

## Round PICMA® Chip Actuators

Miniature Multilayer Piezo Actuators with and without Inner Hole



### PD0xx • PD1xx

- Superior lifetime
- Ultracompact: From 5 mm Ø
- Ideal for dynamic operation
- µs response time
- Subnanometer resolution
- UHV-compatible to  $10^{-9}$  hPa

### Piezo linear actuator with PICMA® multilayer technology

Operating voltage -20 to 100 V. Ceramic insulation, polymer free. Humidity resistance. UHV-compatible to  $10^{-9}$  hPa, no outgassing, high bakeout temperature. Flexible thanks to numerous designs. Versions with rectangular, round or annular cross section.

### Customized versions and other specifications on request

- PTFE-insulated wire leads
- Variety of shapes
- Inner hole
- Precision-ground ceramic end plates

### Fields of application

Industry and research. For laser tuning, microdispensing, life sciences.

## Specifications

	PD050.3x	PD080.3x	PD120.3x	PD150.3x	PD160.3x	PD161.3x	Unit	Tolerance
Outer diameter (OD)	5 ±0.2	8 ±0.3	12 ±0.4	15 ±0.3	16 ±0.5	16 ±0.5	mm	
Inner diameter (ID)	2.5 ±0.15	4.5 ±0.15	6 ±0.2	9 ±0.15	8 ±0.25	–	mm	
Height (TH)	2.5 ±0.05	2.5 ±0.05	2.5 ±0.05	2 ±0.05	2.5 ±0.05	2.5 ±0.05	mm	
Travel range*	1.8	2	2	1.8	2	2.3	µm	±20 %
Blocking force**	>400	>1000	>2500	>3300	>4400	>6000	N	
Electrical capacitance***	110	300	900	1000	1700	2400	nF	±20 %
Axial resonant frequency****	>500	>500	>500	>600	>500	>500	kHz	
Piezo ceramic	PIC252	PIC252	PIC252	PIC252	PIC252	PIC252		
Operating voltage range	-20 to 100	-20 to 100	-20 to 100	-20 to 100	-20 to 100	-20 to 100	V	
Operating temperature range	-40 to 150	-40 to 150	-40 to 150	-40 to 150	-40 to 150	-40 to 150	°C	
Recommended preload for dynamic operation	15	15	15	15	15	15	MPa	
Maximum preload for constant force	30	30	30	30	30	30	MPa	
Recommended electronics	E-610, E-617, E-831, E-836	E-610, E-617, E-831, E-836	E-610, E-617, E-831, E-836	E-610, E-617, E-831, E-836	E-610, E-617, E-831, E-836	E-610, E-617, E-831, E-836		

Standard connections: PDxxx.31: PTFE-insulated stranded wires, UHV compatible, 100 mm, AWG 32, Ø 0.49 mm; PDxxx.30: Solderable contacts

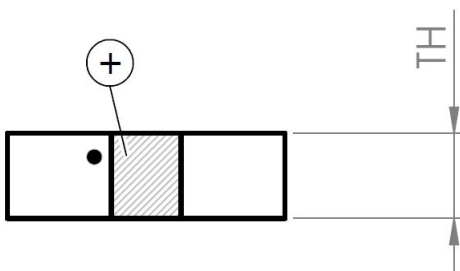
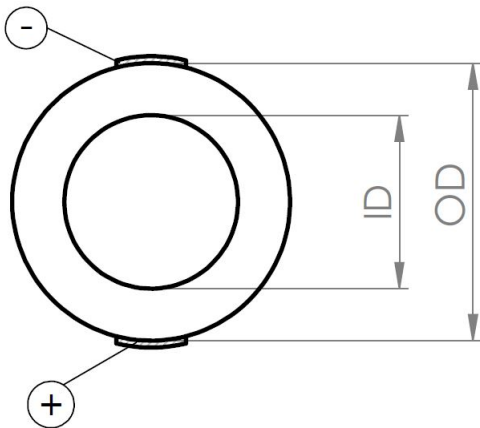
\* At 0 to 100 V. The values refer to the unattached component and can be lower when glued on.

\*\* At 0 to 100 V

\*\*\* Measured at 1 V<sub>pp</sub>, 1 kHz, RT

\*\*\*\* Measured at 1 V<sub>pp</sub>, unloaded, unclamped. The value is halved for unilateral clamping. Depending on the installation situation, the lateral resonant frequencies can be lower than the axial resonant frequencies.

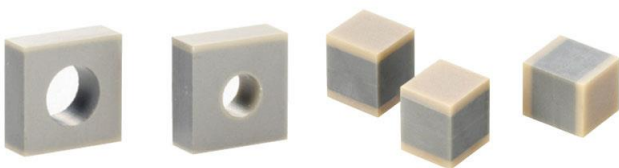
## Drawings / Images



*Round PICMA® Chip miniature piezo actuator, lapped end surfaces. OD, ID, TH, see data table.*



*PICMA® Chip rings and disks are available with diameters up to 16 mm.*



*On request, PICMA® Chip piezo actuators can be manufactured with all-ceramic insulated inner hole (left) or with precision-ground ceramic end plates (right).*

## Ordering Information

### PICMA® Chip actuators with PTFE-insulated stranded wires

#### PD050.31

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 5 mm × ID 2.5 mm × TH 2.5 mm, stranded wires

#### PD080.31

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 8 mm × ID 4.5 mm × TH 2.5 mm, stranded wires

#### PD120.31

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 12 mm × ID 6 mm × TH 2.5 mm, stranded wires

#### PD150.31

Round PICMA® Chip miniature piezo actuator with inner hole, 1.8 µm travel range, OD 15 mm × ID 9 mm × TH 2 mm, stranded wires

#### PD160.31

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 16 mm × ID 8 mm × TH 2.5 mm, stranded wires

#### PD161.31

Round PICMA® Chip miniature piezo actuator, 2.3 µm travel range, OD 16 mm × TH 2.5 mm, stranded wires

### PICMA® Stack actuators with solderable contacts

#### PD050.30

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 5 mm × ID 2.5 mm × TH 2.5 mm

#### PD080.30

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 8 mm × ID 4.5 mm × TH 2.5 mm

#### PD120.30

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 12 mm × ID 6 mm × TH 2.5 mm

#### PD150.30

Round PICMA® Chip miniature piezo actuator with inner hole, 1.8 µm travel range, OD 15 mm × ID 9 mm × TH 2 mm

#### PD160.30

Round PICMA® Chip miniature piezo actuator with inner hole, 2.0 µm travel range, OD 16 mm × ID 8 mm × TH 2.5 mm

#### PD161.30

Round PICMA® Chip miniature piezo actuator, 2.3 µm travel range, OD 16 mm × TH 2.5 mm