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PUIaudio



Data Sheet HD-EMB1104-SM-3

**Features:**

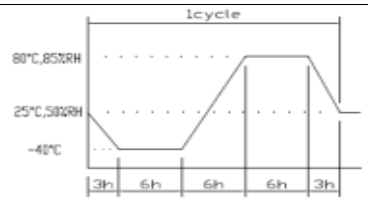
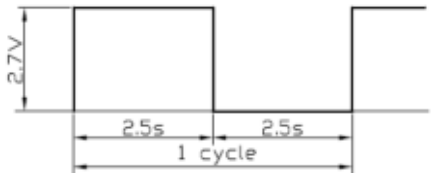
- Designed to be driven with 2.7 VDC
- Surface mount motor directly soldered to the PCB board
- Recommended PCB layout shown for easy implementation
- Generates 15,000 RPMs with no more than 50 dBA acoustic noise

## Specifications

| Parameters | Values | Units |
|---|---|---|
| Rated Voltage | 2.7 | $V_{DC}$ |
| Starting Voltage | 2.3 | $V_{DC}$ |
| Operating Voltage Range | 2.3 ~ 3.0 | $V_{DC}$ |
| Direction of Rotation | CW | - |
| Vibration Strength | 0.3 | G |
| Terminal Resistance | 33 ± 6 | Ohms |
| Insulation Resistance | > 1M | Ohms |
| Rated Speed | 15,000 ± 3,000 | RPM *(@ 2.7 $V_{DC}$)* |
| Rated Current (Max) | 80 | mA *(@ 2.7 $V_{DC}$)* |
| Stall Current (Max) | 100 | mA *(@ 2.7 $V_{DC}$)* |
| Shaft Pull Strength | > 3.0 | kgf |
| Shaft End Play (Max) | < 0.3 | mm |
| Mechanical Noise (Max) | 50 | dBA |
| Environmental Compliances | RoHS/REACH | - |
| Total Mass | 0.53 ± 10% | Grams |
| Counterweight Mass | 0.13 ± 10% | Grams |
| Storage Temperature | -40 ~ +85 | °C |
| Operating Temperature | -20 ~ +70 | °C |

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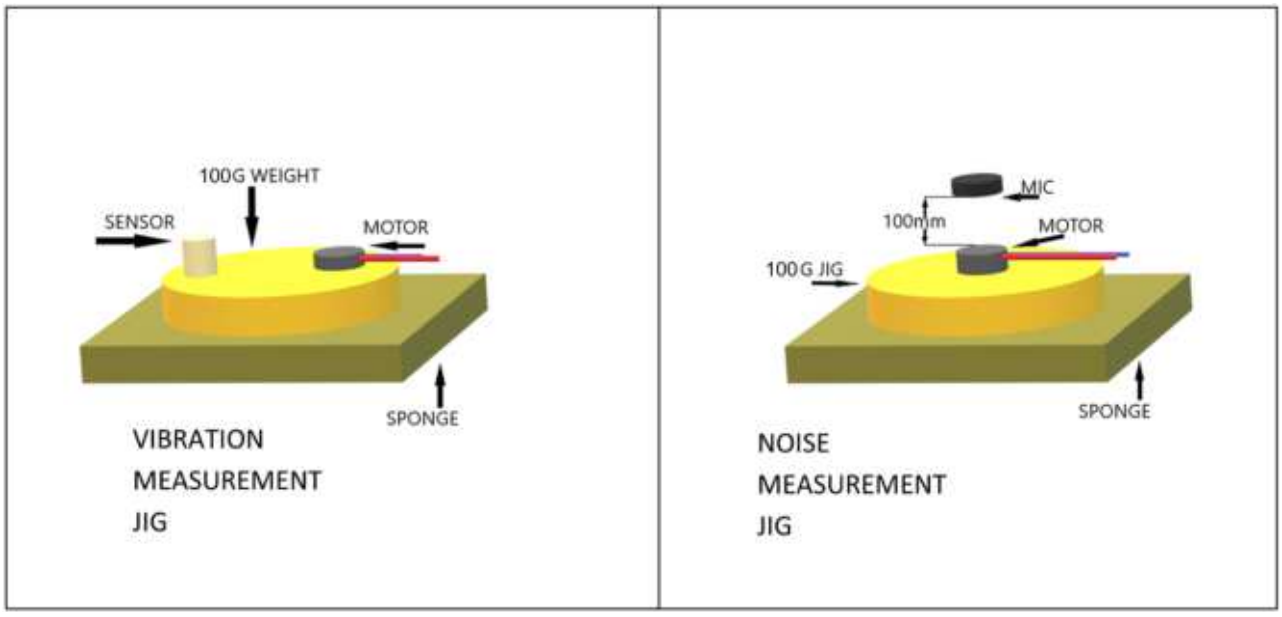
## Reliability Testing

| Type of Test | Test Specifications | Pass/Fail Criteria |
|---|---|---|
| High Temperature | Temperature: +80±3°C<br>Test Duration: 96 hours | *After each test, motors rest for 4 hours at room temperature. After rest, the rated speed of the motor should be within* ± 30% of the initial value |
| Low Temperature | Temperature: -40±3°C<br>Test Duration: 96 hours | |
| Humidity Cycle | <br>Test Cycles: 6 | |
| Thermal Shock | Temperature Range: -40 <-> +80°C<br>Test Duration: 30 minutes at -40°C, heat to +80°C within 20 seconds. 30 minutes at +80°C, cool to -40°C within 20 seconds.<br>Test Cycles: 50 | |
| Free Drop | Drop from listed drop height three times in ±X, ±Y, ±Z directions (18 total):<br>Jig Mass: 100 grams (including motor)<br>Drop Height: 1.5 meters | |
| Vibration | Amplitude: 6.06Grms<br>Frequency: 20, 80, 350, 2000 Hz<br>Cycle Time: 10 min each frequency, in each axis.<br>Test Orientation: X, Y, Z<br>Test Duration: 2 hours | |
| Lifetime | <br>Temperature: Room Temperature<br>Test Cycles: 300,000 *(@ 2.7$V_{DC}$)* | *Electrical parameters measured every 20,000 cycles.*<br>*After 200,000 cycles, the motor shall have no mechanical damage.*<br>*After 300,000 cycles, the motor should function.* |
| | Temperature: +55°C<br>Test Cycles: 53,000 *(@ 2.7$V_{DC}$)* | *After 53,000 cycles, the the rated speed of the motor should be within* ± 30% of the initial value and show no mechanical damage. |
| | Temperature: -20°C<br>Test Cycles: 53,000 *(@ 2.7$V_{DC}$)* | |

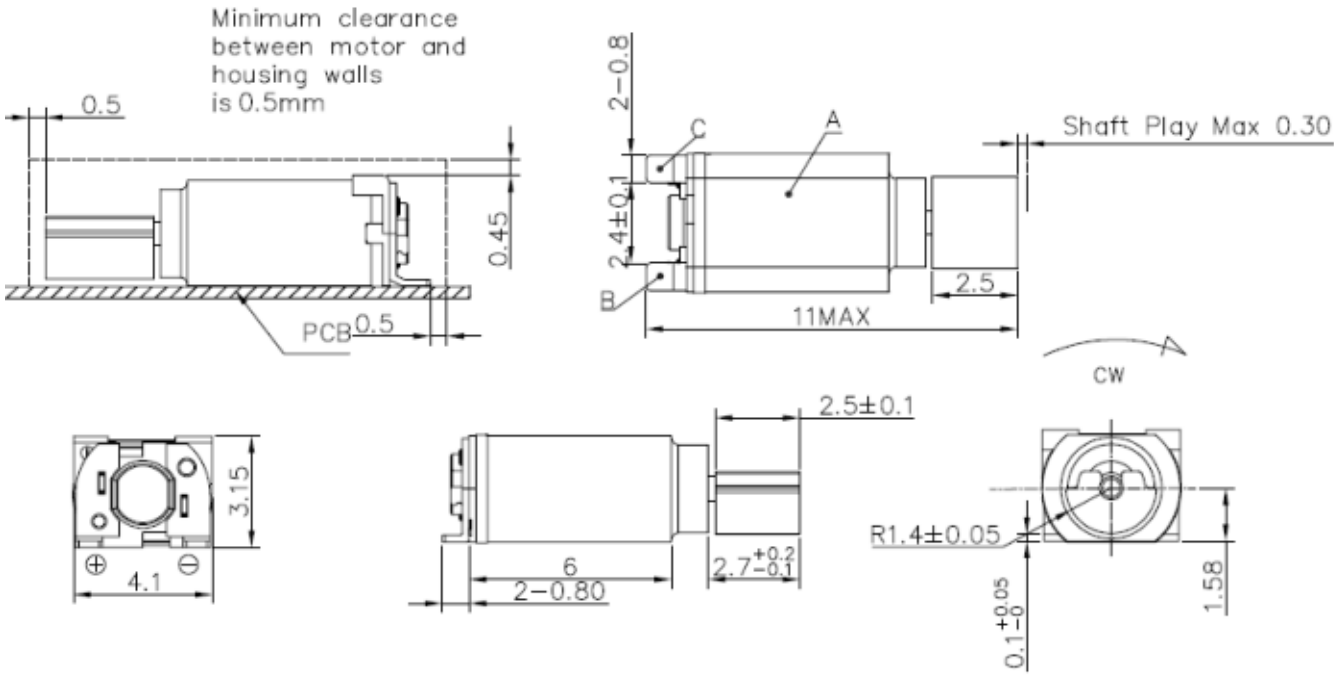
**After testing, each motor must achieve the listed Pass/Fail Criteria for the appropriate test.**

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## Measurement Methods

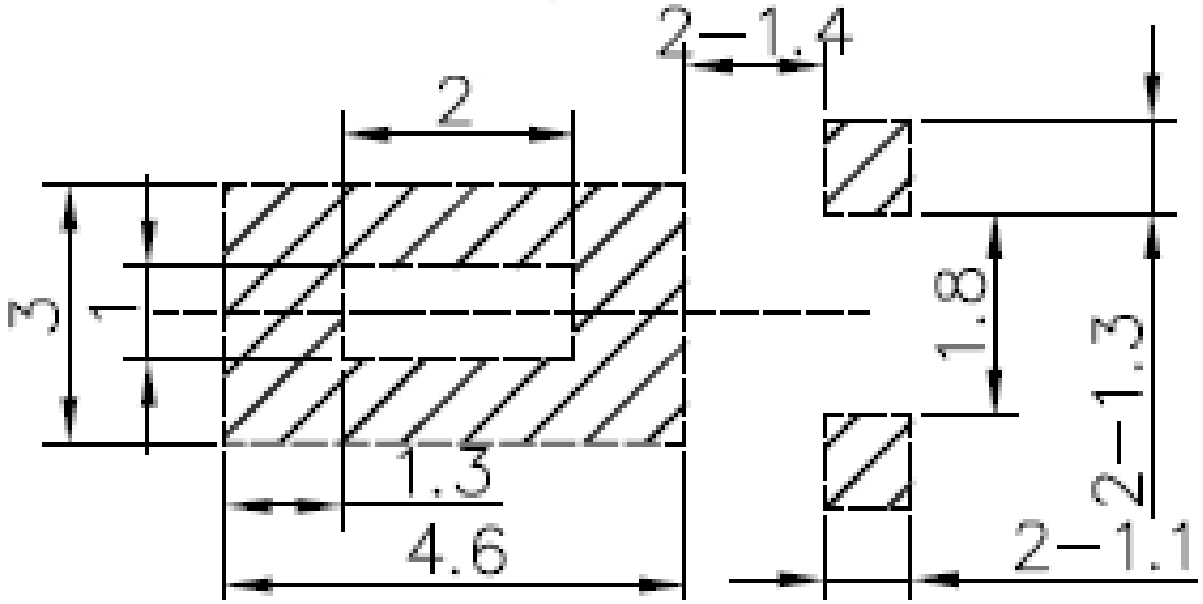



## Dimensions



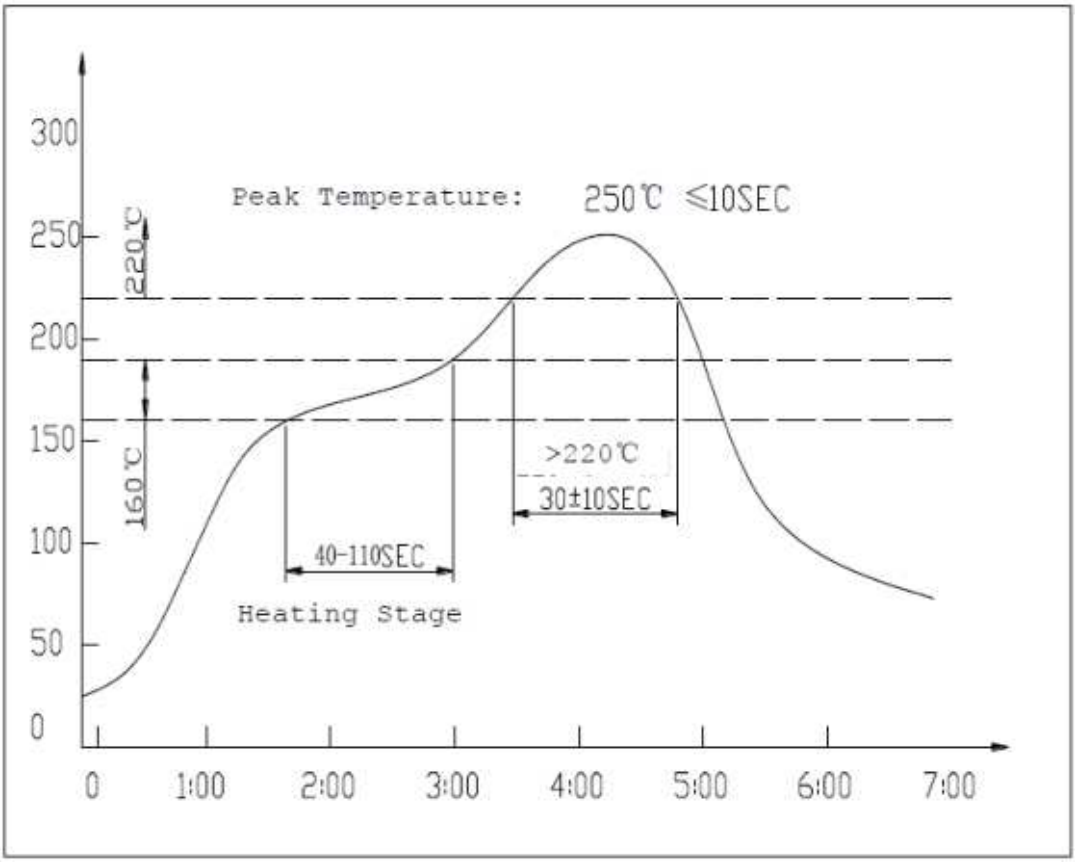
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## PCB Land Pattern



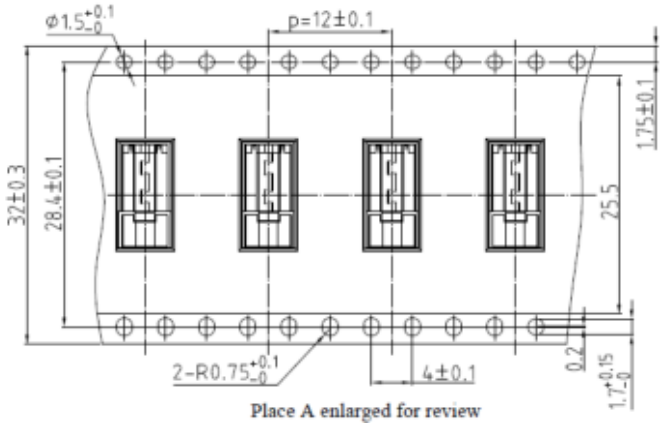

***This land pattern is advisory only and its use or adaptation is entirely voluntary. PUI Audio disclaims all liability of any kind associated with the use, application, or adaptation of this land pattern.**

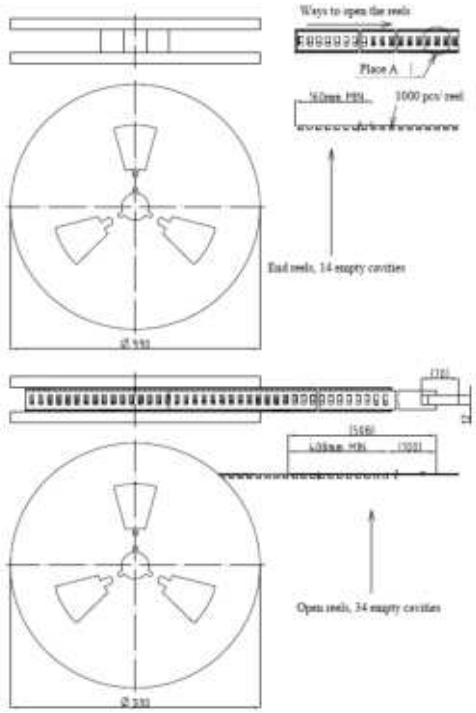
## Recommend Soldering Procedure

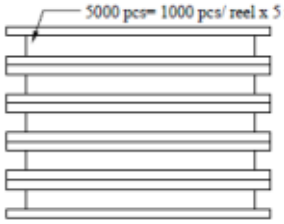


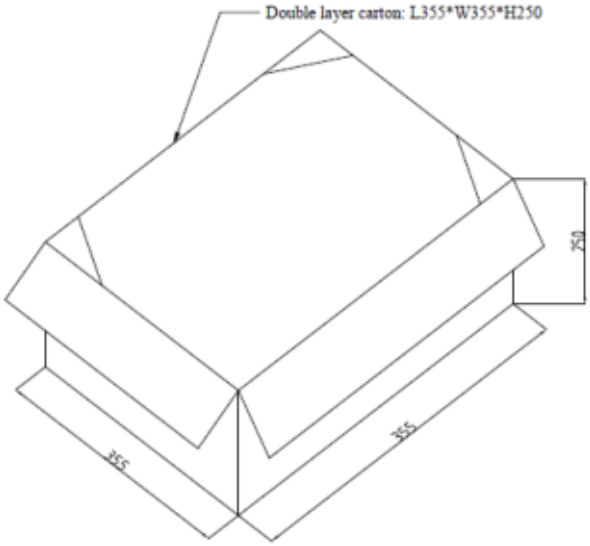
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# Packaging




**Specifications Revisions**

| Revision | Description | Date | Approved |
|---|---|---|---|
| A | Released from Engineering | 2/16/2023 | - |
| B | Revised operating voltage range, terminal resistance, rated speed tolerance, mass, reliability testing criteria, and 2D drawing. | 5/19/2026 | NW |

Note:

1. Unless otherwise specified:
   A. All dimensions are in millimeters.
   B. Default tolerances are ±0.5mm and angles are ±3°.
2. Specifications subject to change or withdrawal without notice.