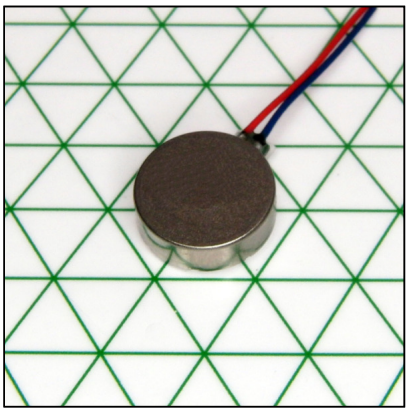


10mm Brushless Vibration Motor - 3mm Type Shown on 6mm Isometric Grid

PRECISION MICRODRIVES™

Product Data Sheet
Dura Vibe™
10mm Brushless Vibration Motor - 3mm Type

Model: 910-101

Ordering Information

The model number 910-101 fully defines the model, variant and additional features of the product. Please quote this number when ordering.
For stocked types, testing and evaluation samples can be ordered directly through our online store.

Datasheet Versions

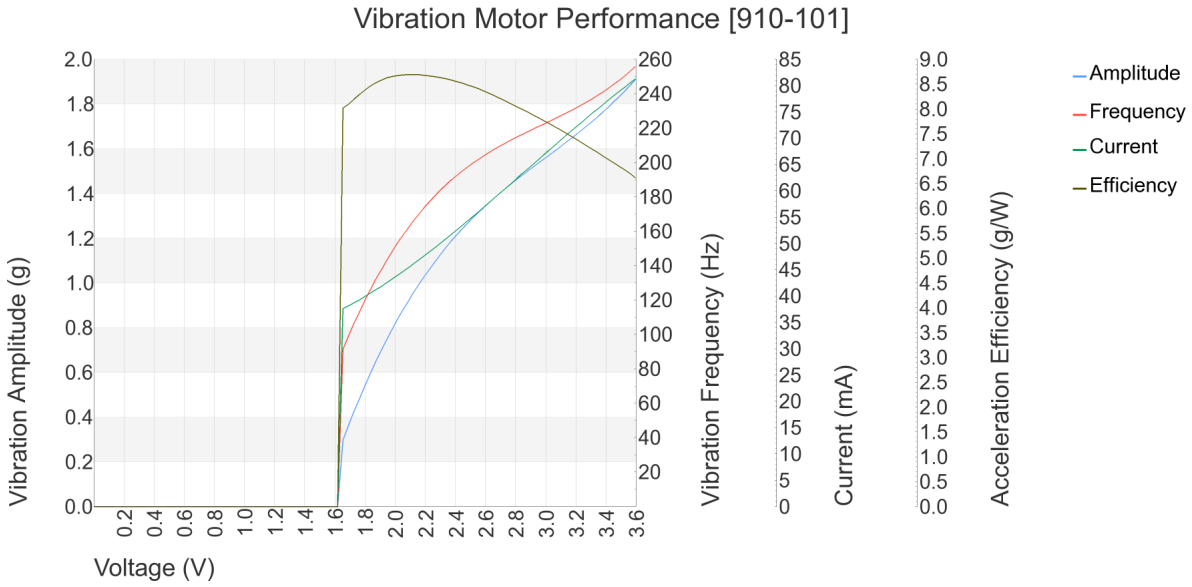
It is our intention to provide our customers with the best information available to ensure the successful integration between our products and your application. Therefore, our publications will be updated and enhanced as improvements to the data and product updates are introduced.
To obtain the most up-to-date version of this datasheet, please visit our website at:
www.precisionmicrodrives.com
The version number of this datasheet can be found on the bottom left hand corner of any page of the datasheet and is referenced with an ascending R-number (e.g. R002 is newer than R001). Please contact us if you require a copy of the engineering change notice between revisions.

If you have any questions, suggestions or comments regarding this publication or need technical assistance, please contact us via email at:
enquiries@precisionmicrodrives.com or call us on +44 (0) 1932 252 482

Key Features

Body Diameter:	10 mm [+/- 0.1]
Body Length:	3 mm [+/- 0.1]
Drive Electronics:	Integrated
No. of Wires:	2
Rated Operating Voltage:	3 V
Rated Vibration Speed:	12,500 rpm [+/- 2,500]
Typical Rated Operating Current:	65 mA
Typical Normalised Amplitude:	1.4 G

Typical Brushless Vibration Motor Performance Characteristics



Physical Specification

PARAMETER	CONDITIONS	SPECIFICATION
Body Diameter	Max body diameter or max face dimension where non-circular	10 mm [+/- 0.1]
Body Length	Excl. shafts, leads and terminals	3 mm [+/- 0.1]
Unit Weight		1 g

Construction Specification

PARAMETER	CONDITIONS	SPECIFICATION
Motor Construction		Flat Coreless
Commutation		Hall Effect Sensor
Drive Electronics		Integrated
Bearing Type		Sintered Bronze

Leads & Connectors Specification

PARAMETER	CONDITIONS	SPECIFICATION
No. of Wires		2
Lead Length	Lead lengths defined as total length or between motor and connector	100 mm [+/- 2]
Lead Strip Length		1.5 mm [+/- 0.5]
Lead Wire Gauge		32 AWG
Lead Configuration		Straight

Operational Specification

PARAMETER	CONDITIONS	SPECIFICATION
Rated Operating Voltage		3 V
Rated Vibration Speed	At rated voltage using the inertial test load	12,500 rpm [+/- 2,500]
Max. Rated Operating Current	At rated voltage using the inertial test load	90 mA
Rated Inertial Test Load	Mass of standard test sled	100 g
Min. Vibration Amplitude	Peak-to-peak value at rated voltage using the inertial test load	1.1 G
Max. Start Voltage	With the inertial test load	2.5 V
Max. Operating Voltage		3.6 V
Max. Start Current	At rated voltage	100 mA
Min. Insulation Resistance	At 50V DC between motor terminal and case	10 MOhm

Important: The characteristics of the motor is the typical operating parameters of the product. The data herein offers design guidance information only and supplied batches are validated for conformity against the specifications on the previous page.

Typical Performance Characteristics

PARAMETER	CONDITIONS	SPECIFICATION
Typical Rated Power Consumption	At rated voltage and load	195 mW
Typical Rated Operating Current	At rated voltage using the inertial test load	65 mA
Typical Vibration Amplitude	Peak-to-peak value at rated voltage using the inertial test load	1.4 G
Typical Start Current	At rated voltage	100 mA
Typical Vibration Efficiency	At rated voltage using the inertial test load	7.2 G/W
Typical Normalised Amplitude	Peak-to-peak vibration amplitude normalised by the inertial test load at rated voltage	1.4 G
Typical Start Voltage	With the inertial test load	1.7 V

Typical Haptic Characteristics

PARAMETER	CONDITIONS	SPECIFICATION
Typical Lag Time	At rated voltage using the inertial test load	52 ms
Typical Rise Time	At rated voltage using the inertial test load	140 ms
Typical Stop Time	At rated voltage using the inertial test load	280 ms

Environmental Characteristics

PARAMETER	CONDITIONS	SPECIFICATION
Min. Operating Temp.		-30 Deg.C
Max. Operating Temp.		70 Deg.C
Min. Storage Temp.		-40 Deg.C
Max. Storage Temp.		85 Deg.C

Typical Packing Conditions

PARAMETER	CONDITIONS	SPECIFICATION
Carton Type		Boxed Trays

Reliability Analysis

This section presents information regarding the longevity test performed on the motor. The Mean Time to Failure reported in this page should not be interpreted as a guaranteed lifetime. Please check our Application Notes for further information.

Our longevity test consists of powering the motors at their rated voltage for 2 seconds, then turning them off for 2 seconds. This cycle is repeated over the total test time.

The test is performed by our custom longevity machine which drives the motors and collects performance data. The test parameters and results can be seen below.

Test Parameters

- Motors tested: 48
- Test time: 5000 hours
- Cycle period: 4 seconds
- Duty cycle: 50%
- Test voltage: 3 V
- Temperature: 32 °C

Formulas to derive the key reliability figures from a Weibull distribution:

$$MTTF = \eta * \Gamma\left(1 + \frac{1}{\beta}\right)$$

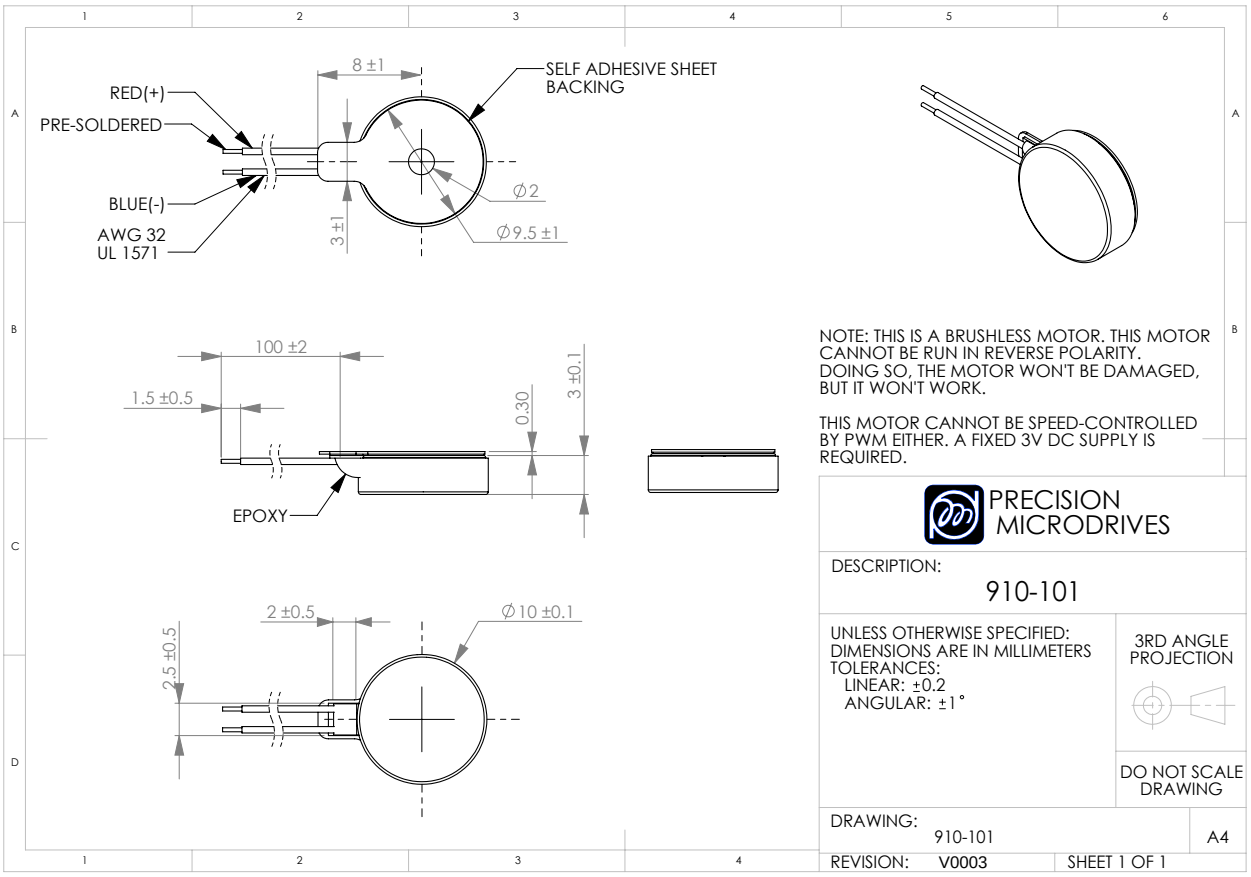
$$FIT = 10^9 / MTTF$$

Test Result

None of the 48 tested motors failed during the 5000 hours of the test. For this reason the Mean Time to Failure is expected to be well above 5000 hours.

5000 hours correspond to 4.5 million test cycles.

Product Dimensional Specification



Life Support Policy

PRECISION MICRODRIVES PRODUCTS ARE NOT AUTHORISED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF PRECISION MICRODRIVES LIMITED.
As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.

2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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