



## SPECIFICATION FOR APPROVAL

**CUSTOMER: Chip**

**EVERCOOL MODEL NO: EC6025M12SP**

**CUSTOMER MODEL NO: EC6025M12SP**

**DESCRIPTION: DC12V FAN**

| APPROVED BY<br>(AUTHORISED) | APPROVED          |
|-----------------------------|-------------------|
|                             | <b>Alex</b>       |
|                             | CHECKED           |
|                             | <b>Guoruihua</b>  |
|                             | DRAWN             |
|                             | <b>Libingbing</b> |
|                             | SALES             |
|                             | <b>Teddy</b>      |

\* Please confirm your acceptance by return fax or mail.

| SPEC NO     | ISSUE DATE | EDITION | REVISED DATE |
|-------------|------------|---------|--------------|
| 20151126A15 | 2015/11/26 | A0      | 2015/11/26   |

THE PRODUCTION ACCORD WITH EUROPE UNION ROHS STANDARD

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## I. GENERAL SPECIFICATION

| Item                       | Specification     |                   |
|----------------------------|-------------------|-------------------|
| 1.Part NO.                 | EC6025M12SP       |                   |
| 2.Outline Dimension        | 60*60*25          |                   |
| 3.Rated Voltage            | 12                | VDC               |
| 4.Rated Current*           | 0.2               | A(Max)            |
| 5.Rated Power Consumption* | 2.4               | W                 |
| 6.Rated Speed*             | 2000RPM±25 %      | 4500RPM±10 %      |
| 7.Airflow**                | 9.92CFM(ft3/min)  | 23.17CFM(ft3/min) |
| 8.Static Pressure**        | 0.049In-H2O       | 0.21In-H2O        |
| 9.Noise Level***           | <11.9dB(A)        | <32dB(A)          |
| 10.Life Expectancy         | 25000 hrs at 25°C |                   |
| 11.No of Polarity          | 4 Poles           |                   |
| 12.Direction of Rotation   | Counter-Clockwise |                   |

**Noted:**

**\*Input Current Speed Power Consumption**

Measured after continuous 30 minutes

operation at rated voltage in free air

at ambient temperature of 25 °C, 65% relative humidity

**\*\*Performance**

Measured with use of double chamber. The value

are recorded when the fan speed is stabilized

at rated voltage.

**\*\*\*Noise Level**

Measured at rated voltage in a semi-anechoic chamber

with background noise below than 17 dB(A).

The measuring distance is in one meter from microphone

to inlet of the fan.

## II. ELECTRICAL SPECIFICATION

| Item                    |       | Specification                                           |
|-------------------------|-------|---------------------------------------------------------|
| 1.Polarity Protection   | ✓ YES | Be capable of endurance when Vcc & GRD are exchanged    |
|                         | NO    |                                                         |
| 2.Auto restart          | ✓ YES | Locked motor protection                                 |
|                         | NO    |                                                         |
| 3.Insulation Resistance |       | 10MΩ/b/w unshielded wire and frame at 500 VDC/min       |
| 4.Dielectric Strength   |       | 5Ma Max./Measured b/w lead wire and frame at 500VAC/min |

## III. MAIN MATERIALS / PARTS SPECIFICATION

| Item                     |   | Specification                     |     |      |    |     |  |
|--------------------------|---|-----------------------------------|-----|------|----|-----|--|
| 1.Materials of Frame     |   | Thermoplastic PBT of UL 94V-0(BK) |     |      |    |     |  |
| 2.Materials of Fan Blade |   |                                   |     |      |    |     |  |
| 3.Bobbin                 |   |                                   |     |      |    |     |  |
|                          |   | Dual ball bearing                 |     |      |    |     |  |
|                          |   | 1 ball & 1 sleeve bearing         |     |      |    |     |  |
|                          | ✓ | Sleeve bearing                    |     |      |    |     |  |
|                          |   | EL bearing                        |     |      |    |     |  |
| 5.Lead wire              | ✓ | Red (+)                           | UL# | 1007 | 28 | AWG |  |
|                          | ✓ | Black (-)                         | UL# | 1007 | 28 | AWG |  |
|                          | ✓ | Yellow(FG)                        | UL# | 1007 | 28 | AWG |  |
|                          | ✓ | Blue(PWM)                         | UL# | 1007 | 28 | AWG |  |
| 6.Connector              |   | 2510 4P                           |     |      |    |     |  |

## IV. ENVIRONMENT SPECIFICATION

| Item                    | Specification                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------|
| 1.Operation Temperature | -10℃~+70℃/66%(RH), high / low temperature test for 24 hours, temperature change: 30℃/hours. |
| 2.Storage Temperature   | -40℃~+70℃/66%(RH), high / low temperature test for 24 hours, temperature change: 30℃/hours. |

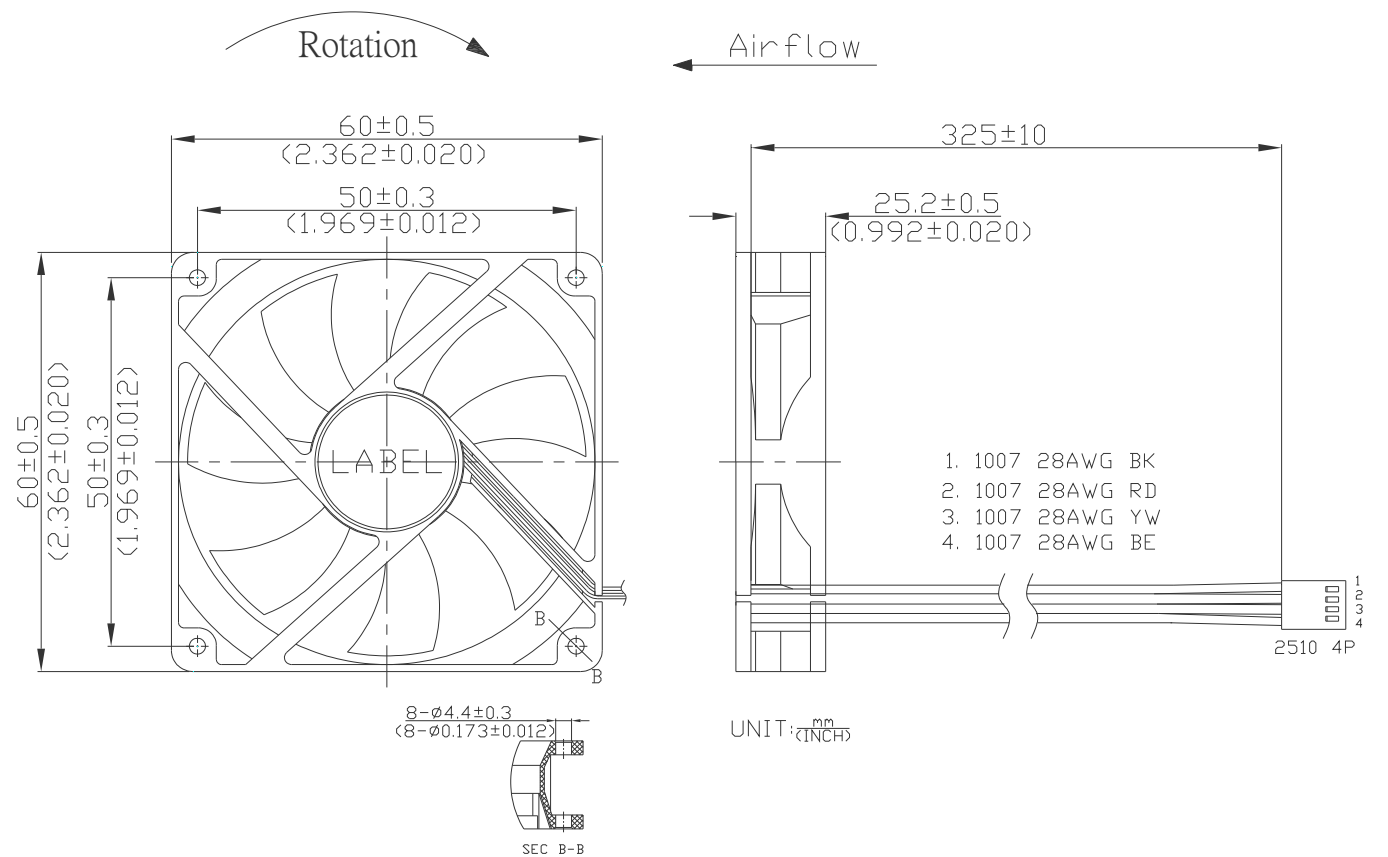
# V. DROPPING TEST

Prepared in minimum packing condition,fan will withstand one drop each on three surfaces from 30 cm height onto a 10mm thick hard wooden board.

# VI. LABEL MARKING

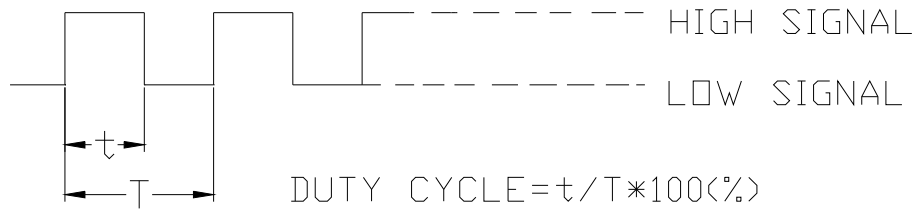


# VII. OUTLINE DIMENSION



### VIII.PWM CONTROL SIGNAL:

Signal Voltage Range:-0.8-20VDC.



.The frequency for control signal of the fan shall be able to accept a 18KHZ-32KHZ.

The preferred operating point for the fan is 25k HZ.

.At 100% duty cycle ,The rotor will spin at maximum speed.

At 0% duty cycle, The rotor will stop spin.

At 25KHZ 20% duty cycle ,The fan will be able to star from a dead stop.

### SPEED VS PWM CONTROL SIGNAL:

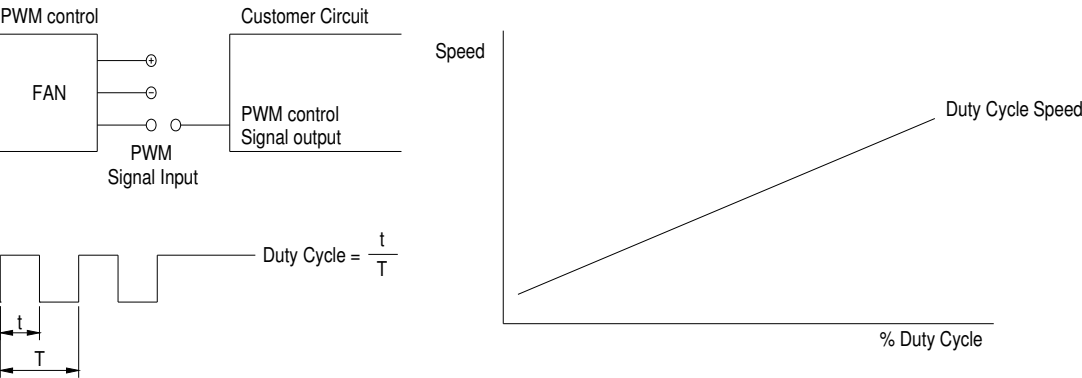
(AT RATED VOLTAGE & PWM FREQUENCY=25KHZ)

| DUTY CYCLE(%) | SPEED.PWM(REF) | CURRENT(A)TYP |
|---------------|----------------|---------------|
| 100           | 4500±10%       | 0.2           |
| 75            | 3500±10%       | 0.16          |
| 50            | 3000±15%       | 0.12          |
| 25            | 2500±20%       | 0.1           |
| 0             | 2000±25%       | 0.07          |

# IX. Sensor Curcuit System

## PWM CONTROL

In PWM speed control, a fixed frequency square wave is applied to the speed control lead wire of the fan. The ratio of the on time vs. the PWM period is proportional to the RPM.



## PWM INPUT VOLTAGE RANGE:

High level= 2.8 to 20 VDC  
Low level= 0 to 0.4 VDC

## PWM INPUT CURRENT (IPWM) RANGE:

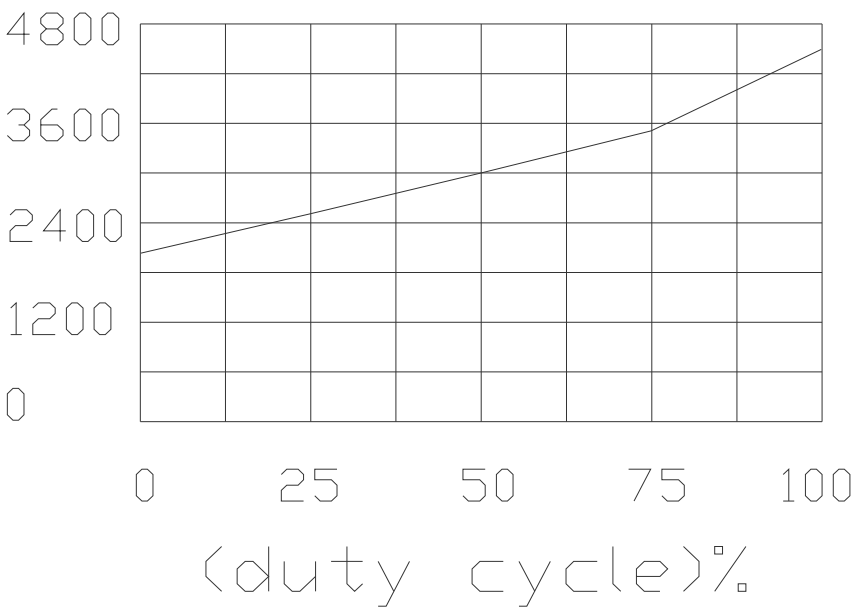
40uA to 20mA

To control signal line of the fan shall be able to accept a 30Hz to 30kHz.  
The preferred operating point for the fan is 0%~100% of duty cycle.

# X.Fan Duty Cycle Vs RPM Curve

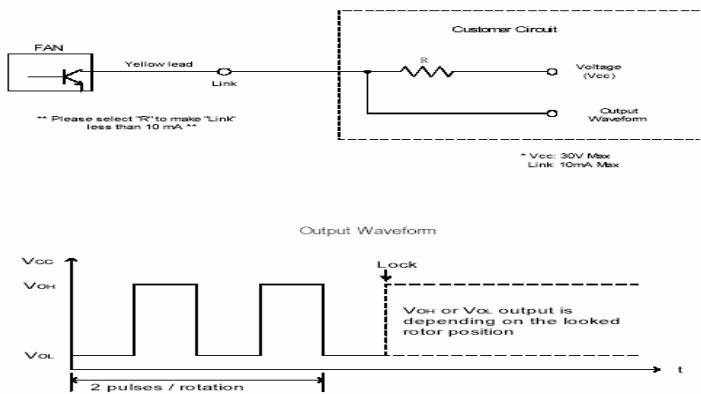
6025duty cycle vs rpm curve

RPM

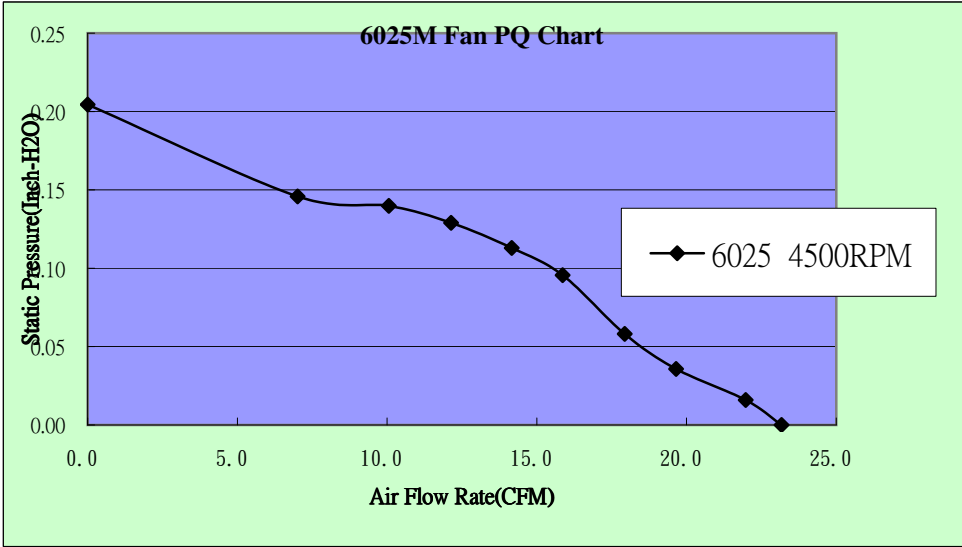


# VIII. Sensor Curcuit System

Speed Sensor / Tachometer ( FG/F )



# XI. P/Q Performance



|    | Q(cfm) | Ps(InchH2o) |
|----|--------|-------------|
| 1  | 0.000  | 0.205       |
| 2  | 7.014  | 0.146       |
| 3  | 10.056 | 0.140       |
| 4  | 12.136 | 0.129       |
| 5  | 14.162 | 0.113       |
| 6  | 15.859 | 0.096       |
| 7  | 17.937 | 0.058       |
| 8  | 19.649 | 0.036       |
| 9  | 21.977 | 0.016       |
| 10 | 23.170 | 0.000       |