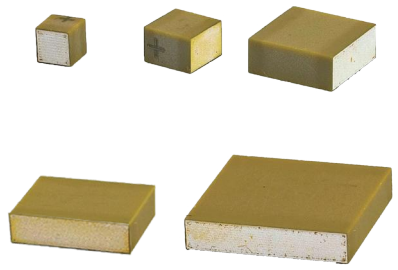
Piezo Chip Actuator



Features

- AC lifetime: 10^9 cycles
- Operating voltage: -20 to +150V
- Microsecond-level response
- Vacuum compatible up to 10^{-6} Pa
- Sub-nanometer resolution
- Curie temperature of 230°C

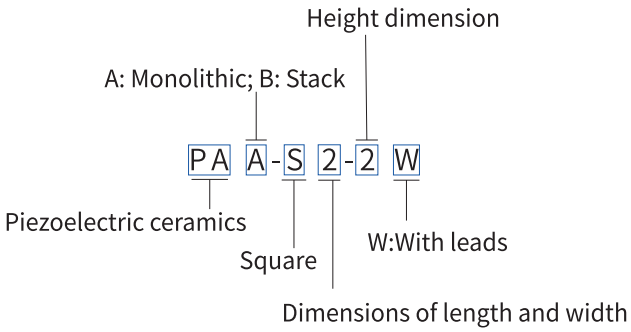
Description

The Piezo Chip Actuator consists of multiple ceramic layers and electrode layers stacked and intersected internally, with external electrodes printed on both sides to lead out the internal electrodes. Through precision grinding processes, the height tolerance of each piezoelectric ceramic is controlled to be smaller than ±5μm. The company has achieved seamless integration from piezoelectric ceramic powder to the finished actuator, and mass production has been implemented. Currently, the products are applied in the fields of nanoscale positioning, precision manufacturing, and dispensing valve technology.

Applications

- Industrial automation
- Life science
- Scientific research
- Semiconductor equipment
- Optical adjustment

Model Interpretation



Technical Specifications

	Dimensions	Displacement*	Blocking force**	Electrical capacitance***	Resonant frequency
Unit	mm×mm×mm	μm	N	nF	kHz
Tolerance		±15%	Max. value	±15%	±15%
PAA-S2-2	2×2×2	2.5	160	22	565
PAA-S3-2	3×3×2	2.5	350	60	475
PAA-S5-2	5×5×2	2.5	1000	170	320
PAA-S7-2	7×7×2	2.5	1960	390	235
PAA-S7M-2	7×7×2	3	1960	610	235
PAA-S10-2	10×10×2	2.5	3900	800	165

*Displacement test: drive voltage range 0 to 150V, and PAA-S7M-2 drive voltage range 0~120V
**Blocking force test:The force that compresses the ceramic elongation to zero at a driving voltage of 150v
***Capacitance test conditions: ambient temperature environment, 1Vpp/1kHz
The tolerance of dimension A*B within ±0.1mm, and the tolerance of H within ±0.01mm
The default configuration does not involve soldering wire harness for the Piezo Chip Actuator
Optional soldering of standard wiring harness available, length 75mm, AWG32, PTFE insulation, followed by 'W' in the product code
Other specifications can be customized on request

Customization Information

- **Drive Voltage:** YiNGUAN can flexibly customize the maximum drive voltage of the device. The common available options for the maximum drive voltage that we provide are 50V, 75V, 100V, 120V, and 150V. Other special maximum drive voltages can also be customized flexibly according to customer requirements. For consumer electronics products, YG has specially developed ultra-low drive voltage products with drive voltages as low as 3V, 10V, and 24V.

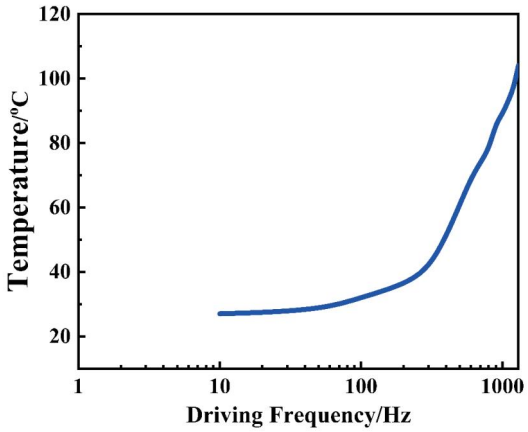
- **Output Displacement:** YiNGUAN uses specially developed piezoelectric ceramic materials, and the maximum displacement of a single-piece actuator can reach 3.5μm.

- **Operating Frequency:** YiNGUAN can flexibly design according to customer requirements. The highest drive frequency of a single actuator can reach up to 50kHz.

- **Dimensions:** The dimensions of a single-piece actuator can be customized flexibly. In terms of length and width, the minimum customization is 0.8 mm, and the maximum is 10 mm. In terms of height, the minimum customization is 1 mm, and the maximum is 3mm.

- **Wiring Harness:** Under the condition of meeting the AWG usage standards, optional wiring harnesses are available. The standard length of the wiring harness is 7.5 cm of tinned wire, and the length and orientation of the wiring harness can also be customized flexibly according to customer requirements. For convenient connection of the positive and negative electrode wires, within the allowable error range of performance variation, the soldering point position can be selected.

Performance Chart



The figure above shows the temperature variation of the PAA-S7-2W device. It serves as a representative example, as the stack also exhibits similar patterns.