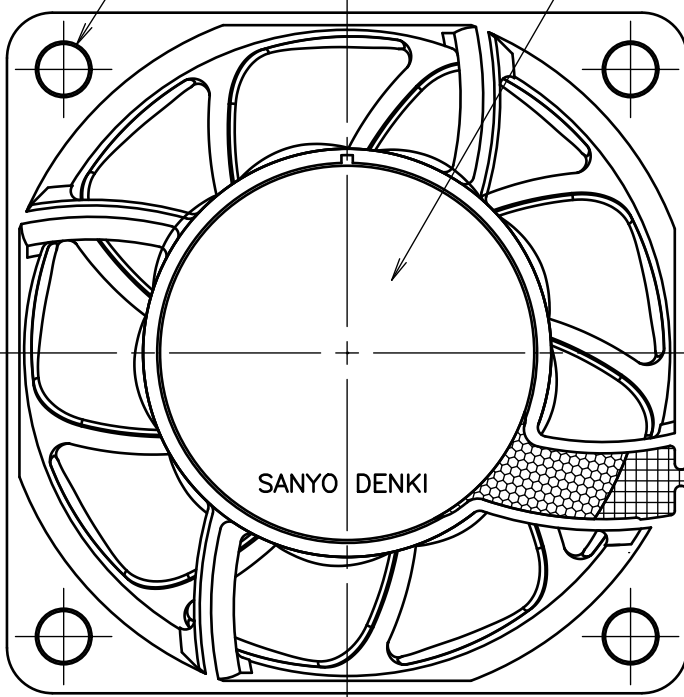


1. DIMENSIONS AND PARTS LIST

<DIMENSIONS>

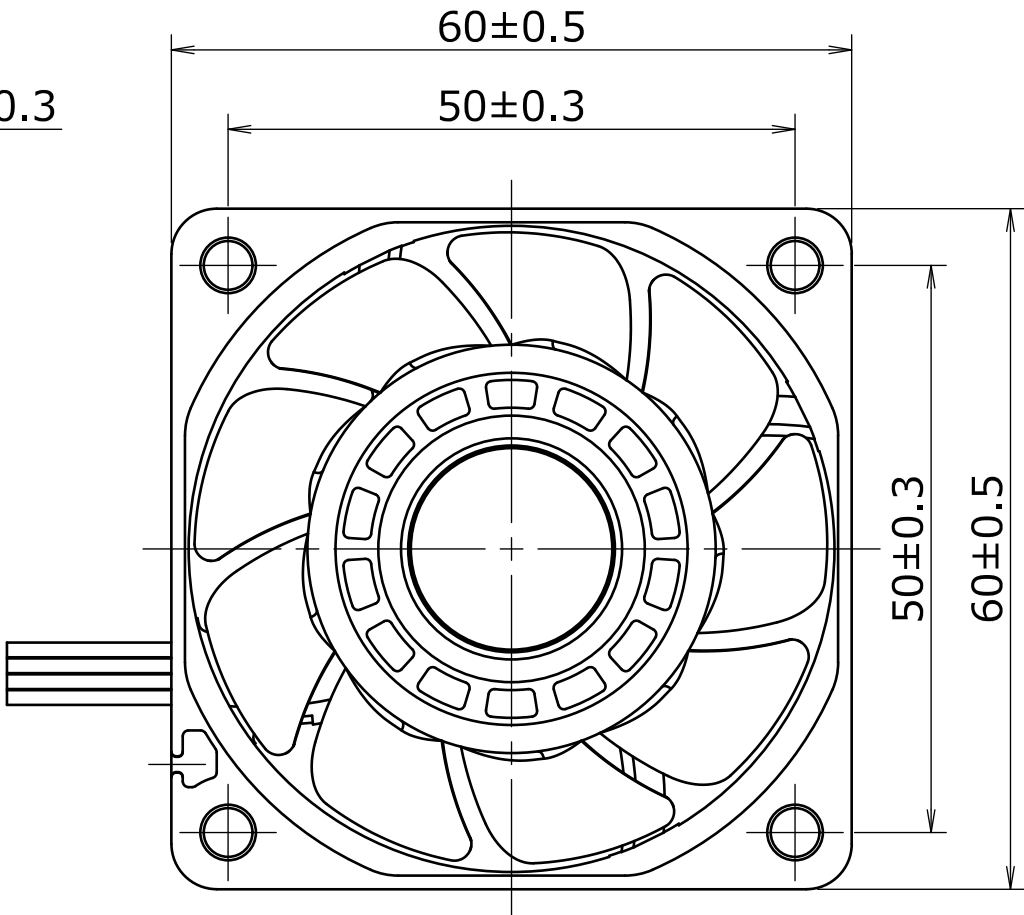
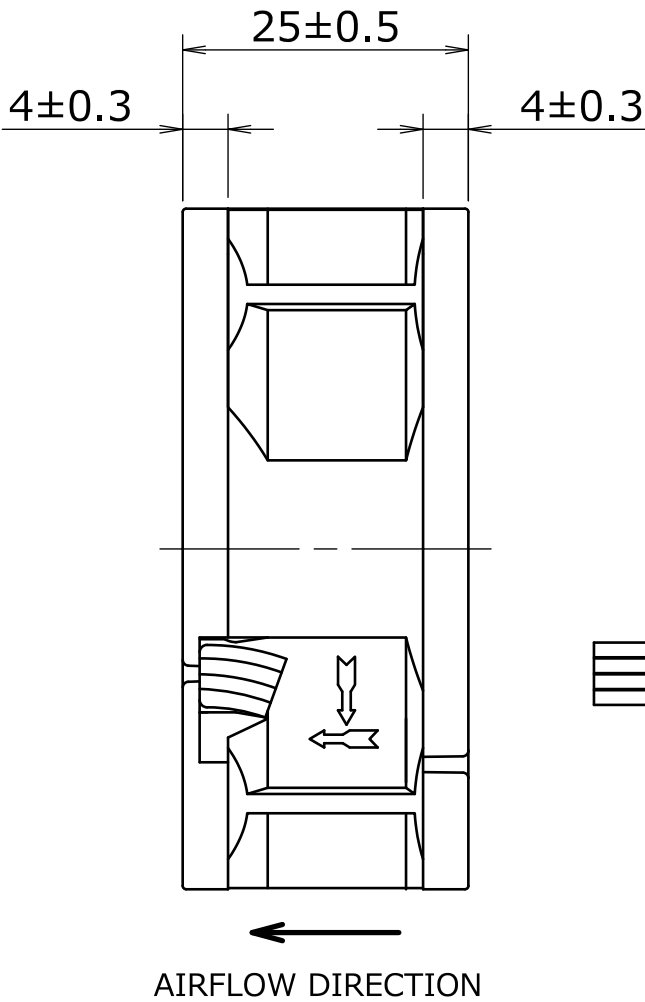
8- $\varnothing 4.5 \pm 0.3$

LABEL(NOTE 1-1)



+50
300 0
(10)

ROTATING DIRECTION



<LEAD WIRE CONNECTION TABLE>

FAN		
SIGNAL	LEAD WIRE	COLOR
+	UL1430 AWG26	RED
GND	UL1430 AWG26	BLACK
PWM	UL1430 AWG26	BROWN
SENSOR	UL1430 AWG26	YELLOW

NOTE 1-1. THE PRODUCT NAME, MODEL NO., MANUFACTURER, MANUFACTURE DATE, ETC. ARE PRINTED ON LABEL.
銘板上に品名、型名、製造会社 及び 製造年月日等を表示する。
1-2. THE ELECTRICAL LIVE PARTS OF THIS FAN ARE COATED WITH RESIN.
本ファンモータは、活電部に樹脂コーティングを施している。

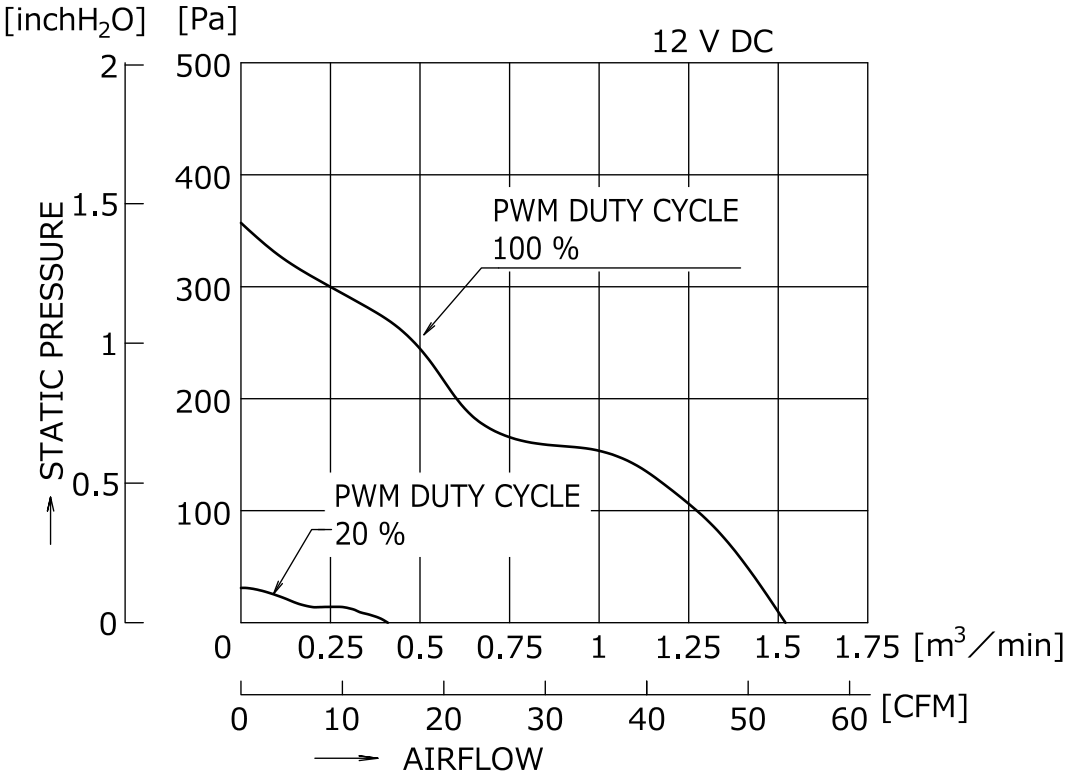
	ECN No.	名称 Title	
	E0206025	San Ace 60W (9WPA)	
単位 Unit	新規 New Design	RIBLESS/PULSE_SENSOR/ PWM_CONTROL	
mm	S.MITOMO		
尺度 Scale	図面番号 Dwg. No.	9WPA0612P4G2011	
-		Rev. B	
SANYO DENKI		承認 Approved By	審査 Checked By
		T.IKEDA	H.OHSAWA
		21-03-15	21-03-09
		設計 Designed By	設計 Designed By
		Y.OKUDA	Y.OKUDA
		21-02-25	21-02-25
Group		D12K	User
		E0	Page
		1/4	

2. DESCRIPTION AND AIRFLOW-STATIC PRESSURE CHARACTERISTICS EXAMPLE

<DESCRIPTION>

ITEM	UNIT	DESCRIPTION		
PWM DUTY CYCLE	%	100	20	0
RATED VOLTAGE	V DC	12		
OPERATING VOLTAGE RANGE	V DC	10.8 ~ 13.2		
MAX. AIRFLOW (NOTE 2-2)	m ³ /min (CFM)	1.52 (53.7)	0.43 (15.1)	- -
MAX. STATIC PRESSURE (NOTE 2-2)	Pa (inchH ₂ O)	357 (1.43)	30 (0.12)	- -
RATED CURRENT (NOTE 2-2)	A	0.93	0.09	0.04 MAX.
RATED SPEED	min ⁻¹	12000±1200	3500±1050	NO ROTATION
INSULATION RESISTANCE (NOTE 2-3)	-	10 MΩ MIN. AT 500 V DC		
DIELECTRIC STRENGTH (NOTE 2-3)	-	1 MINUTE AT 500 V AC, 50/60 Hz		
OPERATING TEMPERATURE	℃	-40 ~ +70		
STORAGE TEMPERATURE	℃	-40 ~ +70		
EXPECTED LIFE	-	40,000 h / 60 ℃ (L10, CONTINUOUS OPERATION)		
SOUND PRESSURE LEVEL (NOTE 2-2, 2-4)	dB(A)	56	22	-
MASS	g	APPROX. 110		
MATERIAL	-	FRAME, IMPELLER : PLASTICS		
BEARING SYSTEM	-	2 BALL BEARINGS		
CONTROL TERMINAL	-	SOURCE CURRENT: 1 mA MAX. AT CONTROL VOLTAGE 0 V		
	-	SINK CURRENT : 1 mA MAX. AT CONTROL VOLTAGE 5.25 V		
	-	CONTROL TERMINAL VOLTAGE : 5.25 V MAX. (OPEN CIRCUIT)		
IP CODE	-	IP68(IEC 60529:2001)		

<AIRFLOW-STATIC PRESSURE CHARACTERISTICS EXAMPLE>



- NOTE 2-1. VALUES FOR EACH CHARACTERISTIC ARE AT ROOM TEMPERATURE AND NORMAL HUMIDITY.
諸特性は常温、常湿での値。
- 2-2. UNSPECIFIED VALUE IS THE NOMINAL VALUE.
指定なき値は標準値。
- 2-3. MEASURED BETWEEN LEAD WIRE CONDUCTORS AND FRAME.
リード線導体部とフレームとの間。
- 2-4. MEASURED AT 1 m FROM THE AIR INLET.
ファン吸込側より1 mにて測定する。
- 2-5. MOTOR IS PROTECTED FROM DAMAGE OF LOCKED ROTOR CONDITION AT THE OPERATING VOLTAGE.
DO NOT LOCK ROTOR OUTSIDE OF OPERATING VOLTAGE.
ファン拘束時焼損の恐れはない。使用電圧範囲外でファンを拘束しないこと。

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3. SENSOR SPECIFICATIONS

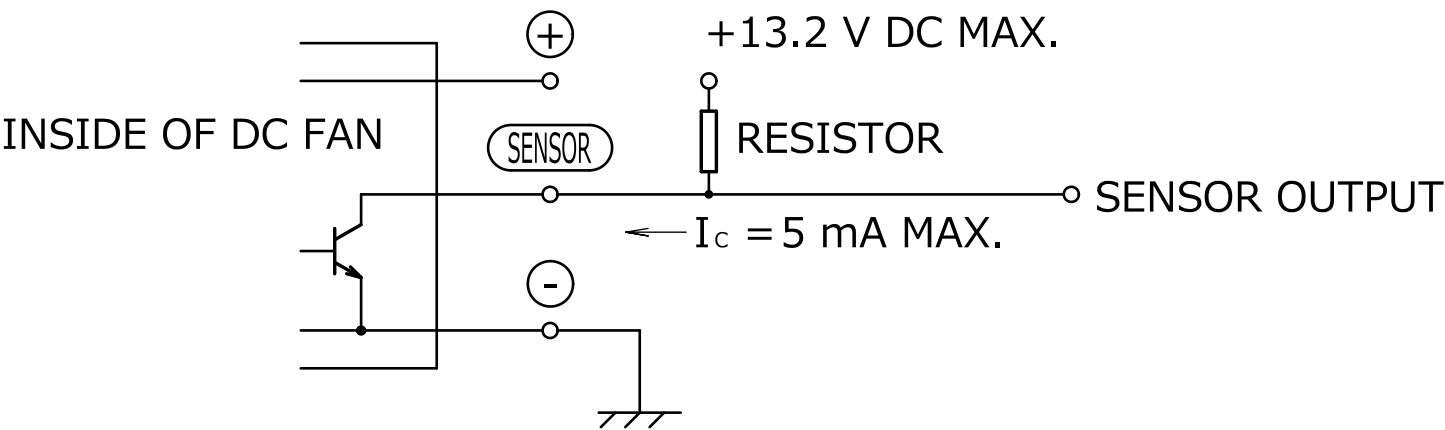
<OUTPUT CIRCUIT>

OPEN COLLECTOR

<SPECIFICATIONS>

$V_{CE} = +13.2 \text{ V DC MAX.}$

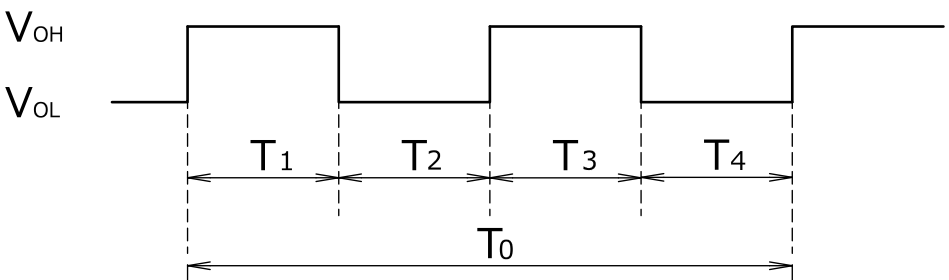
$I_C = 5 \text{ mA MAX.}$ ($V_{CE} \text{ (SAT)} = 0.8 \text{ V MAX.}$)



<OUTPUT WAVEFORM>

(a) IN CASE OF STEADY RUNNING

ONE REVOLUTION



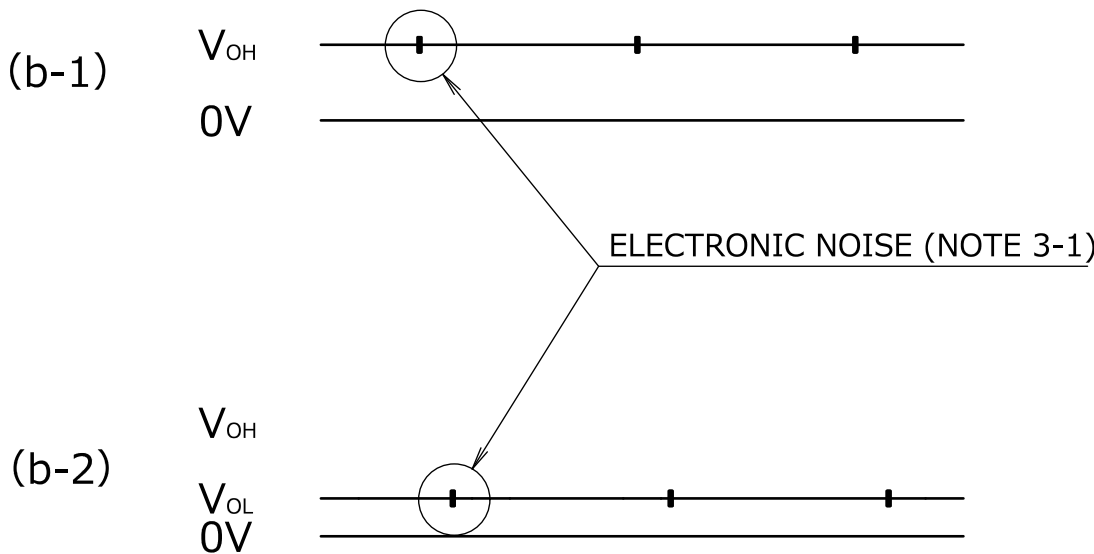
$$T_{1 \text{ to } 4} \cong (1/4) T_0$$

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

$$N = \text{FAN SPEED (min}^{-1}\text{)}$$

(b) IN CASE OF STEADY LOCKED ROTOR

SENSOR OUTPUT IS FIXED EITHER (b-1) OR (b-2) .
センサー出力は(b-1)あるいは(b-2)のどちらかに固定される。



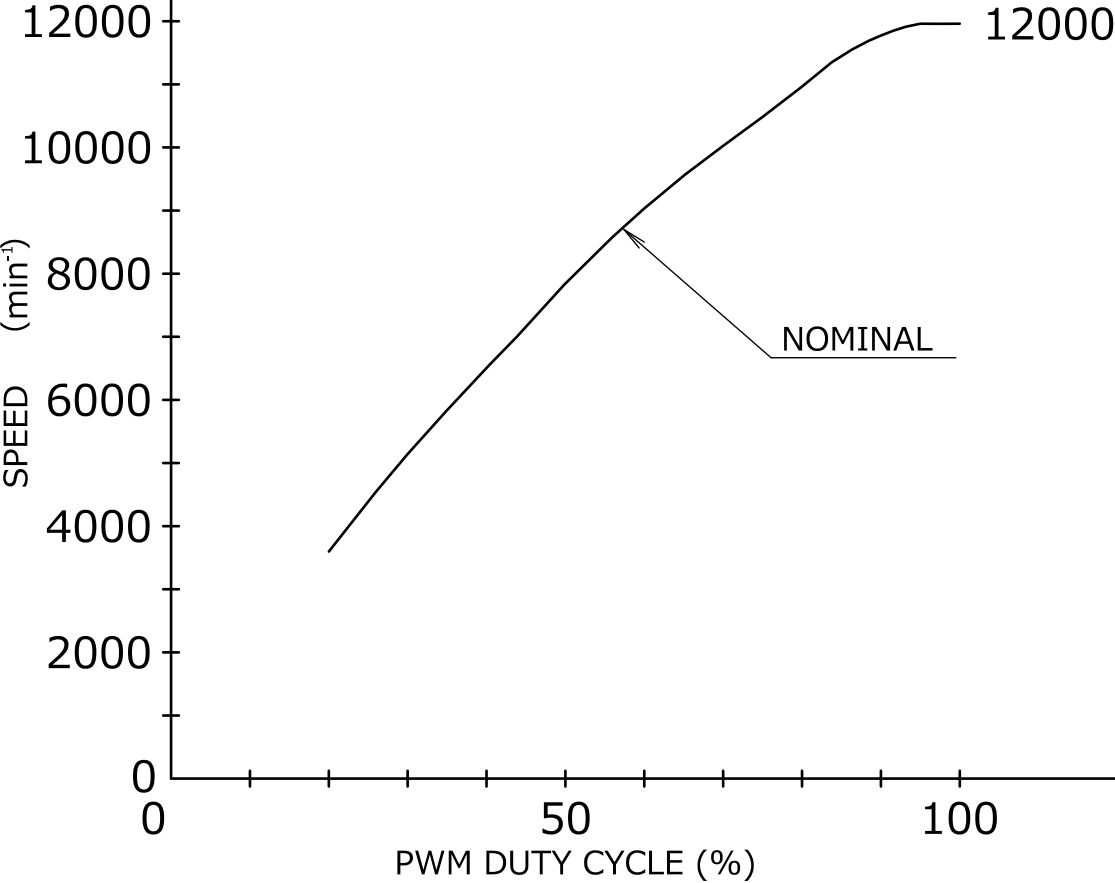
NOTE: 3-1. THE ELECTRONIC NOISE DUE TO AUTO-RESTART
BEHAVIOR OF THE MOTOR MAY INFLUENCE V_{OH} OR V_{OL} .
モータの再起動動作にともない、 V_{OH} あるいは V_{OL} にノイズが載ることがある。

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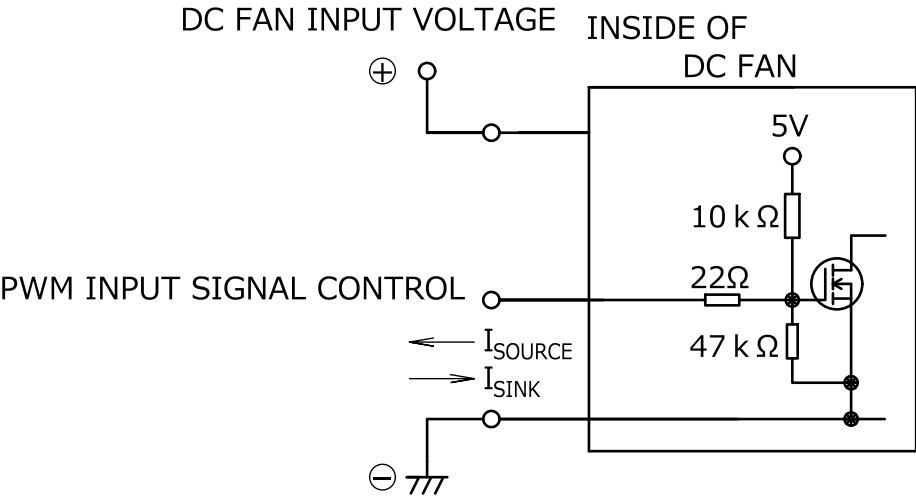
4. PWM DUTY-SPEED CHARACTERISTICS EXAMPLE

<PWM DUTY-SPEED CHARACTERISTICS EXAMPLE>

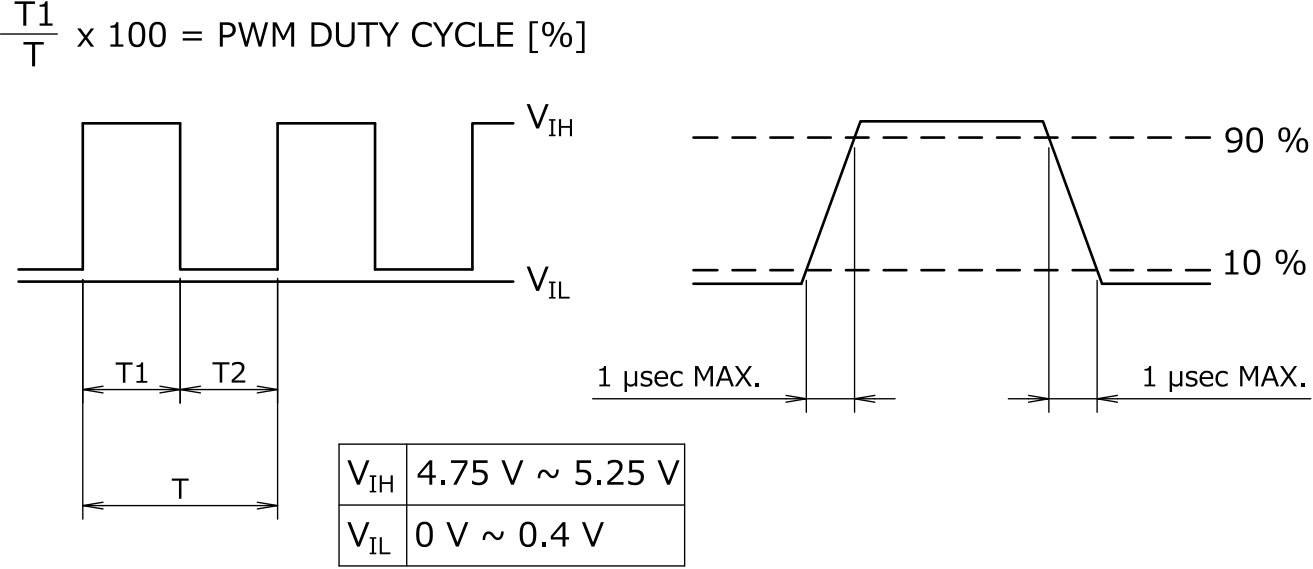
VOLTAGE : 12 V DC
PWM FREQUENCY : 25 kHz
(AT ROOM TEMPERATURE, NORMAL HUMIDITY)



<EXAMPLE OF CONNECTION SCHEMATIC>



<PWM INPUT SIGNAL EXAMPLE>



- NOTE 4-1. PWM CONTROL SWITCHING MAY AFFECT THE SENSOR OUTPUT.
PWM制御によるスイッチングがセンサ出力に影響する場合がある。
- 4-2. REFER TO PAGE 2 FOR THE SPEED WITH PWM DUTY CYCLE OF 0, 20, 100 %.
PWMデューティサイクルが 0, 20, 100 %の時、回転速度は2頁を参照のこと。
- 4-3. WHEN THE CONTROL TERMINAL IS OPEN,
FAN SPEED IS THE SAME AS WHEN PWM DUTY CYCLE IS 100 %.
PWM入力端子がオープン状態の時、回転速度はPWMデューティサイクル100 %と同じであること。
- 4-4. EITHER TTL INPUT, OPEN COLLECTOR OR OPEN DRAIN CAN BE USED
FOR PWM CONTROL INPUT SIGNAL.
AND IN CASE OF OPEN COLLECTOR, DRAIN INPUT,
THE PWM DUTY CYCLE SHOULD BE (T-T2) × 100 / T.
PWM入力信号はTTL入力又は、オープンコレクタ、ドレイン入力にて使用可能であること。
但し、オープンコレクタ、ドレイン入力の場合、PWMデューティ = (T-T2) × 100 / T のこと。

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