

AVC

APPROVAL SHEET

Customer Name	
Product	DC FAN
Part No.	DAPA1290B8FY002
Issue Date	SEP.29.2025
Customer No.	DAPA1290B8FY002
Version	A

深圳市健策电子有限公司
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CUSTOMER APPROVED	Checked by	Inspected by	Designed by
			匡岳彪 09/29. 25

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* History

REV.	DESCRIPTION	DATE
A	ISSUE SPEC.	09/29'25

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Rev. A

SPECIFICATION FOR APPROVAL

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS FAN.

2. CHARACTERS BY SETTING COMMUNICATION POWER (AT Ta=25°C)

ITEM	SPEC.
2-1. RATED VOLTAGE	53.0 VDC
2-2. OPERATION VOLTAGE	36.0 ~ 60.0 VDC
2-3. RATED CURRENT (IN FREE AIR)	5.50 (6.60 MAX.) A (AVERAGE)
2-4. CURRENT ON LABEL	14.20 A
2-5. RATED POWER (IN FREE AIR)	291.5 (349.8 MAX.) W
2-6. MAX. POWER (INPUT VOLTAGE 53V,IN FULL PRESSURE)	492.9 W
2-7. START PEAK CURRENT (IN FREE AIR)	6.9(MAX) A
2-8. SPEED (IN FREE AIR)	13600±5% R.P.M
2-9. SPEED CONTROL TYPE	PWM CONTROLLER
2-10. SIGNAL OUTPUT	FREQUENCY GENERATOR (FG)
2-11. MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	12.08 (10.87 MIN.) M ³ /MIN 426.6 (383.94 MIN.) CFM
2-12. MAX. AIR PRESSURE (AT ZERO FLOW)	271.78(220.14MIN.) mm-H ₂ O 10.7 (8.67 MIN.) inch-H ₂ O
2-13. ACOUSTICAL NOISE	78.0 (82.0 MAX.) dB-A

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- 2-14. INSULATION RESISTANCE — 10 MEGA OHM MIN. AT 500 VDC
(BETWEEN FRAME AND (+) TERMINAL)
- 2-15. DIELECTRIC STRENGTH — 5 mA MAX. AT 500 VAC 60Hz ONE MINUTE,
(BETWEEN FRAME AND (+) TERMINAL)
- 2-16. INSULATION CLASS — UL: CLASS A
- 2-17. DYNAMIC CLEARANCE BETWEEN FRAME AND IMPELLER —

WHEN THE FAN IS RUNNING AT FULL SPEED, THE CLEARANCE BETWEEN THE FRAME AND THE BLADE MUST BE GREATER THAN OR EQUAL TO 0.3MM

- 2-18. STATIC GAP BETWEEN FRAME AND IMPELLER —

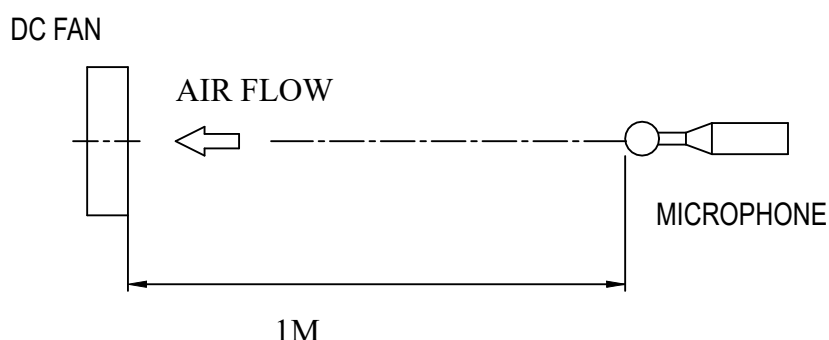
WHEN THE FAN IS STATIONARY, THE RADIAL CLEARANCE BETWEEN THE FRAME AND THE BLADE IS GREATER THAN 0.5MM

- 2-19. WIRE IMPEDANCE TEST —
IMPEDANCE FROM THE END OF THE RED AND BLACK WIRES TO THE PLUG
TERMINALS $\leq 2m\Omega$

NOTE:

A. THE VALUES WRITTEN IN PARENTHESIS, (), ARE LIMITED SPEC.

B. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ACOUSTICAL CHAMBER WITH LARSON DAVIS TYPE 824S SOUND LEVEL METER.

C. THE AIR FLOW AND AIR PRESSURE MEASURED AT RATED VOLTAGE IN DOUBLE CHAMBER IS MEASURED ACCORDING TO AMCA STANDARD 210-85.

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3. MECHANICAL

- 3-1. DIMENSION _____ SEE DIMENSION DRAWING
- 3-2. FRAME _____ DIECASTING ALUMINUM
- 3-3. FAN BLADE _____ THERMOPLASTIC OF UL94-V0
- 3-4. BEARING SYSTEM _____ TWO BALL BEARING
- 3-5. WEIGHT _____ 1158 g

4. ENVIRONMENTAL

- 4-1. OPERATING TEMPERATURE _____ -10 TO +70 °C
- 4-2. STORAGE TEMPERATURE _____ -40 TO +80°C
- 4-3. OPERATING HUMIDITY _____ 5 TO 90 % RH
- 4-4. STORAGE HUMIDITY _____ 5 TO 95 % RH
- 4-5. DROP TEST _____

IN MINIMUM PACKAGING CONDITION FAN WITHSTAND EACH ONE
DROP OF THREE FACES FROM 30cm DISTANCE HEIGHT ONTO 10mm
THICKNESS OF WOODEN BOARD

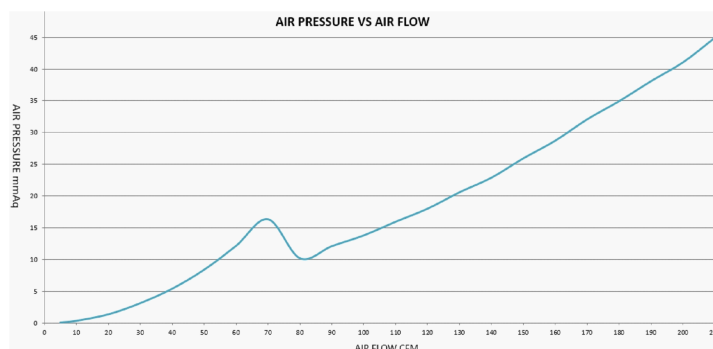
- 4-6. VIBRATION TEST _____
SINE WAVE
DISPLACEMENT AMPLITUDE: 0.75 mm (EQUIVALENT 10G)
FREQUENCY RANGE: 10Hz - 55 Hz / 30 SEC. 55Hz - 10 Hz / 30 SEC.
LINEAR SCANNING 120 CYCLE
ENDURANCE TIMER PER AXIS: 2 HOURS
ORIENTATION: X,Y,Z

- 4-7. SHOCK TEST _____
APPLY PEAK ACCELERATION 100 G AND KEEP DURATION OF THE
PLUSES FOR 6mS (HALF SINE WAVE)

- 4-8. RoHS COMPLIANCE _____ SEE RoHS STANDARD

- 4-9. REVERSE START PROTECTION _____ THE LIMITED AIR FLOW VALUE FOR REVERSE
START IS 195CFM.

- 4-10. CURVE FOR REVERSE ROTATION VS AIR PRESSURE.



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5. PROTECTION

5-1. LOCKED ROTOR PROTECTION _____

IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM DAMAGE IN
72 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE

5-2. POLARITY PROTECTION _____

BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR
POSITIVE AND NEGATIVE LEADS

5-3. HOT SWAP PROTECTION _____

THIS FAN HAS NO HOT SWAP FUNCTION.

5-4. PCBA PROTECTION _____

LIQUID COATING OF PCBA IS TO PREVENT FROM SHORT,DUE TO MOISTURE
CONDENSATION AT LOW TEMP.

5-5. SOLDERED PAD OF CABLE PROTECTION _____

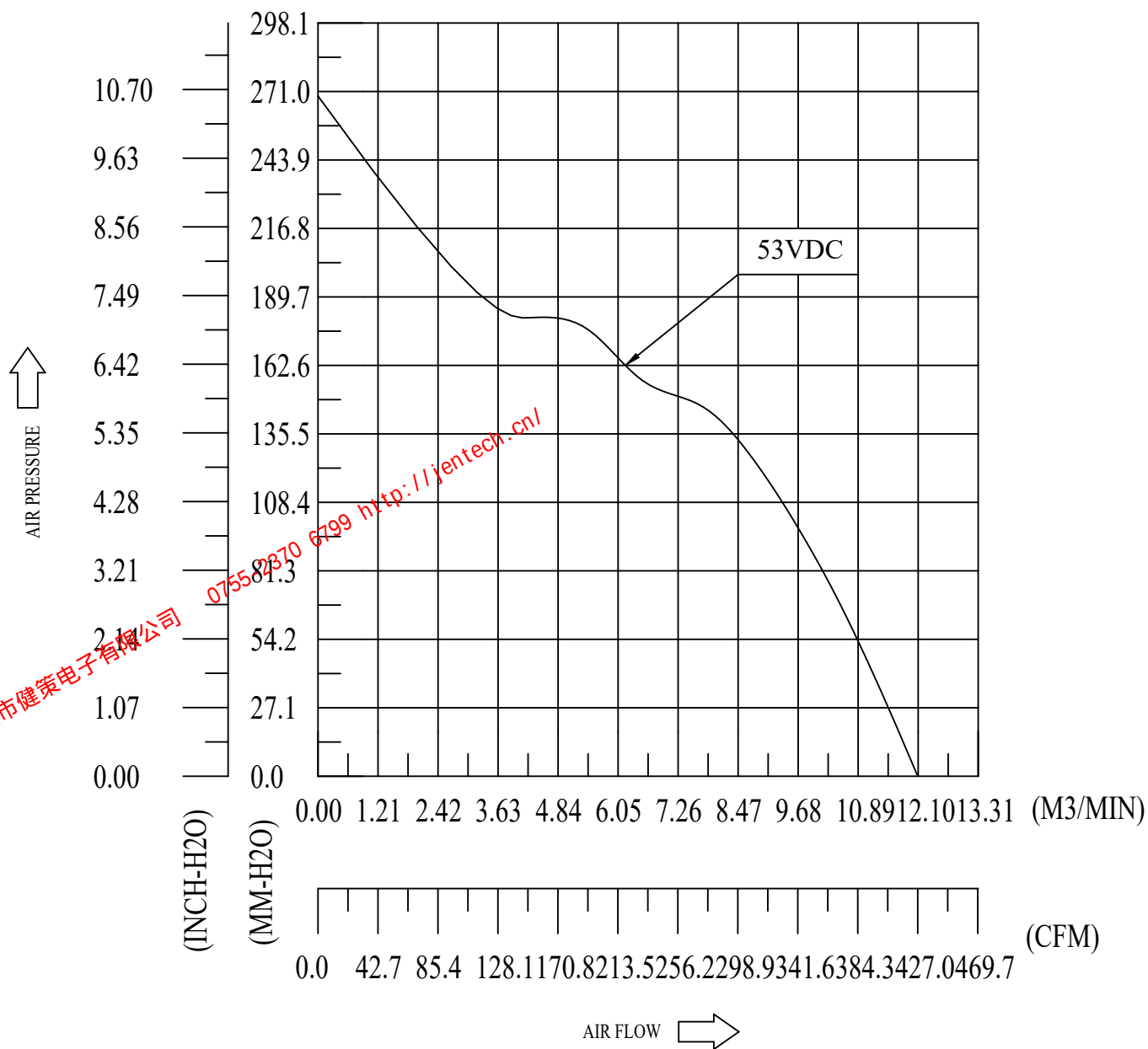
UV GLUE COATING FOR SOLDERED DOT OF CABLE IS TO PREVENT DROP.

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6. P & Q CURVE BY SETTING COMMUNICATION POWER



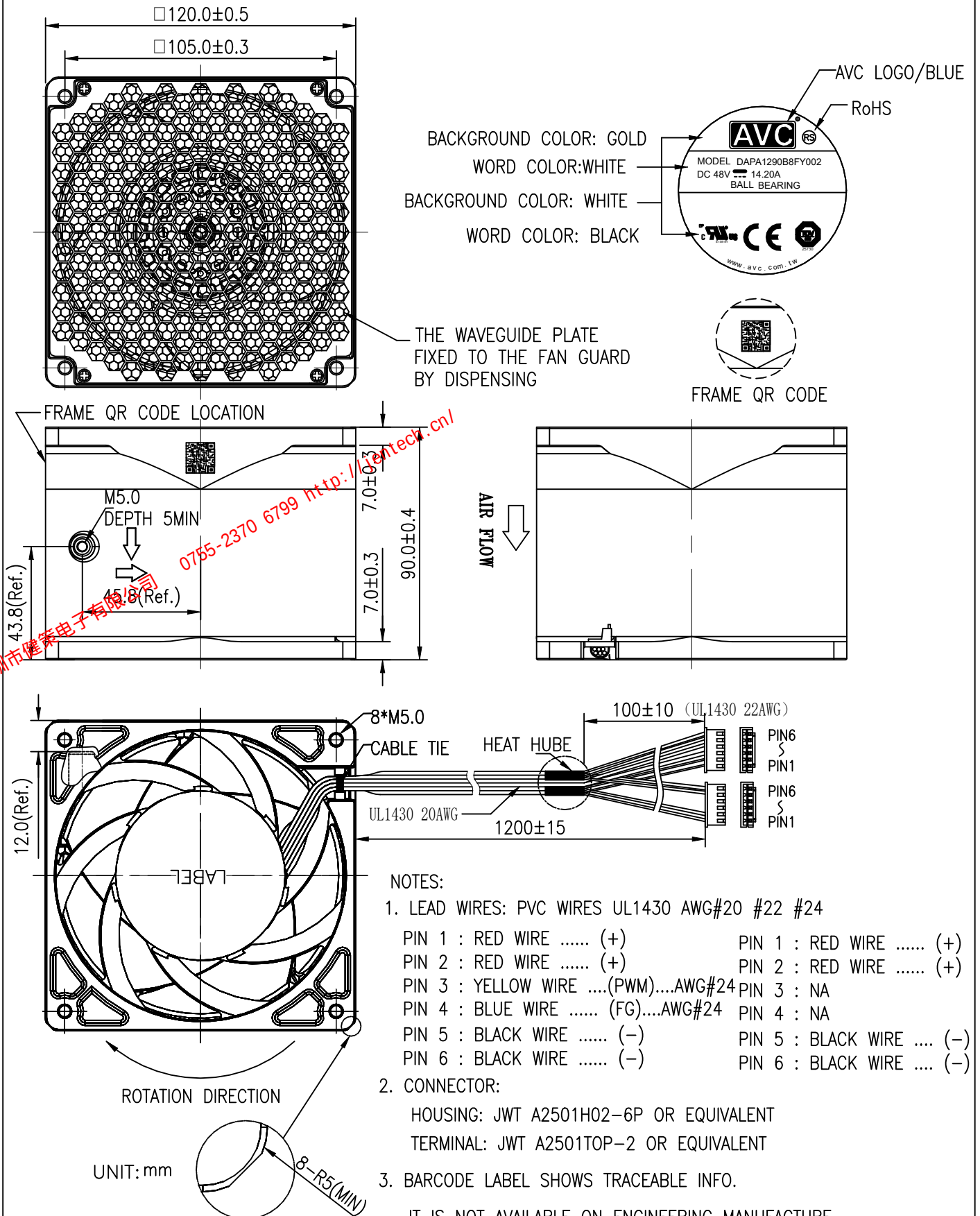
* TEST CONDITION:

INPUT VOLTAGE	——	OPERATION VOLTAGE
TEMPERATURE	——	ROOM TEMPERATURE
HUMIDITY	——	65%RH

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7-1 DIMENSION DRAWING

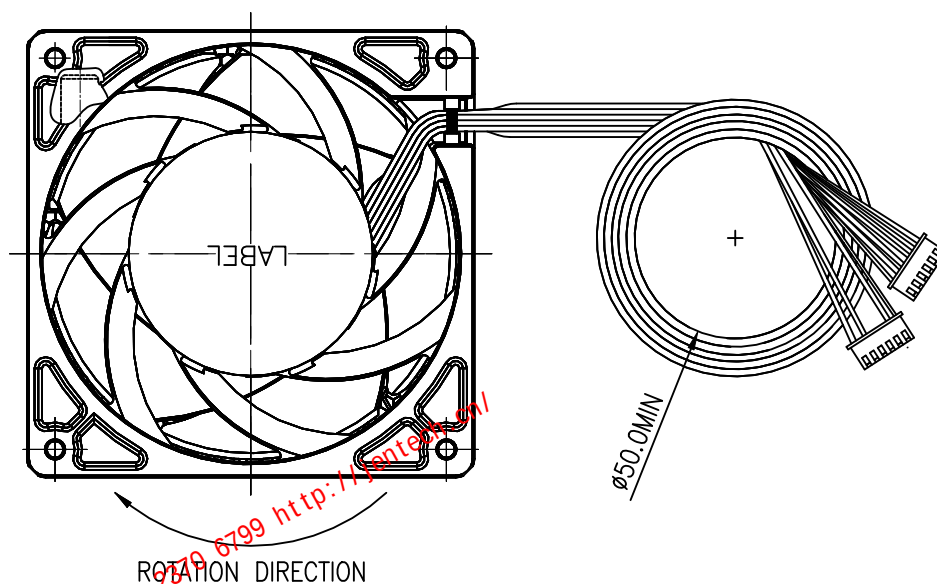


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7-2 DIMENSION DRAWING

BEFORE THE FAN IS SHIPPED, THE WIRE SHOULD BE WRAPPED WITH A DIAMETER GREATER THAN 50MM.



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8. SPEED CONTROL FUNCTION

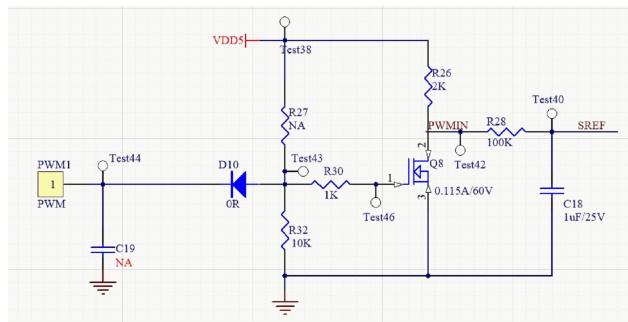
8-1. PWM SIGNAL DESCRIPTION :

1. CONTROL SIGNAL: PWM CONTROL
2. THE RANGE OF SIGNAL VOLTAGE: LOW LEVEL VOLTAGE: MIN. $>-0.8V$, MAX $<0.4V$
HIGH LEVEL VOLTAGE: MIN. $>2.8V$, MAX. $<20V$
3. THE FREQUENCY OF PWM SIGNAL SHALL BE ABLE TO ACCEPT A 300HZ~60KHZ
4. INPUT IMPEDANCE : 20K OHM MIN.

8-2. FAN SPEED CONTROL DESCRIPTION

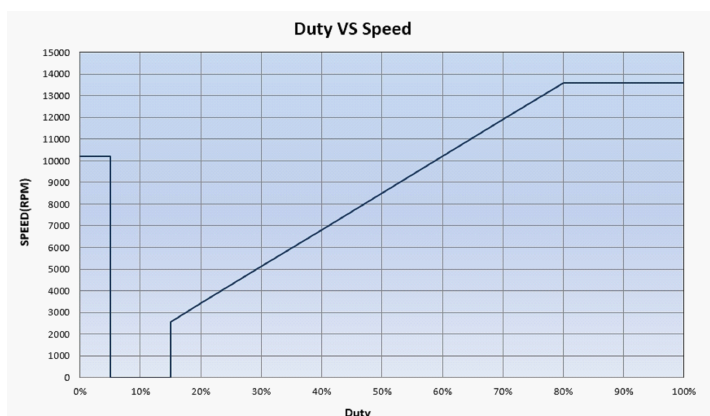
1. FAN INPUT VOLTAGE (POSITIVE) : 53VDC
2. PWM FREQUENCY : 500HZ
3. THE FAN SPEED WILL SPIN AT MAXIMUM WHEN THE DUTY CYCLE IS 100%.
4. THE FAN WILL STOP WHEN THE DUTY CYCLE IS 10 %.
5. THE FAN WILL SPIN AT 10200 RPM WHEN THE DUTY CYCLE IS 0~5%.
6. THE FAN SPEED WILL SPIN AT 0~13600 RPM WHEN THE DUTY CYCLE IS 10~100%.
7. THE FAN SPEED WILL SPIN AT 10200RPM WHEN THE LEAD WIRE OF PWM SIGNAL DISCONNECTED
8. THE FAN WILL BE ABLE TO START WHEN THE DUTY CYCLE IS 15% .

8-3. PWM CONTROL LEAD WIRE INPUT IMPEDANCE



8-4. PWM DUTY CYCLE VS. RPM (AT Ta=25°C)

DUTY CYCLE (%)	R.P.M (REF)	TYPICAL CURRENT(A)	MAX CURRENT(A)
0~5	10200±5%	2.61	3.14
10	0	0.03	0.05
15	2550±300	0.18	0.27
25	4250±300	0.37	0.56
50	8500±5%	1.65	1.98
75	12750±5%	4.73	5.68
100	13600±5%	5.50	6.60

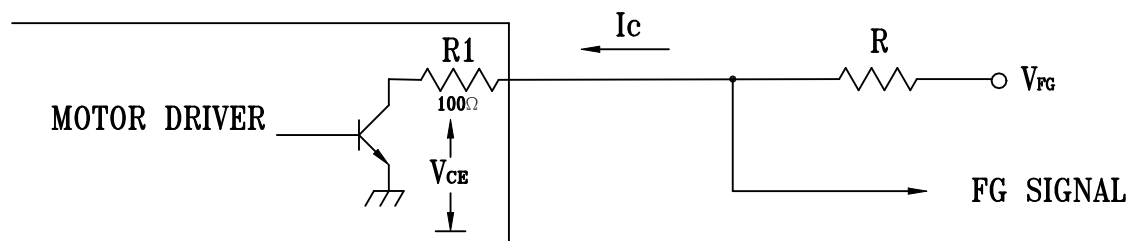


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9. FREQUENCY GENERATOR (FG) SIGNAL

9-1. SCHEMATIC:



CAUTION:

THE LEAD WIRE OF FG SIGNAL CAN NOT TOUCH
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

9-2. SIGNAL SPECIFICATION:

OUTPUT TYPE: OPEN COLLECTOR

V_{FG} MAXIMUM VOLTAGE =60.0V

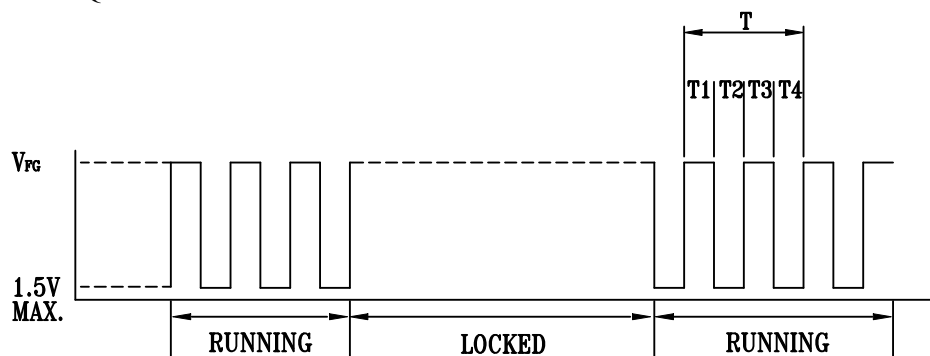
V_{FG} MINIMUM VOLTAGE = 2.8V

I_c MAXIMUM CURRENT =5mA

LOW LEVEL VOLTAGE = 1.5V MAX.

$$R \geq V_{FG} / I_c$$

9-3. FREQUENCY GENERATOR WAVEFORM:



$$T = T_1 + T_2 + T_3 + T_4 = 60/N \text{ (Sec)}$$

N: SPEED (RPM)