

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

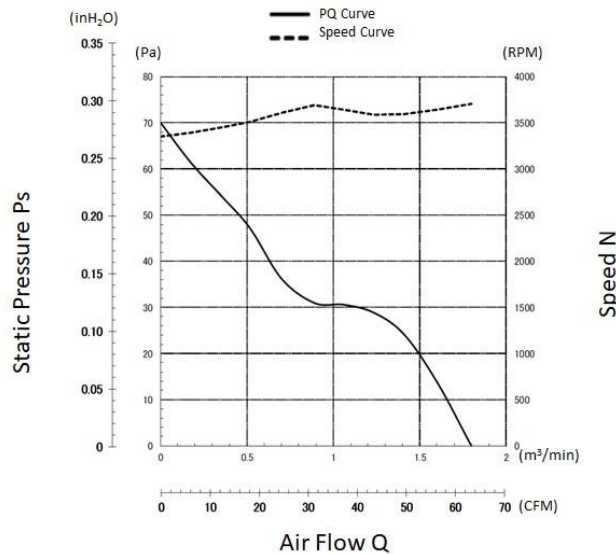
Allowable Ambient Temperature Range:

-10°C ~ +70°C (Operating)

-40°C ~ +70°C (Storage)

(non-condensing environment)

Characteristics Curves



PWM Benefits & Applications

PWM Benefits

- Increased Life Expectancy
- Energy Saving
- Lower Vibration
- Lower Noise
- Current Spike Prevention

PWM Applications

- Routers
- Switches
- Storage
- Data Centers
- Optical Repeaters
- Broadcast Equipment
- Inverters
- UPS
- Battery Chargers
- Fuel Cells
- Industrial Power Supplies
- Welders
- Plasma Cutters
- Instrumentation
- Test Equipment
- Enclosures and more

- Customized fan performances at multiple operating points.
- Peak efficiency resulting in lower total ownership costs.
- Cost effective and better reliability.

Life Expectancy L10

25°C 100,000 Hours

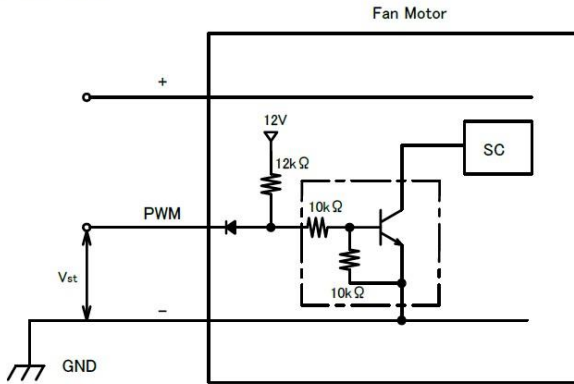
Specifications

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)
09225VE-24L-CU-02	24	14.0 ~27.6	0.14	0.19	3.36	4.56	3700	63.6	1.80	0.28	70	38.5	150

*1: Values in Free Air

PWM Specifications

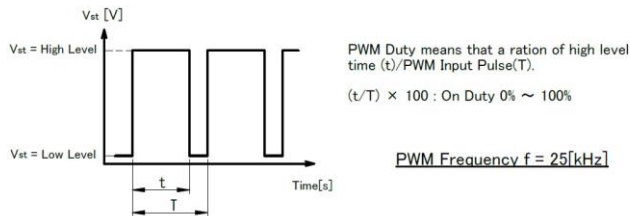
PWM CONTROL CONNECTION



1. PWM Control

- V_{st} = Low Level (0V~0.4V) → Stop (On Duty 0%)
- V_{st} = High Level (4.5V~5.0V) → Full Speed (On Duty 100%)
- V_{st} = Open → Full Speed

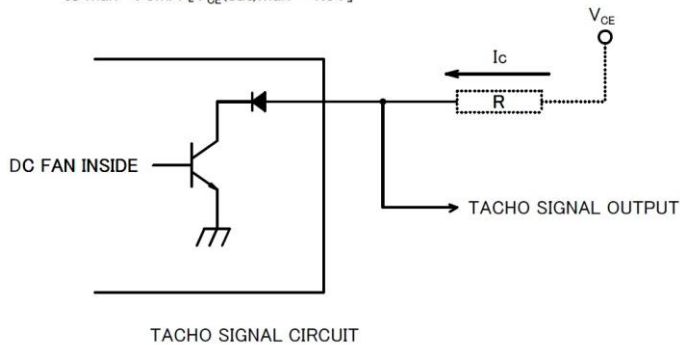
2. PWM Duty & PWM Input Pulse



TACHO Specifications

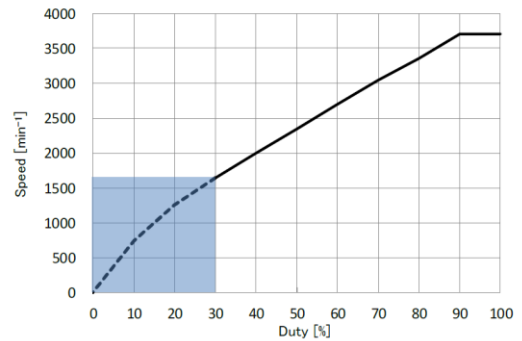
TACHO SIGNAL

1. OUTPUT CIRCUIT : OPEN COLLECTOR
2. SPECIFICATION
 Ta=25°C
 Absolute Maximum Ratings at Ta=25°C
 V_{CE} max : +15V
 I_c max : 5mA [V_{CE(sat)}max = 1.5V]



PWM Characteristics Curve

Reference PWM Duty VS Speed
 Conditions: at rating Voltage, V_{st}=5.0V, f=25kHz, Ta=25°C



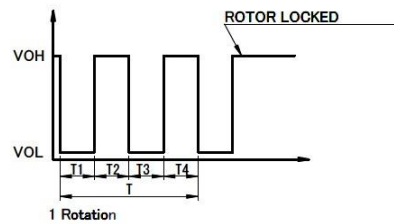
3. The condition for PWM control are as follows.

- 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]
- Don't rotate continually with Duty 0% inputted.
 But Impeller may move little bit at restart timing periodically and Input rating voltage.

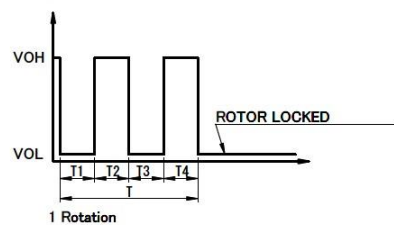
3. OUTPUT WAVEFORM :

RATED VOLTAGE OUTPUT SIGNAL VOLTAGE

3-1 Case-1



3-2 Case-2

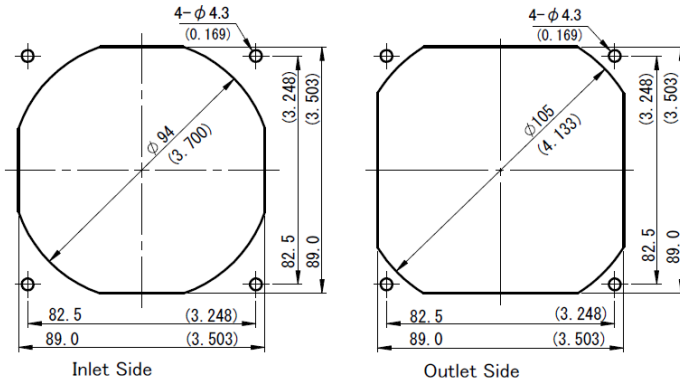


- 1) When the rotor is locked at VOH position of signal, signal keeps VOH position.
- 2) When the rotor is locked at VOL position of signal, signal keeps VOL position.
- 3) $T = T1 + T2 + T3 + T4 = 60/m = 1 \text{ rotation}$

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

Tach Duty Cycle = 50% ± 10%

Panel Cut-Outs



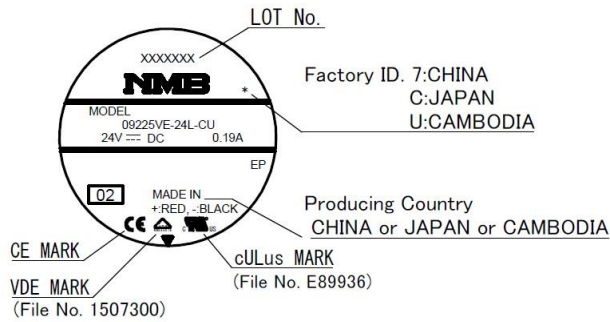
Unit: mm (inch)

Materials

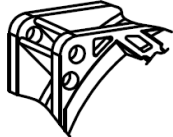
- Casing : Plastic (Black UL94V-0)
- Impeller : Plastic (Black UL94V-0)
- Bearing : Ball Bearing
- Lead Wire : UL1430 AWG26
(+) : Red (-) : Black
PWM : Brown Tach : White

Outline

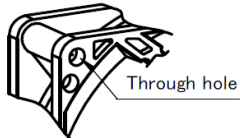
Name Plate



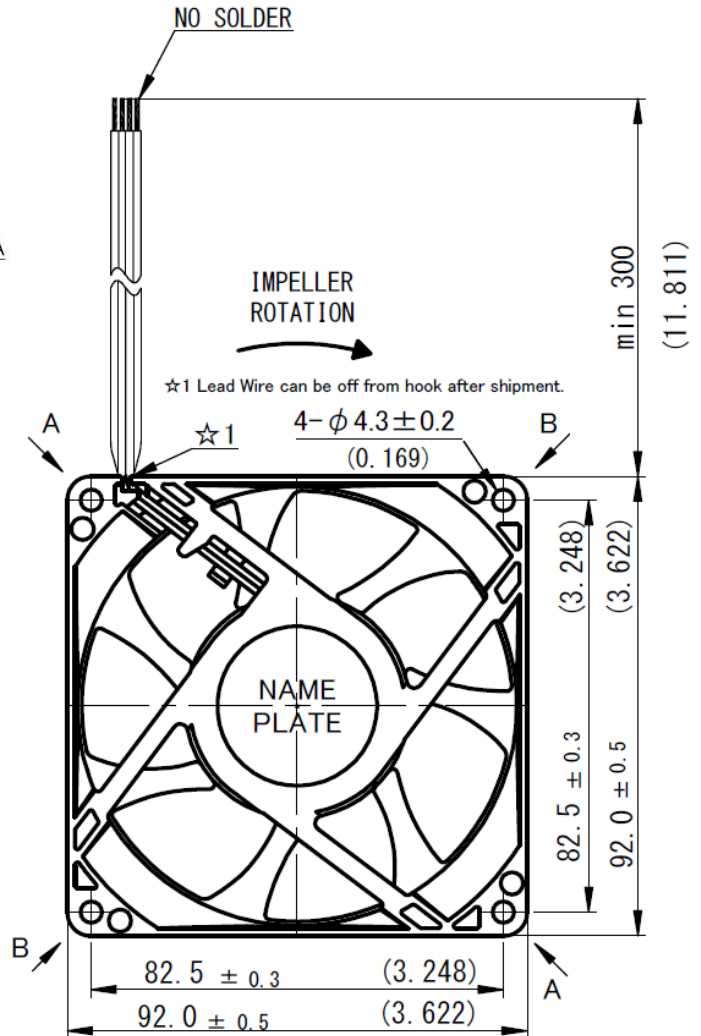
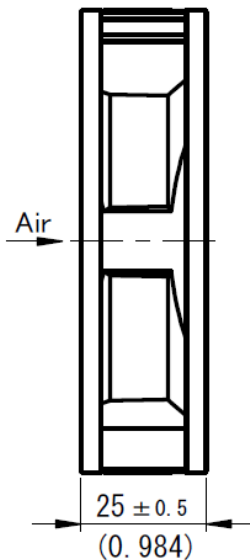
Rib Type



Detail A



Detail B



Unit: mm (inch)

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

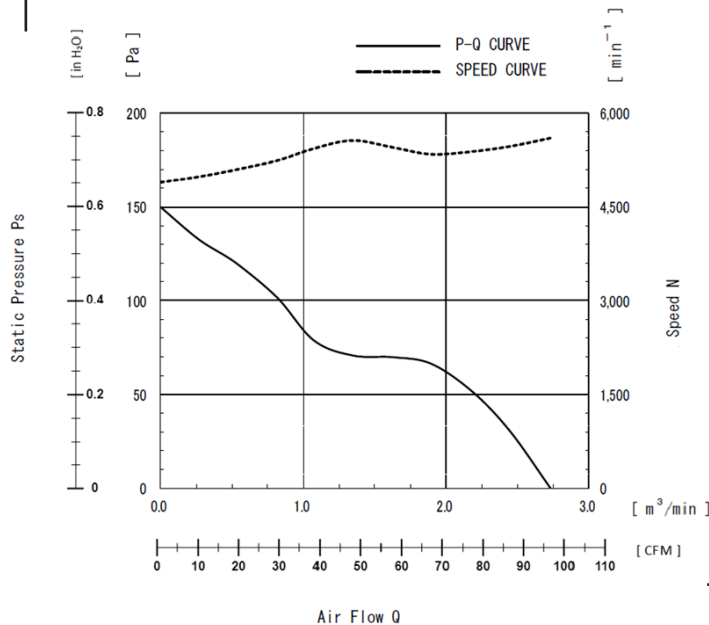
Dielectric Withstand Voltage:

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

60°C 40,000 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		(CFM)	(m ³ /min)	(inH ₂ O)	(Pa)		
	(V)	(V)	(A) ^{*1}	(A) ^{*1}	(W) ^{*1}	(W) ^{*1}	(min ⁻¹) ^{*1}	(CFM)	(m ³ /min)	(inH ₂ O)	(Pa)	(dB) ^{*1}	(g)
09225VE-12Q-CT-00	12	7.0 ~ 13.8	0.72	0.92	8.64	11.04	5600	96.41	2.73	0.60	150	51.0	150

*1: Values in Free Air

TACHO Specifications

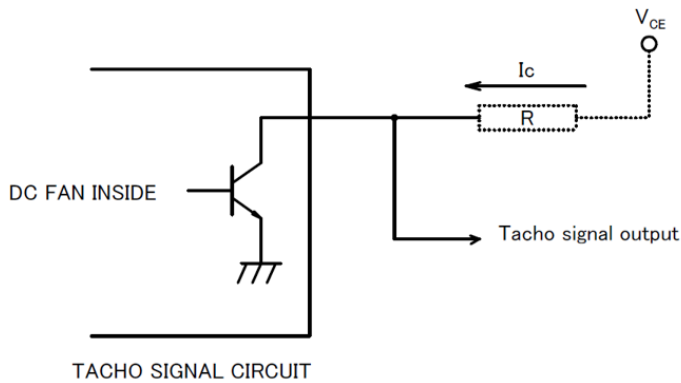
TACHOMETER SIGNAL

1. OUTPUT CIRCUIT : OPEN COLLECTOR)
2. SPECIFICATION

Absolute Maximum Ratings at Ta=25°C

V_{CE} max : +15V

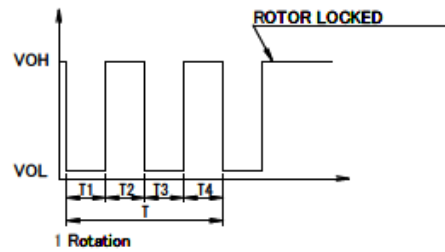
I_c max : 5mA [V_{CE(sat)}max = 0.5V]



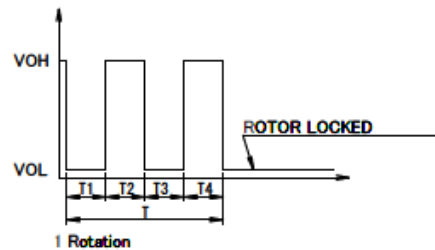
3. OUTPUT WAVEFORM: RATED VOLTAGE

OUTPUT SIGNAL VOLTAGE

3-1 Case-1



3-2 Case-2

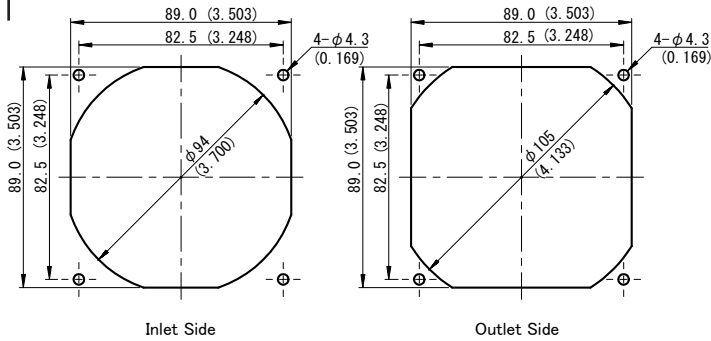


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- 3) $T = T1 + T2 + T3 + T4 = 60 / m$ / m=1 rotation

m : min⁻¹

Tacho Duty Cycle = 50% ± 10%

Panel Cut-Outs



Unit: mm (inch)

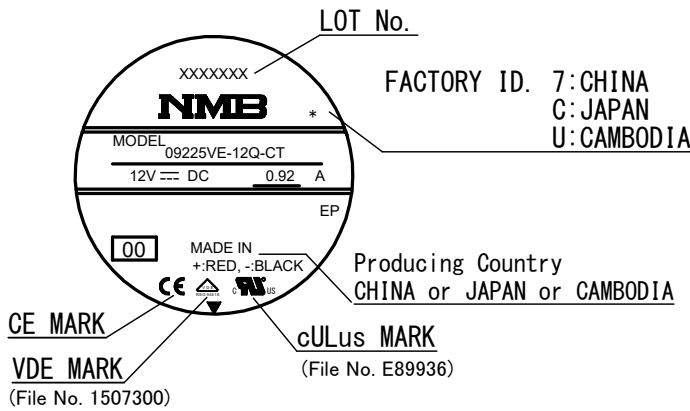
Materials

- Casing : Plastic (Black UL94V-0)
- Impeller : Plastic (Black UL94V-0)
- Bearing : Ball Bearing
- Lead Wire : UL3385 AWG26 or UL1430 AWG 26

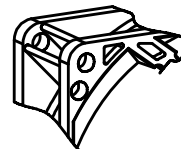
(+) : Red (-) : Black
Tach: White

Outline

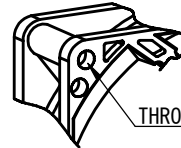
Name Plate



RIB TYPE



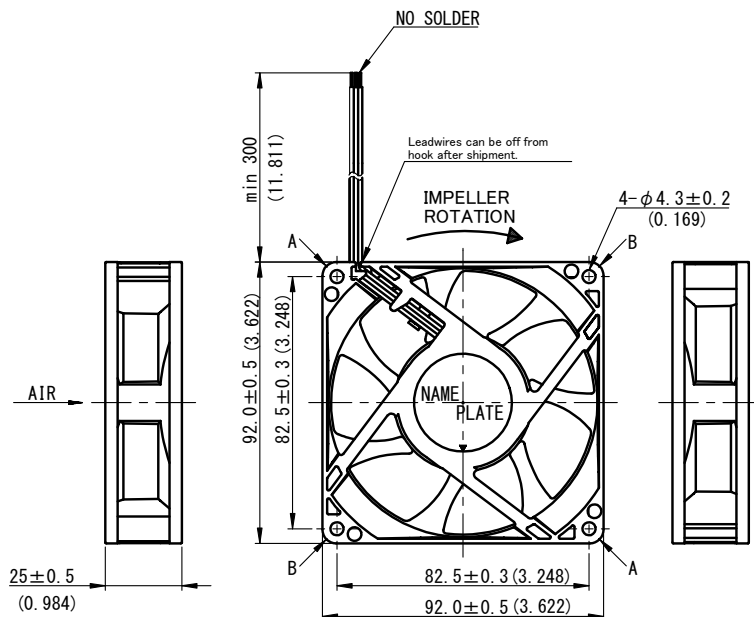
Detail A



Detail B

THROUGH HOLE

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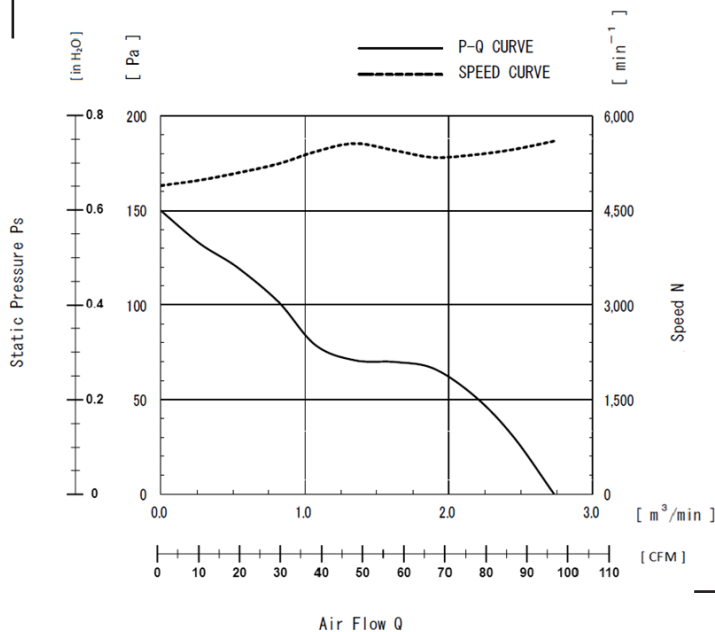
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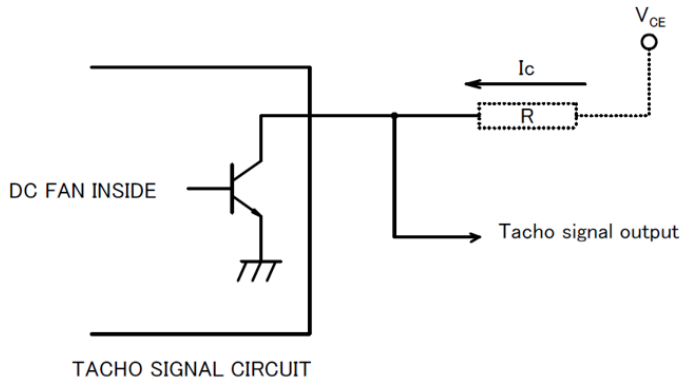
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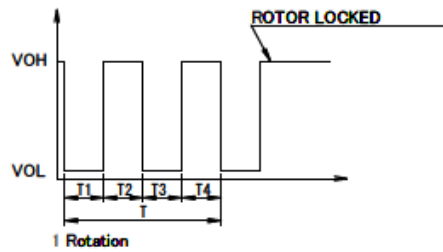
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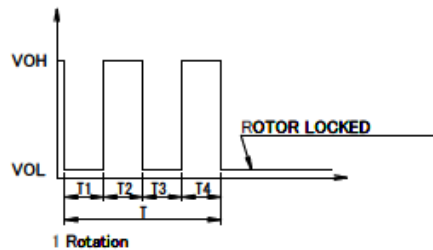
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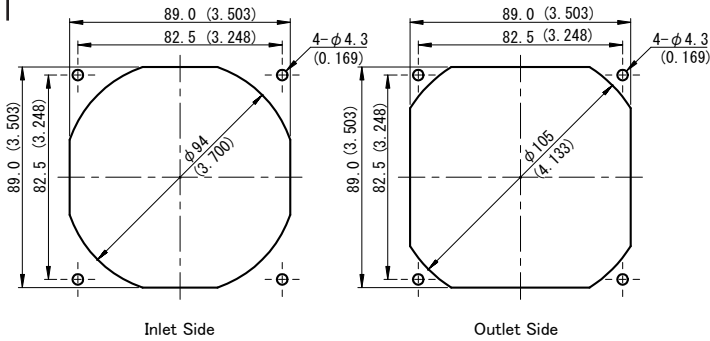


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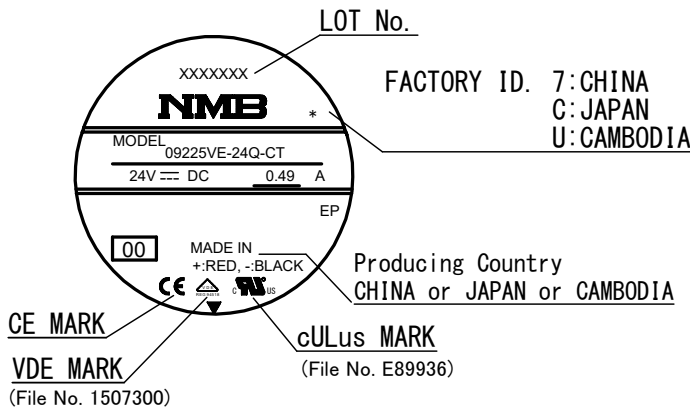
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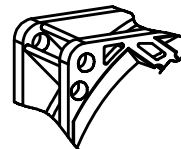
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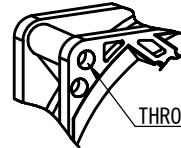
Name Plate



RIB TYPE



Detail A



Detail B

THROUGH HOLE

Unit: mm (inch)

