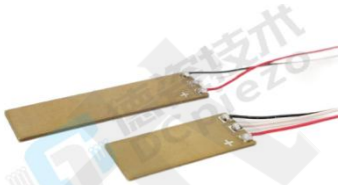
# Product specification

The DCB3-320708 piezoelectric bimorph is composed of multiple co-fired piezoelectric ceramic layers, and its maximum displacement can reach ±450 μm.The red wire of the electrode serves as the positive terminal (+), and the black wire is the negative terminal (-).



**DCB3-320708**

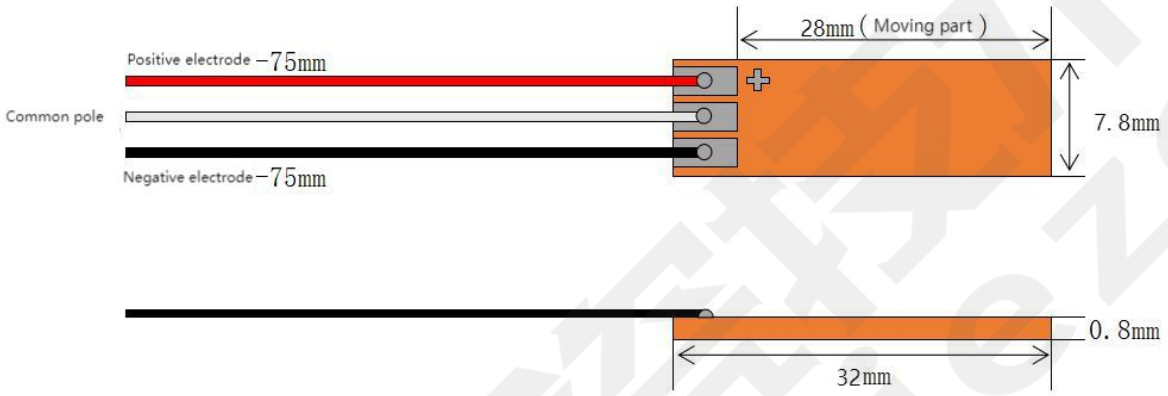
## Performance Parameters

| | | | |
|---|---|---|---|
| **Drive Voltage Range** | 0~150 V | **Capacitance** | 550nF ± 15% |
| **Displacement (Free Stroke) at 150 V** | 450.0 μm ± 15% | **Dissipation Factor** | <2.0% |
| **Hysteresis** | <15% | **Resonant Frequency** | 370HZ |
| **Free length** | 28mm | **Blocking Force at 150 V** | 1.5N |
| **Curie Temperature** | 230 °C | **Operating Temperature** | -25 ~ 130 °C |
| **Product Size** | L：32.0mm | **Outer Dimensions** | L: 32.0 ± 0.5mm |
| | W：7.8mm | | W: 7.8 ± 0.1mm |
| | H：0.8mm | | H: 0.8 ± 0.1mm |

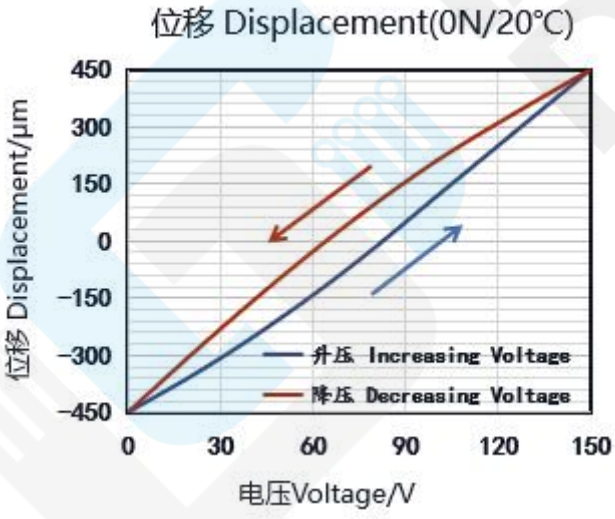
- All specifications are quoted at 25°C, unless otherwise stated.
- One side clamp, free length is 28mm, no load.

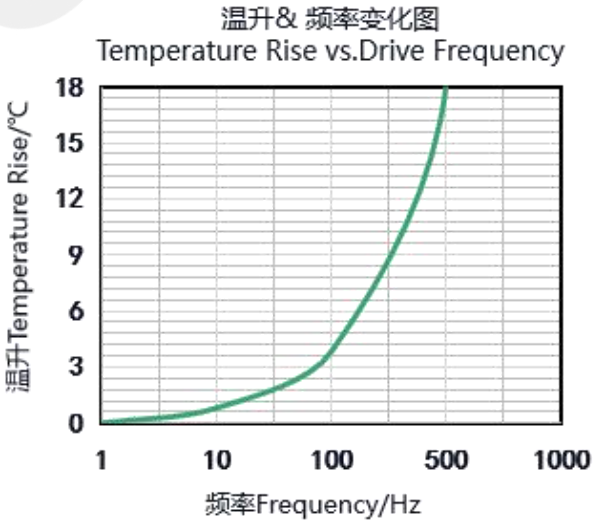
# Product specification

## Product Size




## Performance Curve




- The above test displacement using differential voltage control: 150v voltage is applied to the red wire, 0-150v voltage is applied to the white wire, and 0V voltage is applied to the black wire.

# Product specification

## Matters Needing Attention

### 1、Installation

(1) The upper surface of the bimorph has three electrodes, which can be fixed by adhesive bonding or mechanical clamping.

(2) It is recommended to connect the bimorph to a rigid carrier (such as ceramic, PEEK, etc.) to avoid displacement drift and elastic deformation.

(3) The contact surface of the carrier must be sufficiently flat. If the carrier is made of metal, the contact area should be insulated to prevent short circuits between the three external electrodes and the carrier.

(4) If adhesive bonding is used, it is recommended to use a low Young's modulus adhesive, and the curing temperature should be as low as possible to reduce thermal stress generated during processing (note that the bonding area should not cover the moving part of the ceramic to avoid reducing the bimorph's stroke).

(5) If mechanical clamping is used, the clamping pressure should not exceed 5 times the maximum thrust of the ceramic to ensure the mechanical stability of the assembly.

### 2、Electrical Connection

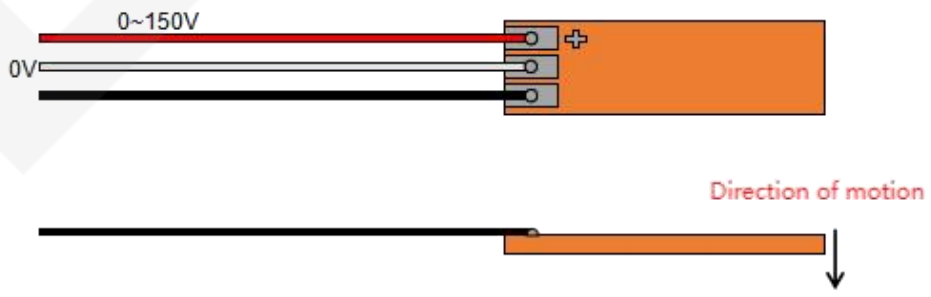
(1) The fixed end of the bimorph has three electrodes: the red wire is connected to the positive pole, the black wire is connected to the negative pole, and the white wire is the common pole.

(2) Note: After use, a certain amount of charge may be stored in the ceramic. If the wires are short-circuited at this time, the charge in the ceramic will be released instantaneously, which may cause sparks or even lead to ceramic failure. It is recommended to discharge the ceramic using a resistor (>1 kΩ).

### 3、Driving Modes

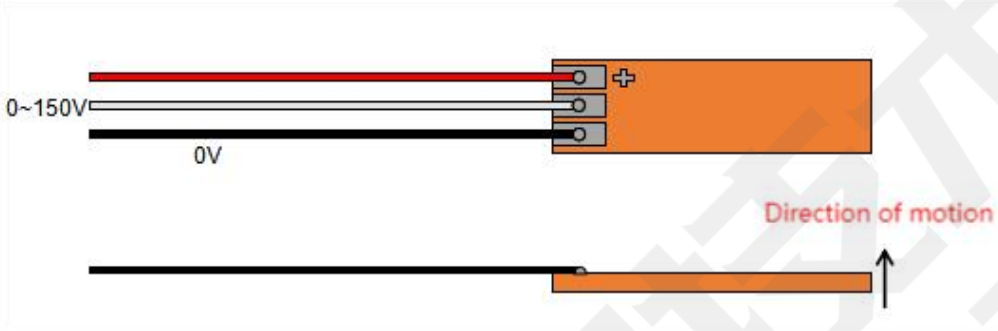
#### ① Single-Side Voltage Control

(1) If a positive voltage (0~150 V) is applied to the red wire and the white wire is connected to the negative pole, the bimorph will bend downward (the side printed with the positive pole mark and electrodes is the upward-facing side), as shown in the figure below.



# Product specification

(2) If a positive voltage (0~150 V) is applied to the white wire and the black wire is connected to the negative pole, the bimorph will bend upward (the side printed with the positive pole mark and electrodes is the upward-facing side), as shown in the figure below.

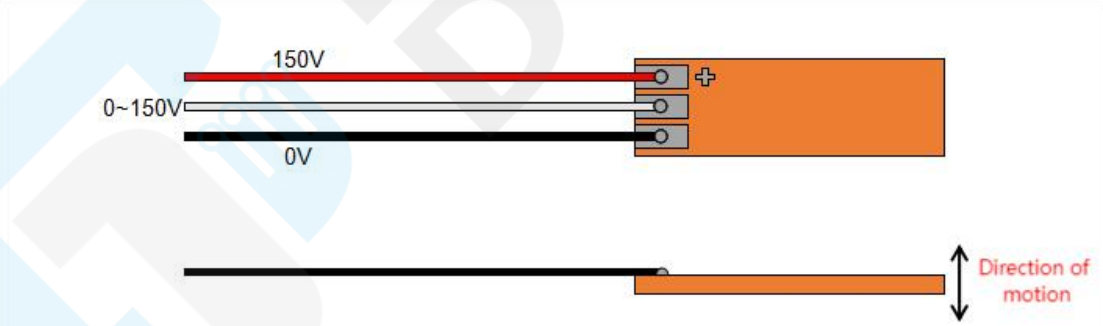



（3）When operating in single-side voltage control mode, avoid simultaneously applying voltage to both the black and red wires. If the voltage difference between the two wires exceeds >150 V, it may damage the actuator.

## ② Differential Voltage Control

(1) In this driving mode, the bimorph can be controlled to bend both upward and downward simultaneously.

(2) This motion mode requires two power supplies: one power supply is connected to the two electrodes on the red and black wires to provide a differential voltage, while an adjustable output power supply is applied to the white wire to control the bimorph's upward or downward bending.




| | Red line | White line | Black line |
|---|---|---|---|
| 1 | 150V | 0~150V | GND |
| 2 | 75V | -75~75V | -75V |

(3) Long-term operation: At room temperature of 25°C and ambient humidity of 45%, the bimorph can still function normally after undergoing a long-term durability test of 1x10^8 cycles at a frequency of 100 Hz.