

General Specifications

Motor Type: DC Brushless Motor

Motor Protection:

Auto Restart/Polarity Protection
(Motor withstands reverse connection for positive and negative leads.)

Insulation Resistance:

10M Ω or over with a DC500V Megger

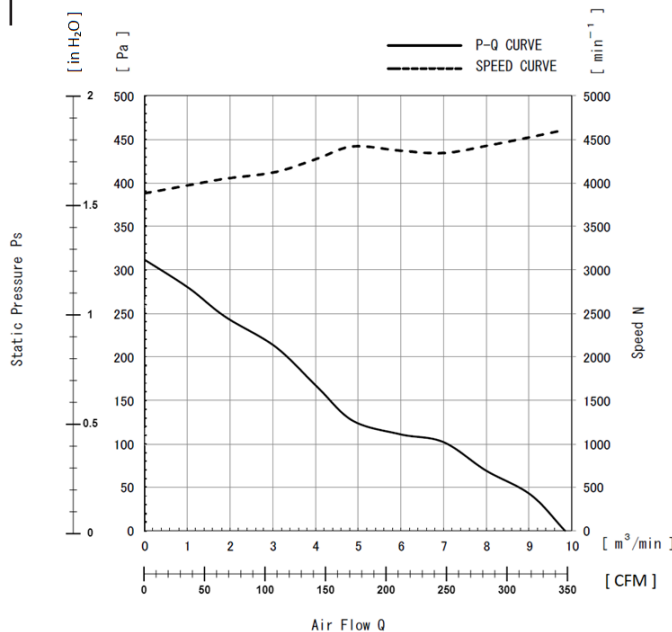
Dielectric Withstand Voltage:

AC 700V 1s or 500V 1min

Allowable Ambient Temperature Range:

-10°C ~ +70°C (Operating)
-40°C ~ +70°C (Storage)
(non-condensing environment)

Characteristics Curves



IP Rated Fan Benefits & Applications

IP 68/69K

NMB offers the industry's highest Ingress Protection (IP) rated cooling fans. IP69K fans provide dust tight protection, and safeguard against powerful, high temperature, water jets for outdoor applications and other harsh environments. NMB fans are designed with NMB precision machined ball bearings with stainless steel outer ring and stainless steel or ceramic balls, assuring long life and high reliability.

Benefits

- IP69K rating per IEC 60529 standard
- Long life and high reliability with NMB precision ball bearings
- Open Collector Tacho Signal output for fan speed

Applications

- Outdoor Applications
- Factory Automation
- Food Processing
- Refrigeration
- LED Lighting
- Inverters
- Telecomm
- Horticulture

Life Expectancy L10

25°C 100,000 Hours

Specifications

MODEL	Rated Voltage	Operating Voltage	Current		Input Power		Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
	(V)	(V)	Avg	Max	Avg	Max	(min ⁻¹) ^{*1}	(CFM)	(m ³ /min)	(inH ₂ O)	(Pa)	(dB) ^{*1}	(g)
	(V)	(V)	(A) ^{*1}	(A) ^{*1}	(W) ^{*1}	(W) ^{*1}	(min ⁻¹) ^{*1}	(CFM)	(m ³ /min)	(inH ₂ O)	(Pa)	(dB) ^{*1}	(g)
15050VE-24R-GT-00	24	18.0 ~ 26.4	1.80	2.20	43.20	52.80	4600	346.08	9.8	1.25	312	68.0	870

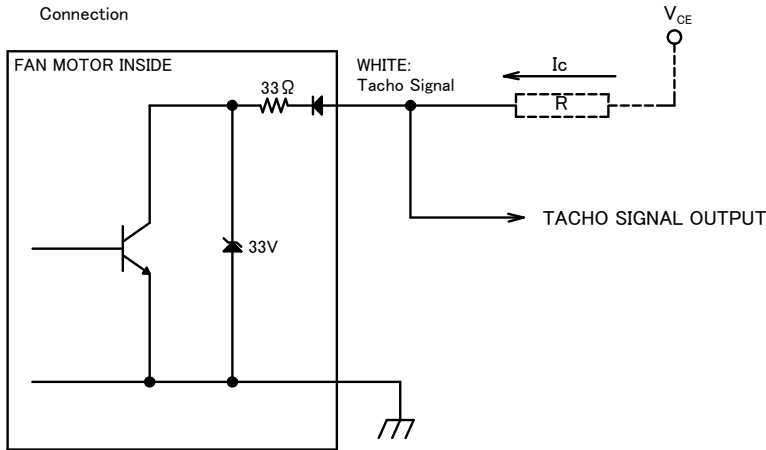
*1: Values in Free Air

TACHO Specifications

TACHO SIGNAL

1. OUTPUT CIRCUIT : OPEN COLLECTOR)
2. SPECIFICATION
 $V_{CE} \text{ max} : +30\text{VDC}$
 $I_c \text{ max} : 5\text{mA}$ [$V_{CE(sat)/max} = 2\text{V}$]
 $T_a = 25^\circ\text{C}$

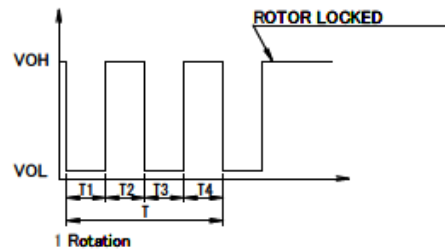
Connection



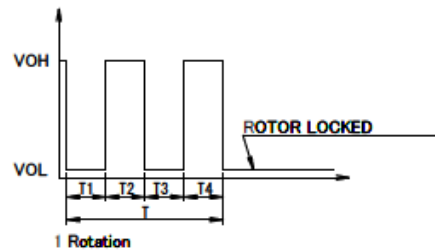
TACHO SIGNAL CIRCUIT

3. OUTPUT WAVEFORM: RATED VOLTAGE OUTPUT SIGNAL VOLTAGE

3-1 Case-1



3-2 Case-2

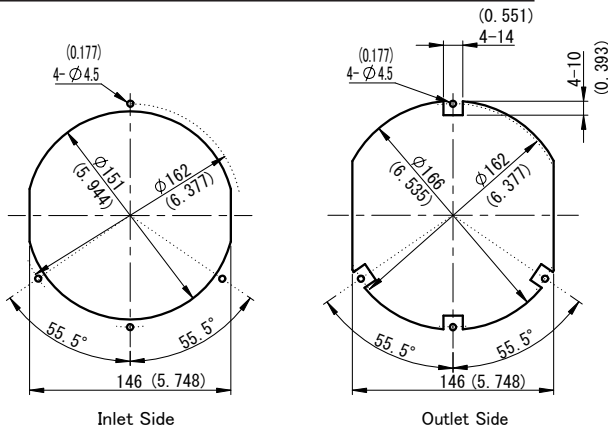


- 1) When the rotor is locked at VOH position of signal, signal keeps VOH position.
- 2) When the rotor is locked at VOL position of signal, signal keeps VOL position.
- 3) $T = T1 + T2 + T3 + T4 = 60^\circ / m = 1 \text{ rotation}$

$$m : \text{min}^{-1}$$

$$\text{Tacho Duty Cycle} = 50\% \pm 10\%$$

Panel Cut-Outs



Unit: mm (inch)

Materials

Casing : Aluminum (Black Paint)

Impeller : Plastic (Black)

Bearing : Ball Bearing

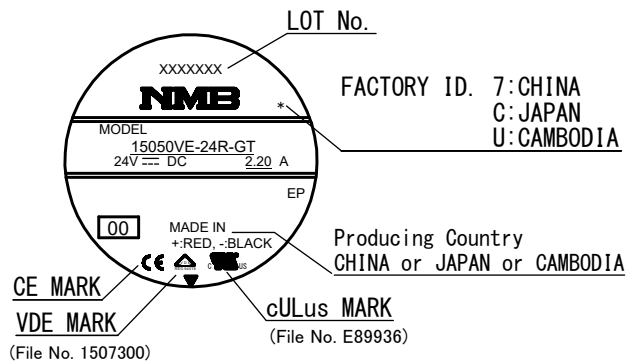
Lead Wire : UL3443 AWG22, 24 or UL10368 AWG22, 24

AWG 22: (+) : Red (-) : Black

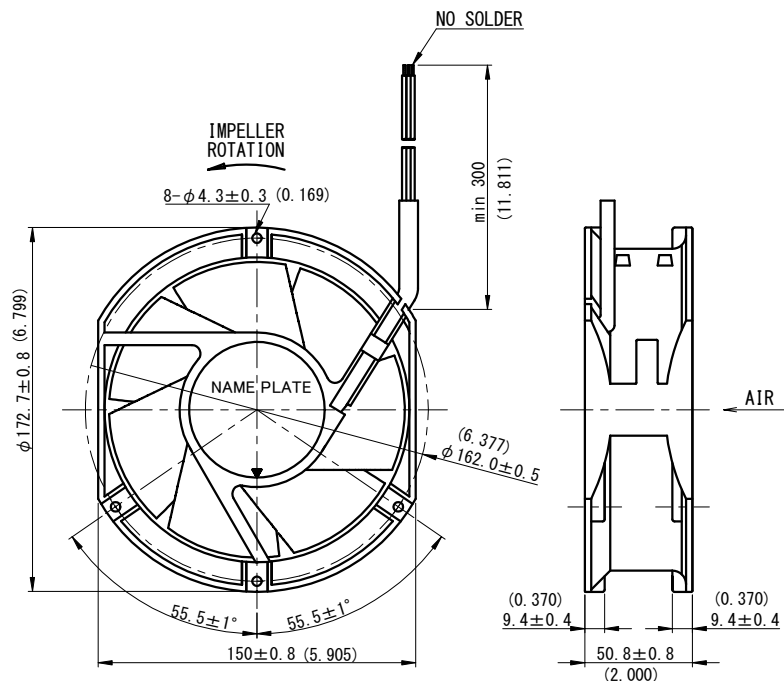
AWG 24: Tach: White

Outline

Name Plate



Unit: mm (inch)



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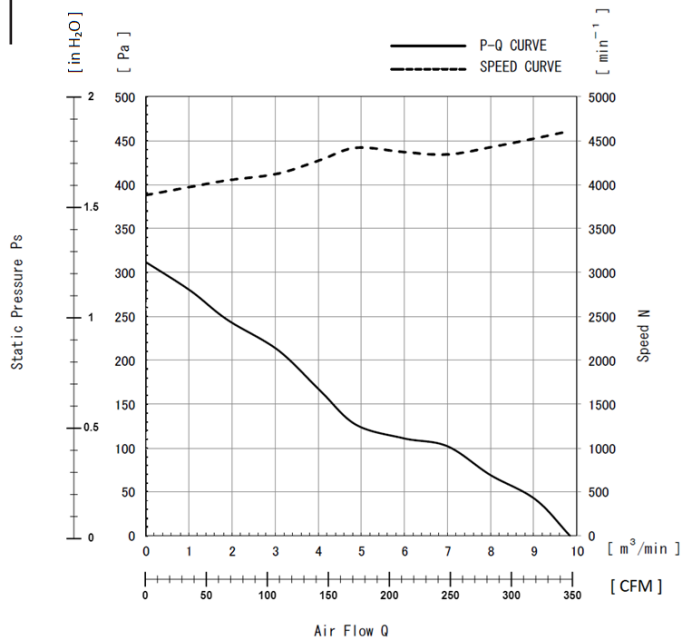
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Allowable Ambient Temperature Range:

-10°C ~ +70°C (Operating)
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Characteristics Curves



Specifications

MODEL	Rated Voltage	Operating Voltage	Current		Input Power		Speed	Max. Air Flow		Max. Static Pressure		Noise	Mass
	(V)	(V)	Avg	Max	Avg	Max	(min⁻¹)*1	(CFM)	(m³/min)	(inH₂O)	(Pa)	(dB)*1	(g)
	(V)	(V)	(A)*1	(A)*1	(W)*1	(W)*1	(min⁻¹)*1	(CFM)	(m³/min)	(inH₂O)	(Pa)	(dB)*1	(g)
15050VE-48R-GT-00	48	38.0 ~ 52.8	0.90	1.10	43.20	52.80	4600	346.08	9.8	1.25	312	68.0	870

*1: Values in Free Air

IP Rated Fan Benefits & Applications

IP 68/69K

NMB offers the industry's highest Ingress Protection (IP) rated cooling fans. IP69K fans provide dust tight protection, and safeguard against powerful, high temperature, water jets for outdoor applications and other harsh environments. NMB fans are designed with NMB precision machined ball bearings with stainless steel outer ring and stainless steel or ceramic balls, assuring long life and high reliability.

Benefits

- IP69K rating per IEC 60529 standard
- Long life and high reliability with NMB precision ball bearings
- Open Collector Tacho Signal output for fan speed

Applications

- Outdoor Applications
- Factory Automation
- Food Processing
- Refrigeration
- LED Lighting
- Inverters
- Telecomm
- Horticulture

Life Expectancy L10

25°C 100,000 Hours

TACHO Specifications

TACHO SIGNAL

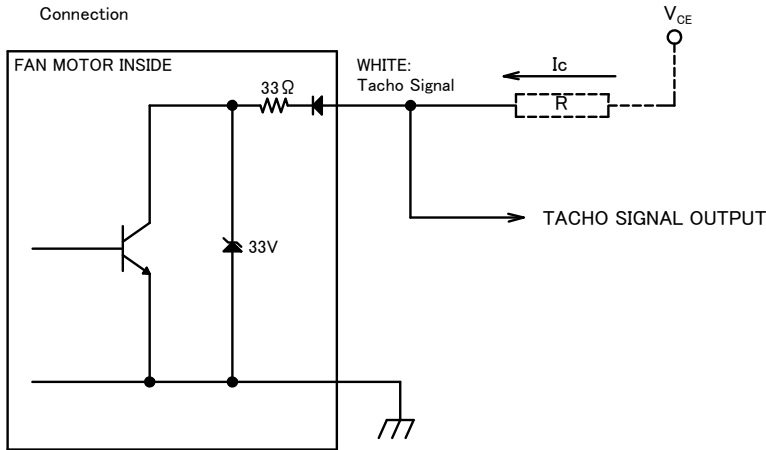
1. OUTPUT CIRCUIT : OPEN COLLECTOR)
2. SPECIFICATION

V_{CE} max : +30VDC

I_c max : 5mA [$V_{CE(sat)}$ /max = 2V]

$T_a=25^\circ\text{C}$

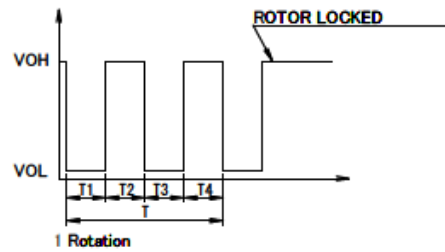
Connection



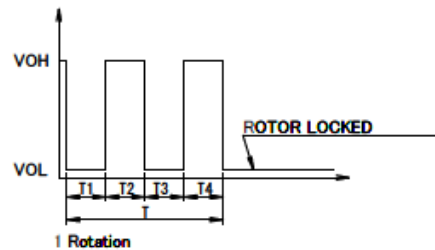
TACHO SIGNAL CIRCUIT

3. OUTPUT WAVEFORM: RATED VOLTAGE OUTPUT SIGNAL VOLTAGE

3-1 Case-1



3-2 Case-2

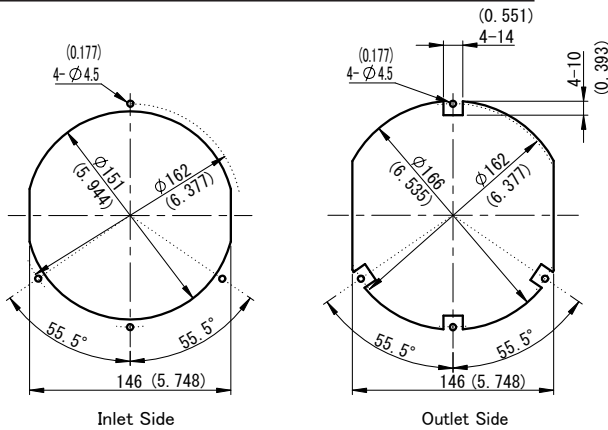


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- 3) $T = T1 + T2 + T3 + T4 = 60^\circ/m = 1 \text{ rotation}$

$m : \text{min}^{-1}$

Tacho Duty Cycle = $50\% \pm 10\%$

Panel Cut-Outs



Unit: mm (inch)

Materials

Casing : Aluminum (Black Paint)

Impeller : Plastic (Black)

Bearing : Ball Bearing

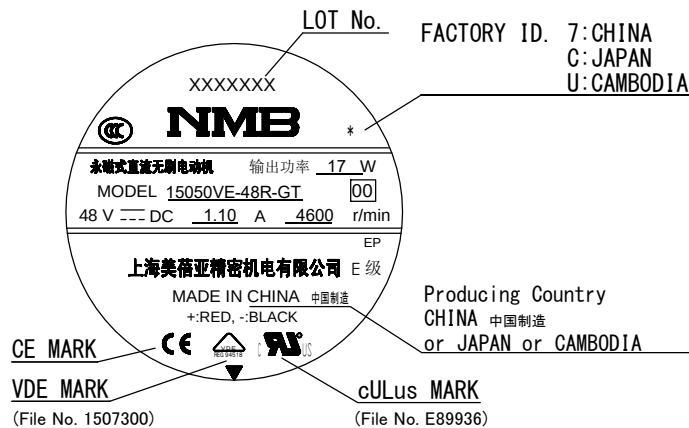
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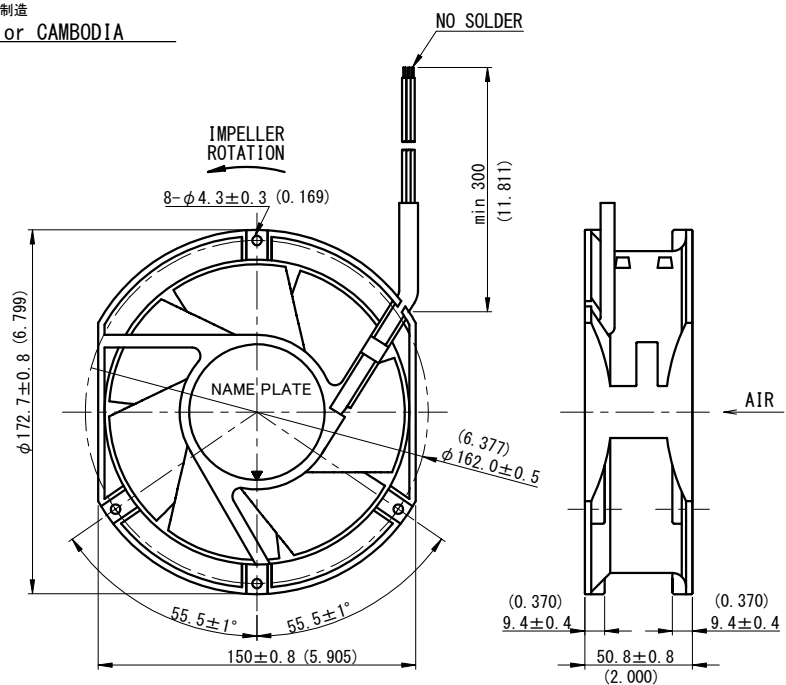
AWG 24: Tach: White

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Unit: mm (inch)



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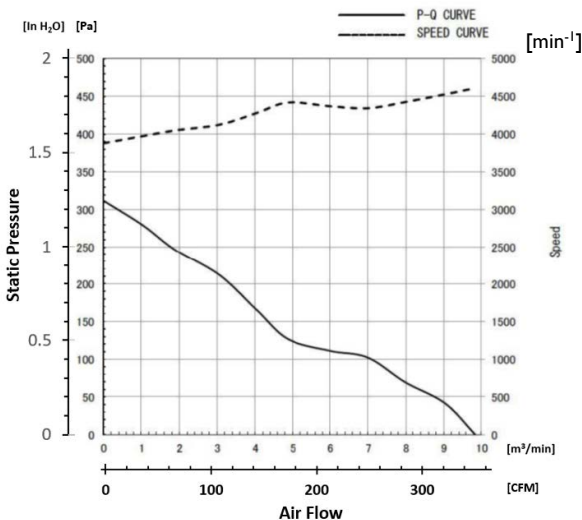
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-10°C ~ +70°C (Operating)

-40°C ~ +70°C (Storage)

(non-condensing environment)

Characteristics Curve



Specifications

MODEL	Rated Voltage	Operating Voltage	Current		Input Power		Speed	Max. Air Flow ^{*2}		Max. Static Pressure ^{*2}		Noise	Mass
			Avg	Max	Avg	Max		(CFM)	(m³/h)	(in H₂O)	(Pa)		
15050VE-48R-GU-03	(V)	(V)	(A) ^{*1}	(A) ^{*1}	(W) ^{*1}	(W) ^{*1}	(min⁻¹) ^{*1}	346.08	9.80	1.25	312	68.0	870

*1: Values in Free Air

*2: Attach Inlet-ring (NMB: IR12714)

IP Rated Fan Benefits & Applications

IP68/69K

NMB offers Ingress Protection (IP) rated cooling fans. IP68 fans provide dust tight protection, and safeguard against wet location and powerful water jets for outdoor applications and other harsh environments. NMB fans are designed with NMB precision machined ball bearings assuring long life and high reliability.

Benefits

- IP68 rating per IEC 60529 standard
- Long life and high reliability with NMB stainless precision ball bearings with 100K hr at 25C (L10)
- Open Collector Tacho Signal output for fan speed
- PWM Speed Control

Applications

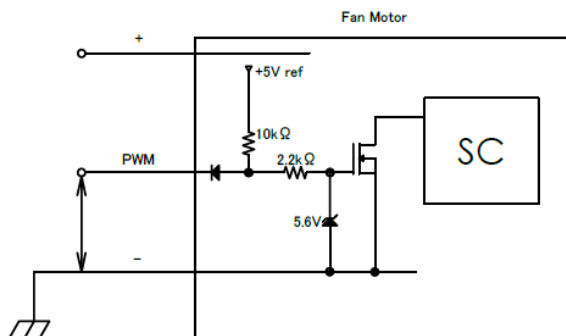
- Outdoor Applications
- Factory Automation
- Food Processing
- Inverters
- Telecomm
- Horticulture

Life Expectancy L10

25°C 100,000 Hours

PWM Specifications

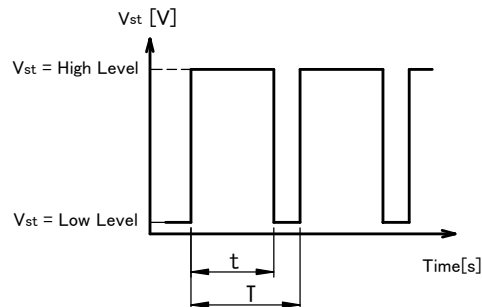
Connection wiring diagram



1. PWM Control

V_{st} = Low Level (0V~0.4V)	→ Stop (On Duty 0%)
V_{st} = High Level (4.0V~5.0V)	→ Full Speed (On Duty 100%)
V_{st} = Open	→ Full Speed

2. PWM Duty & PWM Input Pulse



PWM Duty means that a ration of high level time (t)/PWM Input Pulse(T).

$$(t/T) \times 100 : \text{On Duty } 0\% \sim 100\%$$

$$\text{PWM Frequency } f = 25[\text{kHz}]$$

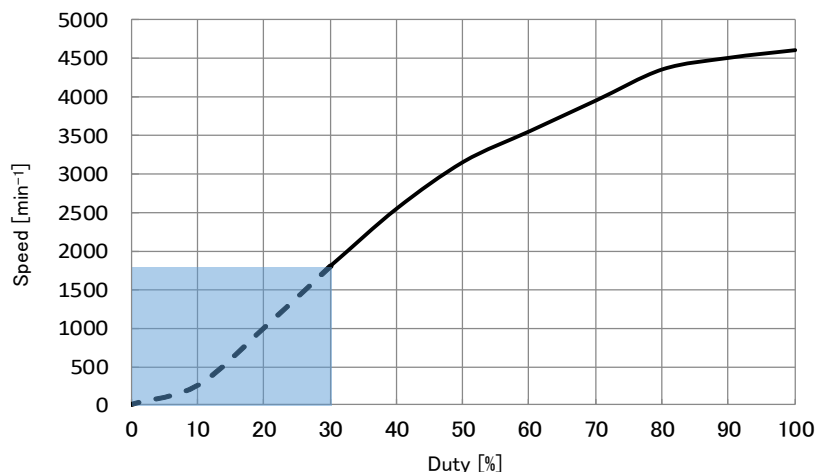
3. The condition for PWM control are as follows.

- When you use this under PWM control, always be sure the motor's operation under practical mounting state. Fan motor may not start up caused by PWM control at very low speed condition.
- To run at Rating Voltage.
- Please use the start with Duty 30% or more at 25kHz. [At rated voltage input, Ambient temperature 25°C]

PWM Characteristic Curve

Reference PWM Duty VS Speed

Conditions: at rating Voltage, $V_{st}=5.0\text{V}$, $f=25\text{kHz}$, $T_a=25^\circ\text{C}$



TACHO Specifications

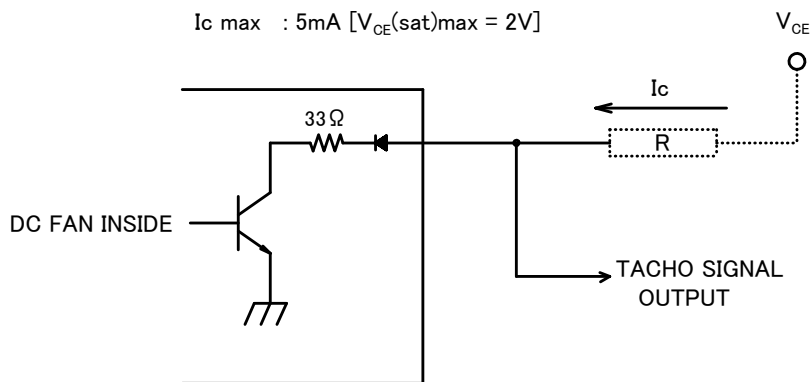
TACHO SIGNAL

1. OUTPUT CIRCUIT : OPEN COLLECTOR
2. SPECIFICATION

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

V_{CE} max : +52.8V

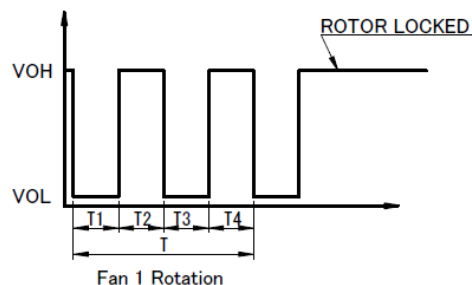
I_c max : 5mA [$V_{CE(sat)}$ max = 2V]



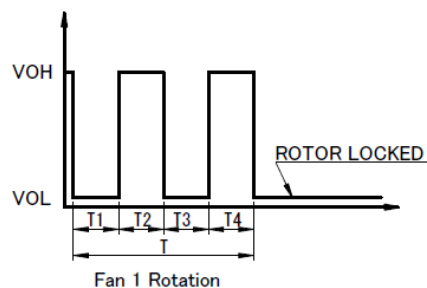
TACHO SIGNAL CIRCUIT

OUTPUT WAVEFORM : (AT RATED OUTPUT SIGNAL VOLTAGE)

Case-1

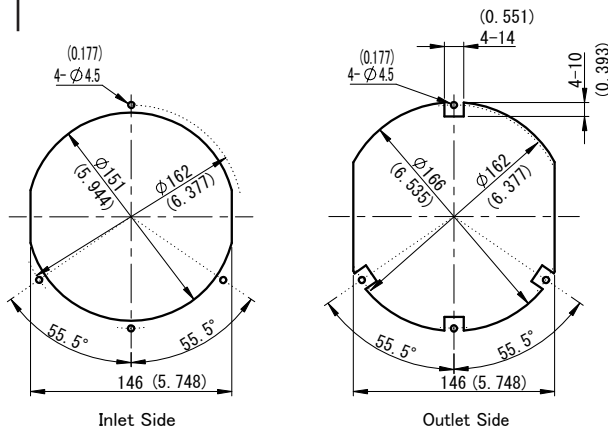


Case-2



- 1) When the rotor is locked at VOH position of signal, signal keeps VOH position.
- 2) When the rotor is locked at VOL position of signal, signal keeps VOL position.
- 3) $T = T1 + T2 + T3 + T4 = 60/m = 1$ rotation
 m : fan rotational speed (min^{-1})
Tach Duty Cycle = $50\% \pm 10\%$

Panel Cutouts



Material

Casing : Aluminum (Paint Black)

Impeller : Plastic

Bearing : Ball Bearing

Lead Wire : UL3443 AWG22 or equivalent

(+): Red (-): Black

(PWM): Brown (Tacho): White

Outline

