



# Product specification

The **DCS3-101025** piezoelectric stack consists of multiple chips which are bonded via epoxy. It offers a maximum displacement of 28.0  $\mu\text{m}$ . The red wire of the electrode serves as the positive terminal (+), and the black wire is the negative terminal (-).

**DCS3-101025**

## Performance Parameters

|                                     |                             |                         |                              |
|-------------------------------------|-----------------------------|-------------------------|------------------------------|
| Drive Voltage Range                 | -30~150 V                   | Capacitance             | 7.5 $\mu\text{F} \pm 15\%$   |
| Displacement (Free Stroke) at 150 V | 28.0 $\mu\text{m} \pm 15\%$ | Dissipation Factor      | <2.3%                        |
| Hysteresis                          | <15%                        | Resonant Frequency      | 42kHz                        |
| Stiffness                           | 142 N/ $\mu\text{m}$        | Blocking Force at 150 V | 4000N                        |
| Curie Temperature                   | 230 $^{\circ}\text{C}$      | Operating Temperature   | -25 ~ 130 $^{\circ}\text{C}$ |
| Product Size                        | L: 10.0mm                   | Outer Dimensions        | L: 10.3 $\pm 0.2\text{mm}$   |
|                                     | W: 10.0mm                   |                         | W: 13.0 $\pm 0.2\text{mm}$   |
|                                     | H: 25.0mm                   |                         | H: 25.0 $\pm 0.1\text{mm}$   |

- All specifications are quoted at 25 $^{\circ}\text{C}$ , unless otherwise stated.
- The displacement may vary slightly for different loads, and the maximum displacement occurs when used with the recommended load.

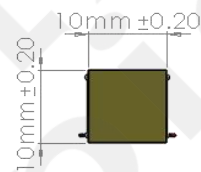
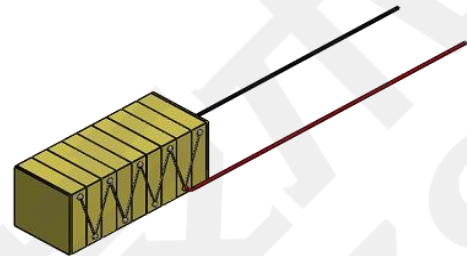
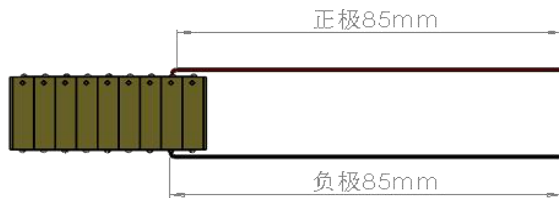
Guangdong DCpiezo Technology Co., Ltd.

<http://www.dc-piezo.com> Tel:+86 13798552005 WeChat:13798552005 Email:dcpiezo@163.com

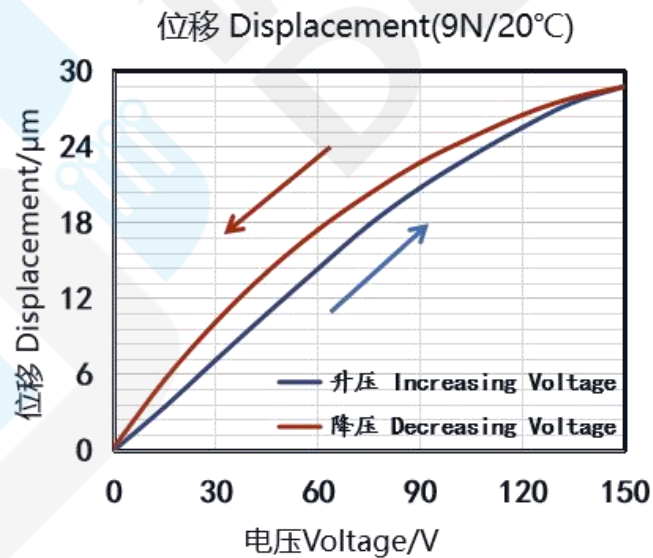


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## Product Size



## Performance Curve



- These temperature rises were measured after applying a sine-wave drive voltage ranging from 0 to 150V at the specified frequency for 10 minutes.



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## Matters Needing Attention

### 1. Storage Conditions & Precautions:

Temperature:  $<50^{\circ}\text{C}$ , Humidity:  $<40\%\text{Rh}$ . Avoid impact and compression. Store in vacuum-sealed bags for long-term preservation. When not in use, connect to a resistive discharge ( $\geq 100\text{k}\Omega$ ) or short-circuit (for low-capacitance ceramics).

### 2. Operating Conditions & Precautions:

Temperature: Maximum operating temperature  $\leq 130^{\circ}\text{C}$  (preferably  $<60^{\circ}\text{C}$ ). Add heat dissipation measures if temperature exceeds  $80^{\circ}\text{C}$ .

Humidity:  $<50\%\text{Rh}$ . In high-humidity environments, preheat at low voltage before use to avoid creepage discharge.

Dust Avoidance: Dust adhesion on ceramic surfaces may reduce insulation resistance.

Clearance: Maintain a gap  $>1.6\text{mm}$  between ceramics and other conductors.

Safety: Do not immerse piezoelectric stacks in organic solvents or expose to flammable gases/liquids.

### 3. Assembly Precautions:

Polarity: Red wire = positive (+), black wire = negative (-). Reverse polarity may cause mechanical failure.

Handling: Handle with care to avoid impact. Wear gloves to prevent oil contamination.

Fit Tolerance: Assemble with clearance fit first, then tighten. Avoid interference fit to prevent ceramic compression.

Electrostatic Protection: Maintain  $>1.6\text{mm}$  gap between ceramics and metal parts to avoid static discharge.

Adhesive Bonding: Ensure flat bonding surfaces and remove excess glue to minimize contamination.

Soldering: Limit contact time under high temperature to  $<1$  second to protect ceramics and coatings.

High-Temperature Assembly: Control temperature  $<120^{\circ}\text{C}$  to prevent depolarization, adhesive failure, or coating damage.

### 4. Preload Instructions:

Load Application: Apply external load to the center of the stack or distribute uniformly on the mounting surface. Ensure contact surfaces are flat and smooth.

Guangdong DCpiezo Technology Co., Ltd.

<http://www.dc-piezo.com> Tel: +86 13798552005 WeChat: 13798552005 Email: [dcpiezo@163.com](mailto:dcpiezo@163.com)



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**Force Direction:** Piezoelectric stacks can only withstand axial forces. Shear or torsional forces may cause mechanical failure.

**Preload Force:** Preload should not exceed 40% of maximum blocking force, and its direction must align with the motion axis to minimize shear stress.

