Technical Note  
PL0XT0001, valid for PL022, PL033, PL055

PICMA® Chip Monolithic Multilayer Piezo Actuators

Features:
- Ceramic Insulation for Extended Lifetime
- Ultra-Compact from 2x2x2 mm³
- High Curie Temperature
- Ideal for Dynamic Operation
- Sub-Millisecond Response / Sub-Nanometer Resolution
- UHV Compatible to $10^{-9}$ hPa
- Superior Lifetime Even Under Extreme Conditions

Technical Data / Ordering Numbers:

<table>
<thead>
<tr>
<th>Ordering Number*</th>
<th>Dimensions A x B x TH [mm ±0.1]</th>
<th>Displacement [µm ±20% @ 100V] measured between two tips</th>
<th>Blocking Force [N]@100 V</th>
<th>El. capacitance [nF ±20%]</th>
<th>Unloaded Resonant Frequency [kHz]</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL022.30</td>
<td>2 x 2 x 2</td>
<td>2.2</td>
<td>&gt; 120</td>
<td>25</td>
<td>&gt; 300</td>
</tr>
<tr>
<td>PL033.30</td>
<td>3 x 3 x 2</td>
<td>2.2</td>
<td>&gt; 300</td>
<td>50</td>
<td>&gt; 300</td>
</tr>
<tr>
<td>PL055.30</td>
<td>5 x 5 x 2</td>
<td>2.2</td>
<td>&gt; 500</td>
<td>250</td>
<td>&gt; 300</td>
</tr>
</tbody>
</table>

* For optional wire leads (STC-32T-1x, 100 mm length) change order number extension to .x1 (e.g. PL022.31).

Capacitance measured at 1 V_{pp}, 1 kHz.  
Max. operating voltage: -20 to +120 V  
Max. operating temperature: 150°C  
Standard Mechanical Interface: ceramic (top & bottom)  
Standard Electrical Interface: solderable termination

CAUTION:

Polarity Matters: Termination with the smaller electrode (or red lead) must be connected to +V, opposite one (or black lead) attached to GND. Do not reverse. Do not exceed 120 volts.

Assembling: Epoxy adhesives are recommended for mechanical assembling. Please make sure that the mounting surface does not short the actuator electrically.

Soldering: The contacts may be soldered with a solder from the system L-Sn95..97Ag3 ..4Cu0.5..1.0 containing flux. Permissible flux types are 1.1.1 or 1.1.3 (DIN EN29-454 Part 1) corresponding to ROLO / ROMO (J-STD-004). The maximum soldering temperature is 350 °C (662 °F) for less than one second (i.e. as short as possible). Flux residues must be removed by a cleaning process applying ethanol or a higher alcohol. The use of an ultrasonic bath is possible. Alternatively the use of conductive epoxies instead of solder is recommended.

Environment: Store components in dry air and at room temperature.

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