



# Product specification

The **DCC1-030302** piezoelectric ceramic square plate is composed of alternating layers of ceramic and electrodes stacked crosswise, with a maximum displacement of up to 2.0  $\mu\text{m}$ . The red wire serves as the positive electrode (+) of the product, and the black wire serves as the negative electrode (-).



**DCC1-030302**

## Performance Parameters

<b>Drive Voltage Range</b>	-10~75 V	<b>Capacitance</b>	260nF $\pm$ 15%
<b>Displacement (Free Stroke) at 150 V</b>	2.0 $\mu\text{m}$ $\pm$ 15%	<b>Dissipation Factor</b>	<2.0%
<b>Hysteresis</b>	<15%	<b>Resonant Frequency</b>	450kHz
<b>Stiffness</b>	120 N/ $\mu\text{m}$	<b>Blocking Force at 150 V</b>	/
<b>Curie Temperature</b>	230 $^{\circ}\text{C}$	<b>Operating Temperature</b>	-25 ~ 130 $^{\circ}\text{C}$
<b>Product Size</b>	L: 3.0mm	<b>Outer Dimensions</b>	L: 3.0 $\pm$ 0.1mm
	W: 3.0mm		W: 3.0 $\pm$ 0.1mm
	H: 2.0mm		H: 2.0 $\pm$ 0.1mm

- 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.

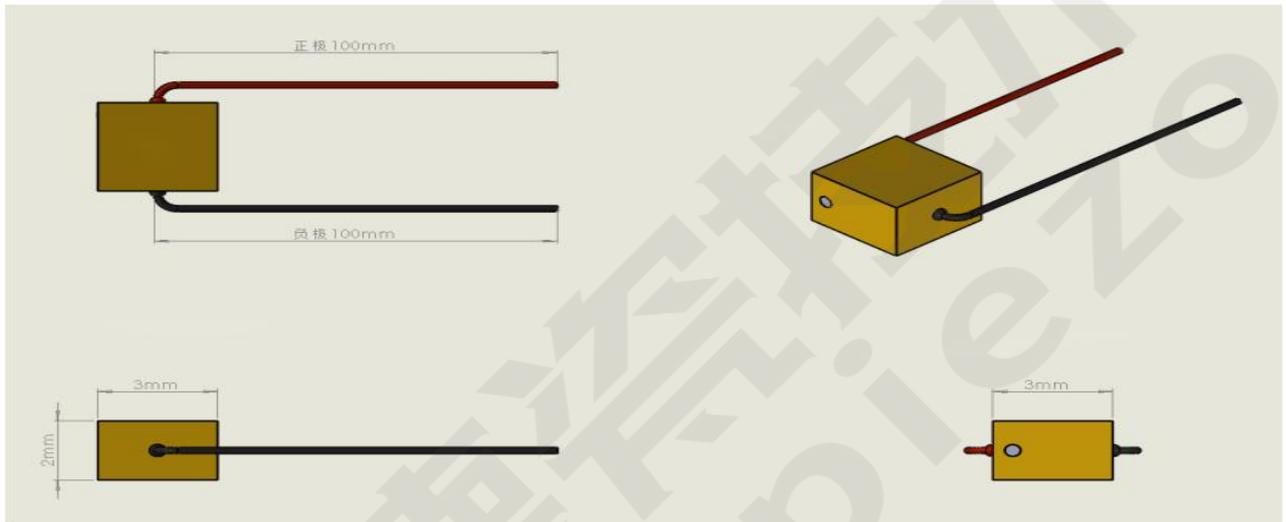
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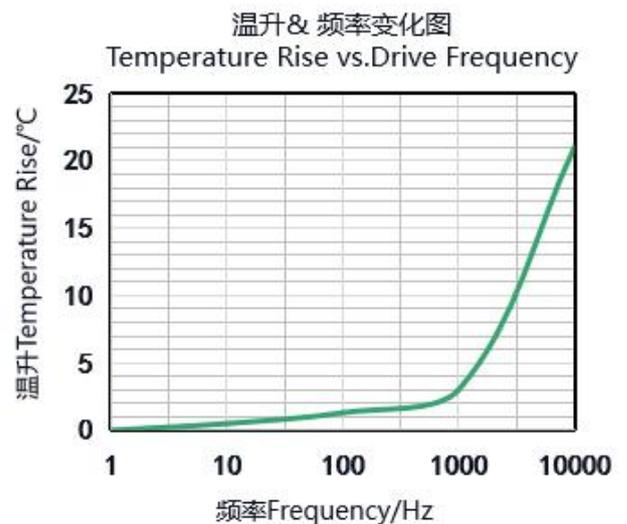
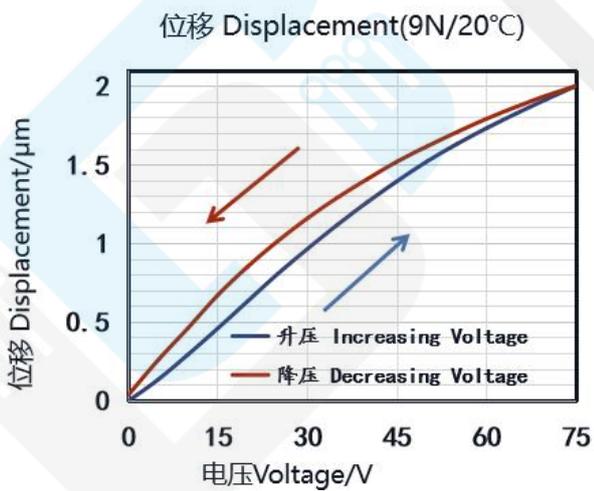


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## Product Size



## Performance Curve



- These temperature rises were measured after applying a sine-wave drive voltage ranging from 0 to 75V 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

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mounting surface. Ensure contact surfaces are flat and smooth.

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.

