

# Fans with PWM speed control function

Technical Material  
Refer to Page 299

There are following part numbers except ones with **With PWM speed control function** marking in the text.



Photo shows 38×38×28mm fan.

## Available size and example of characteristics

Please inquire our sales department for specifications other than the following.

**ClosedLoop** ...Closed Loop Control ( No mark denotes open loop control. )

| Size (mm)                             | Model No.                       | Frame material | Voltage [V] | PWM Frequency [kHz] | Current [A] | Rated Speed (min <sup>-1</sup> ) |                                   | Max. Air Flow         |        | Max. Static Pressure |                        | SPL [dB(A)] | Expected Life [h] |
|---------------------------------------|---------------------------------|----------------|-------------|---------------------|-------------|----------------------------------|-----------------------------------|-----------------------|--------|----------------------|------------------------|-------------|-------------------|
|                                       |                                 |                |             |                     |             | Duty Cycle 0%                    | Duty Cycle 100%                   | [m <sup>3</sup> /min] | [CFM]  | [Pa]                 | [inchH <sub>2</sub> O] |             |                   |
| 36 × 36 × 28mm                        | 9GV3612P3J03                    | Plastics       | 12          | 25.0                | 0.75        | 3,200                            | 19,000                            | 0.55                  | 19.42  | 525                  | 2.11                   | 58.5        | 40,000            |
|                                       | 9GV3612P3G03                    | Plastics       | 12          | 25.0                | 0.34        | 3,200                            | 14,000                            | 0.4                   | 14.12  | 275                  | 1.10                   | 52          | 40,000            |
| 38 × 38 × 28mm                        | 9GV0312P3J03                    | Plastics       | 12          | 25.0                | 0.6         | 3,000                            | 15,900                            | 0.57                  | 20.13  | 315                  | 1.27                   | 54          | 40,000            |
| 40 × 40 × 28mm                        | 109P0412P3J033                  | Plastics       | 12          | 25.0                | 0.41        | 0                                | 12,500                            | 0.46                  | 16.24  | 210                  | 0.84                   | 44          | 40,000            |
|                                       | 109P0412P3G033                  | Plastics       | 12          | 25.0                | 0.39        | 0                                | 11,500                            | 0.42                  | 14.83  | 179                  | 0.72                   | 42          | 40,000            |
|                                       | 9PH0412P3K033                   | Plastics       | 12          | 25.0                | 0.5         | 3,200                            | 15,500                            | 0.59                  | 20.83  | 340                  | 1.37                   | 50          | 40,000            |
|                                       | 9GV0412P3J02                    | Plastics       | 12          | 25.0                | 0.6         | 2,650                            | 14,700                            | 0.68                  | 24.01  | 330                  | 1.33                   | 55          | 40,000            |
|                                       | 9GV0412P3K03                    | Plastics       | 12          | 25.0                | 0.84        | 3,000                            | 16,500                            | 0.76                  | 26.8   | 415                  | 1.67                   | 58          | 30,000            |
|                                       | 9GV0412P3J03                    | Plastics       | 12          | 25.0                | 0.6         | 2,650                            | 14,700                            | 0.68                  | 24.01  | 330                  | 1.33                   | 55          | 40,000            |
|                                       | 9GV0412P3G03                    | Plastics       | 12          | 25.0                | 0.47        | 2,400                            | 13,000                            | 0.6                   | 21.19  | 260                  | 1.04                   | 52          | 40,000            |
|                                       | 9CRA0412P5J03                   | Plastics       | 12          | 25.0                | 1.4         | Inlet : 2,850<br>outlet : 2,250  | Inlet : 15,800<br>outlet : 12,200 | 0.9                   | 31.78  | 570                  | 2.29                   | 62          | 40,000            |
| 40 × 40 × 56mm                        | 9CRA0412P5K03                   | Plastics       | 12          | 25.0                | 1.8         | Inlet : 3,050<br>outlet : 2,300  | Inlet : 17,000<br>outlet : 13,000 | 0.95                  | 33.5   | 650                  | 2.61                   | 65          | 30,000            |
|                                       | 9CR0412P5S03                    | Plastics       | 12          | 25.0                | 0.88        | Inlet : 3,300<br>outlet : 2,000  | Inlet : 15,800<br>outlet : 10,600 | 0.7                   | 24.72  | 450                  | 1.81                   | 57.5        | 40,000            |
|                                       | 9CRA0412P5G03                   | Plastics       | 12          | 25.0                | 1           | Inlet : 2,800<br>outlet : 2,150  | Inlet : 14,000<br>outlet : 10,400 | 0.77                  | 27.19  | 435                  | 1.75                   | 59          | 40,000            |
|                                       | 9AH0612P4G03                    | Plastics       | 12          | 25.0                | 0.21        | 1,120                            | 5,600                             | 0.78                  | 27.54  | 87.3                 | 0.35                   | 39          | 30,000            |
| 60 × 60 × 25mm                        | 9AH0612P4H05                    | Plastics       | 12          | 25.0                | 0.11        | 0                                | 3,800                             | 0.53                  | 18.71  | 40.2                 | 0.16                   | 28          | 40,000            |
|                                       | 9G0612P1G03                     | Plastics       | 12          | 25.0                | 1.54        | 3,550                            | 11,800                            | 1.84                  | 64.97  | 435                  | 1.75                   | 58          | 40,000            |
| 60 × 60 × 38mm                        | 9G0612P1G04 <b>ClosedLoop</b>   | Plastics       | 12          | 25.0                | 1.54        | 0                                | 11,800                            | 1.84                  | 64.97  | 435                  | 1.75                   | 58          | 40,000            |
|                                       | 9G0612P1M03                     | Plastics       | 12          | 25.0                | 0.35        | 1,200                            | 6,000                             | 0.94                  | 33.19  | 112                  | 0.45                   | 41          | 40,000            |
| 60 × 60 × 76mm                        | 9CR0612P0S03                    | Plastics       | 12          | 25.0                | 3.2         | Inlet : 1,300<br>outlet : 800    | Inlet : 11,500<br>outlet : 7,000  | 2.26                  | 79.8   | 550                  | 2.21                   | 66          | 40,000            |
|                                       | 9CR0612P0H03                    | Plastics       | 12          | 25.0                | 2.7         | Inlet : 1,200<br>outlet : 800    | Inlet : 10,300<br>outlet : 6,500  | 1.98                  | 69.91  | 450                  | 1.81                   | 64          | 40,000            |
| 80 × 80 × 15mm                        | 9PH0812P7S06                    | Plastics       | 12          | 1.8                 | 0.26        | 1,000                            | 4,000                             | 1.17                  | 41.31  | 49.6                 | 0.20                   | 40          | 40,000            |
| 80 × 80 × 25mm                        | 9AH0812P4H04                    | Plastics       | 12          | 25.0                | 0.11        | 0                                | 2,900                             | 1.03                  | 36.37  | 35.3                 | 0.14                   | 29          | 40,000            |
| 80 × 80 × 38mm                        | 9G0812P1G04                     | Plastics       | 12          | 25.0                | 1.1         | 1,200                            | 6,300                             | 2.55                  | 90.04  | 211                  | 0.85                   | 51          | 40,000            |
|                                       | 9G0812P1H03                     | Plastics       | 12          | 25.0                | 0.9         | 1,000                            | 5,700                             | 2.28                  | 80.51  | 171                  | 0.69                   | 49          | 40,000            |
|                                       | 9G0848P1G03                     | Plastics       | 48          | 25.0                | 0.27        | 1,500                            | 6,300                             | 2.55                  | 90.04  | 211                  | 0.85                   | 51          | 40,000            |
| 80 × 80 × 80mm                        | 9CR0848P8S03                    | Plastics       | 48          | 25.0                | 1.29        | Inlet : 2,000<br>outlet : 1,300  | Inlet : 8,000<br>outlet : 5,300   | 4.53                  | 159.95 | 520                  | 2.09                   | 71          | 40,000            |
| 92 × 92 × 25mm                        | 9AH0912P4G03                    | Plastics       | 12          | 25.0                | 0.3         | 700                              | 3,900                             | 1.76                  | 62.15  | 66.5                 | 0.27                   | 43          | 30,000            |
|                                       | 9AH0912P4H03                    | Plastics       | 12          | 25.0                | 0.17        | 600                              | 3,150                             | 1.45                  | 51.20  | 44                   | 0.18                   | 33          | 40,000            |
| 92 × 92 × 32mm                        | 9G0912P2G03                     | Plastics       | 12          | 25.0                | 0.88        | 1,200                            | 5,000                             | 2.84                  | 100.28 | 146                  | 0.59                   | 50          | 40,000            |
|                                       | 9G0912P2B03                     | Plastics       | 12          | 25.0                | 0.52        | 1,200                            | 4,000                             | 2.27                  | 80.15  | 93.4                 | 0.38                   | 43          | 40,000            |
| 92 × 92 × 38mm                        | 9G0912P1G03                     | Plastics       | 12          | 25.0                | 1.1         | 1,000                            | 5,000                             | 3.1                   | 109.46 | 150                  | 0.60                   | 50          | 40,000            |
| 120 × 120 × 25mm                      | 9G1212P4G03                     | Plastics       | 12          | 25.0                | 0.9         | 1,000                            | 4,100                             | 3.68                  | 129.94 | 120                  | 0.48                   | 51          | 40,000            |
|                                       | 9G1212P4G031                    | Plastics       | 12          | 25.0                | 0.9         | 1,000                            | 4,100                             | 3.68                  | 129.94 | 120                  | 0.48                   | 51          | 40,000            |
| 120 × 120 × 38mm                      | 9SG1212P1G01                    | Aluminum       | 12          | 16.0                | 4           | 3,900<br>(Duty cycle 50%)        | 6,000                             | 7.35                  | 259.53 | 340                  | 1.37                   | 64          | 40,000            |
|                                       | 9SG1224P1G01                    | Aluminum       | 24          | 16.0                | 2           | 3,600<br>(Duty cycle 50%)        | 6,000                             | 7.35                  | 259.53 | 340                  | 1.37                   | 64          | 40,000            |
|                                       | 9SG1248P1G01                    | Aluminum       | 48          | 16.0                | 1           | 3,600<br>(Duty cycle 50%)        | 6,000                             | 7.35                  | 259.53 | 340                  | 1.37                   | 64          | 40,000            |
| 150 × 150 × 50mm                      | 9GV1512P5M03                    | Plastics       | 12          | 25.0                | 1.2         | 650                              | 3,000                             | 6.35                  | 224.22 | 132                  | 0.53                   | 53          | 40,000            |
| φ 172mm × 51mm thick<br>Side Cut Type | 109E5712P5K04 <b>ClosedLoop</b> | Aluminum       | 12          | 25.0                | 3.2         | 0                                | 4,100                             | 8.5                   | 300.14 | 243                  | 0.98                   | 60          | 40,000            |
| B97mm × 33mm                          | 9BAM12P2G09                     | Plastics       | 12          | 25.0                | 2.7         | 2,800                            | 6,000                             | 1.4                   | 49.43  | 835                  | 3.35                   | 64          | 40,000            |

- Rated current, maximum air flow, maximum static pressure, and sound pressure level are the values given when duty cycle 100%.
- Storage temperature is -30°C to +70°C. For operating temperature range, see individual specification sheet.
- Switching with the PWM control may affect the sensor output. • Specifications may be changed without notice.

PWM Speed Control Function

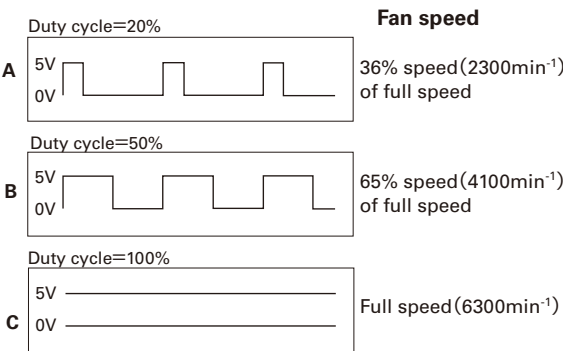
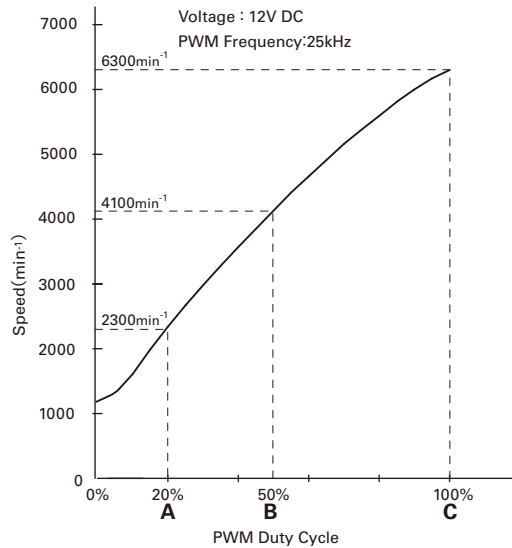
The PWM speed control function is a function that externally controls the rotation speed of the fan by changing the duty of the input pulse signal between the control terminal and GND.

It regulates optimum airflow for efficient cooling when necessary, and is effective for lowering power consumption and reducing equipment noise level.

\* Some models can not have PWM speed control function. Contact us for more information.

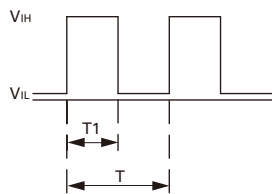
● Typical standard model: 9GV0812P4K03

PWM Duty - Speed Characteristics



PWM Input Signal

Input Signal Wave Form



$V_{IH} = 4.75V \text{ to } 5.25V$

$V_{IL} = 0V \text{ to } 0.4V$

$PWM \text{ Duty Cycle}(\%) = \frac{T_1}{T} \times 100$

$PWM \text{ Frequency } 25 \text{ (kHz)} = \frac{1}{T}$

Source Current ( I source ) : 1mA Max. at control voltage 0V

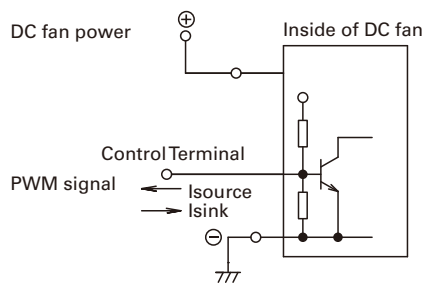
Sink Current ( I sink ) : 1mA Max. at control voltage 5.25V

Control Terminal Voltage : 5.25V Max. ( When control terminal is opened )

When the control lead wire is open, speed is same as one at 100% PWM duty cycle.

This fan speed should be controlled by PWM input signal of either TTL input or open collector, drain input.

Example of Connection Schematic



Source Current ( I source ) : 1mA Max. at control voltage 0V

Sink Current ( I sink ) : 1mA Max. at control voltage 5.25V

Control Terminal Voltage : 5.25V Max. ( When control terminal is opened )