

# San Ace 120 9GA type

## Low Power Consumption Fan

### Features

#### Low Power Consumption

The power consumption has decreased by 45% compared with our current model.\*

#### High Static Pressure

The static pressure has increased by 63% compared with our current model.\*

#### Low Noise and High Energy Efficiency

The PWM control function enables the external control of fan speed, contributing to lower noise and higher energy efficiency of devices.

\* Our current DC fan model 9GV1212P4G01, 120 x 120 x 25 mm "San Ace 120 9GV type".



**120 × 120 × 25 mm**

### Specifications

The following nos. **have PWM controls, pulse sensors, and ribs. For ribless, append "1" to the model no.**

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]
9GA1212P4G001	12	10.2 to 13.8	100	0.93	11.16	6,400	3.8 134	365 1.47	57	-20 to +70	40,000/60°C (70,000/40°C)
			25	0.16	1.92	2,550	1.5 53	60 0.24	34		
9GA1212P4S001	12	10.2 to 13.8	100	0.61	7.32	5,400	3.2 113	260 1.04	54		
			25	0.16	1.92	2,550	1.5 53	60 0.24	34		
9GA1224P4G001	24	20.4 to 27.6	100	0.47	11.28	6,400	3.8 134	365 1.47	57		
			25	0.10	2.40	2,550	1.5 53	60 0.24	34		
9GA1224P4S001	24	20.4 to 27.6	100	0.31	7.44	5,400	3.2 113	260 1.04	54		
			25	0.10	2.40	2,550	1.5 53	60 0.24	34		
9GA1248P4G001	48	40.8 to 53	100	0.24	11.52	6,400	3.8 134	365 1.47	57		
			25	0.08	3.84	2,550	1.5 53	60 0.24	34		
9GA1248P4S001	48	40.8 to 53	100	0.16	7.68	5,400	3.2 113	260 1.04	54		
			25	0.08	3.84	2,550	1.5 53	60 0.24	34		

\* PWM frequency: 25 kHz, Fans do not rotate when PWM duty cycle is 0%.

Models with the following sensor specifications are also available as options: Without sensor Lock sensor

The following nos. **have pulse sensors, and ribs. For ribless, append "1" to the model no.**

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]
9GA1212G4001	12	7 to 13.8	0.93	11.16	6,400	3.8 134	365 1.47	57	-20 to +70	40,000/60°C (70,000/40°C)
9GA1212S4001			0.61	7.32	5,400	3.2 113	260 1.04	54		
9GA1224G4001	24	14 to 27.6	0.47	11.28	6,400	3.8 134	365 1.47	57		
9GA1224S4001			0.31	7.44	5,400	3.2 113	260 1.04	54		
9GA1248G4001	48	36 to 53	0.24	11.52	6,400	3.8 134	365 1.47	57		
9GA1248S4001			0.16	7.68	5,400	3.2 113	260 1.04	54		

Models with the following sensor specifications are also available as options: Without sensor Lock sensor

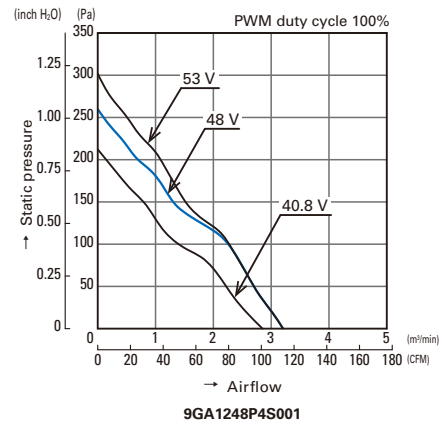
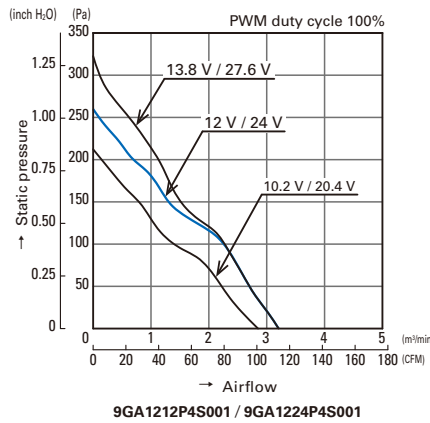
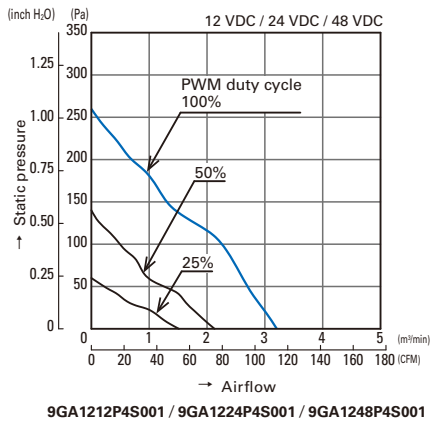
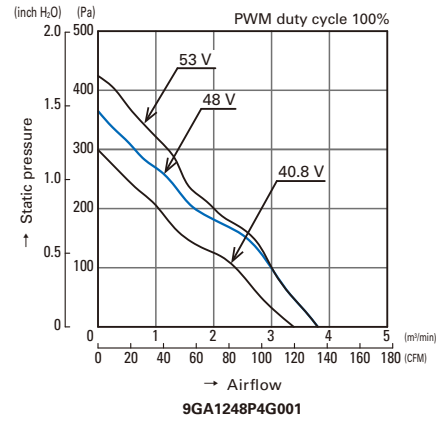
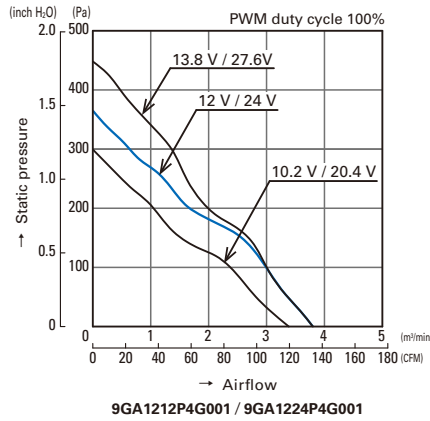
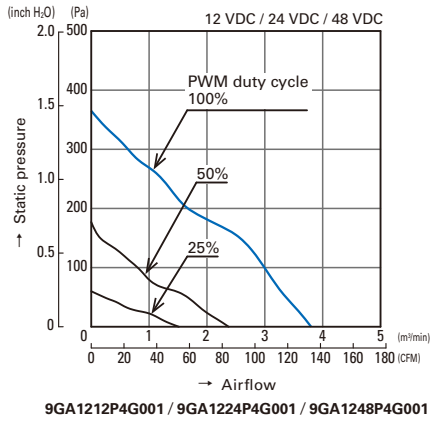
### Common Specifications

- Material ..... Frame, Impeller: Plastics (Flammability: UL94V-0)
- Expected life ..... Refer to specifications  
(L10: Survival rate: 90% at 60°C, rated voltage, and continuously run in a free air state)  
Expected life at 40°C ambient is just reference value.
- Motor protection system ..... Current blocking function and reverse polarity protection
- Dielectric strength ..... 50/60 Hz, 500 VAC, 1 minute (between lead conductor and frame)
- Sound pressure level (SPL) ..... Expressed as the value at 1 m from air inlet side
- Operating temperature ..... Refer to specifications (Non-condensing)
- Storage temperature ..... -30°C 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 ..... Approx. 280 g

## Airflow - Static Pressure Characteristics

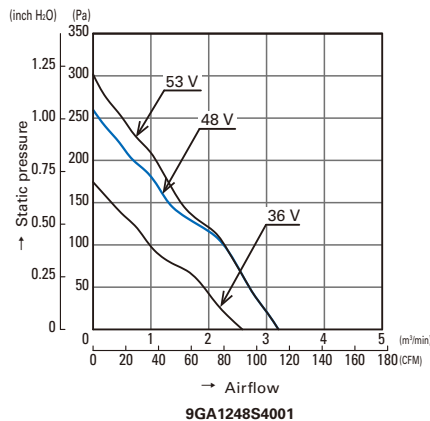
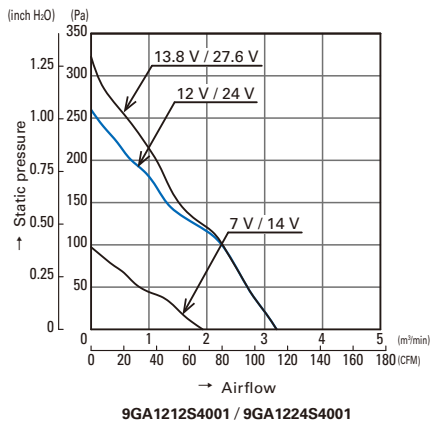
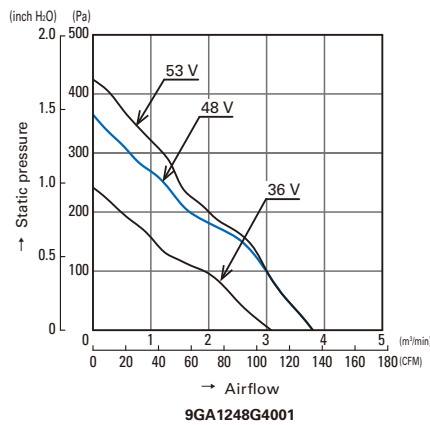
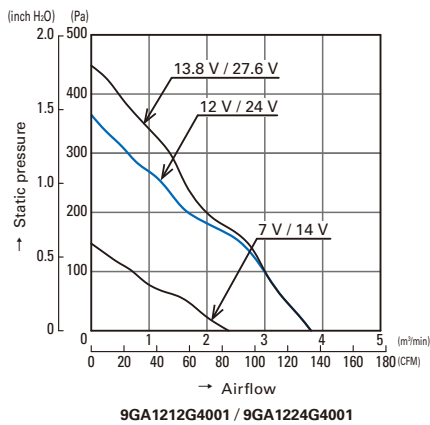
With pulse sensor and PWM control function

- PWM duty cycle
- Operating voltage range

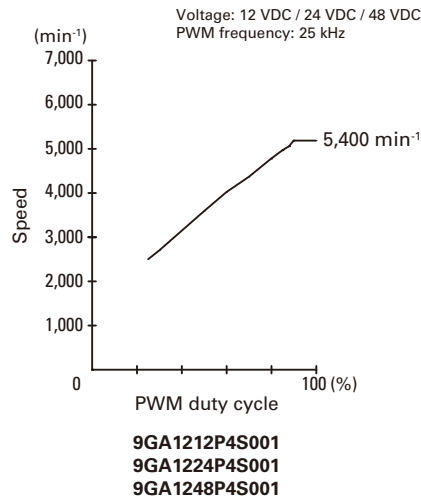
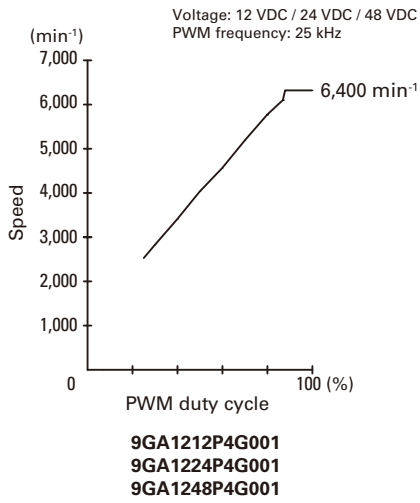


With pulse sensor

- Operating voltage range

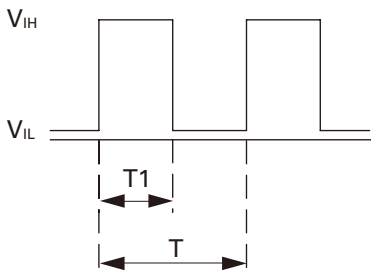


**PWM Duty - Speed Characteristics Example**



**PWM Input Signal Example**

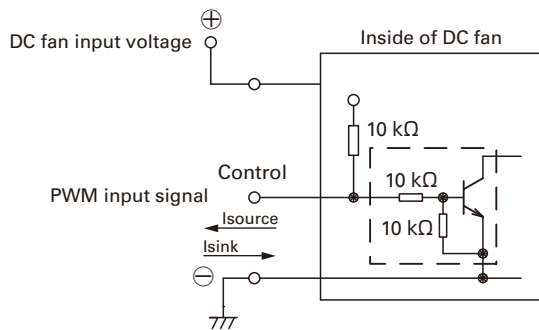
Input signal waveform



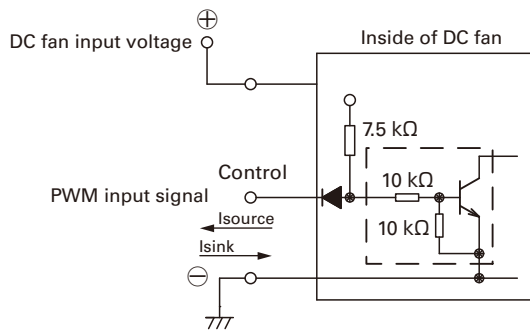
$V_{IH} = 4.75 \text{ to } 5.25 \text{ V}$     $V_{IL} = 0 \text{ to } 0.4 \text{ V}$   
 $\text{PWM duty cycle (\%)} = \frac{T_1}{T} \times 100$     $\text{PWM frequency } 25 \text{ (kHz)} = \frac{1}{T}$   
 Current source ( $I_{source}$ ) = 1 mA max. (when control voltage is 0 V)  
 Current sink ( $I_{sink}$ ) = 1 mA max. (when control voltage is 5.25 V)  
 Control terminal voltage = 5.25 V max. (when control terminal is open)

When the control terminal is open,  
 fan speed is the same as when PWM duty cycle is 100%.  
 Either TTL input, open collector or open drain can be used for  
 PWM control input signal.

**Example of Connection Schematic**



Rated voltage 12 V fan



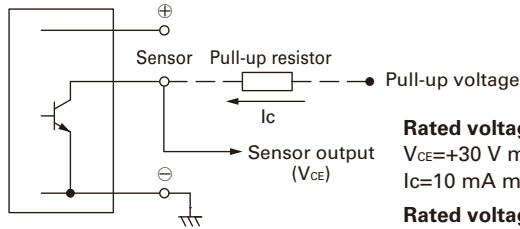
Rated voltage 24 V / 48 V fan

## Specifications for Pulse Sensors

Output circuit: Open collector

Output waveform (Need pull-up resistor)

Inside of DC fan



**Rated voltage 12 V / 24 V fan**

$V_{CE} = +30 \text{ V max.}$

$I_c = 10 \text{ mA max. [} V_{OL} = V_{CE} \text{ (SAT)} = 0.6 \text{ V max.]}$

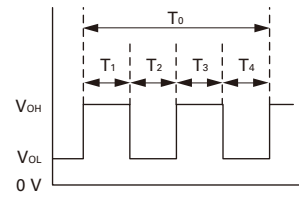
**Rated voltage 48 V fan**

$V_{CE} = +60 \text{ V max.}$

$I_c = 10 \text{ mA max. [} V_{OL} = V_{CE} \text{ (SAT)} = 0.6 \text{ V max.]}$

In case of steady running

(One revolution)

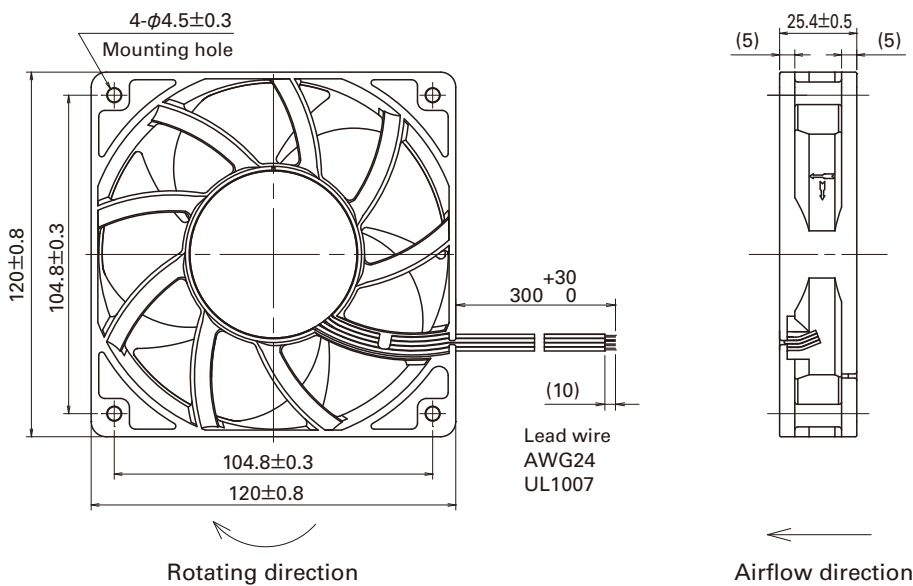


$$T_{1 \text{ to } 4} \doteq (1/4) T_0$$

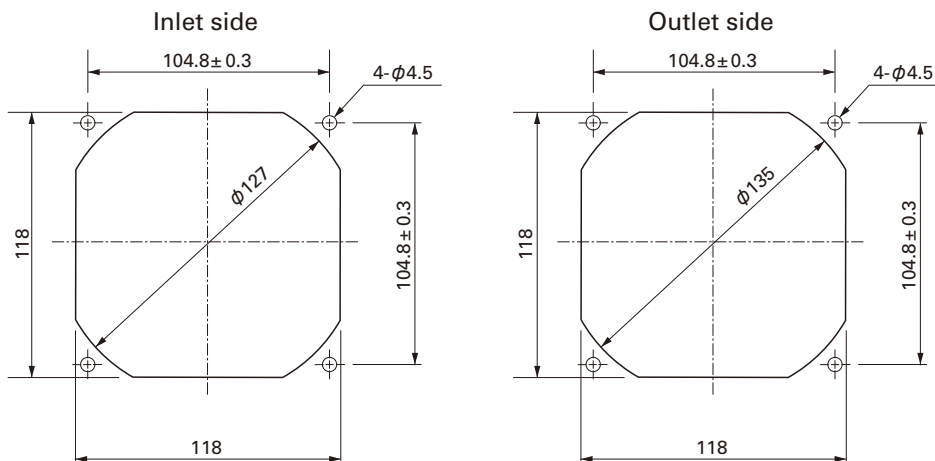
$$T_{1 \text{ to } 4} \doteq (1/4) T_0 = 60/4N \text{ (s)}$$

$$N = \text{Fan speed (min}^{-1}\text{)}$$

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



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



### Notice

- Please read the "Safety Precautions" on our website before using the product.
- The products shown in this catalog are subject to Japanese Export Control Law. Diversion contrary to the law of exporting country is prohibited.
- For protecting fan bearings against electrolytic corrosion near strong electromagnetic noise sources, we provide effective countermeasures such as Electrolytic Corrosion Proof Fans and EMC guards. Contact us for details.

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