



Part No. **Z4SH2B0070001**

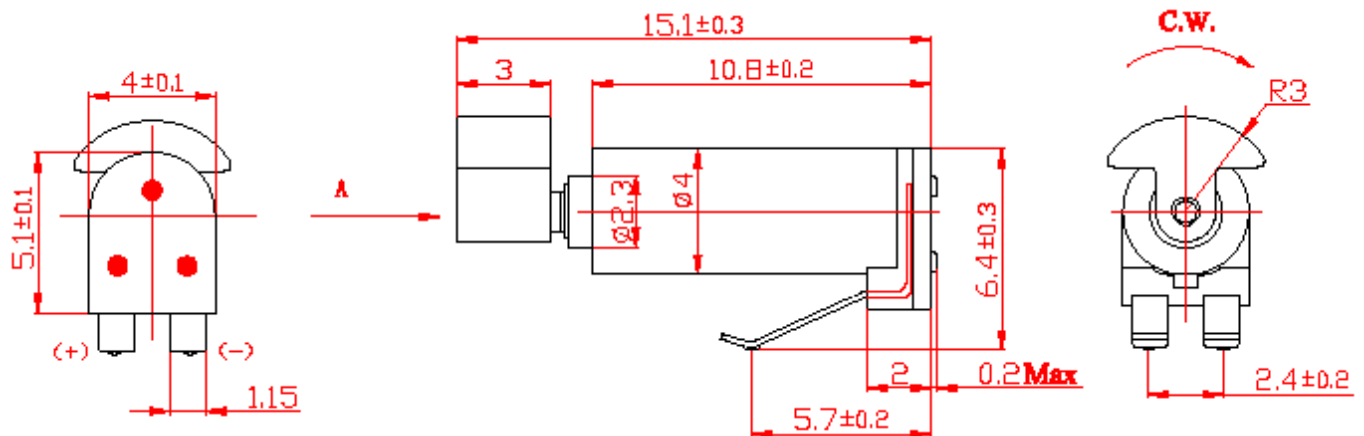
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Technic requirement

1. Rated voltage: 3.0V
2. Rated current: 70mA Max
3. Rated speed: 10,000±2000rpm
4. Stall current: 90mA Max
5. Terminal resistance: 41|?(±20%)
6. Starting voltage: 2.0V Max
7. Shaft end play: 0.05~0.2mm
8. Overall length is measured after counterweight being pressed against body in direction A. (Shaft end play is not included.)
9. Unmarked tolerance: ±0.1mm



1. General scope

This specification applies to cylindrical permanent-magnetic motors DC model **Z4SH2B0070001**.

2. Operating Conditions

Items	Specifications	Condition & Remarks
2-1 Rated voltage	3.0V DC	
2-2 Rated load	Counter weight	As specified in 10. Outline drawing.
2-3 Rotation	C.W/C.C.W (clockwise or counter clockwise)	
2-4 Motor position	All positions	
2-5 Operating voltage	2.2 ~ 3.6V DC	
2-6 Operating conditions	-30 ~ 70°C, ordinary humidity Humidity : 65±20%RH	No condensation of moisture.
2-7 Storage conditions	-40 ~ 80°C, ordinary humidity Humidity : 65±20%RH	No condensation of moisture.

3. Measuring conditions

Items	Specifications	Condition & Remarks
3-1	Temperature	20±2°C
3-2	Humidity	(63 ~ 67%) RH
3-3	Motor position	Motor Shaft horizontal Lock the motor in a test fixture.

The measurement at 20 & 65%RH is standard. If the judgment is not questionable, recognize measurement at 5 to 35 & relative humidity 45% to 85%. Direction of motor is shaft horizontal.

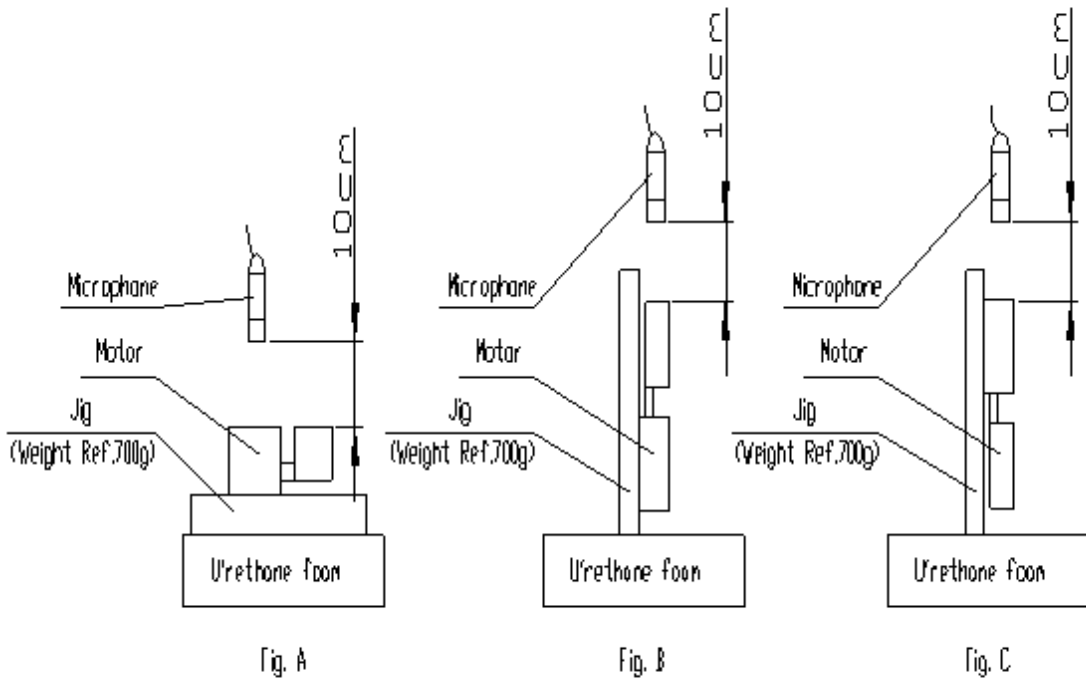
4. Mechanical specifications

Items	Specifications	Condition & Remarks
4-1 Configuration	As specified in 10. Outline drawing	Outline drawing No: Z4SH2B0070001.
4-2 Appearance	There shall be no evidence of mechanical damage and shall not have inadequate corrosion and so on	Visual examination (allowable extent is based on boundary sample)
4-3 Shaft end play	0.05 ~ 0.2mm	
4-4 Holding strength of vibration weight	49N (5kgf) min.	

5. Performance and characteristics

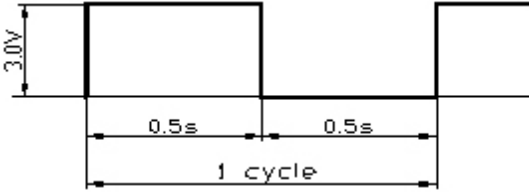
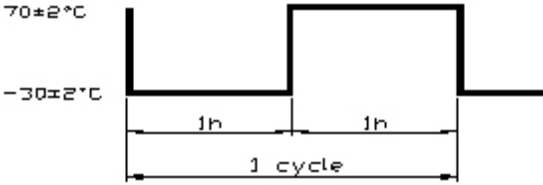
Items	Specifications	Condition & Remarks
5-1 Rated speed	10,000±2,000rpm	At rated voltage and rated load (Counterweight).
5-2 Rated current	70mA max	
5-3 Stall current	90mA max	At rated voltage.
5-4 Starting voltage	2.0V DC max	(Counterweight) any position of rotor.
5-5 Insulation resistance	1M• min	At DC 100V between terminal and case.
5-6 Terminal resistance	41• (±20%)	At 20°C.
Mechanical noise	50db (A) Max	
At rated voltage and rated load (counterweight). Background noise: 28db (A) Max Measuring instruments: B & K. The weight of jig: 700g.		

5-7



6. Reliability

Items	Standard test conditions	Condition & Remarks
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6-1	Life test	 <table border="1" data-bbox="326 428 1247 493"> <thead> <tr> <th>Position</th> <th>Voltage</th> <th>Load</th> <th>Temperature</th> <th>Humidity</th> <th>Life</th> </tr> </thead> <tbody> <tr> <td>Horizontal</td> <td>Rated</td> <td>weight</td> <td>20 °C</td> <td>65 %</td> <td>200,000 cycles</td> </tr> </tbody> </table>	Position	Voltage	Load	Temperature	Humidity	Life	Horizontal	Rated	weight	20 °C	65 %	200,000 cycles	After the test, Motors shall be approved as specified in item 7-1.
Position	Voltage	Load	Temperature	Humidity	Life										
Horizontal	Rated	weight	20 °C	65 %	200,000 cycles										
6-2	Low Temp exposure	Temperature: $-40 \pm 2^\circ\text{C}$ Time: 96hrs	After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.												
6-3	High Temp exposure	Temperature: $80 \pm 2^\circ\text{C}$ Time: 96hrs													
6-4	Humidity exposure	Temperature: $40 \pm 2^\circ\text{C}$ Humidity: 90 ~ 95% RH Exposure time: 96hrs No condensation of moisture													
6-5	Vibration	Displacement: 1.5mm (p-p) Frequency: 10 ~ 55Hz Acceleration: 22m/s^2 Period: 20 Mins log sweep (10 ~ 55 ~ 10Hz) Direction: x, y, z Time: Every 2 hours	After the test motors shall be approved as specified in item 7-2.												
6-6	Free fall	Test state: Set the motor to the approximately 100 g (include the motor) weight of block drop the motor on the concrete floor. Height: 1.5 m Direction: 6/6faces Number of times: Twice 2 each	After the test motors shall be approved as specified in item 7-2.												
6-7	Heat shock test	Test cycle: 20 cycles 	After 2 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 7-2.												

7. Requirements

Items	Requirements
7-1 Table A	1) Rated speed: Initial data -30% Min, Initial data +60% Max 2) Rated current: $\pm 30\%$ /Initial data $\pm 30\%$ max 3) Starting voltage: 2.4 V DC max
7-2 Table B	1) Rated speed: $\pm 30\%$ /Initial data $\pm 30\%$ max 2) Rated current: $\pm 30\%$ /Initial data $\pm 30\%$ max 3) Starting voltage: 2.4 V DC max

8. Matters to be paid attention to when using motor

8-1 Please lay the motors carefully in transportation to avoid any serious damage to the motor body or its electric function because of collision.

8-2 Please use and storage motors according to N0.2 item (Operating Conditions) in specification, or else motor characteristics would be affected.

8-3 Make arrangement to limit the storage period to 6 months or less. Condensation of atmosphere must be avoided in motor usage or opening the packaging of the motor.

8-4 For proper operation, storage and operating environment must not contain corrosive gases. For example H₂S, SO₂, NO₂, CL₂, etc. In addition storage environment must not have materials that emit corrosive gases especially from silicon, cyanic, formalin and phenol group. In the mechanism or the set, existence of corrosive gases may cause no rotation in motor.

8-5 Please don't stall the shaft for a long time after powering, and not to touch the weight when motor is rotating.

8-6 There should be no sundries (such as grain, fiber, hair, small tape, glue etc.) in the shaft end play.

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