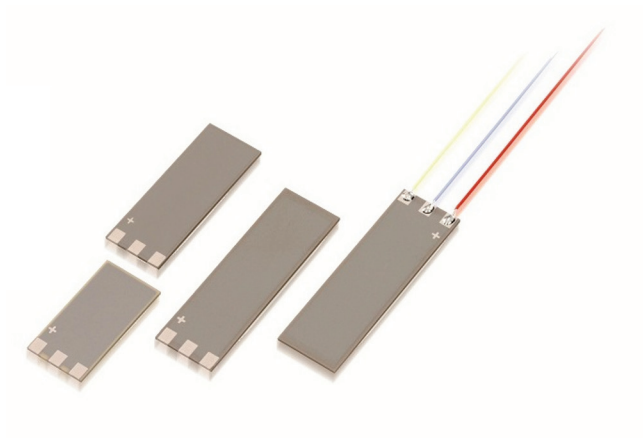


PICMA® Bender

All-Ceramic Bending Actuators with High Displacement



PL112 – PL140

- Displacement to 2 mm
- Fast response in the ms range
- Nanometer resolution
- Low operating voltage
- Operating temperature up to 150°C
- UHV-compatible to 10⁻⁹ hPa

PICMA® multilayer bender elements with high reliability

Operating voltage 0 to 60 V. Bidirectional displacement, bimorph design. Ceramic insulation, polymer free. UHV-compatible to 10⁻⁹ hPa, no outgassing, high bakeout temperature. Reliable even under extreme conditions.

Fields of application

Industry and research, vacuum. For medical technology, laser technology, sensor technology, automation tasks, pneumatic valves.

Specifications

	PL112.10	PL122.10	PL127.10	PL128.10	PL140.10	Unit	Tolerance
Operating voltage range	0 to 60 (±30)	0 to 60 (±30)	0 to 60 (±30)	0 to 60 (±30)	0 to 60 (±30)	V	
Displacement	±100	±310	±450	±450	±1000	µm	±20 %
Remaining length L_F	12	22	27	28	40	mm	
Length L	18	25	31	36	45	mm	±0.5 mm
Width W	9.60 ±0.2	9.60 ±0.2	9.60 ±0.2	6.15 ±0.1	11.00 ±0.2	mm	
Height TH	0.67	0.67	0.67	0.67	0.55	mm	±0.1 mm
Blocking force	±2.1	±1.25	±1.1	±0.55	±0.5	N	±20 %
Electrical capacitance	2 × 1.1	2 × 2.5	2 × 3.4	2 × 1.2	2 × 4.1	µF	±20 %
Resonant frequency	1800	600	420	360	160	Hz	±20 %
Operating temperature range	-20 to 150	-20 to 85	-20 to 85	-20 to 150	-20 to 85	°C	
Piezo ceramic	PIC252	PIC251	PIC251	PIC252	PIC251		
Recommended electronics	E-650, E-651 • E-614	E-650, E-651 • E-614	E-650, E-651 • E-614	E-650, E-651 • E-614	E-650, E-651 • E-614		

Electrical capacitance: Measured at 1 V_{pp}, 1 kHz, RT, clamped on one side with remaining length L_F , no load.

Resonant frequency: Measured at 1 V_{pp}, clamped on one side with remaining length L_F , no load.

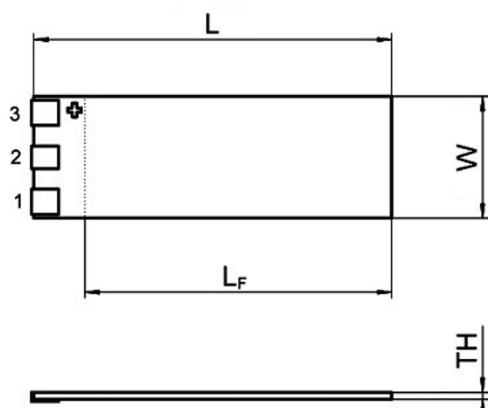
Standard connections: Solderable contacts (PL1xx.10) or PTFE-insulated stranded wires, UHV compatible, 100 mm, AWG 32, Ø 0.49 mm (PL1xx.11).

Recommended mounting: Epoxy resin adhesive.

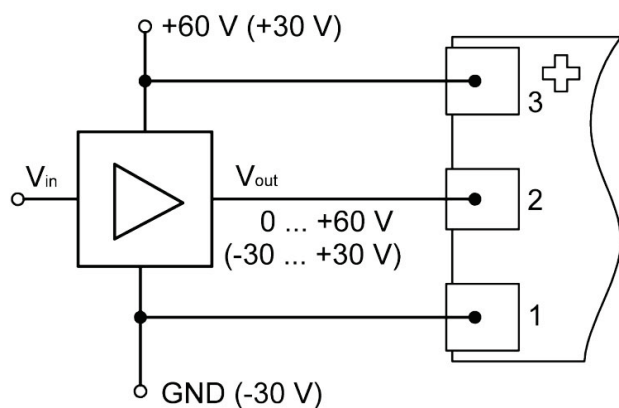
All specifications depend on actual clamping conditions and mechanical load applied.

Custom designs or different specifications on request.

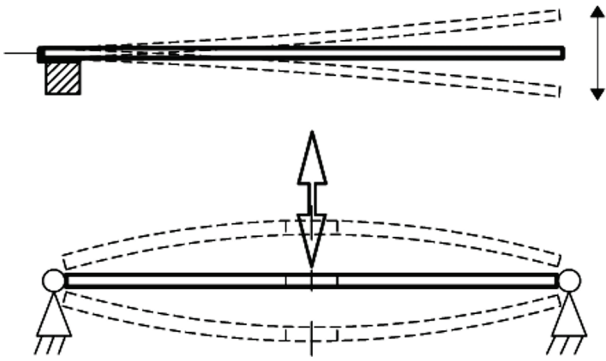
Drawings / Images



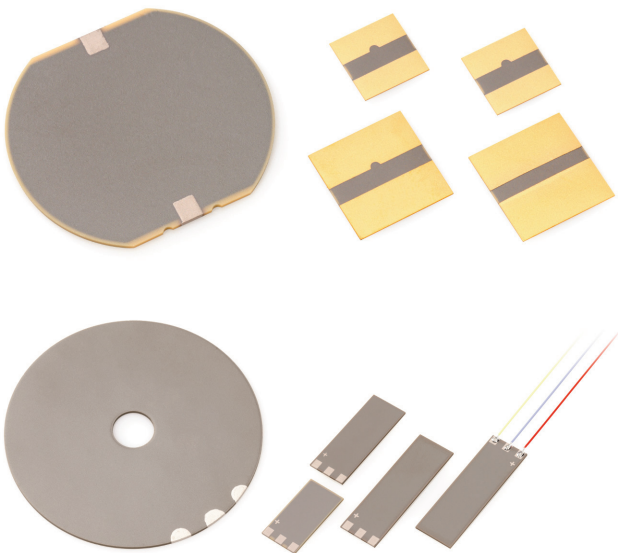
PL112.10 – PL140.10. L, L_F , W, TH, see data table.



PICMA® Bender actuators have differential control.



Displacement of the PICMA® bending actuators: Clamped on one side (top) and on both sides (bottom).



Multilayer contracting plates can be manufactured in a variety of shapes, e.g., square- or disc-shaped, and are available on request. These plates can be applied for example, to metal or silicon substrates, in order to realize bender or pump elements with low control voltages.

Ordering Information

Round PICMA® Bender actuators with PTFE-insulated stranded wires

PL112.11

PICMA® multilayer piezo bending actuator, 200 µm travel range, 18 mm × 9.60 mm × 0.67 mm, stranded wires

PL122.11

PICMA® multilayer piezo bending actuator, 620 µm travel range, 25 mm × 9.60 mm × 0.67 mm, stranded wires

PL127.11

PICMA® multilayer piezo bending actuator, 900 µm travel range, 31 mm × 9.60 mm × 0.67 mm, stranded wires

PL128.11

PICMA® multilayer piezo bending actuator, 900 µm travel range, 36 mm × 6.15 mm × 0.67 mm, stranded wires

PL140.11

PICMA® multilayer piezo bending actuator, 2000 µm travel range, 45 mm × 11.00 mm × 0.55 mm, stranded wires

Round PICMA® Bender actuators

PL112.10

PICMA® multilayer piezo bending actuator, 200 µm travel range, 18 mm × 9.60 mm × 0.67 mm

PL122.10

PICMA® multilayer piezo bending actuator, 620 µm travel range, 25 mm × 9.60 mm × 0.67 mm

PL127.10

PICMA® multilayer piezo bending actuator, 900 µm travel range, 31 mm × 9.60 mm × 0.67 mm

PL128.10

PICMA® multilayer piezo bending actuator, 900 µm travel range, 36 mm × 6.15 mm × 0.67 mm

PL140.10

PICMA® multilayer piezo bending actuator, 2000 µm travel range, 45 mm × 11.00 mm × 0.55 mm