



Item No.: 1566436

## IP 58 Waterproof DC FAN, 24V/DC, 90mA, 1500 RPM

Model No: RD12038B24L1



### 1, Mechanical

- 1-1, External dimension 120\*120\*38mm  
1-2, Weight 246g/pcs (Lead wire length x 300mm & without connector)  
1-3, Bearing Two Ball bearing

### 2, Electrical characteristics (in free air at rated voltage)

- 2-1, Rated voltage 24V  
2-2, Rated current 0.09 ± 10%A  
2-3, Rated input power 2.16 ± 10%W

### 3, Efficiency

- 3-1, Rated speed (range) 1500RPM ± 10%  
3-2, Maximum air flow 65.9 CFM  
3-3, Maximum static air pressure 2.2mm-H2O

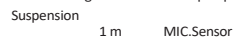
### 4, Characteristics

- 4-1, Operating voltage range 14V~28V  
4-2, Starting voltage 14V (ON/OFF)  
4-3, Locked current 0.15A (Reference)  
4-4, Operating temperature -10°C ~+70°C  
4-5, Storage temperature -30°C ~+85°C  
4-6, Waterproof class Grade IP58 to an immersion depth of 1.0 meter in water  
4-7, Insulation resistance At least 10MΩ at 500 VDC between housing and both lead  
4-8, Dielectric strength Withstand 500 VAC 1 minute 1mA between housing and both lead wires

4-9, MTBF: 50,000Hours

Life expectancy: 50,000Hours continuous operation at rated voltage and normal temperature & humidity  
4-10, Tensile strength of connector Connector will not be any broken at 1 Kg for 15 seconds per piece.

4-11, Acoustic sound level 27.0dBA (Max.27.0dBA)



4-11-1, Acoustic sound level test descriptions

At rated voltage in sound proof room

Background noise: 14.9dBA

4-12, Characteristics definition:

4-12-1, Rated current, rated speed, and rated input power shall reach bottom line of specification after 5 minutes continuous rotation at rated voltage and reach standard specification after 10 minutes continuous at rated voltage.  
4-12-2, Starting voltage is the least voltage that enables to start the fan by sudden power on.

5, Protection:

Reversal voltage test: We took 200pcs for reversal voltage test at 12V for 1 minutes and all remain still.

Fans work normally after corrected voltage.

| 6, Safety | UL | CE | RoHS |
|-----------|----|----|------|
|           |    | ✓  | ✓    |

### 7, Material

| Items | Major components       | Material & Specification                           | Grade       | Remark                                       |
|-------|------------------------|----------------------------------------------------|-------------|----------------------------------------------|
| 7.1   | Fan housing            | PBT 70% + Fiber 30%                                | 94V-0       |                                              |
| 7.2   | Fan blade              | PBT 85% + Fiber 15%                                | 94V-0       |                                              |
| 7.3   | Stator core            | Stainless steel (SUS4012)                          |             |                                              |
| 7.4   | Bearing                | Ball bearing or sleeve bearing (Cu + GLY) - Z100   |             | Two Ball Bearing                             |
| 7.5   | Rubber magnet          | Strontium ferrite (BOB 14W)                        |             |                                              |
| 7.6   | Silicon steel strip    | (H23) (H-8)                                        |             |                                              |
| 7.7   | Enameled copper wires  | Material Specification 0.22-0.23 mm                | MW-2 UEW    | Heat resistance 120°C                        |
| 7.8   | Printed Circuit Boards | Wiring printed single layer board                  |             | CAM-1 T: 0.8mm                               |
|       | Lead Wires             | Polyvinyl Chloride enameled copper wires (AWG #22) | 94V-0 94V-0 | Red wire: +polarity<br>Black wire: -polarity |
|       | Label                  | polyester                                          |             |                                              |

8, Product inspection procedure Inspection procedures below are extremely followed

8-1, 100% Electric, rotating, dead spot, fan blade fasten, and primary noise test on production line

8-2, 100% Current wave test with scope on production line

8-3, 100% Strike test by hand and noise filter in quiet room

8-4, 10 cm drop test at random in accordance with MIL-STD-105E standard

8-5, Random inspection in accordance with MIL-STD-105E standard

8-6, Pass/Reject standard:

Critical AQL: 0.4 Major AQL: 0.65 Minor AQL: 1.0

9, Notes:

9-2, We will not guarantee the products if the application of our products are exceeded the limitation which is specified on this specification.

9-2, In case of changes of the specification specified on this document. A written notice is requested in advance.

9-3, Please do not touch the impeller with the pressure and never bring the fan with lead wire. The bearing and lead wire may be damaged.

9-4, No guarantee on the products against the safety problem or failure caused by powder dust or insect.

9-5, If there is any data or related documentation different from this data sheet. This data sheet is the principle reference.

9-6, Please do not use the fan in the environment of corrosive liquid or detrimental gas.

9-7, Please do not store the fan in the environment of high/low temperature or detrimental gas.

9-8, While the fan is in operation, please do not lock the fan intentionally for a long periods of time, since the continuous stoppage will result in overheating and thus burnt out the fan

9-9, During the installation of the fan, please pay substantial attention to possible noise caused by resonance vibration and shock.

9-10, It is very important to notify that avoid to drop from 60cm height when in any movement or operation, it will impact the balance of blade. Especially ball bearing structure is avoided to drop down.

9-11, The torque of the screw which locked the frame should not exceed 4 Kgf



| Item No | Model No     | Rated Voltage (VDC) | Rated Current (A) | Rated power (W) | Rated Speed (rpm) | Maximum Air Flow (CFM) | Max. Pressure (mmAq) | Noise Level (dB/A) |
|---------|--------------|---------------------|-------------------|-----------------|-------------------|------------------------|----------------------|--------------------|
| 1566436 | RD12038B24L1 | 24                  | 0.09              | 2.16            | 1500              | 65.9                   | 2.20                 | 27.0               |

### 10, RPM detection

1, Output waveform: square wave

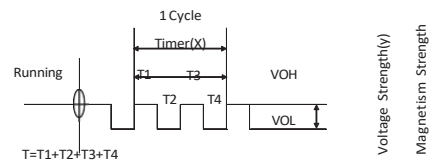
2, when the voltage value is higher (Voltage Y) then output waveform is higher.

3, when the fan is shutdown then output waveform is a horizontal line.

4, the cyclic distance is longer then the RPM is slower

5, RPM formula as follows:

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5, RPM formula as follows:

RPM = 2250 / X (ns)

Example

X=15ns

Ls=1000ns

Lmin=22500ns

RPM = 2250 / 15 = 1500

11, Installation drawing

