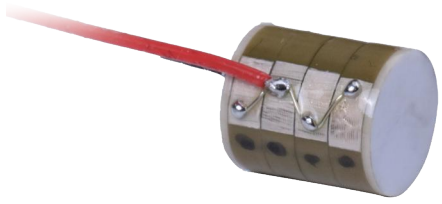
Circular Piezoceramic Stack Actuator



Features

- AC life span of 10^9 cycles
- Compact structure
- Microsecond response
- Sub-nanometer resolution
- Drive voltage -20 to +150V
- High Curie temperature of 230°C

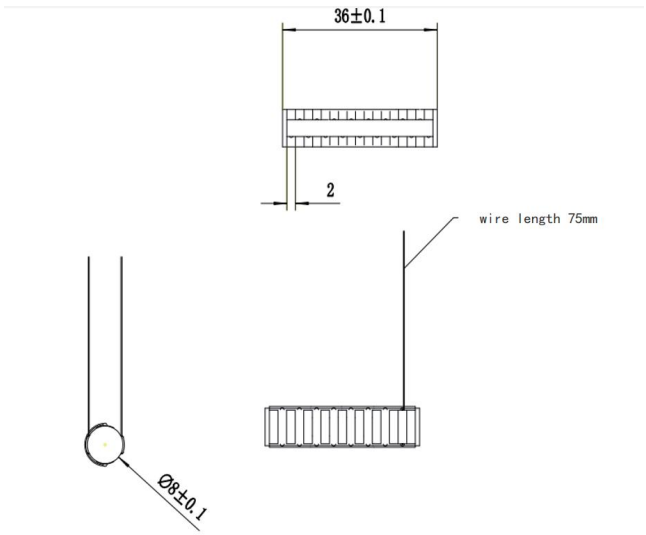
Description

The circular stack is composed of single circular piezoceramic actuators. Electrical parallel connection and mechanical series connection are achieved through external electrodes and Z-shaped wiring. Under electrical signal excitation, the displacement response of multiple layers of ceramic is superimposed to produce an output. It features a sub-millisecond response time and a maximum displacement exceeding 180μm.

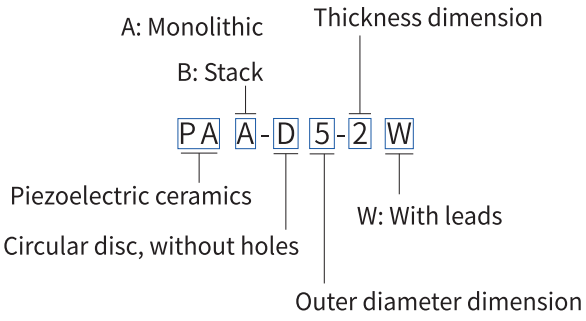
Applications

- Scientific research
- Precision optical adjustment equipment
- Industrial automation
- Semiconductor equipment
- Precision motion control
- Precision inspection equipment

Interface Definition



Model Interpretation



Technical Specifications

	PAB-D8-9W	PAB-D8-18W	PAB-D8-36W	PAB-D8-60W	Unit	Tolerance
Active axes	Z	Z	Z	Z		
Max. displacement	12	22.0	44.0	72.0	μm	±15%
Displacement hysteresis	<15%	<15%	<15%	<15%		
Blocking force	1800	1800	1800	1800	N	150V
Operating voltage	0~150	0~150	0~150	0~150	V	
Resonant frequency	130	100	38	22	kHz	Max. value
Resonant impedance	66	70	76	86	mΩ	
Anti-resonant frequency	160	120	44	26	kHz	Max. value
Dielectric loss	2.08	1.99	1.9	1.92		
Electrical capacitance	2.7	5.3	10.5	18	nF	±15%
Operating temperature range	-25~130	-25~130	-25~130	-25~130	°C	
Curie temperature	230°C	230°C	230°C	230°C	°C	
Electrode	Silver	Silver	Silver	Silver		
Cable length	75	75	75	75	mm	±5 mm
Dimensions						
Φ	8.3	8.3	8.3	8.3	mm	±0.1 mm
L	9	18	36	60	mm	±0.05 mm
MTTF	16	14	9	8	year	

Customization Information

Depending on the different application scenarios of the circular stack actuator, we can offer product customization in terms of performance parameters and structural shape.

- **Drive Voltage:** Different drive voltages can meet various displacement requirements, with common options including 50V, 75V, 100V, 120V, and 150V. Other special maximum drive voltages can also be customized flexibly according to customer requirements.

- **Output Displacement:** The output displacement is primarily determined by the length of the device. YiNGUAN offers a maximum displacement stroke of up to 200μm.

- **Operating Frequency:** The long-term operating frequency of the stack depends on factors such as the resonant frequency of the device and the drive voltage. YiNGUAN can flexibly design according to customer requirements, with the highest drive frequency of the stack reaching up to 30kHz. For ultra-high-frequency application scenarios, we can also provide a drive frequency as high as 100kHz.

- **Dimensions:** The inner diameter, outer diameter, and height of the circular stack can be customized flexibly according to customer requirements. In terms of length and width, the minimum available size is 5 mm, and the maximum is 10 mm. For the inner diameter, the minimum available size is 1 mm, and the maximum is 5 mm. The maximum height that can be customized is 90 mm.

- **Wiring Harness:** Under the condition of meeting the AWG usage standards, the wiring harness is optional. For convenient connection of the positive and negative electrode wires, the soldering point position can be selected within the allowable error range of performance variation.