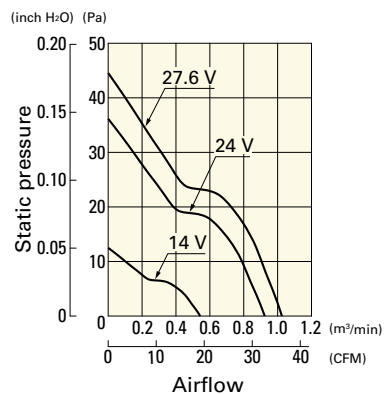
**9RA0824S4001** With pulse sensor

Operating voltage range



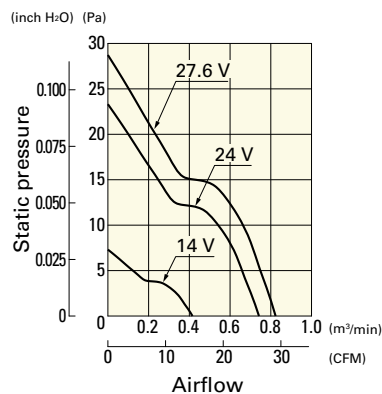
**9RA0824H4001** With pulse sensor

Operating voltage range



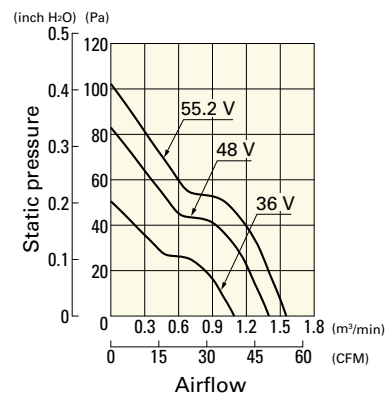
**9RA0824M4001** With pulse sensor

Operating voltage range



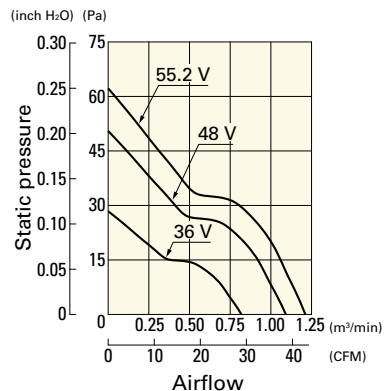
**9RA0848G4001** With pulse sensor

Operating voltage range

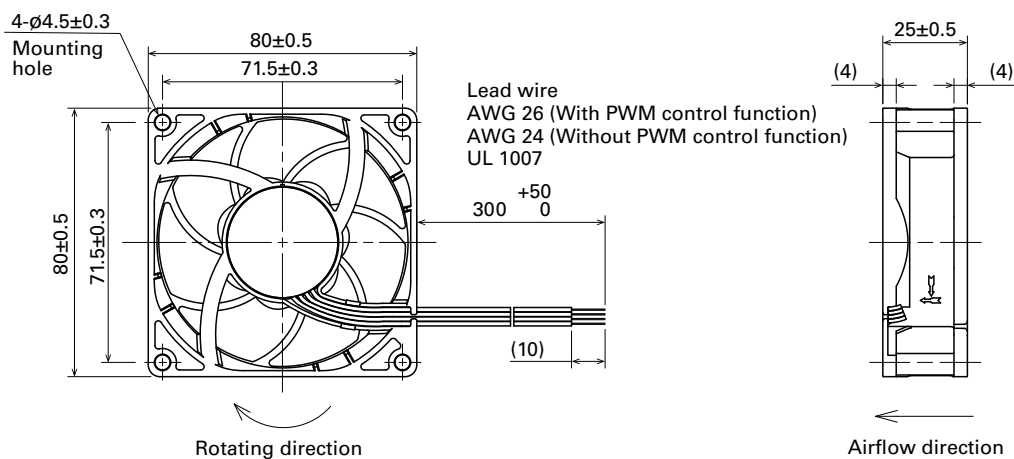


**9RA0848S4001** With pulse sensor

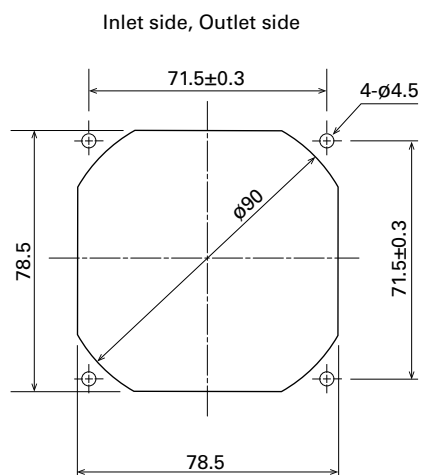
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# DC Fan

# 80×80×25 mm

**San Ace 80 9S** type Silent Fan  **US** Model 9S0812H401 is not TÜV certified.



## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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
- Mass ..... 75 g

## Specifications

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

| Model no.     | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| ▶▶ 9S0812H401 | 12                | 5.0 to 13.2                 | 0.23              | 2.76            | 3400                             | 1.12 39.5                                | 52.15 0.2                                        | 31           | -10 to +70                 | 40000/60°C<br>(70000/40°C) |
| ▶▶ 9S0812F401 |                   | 5.0 to 13.8                 | 0.11              | 1.32            | 2800                             | 0.93 32.8                                | 35.5 0.143                                       | 24           |                            |                            |
| ▶▶ 9S0812M401 |                   |                             | 0.08              | 0.96            | 2500                             | 0.83 29.3                                | 27.5 0.11                                        | 22           |                            |                            |
| ▶▶ 9S0812L401 |                   | 6.0 to 13.8                 | 0.05              | 0.6             | 2000                             | 0.66 23.3                                | 18.1 0.073                                       | 16           |                            |                            |
| ▶▶ 9S0824M401 | 24                | 10 to 26.4                  | 0.06              | 1.44            | 2500                             | 0.83 29.3                                | 27.5 0.11                                        | 22           |                            |                            |
| ▶▶ 9S0824L401 |                   |                             | 0.04              | 0.96            | 2000                             | 0.66 23.3                                | 18.1 0.073                                       | 16           |                            |                            |

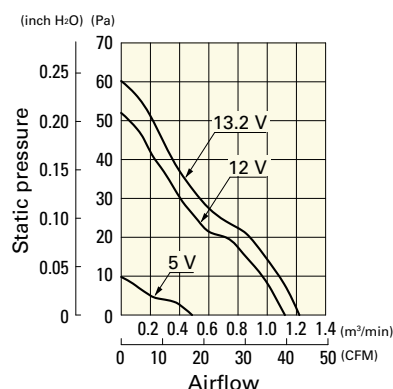
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 616 to 617.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

## Airflow - Static Pressure Characteristics

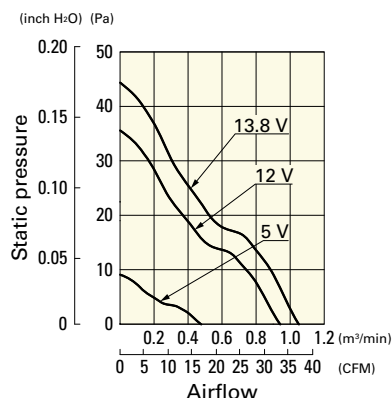
### 9S0812H401 With pulse sensor

Operating voltage range



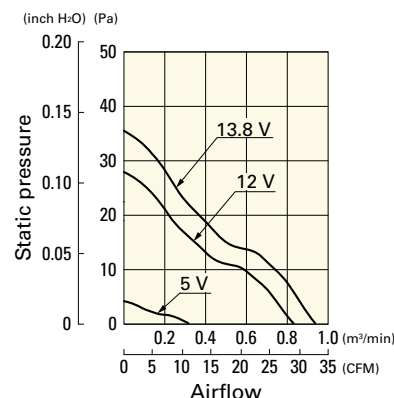
### 9S0812F401 With pulse sensor

Operating voltage range



### 9S0812M401 With pulse sensor

Operating voltage range

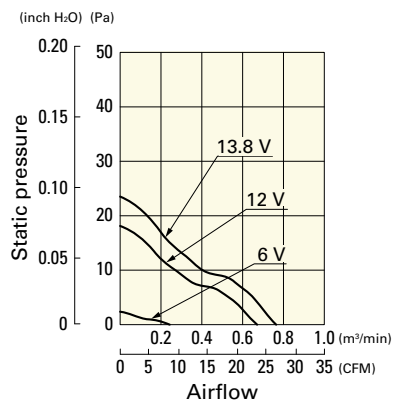




## Airflow - Static Pressure Characteristics

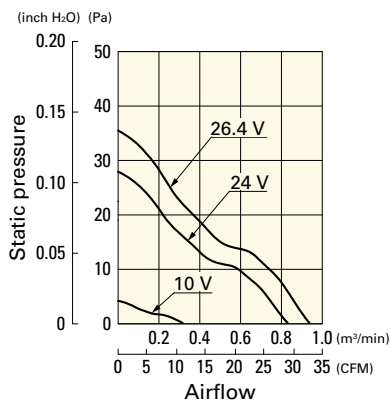
### 9S0812L401 With pulse sensor

Operating voltage range



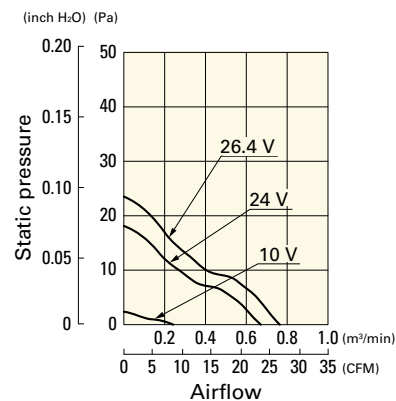
### 9S0824M401 With pulse sensor

Operating voltage range

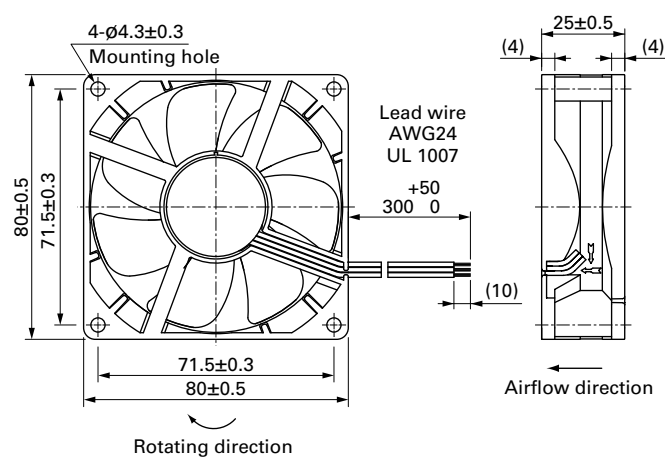


### 9S0824L401 With pulse sensor

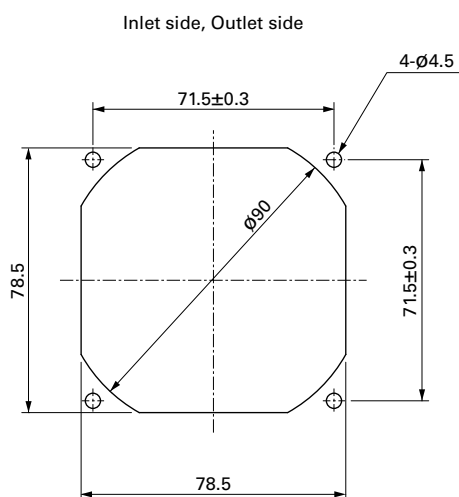
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

## DC Fan

# 80×80×32 mm

## San Ace 80 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 130 g

### 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.

| The models listed below have the same performance characteristics as the models without Hz, apply the Hz to the end of model number. |                   |                             |                    |                   |                 |                                  |                                          |                                                  |              |                            |                            |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| Model no.                                                                                                                            | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
| ▶▶ 9GA0812P2S001                                                                                                                     | 12                | 10.2 to 13.8                | 100                | 0.83              | 9.96            | 9700                             | 2.45 86.5                                | 360 1.45                                         | 57           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| ▶▶ 9GA0812P2H001                                                                                                                     |                   |                             | 0                  | 0.08              | 0.96            | 2800                             | 0.71 25.1                                | 30 0.12                                          | 24           |                            |                            |
| ▶▶ 9GA0812P2M001                                                                                                                     |                   |                             | 100                | 0.59              | 7.08            | 8700                             | 2.2 77.7                                 | 294 1.18                                         | 54           |                            |                            |
|                                                                                                                                      |                   |                             | 0                  | 0.05              | 0.6             | 2600                             | 0.66 23.3                                | 26 0.105                                         | 21           |                            |                            |
| ▶▶ 9GA0812P2M001                                                                                                                     | 12                | 10.2 to 12.6                | 100                | 0.35              | 4.2             | 6700                             | 1.69 59.6                                | 171 0.68                                         | 47           | -20 to +55                 |                            |
| ▶▶ 9GA0824P2S001                                                                                                                     |                   |                             | 0                  | 0.04              | 0.48            | 1400                             | 0.35 12.3                                | 7.5 0.03                                         | 10           |                            |                            |
| ▶▶ 9GA0824P2S001                                                                                                                     | 24                | 20.4 to 27.6                | 100                | 0.42              | 10.1            | 9700                             | 2.45 86.5                                | 360 1.45                                         | 57           | -20 to +70                 |                            |
|                                                                                                                                      |                   |                             | 0                  | 0.05              | 1.2             | 2800                             | 0.71 25.1                                | 30 0.12                                          | 24           |                            |                            |
| 9GA0848P2S001                                                                                                                        | 48                | 40.8 to 55.2                | 100                | 0.22              | 10.56           | 9700                             | 2.45 86.5                                | 360 1.45                                         | 57           | -10 to +70                 |                            |
|                                                                                                                                      |                   |                             | 0                  | 0.04              | 1.92            | 2800                             | 0.71 25.1                                | 30 0.12                                          | 24           |                            |                            |

\* 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.

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

| Model no.    | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0812A2001 | 12                | 6 to 13.2                   | 0.31              | 3.72            | 6000                             | 1.51 53.4                                | 137.7 0.55                                       | 44           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9GA0812B2001 |                   | 6 to 13.8                   | 0.13              | 1.56            | 4000                             | 1.01 35.7                                | 61.2 0.25                                        | 33           |                            |                            |
| 9GA0812L2001 |                   | 7 to 13.8                   | 0.08              | 0.96            | 2600                             | 0.66 23.3                                | 26 0.1                                           | 21           |                            |                            |
| 9GA0824A2001 | 24                | 12 to 26.4                  | 0.15              | 3.6             | 6000                             | 1.51 53.4                                | 137.7 0.55                                       | 44           |                            |                            |
| 9GA0824B2001 |                   | 12 to 27.6                  | 0.08              | 1.92            | 4000                             | 1.01 35.7                                | 61.2 0.25                                        | 33           |                            |                            |
| 9GA0824L2001 |                   | 14 to 27.6                  | 0.05              | 1.2             | 2600                             | 0.66 23.3                                | 26 0.1                                           | 21           |                            |                            |

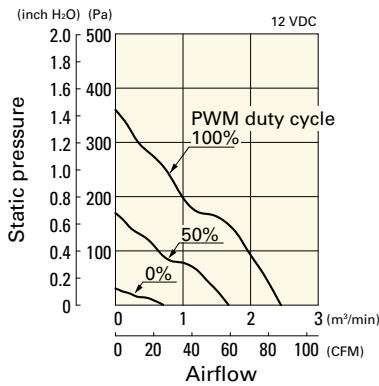
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 608 to 609.

Note 2: The ⌘ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

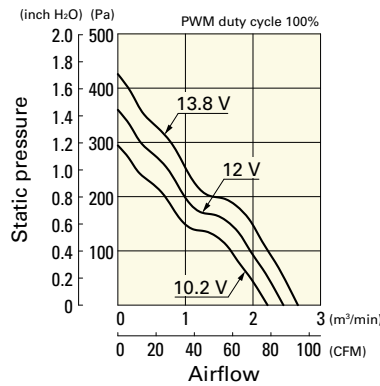
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P2S001** With pulse sensor with PWM control function

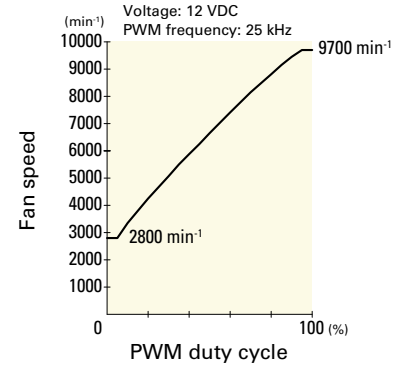
PWM duty cycle



Operating voltage range

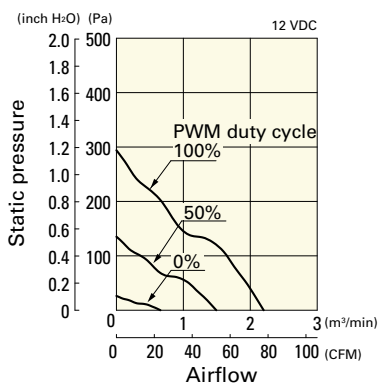


PWM duty - Speed characteristics example

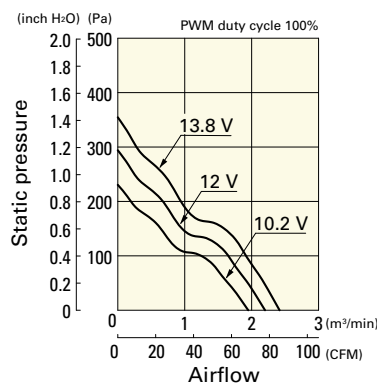


**9GA0812P2H001** With pulse sensor with PWM control function

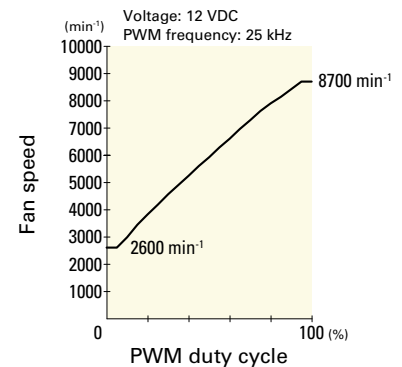
PWM duty cycle



Operating voltage range

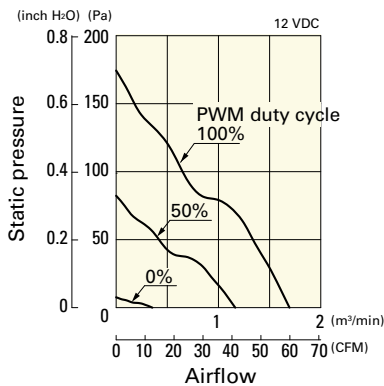


PWM duty - Speed characteristics example

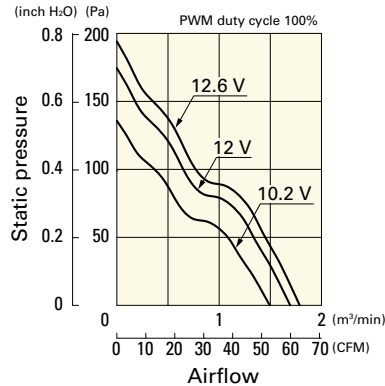


**9GA0812P2M001** With pulse sensor with PWM control function

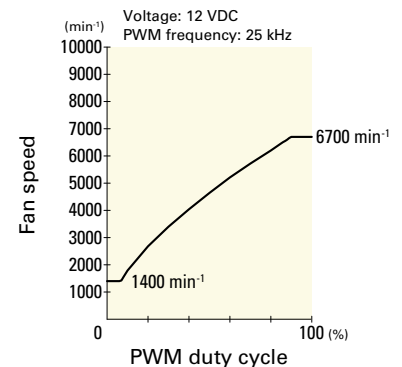
PWM duty cycle



Operating voltage range

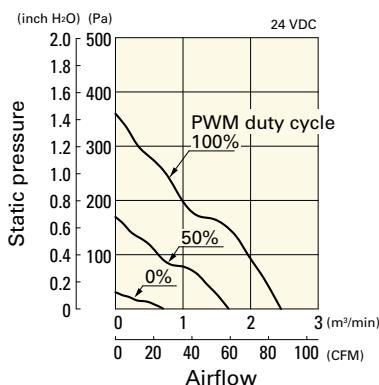


PWM duty - Speed characteristics example

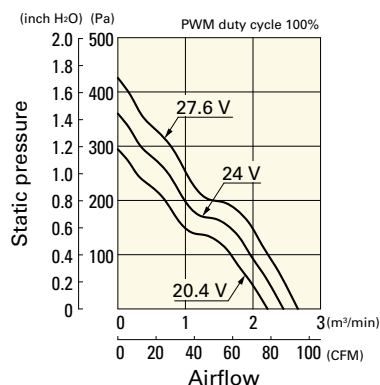


**9GA0824P2S001** With pulse sensor with PWM control function

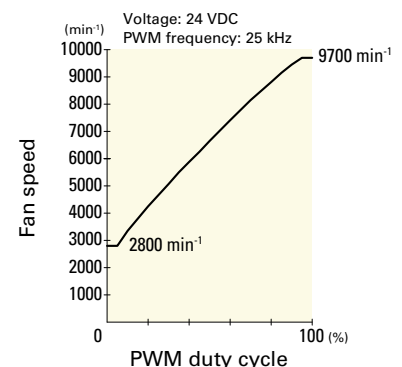
PWM duty cycle



Operating voltage range



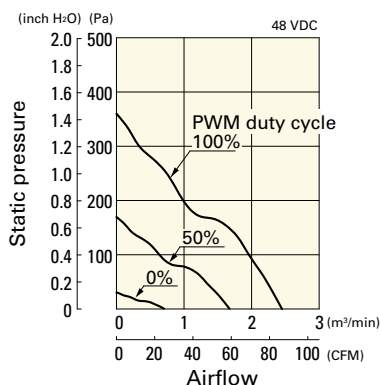
PWM duty - Speed characteristics example



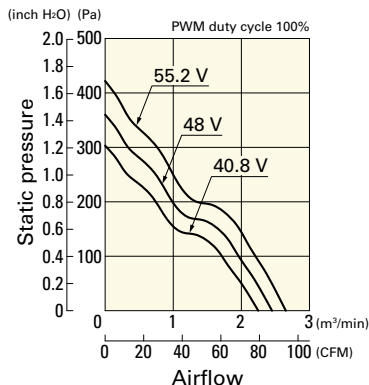
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0848P2S001** With pulse sensor with PWM control function

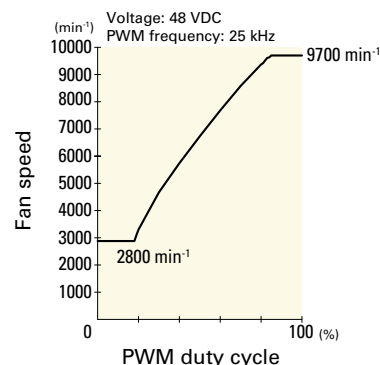
PWM duty cycle



Operating voltage range



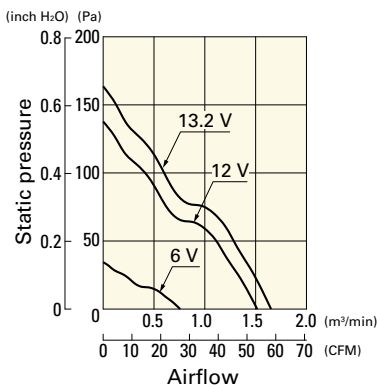
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

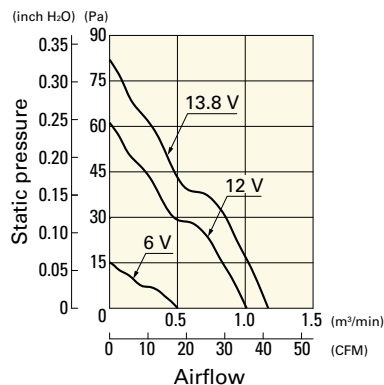
**9GA0812A2001** With pulse sensor

Operating voltage range



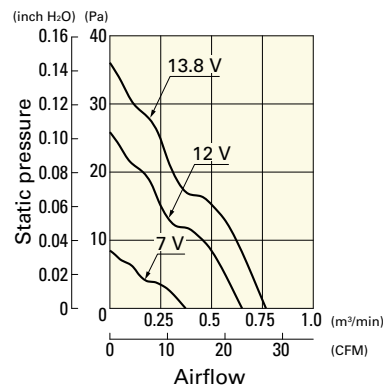
**9GA0812B2001** With pulse sensor

Operating voltage range



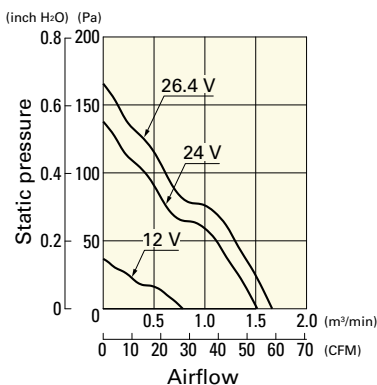
**9GA0812L2001** With pulse sensor

Operating voltage range



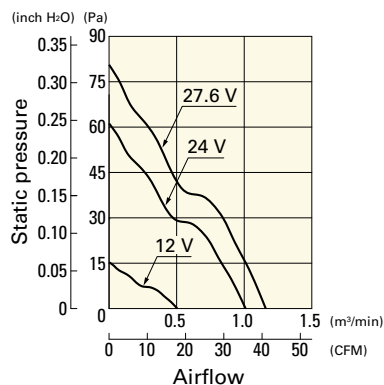
**9GA0824A2001** With pulse sensor

Operating voltage range



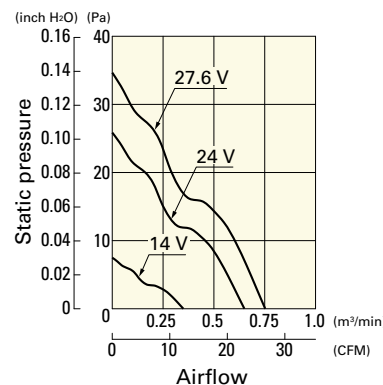
**9GA0824B2001** With pulse sensor

Operating voltage range

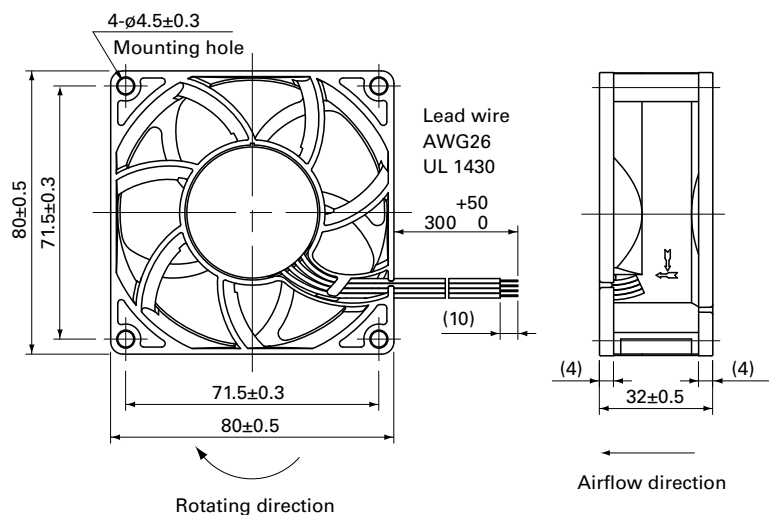


**9GA0824L2001** With pulse sensor

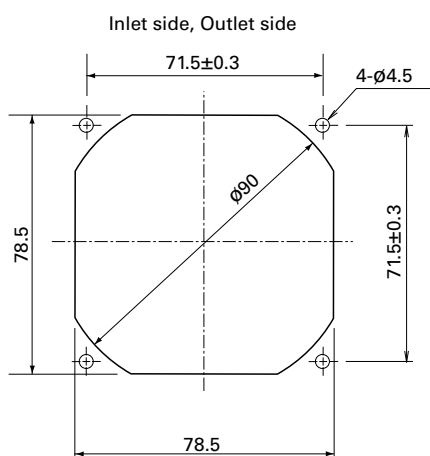
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# DC Fan



# 80×80×38 mm

San Ace 80 9HVB type US

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 230 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9HVB0812P1G001 | 12                | 10.8 to 12.6                | 100                | 4.8               | 57.6            | 18300                            | 4.0 141.3                                | 1600 6.42                                        | 75           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                |                   |                             | 20                 | 0.17              | 2.0             | 4300                             | 0.94 33.2                                | 105 0.42                                         | 40           |                            |                            |

\* 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.

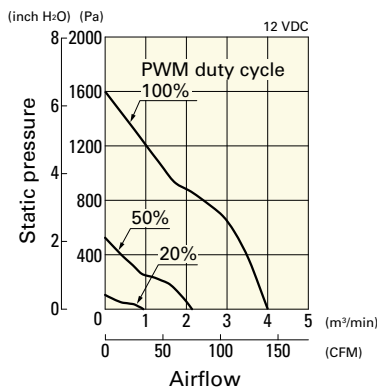
Note 1: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 2: The mark indicates Short LeadTime Service applicable models. See p. 630 for details.

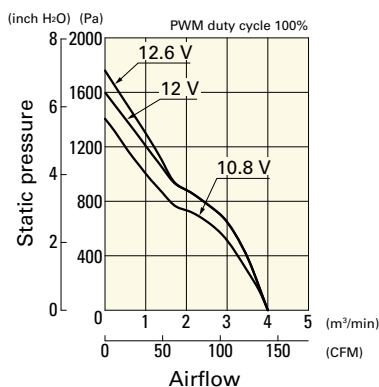
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

### 9HVB0812P1G001 With pulse sensor with PWM control function

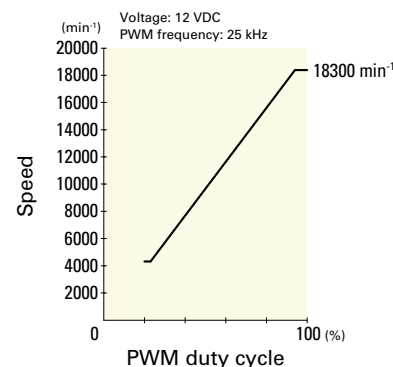
PWM duty cycle



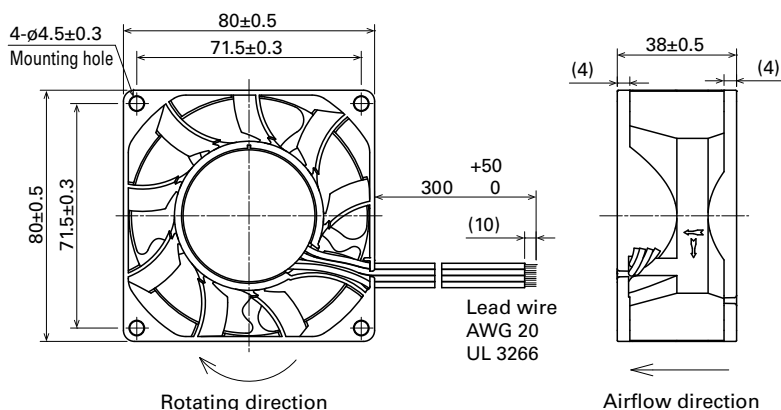
Operating voltage range



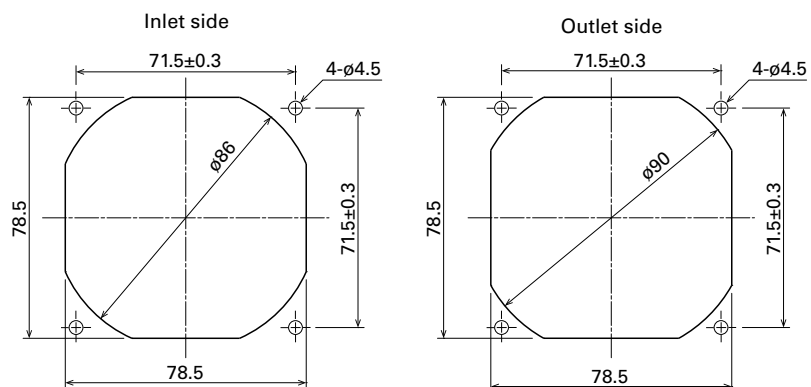
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# DC Fan

# 80×80×38 mm

San Ace 80 9HVA type   US



## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 220 g

## 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.

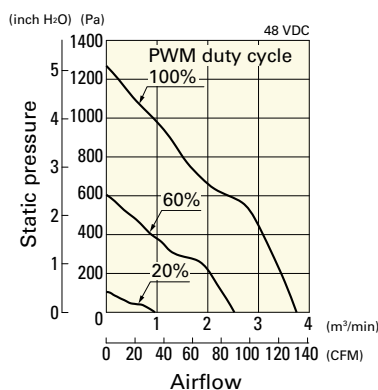
| Model no.      | Rated voltage<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| 9HVA0848P1G601 | 48                   | 36 to 57                       | 100                   | 0.9                  | 43.2               | 16100                               | 3.75 132                                    | 1250 5.0                                            | 73              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|                |                      |                                | 20                    | 0.07                 | 3.36               | 4200                                | 0.96 33.9                                   | 105 0.42                                            | 44              |                               |                            |

\* 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.

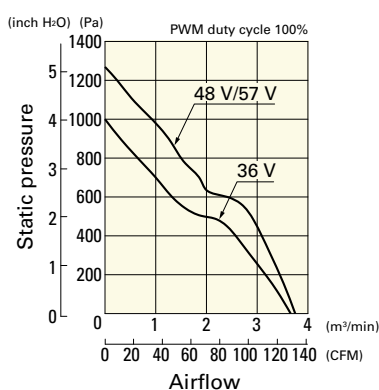
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HVA0848P1G601** With pulse sensor with PWM control function

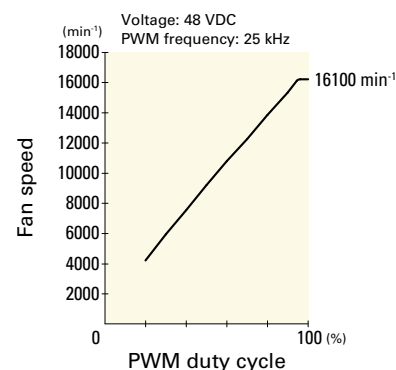
PWM duty cycle



Operating voltage range

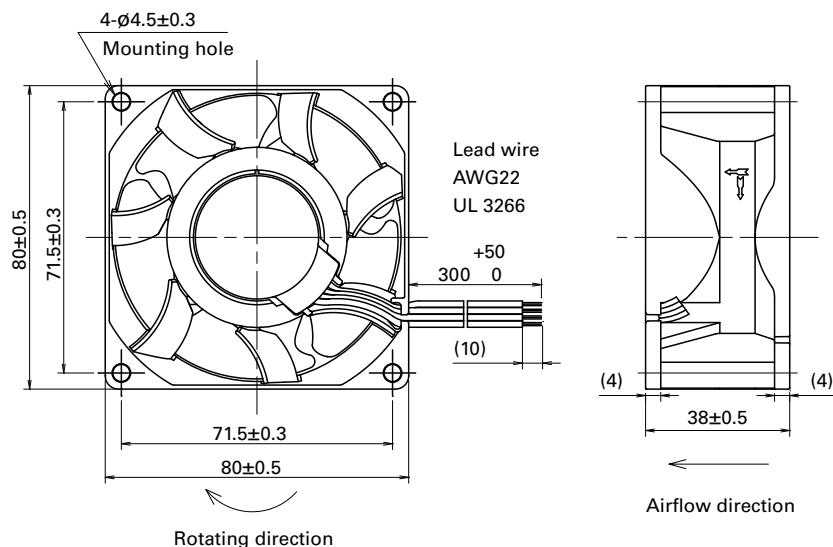


PWM duty - Speed characteristics example

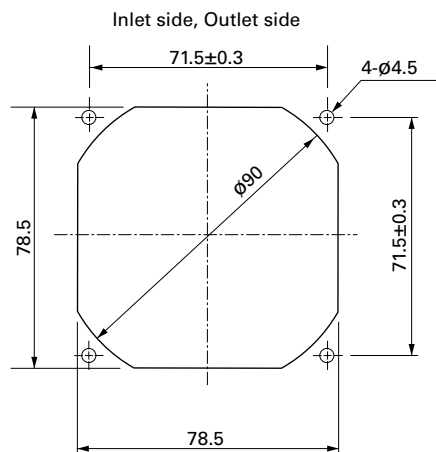




## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# DC Fan

# 80×80×38 mm

San Ace 80 9HV type   



## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 230 g

## 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |       | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-------|-----------------------------------------------------|------|-----------------|-------------------------------|----------------------------|
| » 9HV0812P1G601 | 12                   | 10.8 to 13.2                   | 100                   | 3.4                  | 40.8               | 14900                               | 3.7                            | 130.7 | 1000                                                | 4.0  | 69              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|                 |                      |                                | 0                     | 0.25                 | 3                  | 4400                                | 1.06                           | 37.5  | 87.2                                                | 0.35 | 40              |                               |                            |
| 9HV0824P1G003   | 24                   | 21.6 to 26.4                   | 100                   | 1.7                  | 40.8               | 14900                               | 3.7                            | 130.7 | 1000                                                | 4.0  | 69              |                               |                            |
| » 9HV0848P1G001 | 48                   | 36 to 57                       | 100                   | 0.85                 | 40.8               | 14900                               | 3.7                            | 130.7 | 1000                                                | 4.0  | 69              | -10 to +70                    |                            |
|                 |                      |                                | 0                     | 0.13                 | 6.24               | 4400                                | 1.06                           | 37.5  | 87.2                                                | 0.35 | 40              |                               |                            |

\* 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.

Note 1: The model number of the ribless model for 9HV0824P1G003 is 9HV0824P1G0011.

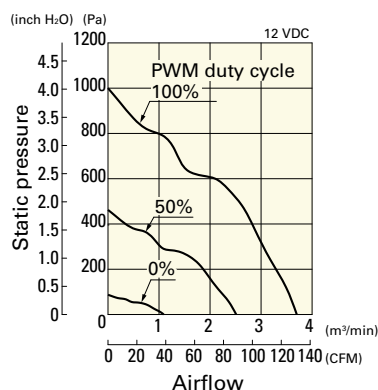
Note 2: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 3: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

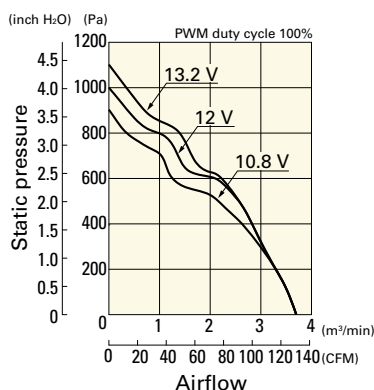
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0812P1G601** With pulse sensor with PWM control function

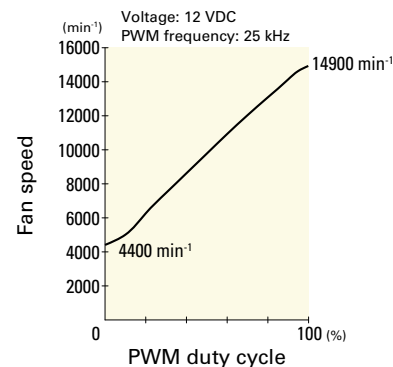
PWM duty cycle



Operating voltage range



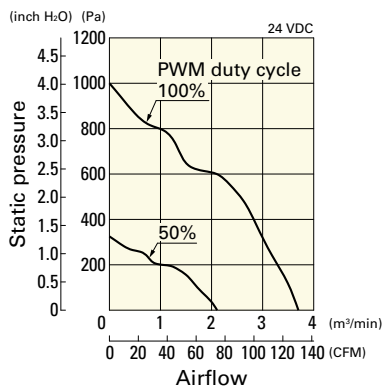
PWM duty - Speed characteristics example



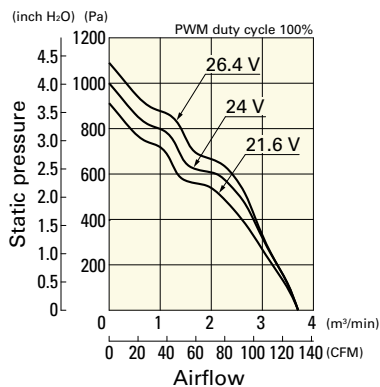
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0824P1G003** With pulse sensor with PWM control function

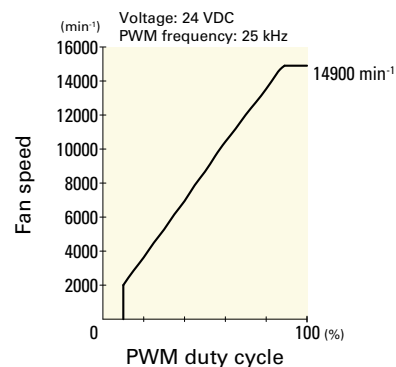
PWM duty cycle



Operating voltage range

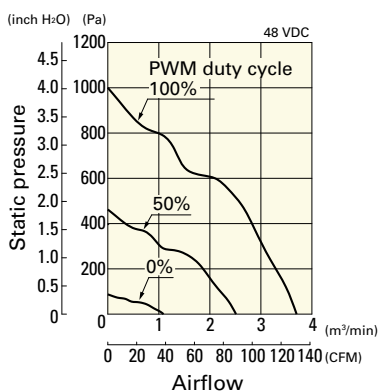


PWM duty - Speed characteristics example

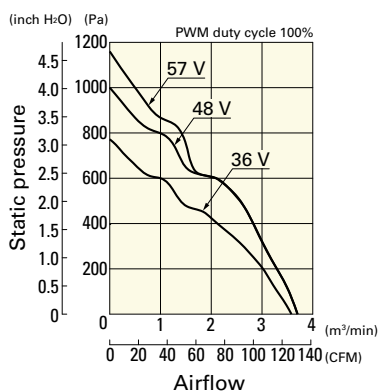


**9HV0848P1G001** With pulse sensor with PWM control function

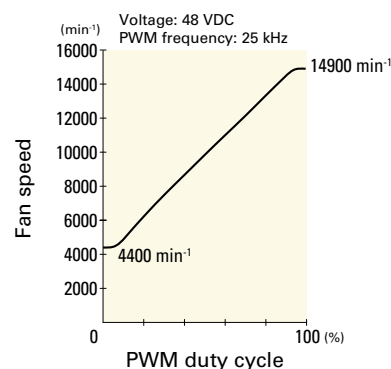
PWM duty cycle



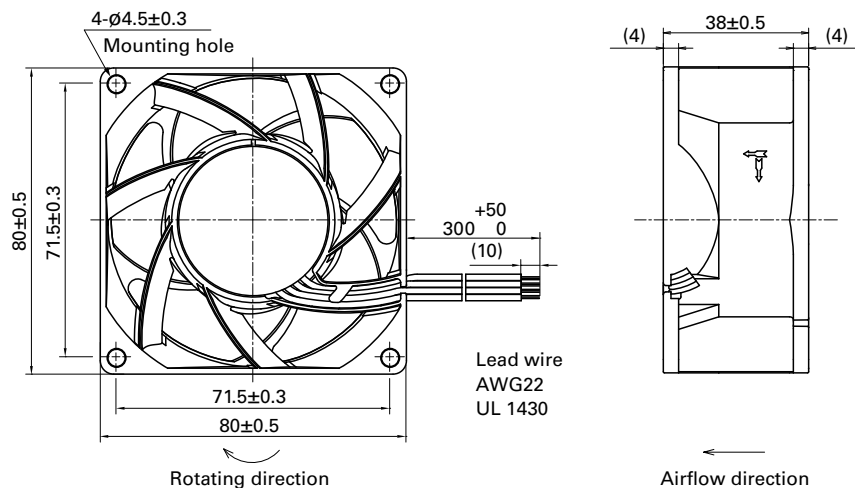
Operating voltage range



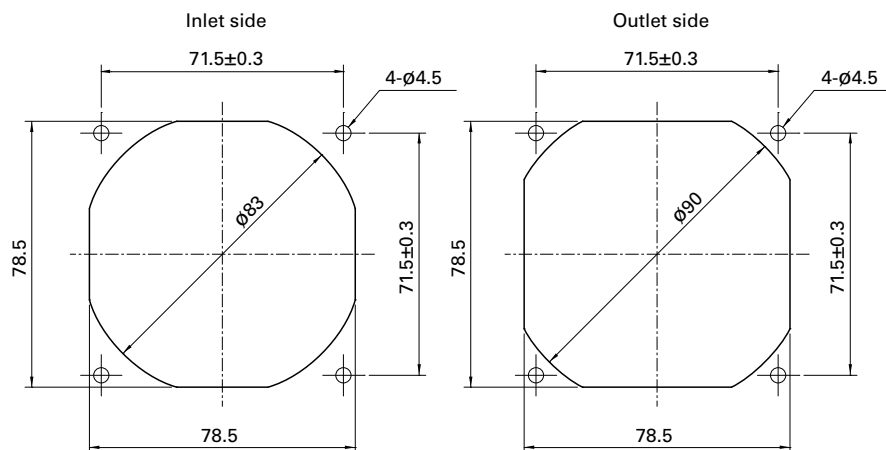
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# 80×80×38 mm

**San Ace 80 9GA** type Low Power Consumption Fan 


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 160 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0812P1G61 | 12                | 10.8 to 13.2                | 100                | 1.2               | 14.4            | 10500                            | 2.85 100.6                               | 480 1.93                                         | 60           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|              |                   |                             | 0                  | 0.07              | 0.48            | 2000                             | 0.51 18.0                                | 28.7 0.11                                        | 21           |                            |                            |
| 9GA0812P1S61 |                   |                             | 100                | 0.94              | 11.28           | 9550                             | 2.6 91.8                                 | 480 1.93                                         | 59           |                            |                            |
|              |                   |                             | 0                  | 0.1               | 1.2             | 2900                             | 0.74 26.1                                | 60 0.24                                          | 27           |                            |                            |
| 9GA0812P1H61 | 24                | 20.4 to 27.6                | 100                | 0.6               | 7.2             | 8250                             | 2.25 79.4                                | 380 1.53                                         | 55           |                            |                            |
|              |                   |                             | 0                  | 0.08              | 0.96            | 2500                             | 0.64 22.6                                | 45 0.18                                          | 24           |                            |                            |
| 9GA0824P1S61 |                   |                             | 100                | 0.47              | 11.28           | 9550                             | 2.6 91.8                                 | 480 1.93                                         | 59           |                            |                            |
|              |                   |                             | 0                  | 0.06              | 1.44            | 2900                             | 0.74 26.1                                | 60 0.24                                          | 27           |                            |                            |
| 9GA0824P1H61 | 48                | 40.8 to 55.2                | 100                | 0.3               | 7.2             | 8250                             | 2.25 79.4                                | 380 1.53                                         | 55           |                            |                            |
|              |                   |                             | 0                  | 0.05              | 1.2             | 2500                             | 0.64 22.6                                | 45 0.18                                          | 24           |                            |                            |
| 9GA0848P1S61 |                   |                             | 100                | 0.25              | 12              | 9550                             | 2.6 91.8                                 | 480 1.93                                         | 59           |                            |                            |
|              |                   |                             | 0                  | 0.04              | 1.92            | 2900                             | 0.74 26.1                                | 60 0.24                                          | 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.

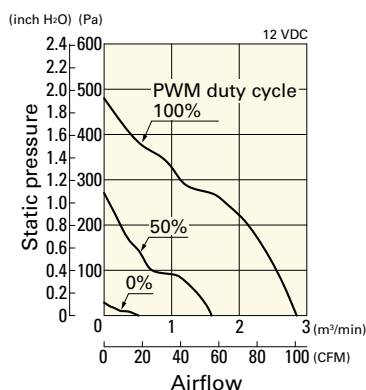
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 608 to 609.

Note 2: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

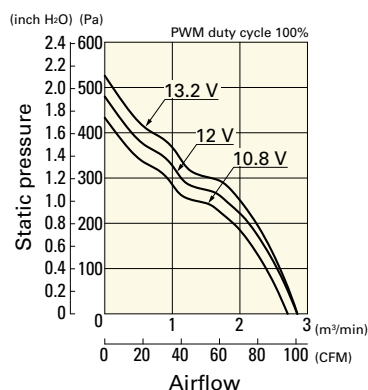
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P1G61** With pulse sensor with PWM control function

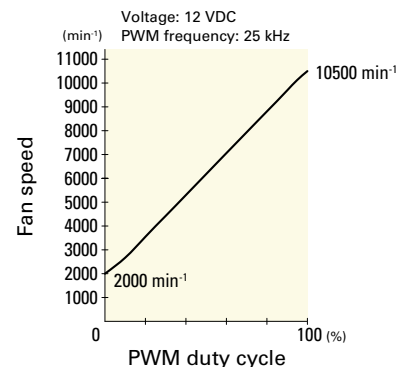
PWM duty cycle



Operating voltage range



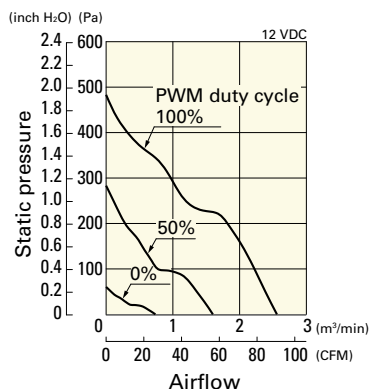
PWM duty - Speed characteristics example



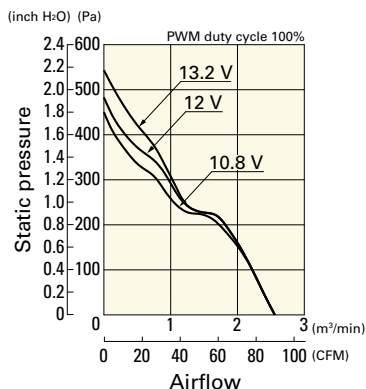
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0812P1S61** With pulse sensor with PWM control function

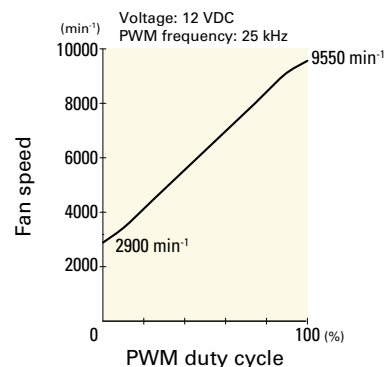
PWM duty cycle



Operating voltage range

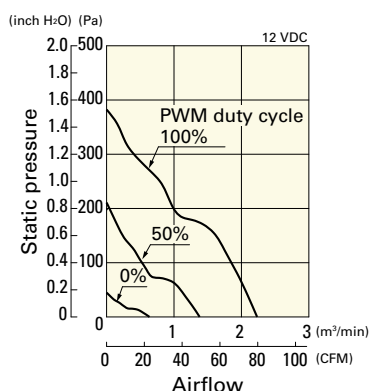


PWM duty - Speed characteristics example

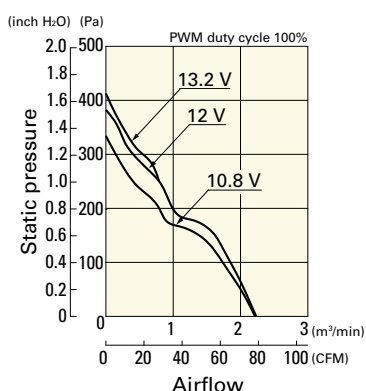


**9GA0812P1H61** With pulse sensor with PWM control function

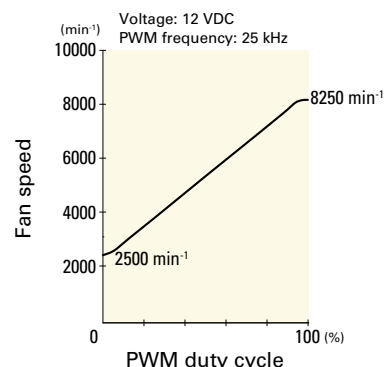
PWM duty cycle



Operating voltage range

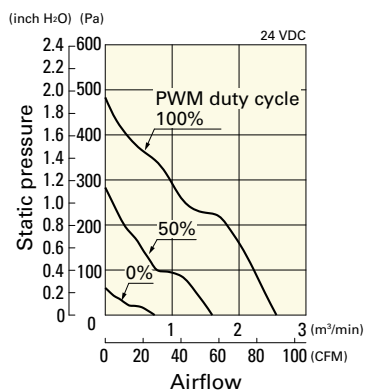


PWM duty - Speed characteristics example

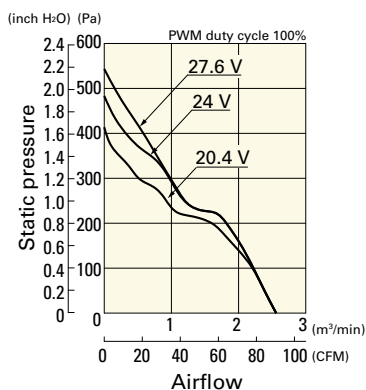


**9GA0824P1S61** With pulse sensor with PWM control function

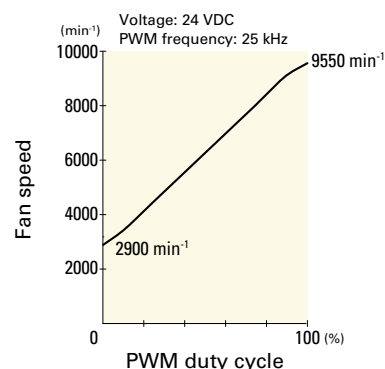
PWM duty cycle



Operating voltage range

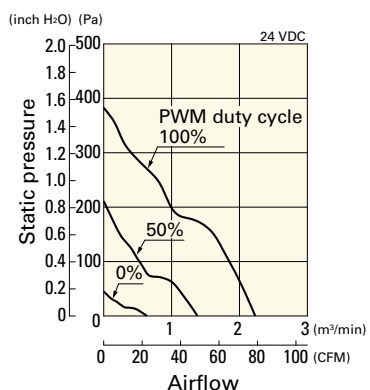


PWM duty - Speed characteristics example

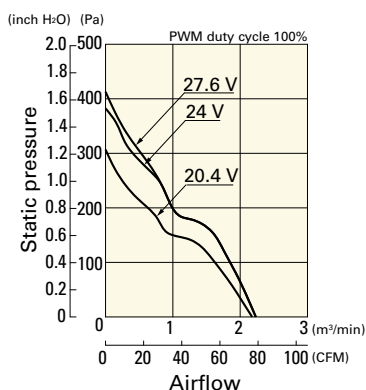


**9GA0824P1H61** With pulse sensor with PWM control function

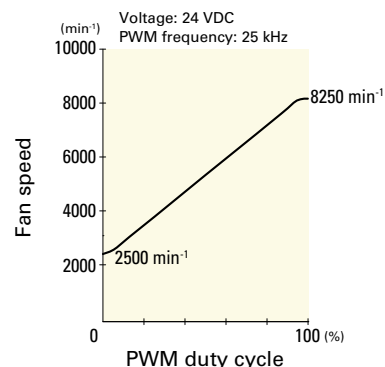
PWM duty cycle



Operating voltage range



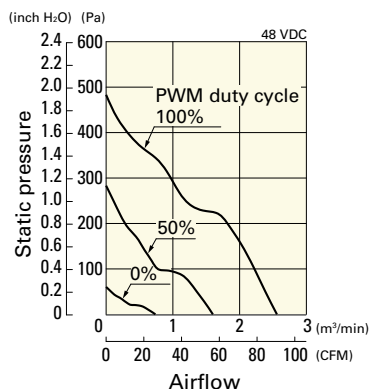
PWM duty - Speed characteristics example



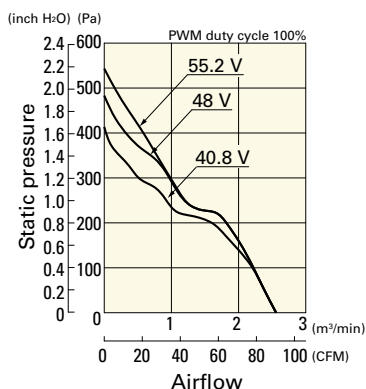
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0848P1S61** With pulse sensor with PWM control function

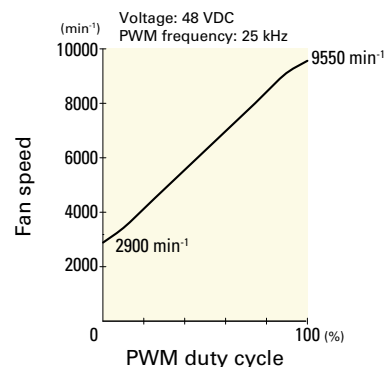
PWM duty cycle



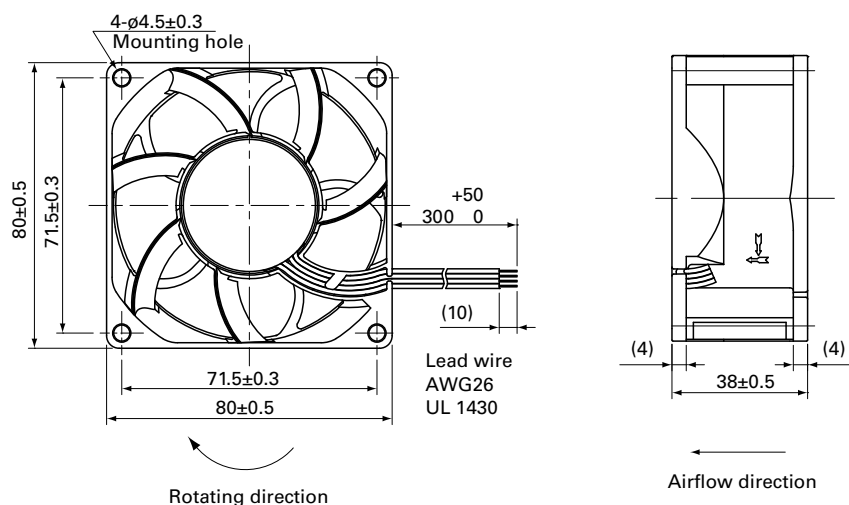
Operating voltage range



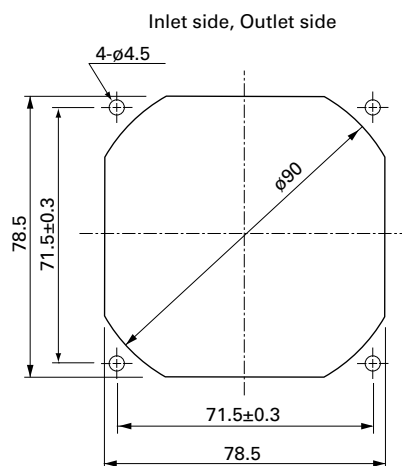
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

## DC Fan

# 80×80×38 mm

## San Ace 80 9GV type



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 220 g

### 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| <b>9GV0812P1G03</b> | 12                | 10.8 to 13.2                | 100                | 3.8               | 45.6            | 10200                            | 3.9 138.0                                | 490.0 1.97                                       | 65           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                     |                   |                             | 0                  | 0.32              | 3.84            | 3000                             | 1.15 40.6                                | 42.4 0.17                                        | 34           |                            |                            |
| <b>9GV0812P1H03</b> |                   |                             | 100                | 3.0               | 36.0            | 9700                             | 3.7 131.0                                | 440.0 1.77                                       | 63           |                            |                            |
|                     |                   |                             | 0                  | 0.2               | 2.4             | 2900                             | 1.11 39.2                                | 39.0 0.16                                        | 34           |                            |                            |
| <b>9GV0812P1F03</b> |                   | 10.2 to 13.8                | 100                | 1.5               | 18              | 8000                             | 3.05 108.0                               | 301.0 1.21                                       | 58           |                            |                            |
|                     |                   |                             | 0                  | 0.12              | 1.44            | 2400                             | 0.92 32.0                                | 27.1 0.11                                        | 26           |                            |                            |
| <b>9GV0812P1M03</b> |                   |                             | 100                | 0.75              | 9               | 6000                             | 2.29 81.0                                | 169.0 0.68                                       | 51           |                            |                            |
|                     |                   |                             | 0                  | 0.09              | 1.08            | 1700                             | 0.65 23.0                                | 13.6 0.05                                        | 19           |                            |                            |
| <b>9GV0824P1G03</b> | 24                | 20.4 to 27.6                | 100                | 1.6               | 38.4            | 10200                            | 3.9 138.0                                | 490.0 1.97                                       | 65           |                            |                            |
|                     |                   |                             | 0                  | 0.3               | 7.2             | 4700                             | 1.79 63.2                                | 104.0 0.41                                       | 44           |                            |                            |
| <b>9GV0848P1G03</b> | 48                | 40.8 to 55.2                | 100                | 0.84              | 40.32           | 10200                            | 3.9 138.0                                | 490.0 1.97                                       | 65           |                            |                            |
|                     |                   |                             | 0                  | 0.15              | 7.2             | 4700                             | 1.79 63.2                                | 104.0 0.41                                       | 44           |                            |                            |

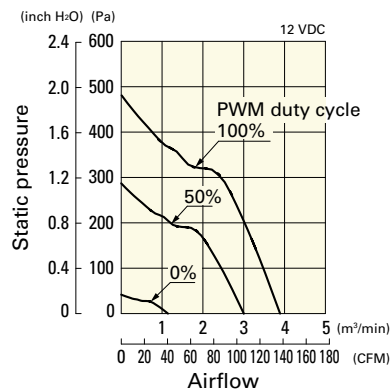
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 611.

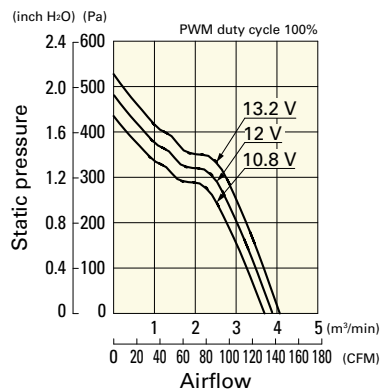
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV0812P1G03** With pulse sensor with PWM control function

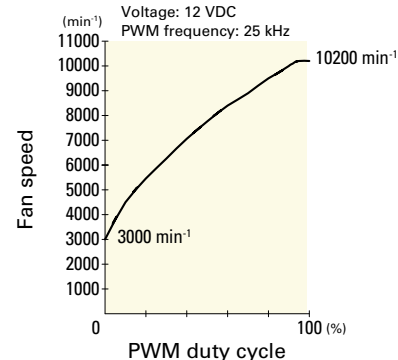
PWM duty cycle



Operating voltage range



PWM duty - Speed characteristics example

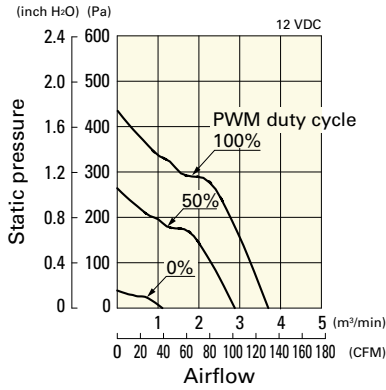




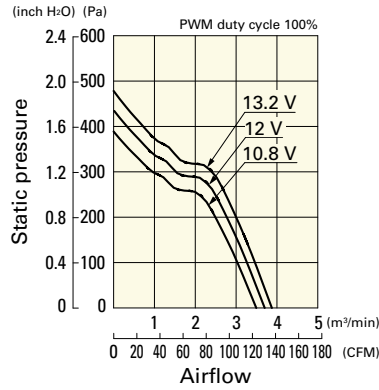
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV0812P1H03** With pulse sensor with PWM control function

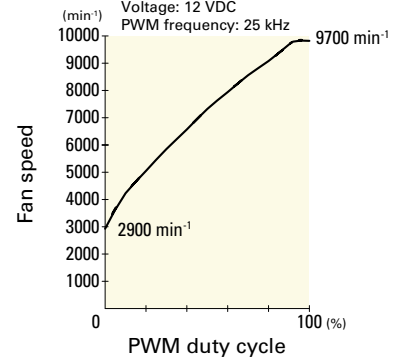
PWM duty cycle



Operating voltage range

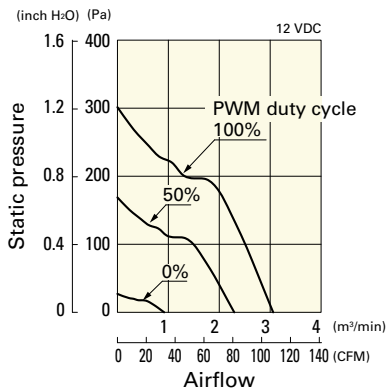


PWM duty - Speed characteristics example

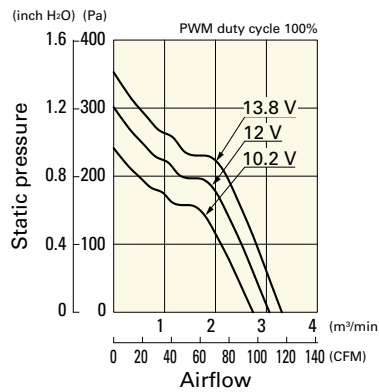


**9GV0812P1F03** With pulse sensor with PWM control function

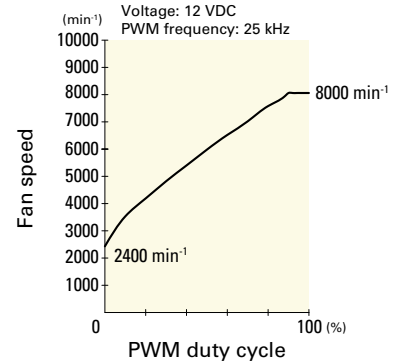
PWM duty cycle



Operating voltage range

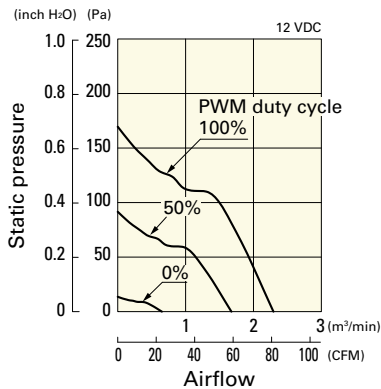


PWM duty - Speed characteristics example

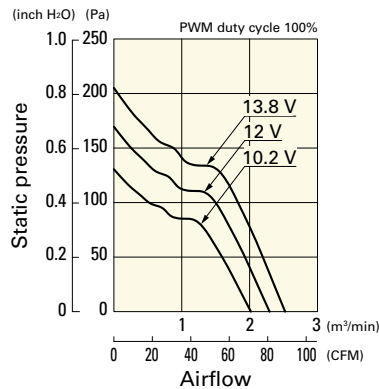


**9GV0812P1M03** With pulse sensor with PWM control function

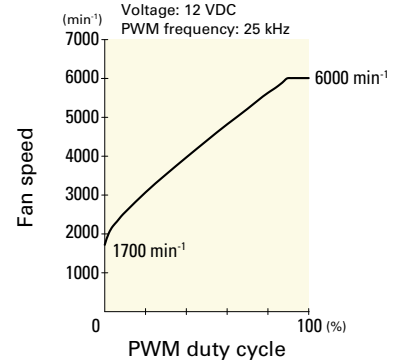
PWM duty cycle



Operating voltage range

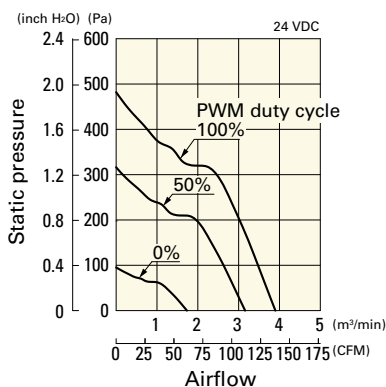


PWM duty - Speed characteristics example

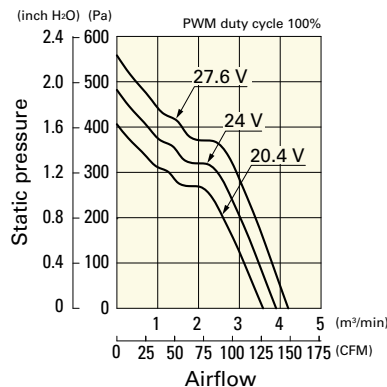


**9GV0824P1G03** With pulse sensor with PWM control function

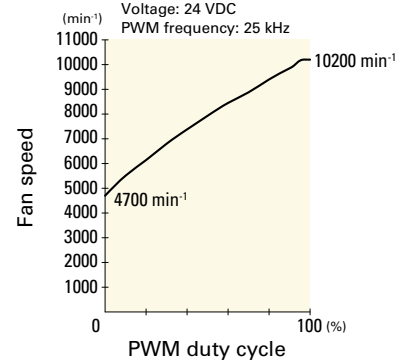
PWM duty cycle



Operating voltage range



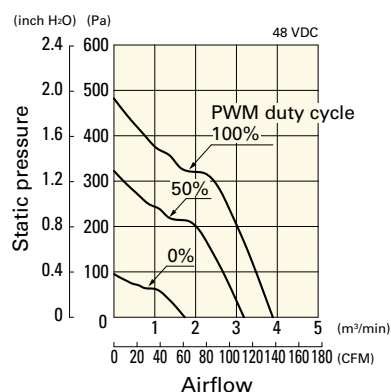
PWM duty - Speed characteristics example



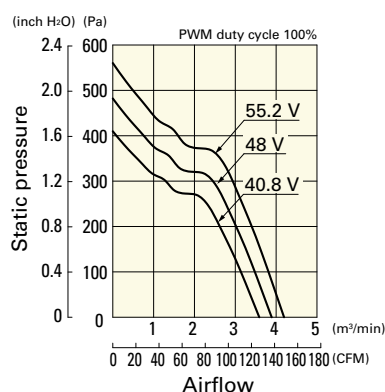
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV0848P1G03** With pulse sensor with PWM control function

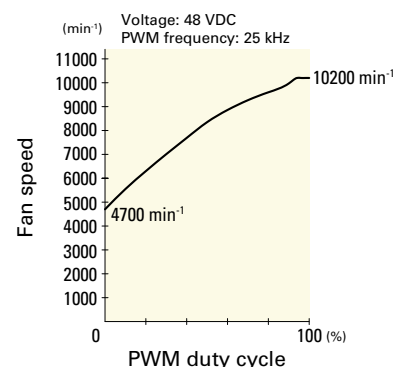
PWM duty cycle



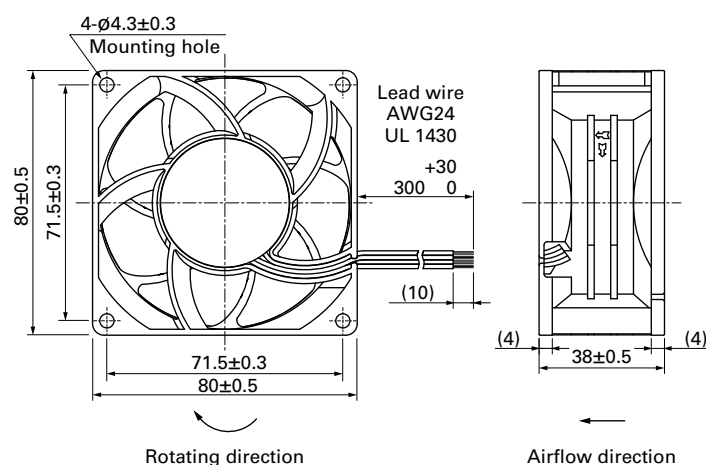
Operating voltage range



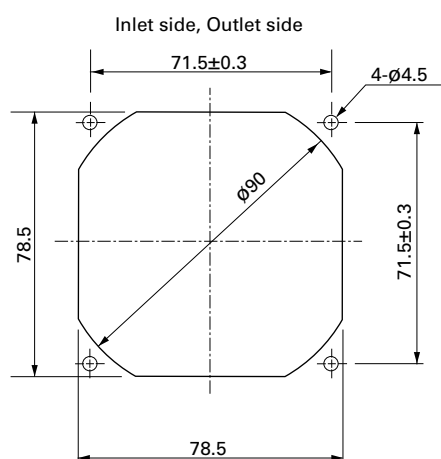
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# 80×80×38 mm

**San Ace 80 9G type**


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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
- Mass ..... 170 g

## Specifications

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

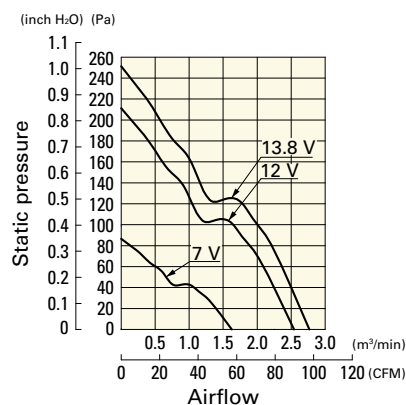
| Model no.  | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| 9G0812G101 | 12                   | 7 to 13.8                      | 1.1                  | 13.2               | 6300                                | 2.55 90                                     | 211 0.847                                           | 51              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
| 9G0812H101 |                      |                                | 0.9                  | 10.8               | 5700                                | 2.28 80                                     | 171 0.687                                           | 49              |                               |                            |
| 9G0824G101 | 24                   | 20.4 to 27.6                   | 0.56                 | 13.4               | 6300                                | 2.55 90                                     | 211 0.847                                           | 51              |                               |                            |
| 9G0824H101 |                      |                                | 0.42                 | 10.1               | 5700                                | 2.28 80                                     | 171 0.687                                           | 49              |                               |                            |
| 9G0848G101 | 48                   | 40.8 to 55.2                   | 0.27                 | 13.0               | 6300                                | 2.55 90                                     | 211 0.847                                           | 51              |                               |                            |
| 9G0848H101 |                      |                                | 0.2                  | 9.6                | 5700                                | 2.28 80                                     | 171 0.687                                           | 49              |                               |                            |

Note: Sensor and control options are available for selection. Refer to the table on p. 605.

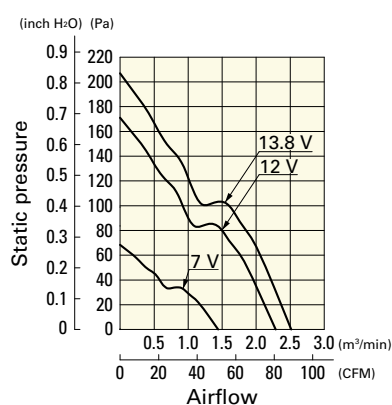
## Airflow - Static Pressure Characteristics

**9G0812G101** With pulse sensor

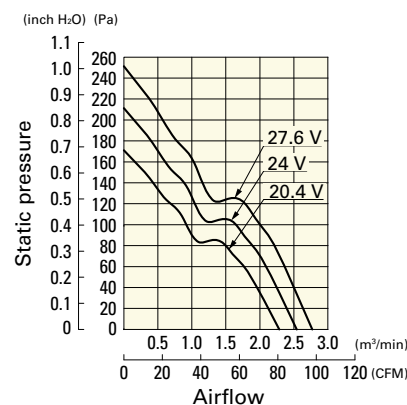
Operating voltage range


**9G0812H101** With pulse sensor

Operating voltage range


**9G0824G101** With pulse sensor

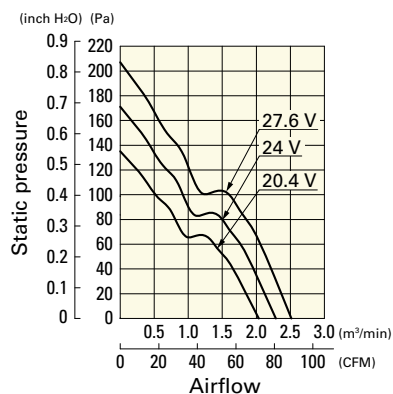
Operating voltage range



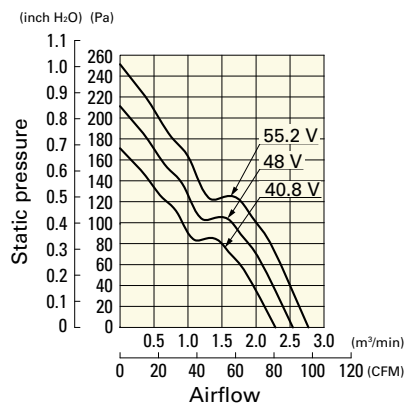
## Airflow - Static Pressure Characteristics

**9G0824H101** With pulse sensor

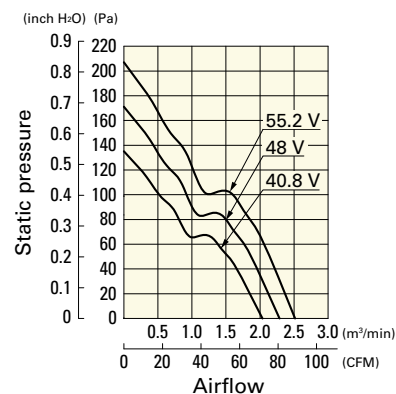
Operating voltage range


**9G0848G101** With pulse sensor

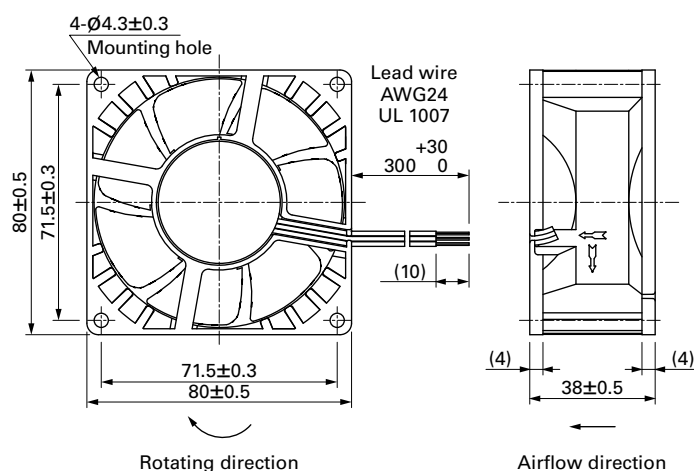
Operating voltage range


**9G0848H101** With pulse sensor

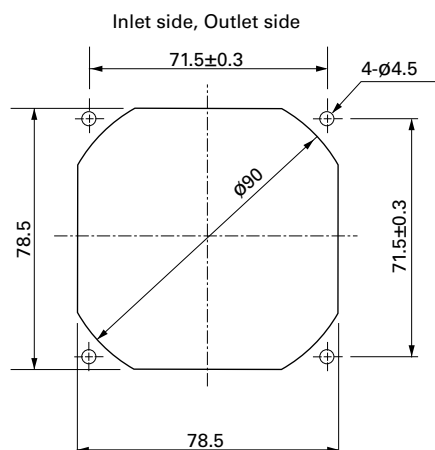
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-049E, 109-049H, 109-049C

### Resin finger guards

page: p. 571

Model no.: 109-1002G

### Resin filter kits

page: p. 572

Model no.: 109-1002F13 (13PPI), 109-1002F20 (20PPI),  
109-1002F30 (30PPI), 109-1002F40 (40PPI)

# 92×92×25 mm

**San Ace 92 9HV** type   


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 150 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-------------------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| ▶▶ <b>9HV0912P4G001</b> | 12                | 10.2 to 13.8                | 100                | 1.23              | 14.76           | 7350                             | 3.35 118                                 | 280 1.12                                         | 56           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                         |                   |                             | 20                 | 0.12              | 1.44            | 2200                             | 1.0 35.3                                 | 25 0.1                                           | 26           |                            |                            |
| ▶▶ <b>9HV0912P4H001</b> | 12                | 10.2 to 13.8                | 100                | 0.71              | 8.52            | 6050                             | 2.75 97.1                                | 190 0.76                                         | 52           |                            |                            |
|                         |                   |                             | 20                 | 0.07              | 0.84            | 1700                             | 0.77 27.2                                | 15 0.06                                          | 20           |                            |                            |
| ▶▶ <b>9HV0924P4G001</b> | 24                | 20.4 to 27.6                | 100                | 0.61              | 14.64           | 7350                             | 3.35 118                                 | 280 1.12                                         | 56           |                            |                            |
|                         |                   |                             | 20                 | 0.06              | 1.44            | 2200                             | 1.0 35.3                                 | 25 0.1                                           | 26           |                            |                            |
| ▶▶ <b>9HV0924P4H001</b> | 24                | 20.4 to 27.6                | 100                | 0.38              | 9.12            | 6050                             | 2.75 97.1                                | 190 0.76                                         | 52           |                            |                            |
|                         |                   |                             | 20                 | 0.05              | 1.2             | 1700                             | 0.77 27.2                                | 15 0.06                                          | 20           |                            |                            |

\* 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.

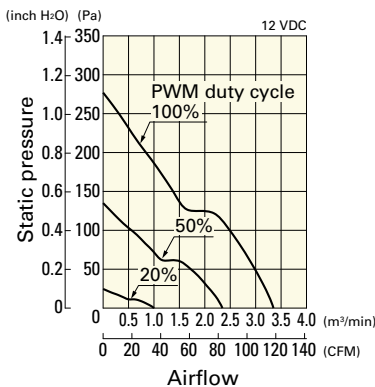
Note 1: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

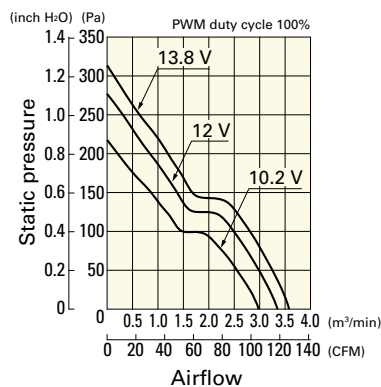
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0912P4G001** With pulse sensor with PWM control function

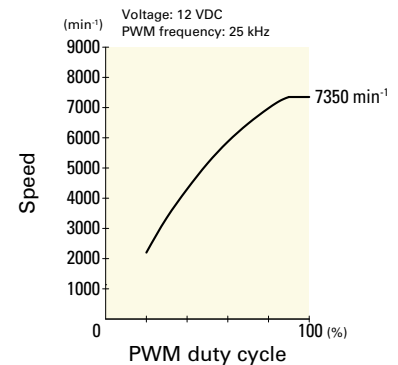
PWM duty cycle



Operating voltage range



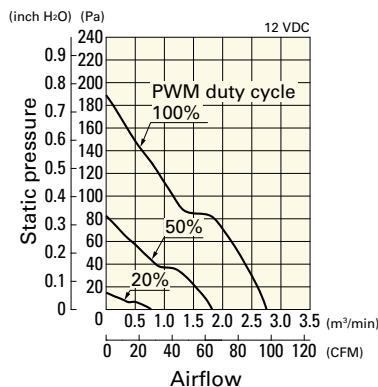
PWM duty - Speed characteristics example



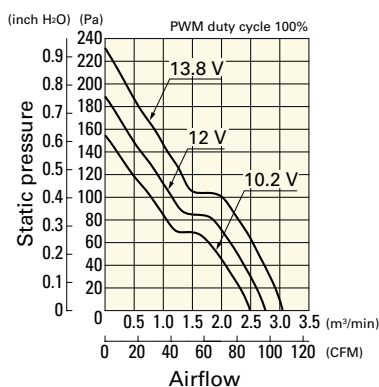
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0912P4H001** With pulse sensor with PWM control function

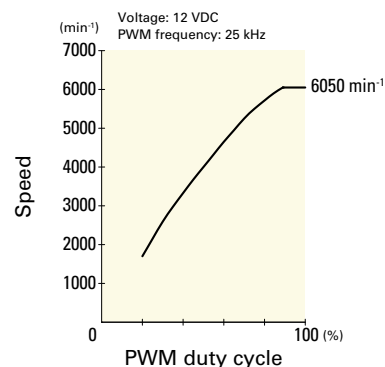
PWM duty cycle



Operating voltage range

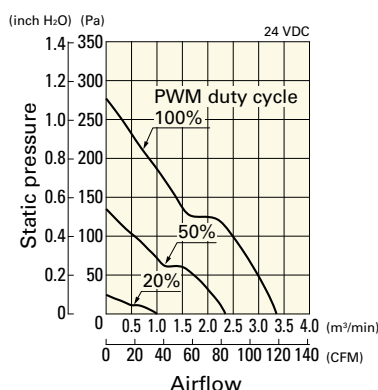


PWM duty - Speed characteristics example

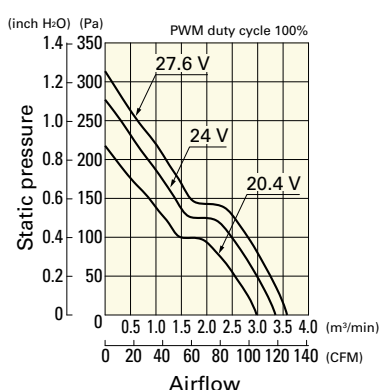


**9HV0924P4G001** With pulse sensor with PWM control function

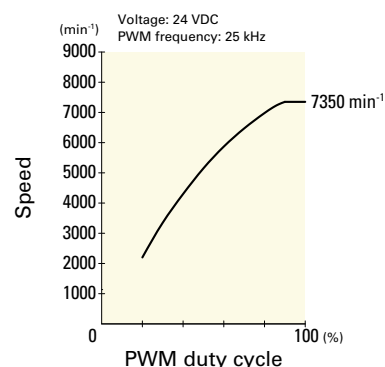
PWM duty cycle



Operating voltage range

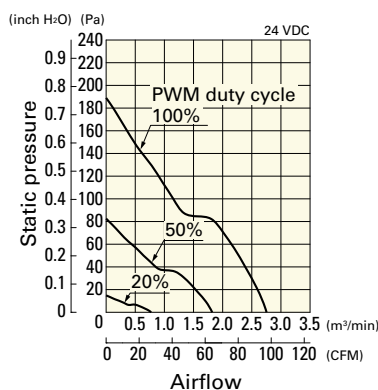


PWM duty - Speed characteristics example

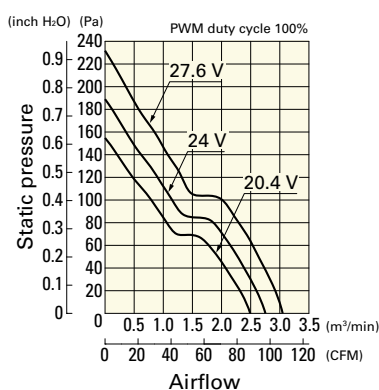


**9HV0924P4H001** With pulse sensor with PWM control function

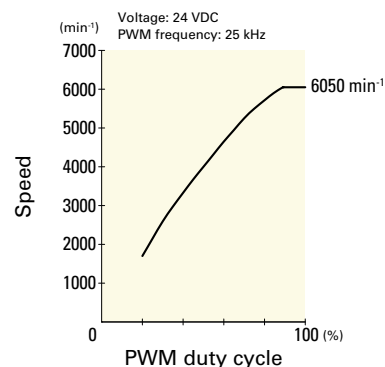
PWM duty cycle



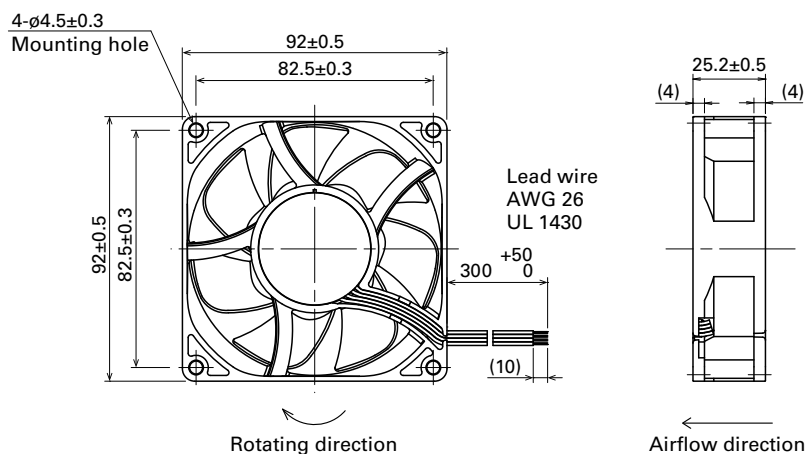
Operating voltage range



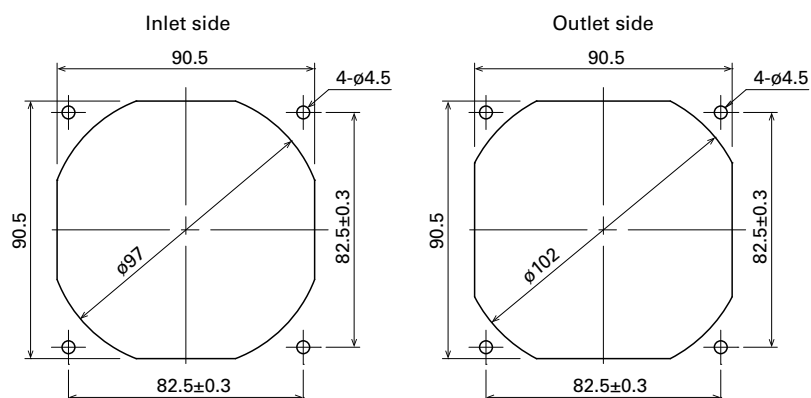
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

# 92×92×25 mm

## San Ace 92 9GA type Low Power Consumption Fan



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 125 g

### 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0912P4J03 | 12                | 10.2 to 13.8                | 100                | 0.39              | 4.68            | 5000                             | 2.2 77.7                                 | 105 0.42                                         | 43           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
|              |                   |                             | 0                  | 0.06              | 0.72            | 1500                             | 0.65 23.3                                | 9.4 0.04                                         | 14           |                            |                            |
| 9GA0912P4G03 |                   |                             | 100                | 0.28              | 3.36            | 4400                             | 1.93 68.2                                | 81 0.33                                          | 39           |                            |                            |
|              |                   |                             | 0                  | 0.06              | 0.72            | 1500                             | 0.65 23.3                                | 9.4 0.04                                         | 14           |                            |                            |
| 9GA0912P4S03 | 24                | 20.4 to 27.6                | 100                | 0.2               | 2.4             | 3800                             | 1.67 59.0                                | 60.6 0.24                                        | 35           |                            |                            |
|              |                   |                             | 0                  | 0.06              | 0.72            | 1500                             | 0.65 23.3                                | 9.4 0.04                                         | 14           |                            |                            |
| 9GA0924P4J03 |                   |                             | 100                | 0.2               | 4.8             | 5000                             | 2.2 77.7                                 | 105 0.42                                         | 43           |                            |                            |
|              |                   |                             | 0                  | 0.04              | 0.96            | 1500                             | 0.65 23.3                                | 9.4 0.04                                         | 14           |                            |                            |
| 9GA0924P4G03 |                   |                             | 100                | 0.15              | 3.6             | 4400                             | 1.93 68.2                                | 81 0.33                                          | 39           |                            |                            |
|              |                   |                             | 0                  | 0.04              | 0.96            | 1500                             | 0.65 23.3                                | 9.4 0.04                                         | 14           |                            |                            |
| 9GA0924P4S03 |                   |                             | 100                | 0.12              | 2.88            | 3800                             | 1.67 59.0                                | 60.6 0.24                                        | 35           |                            |                            |
|              |                   |                             | 0                  | 0.04              | 0.96            | 1500                             | 0.65 23.3                                | 9.4 0.04                                         | 14           |                            |                            |

\* 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.

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

| Model no.   | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GA0912H401 | 12                | 10.2 to 13.8                | 0.19              | 2.28            | 3300                             | 1.45 51.2                                | 45.6 0.18                                        | 31           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
| 9GA0912W401 |                   | 7 to 16                     | 0.19              | 2.28            | 3300                             | 1.45 51.2                                | 45.6 0.18                                        | 31           |                            |                            |
| 9GA0912F401 |                   | 10.2 to 13.8                | 0.14              | 1.68            | 2800                             | 1.23 43.5                                | 32.9 0.13                                        | 28           |                            |                            |
| 9GA0912M401 |                   |                             | 0.11              | 1.32            | 2400                             | 1.05 37.1                                | 24 0.096                                         | 24           |                            |                            |
| 9GA0912L401 | 24                | 10.2 to 13.8                | 0.09              | 1.08            | 2000                             | 0.87 30.7                                | 16.7 0.067                                       | 21           |                            |                            |
| 9GA0924H401 |                   |                             | 0.09              | 2.16            | 3300                             | 1.45 51.2                                | 45.6 0.18                                        | 31           |                            |                            |
| 9GA0924W401 |                   | 12 to 28.8                  | 0.09              | 2.16            | 3300                             | 1.45 51.2                                | 45.6 0.18                                        | 31           |                            |                            |
| 9GA0924F401 |                   | 16 to 27.6                  | 0.08              | 1.92            | 2800                             | 1.23 43.5                                | 32.9 0.13                                        | 28           |                            |                            |
| 9GA0924M401 |                   | 14 to 27.6                  | 0.05              | 1.2             | 2400                             | 1.05 37.1                                | 24 0.096                                         | 24           |                            |                            |
| 9GA0924L401 |                   |                             | 0.03              | 0.72            | 2000                             | 0.87 30.7                                | 16.7 0.067                                       | 21           |                            |                            |

Note 1: Sensor and control options are available for selection. Refer to the table on pp. 609 to 610.

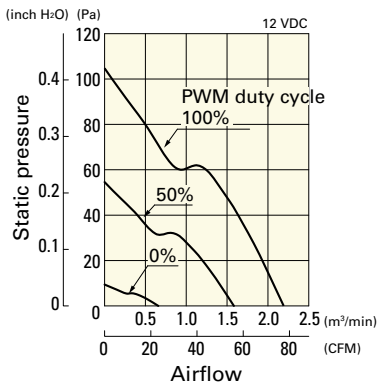
Note 2: The ⌘ mark indicates Short Lead Time Service applicable models. See p. 630 for details.



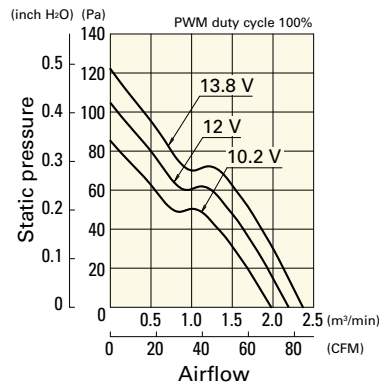
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0912P4J03** With pulse sensor with PWM control function

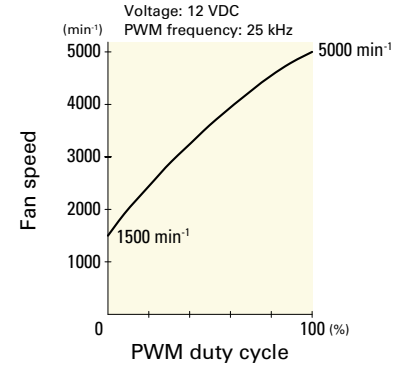
PWM duty cycle



Operating voltage range

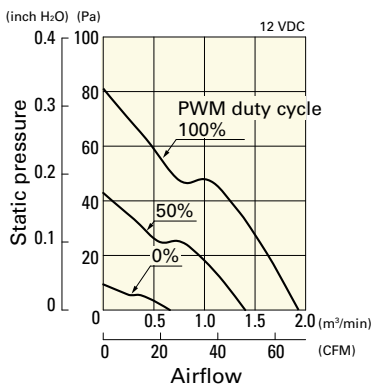


PWM duty - Speed characteristics example

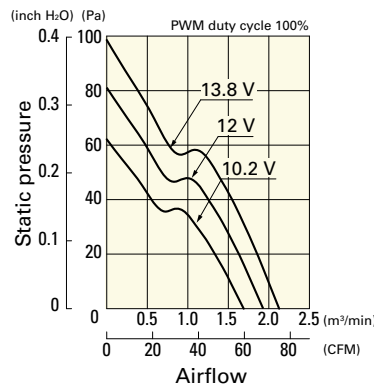


**9GA0912P4G03** With pulse sensor with PWM control function

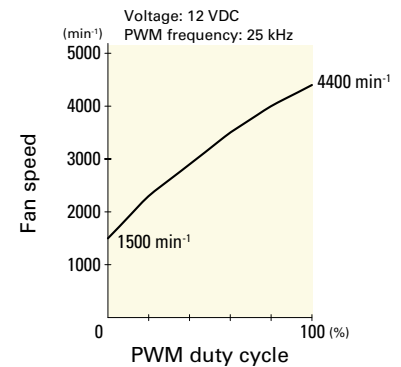
PWM duty cycle



Operating voltage range

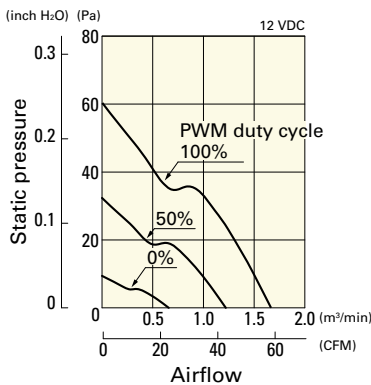


PWM duty - Speed characteristics example

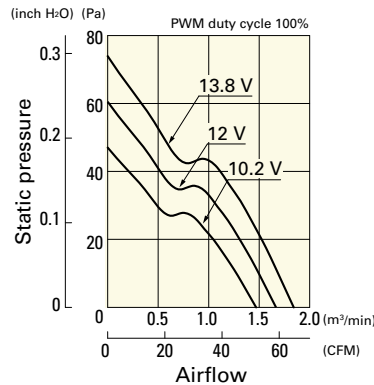


**9GA0912P4S03** With pulse sensor with PWM control function

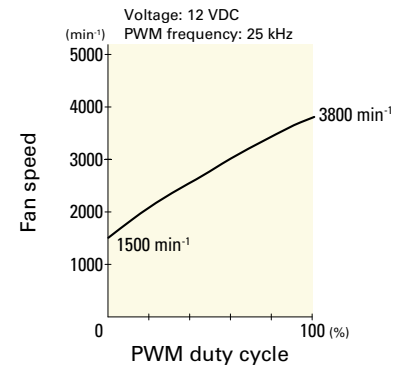
PWM duty cycle



Operating voltage range

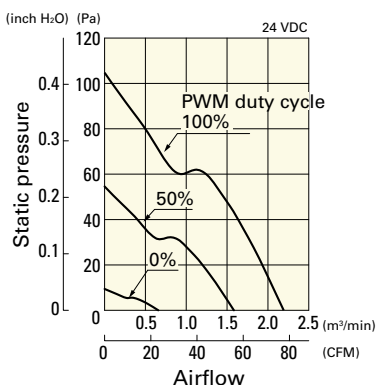


PWM duty - Speed characteristics example

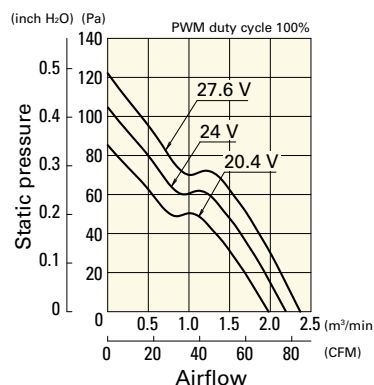


**9GA0924P4J03** With pulse sensor with PWM control function

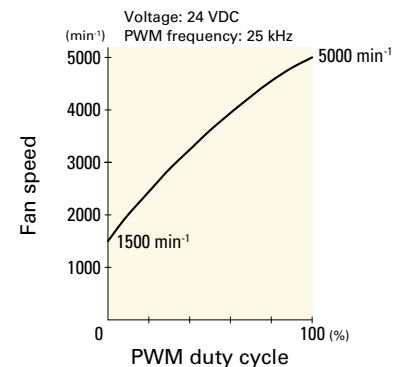
PWM duty cycle



Operating voltage range



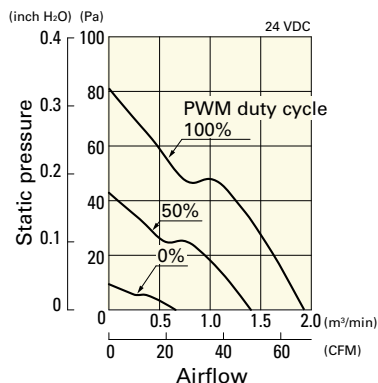
PWM duty - Speed characteristics example



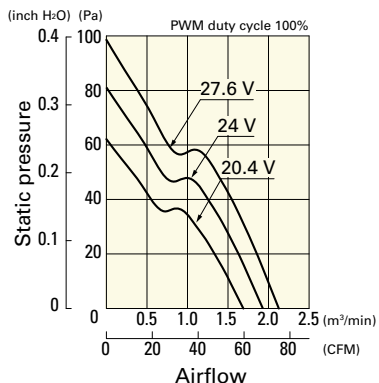
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0924P4G03** With pulse sensor with PWM control function

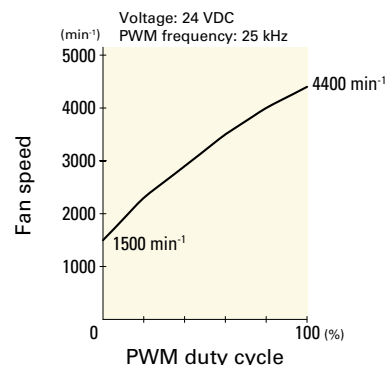
PWM duty cycle



Operating voltage range

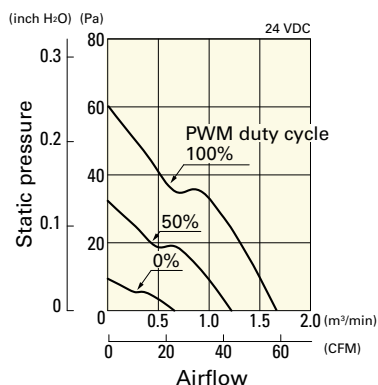


PWM duty - Speed characteristics example

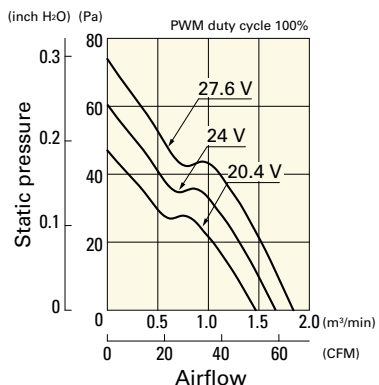


**9GA0924P4S03** With pulse sensor with PWM control function

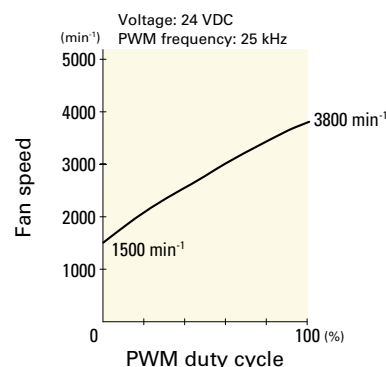
PWM duty cycle



Operating voltage range



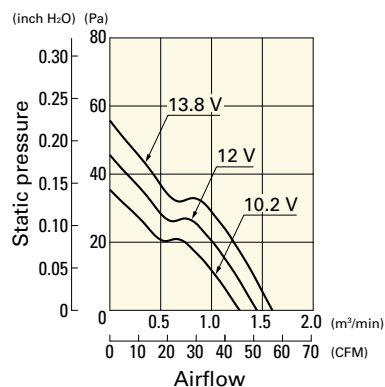
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

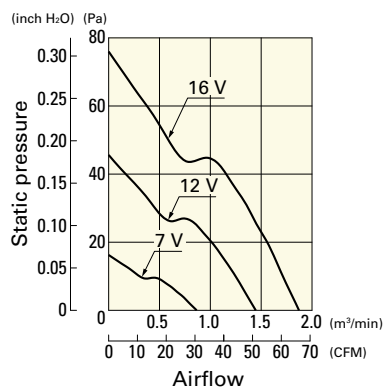
**9GA0912H401** With pulse sensor

Operating voltage range



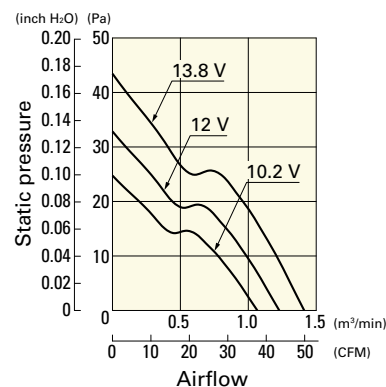
**9GA0912W401** With pulse sensor

Operating voltage range



**9GA0912F401** With pulse sensor

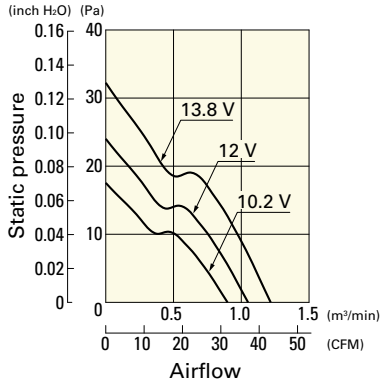
Operating voltage range



## Airflow - Static Pressure Characteristics

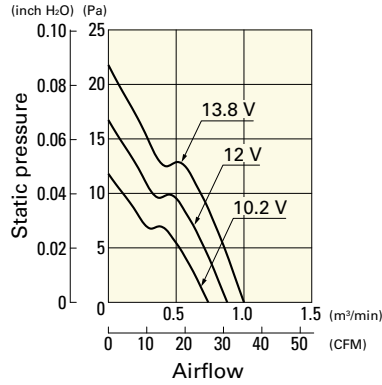
**9GA0912M401** With pulse sensor

Operating voltage range



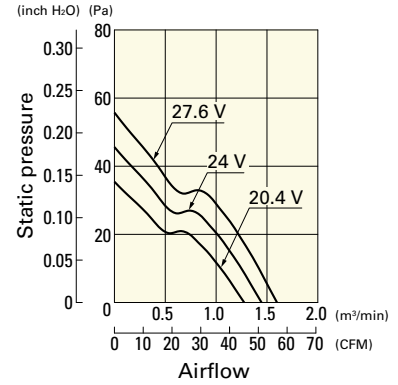
**9GA0912L401** With pulse sensor

Operating voltage range



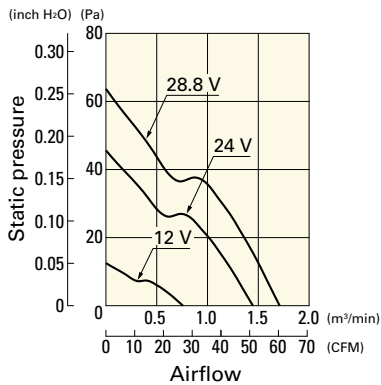
**9GA0924H401** With pulse sensor

Operating voltage range



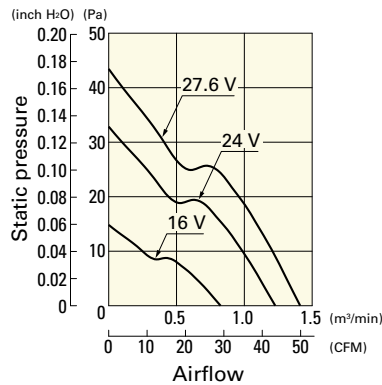
**9GA0924W401** With pulse sensor

Operating voltage range



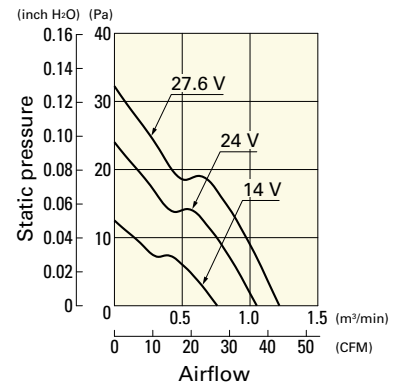
**9GA0924F401** With pulse sensor

Operating voltage range



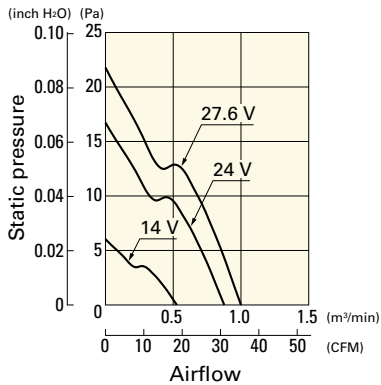
**9GA0924M401** With pulse sensor

Operating voltage range

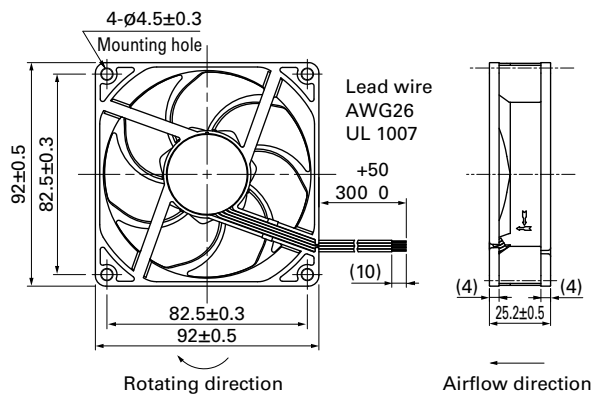


**9GA0924L401** With pulse sensor

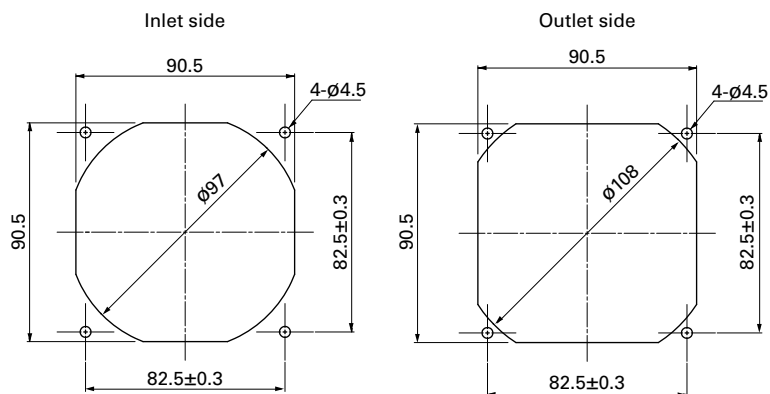
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

92×92×25 mm

San Ace 92 9RA type   **General Specifications**

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 130 g

**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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9RA0912P4G001 | 12                   | 10.8 to 13.2                   | 100                   | 0.22                 | 2.64               | 4200                                | 1.8 63.5                       | 73.5 0.29                                           | 37              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
|                 |                      |                                | 30                    | 0.03                 | 0.36               | 1000                                | 0.42 14.8                      | 4.1 0.016                                           | 11              |                               |                            |
| » 9RA0924P4G001 | 24                   | 21.6 to 26.4                   | 100                   | 0.13                 | 3.12               | 4200                                | 1.8 63.5                       | 73.5 0.29                                           | 37              |                               |                            |
|                 |                      |                                | 20                    | 0.03                 | 0.72               | 1000                                | 0.42 14.8                      | 4.1 0.016                                           | 11              |                               |                            |
| » 9RA0948P4G001 | 48                   | 43.2 to 52.8                   | 100                   | 0.07                 | 3.36               | 4200                                | 1.8 63.5                       | 73.5 0.29                                           | 37              |                               |                            |
|                 |                      |                                | 20                    | 0.03                 | 1.44               | 1400                                | 0.6 21.2                       | 8.1 0.033                                           | 14              |                               |                            |

\* 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.

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

| Model no.      | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9RA0912G4001 | 12                   | 7 to 13.8                      | 0.22                 | 2.64               | 4200                                | 1.8 63.5                       | 73.5 0.29                                           | 37              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
| » 9RA0912S4001 |                      |                                | 0.2                  | 2.4                | 3850                                | 1.65 58.3                      | 61.7 0.25                                           | 35              |                               |                            |
| » 9RA0912H4001 |                      |                                | 0.14                 | 1.68               | 3400                                | 1.46 51.6                      | 48.1 0.19                                           | 31              |                               |                            |
| » 9RA0912F4001 |                      |                                | 0.1                  | 1.2                | 2850                                | 1.22 43.1                      | 33.8 0.14                                           | 27              |                               |                            |
| » 9RA0912M4001 |                      |                                | 0.07                 | 0.84               | 2450                                | 1.05 37.1                      | 25 0.1                                              | 23              |                               |                            |
| » 9RA0924G4001 | 24                   | 14 to 27.6                     | 0.13                 | 3.12               | 4200                                | 1.8 63.5                       | 73.5 0.29                                           | 37              |                               |                            |
| » 9RA0924S4001 |                      |                                | 0.1                  | 2.4                | 3850                                | 1.65 58.3                      | 61.7 0.25                                           | 35              |                               |                            |
| » 9RA0924H4001 |                      |                                | 0.08                 | 1.92               | 3400                                | 1.46 51.6                      | 48.1 0.19                                           | 31              |                               |                            |
| » 9RA0924F4001 |                      |                                | 0.06                 | 1.44               | 2850                                | 1.22 43.1                      | 33.8 0.14                                           | 27              |                               |                            |
| » 9RA0924M4001 |                      |                                | 0.04                 | 0.96               | 2450                                | 1.05 37.1                      | 25 0.1                                              | 23              |                               |                            |
| » 9RA0948G4001 | 48                   | 36 to 55.2                     | 0.07                 | 3.36               | 4200                                | 1.8 63.5                       | 73.5 0.29                                           | 37              |                               |                            |
| » 9RA0948S4001 |                      |                                | 0.06                 | 2.88               | 3850                                | 1.65 58.3                      | 61.7 0.25                                           | 35              |                               |                            |
| » 9RA0948H4001 |                      |                                | 0.05                 | 2.4                | 3400                                | 1.46 51.6                      | 48.1 0.19                                           | 31              |                               |                            |
| » 9RA0948M4001 |                      |                                |                      |                    |                                     |                                |                                                     |                 |                               |                            |

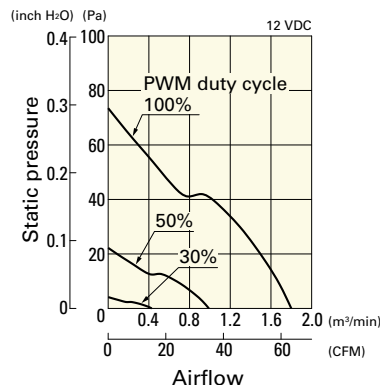
Note 1: Sensor and control options are available for selection. Refer to the table on p. 615.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

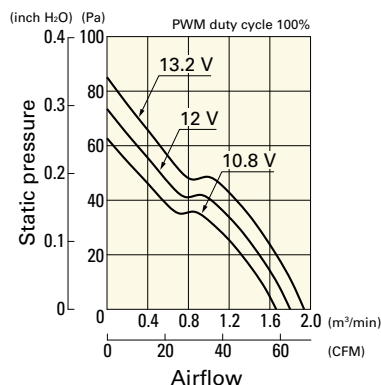
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9RA0912P4G001** With pulse sensor with PWM control function

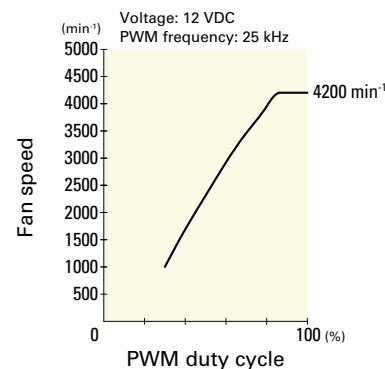
PWM duty cycle



Operating voltage range

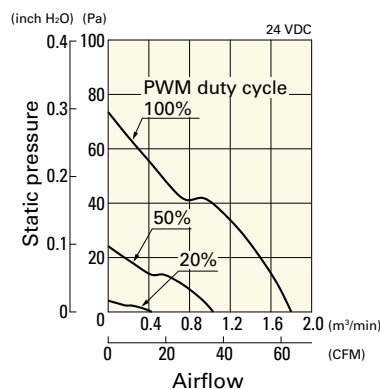


PWM duty - Speed characteristics example

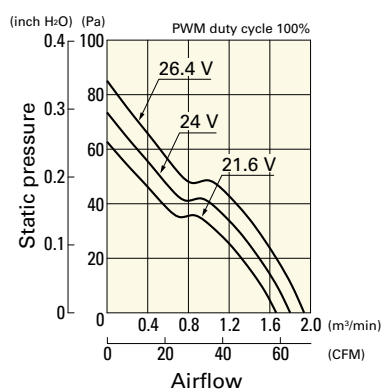


**9RA0924P4G001** With pulse sensor with PWM control function

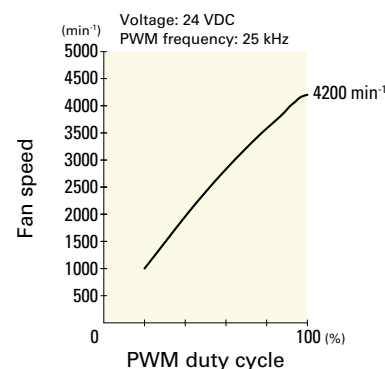
PWM duty cycle



Operating voltage range

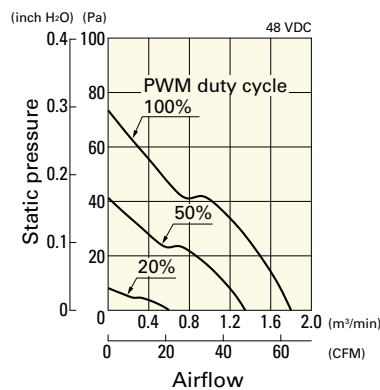


PWM duty - Speed characteristics example

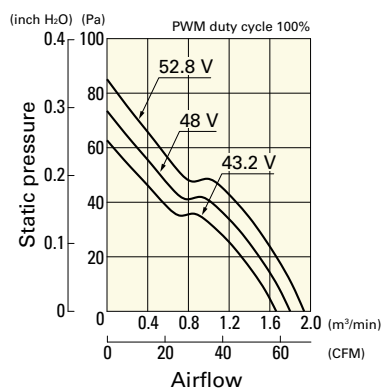


**9RA0948P4G001** With pulse sensor with PWM control function

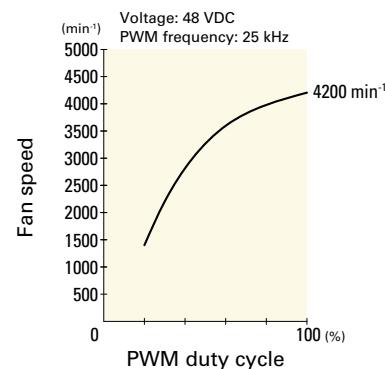
PWM duty cycle



Operating voltage range

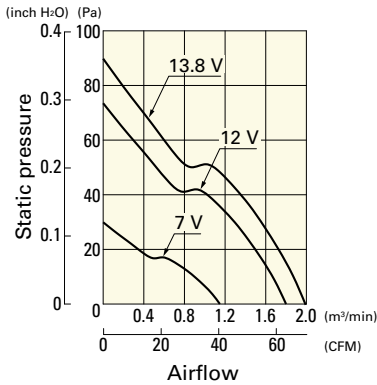


PWM duty - Speed characteristics example



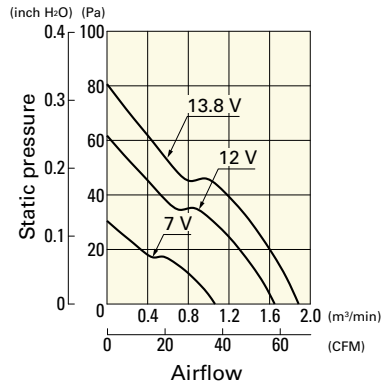
## 9RA0912G4001 With pulse sensor

Operating voltage range



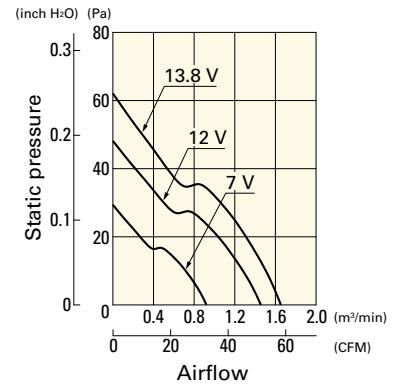
## 9RA0912S4001 With pulse sensor

Operating voltage range



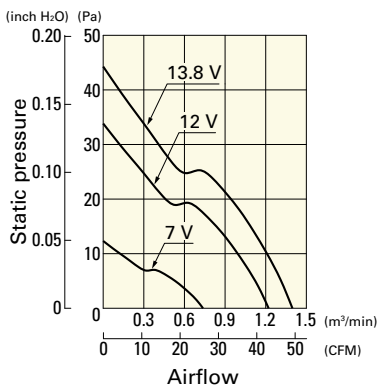
## 9RA0912H4001 With pulse sensor

Operating voltage range



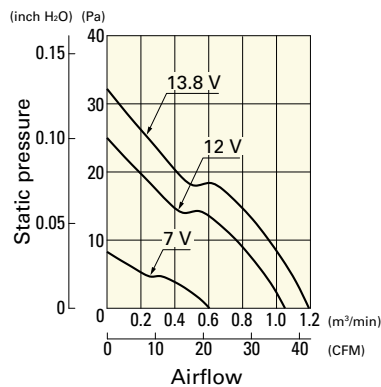
## 9RA0912F4001 With pulse sensor

Operating voltage range



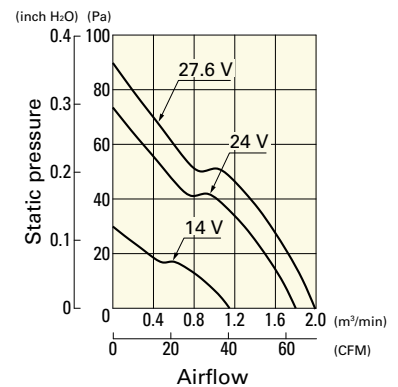
## 9RA0912M4001 With pulse sensor

Operating voltage range



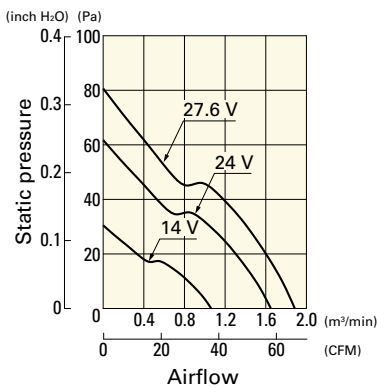
## 9RA0924G4001 With pulse sensor

Operating voltage range



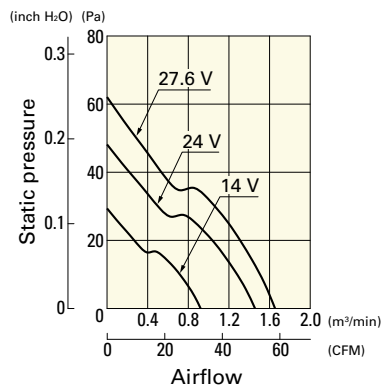
## 9RA0924S4001 With pulse sensor

Operating voltage range



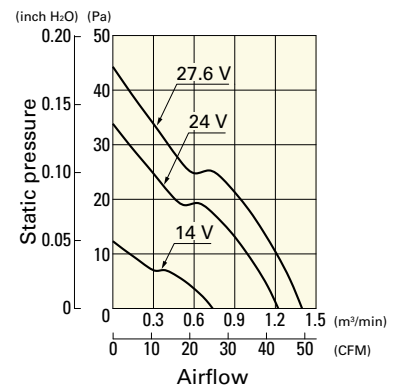
## 9RA0924H4001 With pulse sensor

Operating voltage range



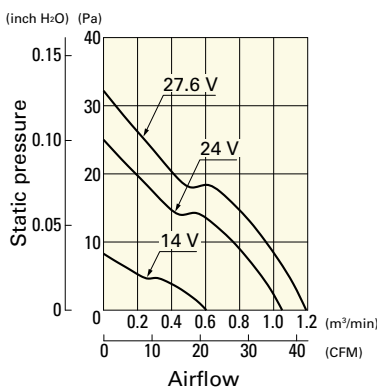
## 9RA0924F4001 With pulse sensor

Operating voltage range



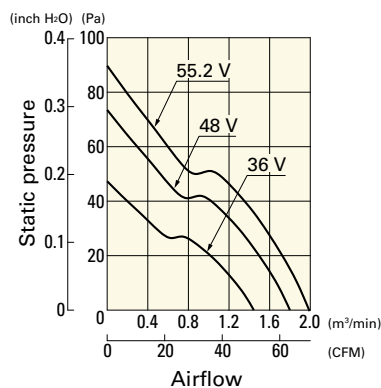
## 9RA0924M4001 With pulse sensor

Operating voltage range



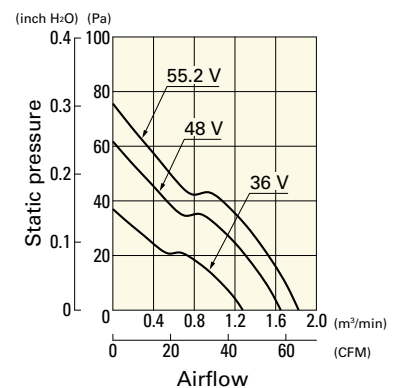
## 9RA0948G4001 With pulse sensor

Operating voltage range



## 9RA0948S4001 With pulse sensor

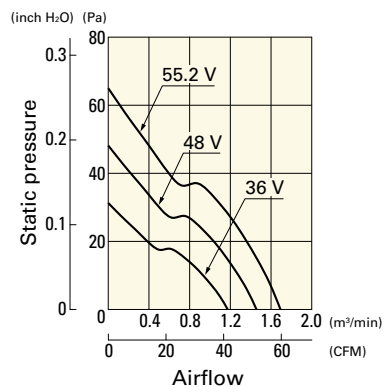
Operating voltage range



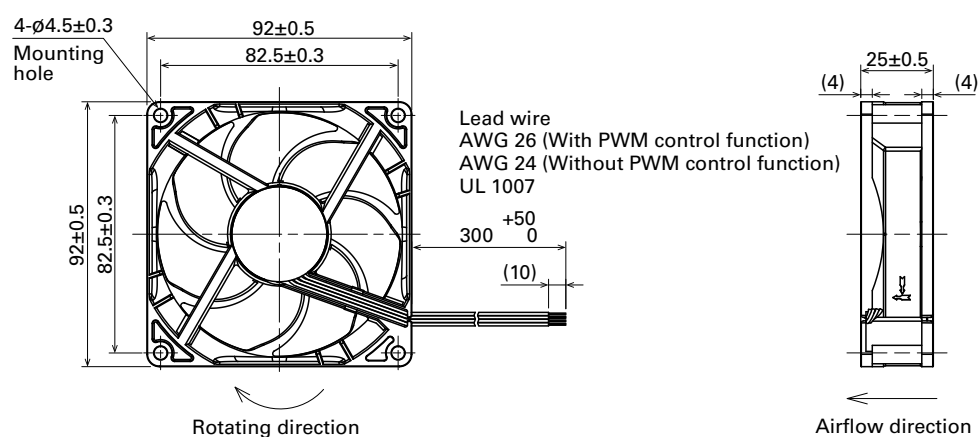
## Airflow - Static Pressure Characteristics

**9RA0948H4001** With pulse sensor

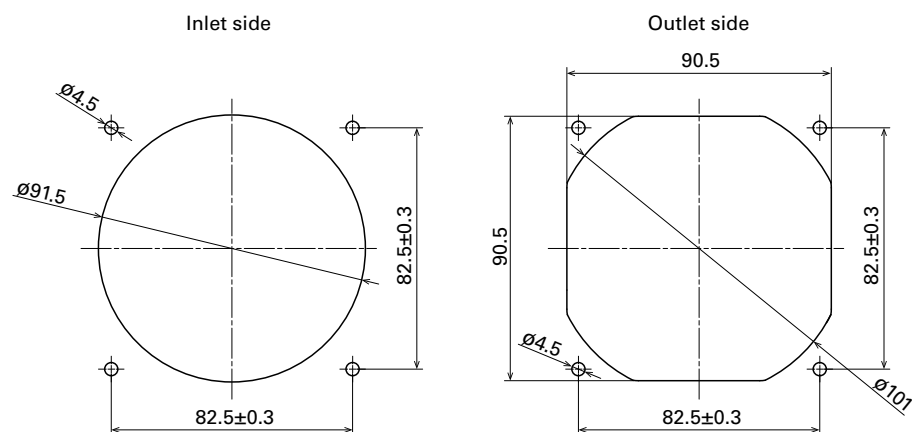
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

 Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)



# 92×92×25 mm

**San Ace 92 9S** type Silent Fan 


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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
- Mass ..... 100 g

## Specifications

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

| Model no.  | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9S0912F401 | 12                | 5.0 to 13.8                 | 0.14              | 1.68            | 2650                             | 1.26 44.5                                | 30.0 0.12                                        | 27           | -10 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9S0912M401 |                   |                             | 0.11              | 1.32            | 2250                             | 1.07 37.8                                | 21.6 0.087                                       | 22           |                            |                            |
| 9S0912L401 |                   | 6.0 to 13.8                 | 0.07              | 0.84            | 1750                             | 0.83 29.3                                | 13.1 0.053                                       | 17           |                            |                            |
| 9S0924F401 | 24                | 14 to 26.4                  | 0.09              | 2.16            | 2650                             | 1.26 44.5                                | 30.0 0.12                                        | 27           |                            |                            |
| 9S0924M401 |                   |                             | 0.07              | 1.68            | 2250                             | 1.07 37.8                                | 21.6 0.087                                       | 22           |                            |                            |
| 9S0924L401 |                   |                             | 0.04              | 0.96            | 1750                             | 0.83 29.3                                | 13.1 0.053                                       | 17           |                            |                            |

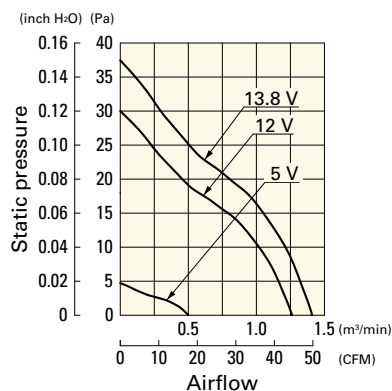
Note 1: Sensor and control options are available for selection. Refer to the table on p. 617.

Note 2: The  mark indicates Short LeadTime Service applicable models. See p. 630 for details.

## Airflow - Static Pressure Characteristics

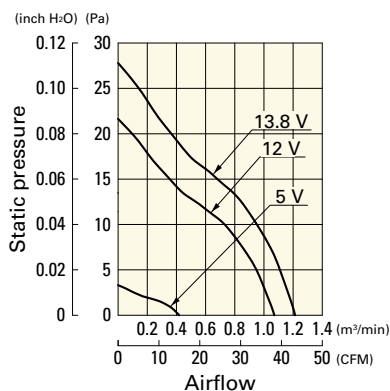
**9S0912F401** With pulse sensor

Operating voltage range



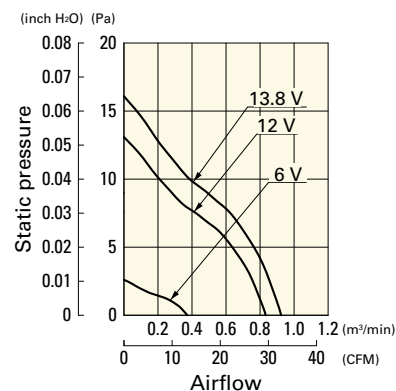
**9S0912M401** With pulse sensor

Operating voltage range



**9S0912L401** With pulse sensor

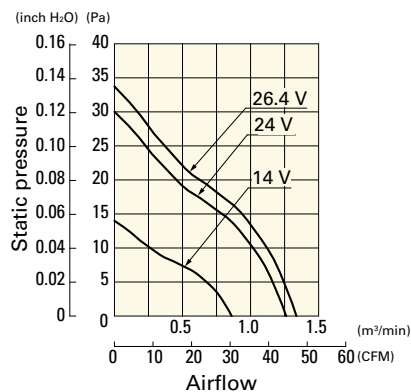
Operating voltage range



## Airflow - Static Pressure Characteristics

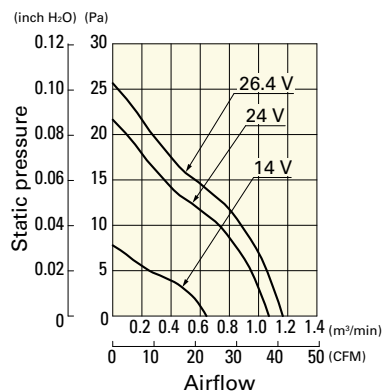
**9S0924F401** With pulse sensor

Operating voltage range



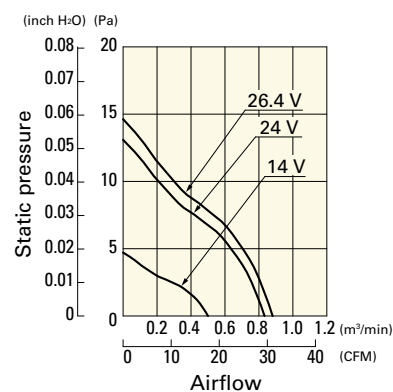
**9S0924M401** With pulse sensor

Operating voltage range

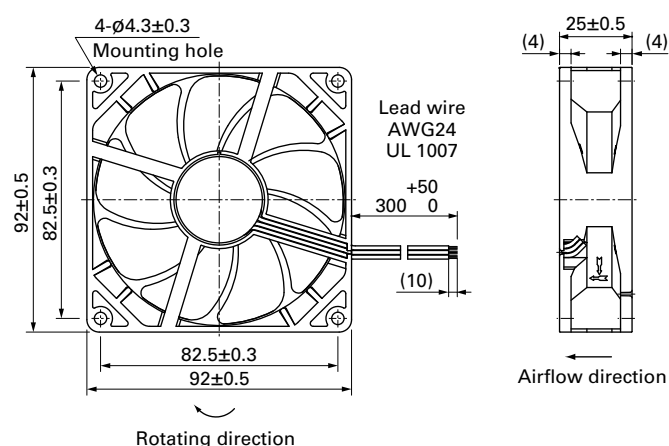


**9S0924L401** With pulse sensor

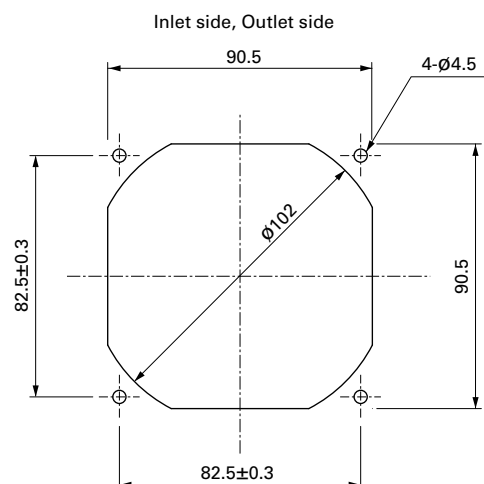
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

# 92×92×32 mm

**San Ace 92 9G type**


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue ☐Sensor ☐Yellow
- Mass ..... 170 g

## Specifications

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

|    | Model no.  | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----|------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| ▶▶ | 9G0912A201 | 12                   | 10.2 to 13.8                   | 0.58                 | 6.96               | 4300                                | 2.5 88.3                       | 115 0.462                                           | 44              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
| ▶▶ | 9G0912S201 |                      |                                | 0.38                 | 4.56               | 3500                                | 2.0 70.7                       | 77 0.309                                            | 38              |                               |                            |
| ▶▶ | 9G0912H201 |                      |                                | 0.23                 | 2.76               | 2850                                | 1.59 56.2                      | 51 0.205                                            | 32              |                               |                            |
| ▶▶ | 9G0912M201 |                      |                                | 0.13                 | 1.56               | 2100                                | 1.2 42.4                       | 27 0.108                                            | 25              |                               |                            |
| ▶▶ | 9G0924A201 | 24                   | 20.4 to 27.6                   | 0.3                  | 7.2                | 4300                                | 2.5 88.3                       | 115 0.462                                           | 44              | -20 to +60                    |                            |
| ▶▶ | 9G0924S201 |                      |                                | 0.19                 | 4.56               | 3500                                | 2.0 70.7                       | 77 0.309                                            | 38              |                               |                            |
| ▶▶ | 9G0924H201 |                      |                                | 0.12                 | 2.88               | 2850                                | 1.59 56.2                      | 51 0.205                                            | 32              |                               |                            |
| ▶▶ | 9G0924M201 |                      |                                | 0.08                 | 1.92               | 2100                                | 1.2 42.4                       | 27 0.108                                            | 25              |                               |                            |
| ▶▶ | 9G0948A201 | 48                   | 40.8 to 55.2                   | 0.16                 | 7.68               | 4300                                | 2.5 88.3                       | 115 0.462                                           | 44              |                               |                            |
|    | 9G0948S201 |                      |                                | 0.11                 | 5.28               | 3500                                | 2.0 70.7                       | 77 0.309                                            | 38              |                               |                            |
|    | 9G0948H201 |                      |                                | 0.08                 | 3.84               | 2850                                | 1.59 56.2                      | 51 0.205                                            | 32              |                               |                            |
|    | 9G0948M201 |                      |                                | 0.05                 | 2.4                | 2100                                | 1.2 42.4                       | 27 0.108                                            | 25              |                               |                            |

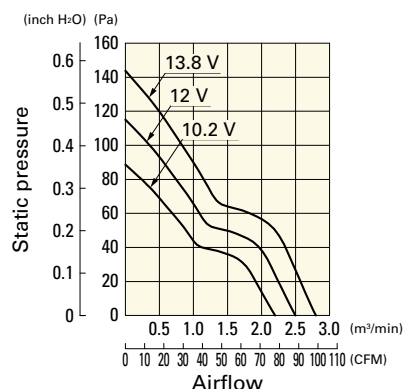
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 605 to 606.

Note 2: The ☞ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

## Airflow - Static Pressure Characteristics

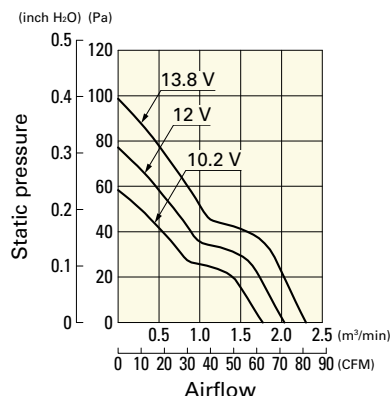
### 9G0912A201 With pulse sensor

Operating voltage range



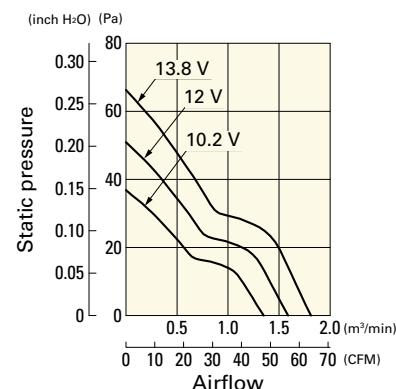
### 9G0912S201 With pulse sensor

Operating voltage range



### 9G0912H201 With pulse sensor

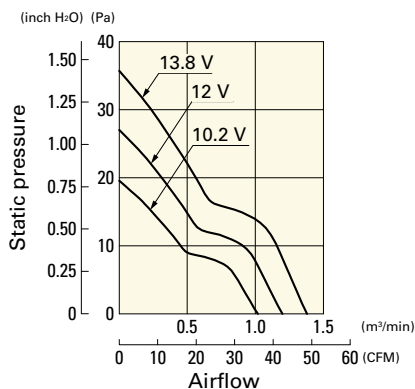
Operating voltage range



## Airflow - Static Pressure Characteristics

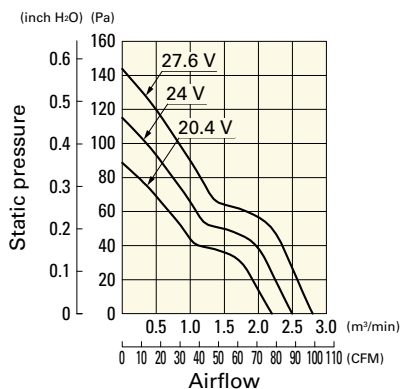
**9G0912M201** With pulse sensor

Operating voltage range



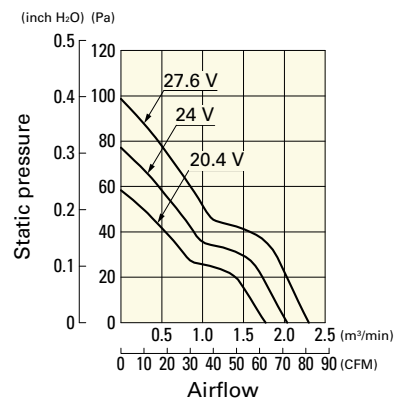
**9G0924A201** With pulse sensor

Operating voltage range



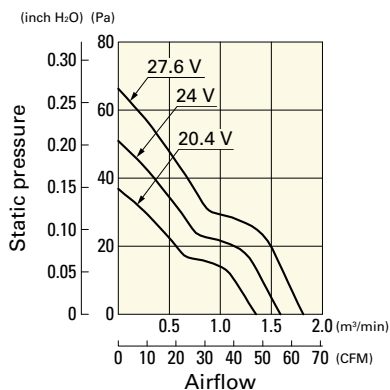
**9G0924S201** With pulse sensor

Operating voltage range



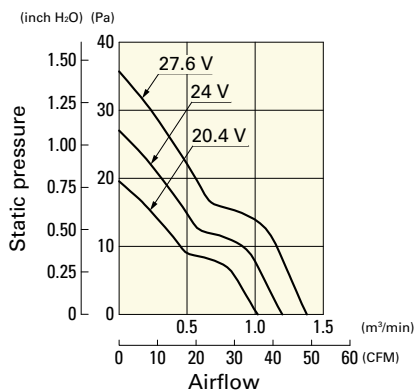
**9G0924H201** With pulse sensor

Operating voltage range



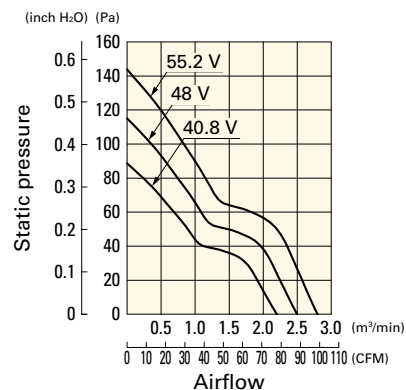
**9G0924M201** With pulse sensor

Operating voltage range



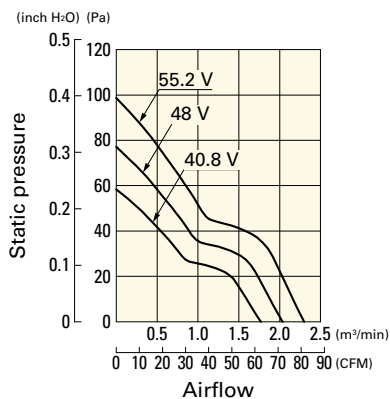
**9G0948A201** With pulse sensor

Operating voltage range



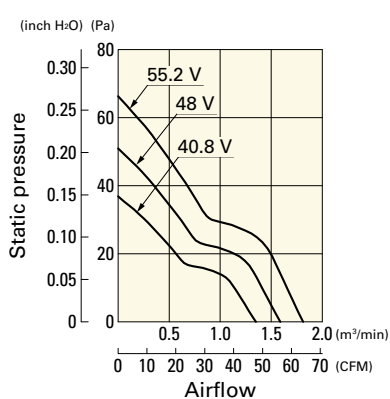
**9G0948S201** With pulse sensor

Operating voltage range



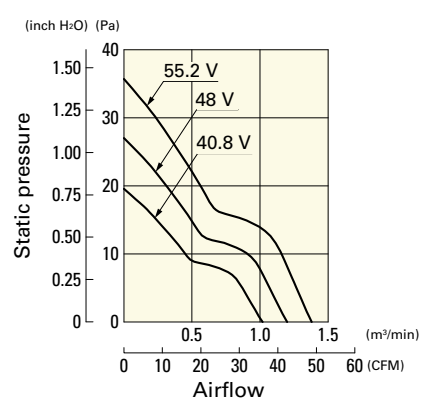
**9G0948H201** With pulse sensor

Operating voltage range

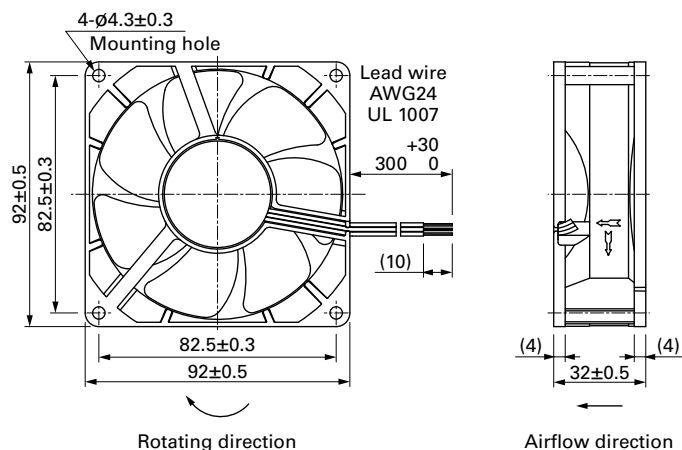


**9G0948M201** With pulse sensor

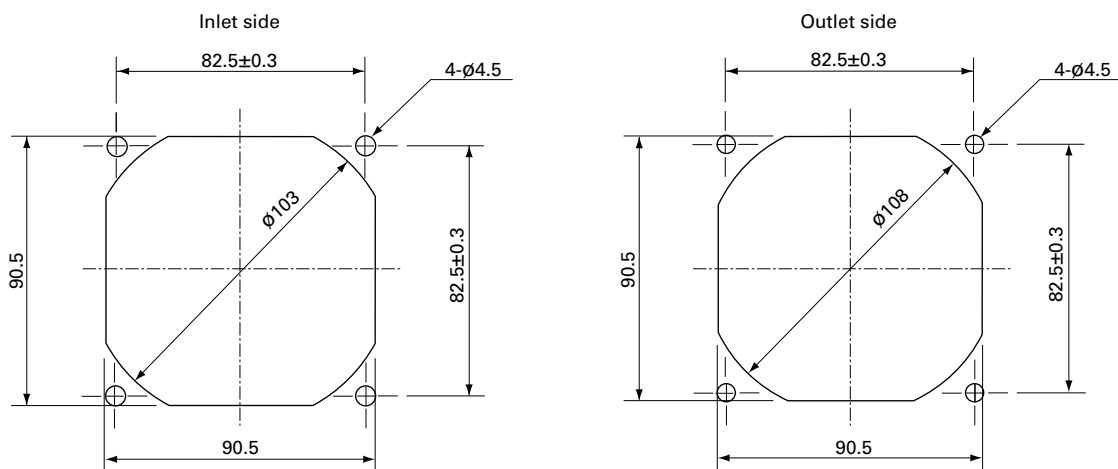
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

# DC Fan

# 92×92×38 mm

San Ace 92 9HV type    



## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 250 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9HV0912P1G001 | 12                | 8 to 12.6                   | 100                 | 5.2               | 62.4            | 14900                            | 5.1 180                                  | 1100 4.42                                        | 72           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                 |                   |                             | 0                   | 0.8               | 9.6             | 4500                             | 1.54 54.4                                | 160 0.64                                         | 44           |                            |                            |
| 9HV0924P1G001   | 24                | 20.4 to 27.6                | 100                 | 2.50              | 60.0            | 14900                            | 5.1 180                                  | 1100 4.42                                        | 72           |                            |                            |
|                 |                   |                             | 0                   | 0.34              | 8.16            | 4500                             | 1.54 54.4                                | 160 0.64                                         | 44           |                            |                            |
| » 9HV0948P1G001 | 48                | 36 to 60                    | 100                 | 1.2               | 57.6            | 14900                            | 5.1 180                                  | 1100 4.42                                        | 72           |                            |                            |
|                 |                   |                             | 0                   | 0.15              | 7.2             | 4500                             | 1.54 54.4                                | 160 0.64                                         | 44           |                            |                            |

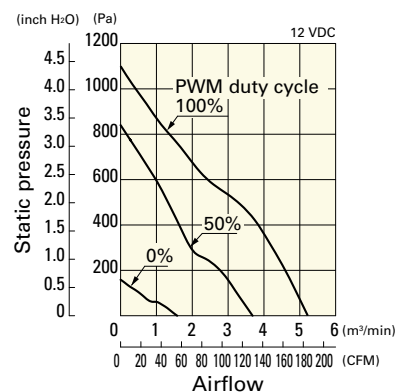
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

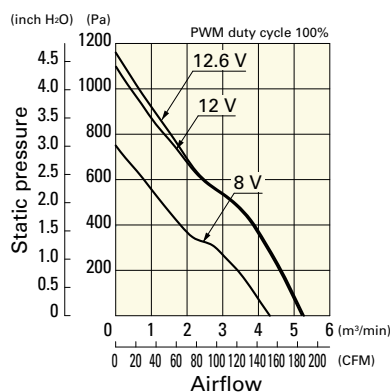
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0912P1G001** With pulse sensor with PWM control function

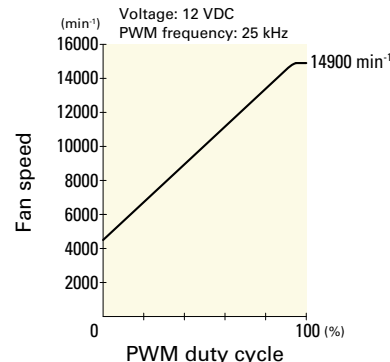
PWM duty cycle



Operating voltage range



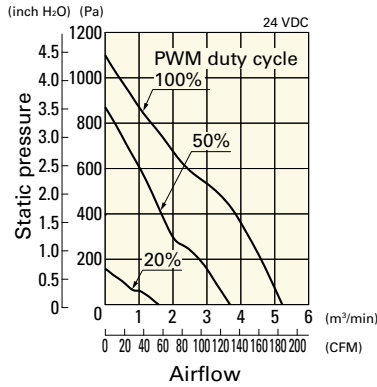
PWM duty - Speed characteristics example



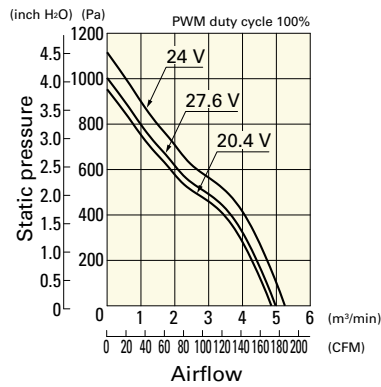
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV0924P1G001** With pulse sensor with PWM control function

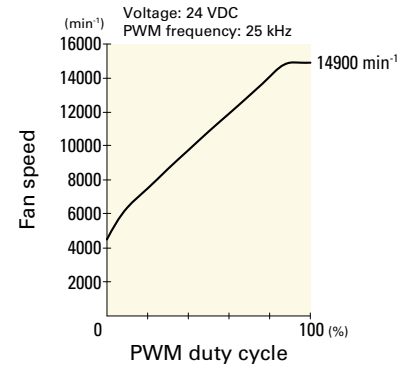
PWM duty cycle



Operating voltage range

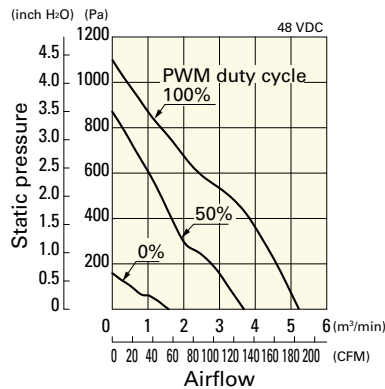


PWM duty - Speed characteristics example

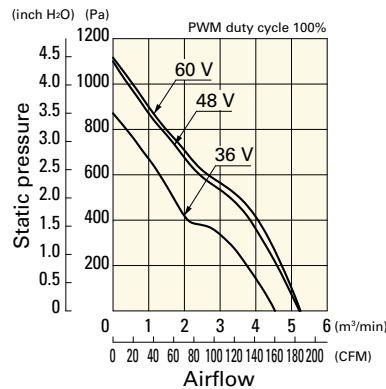


**9HV0948P1G001** With pulse sensor with PWM control function

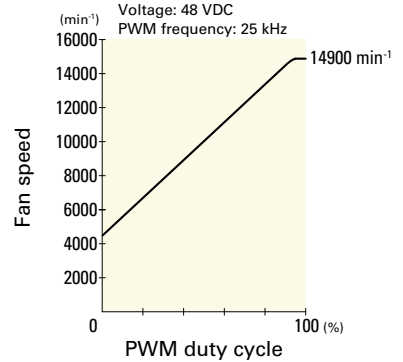
PWM duty cycle



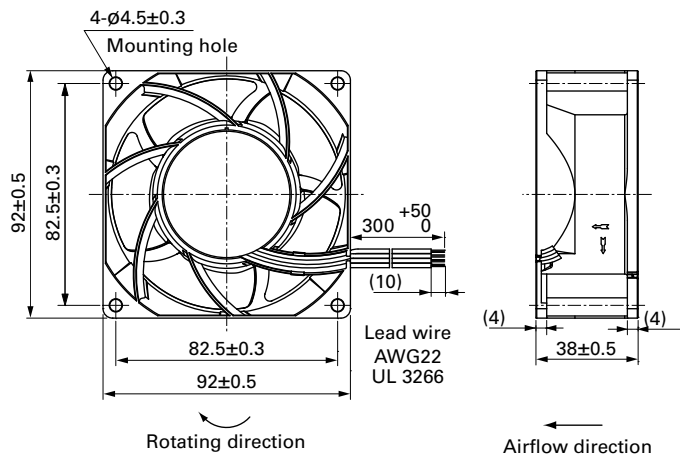
Operating voltage range



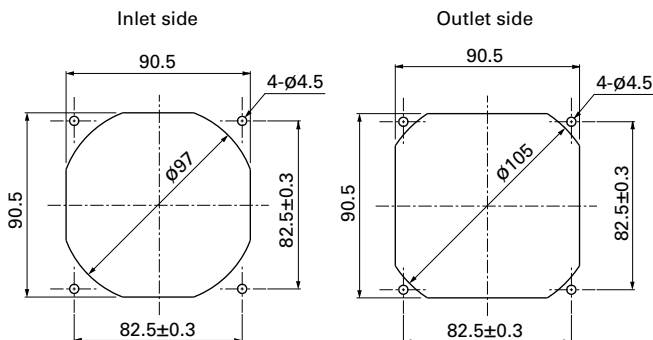
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)



# 92×92×38 mm

**San Ace 92 9GA** type Low Power Consumption Fan 


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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 ..... 240 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9GA0912P1H03 | 12                | 10.2 to 13.8                | 100                | 2.1               | 25.2            | 9700                             | 4.0 141                                  | 500 2.01                                         | 63           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                |                   |                             | 0                  | 0.16              | 1.92            | 2500                             | 0.97 34.3                                | 33 0.13                                          | 29           | -20 to +70                 |                            |
| » 9GA0924P1H01 | 24                | 20.4 to 27.6                | 100                | 1.1               | 26.4            | 9700                             | 4.0 141                                  | 500 2.01                                         | 63           | -10 to +70                 |                            |
|                |                   |                             | 0                  | 0.07              | 1.68            | 2500                             | 0.97 34.3                                | 33 0.13                                          | 29           | -10 to +70                 |                            |
| » 9GA0948P1H03 | 48                | 40.8 to 55.2                | 100                | 0.55              | 26.4            | 9700                             | 4.0 141                                  | 500 2.01                                         | 63           | -20 to +70                 |                            |

\* 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.

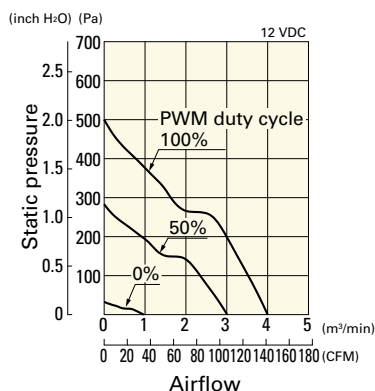
Note 1: Sensor and control options are available for selection. Refer to the table on pp. 609 to 610.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

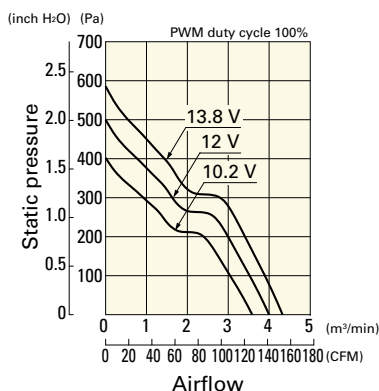
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0912P1H03** With pulse sensor with PWM control function

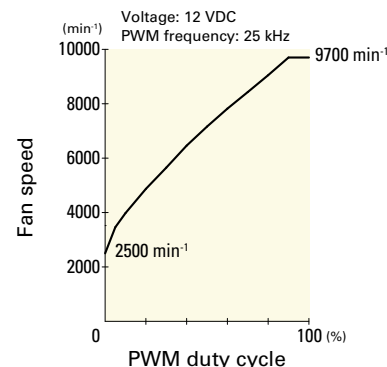
PWM duty cycle



Operating voltage range



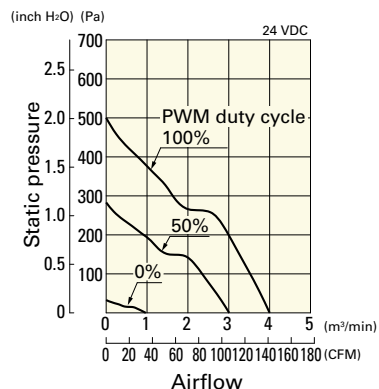
PWM duty - Speed characteristics example



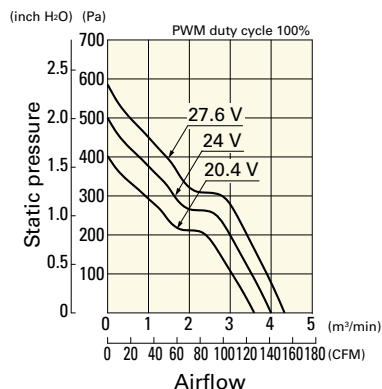
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA0924P1H01** With pulse sensor with PWM control function

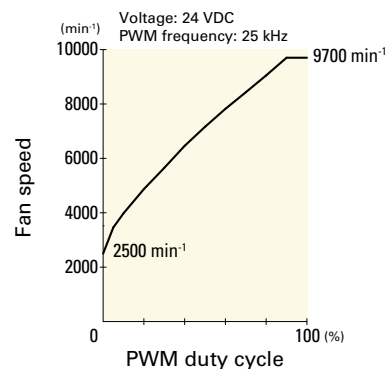
PWM duty cycle



Operating voltage range

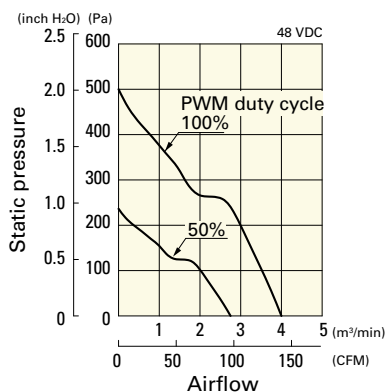


PWM duty - Speed characteristics example

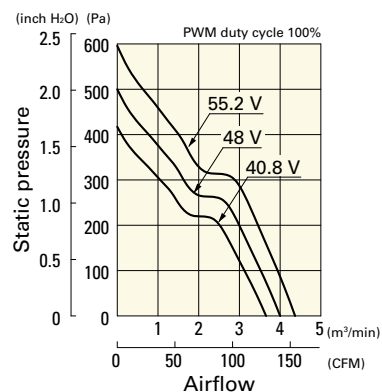


**9GA0948P1H03** With pulse sensor with PWM control function

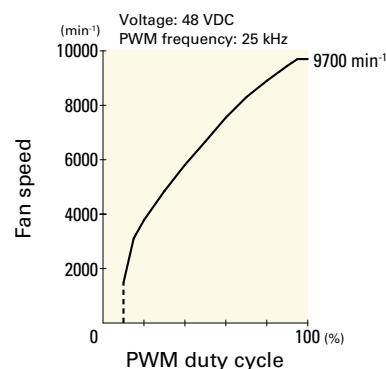
PWM duty cycle



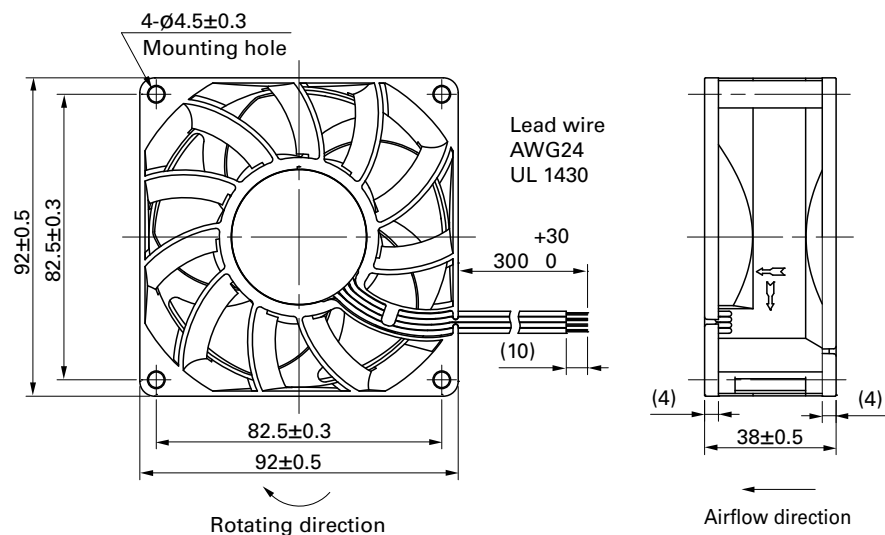
Operating voltage range



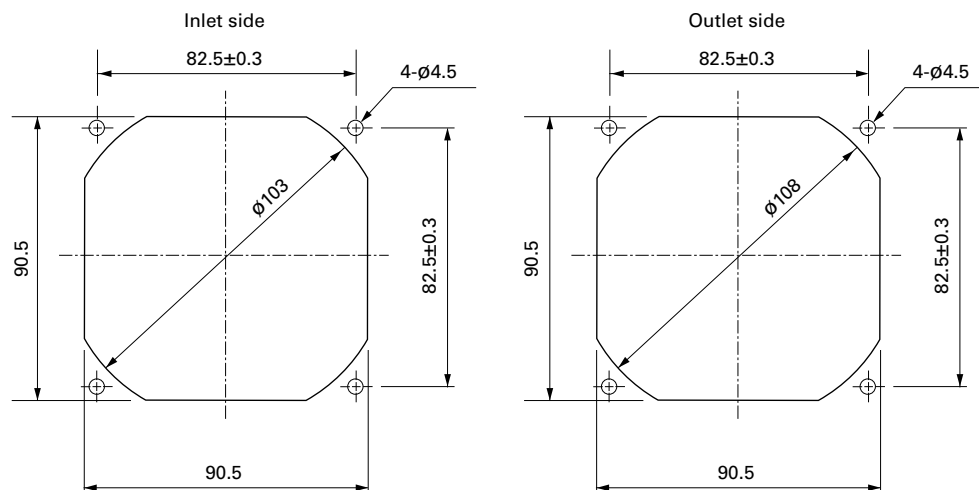
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

## DC Fan

# 92×92×38 mm

## San Ace 92 9GV type



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 250 g

### 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |       | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|--------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-------|-----------------------------------------------------|------|-----------------|-------------------------------|----------------------------|
| 9GV0912P1G03 | 12                   | 10.8 to 13.2                   | 100                   | 4.1                  | 49.2               | 9000                                | 5.35                           | 189.0 | 430.0                                               | 1.73 | 68              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
| 0            |                      |                                | 0.33                  | 4.0                  | 2900               | 1.72                                | 60.8                           | 44.6  | 0.18                                                | 37   |                 |                               |                            |
| 9GV0912P1H03 |                      | 10.2 to 13.8                   | 100                   | 3.5                  | 42.0               | 8500                                | 5.05                           | 178.0 | 385.0                                               | 1.55 | 64              |                               |                            |
|              |                      |                                | 0                     | 0.29                 | 3.5                | 2700                                | 1.6                            | 56.5  | 38.8                                                | 0.16 | 34              |                               |                            |
| 9GV0912P1F03 |                      |                                | 100                   | 1.9                  | 22.8               | 7000                                | 4.15                           | 146.6 | 261                                                 | 1.05 | 59              | -10 to +70                    |                            |
|              |                      |                                | 0                     | 0.16                 | 1.92               | 2200                                | 1.3                            | 45.9  | 25.7                                                | 0.1  | 31              |                               |                            |
| 9GV0948P1H03 | 48                   | 40.8 to 55.2                   | 100                   | 0.82                 | 39.4               | 8500                                | 5.05                           | 178.0 | 385.0                                               | 1.55 | 64              | -20 to +70                    |                            |
| 0            |                      |                                | 0.14                  | 6.7                  | 4000               | 2.37                                | 83.7                           | 85.2  | 0.34                                                | 45   |                 |                               |                            |
| 9GV0948P1F03 |                      |                                | 100                   | 0.48                 | 23.04              | 7000                                | 4.15                           | 146.6 | 261                                                 | 1.05 | 59              | -10 to +70                    |                            |
|              |                      |                                | 0                     | 0.12                 | 5.76               | 3500                                | 2.07                           | 73.1  | 65.2                                                | 0.26 | 42              |                               |                            |

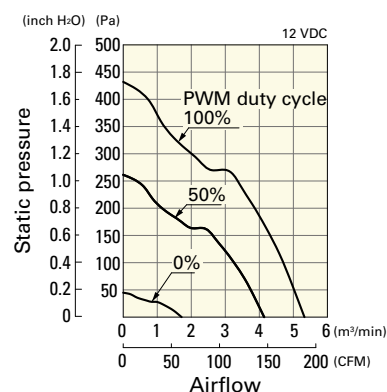
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on p. 611.

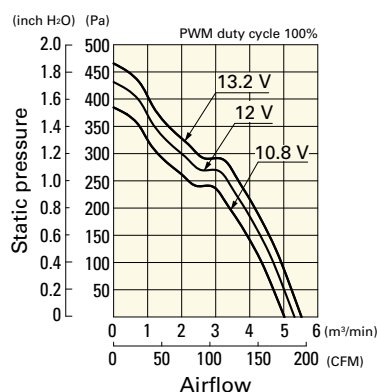
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV0912P1G03** With pulse sensor with PWM control function

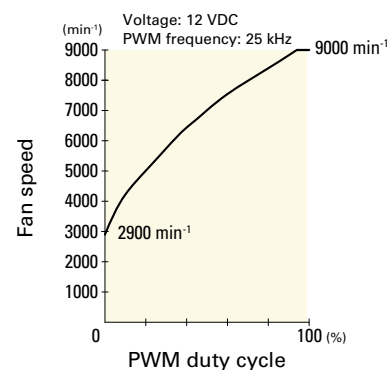
PWM duty cycle



Operating voltage range



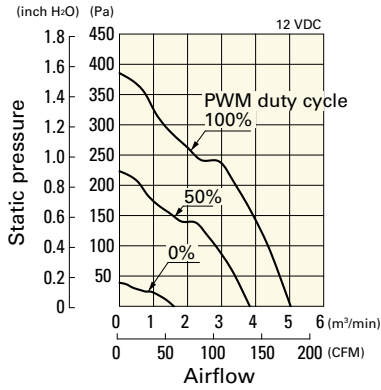
PWM duty - Speed characteristics example



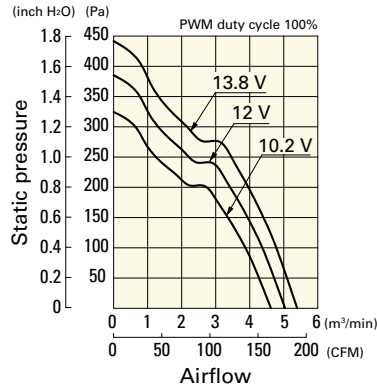
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV0912P1H03** With pulse sensor with PWM control function

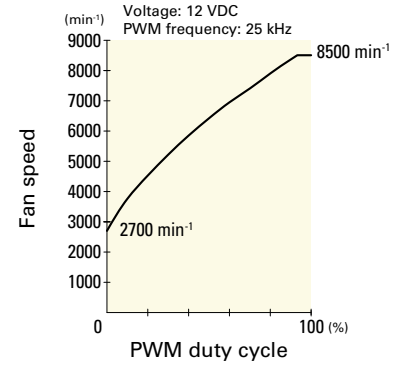
PWM duty cycle



Operating voltage range

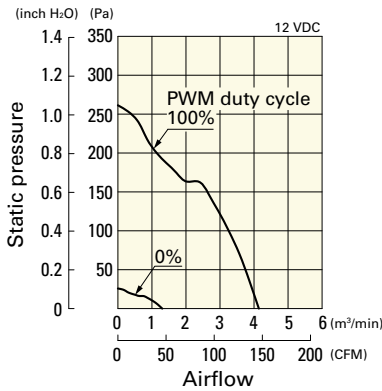


PWM duty - Speed characteristics example

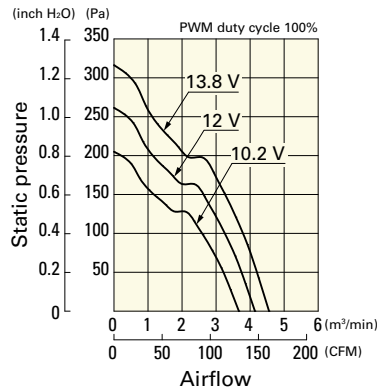


**9GV0912P1F03** With pulse sensor with PWM control function

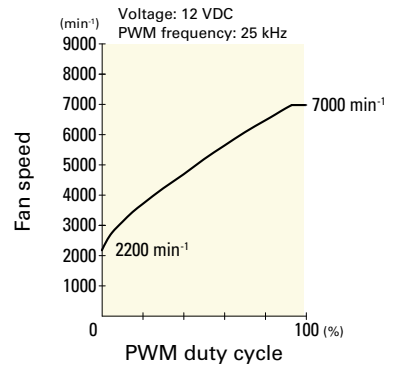
PWM duty cycle



Operating voltage range

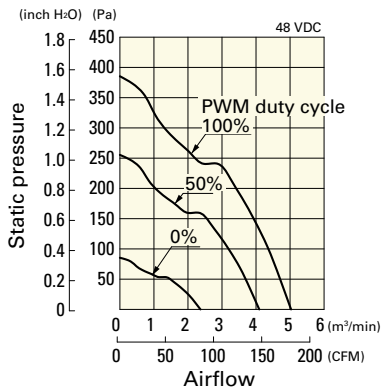


PWM duty - Speed characteristics example

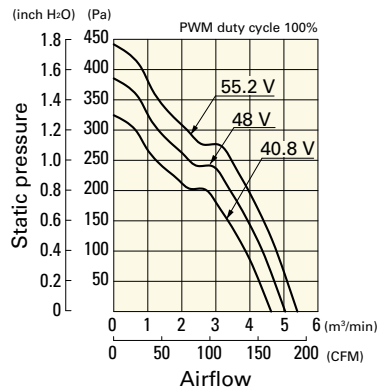


**9GV0948P1H03** With pulse sensor with PWM control function

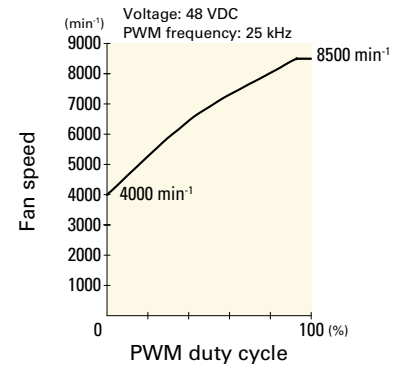
PWM duty cycle



Operating voltage range

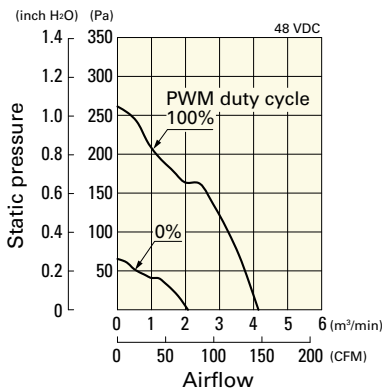


PWM duty - Speed characteristics example

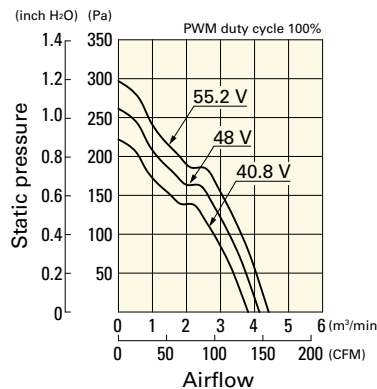


**9GV0948P1F03** With pulse sensor with PWM control function

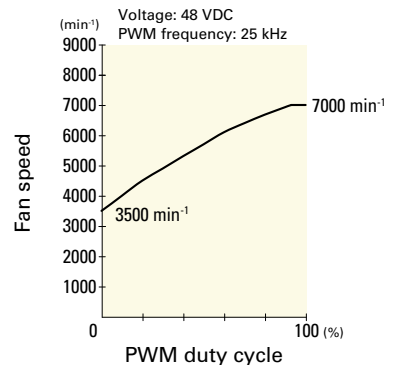
PWM duty cycle



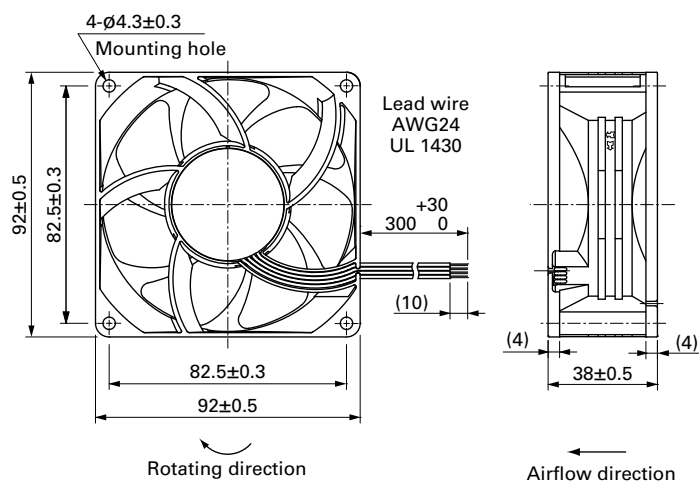
Operating voltage range



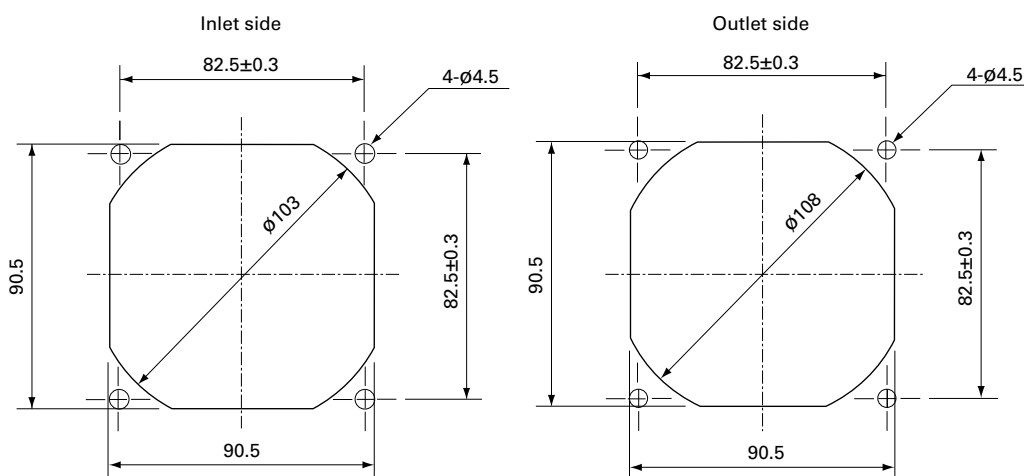
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)

# 92×92×38 mm

**San Ace 92 9G type**


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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
- Mass ..... 180 g

## Specifications

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

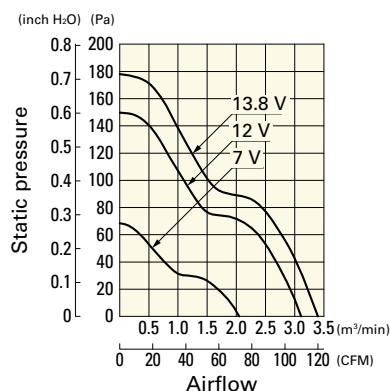
| Model no.  | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| 9G0912G101 | 12                   | 7.0 to 13.8                    | 1.1                  | 13.2               | 5000                                | 3.1 110                                     | 150 0.602                                           | 50              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |
| 9G0912H101 |                      |                                | 0.58                 | 6.96               | 4000                                | 2.54 90                                     | 100 0.402                                           | 43              |                               |                            |
| 9G0924G101 | 24                   | 20.4 to 27.6                   | 0.55                 | 13.2               | 5000                                | 3.1 110                                     | 150 0.602                                           | 50              |                               |                            |
| 9G0924H101 |                      |                                | 0.3                  | 7.2                | 4000                                | 2.54 90                                     | 100 0.402                                           | 43              |                               |                            |
| 9G0948G101 | 48                   | 40.8 to 55.2                   | 0.27                 | 12.96              | 5000                                | 3.1 110                                     | 150 0.602                                           | 50              |                               |                            |
| 9G0948H101 |                      |                                | 0.16                 | 7.68               | 4000                                | 2.54 90                                     | 100 0.402                                           | 43              |                               |                            |

Note: Sensor and control options are available for selection. Refer to the table on pp. 605 to 606.

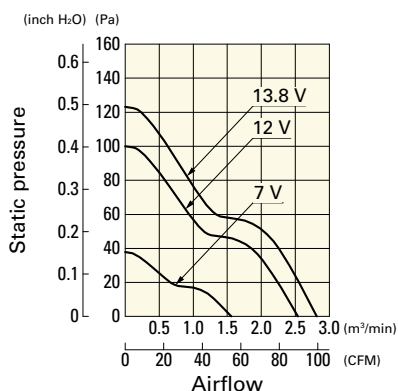
## Airflow - Static Pressure Characteristics

**9G0912G101** With pulse sensor

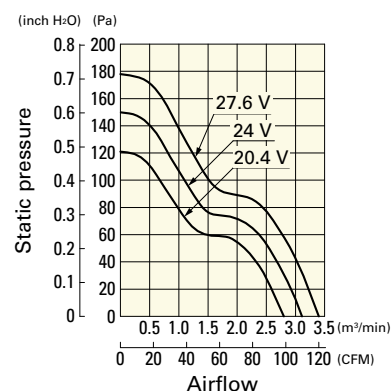
Operating voltage range


**9G0912H101** With pulse sensor

Operating voltage range


**9G0924G101** With pulse sensor

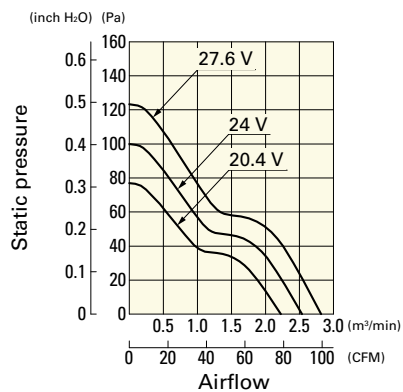
Operating voltage range



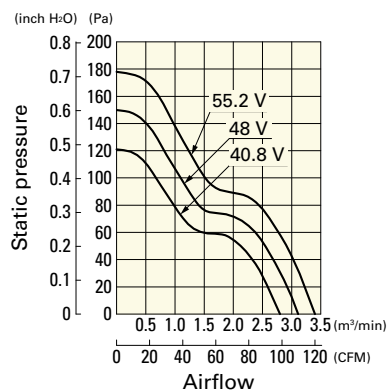
## Airflow - Static Pressure Characteristics

**9G0924H101** With pulse sensor

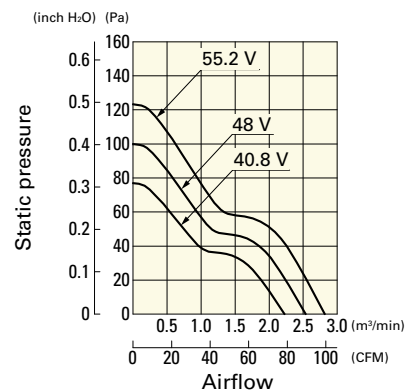
Operating voltage range


**9G0948G101** With pulse sensor

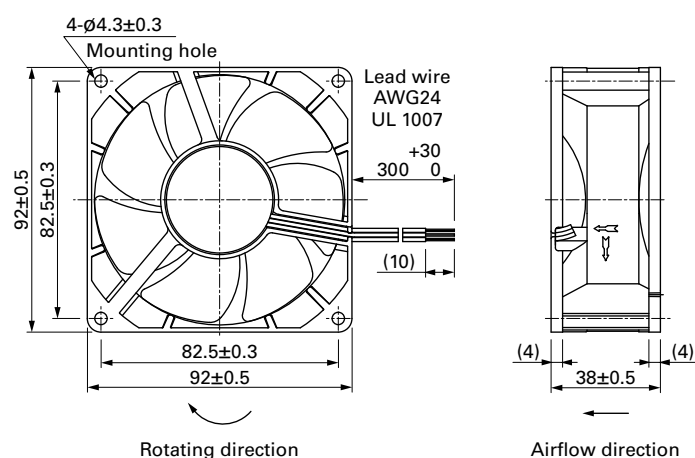
Operating voltage range


**9G0948H101** With pulse sensor

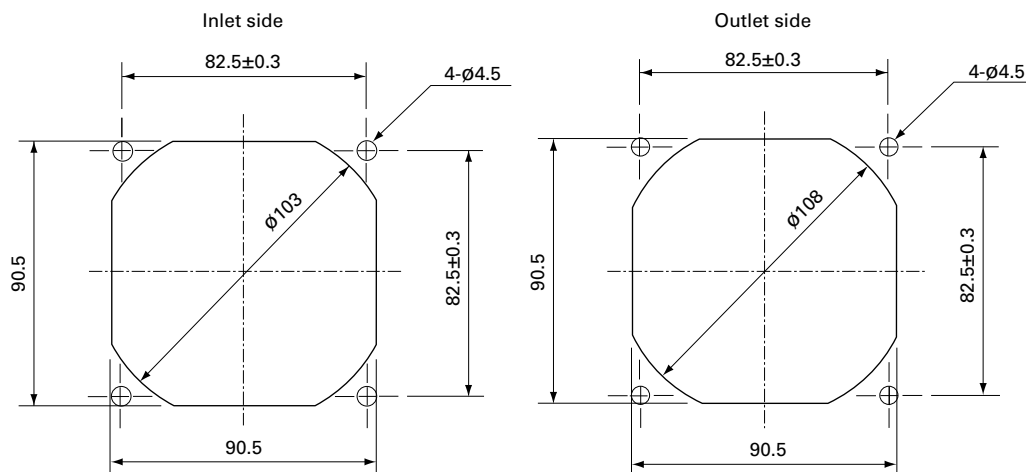
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 564

Model no.: 109-099E, 109-099H, 109-099C

### Resin finger guards

page: p. 571

Model no.: 109-1001G

### Resin filter kits

page: p. 572

Model no.: 109-1001F13 (13PPI), 109-1001F20 (20PPI),  
109-1001F30 (30PPI), 109-1001F40 (40PPI)





# 120×120×25 mm

**San Ace 120 9GA type** Low Power Consumption Fan  **us**

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 280 g

## 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|-----------------|----------------------|--------------------------------|-----------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9GA1212P4G001 | 12                   | 10.2 to 13.8                   | 100                   | 0.93                 | 11.16              | 6400                                | 3.8 134                        | 365 1.47                                            | 57              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|                 |                      |                                | 25                    | 0.16                 | 1.92               | 2550                                | 1.5 53                         | 60 0.24                                             | 34              |                               |                            |
| » 9GA1212P4S001 |                      |                                | 100                   | 0.61                 | 7.32               | 5400                                | 3.2 113                        | 260 1.04                                            | 54              |                               |                            |
|                 |                      |                                | 25                    | 0.16                 | 1.92               | 2550                                | 1.5 53                         | 60 0.24                                             | 34              |                               |                            |
| » 9GA1224P4G001 | 24                   | 20.4 to 27.6                   | 100                   | 0.47                 | 11.28              | 6400                                | 3.8 134                        | 365 1.47                                            | 57              |                               |                            |
|                 |                      |                                | 25                    | 0.1                  | 2.4                | 2550                                | 1.5 53                         | 60 0.24                                             | 34              |                               |                            |
| » 9GA1224P4S001 |                      |                                | 100                   | 0.31                 | 7.44               | 5400                                | 3.2 113                        | 260 1.04                                            | 54              |                               |                            |
|                 |                      |                                | 25                    | 0.1                  | 2.4                | 2550                                | 1.5 53                         | 60 0.24                                             | 34              |                               |                            |
| » 9GA1248P4G001 | 48                   | 40.8 to 53                     | 100                   | 0.24                 | 11.52              | 6400                                | 3.8 134                        | 365 1.47                                            | 57              |                               |                            |
|                 |                      |                                | 25                    | 0.08                 | 3.84               | 2550                                | 1.5 53                         | 60 0.24                                             | 34              |                               |                            |
| » 9GA1248P4S001 |                      |                                | 100                   | 0.16                 | 7.68               | 5400                                | 3.2 113                        | 260 1.04                                            | 54              |                               |                            |
|                 |                      |                                | 25                    | 0.08                 | 3.84               | 2550                                | 1.5 53                         | 60 0.24                                             | 34              |                               |                            |

\* 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.

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

| Model no.      | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| » 9GA1212G4001 | 12                   | 7 to 13.8                      | 0.93                 | 11.16              | 6400                                | 3.8 134                        | 365 1.47                                            | 57              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
| » 9GA1212S4001 |                      |                                | 0.61                 | 7.32               | 5400                                | 3.2 113                        | 260 1.04                                            | 54              |                               |                            |
| » 9GA1224G4001 | 24                   | 14 to 27.6                     | 0.47                 | 11.28              | 6400                                | 3.8 134                        | 365 1.47                                            | 57              |                               |                            |
| » 9GA1224S4001 |                      |                                | 0.31                 | 7.44               | 5400                                | 3.2 113                        | 260 1.04                                            | 54              |                               |                            |
| » 9GA1248G4001 | 48                   | 36 to 53                       | 0.24                 | 11.52              | 6400                                | 3.8 134                        | 365 1.47                                            | 57              |                               |                            |
| » 9GA1248S4001 |                      |                                | 0.16                 | 7.68               | 5400                                | 3.2 113                        | 260 1.04                                            | 54              |                               |                            |

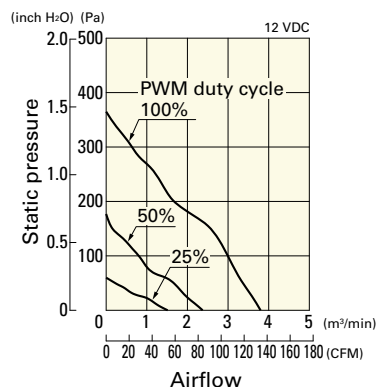
Note 1: Sensor and control options are available for selection. Refer to the table on p. 610.

Note 2: The » mark indicates Short Lead Time Service applicable models. See p. 630 for details.

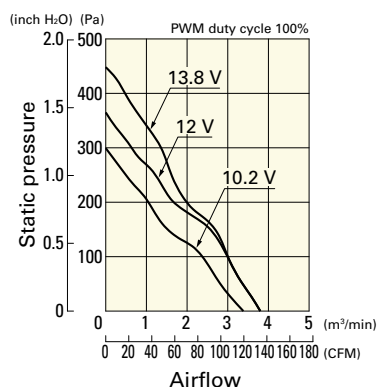
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

### 9GA1212P4G001 With pulse sensor with PWM control function

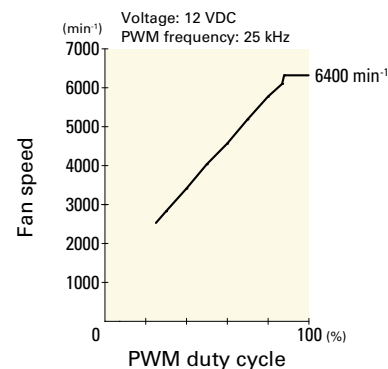
PWM duty cycle



Operating voltage range

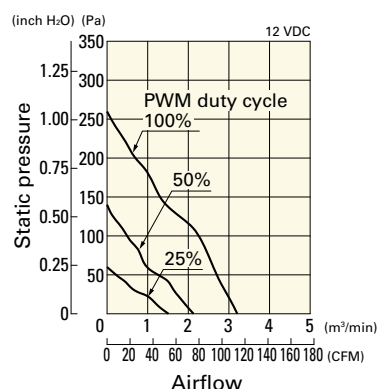


PWM duty - Speed characteristics example

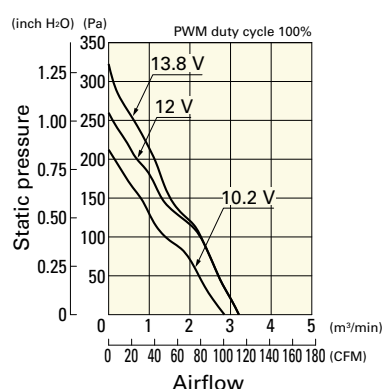


### 9GA1212P4S001 With pulse sensor with PWM control function

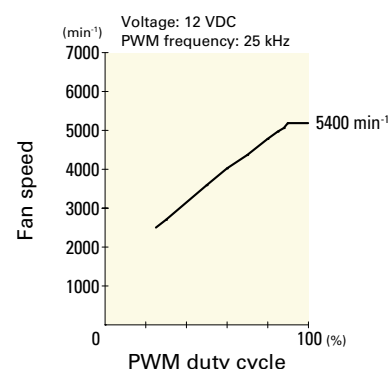
PWM duty cycle



Operating voltage range

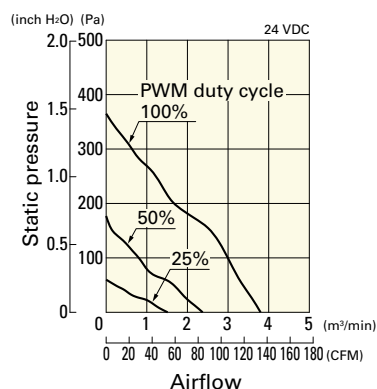


PWM duty - Speed characteristics example

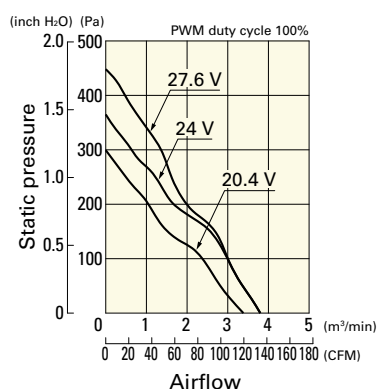


### 9GA1224P4G001 With pulse sensor with PWM control function

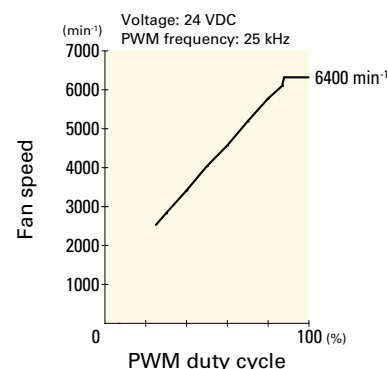
PWM duty cycle



Operating voltage range

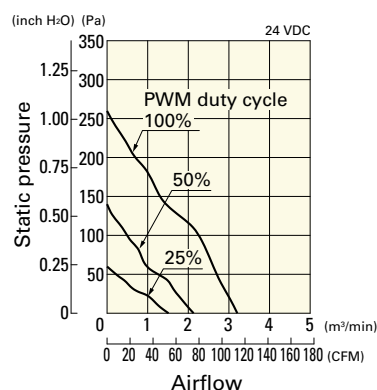


PWM duty - Speed characteristics example

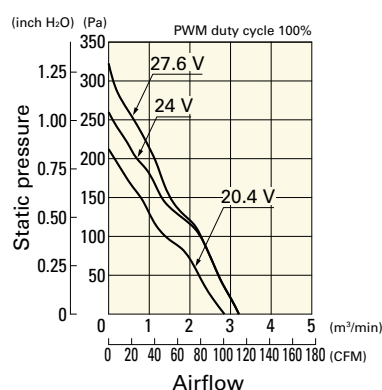


### 9GA1224P4S001 With pulse sensor with PWM control function

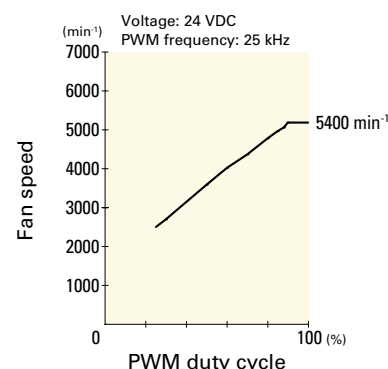
PWM duty cycle



Operating voltage range



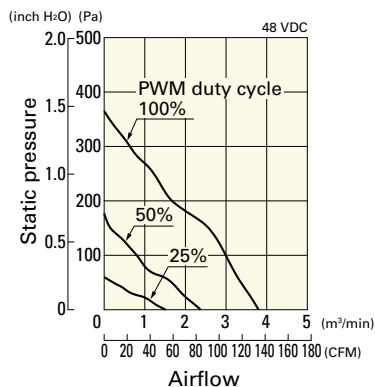
PWM duty - Speed characteristics example



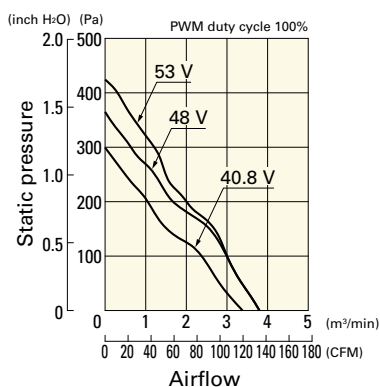
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GA1248P4G001** With pulse sensor with PWM control function

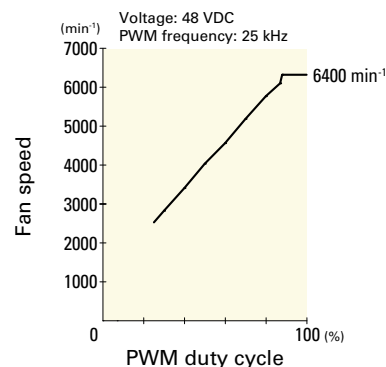
PWM duty cycle



Operating voltage range

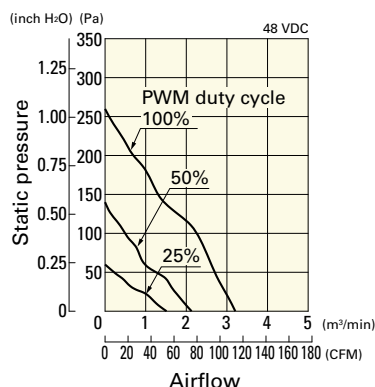


PWM duty - Speed characteristics example

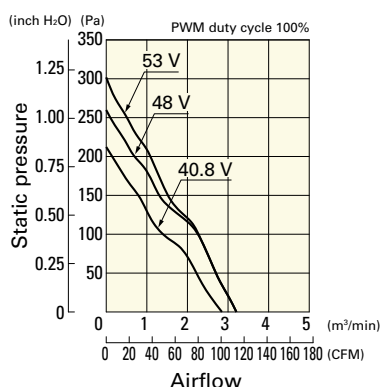


**9GA1248P4S001** With pulse sensor with PWM control function

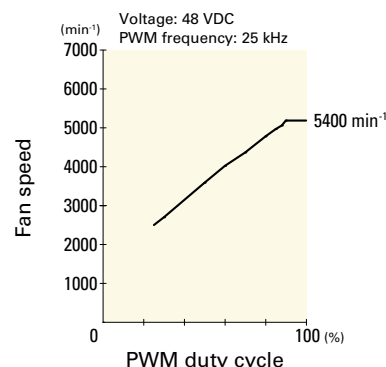
PWM duty cycle



Operating voltage range



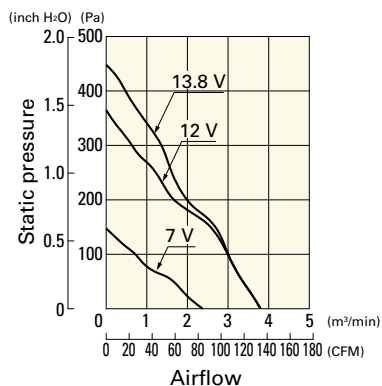
PWM duty - Speed characteristics example



## Airflow - Static Pressure Characteristics

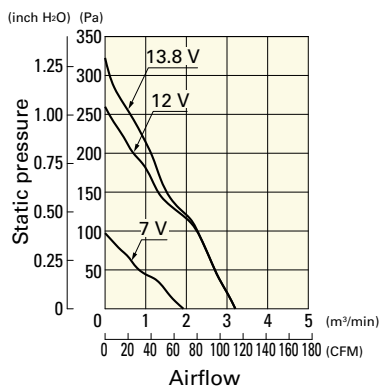
**9GA1212G4001** With pulse sensor

Operating voltage range



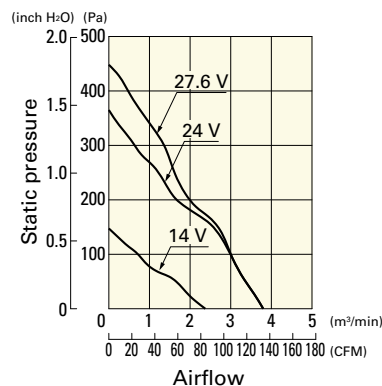
**9GA1212S4001** With pulse sensor

Operating voltage range



**9GA1224G4001** With pulse sensor

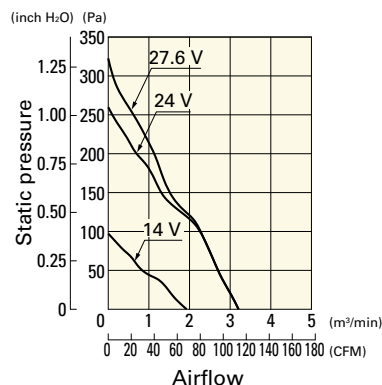
Operating voltage range



## Airflow - Static Pressure Characteristics

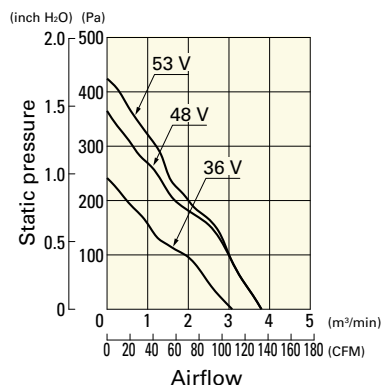
**9GA1224S4001** With pulse sensor

Operating voltage range



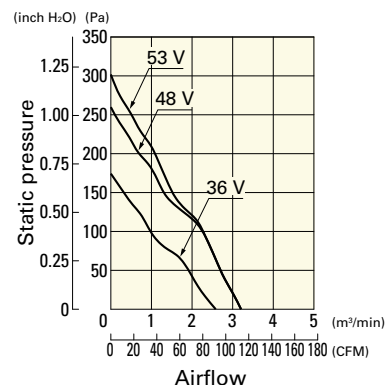
**9GA1248G4001** With pulse sensor

Operating voltage range

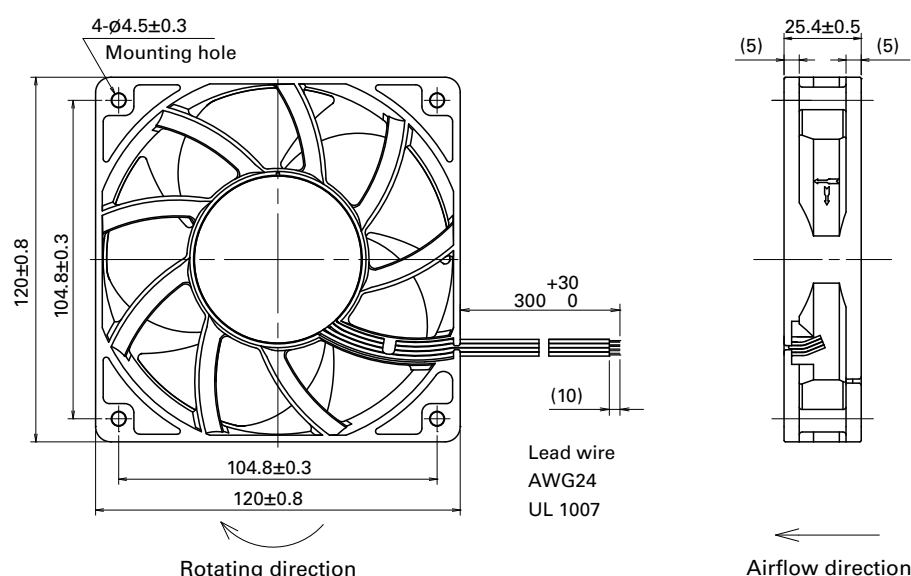


**9GA1248S4001** With pulse sensor

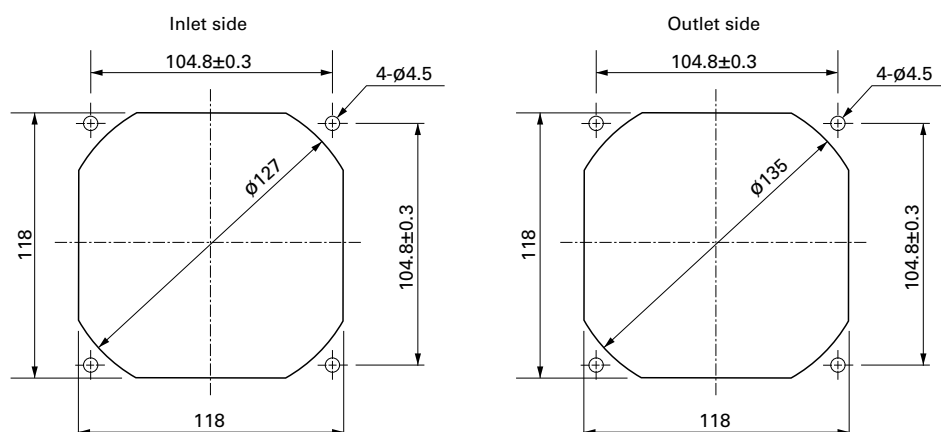
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI), 109-1000F30 (30PPI), 109-1000F40 (40PPI)



# 120×120×25 mm

**San Ace 120 9GV** type   

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 260 g

## 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<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle <sup>1</sup> [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |      | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|--------------|----------------------|--------------------------------|------------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|------|-----------------------------------------------------|------|-----------------|-------------------------------|----------------------------|
| 9GV1212P4G01 | 12                   | 10.2 to 13.8                   | 100                                | 1.68                 | 20.16              | 5100                                | 4.83                           | 171  | 224                                                 | 0.9  | 58              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|              |                      |                                | 0                                  | 0.18                 | 2.16               | 1650                                | 1.56                           | 55.1 | 23.5                                                | 0.09 | 30              |                               |                            |
| 9GV1224P4G01 | 24                   | 20.4 to 27.6                   | 100                                | 0.84                 | 20.16              | 5100                                | 4.83                           | 171  | 224                                                 | 0.9  | 58              |                               |                            |
|              |                      |                                | 0                                  | 0.13                 | 3.12               | 1650                                | 1.56                           | 55.1 | 23.5                                                | 0.09 | 30              |                               |                            |
| 9GV1248P4J01 | 48                   | 40.8 to 55.2                   | 100                                | 0.5                  | 24.0               | 5400                                | 5.11                           | 180  | 251                                                 | 1.01 | 59              |                               |                            |
|              |                      |                                | 0                                  | 0.15                 | 7.2                | 3000                                | 2.84                           | 100  | 77.5                                                | 0.31 | 47              |                               |                            |
| 40.8 to 60.0 |                      | 100                            | 0.42                               | 20.16                | 5100               | 4.83                                | 171                            | 224  | 0.9                                                 | 58   |                 |                               |                            |
|              |                      | 0                              | 0.07                               | 3.36                 | 1650               | 1.56                                | 55.1                           | 23.5 | 0.09                                                | 30   |                 |                               |                            |
|              |                      | 9GV1248P4G01                   | 100                                | 0.33                 | 15.84              | 4600                                | 4.35                           | 154  | 182                                                 | 0.73 | 55              |                               |                            |
|              |                      |                                | 0                                  | 0.07                 | 3.36               | 1650                                | 1.56                           | 55.1 | 23.5                                                | 0.09 | 30              |                               |                            |
| 9GV1248P4H01 |                      |                                |                                    |                      |                    |                                     |                                |      |                                                     |      |                 |                               |                            |

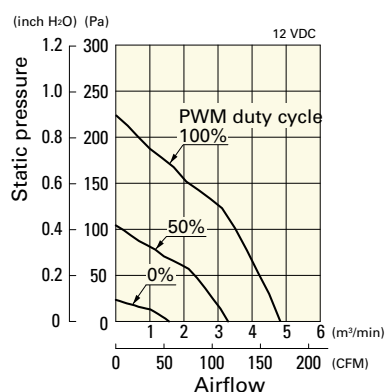
\* PWM frequency is 25 kHz. Models without ratings for 0% PWM duty cycle have zero speed at 0%. When control terminal is open, speed is the same as at 100% duty cycle.

Note: Sensor and control options are available for selection. Refer to the table on pp. 611 to 612.

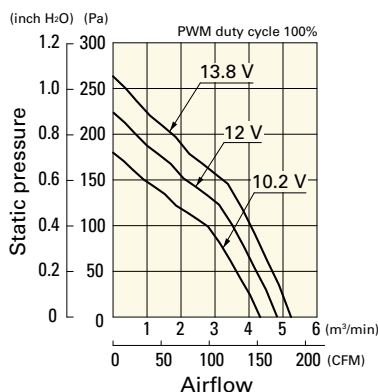
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1212P4G01** With pulse sensor with PWM control function

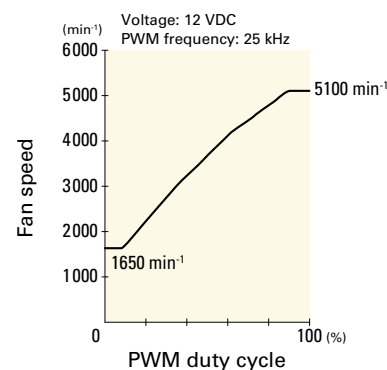
PWM duty cycle



Operating voltage range



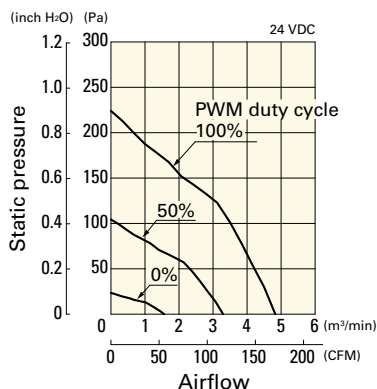
PWM duty - Speed characteristics example



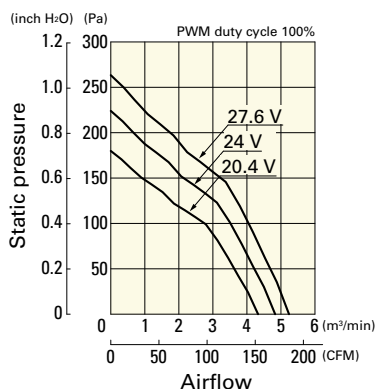
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1224P4G01** With pulse sensor with PWM control function

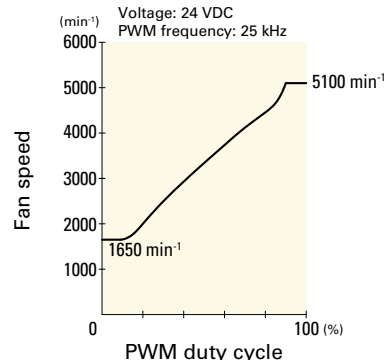
PWM duty cycle



Operating voltage range

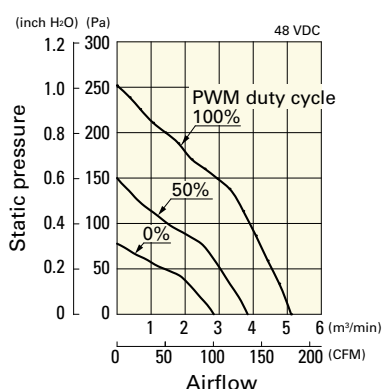


PWM duty - Speed characteristics example

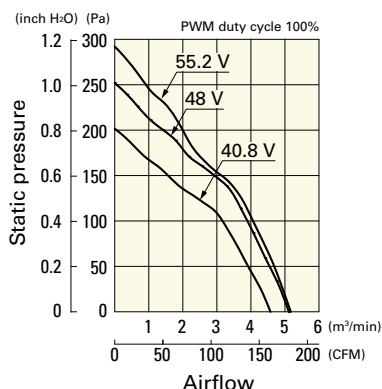


**9GV1248P4J01** With pulse sensor with PWM control function

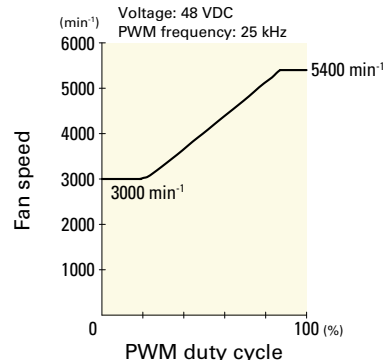
PWM duty cycle



Operating voltage range

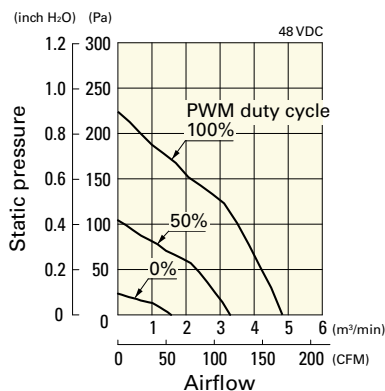


PWM duty - Speed characteristics example

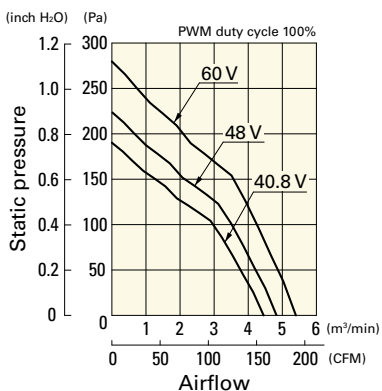


**9GV1248P4G01** With pulse sensor with PWM control function

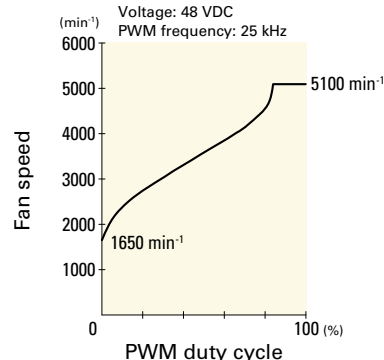
PWM duty cycle



Operating voltage range

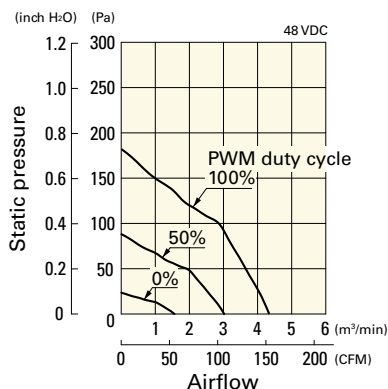


PWM duty - Speed characteristics example

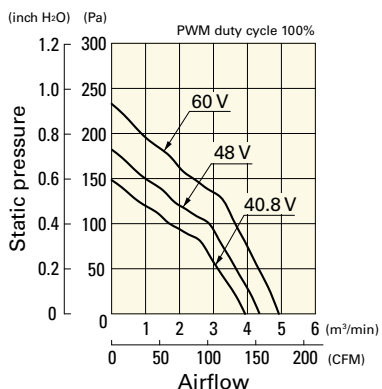


**9GV1248P4H01** With pulse sensor with PWM control function

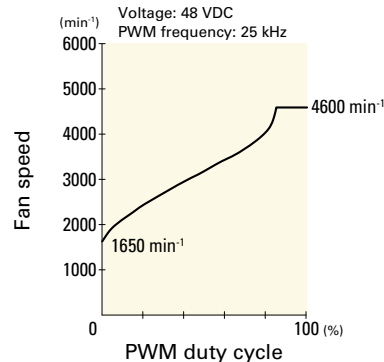
PWM duty cycle



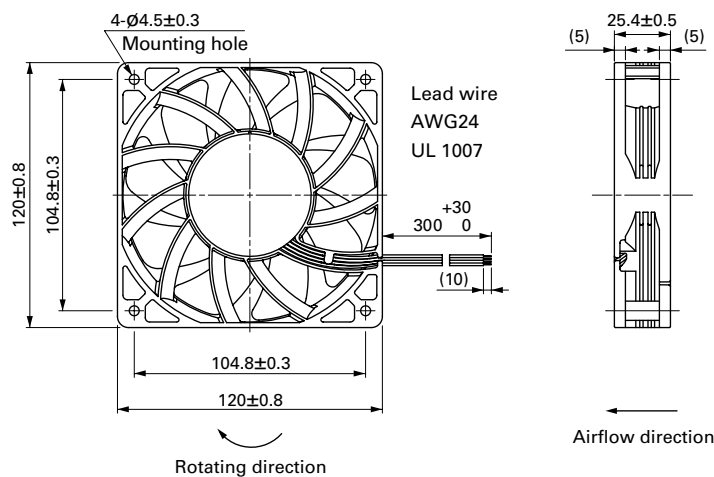
Operating voltage range



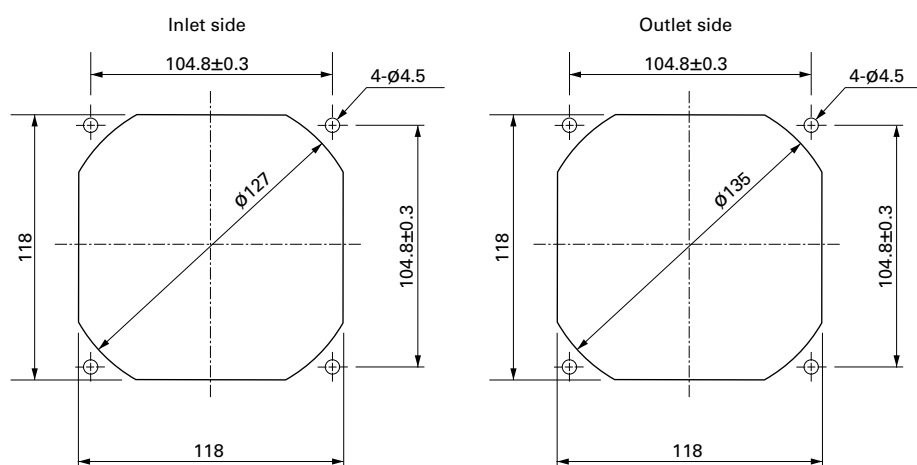
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)

## DC Fan



# 120×120×25 mm

## San Ace 120 9RA type



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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  
(For models without PWM control function, there is no speed control wiring.)
- Mass ..... 210 g

### 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 <sup>-1</sup> ] | Max. airflow [m³/min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|-----------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9RA1212P4G001 | 12                | 10.8 to 13.2                | 100                | 0.55              | 6.6             | 4500                             | 3.68 130                    | 120 0.48                                         | 47           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
|                 |                   |                             | 20                 | 0.06              | 0.72            | 1250                             | 1.02 36                     | 9.2 0.037                                        | 15           |                            |                            |
| » 9RA1224P4G001 | 24                | 21.6 to 26.4                | 100                | 0.28              | 6.72            | 4500                             | 3.68 130                    | 120 0.48                                         | 47           |                            |                            |
|                 |                   |                             | 20                 | 0.05              | 1.2             | 1750                             | 1.43 50.5                   | 18.1 0.073                                       | 22           |                            |                            |
| » 9RA1248P4G001 | 48                | 43.2 to 52.8                | 100                | 0.15              | 7.2             | 4500                             | 3.68 130                    | 120 0.48                                         | 47           |                            |                            |
|                 |                   |                             | 20                 | 0.03              | 1.44            | 1650                             | 1.34 47.3                   | 16.1 0.065                                       | 21           |                            |                            |

\* 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.

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

| Model no.      | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m³/min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|----------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|-----------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9RA1212G4001 | 12                | 7 to 13.8                   | 0.55              | 6.6             | 4500                             | 3.68 130                    | 120 0.48                                         | 47           | -20 to +70                 | 60000/60°C<br>(90000/40°C) |
| » 9RA1212E4001 |                   |                             | 0.41              | 4.92            | 4000                             | 3.3 116.5                   | 96 0.386                                         | 45           |                            |                            |
| » 9RA1212A4001 |                   |                             | 0.3               | 3.6             | 3500                             | 2.86 101.1                  | 73 0.293                                         | 42           |                            |                            |
| » 9RA1212H4001 |                   |                             | 0.26              | 3.12            | 3200                             | 2.62 92.4                   | 61 0.245                                         | 39           |                            |                            |
| » 9RA1212M4001 |                   |                             | 0.12              | 1.44            | 2200                             | 1.8 63.5                    | 29 0.116                                         | 28           |                            |                            |
| » 9RA1224G4001 | 24                | 14 to 27.6                  | 0.28              | 6.72            | 4500                             | 3.68 130                    | 120 0.48                                         | 47           |                            |                            |
| » 9RA1224E4001 |                   |                             | 0.22              | 5.28            | 4000                             | 3.3 116.5                   | 96 0.386                                         | 45           |                            |                            |
| » 9RA1224A4001 |                   |                             | 0.16              | 3.84            | 3500                             | 2.86 101.1                  | 73 0.293                                         | 42           |                            |                            |
| » 9RA1224H4001 |                   |                             | 0.13              | 3.12            | 3200                             | 2.62 92.4                   | 61 0.245                                         | 39           |                            |                            |
| » 9RA1224M4001 |                   |                             | 0.07              | 1.68            | 2200                             | 1.8 63.5                    | 29 0.116                                         | 28           |                            |                            |
| » 9RA1248G4001 | 48                | 36 to 55.2                  | 0.15              | 7.2             | 4500                             | 3.68 130                    | 120 0.48                                         | 47           |                            |                            |
| » 9RA1248E4001 |                   |                             | 0.11              | 5.28            | 4000                             | 3.3 116.5                   | 96 0.386                                         | 45           |                            |                            |
| » 9RA1248A4001 |                   |                             | 0.09              | 4.32            | 3500                             | 2.86 101.1                  | 73 0.293                                         | 42           |                            |                            |

Note 1: Sensor and control options are available for selection. Refer to the table on pp. 615 to 616.

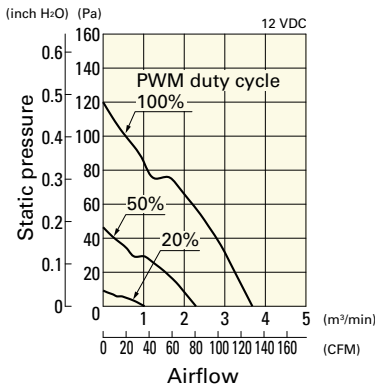
Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.



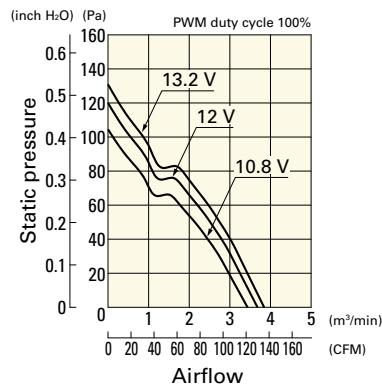
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9RA1212P4G001** With pulse sensor with PWM control function

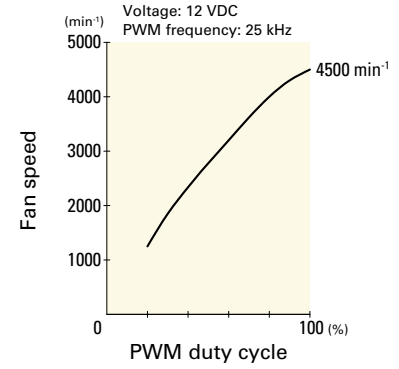
PWM duty cycle



Operating voltage range

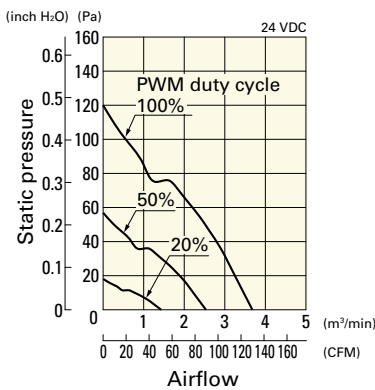


PWM duty - Speed characteristics example

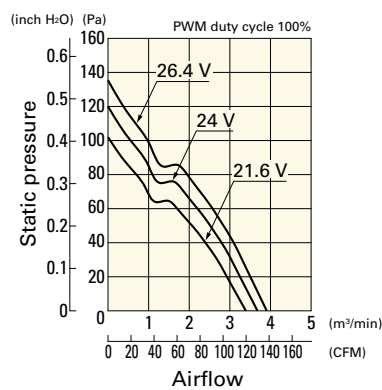


**9RA1224P4G001** With pulse sensor with PWM control function

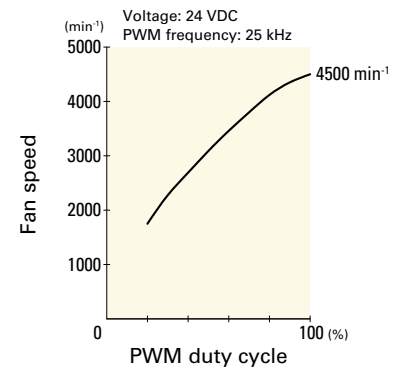
PWM duty cycle



Operating voltage range

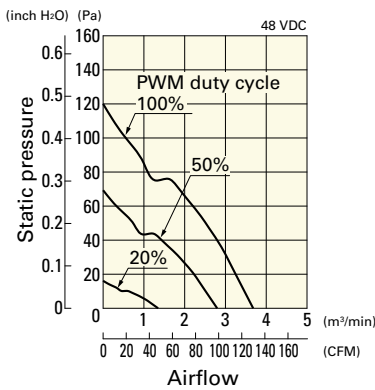


PWM duty - Speed characteristics example

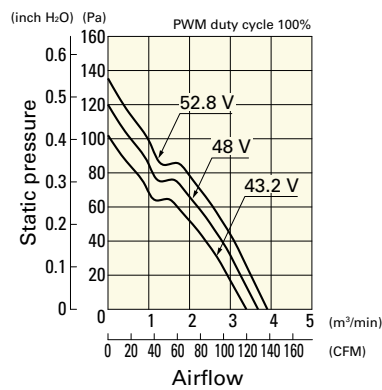


**9RA1248P4G001** With pulse sensor with PWM control function

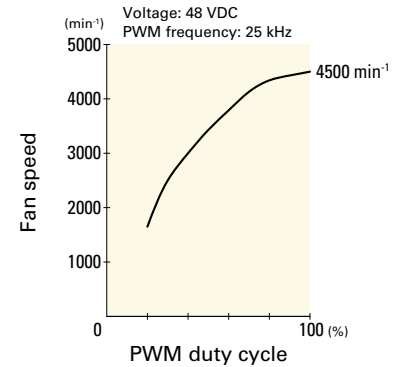
PWM duty cycle



Operating voltage range



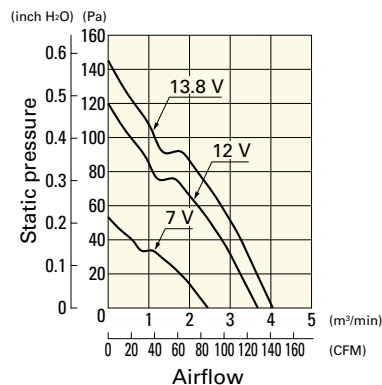
PWM duty - Speed characteristics example



# Airflow - Static Pressure Characteristics

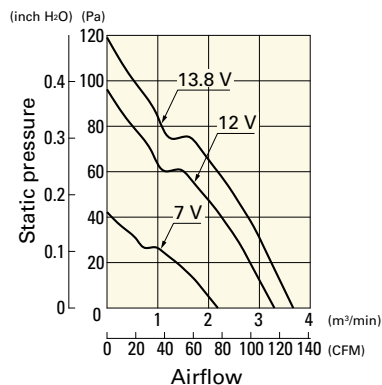
**9RA1212G4001** With pulse sensor

Operating voltage range



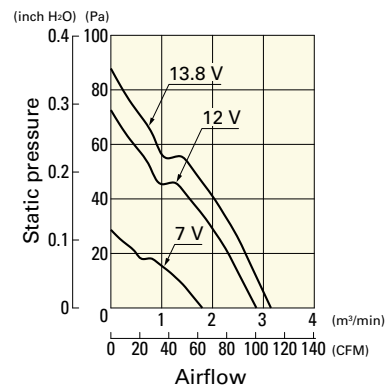
**9RA1212E4001** With pulse sensor

Operating voltage range



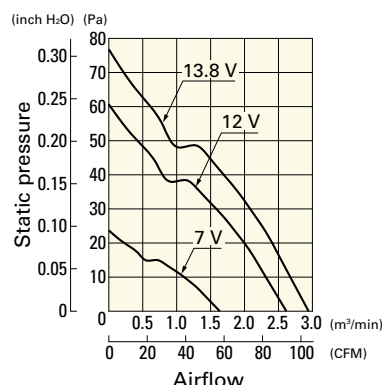
**9RA1212A4001** With pulse sensor

Operating voltage range



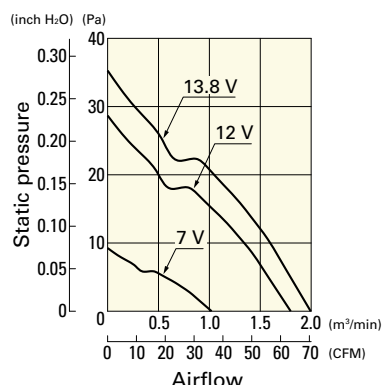
**9RA1212H4001** With pulse sensor

Operating voltage range



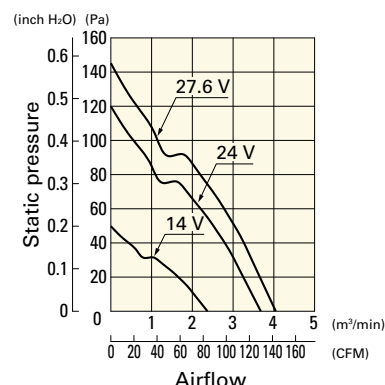
**9RA1212M4001** With pulse sensor

Operating voltage range



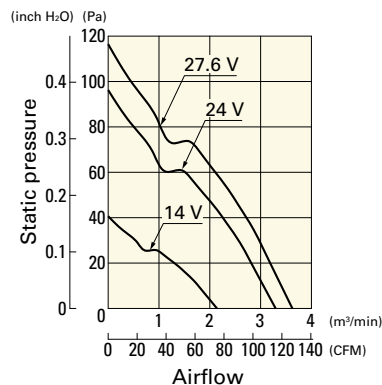
**9RA1224G4001** With pulse sensor

Operating voltage range



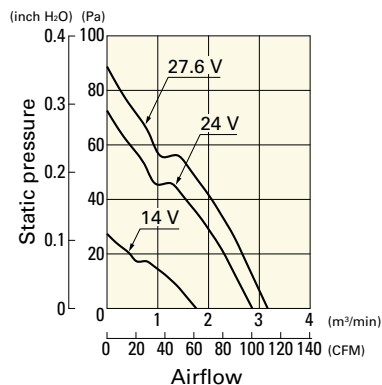
**9RA1224E4001** With pulse sensor

Operating voltage range



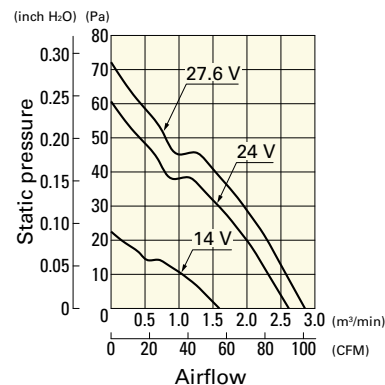
**9RA1224A4001** With pulse sensor

Operating voltage range



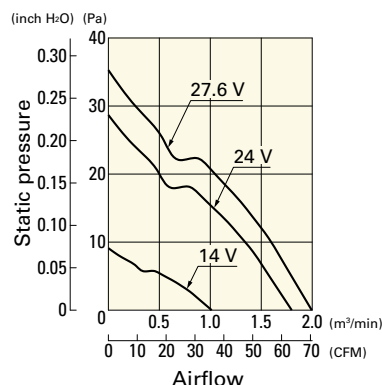
**9RA1224H4001** With pulse sensor

Operating voltage range



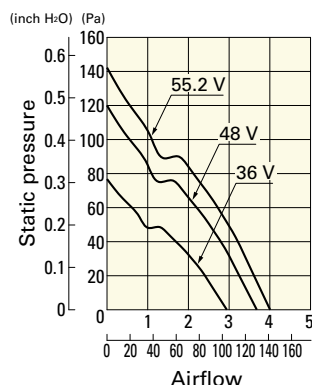
**9RA1224M4001** With pulse sensor

Operating voltage range



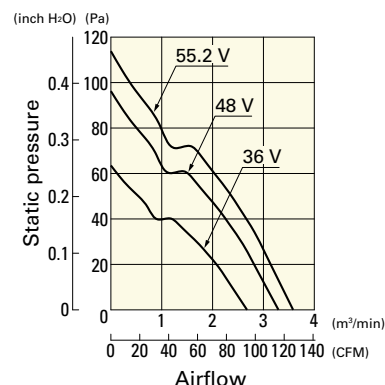
**9RA1248G4001** With pulse sensor

Operating voltage range



**9RA1248E4001** With pulse sensor

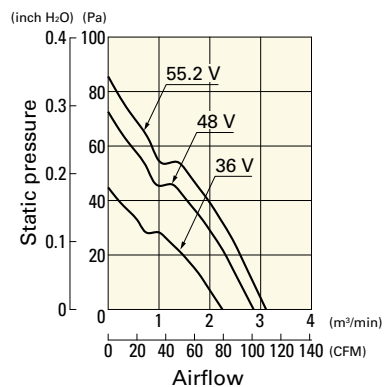
Operating voltage range



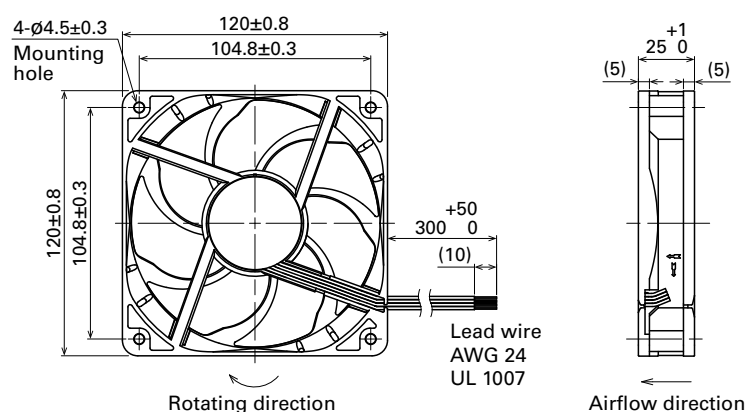
## Airflow - Static Pressure Characteristics

**9RA1248A4001** With pulse sensor

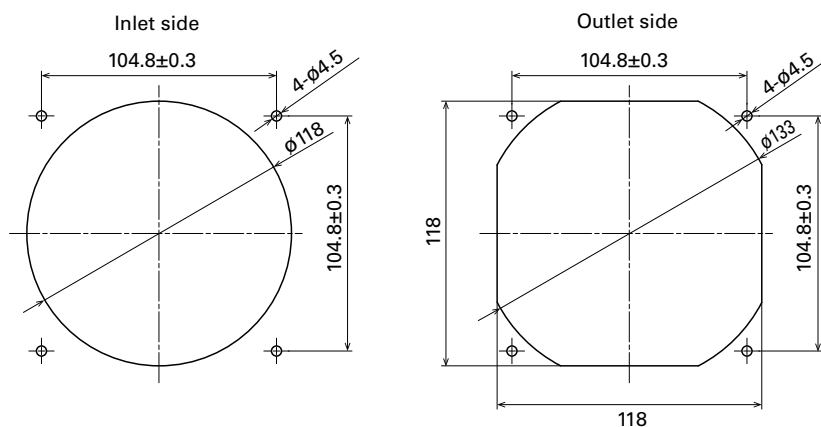
Operating voltage range



## Dimensions (unit: mm) (Ribbed frame with pulse sensor with PWM control function)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)

## DC Fan

# 120×120×25 mm

**San Ace 120 9S** type Silent Fan  **US**



### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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
- Mass ..... 140 g

### Specifications

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

| Model no.    | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| ➤ 9S1212H401 | 12                | 5.0 to 13.2                 | 0.39              | 4.68            | 2700                             | 2.45 86.5                                | 45.2 0.18                                        | 36           | -10 to +60                 | 40000/60°C<br>(70000/40°C) |
| ➤ 9S1212F401 |                   | 5.0 to 13.8                 | 0.19              | 2.28            | 2200                             | 2.0 70.6                                 | 30.0 0.12                                        | 30           |                            |                            |
| ➤ 9S1212M401 |                   | 6.0 to 13.8                 | 0.13              | 1.56            | 1850                             | 1.66 58.6                                | 22.7 0.09                                        | 24           |                            |                            |
| ➤ 9S1212L401 |                   | 7.0 to 13.8                 | 0.08              | 0.96            | 1500                             | 1.36 48.1                                | 14.9 0.06                                        | 17           |                            |                            |
| ➤ 9S1224M401 | 24                | 14 to 26.4                  | 0.06              | 1.44            | 1850                             | 1.66 58.6                                | 22.7 0.09                                        | 24           | -10 to +70                 |                            |

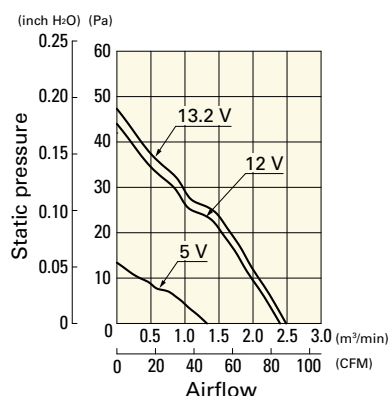
Note 1: Sensor and control options are available for selection. Refer to the table on p. 617.

Note 2: The ➤ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

### Airflow - Static Pressure Characteristics

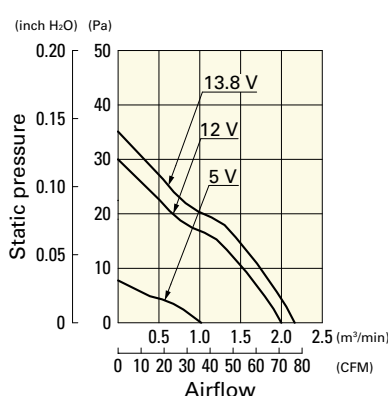
#### 9S1212H401 With pulse sensor

Operating voltage range



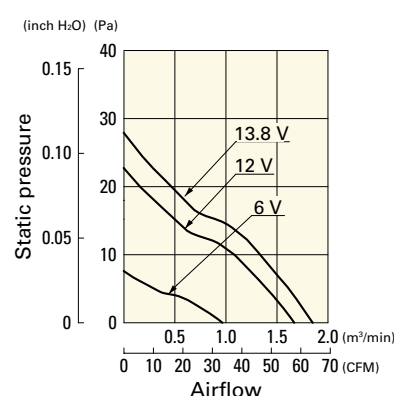
#### 9S1212F401 With pulse sensor

Operating voltage range



#### 9S1212M401 With pulse sensor

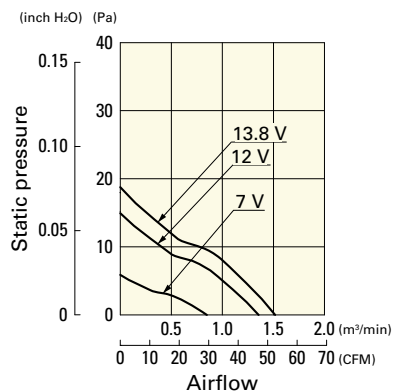
Operating voltage range



## Airflow - Static Pressure Characteristics

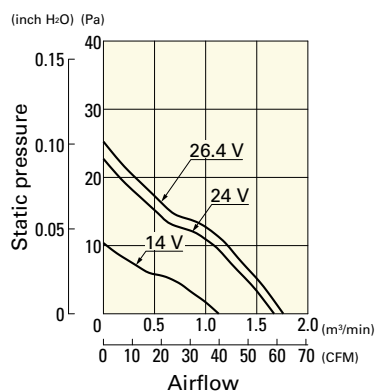
### 9S1212L401 With pulse sensor

Operating voltage range

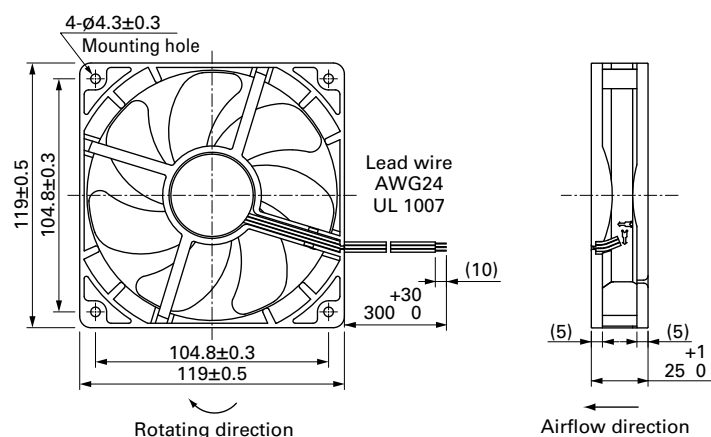


### 9S1224M401 With pulse sensor

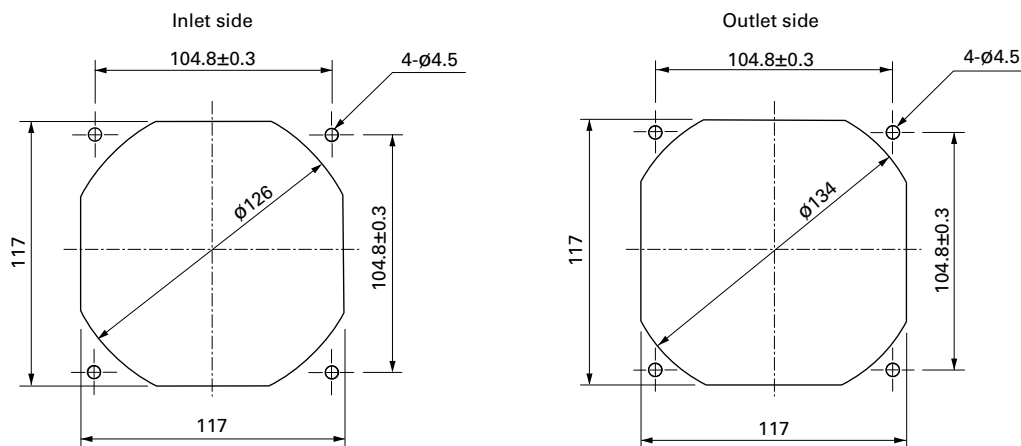
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)

# DC Fan

# 120×120×38 mm

**San Ace 120 9HV** type   



## General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 460 g

## Specifications

The models listed below **have pulse sensors with PWM control function.**

| Model no.     | Rated voltage<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle* [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |     | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---------------|----------------------|--------------------------------|------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----|-----------------------------------------------------|------|-----------------|-------------------------------|----------------------------|
| 9HV1224P1A001 | 24                   | 21.6 to 26.4                   | 100                    | 2.4                  | 57.6               | 9600                                | 7.0                            | 247 | 950                                                 | 3.82 | 71              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|               |                      |                                | 0                      | 0.37                 | 8.88               | 3800                                | 2.7                            | 95  | 161                                                 | 0.65 | 46              |                               |                            |
| 9HV1248P1G001 | 48                   | 36 to 60                       | 100                    | 2.0                  | 96                 | 11500                               | 8.3                            | 293 | 1300                                                | 5.22 | 75              |                               |                            |
|               |                      |                                | 0                      | 0.23                 | 11                 | 3800                                | 2.7                            | 95  | 161                                                 | 0.65 | 46              |                               |                            |
| 9HV1248P1H001 |                      |                                | 100                    | 1.4                  | 67                 | 10000                               | 7.2                            | 254 | 1050                                                | 4.22 | 72              |                               |                            |
|               |                      |                                | 0                      | 0.23                 | 11                 | 3800                                | 2.7                            | 95  | 161                                                 | 0.65 | 46              |                               |                            |

\* 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.

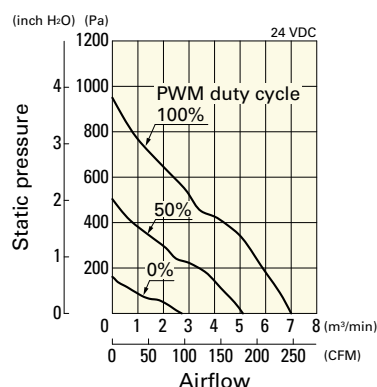
Note 1: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 2: The  mark indicates Short LeadTime Service applicable models. See p. 630 for details.

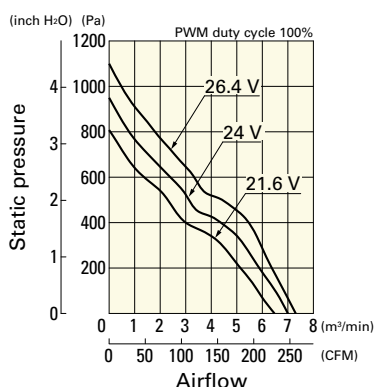
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV1224P1A001** With pulse sensor with PWM control function

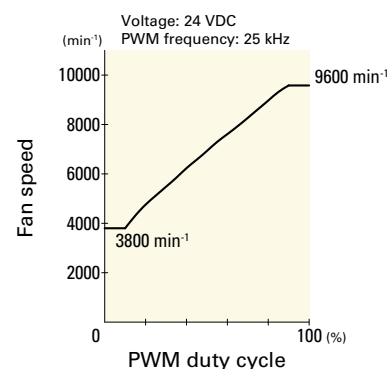
PWM duty cycle



Operating voltage range



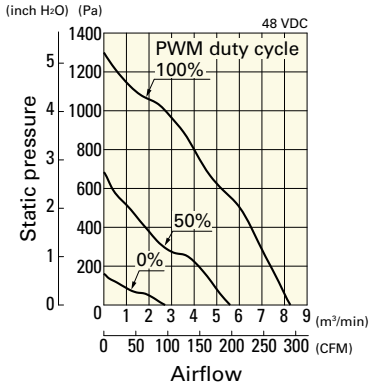
PWM duty - Speed characteristics example



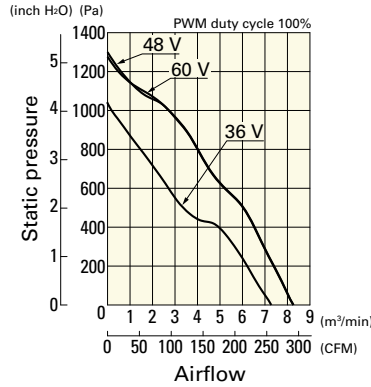
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV1248P1G001** With pulse sensor with PWM control function

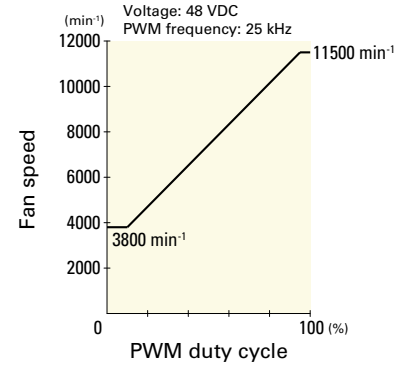
PWM duty cycle



Operating voltage range

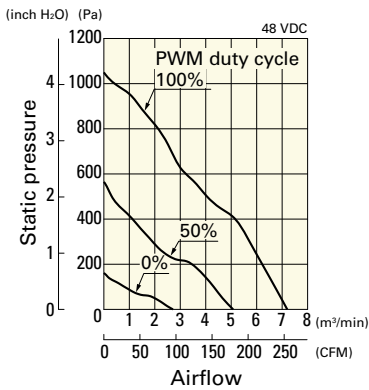


PWM duty - Speed characteristics example

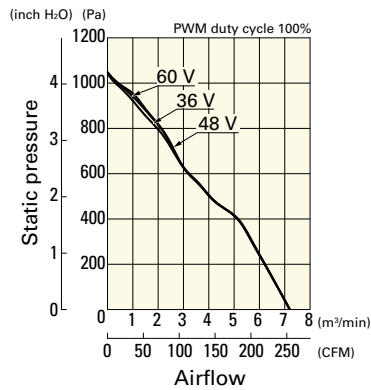


**9HV1248P1H001** With pulse sensor with PWM control function

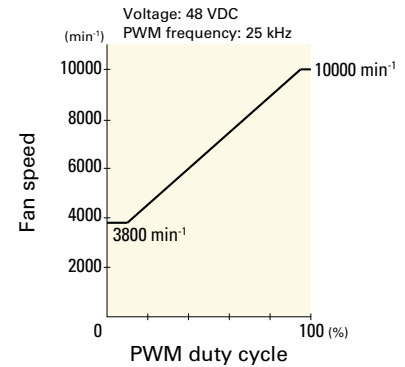
PWM duty cycle



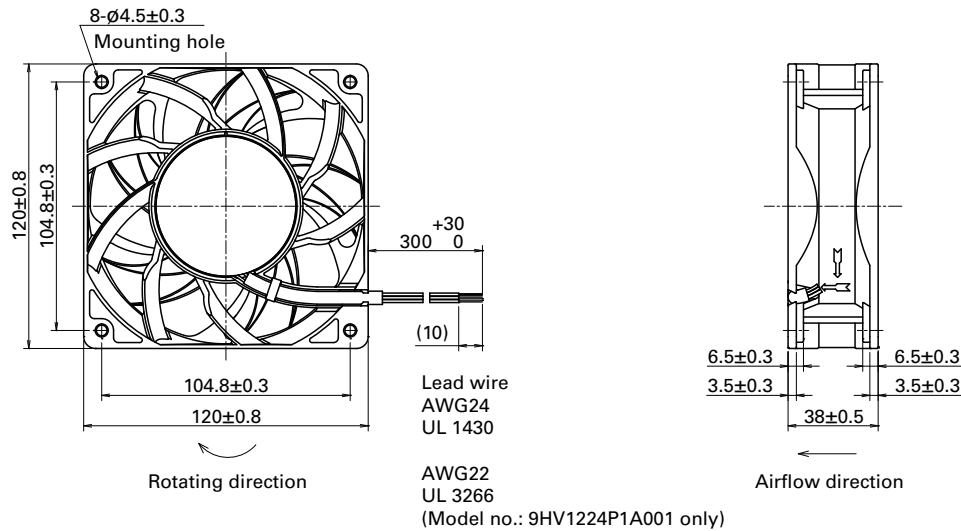
Operating voltage range



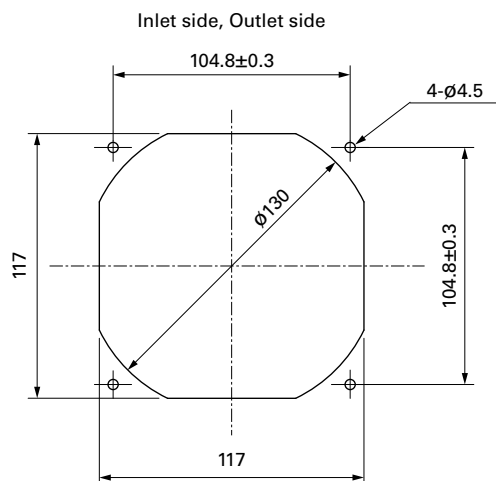
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)



# 120×120×38 mm

**San Ace 120 9SX** type   


## General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 390 g

## Specifications

The models listed below **have pulse sensors with PWM control function.**

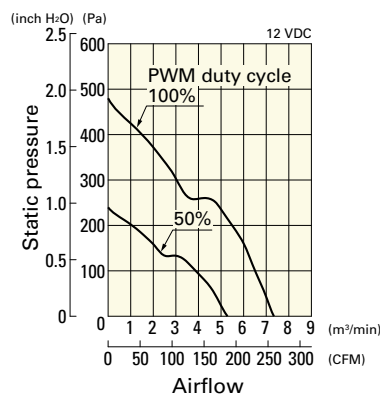
| Model no.            | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|----------------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| <b>9SX1212P1K001</b> | 12                | 10.8 to 13.2                | 100                | 4.4               | 52.8            | 7400                             | 7.3 258                                  | 480 1.93                                         | 66           | -10 to +60                 | 40000/60°C<br>(70000/40°C) |

\* 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.

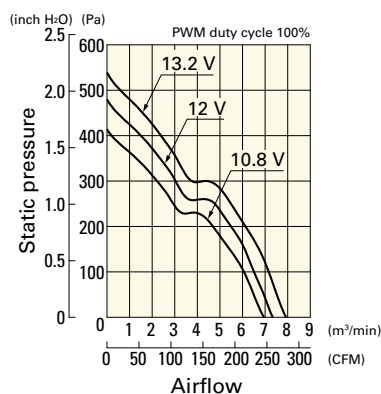
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9SX1212P1K001** With pulse sensor with PWM control function

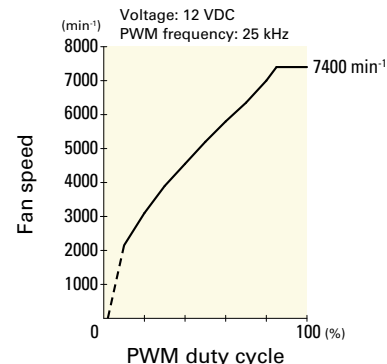
PWM duty cycle



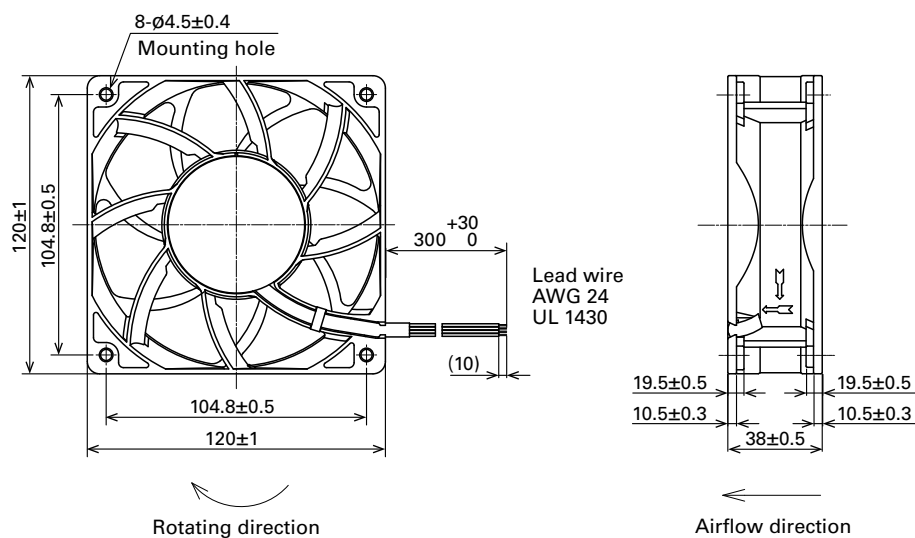
Operating voltage range



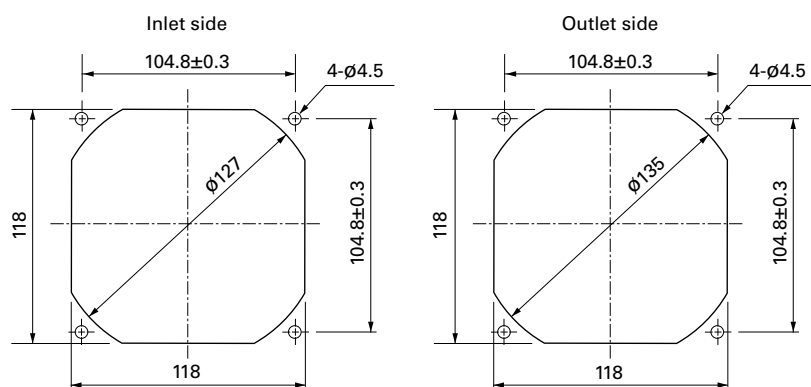
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)



# 120×120×38 mm

**San Ace 120 9GV** type   

## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 360 g

## 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 <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|------------------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| ▶▶ <b>9GV1212P1J01</b> | 12                | 10.2 to 13.8                | 100                | 3.0               | 36.0            | 6400                             | 6.35 224.0                               | 360.0 1.45                                       | 64           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                        |                   |                             | 0                  | 0.19              | 2.28            | 1500                             | 1.49 52.6                                | 19.8 0.08                                        | 33           |                            |                            |
| <b>9GV1212P1G01</b>    |                   |                             | 100                | 2.1               | 25.2            | 5500                             | 5.45 192.6                               | 265 1.06                                         | 60           |                            |                            |
|                        |                   |                             | 0                  | 0.19              | 2.28            | 1500                             | 1.49 52.6                                | 19.8 0.08                                        | 33           |                            |                            |
| ▶▶ <b>9GV1224P1J01</b> | 24                | 20.4 to 27.6                | 100                | 1.5               | 36.0            | 6400                             | 6.35 224.0                               | 360 1.45                                         | 64           |                            |                            |
| ▶▶ <b>9GV1224P1H01</b> |                   |                             | 100                | 0.8               | 19.2            | 5200                             | 5.16 182.3                               | 237 0.95                                         | 58           |                            |                            |
| ▶▶ <b>9GV1248P1J01</b> | 48                | 40.8 to 55.2                | 100                | 0.75              | 36.0            | 6400                             | 6.35 224.0                               | 360.0 1.45                                       | 64           |                            |                            |
|                        |                   |                             | 0                  | 0.06              | 2.88            | 1500                             | 1.49 52.6                                | 26.1 0.106                                       | 33           |                            |                            |

\* 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.

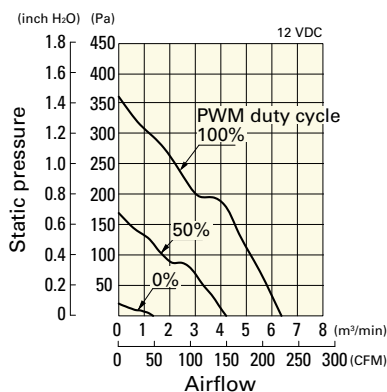
Note 1: Sensor and control options are available for selection. Refer to the table on p. 611.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

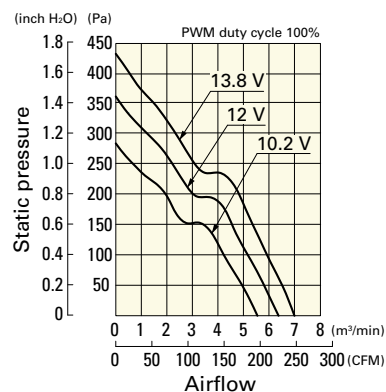
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1212P1J01** With pulse sensor with PWM control function

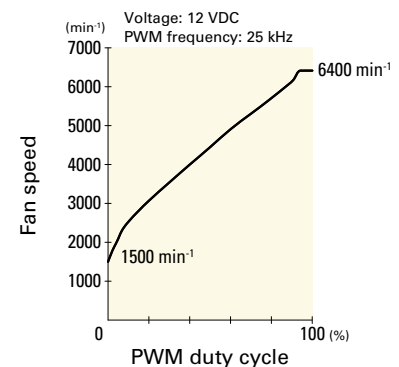
PWM duty cycle



Operating voltage range



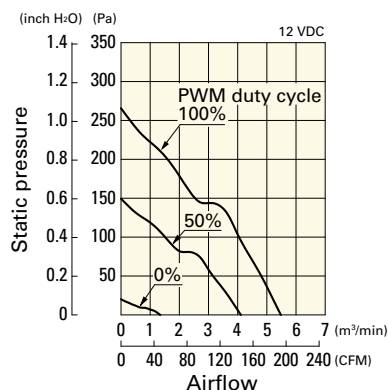
PWM duty - Speed characteristics example



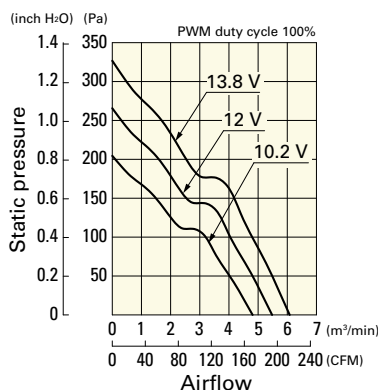
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1212P1G01** With pulse sensor with PWM control function

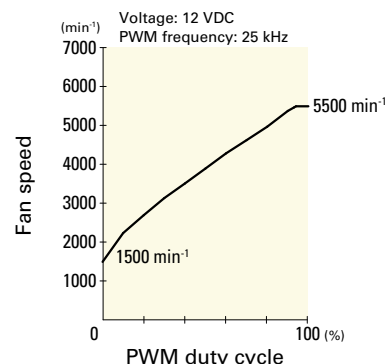
PWM duty cycle



Operating voltage range

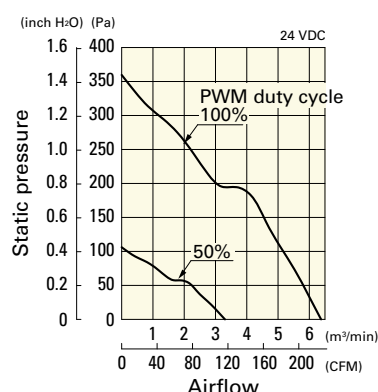


PWM duty - Speed characteristics example

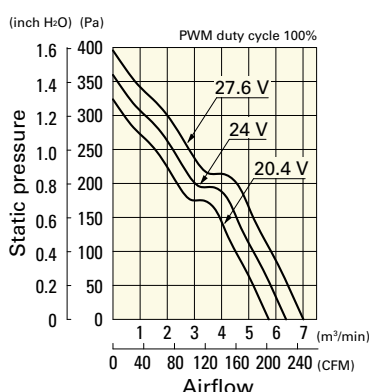


**9GV1224P1J01** With pulse sensor with PWM control function

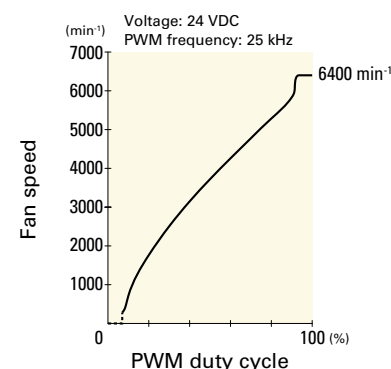
PWM duty cycle



Operating voltage range

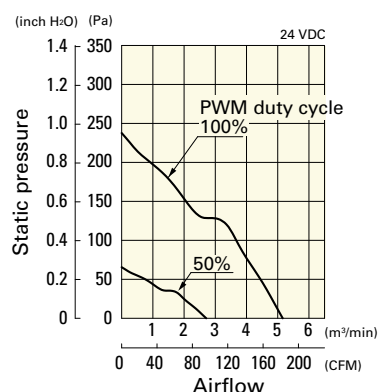


PWM duty - Speed characteristics example

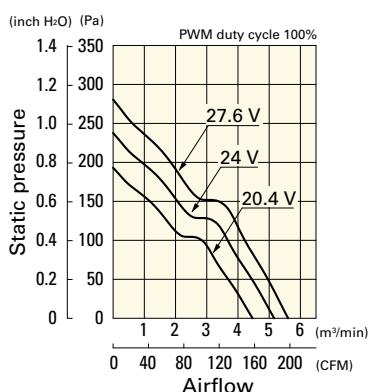


**9GV1224P1H01** With pulse sensor with PWM control function

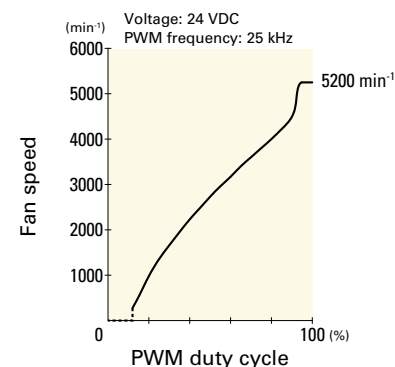
PWM duty cycle



Operating voltage range

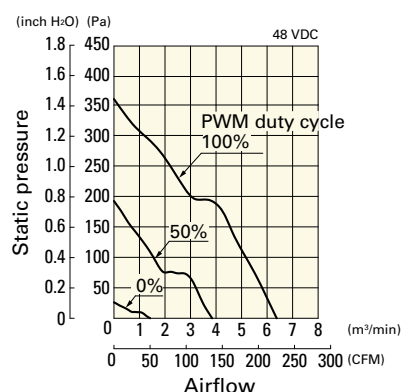


PWM duty - Speed characteristics example

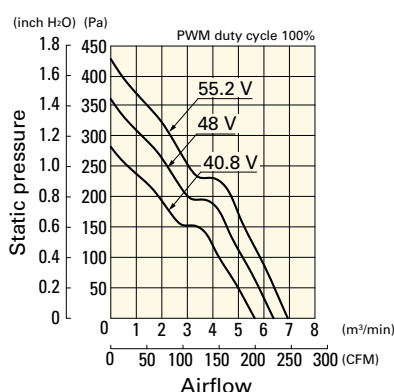


**9GV1248P1J01** With pulse sensor with PWM control function

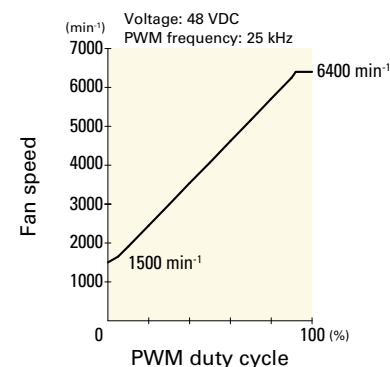
PWM duty cycle



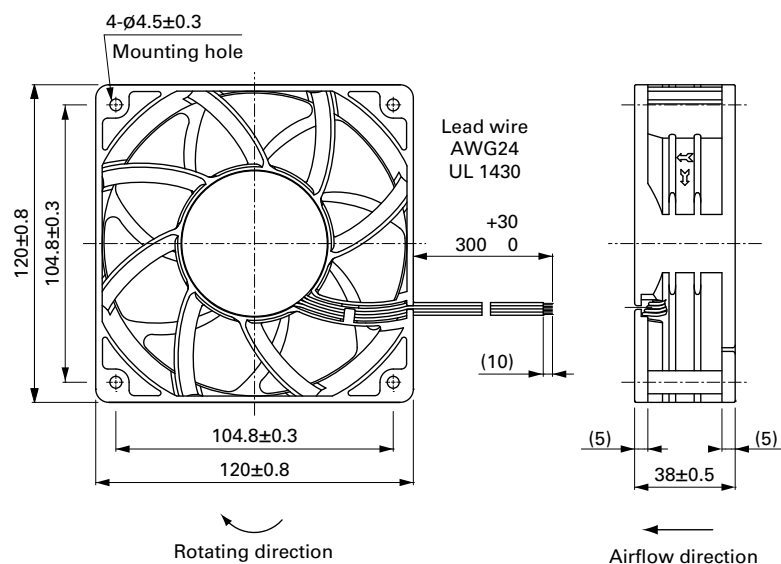
Operating voltage range



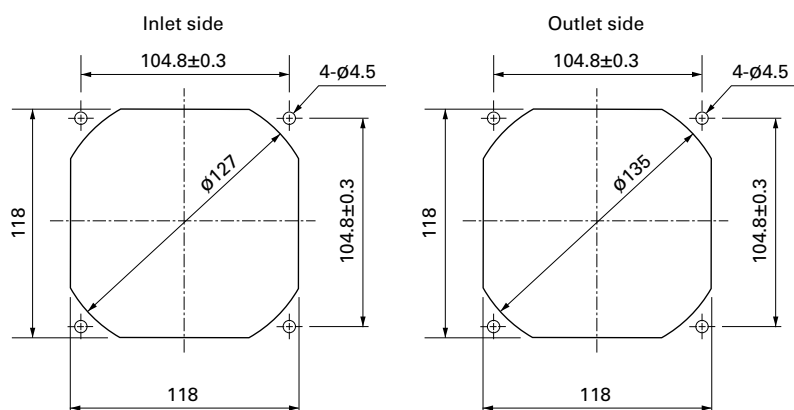
PWM duty - Speed characteristics example



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)

# 120×120×38 mm

**San Ace 120 9G** type   


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue ☐ Sensor Yellow
- Mass ..... 330 g

## Specifications

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

| Model no.  | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9G1212G101 | 12                | 10.2 to 13.8                | 0.98              | 11.76           | 3600                             | 3.88 137                                 | 135 0.542                                        | 49           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| 9G1212E101 |                   |                             | 0.61              | 7.32            | 3100                             | 3.34 118                                 | 100 0.402                                        | 46           |                            |                            |
| 9G1212H101 |                   | 7 to 13.8                   | 0.38              | 4.56            | 2600                             | 2.8 99                                   | 70.4 0.283                                       | 39           |                            |                            |
| 9G1212F101 |                   |                             | 0.28              | 3.36            | 2280                             | 2.45 87                                  | 54.2 0.218                                       | 36           |                            |                            |
| 9G1212M101 |                   |                             | 0.21              | 2.52            | 1950                             | 2.1 74                                   | 39.6 0.159                                       | 32           |                            |                            |
| 9G1224G101 | 24                | 20.4 to 27.6                | 0.5               | 12              | 3600                             | 3.88 137                                 | 135 0.542                                        | 49           |                            |                            |
| 9G1224E101 |                   |                             | 0.34              | 8.16            | 3100                             | 3.34 118                                 | 100 0.402                                        | 46           |                            |                            |
| 9G1224H101 |                   | 14 to 27.6                  | 0.22              | 5.28            | 2600                             | 2.8 99                                   | 70.4 0.283                                       | 39           |                            |                            |
| 9G1224F101 |                   |                             | 0.16              | 3.84            | 2280                             | 2.45 87                                  | 54.2 0.218                                       | 36           |                            |                            |
| 9G1224M101 |                   |                             | 0.11              | 2.64            | 1950                             | 2.1 74                                   | 39.6 0.159                                       | 32           |                            |                            |
| 9G1248G101 | 48                | 40.8 to 55.2                | 0.25              | 12              | 3600                             | 3.88 137                                 | 135 0.542                                        | 49           |                            |                            |
| 9G1248E101 |                   |                             | 0.17              | 8.16            | 3100                             | 3.34 118                                 | 100 0.402                                        | 46           |                            |                            |
| 9G1248H101 |                   |                             | 0.11              | 5.28            | 2600                             | 2.8 99                                   | 70.4 0.283                                       | 39           |                            |                            |
| 9G1248F101 |                   |                             | 0.09              | 4.32            | 2280                             | 2.45 87                                  | 54.2 0.218                                       | 36           |                            |                            |
| 9G1248M101 |                   |                             | 0.07              | 3.36            | 1950                             | 2.1 74                                   | 39.6 0.159                                       | 32           |                            |                            |

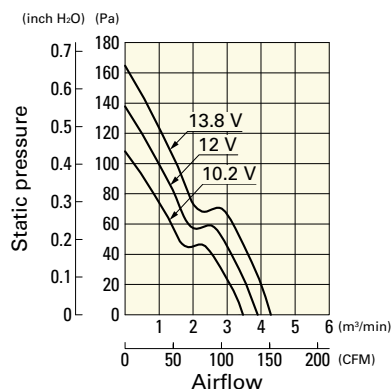
Note 1: Sensor and control options are available for selection. Refer to the table on p. 606.

Note 2: The  mark indicates Short LeadTime Service applicable models. See p. 630 for details.

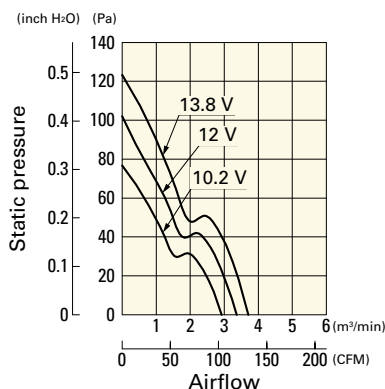
## Airflow - Static Pressure Characteristics

**9G1212G101** With pulse sensor

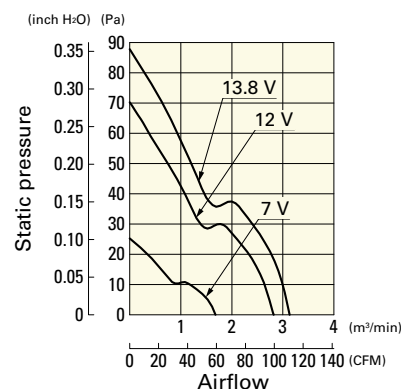
Operating voltage range


**9G1212E101** With pulse sensor

Operating voltage range


**9G1212H101** With pulse sensor

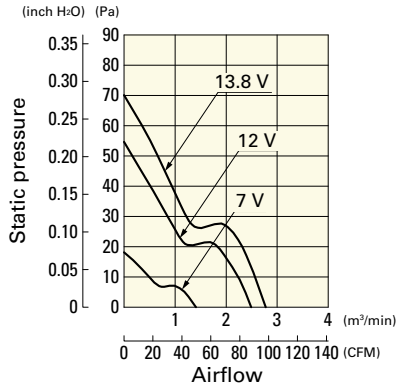
Operating voltage range



## Airflow - Static Pressure Characteristics

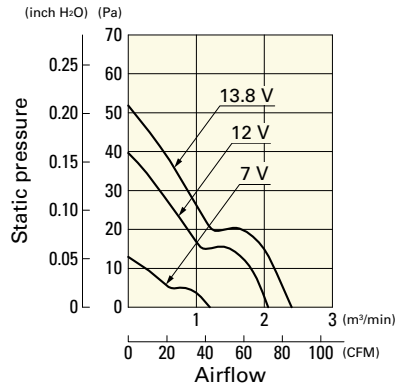
### 9G1212F101 With pulse sensor

Operating voltage range



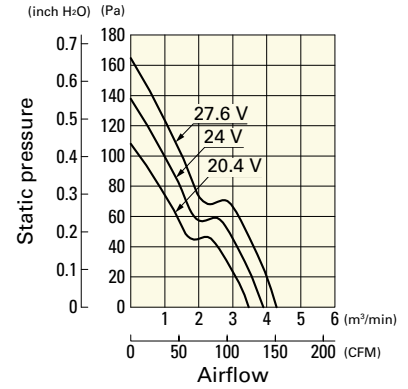
### 9G1212M101 With pulse sensor

Operating voltage range



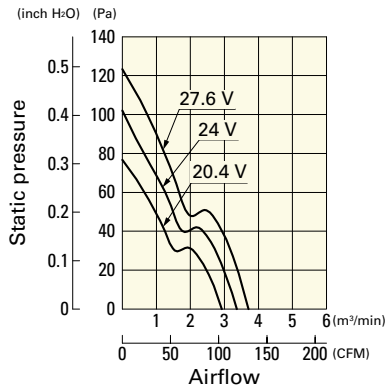
### 9G1224G101 With pulse sensor

Operating voltage range



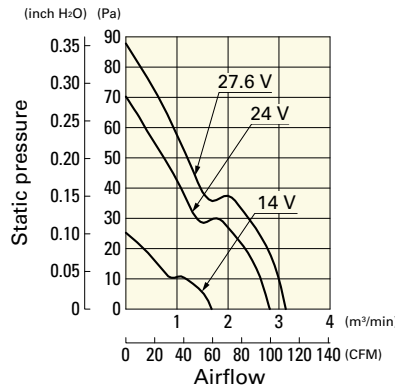
### 9G1224E101 With pulse sensor

Operating voltage range



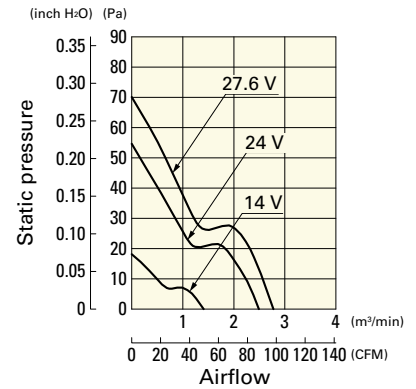
### 9G1224H101 With pulse sensor

Operating voltage range



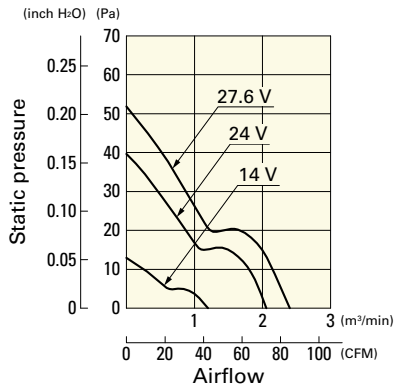
### 9G1224F101 With pulse sensor

Operating voltage range



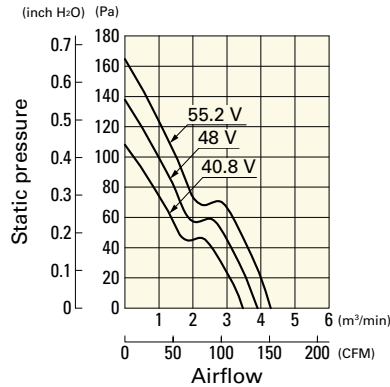
### 9G1224M101 With pulse sensor

Operating voltage range



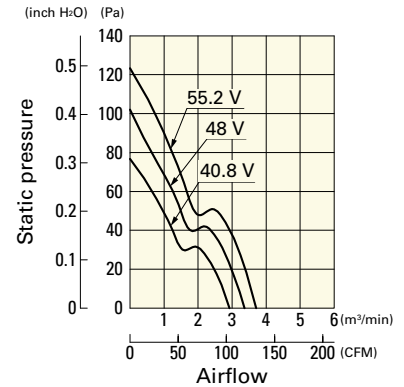
### 9G1248G101 With pulse sensor

Operating voltage range



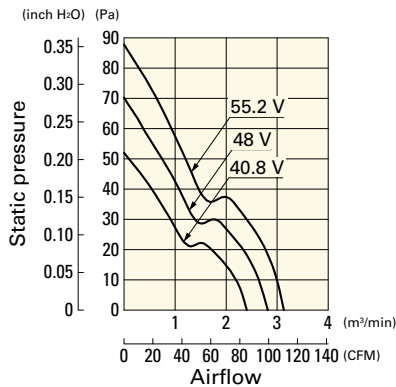
### 9G1248E101 With pulse sensor

Operating voltage range



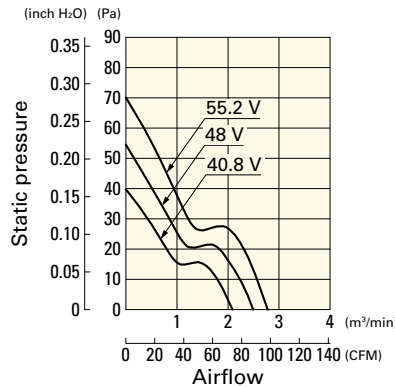
### 9G1248H101 With pulse sensor

Operating voltage range



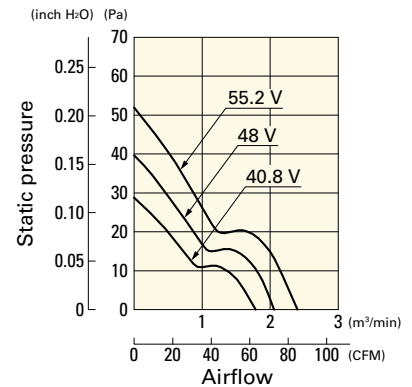
### 9G1248F101 With pulse sensor

Operating voltage range

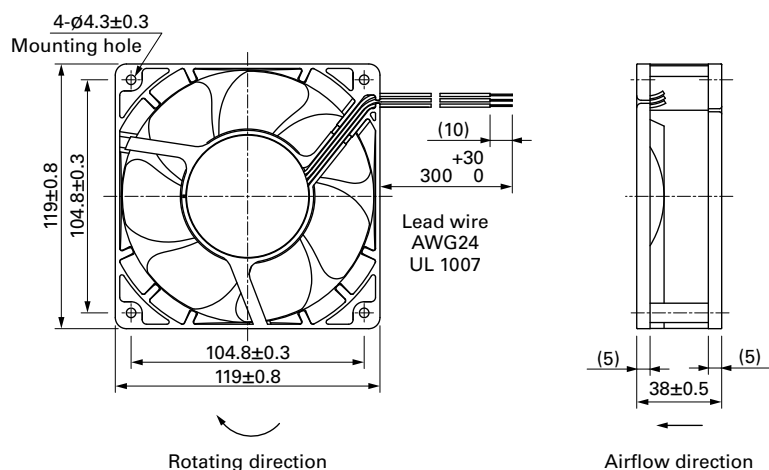


### 9G1248M101 With pulse sensor

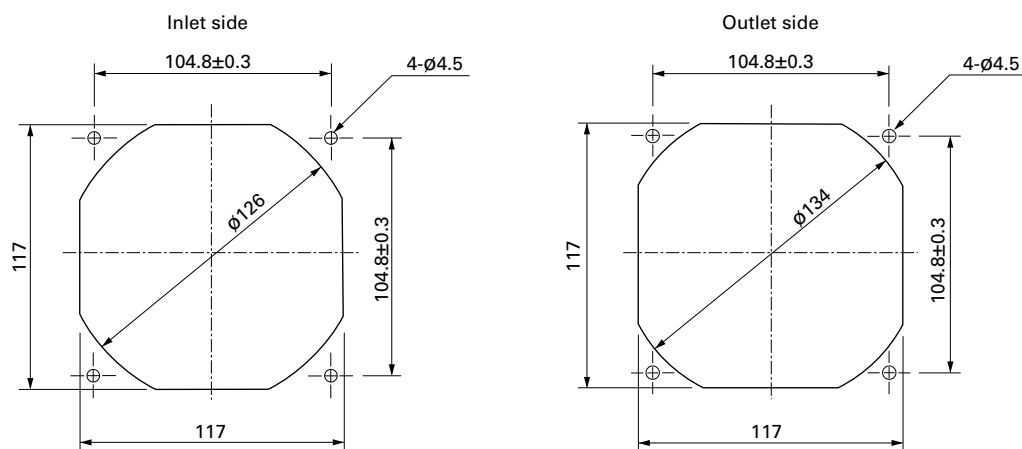
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

### Finger guards

page: p. 565

Model no.: 109-019E, 109-019K, 109-019C, 109-019H

### Resin finger guards

page: p. 571

Model no.: 109-1000G

### Resin filter kits

page: p. 572

Model no.: 109-1000F13 (13PPI), 109-1000F20 (20PPI),  
109-1000F30 (30PPI), 109-1000F40 (40PPI)



# 127×127×38 mm

**San Ace 127 9E type**


## General Specifications

- Material ..... Frame: Aluminum, 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 400 g

## Specifications

The models listed below **have pulse sensors**.

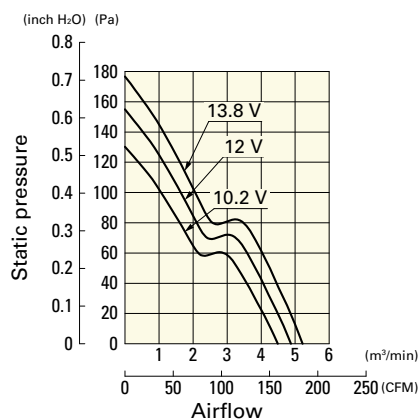
| Model no.           | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---------------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| <b>109E1312A101</b> | 12                   | 10.2 to 13.8                   | 1.4                  | 16.8               | 3850                                | 4.81 170                                    | 155 0.622                                           | 52              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
| <b>109E1312S101</b> |                      |                                | 1.2                  | 14.4               | 3450                                | 4.37 154                                    | 125 0.502                                           | 49              |                               |                            |
| <b>109E1324G101</b> | 24                   | 20.4 to 27.6                   | 1.1                  | 26.4               | 4550                                | 5.66 200                                    | 216 0.867                                           | 57              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |
| <b>109E1324A101</b> |                      |                                | 0.7                  | 16.8               | 3850                                | 4.81 170                                    | 155 0.622                                           | 52              |                               |                            |
| <b>109E1324S101</b> | 48                   | 40.8 to 55.2                   | 0.53                 | 12.7               | 3450                                | 4.37 154                                    | 125 0.502                                           | 49              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
| <b>109E1348G101</b> |                      |                                | 0.54                 | 25.9               | 4550                                | 5.66 200                                    | 216 0.867                                           | 57              |                               |                            |
| <b>109E1348A101</b> | 48                   | 40.8 to 55.2                   | 0.36                 | 17.3               | 3850                                | 4.81 170                                    | 155 0.622                                           | 52              | -20 to +70                    | 60000/60°C<br>(90000/40°C) |
| <b>109E1348S101</b> |                      |                                | 0.28                 | 13.4               | 3450                                | 4.37 154                                    | 125 0.502                                           | 49              |                               |                            |

Note: Sensor and control options are available for selection. Refer to the table on p. 602.

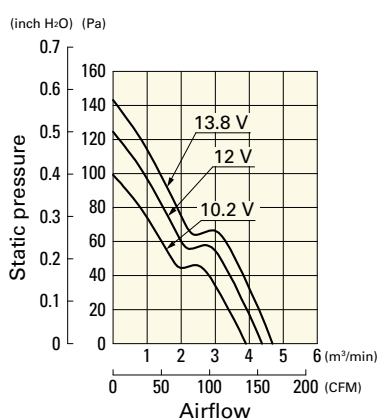
## Airflow - Static Pressure Characteristics

**109E1312A101** With pulse sensor

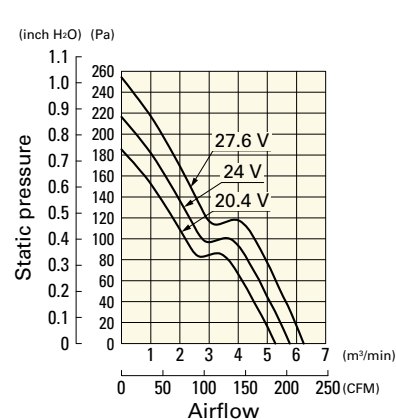
Operating voltage range


**109E1312S101** With pulse sensor

Operating voltage range


**109E1324G101** With pulse sensor

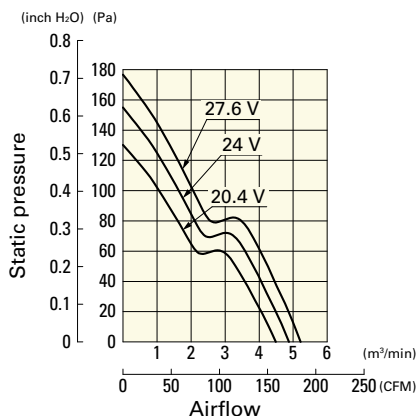
Operating voltage range



## Airflow - Static Pressure Characteristics

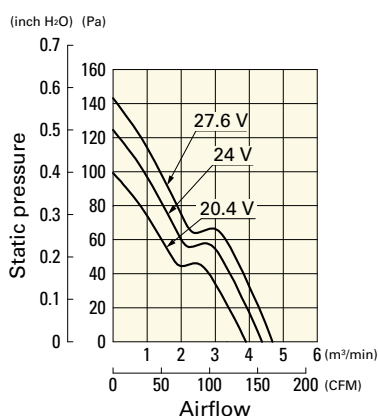
**109E1324A101** With pulse sensor

Operating voltage range



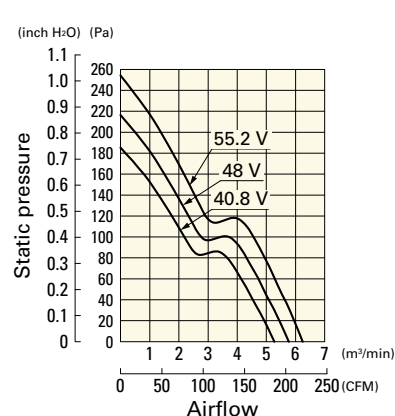
**109E1324S101** With pulse sensor

Operating voltage range



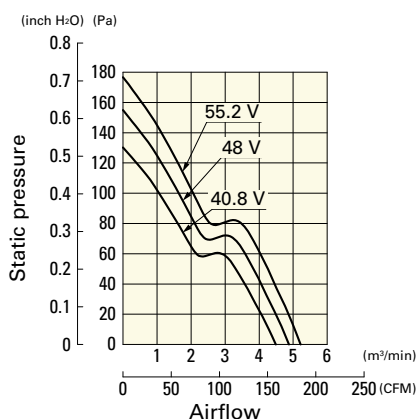
**109E1348G101** With pulse sensor

Operating voltage range



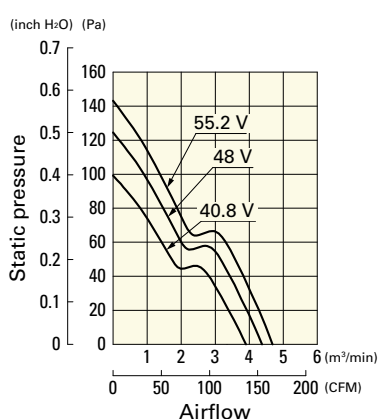
**109E1348A101** With pulse sensor

Operating voltage range

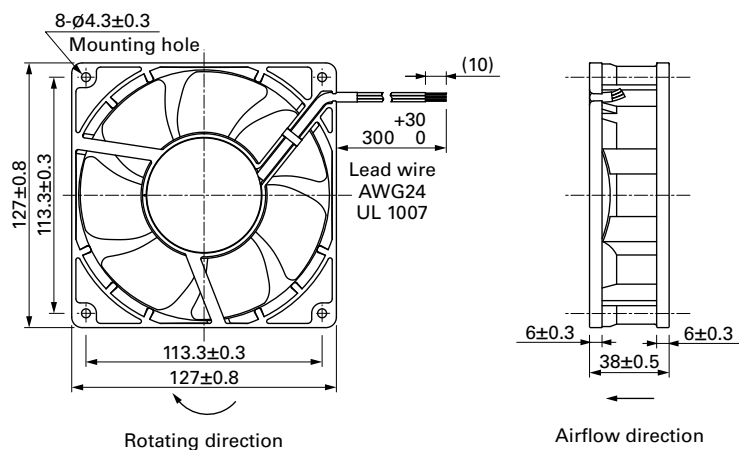


**109E1348S101** With pulse sensor

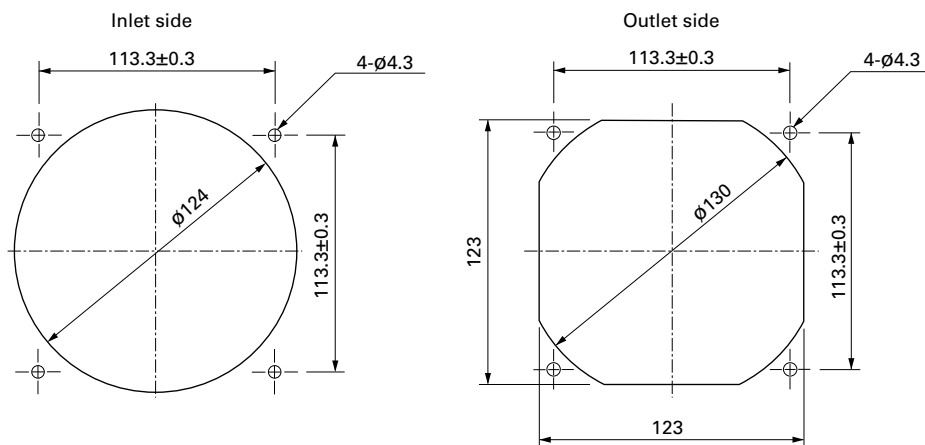
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 565

Model no.: 109-722, 109-722H, 109-723



# 140×140×38 mm

## San Ace 140 9GV type US

### General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 630 g

### Specifications

The models listed below **have pulse sensors with PWM control function.**

| Model no.       | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-----------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| » 9GV1412P1G001 | 12                | 10.8 to 13.2                | 100                | 4.6               | 55.2            | 7600                             | 8.8 310                                  | 640 2.57                                         | 70           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|                 |                   |                             | 20                 | 0.26              | 3.12            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1412P1S001 |                   |                             | 100                | 3.1               | 37.2            | 6650                             | 7.7 272                                  | 480 1.93                                         | 67           |                            |                            |
|                 |                   |                             | 20                 | 0.26              | 3.12            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1412P1H001 | 24                | 21.6 to 26.4                | 100                | 1.7               | 20.4            | 5200                             | 6.0 212                                  | 300 1.2                                          | 62           |                            |                            |
|                 |                   |                             | 20                 | 0.26              | 3.12            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1424P1G001 |                   |                             | 100                | 2.3               | 55.2            | 7600                             | 8.8 310                                  | 640 2.57                                         | 70           |                            |                            |
|                 |                   |                             | 20                 | 0.13              | 3.12            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1424P1S001 |                   |                             | 100                | 1.55              | 37.2            | 6650                             | 7.7 272                                  | 480 1.93                                         | 67           |                            |                            |
|                 |                   |                             | 20                 | 0.13              | 3.12            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1424P1H001 | 48                | 36 to 60                    | 100                | 0.85              | 20.4            | 5200                             | 6.0 212                                  | 300 1.2                                          | 62           |                            |                            |
|                 |                   |                             | 20                 | 0.13              | 3.12            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1448P1G001 |                   |                             | 100                | 1.15              | 55.2            | 7600                             | 8.8 310                                  | 640 2.57                                         | 70           |                            |                            |
|                 |                   |                             | 20                 | 0.11              | 5.28            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1448P1S001 |                   |                             | 100                | 0.78              | 37.44           | 6650                             | 7.7 272                                  | 480 1.93                                         | 67           |                            |                            |
|                 |                   |                             | 20                 | 0.11              | 5.28            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |
| » 9GV1448P1H001 |                   |                             | 100                | 0.42              | 20.16           | 5200                             | 6.0 212                                  | 300 1.2                                          | 62           |                            |                            |
|                 |                   |                             | 20                 | 0.11              | 5.28            | 2300                             | 2.66 93                                  | 80 0.32                                          | 39           |                            |                            |

\* 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.

Note 1: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

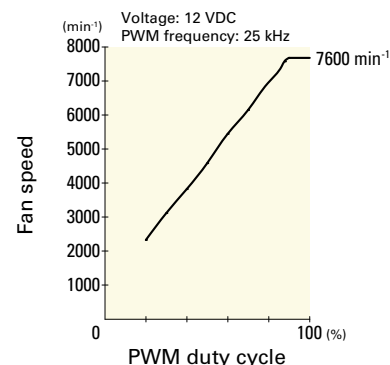
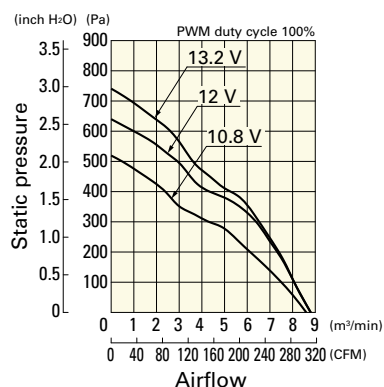
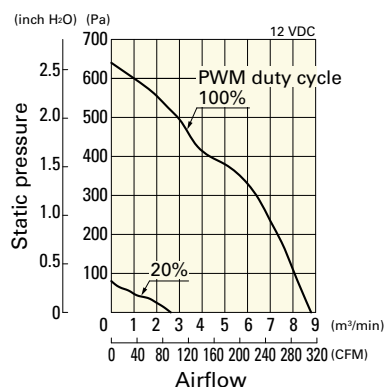
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1412P1G001** With pulse sensor with PWM control function

PWM duty cycle

Operating voltage range

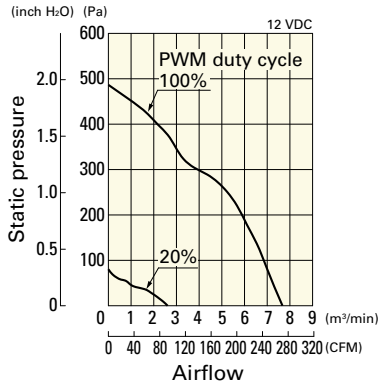
PWM duty - Speed characteristics example



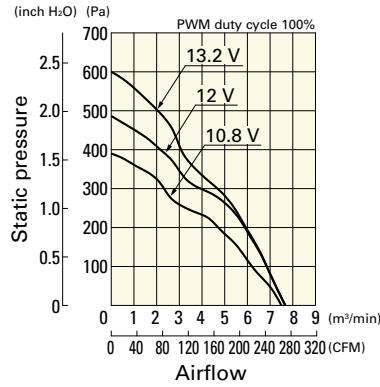
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1412P1S001** With pulse sensor with PWM control function

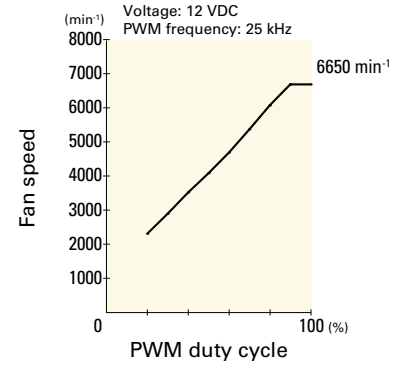
PWM duty cycle



Operating voltage range

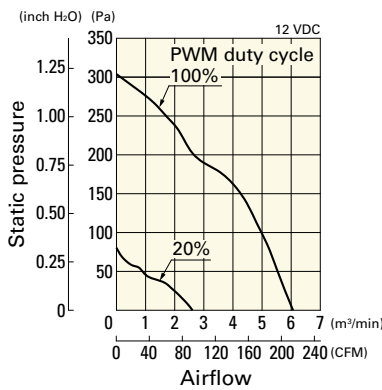


PWM duty - Speed characteristics example

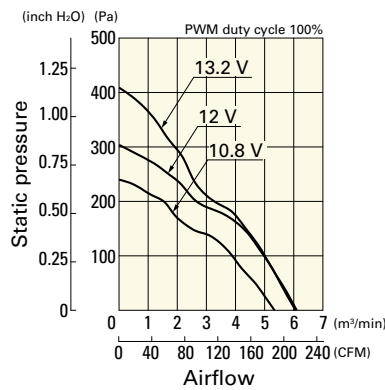


**9GV1412P1H001** With pulse sensor with PWM control function

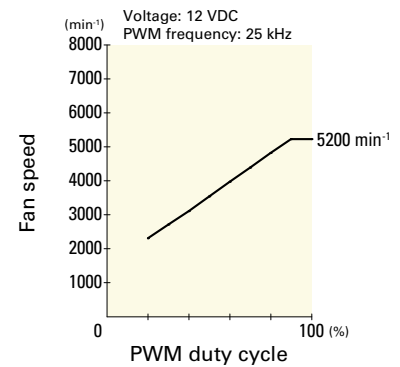
PWM duty cycle



Operating voltage range

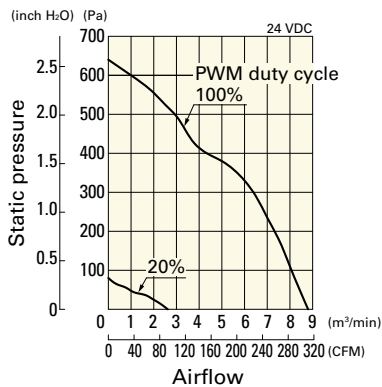


PWM duty - Speed characteristics example

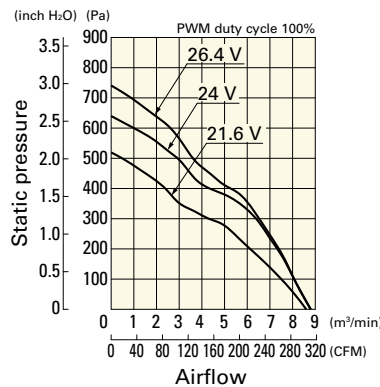


**9GV1424P1G001** With pulse sensor with PWM control function

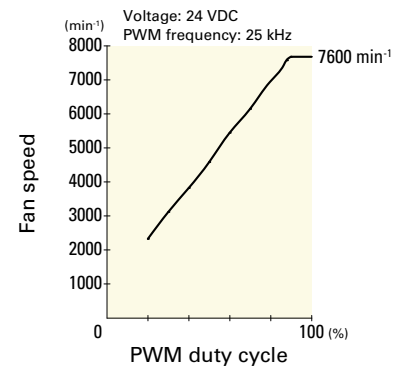
PWM duty cycle



Operating voltage range

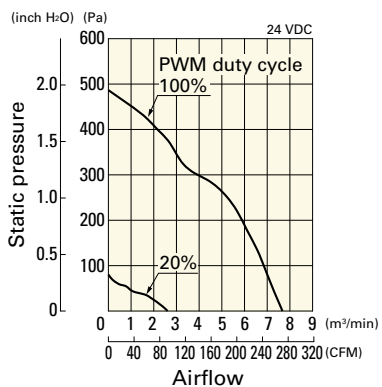


PWM duty - Speed characteristics example

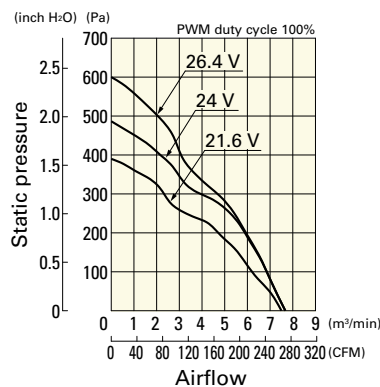


**9GV1424P1S001** With pulse sensor with PWM control function

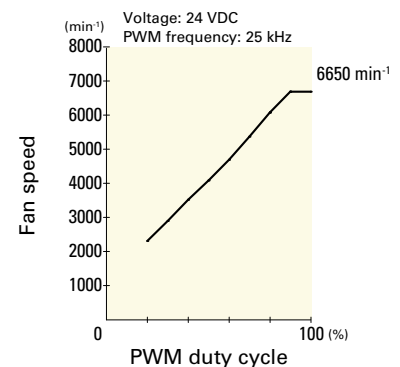
PWM duty cycle



Operating voltage range



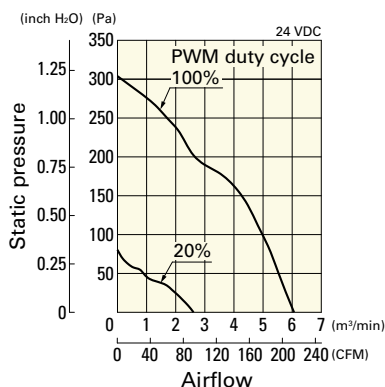
PWM duty - Speed characteristics example



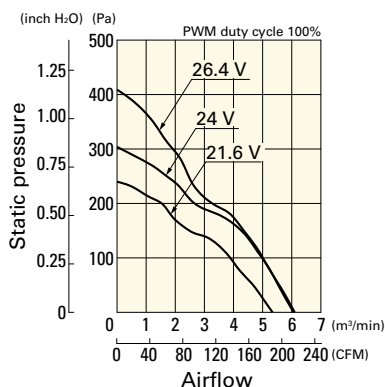
# Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV1424P1H001** With pulse sensor with PWM control function

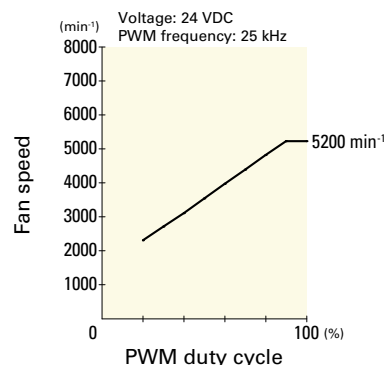
PWM duty cycle



Operating voltage range

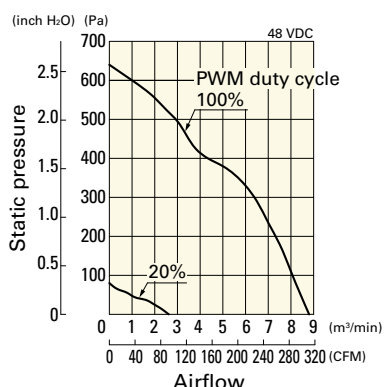


PWM duty - Speed characteristics example

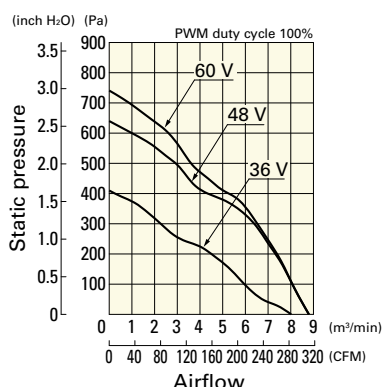


**9GV1448P1G001** With pulse sensor with PWM control function

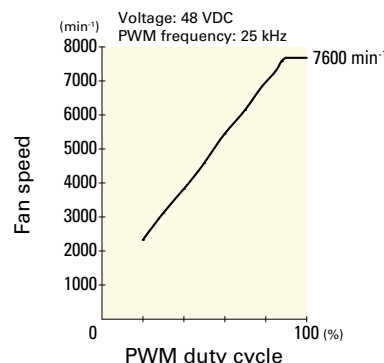
PWM duty cycle



Operating voltage range

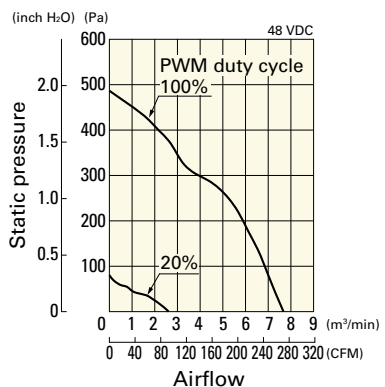


PWM duty - Speed characteristics example

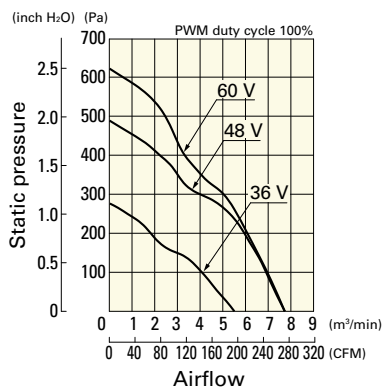


**9GV1448P1S001** With pulse sensor with PWM control function

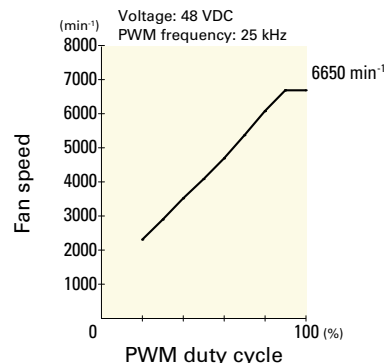
PWM duty cycle



Operating voltage range

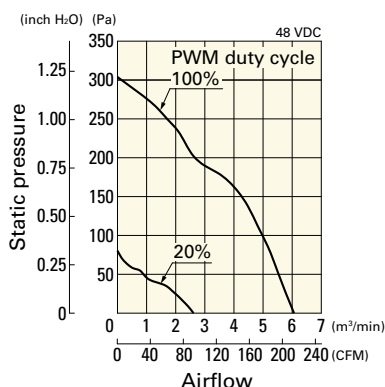


PWM duty - Speed characteristics example

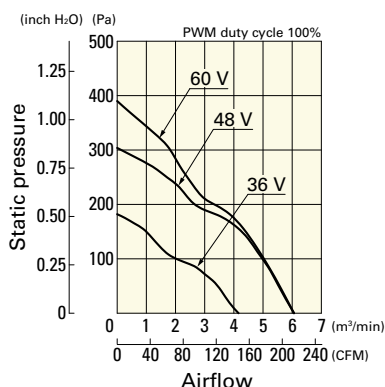


**9GV1448P1H001** With pulse sensor with PWM control function

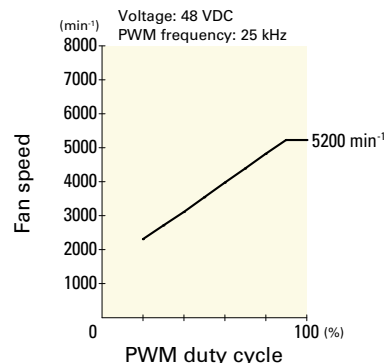
PWM duty cycle



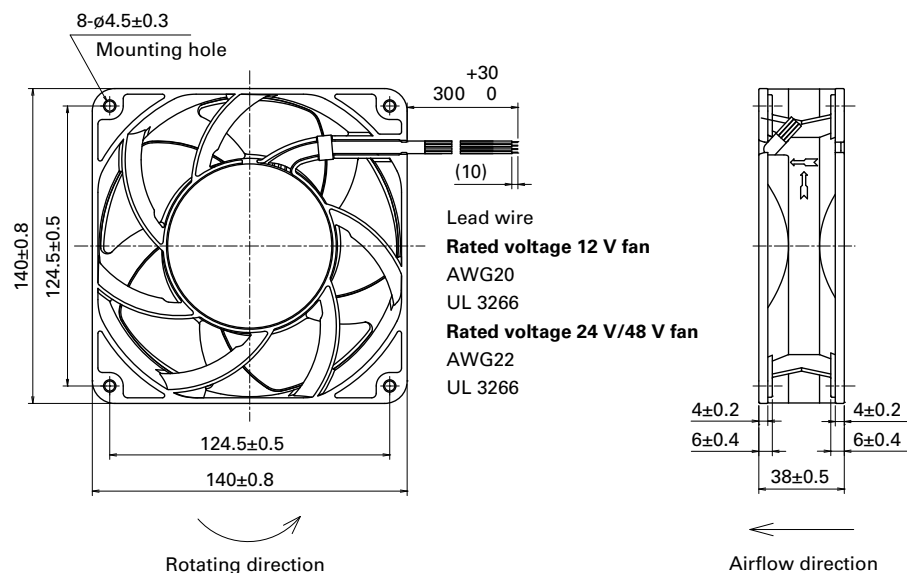
Operating voltage range



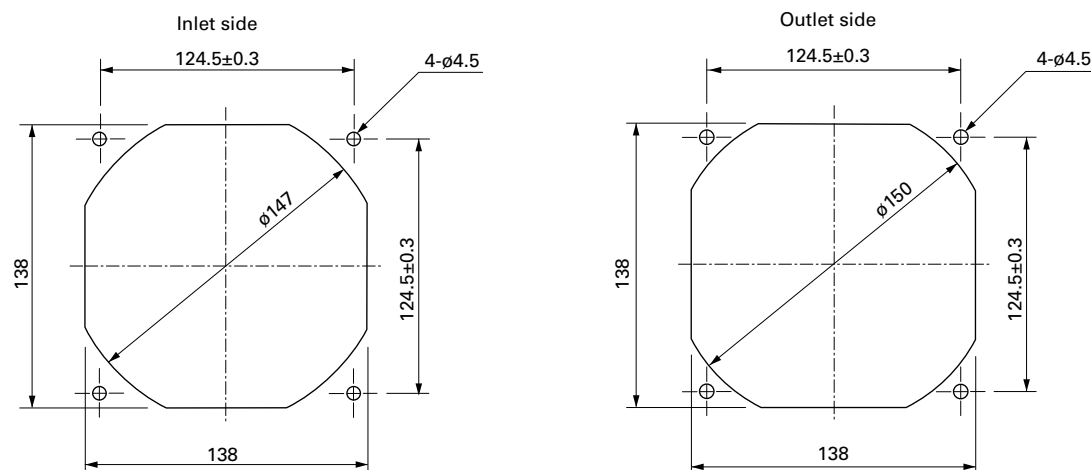
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 565

Model no.: 109-719, 109-719H

## DC Fan

# 140×140×38 mm

**San Ace 140 9P** type   


## General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue ☐ Sensor ☐ Yellow
- Mass ..... 450 g

## Specifications

The models listed below **have ribs and pulse sensors.**

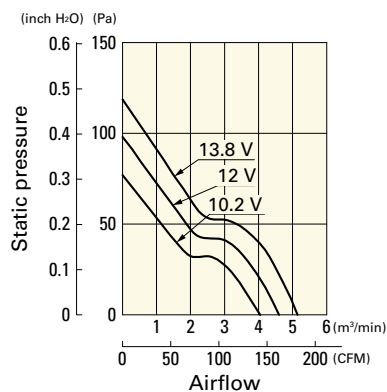
| Model no.           | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m <sup>3</sup> /min] [CFM] | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|---------------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|---------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------|----------------------------|
| <b>109P1412H101</b> | 12                   | 10.2 to 13.8                   | 0.73                 | 8.76               | 2600                                | 4.5 159                                     | 94 0.378                                            | 46              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
| <b>109P1412M101</b> |                      |                                | 0.33                 | 3.96               | 1900                                | 3.3 117                                     | 52 0.209                                            | 38              |                               |                            |
| <b>109P1424H101</b> | 24                   | 20.4 to 27.6                   | 0.37                 | 8.88               | 2600                                | 4.5 159                                     | 94 0.378                                            | 46              |                               |                            |
| <b>109P1424M101</b> |                      |                                | 0.16                 | 3.84               | 1900                                | 3.3 117                                     | 52 0.209                                            | 38              |                               |                            |
| <b>109P1448H101</b> | 48                   | 40.8 to 55.2                   | 0.2                  | 9.6                | 2600                                | 4.5 159                                     | 94 0.378                                            | 46              |                               |                            |
| <b>109P1448M101</b> |                      |                                | 0.09                 | 4.32               | 1900                                | 3.3 117                                     | 52 0.209                                            | 38              |                               |                            |

Note: Sensor and control options are available for selection. Refer to the table on p. 604.

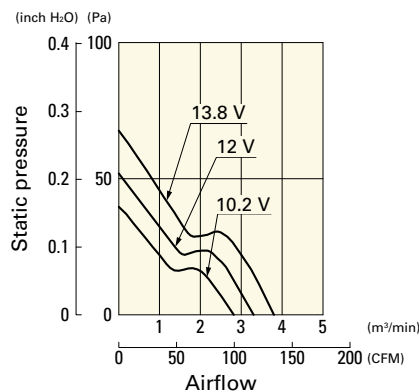
## Airflow - Static Pressure Characteristics

**109P1412H101** With pulse sensor

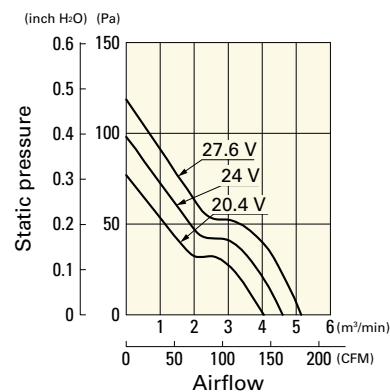
Operating voltage range


**109P1412M101** With pulse sensor

Operating voltage range


**109P1424H101** With pulse sensor

Operating voltage range

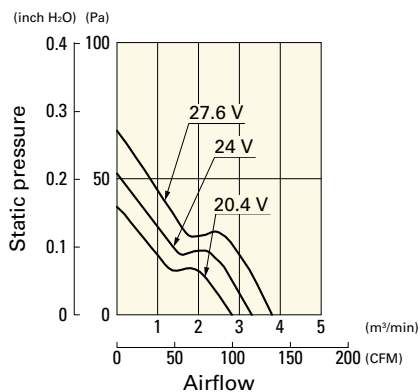




## Airflow - Static Pressure Characteristics

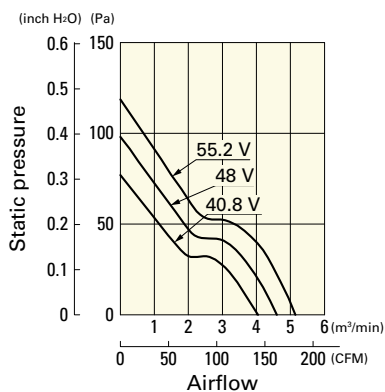
**109P1424M101** With pulse sensor

Operating voltage range



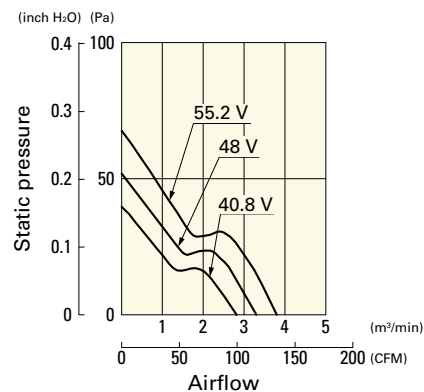
**109P1448H101** With pulse sensor

Operating voltage range

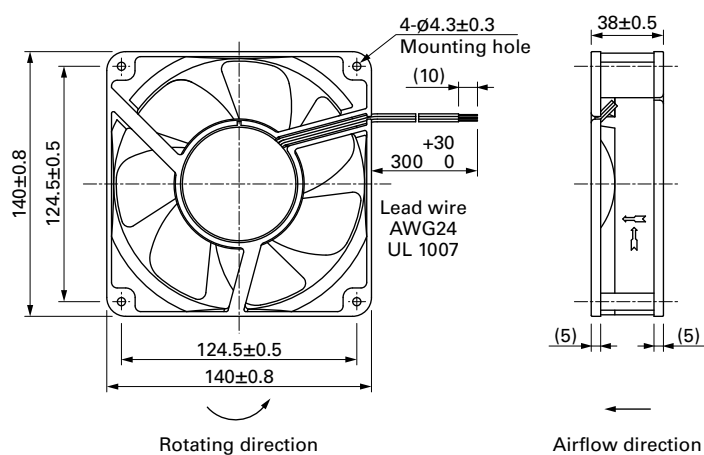


**109P1448M101** With pulse sensor

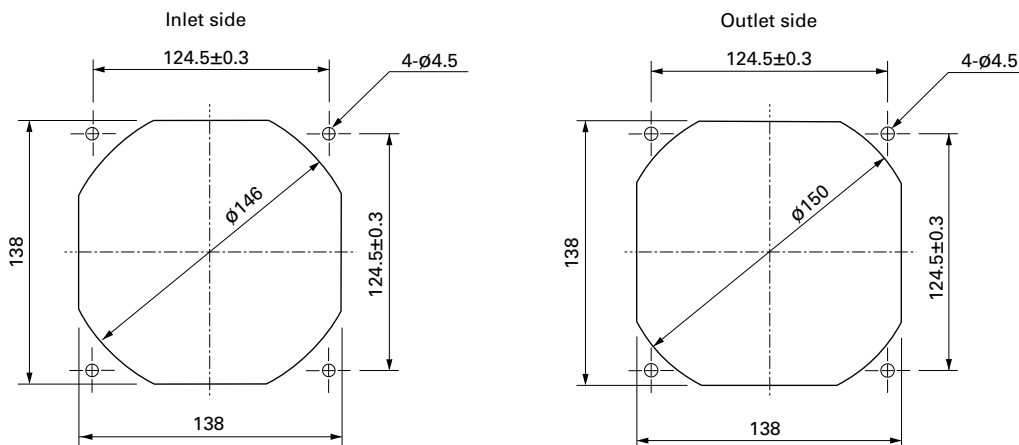
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 565

Model no.: 109-719, 109-719H

## DC Fan



# 150×150×50 mm

**San Ace 150 9GV** type

### General Specifications

- Material ..... Frame: Plastic (Flammability: UL 94V-0), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 450 g

### Specifications

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

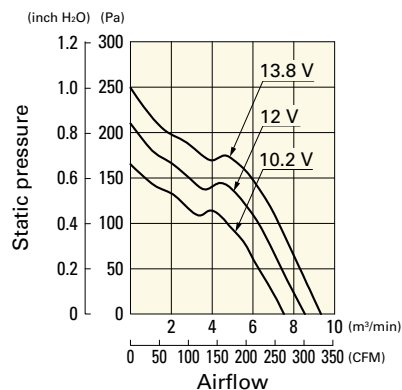
| Model no.          | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|--------------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| <b>9GV1512H501</b> | 12                | 10.2 to 13.8                | 2.9               | 34.8            | 3900                             | 8.54 300                                 | 210 0.84                                         | 61           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
| <b>9GV1512M501</b> |                   |                             | 1.2               | 14.4            | 3000                             | 6.35 224                                 | 132 0.53                                         | 53           |                            |                            |
| <b>9GV1524M501</b> | 24                | 20.4 to 27.6                | 0.6               | 14.4            | 3000                             | 6.35 224                                 | 132 0.53                                         | 53           |                            |                            |

Note: Sensor and control options are available for selection. Refer to the table on p. 612.

### Airflow - Static Pressure Characteristics

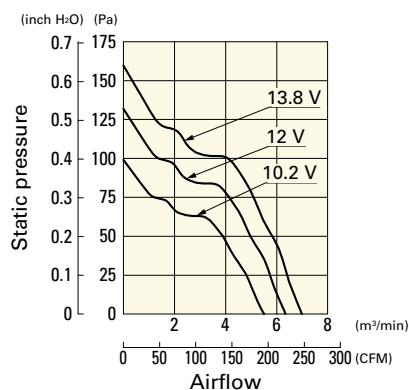
**9GV1512H501** With pulse sensor

Operating voltage range



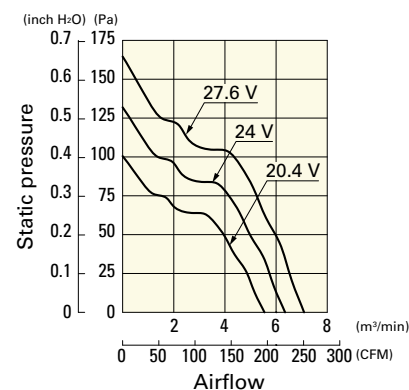
**9GV1512M501** With pulse sensor

Operating voltage range

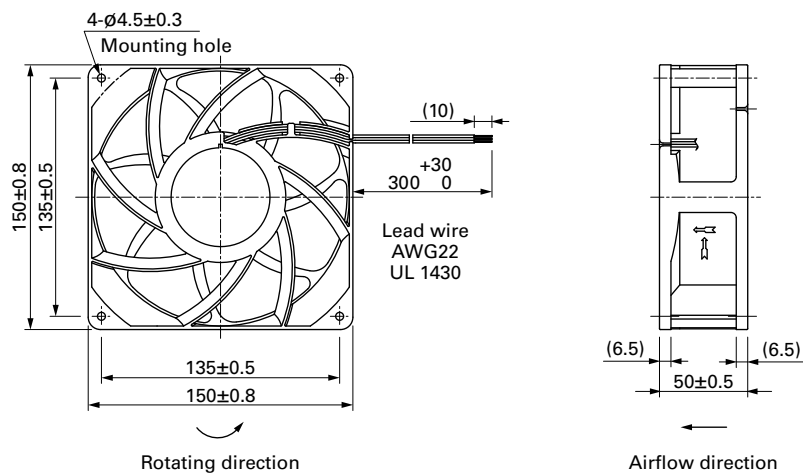


**9GV1524M501** With pulse sensor

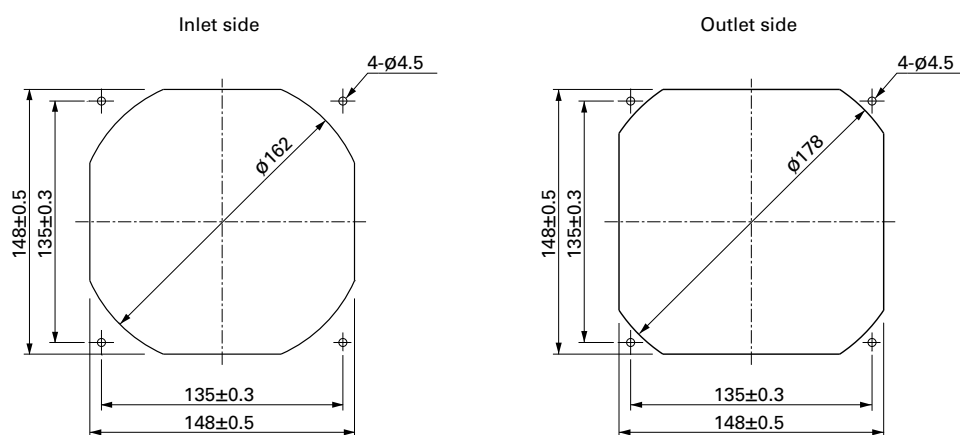
Operating voltage range



## Dimensions (unit: mm) (With ribs)



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



## Options

Finger guards

page: p. 565

Model no.: 109-1051, 109-1052

# Ø172×147×25 mm

**San Ace 172 9E** type   

Sidecut type



## General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 500 g

## Specifications

The models listed below **have pulse sensors**.

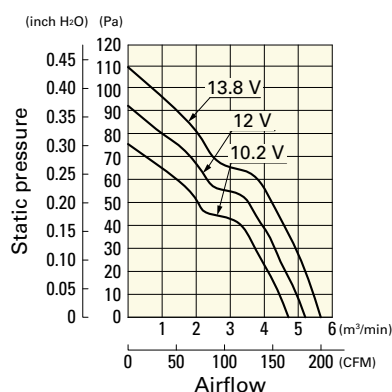
| Model no.           | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| <b>109E4712M401</b> | 12                | 10.2 to 13.8                | 1.3               | 15.6            | 2800                             | 5.2 183                                  | 92 0.369                                         | 51           | -20 to +60                 | 40000/60°C<br>(70000/40°C) |
| <b>109E4712L401</b> |                   |                             | 1.0               | 12.0            | 2500                             | 4.6 162                                  | 73 0.293                                         | 48           |                            |                            |
| <b>109E4724H401</b> | 24                | 20.4 to 27.6                | 1.0               | 24.0            | 3400                             | 6.4 226                                  | 135 0.542                                        | 57           |                            |                            |
| <b>109E4724F401</b> |                   |                             | 0.79              | 19.0            | 3100                             | 5.8 204                                  | 112 0.45                                         | 54           |                            |                            |
| <b>109E4724M401</b> |                   |                             | 0.58              | 13.9            | 2800                             | 5.2 183                                  | 92 0.369                                         | 51           |                            |                            |
| <b>109E4724L401</b> |                   |                             | 0.44              | 10.6            | 2500                             | 4.6 162                                  | 73 0.293                                         | 48           |                            |                            |
| <b>109E4748S401</b> | 48                | 40.8 to 55.2                | 0.62              | 29.8            | 3650                             | 6.8 240                                  | 156 0.627                                        | 58           |                            |                            |
| <b>109E4748H401</b> |                   |                             | 0.52              | 25.0            | 3400                             | 6.4 226                                  | 135 0.542                                        | 57           |                            |                            |
| <b>109E4748F401</b> |                   |                             | 0.4               | 19.2            | 3100                             | 5.8 204                                  | 112 0.45                                         | 54           |                            |                            |
| <b>109E4748M401</b> |                   |                             | 0.32              | 15.4            | 2800                             | 5.2 183                                  | 92 0.369                                         | 51           |                            |                            |
| <b>109E4748L401</b> |                   |                             | 0.25              | 12.0            | 2500                             | 4.6 162                                  | 73 0.293                                         | 48           |                            |                            |

Note: Sensor and control options are available for selection. Refer to the table on pp. 602 to 603.

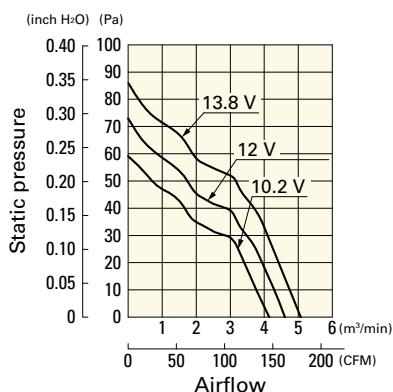
## Airflow - Static Pressure Characteristics

**109E4712M401** With pulse sensor

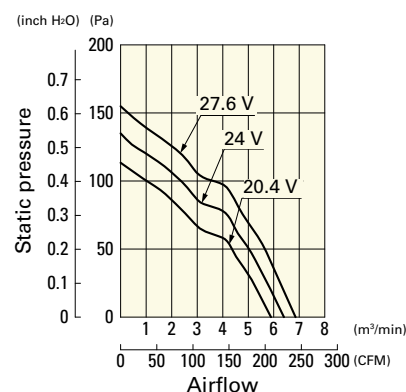
Operating voltage range


**109E4712L401** With pulse sensor

Operating voltage range


**109E4724H401** With pulse sensor

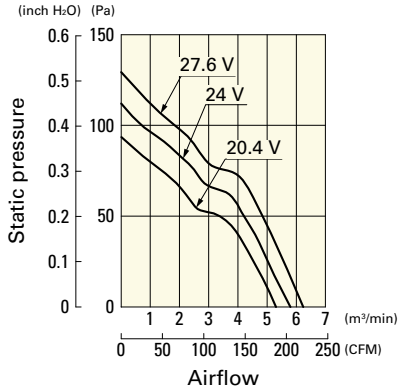
Operating voltage range



## Airflow - Static Pressure Characteristics

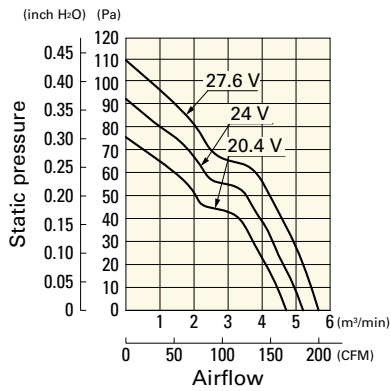
**109E4724F401** With pulse sensor

Operating voltage range



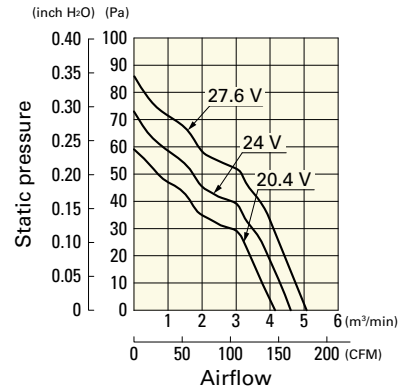
**109E4724M401** With pulse sensor

Operating voltage range



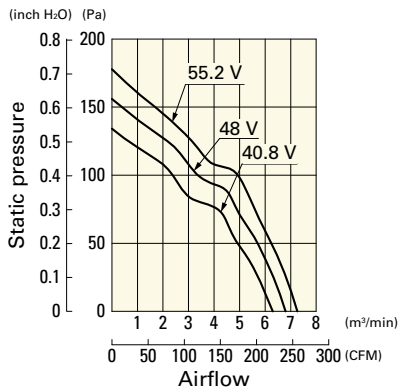
**109E4724L401** With pulse sensor

Operating voltage range



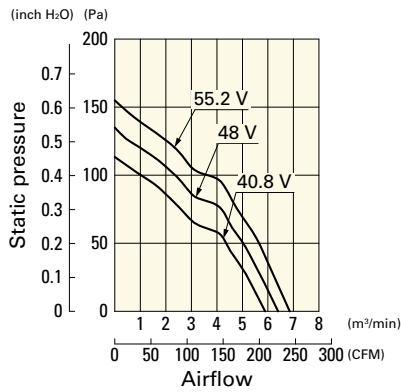
**109E4748S401** With pulse sensor

Operating voltage range



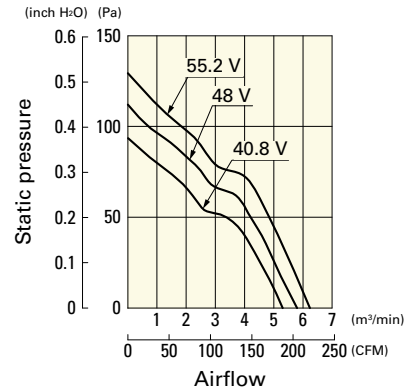
**109E4748H401** With pulse sensor

Operating voltage range



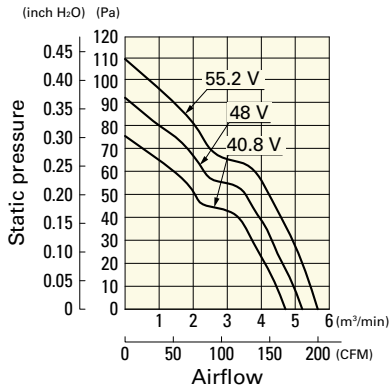
**109E4748F401** With pulse sensor

Operating voltage range



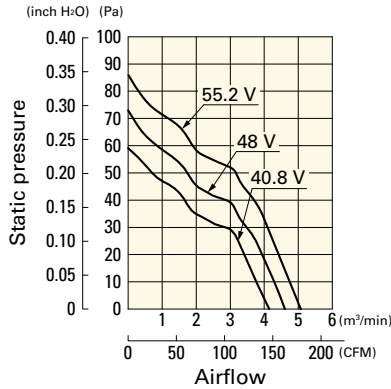
**109E4748M401** With pulse sensor

Operating voltage range

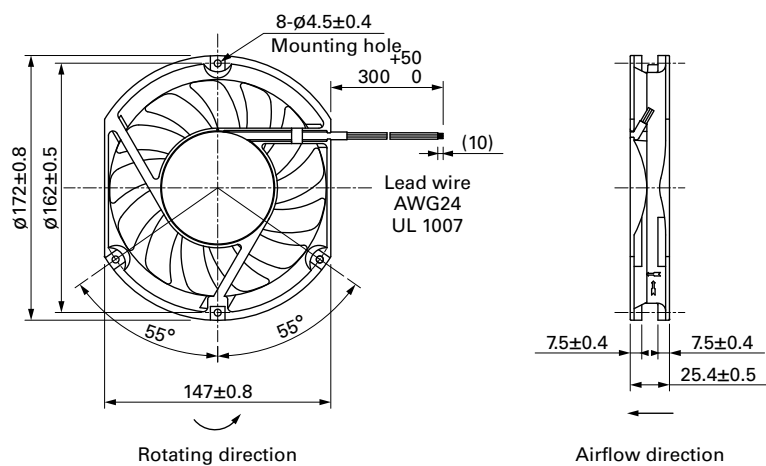


**109E4748L401** With pulse sensor

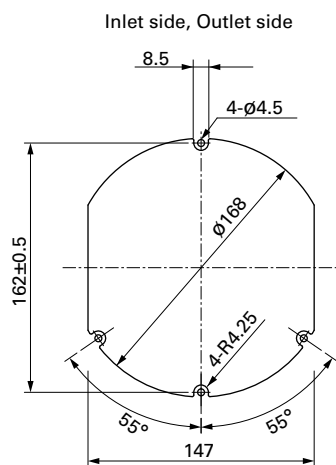
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 566

Model no.: 109-319E, 109-319H, 109-320

# Ø172×150×51 mm

**San Ace 172 9HV** type   

Sidecut type



## General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 800 g

## Specifications

The models listed below **have pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|--------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9HV5724P5H001 | 24                | 16 to 30                    | 100                | 5.0               | 120             | 8000                             | 12.3 434                                 | 1000 4.02                                        | 77           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |
|               |                   |                             | 20                 | 0.5               | 12.0            | 3000                             | 4.6 162                                  | 175 0.7                                          | 51           |                            |                            |
| 9HV5748P5G001 | 48                | 36 to 72                    | 100                | 5.0               | 240             | 10500                            | 16.1 568                                 | 1600 6.43                                        | 83           |                            |                            |
|               |                   |                             | 20                 | 0.41              | 19.7            | 3700                             | 5.6 198                                  | 250 1.01                                         | 57           |                            |                            |

\* 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.

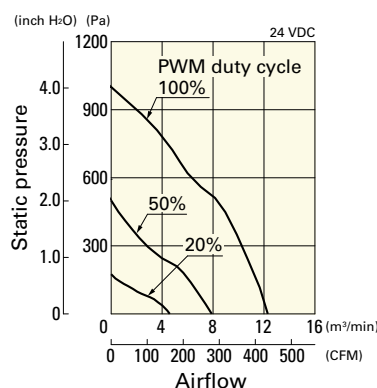
Note 1: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 2: The  mark indicates Short Lead Time Service applicable models. See p. 630 for details.

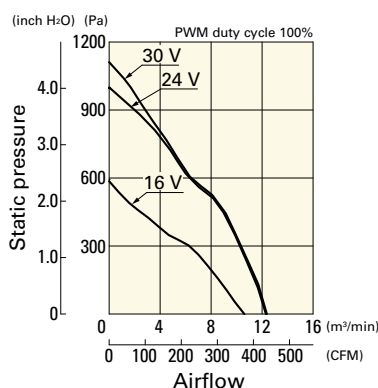
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV5724P5H001** With pulse sensor with PWM control function

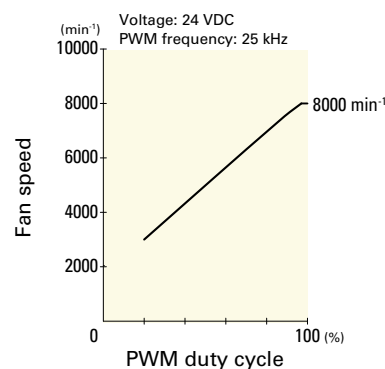
PWM duty cycle



Operating voltage range



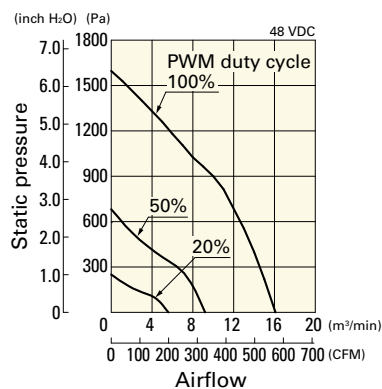
PWM duty - Speed characteristics example



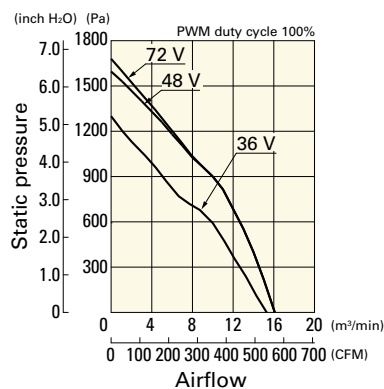
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9HV5748P5G001** With pulse sensor with PWM control function

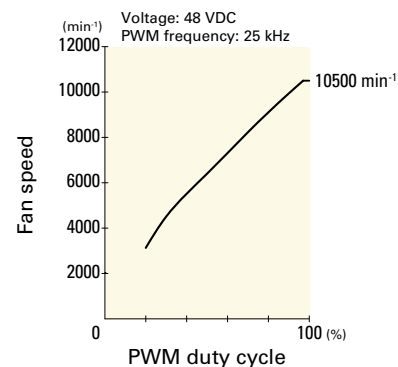
PWM duty cycle



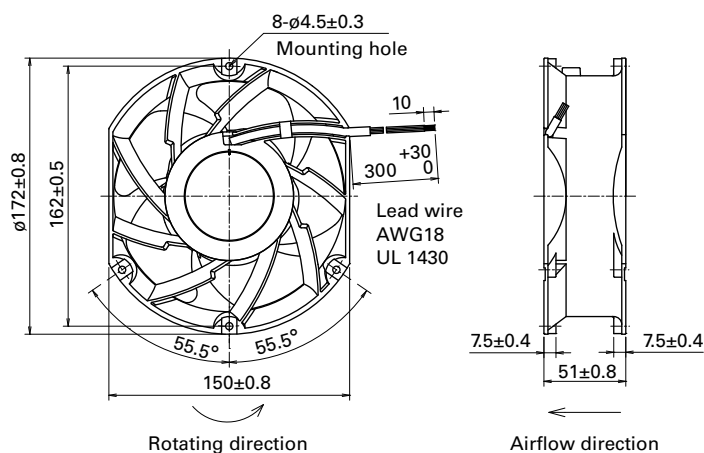
Operating voltage range



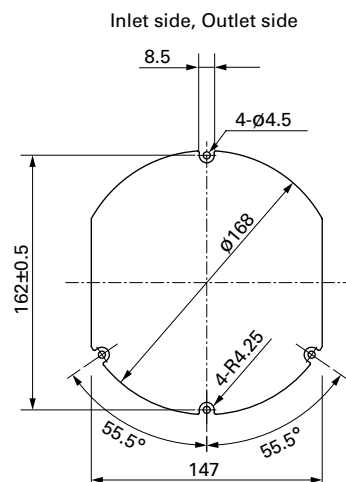
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 566

Model no.: 109-319J, 109-319E, 109-319H, 109-320



# Ø172×150×51 mm

**San Ace 172 9SG** type  **US**

Sidecut type



## General Specifications

- Material ..... Frame: Aluminum, 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. 580.
- 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 ..... 760 g

## Specifications

The models listed below **have pulse sensors with PWM control function.**

| Model no.      | Rated voltage<br>[V] | Operating voltage range<br>[V] | PWM duty<br>cycle* [%] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |      | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |      | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----------------|----------------------|--------------------------------|------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|------|-----------------------------------------------------|------|-----------------|-------------------------------|----------------------------|
| » 9SG5724P5H61 | 24                   | 20.4 to 27.6                   | 100                    | 2.8                  | 67.2               | 6500                                | 11.6                           | 410  | 540                                                 | 2.16 | 71              | -20 to +70                    | 40000/60°C<br>(70000/40°C) |
|                |                      |                                | 0                      | 0.18                 | 4.32               | 1300                                | 2.32                           | 81.9 | 30                                                  | 0.12 | 28              |                               |                            |
| » 9SG5748P5G01 | 48                   | 36 to 72                       | 100                    | 2.91                 | 140                | 8600                                | 15.46                          | 546  | 1000                                                | 4.02 | 78              | -20 to +60                    |                            |
|                |                      |                                | 0                      | 0.21                 | 10.1               | 2000                                | 3.59                           | 127  | 75.1                                                | 0.3  | 40              |                               |                            |
| » 9SG5748P5H01 |                      |                                | 100                    | 1.62                 | 78                 | 6500                                | 11.6                           | 410  | 770                                                 | 3.09 | 71              |                               |                            |
|                |                      |                                | 0                      | 0.21                 | 10.1               | 2000                                | 3.59                           | 127  | 75.1                                                | 0.3  | 40              |                               |                            |

\* 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.

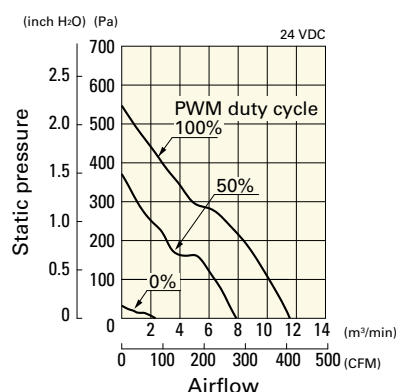
Note 1: Sensor and control options are available for selection. Refer to the table on p. 617.

Note 2: The » mark indicates Short LeadTime Service applicable models. See p. 630 for details.

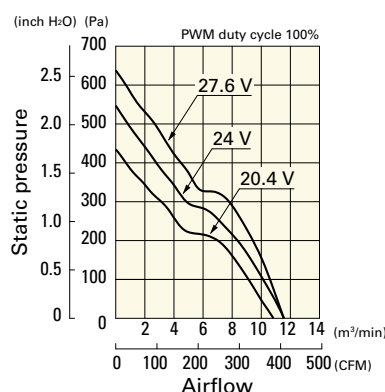
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9SG5724P5H61** With pulse sensor with PWM control function

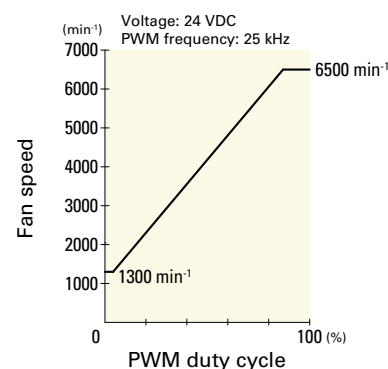
PWM duty cycle



Operating voltage range



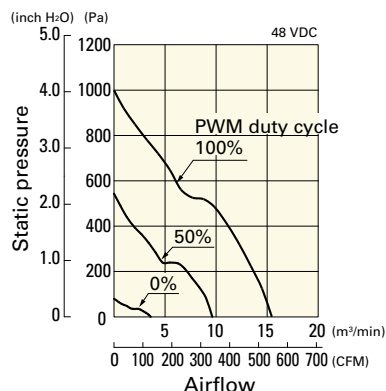
PWM duty - Speed characteristics example



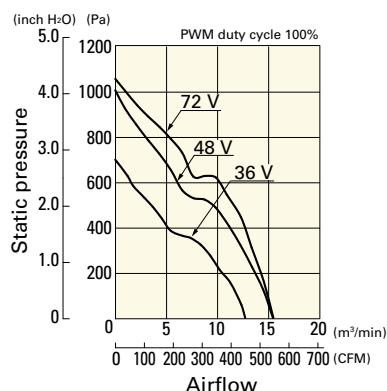
## Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9SG5748P5G01** With pulse sensor with PWM control function

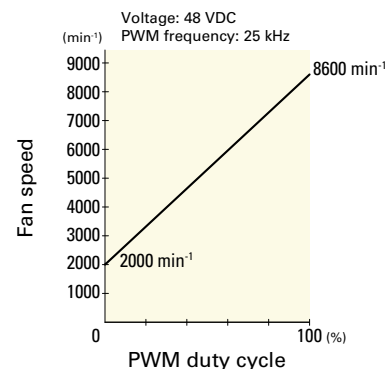
PWM duty cycle



Operating voltage range

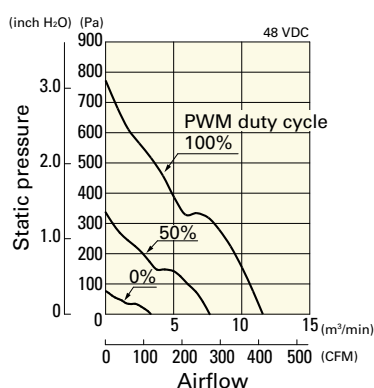


PWM duty - Speed characteristics example

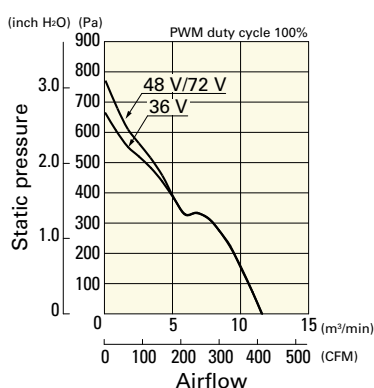


**9SG5748P5H01** With pulse sensor with PWM control function

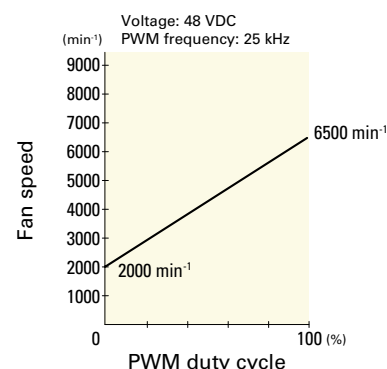
PWM duty cycle



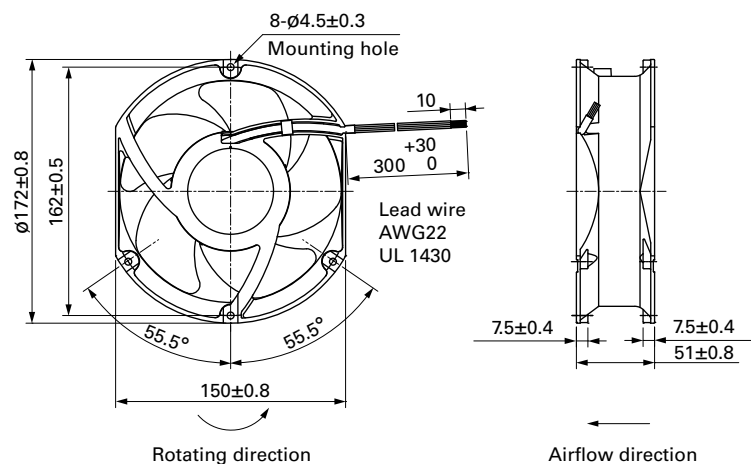
Operating voltage range



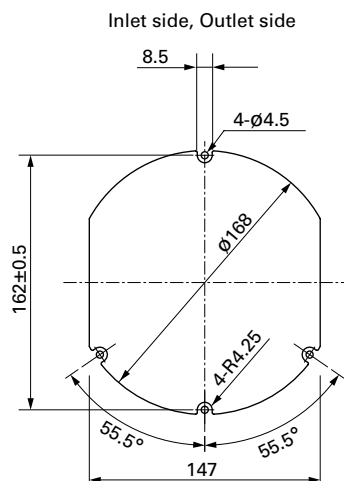
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 566

Model no.: 109-319J, 109-319E, 109-319H, 109-320

# Ø172×150×51 mm

**San Ace 172 9E** type   

Sidecut type



## General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue ☐ Sensor Yellow
- Mass ..... 760 g

## Specifications

The models listed below **have pulse sensors**.

|    | Model no.    | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |     | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |       | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |
|----|--------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----|-----------------------------------------------------|-------|-----------------|-------------------------------|----------------------------|
| ▶▶ | 109E5712K501 | 12                   | 10.2 to 13.8                   | 2.9                  | 34.8               | 4100                                | 8.5                            | 300 | 243.0                                               | 0.976 | 60              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |
|    | 109E5712Y501 |                      |                                | 2.3                  | 27.6               | 3800                                | 8                              | 282 | 210                                                 | 0.84  | 60              |                               |                            |
| ▶▶ | 109E5712H501 |                      |                                | 1.2                  | 14.4               | 3050                                | 6.4                            | 226 | 137.2                                               | 0.551 | 52              | -20 to +70                    |                            |
|    | 109E5712F501 |                      |                                | 0.68                 | 8.16               | 2500                                | 5.1                            | 180 | 95                                                  | 0.38  | 47              |                               |                            |
|    | 109E5712M501 |                      |                                | 0.48                 | 5.76               | 2000                                | 4.2                            | 148 | 67.6                                                | 0.271 | 41              |                               |                            |
| ▶▶ | 109E5724C501 | 24                   | 20.4 to 27.6                   | 2.3                  | 55.2               | 4800                                | 9.9                            | 350 | 308.0                                               | 1.237 | 66              |                               |                            |
| ▶▶ | 109E5724K501 |                      |                                | 1.3                  | 31.2               | 4100                                | 8.5                            | 300 | 243.0                                               | 0.976 | 60              |                               |                            |
| ▶▶ | 109E5724H501 |                      |                                | 0.58                 | 13.92              | 3050                                | 6.4                            | 226 | 137.2                                               | 0.551 | 52              |                               |                            |
|    | 109E5724F501 |                      |                                | 0.35                 | 8.4                | 2500                                | 5.1                            | 180 | 95                                                  | 0.38  | 47              |                               |                            |
| ▶▶ | 109E5724M501 |                      |                                | 0.2                  | 4.8                | 2000                                | 4.2                            | 148 | 67.6                                                | 0.271 | 41              |                               |                            |
| ▶▶ | 109E5748C501 | 48                   | 40.8 to 55.2                   | 1.2                  | 57.6               | 4800                                | 9.9                            | 350 | 308.0                                               | 1.237 | 66              | -20 to +60                    |                            |
| ▶▶ | 109E5748K501 |                      |                                | 0.7                  | 33.6               | 4100                                | 8.5                            | 300 | 243.0                                               | 0.976 | 60              |                               |                            |
| ▶▶ | 109E5748H501 |                      |                                | 0.28                 | 13.44              | 3050                                | 6.4                            | 226 | 137.2                                               | 0.551 | 52              | -20 to +70                    |                            |
|    | 109E5748F501 |                      |                                | 0.19                 | 9.12               | 2500                                | 5.1                            | 180 | 95                                                  | 0.38  | 47              |                               |                            |
|    | 109E5748M501 |                      |                                | 0.11                 | 5.28               | 2000                                | 4.2                            | 148 | 67.6                                                | 0.271 | 41              |                               |                            |

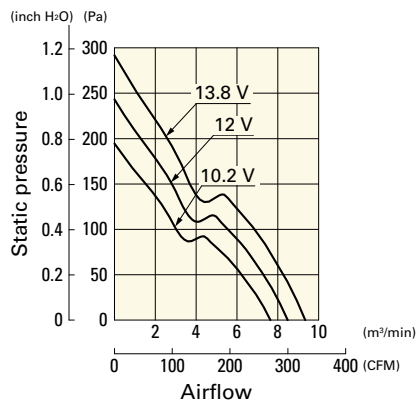
Note 1: Sensor and control options are available for selection. Refer to the table on p. 603.

Note 2: The ▶▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

## Airflow - Static Pressure Characteristics

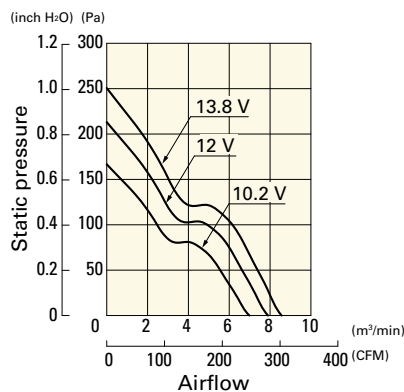
**109E5712K501** With pulse sensor

Operating voltage range



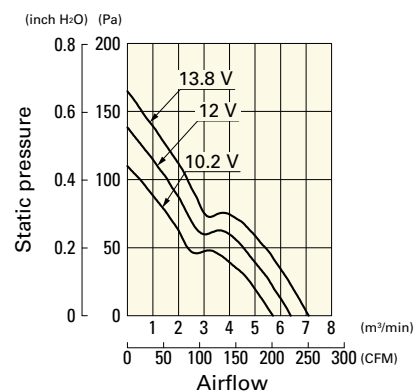
**109E5712Y501** With pulse sensor

Operating voltage range



**109E5712H501** With pulse sensor

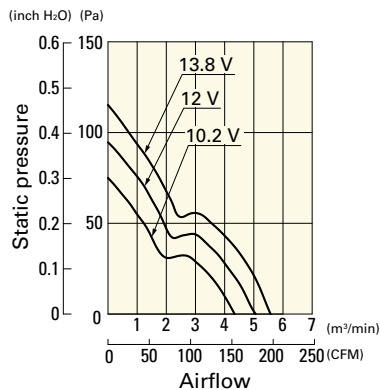
Operating voltage range



## Airflow - Static Pressure Characteristics

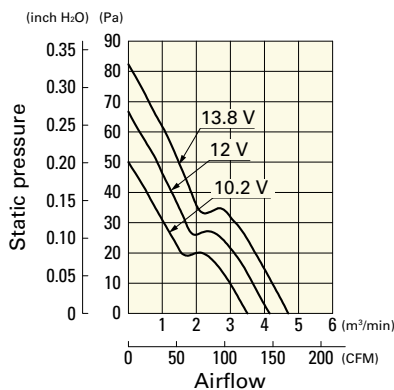
**109E5712F501** With pulse sensor

Operating voltage range



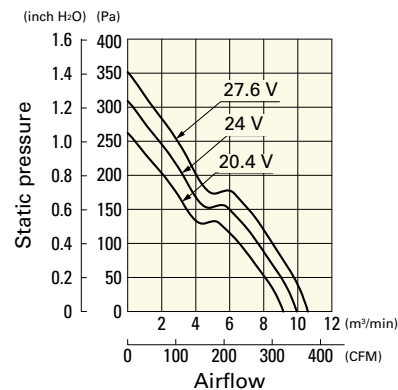
**109E5712M501** With pulse sensor

Operating voltage range



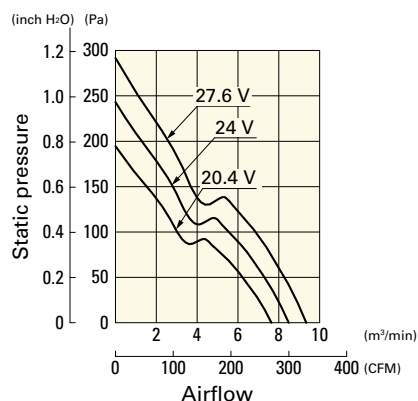
**109E5724C501** With pulse sensor

Operating voltage range



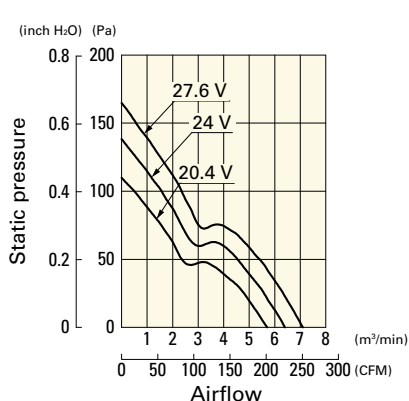
**109E5724K501** With pulse sensor

Operating voltage range



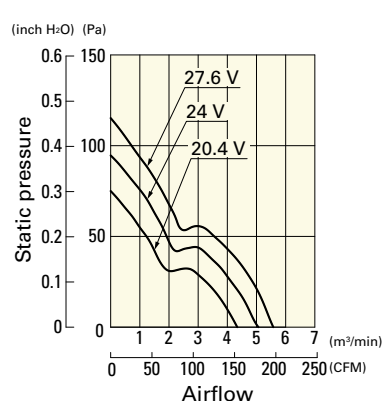
**109E5724H501** With pulse sensor

Operating voltage range



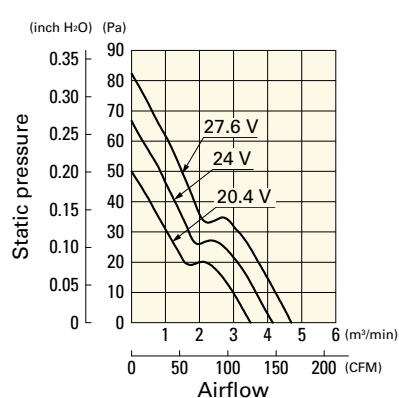
**109E5724F501** With pulse sensor

Operating voltage range



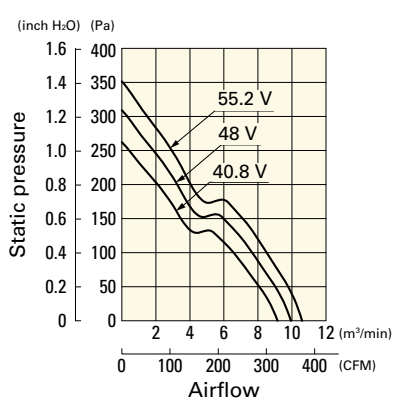
**109E5724M501** With pulse sensor

Operating voltage range



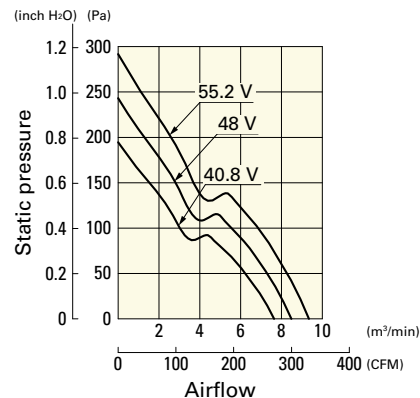
**109E5748C501** With pulse sensor

Operating voltage range



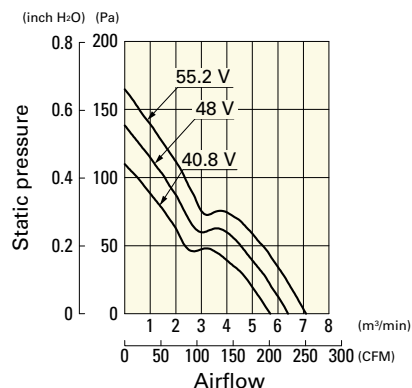
**109E5748K501** With pulse sensor

Operating voltage range



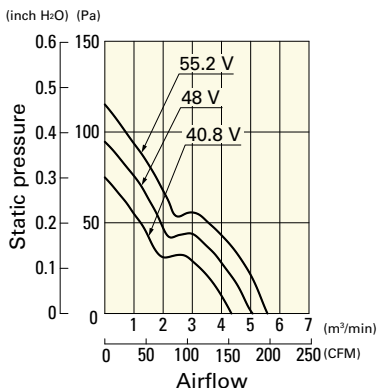
**109E5748H501** With pulse sensor

Operating voltage range



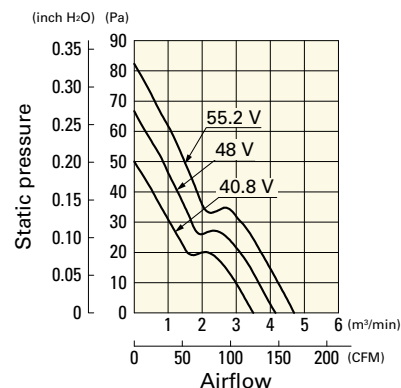
**109E5748F501** With pulse sensor

Operating voltage range

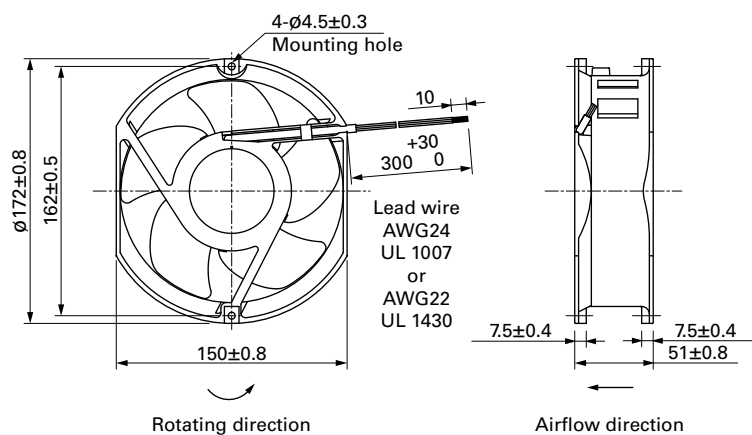


**109E5748M501** With pulse sensor

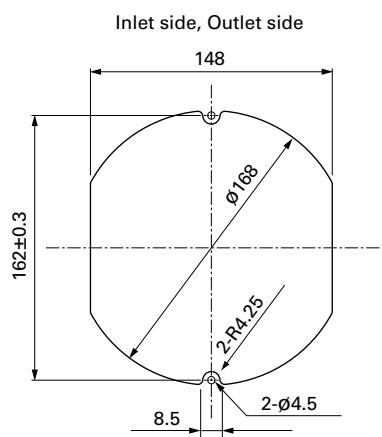
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 566

Model no.: 109-319E, 109-319H, 109-320

# Ø172x51 mm

**San Ace 172 9E** type   

Round type



## General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue Sensor Yellow
- Mass ..... 780 g

## Specifications

The models listed below **have pulse sensors**.

|   | Model no.    | Rated voltage<br>[V] | Operating voltage range<br>[V] | Rated current<br>[A] | Rated input<br>[W] | Rated speed<br>[min <sup>-1</sup> ] | Max. airflow<br>[m³/min] [CFM] |     | Max. static pressure<br>[Pa] [inchH <sub>2</sub> O] |       | SPL<br>[dB (A)] | Operating temperature<br>[°C] | Expected life<br>[h]       |            |
|---|--------------|----------------------|--------------------------------|----------------------|--------------------|-------------------------------------|--------------------------------|-----|-----------------------------------------------------|-------|-----------------|-------------------------------|----------------------------|------------|
| ▶ | 109E1712K501 | 12                   | 10.2 to 13.8                   | 2.9                  | 34.8               | 4100                                | 8.5                            | 300 | 243.0                                               | 0.976 | 55              | -20 to +60                    | 40000/60°C<br>(70000/40°C) |            |
|   | 109E1712Y501 |                      |                                | 2.3                  | 27.6               | 3800                                | 7.8                            | 276 | 210.0                                               | 0.843 | 53              |                               |                            |            |
| ▶ | 109E1712H501 |                      |                                | 1.2                  | 14.4               | 3050                                | 6.4                            | 226 | 137.2                                               | 0.551 | 47              | -20 to +70                    |                            |            |
|   | 109E1712F501 |                      |                                | 0.68                 | 10.8               | 2500                                | 5.1                            | 180 | 95.0                                                | 0.382 | 42              |                               |                            |            |
| ▶ | 109E1712M501 |                      |                                | 0.48                 | 5.76               | 2000                                | 4.2                            | 148 | 67.6                                                | 0.271 | 36              |                               |                            |            |
| ▶ | 109E1724C501 | 24                   | 20.4 to 27.6                   | 2.3                  | 55.2               | 4800                                | 9.9                            | 350 | 308.0                                               | 1.237 | 60              |                               |                            |            |
| ▶ | 109E1724K501 |                      |                                | 1.3                  | 31.2               | 4100                                | 8.5                            | 300 | 243.0                                               | 0.976 | 55              |                               |                            |            |
| ▶ | 109E1724H501 |                      |                                | 0.58                 | 13.92              | 3050                                | 6.4                            | 226 | 137.2                                               | 0.551 | 47              |                               |                            |            |
|   | 109E1724F501 |                      |                                | 0.35                 | 8.4                | 2500                                | 5.1                            | 180 | 95                                                  | 0.382 | 42              |                               |                            |            |
| ▶ | 109E1724M501 |                      |                                | 0.2                  | 4.8                | 2000                                | 4.2                            | 148 | 67.6                                                | 0.271 | 36              |                               |                            |            |
| ▶ | 109E1748C501 | 48                   | 40.8 to 55.2                   | 1.2                  | 57.6               | 4800                                | 9.9                            | 350 | 308.0                                               | 1.237 | 60              | -20 to +60                    |                            |            |
|   | 109E1748K501 |                      |                                | 0.7                  | 33.6               | 4100                                | 8.5                            | 300 | 243.0                                               | 0.976 | 55              |                               |                            |            |
| ▶ | 109E1748H501 |                      |                                | 0.28                 | 13.44              | 3050                                | 6.4                            | 226 | 137.2                                               | 0.551 | 47              |                               |                            | -20 to +70 |
|   | 109E1748F501 |                      |                                | 0.19                 | 9.12               | 2500                                | 5.1                            | 180 | 95                                                  | 0.382 | 42              |                               |                            | -20 to +60 |
| ▶ | 109E1748M501 |                      |                                | 0.11                 | 5.28               | 2000                                | 4.2                            | 148 | 67.6                                                | 0.271 | 36              |                               |                            | -20 to +70 |

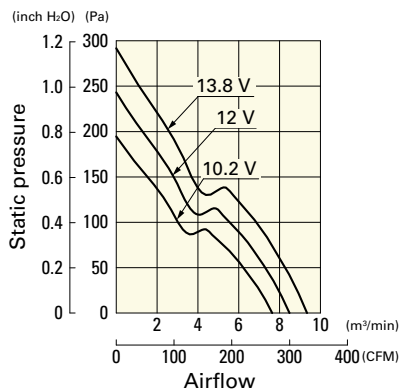
Note 1: Sensor and control options are available for selection. Refer to the table on p. 602.

Note 2: The ▶ mark indicates Short LeadTime Service applicable models. See p. 630 for details.

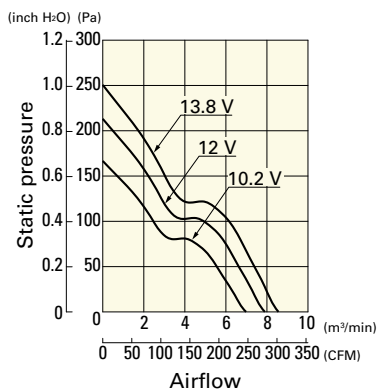
## Airflow - Static Pressure Characteristics

**109E1712K501** With pulse sensor

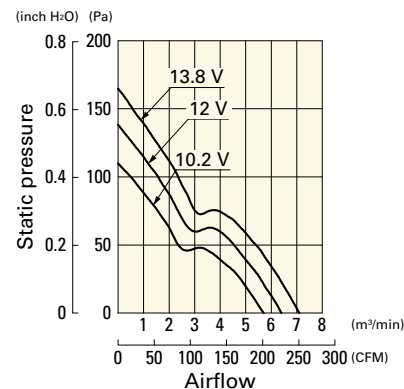
Operating voltage range


**109E1712Y501** With pulse sensor

Operating voltage range


**109E1712H501** With pulse sensor

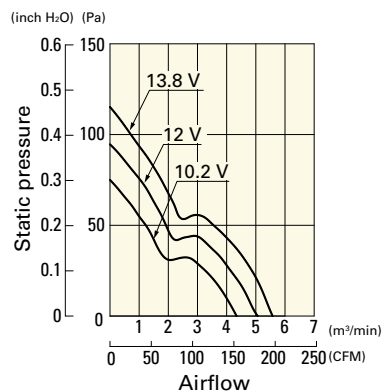
Operating voltage range



## Airflow - Static Pressure Characteristics

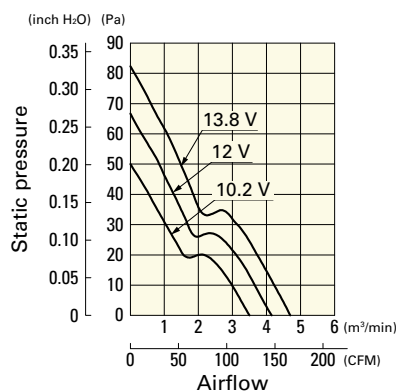
**109E1712F501** With pulse sensor

Operating voltage range



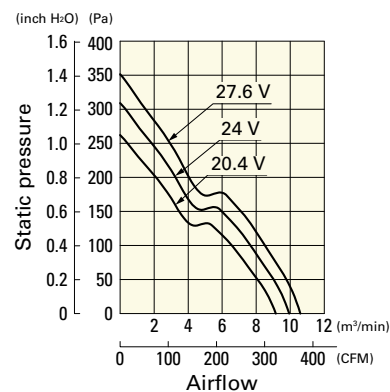
**109E1712M501** With pulse sensor

Operating voltage range



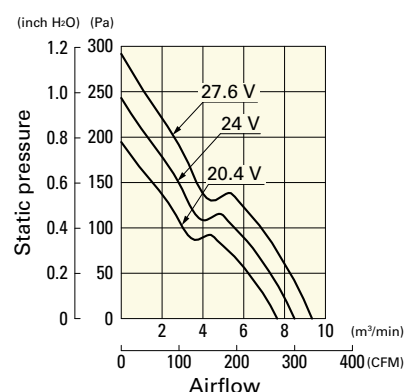
**109E1724C501** With pulse sensor

Operating voltage range



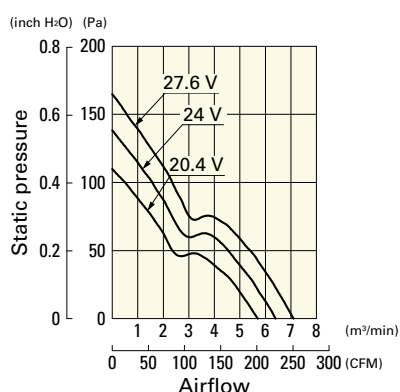
**109E1724K501** With pulse sensor

Operating voltage range



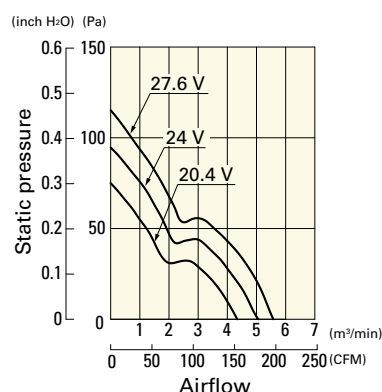
**109E1724H501** With pulse sensor

Operating voltage range



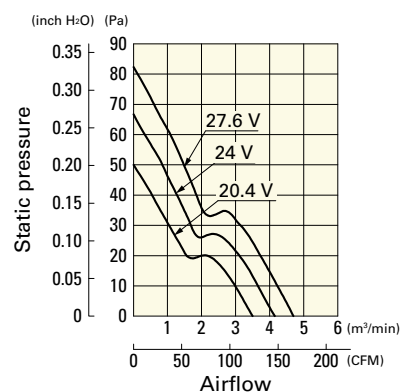
**109E1724F501** With pulse sensor

Operating voltage range



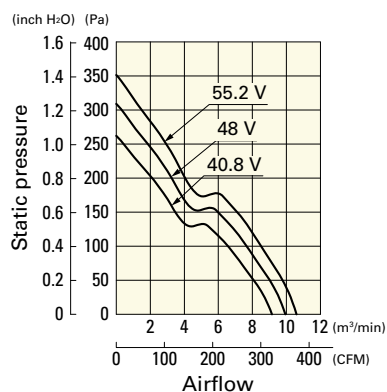
**109E1724M501** With pulse sensor

Operating voltage range



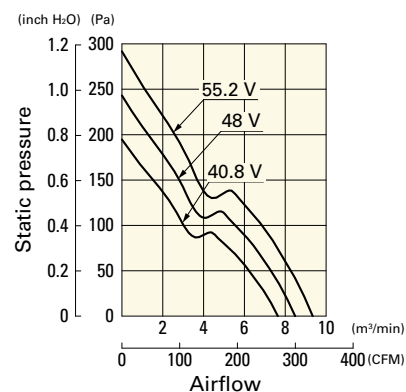
**109E1748C501** With pulse sensor

Operating voltage range



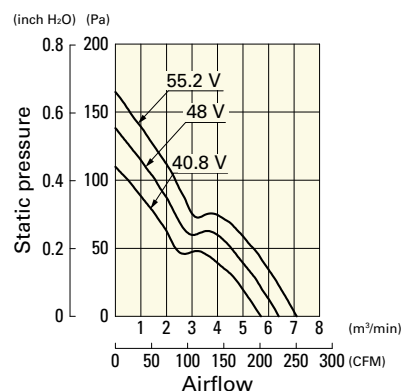
**109E1748K501** With pulse sensor

Operating voltage range



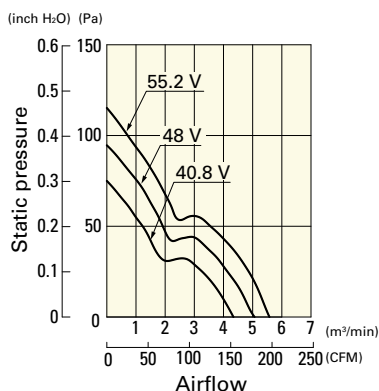
**109E1748H501** With pulse sensor

Operating voltage range



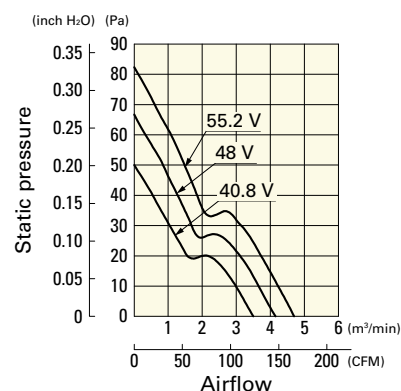
**109E1748F501** With pulse sensor

Operating voltage range



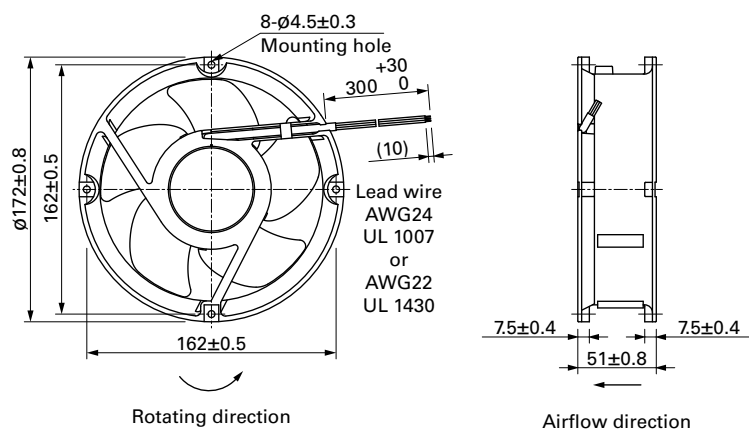
**109E1748M501** With pulse sensor

Operating voltage range

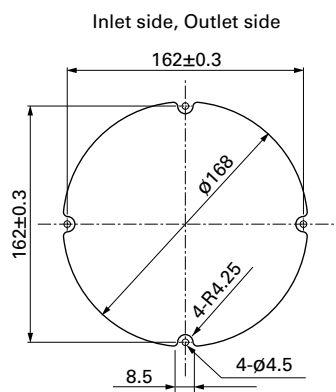




## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 566

Model no.: 109-319E, 109-319H, 109-320, 109-1066, 109-1068

## DC Fan

# Ø200x70 mm

## San Ace 200 9GV type



### General Specifications

- Material ..... Frame: Aluminum, Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 ..... 1800 g

Once the fan stops, wait for at least 15 seconds before restarting the fan.

### Specifications

The models listed below **have pulse sensors with PWM control function.**

| Model no.     | Rated voltage [V] | Operating voltage range [V] | PWM duty cycle* [%] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|---------------|-------------------|-----------------------------|---------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9GV2048P0G201 | 48                | 36 to 72                    | 100                 | 12.5              | 600             | 8000                             | 31.5 1112                                | 1400 5.62                                        | 81           | -20 to +70                 | 40000/60°C<br>(70000/40°C) |

\* PWM frequency is 1 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.

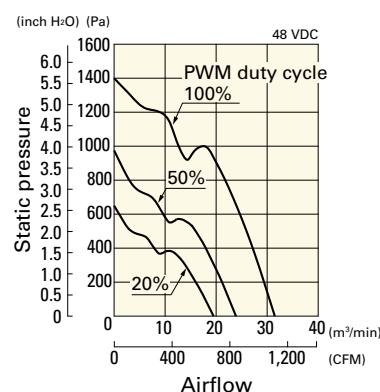
Note 1: Sensor and control options are available for selection. Refer to the table on p. 612.

Note 2: The mark indicates Short LeadTime Service applicable models. See p. 630 for details.

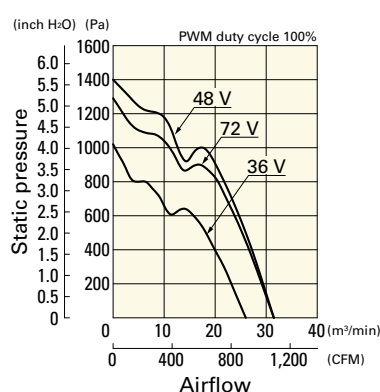
### Airflow - Static Pressure Characteristics / PWM Duty - Speed Characteristics Example

**9GV2048P0G201** With pulse sensor with PWM control function

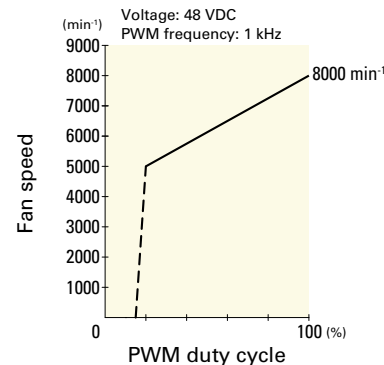
PWM duty cycle



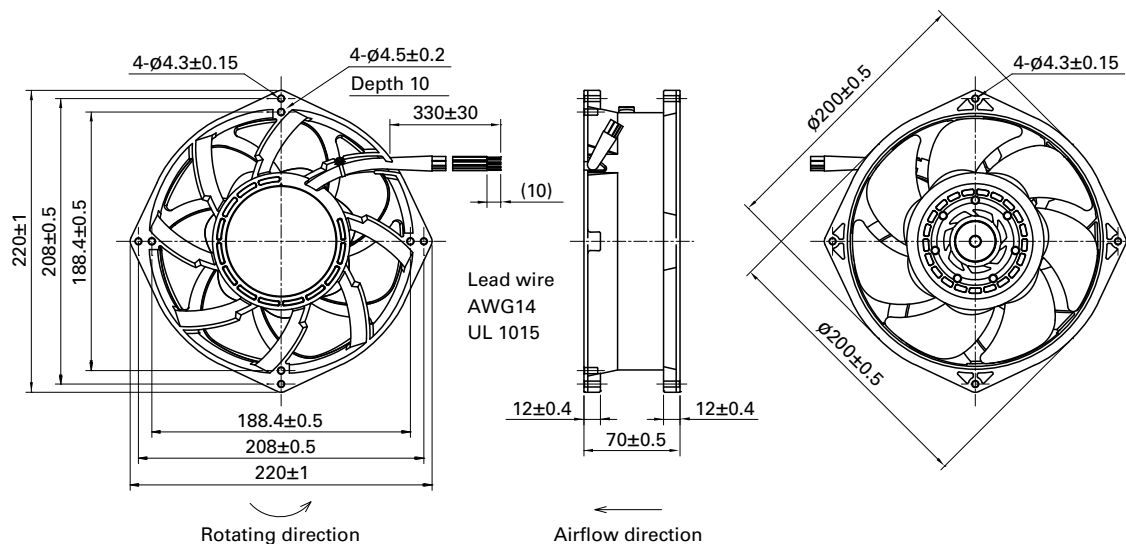
Operating voltage range



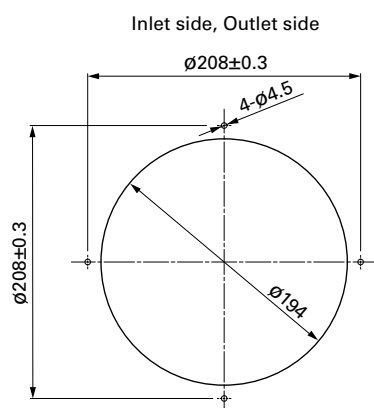
PWM duty - Speed characteristics example



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 567

Model no.: 109-1102, 109-1102H, 109-1103, 109-1103H

## DC Fan

# Ø200×70 mm

## San Ace 200 9EC type



### General Specifications

- Material ..... Frame: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-1)
- 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. 580.
- 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 or Blue    ☐Sensor    ☐Yellow
- Mass ..... 1800 g

Once the fan stops, wait for at least 10 seconds before restarting the fan.

### Specifications

The models listed below **have pulse sensors**.

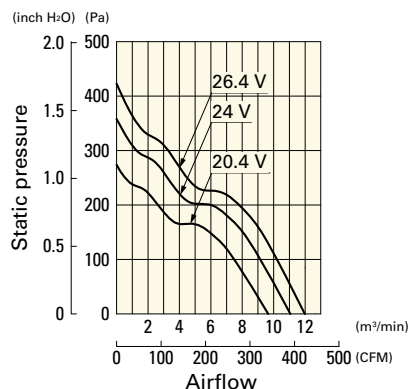
| Model no.   | Rated voltage [V] | Operating voltage range [V] | Rated current [A] | Rated input [W] | Rated speed [min <sup>-1</sup> ] | Max. airflow [m <sup>3</sup> /min] [CFM] | Max. static pressure [Pa] [inchH <sub>2</sub> O] | SPL [dB (A)] | Operating temperature [°C] | Expected life [h]          |
|-------------|-------------------|-----------------------------|-------------------|-----------------|----------------------------------|------------------------------------------|--------------------------------------------------|--------------|----------------------------|----------------------------|
| 9EC2024H001 | 24                | 20.4 to 26.4                | 2.0               | 48.0            | 3600                             | 11.0 388                                 | 360 1.446                                        | 60           | -20 to +60                 | 40000/60°C<br>(70000/40°C) |
| 9EC2048A001 | 48                | 43.0 to 51.0                | 2.2               | 105.6           | 4800                             | 14.7 519                                 | 640 2.57                                         | 68           |                            |                            |
| 9EC2048H001 |                   | 40.8 to 52.8                | 1.2               | 57.6            | 3600                             | 11.0 388                                 | 360 1.446                                        | 60           |                            |                            |

Note: Sensor and control options are available for selection. Refer to the table on p. 605.

### Airflow - Static Pressure Characteristics

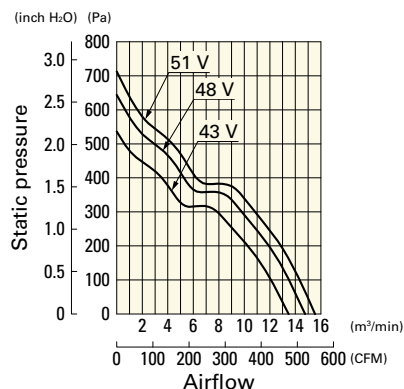
9EC2024H001 With pulse sensor

Operating voltage range



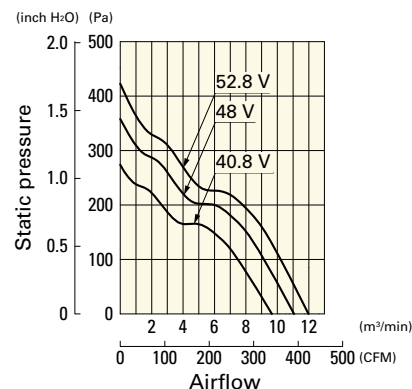
9EC2048A001 With pulse sensor

Operating voltage range

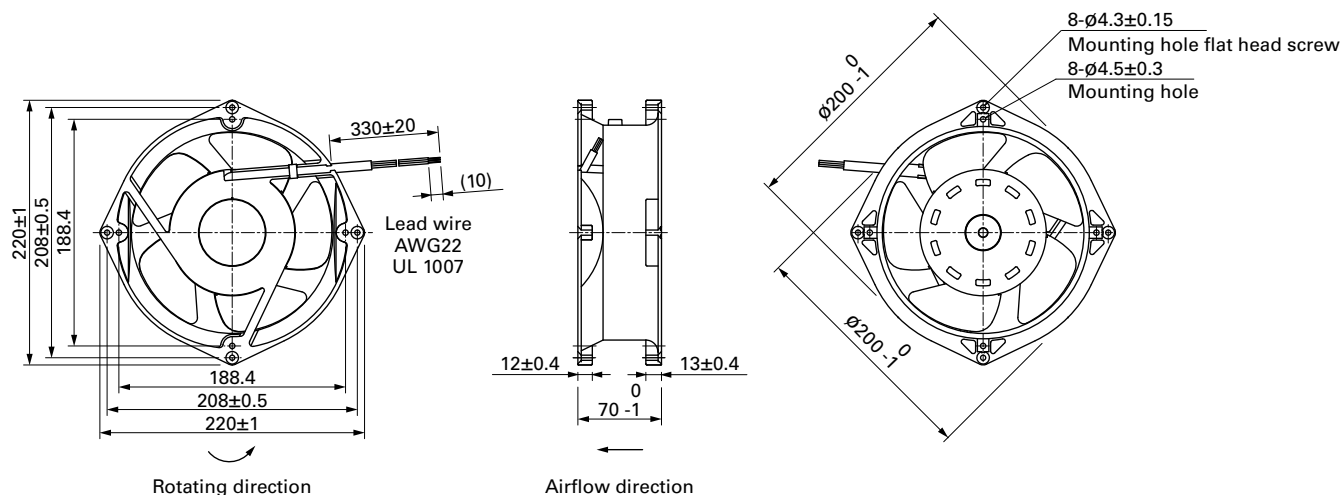


9EC2048H001 With pulse sensor

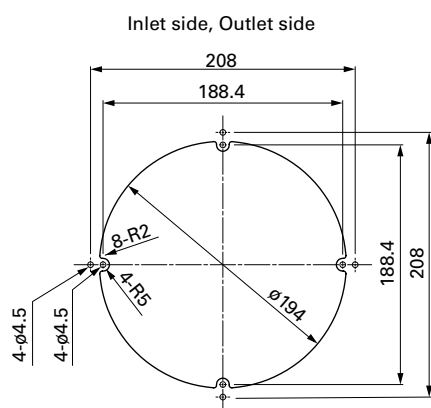
Operating voltage range



## Dimensions (unit: mm)



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



## Options

Finger guards

page: p. 567

Model no.: 109-720, 109-720H, 109-721, 109-721H