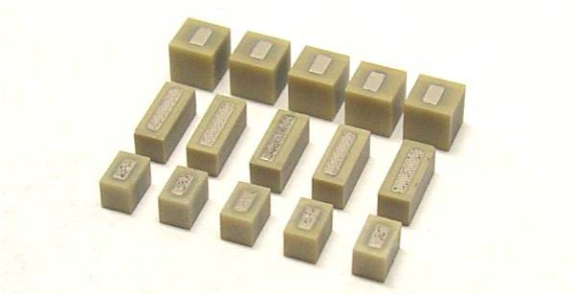
Piezo Actuator

Multilayer Piezo Actuator　PAC Series、PAB Series

Small size, low operating voltage

PAC series



Features
- Minimum out-gas in vacuum environment
- Available in high-temperature environment : over100℃
- High-speed response : Driving in several ten kHz
- Fine positioning : Controllable in nm
- Low operating voltage : under 100V
- Low electromagnetic interference
- Low energy consumption

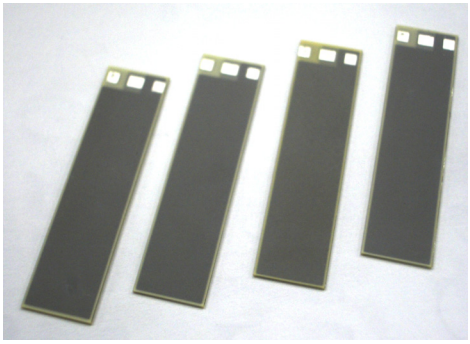
Applications

Printer / vibration / mirror,prism positioning / pump / linear motor etc.

Custom Actuators

We make special order product

PAB series



Features
- Large displacement in low operating voltage
- High reliability : No bonding by cofired
- Low electromagnetic interference
- Low energy consumption

Applications

Switch / vibration / pump etc.

Custom Actuators

We make special order product

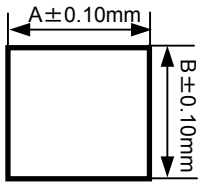
Piezo Actuator

Multilayer Piezo Actuator

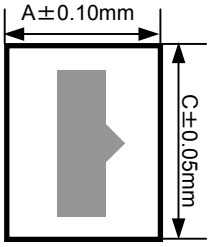
● Specifications

	PAC-122C	PAC-122E	PAC-133C
Operating temperature range	－20℃～150℃	－20℃～150℃	－20℃～150℃
Max. operating voltage	100V		
Max. displacement	≧1.0μm	≧2.0μm	≧1.5μm
Displacement hysteresis	≦15%		
Resonance frequency	≧300kHz	≧200kHz	≧300kHz
Max. generated force	≧10N		≧30N
Capacitance	12nF±20%	25nF±20%	50nF±20%
Dielectric loss (tan δ)	≦2.0%		
Insulation resistance	≧100MΩ		
Dimension (AxBxC)	2x2x3mm	2x2x5mm	3x3x3mm

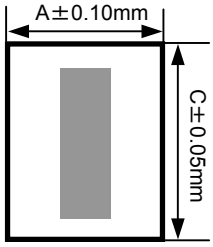
● DIMENSION



A top view



A side view (Positive)

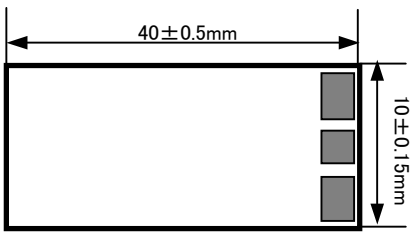


A side view (Negative)

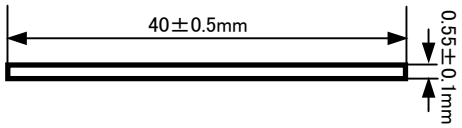
● Specifications

	PAB-4010
Operating temperature range	－20℃～100℃
Max. operating voltage (recommended)	150V(100V)
Max. displacement (recommended)	≧±0.7mm(±0.5mm)
Max. generated force (recommended)	≧560mN(400mN)
Capacitance	400nF±20%
Dielectric loss (tan δ)	≦3.0%
Insulation resistance	≧100MΩ

● DIMENSION



A top view



A side view

SPECIFICATION SHEET

Model Name: PIEZOCERAMIC ACTUATOR

Parts No: LPD3713X

1. Subject

This specification will apply to LPD3713X.

2. Purchaser

2.1 Model name:

2.2 Part No:

3. Supplier

3.1 Model name: Piezoceramic Actuator

3.2 Part No.: LPD3713X

4. Scope

4.1 Appearance. Dimensions

As per attached drawing No.

4.2 Test Conditions

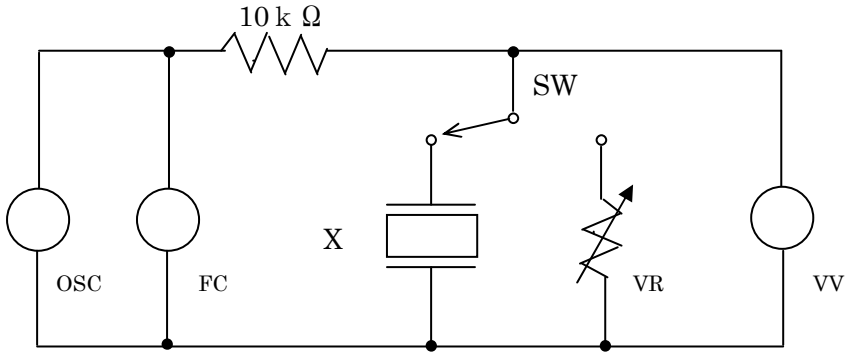
All measurements shall be made ambient temperature of 25℃±5℃ and may also be permissible in between 5℃－35℃ relative humidity 65% unless otherwise specified herein.

4.3 Electrical Characteristics

(1)Resonant Frequency(Fr):	11.0±1.0 kHz
(2)Resonant Resistance(Ro):	500 Ω(max.)
(3)Static Capacitance:	110,000 pF±30% (at 120Hz)
(4)Input Voltage:	140 Vp-p (max.)
(5)Operating Temperature Range:	-20℃～+70 ℃
(6)Storage Temperature Range:	-30℃～+80 ℃
(7) Displacement:	0.15mm (Min.) at DC70V loading

5. Electrical Characteristics Test Method

5.1 Resonant Frequency & Resonance



Osc: Oscillator
FC: Frequency counter
X: Piezo ceramic
VR: Variable resistor
VV: Vacuum tube voltmeter

The circuits are given as the point, where shown in the voltmeter, getting to the smallest as you change the frequency is called resonant frequency and then the resistance comes to resonant resistance (Ro). The support is cable clamp and hanging.

Fr, Ro shall be measured with the same method by using spectrum-impedance meter.

5.2 Electrostatic capacitance

This is measured by LCR meter.

(Frequency 120Hz, 1Vrms)

6. Evaluation Testing

Test is done with JIS Z-9015-sampling plan for inspection by lot tolerance percent defective method.

	Item	Method	Level	AQL
1	appearance, configuration	visual	II	0.65%
2	size	direct measure	n=10	(0.1) limit
3	Fr Ro	item 5.1	II	0.65%
4	C	item 5.2	II	0.65%

7. Packing:

Units shall be packed for shipping and storage so as not do damage, identifying by labeling with Manufacturer's name, part No, lot No, and quantity.

8. Note

8.1 Caution in case of handling.

(1) Do not drop the product. When subjected to a mechanical shock, the product (piezoceramic actuator) may accumulate a high voltage, resulting in an electric shock to anyone who touches it. Also if such a product is connected to a circuit, it may damage transistor, LSI and/or other electric components. The product, which may have accidentally been subjected to a mechanical shock, can be made safe by shorting them between the poles.

(2) Take special protective measures to prevent deterioration and breakdowns, whenever the products are used in the following unfriendly areas:

① Dusty places
② Hot or frosty places
③ Areas exposed to sunlight
④ Moist places
⑤ Humid places
⑥ Area exposed to solvents or their vapor

(3) When operating the product outdoors, protect it from moisture to ensure normal operation.

(4) Do not apply a DC current to the product, Otherwise, silver migration may occur, which will lower the insulation resistance and cause the product to stop functioning.

(5) Protect LSI by using a varistor or zener diode. External heat or mechanical shock makes product to generate several 10Vp-p voltage.

8.2 Caution in case of storing

To prevent deterioration and breakdowns, do not store products in the following places:

① Dusty places
② Hot or frosty places.
③ Areas exposed to sunlight
④ Places with leaking or infiltrating water
⑤ Humid places
⑥ Areas exposed to solvents or their vapor
⑦ Areas exposed to corrosive gases, such as H_2S

8.3 Other Precautions

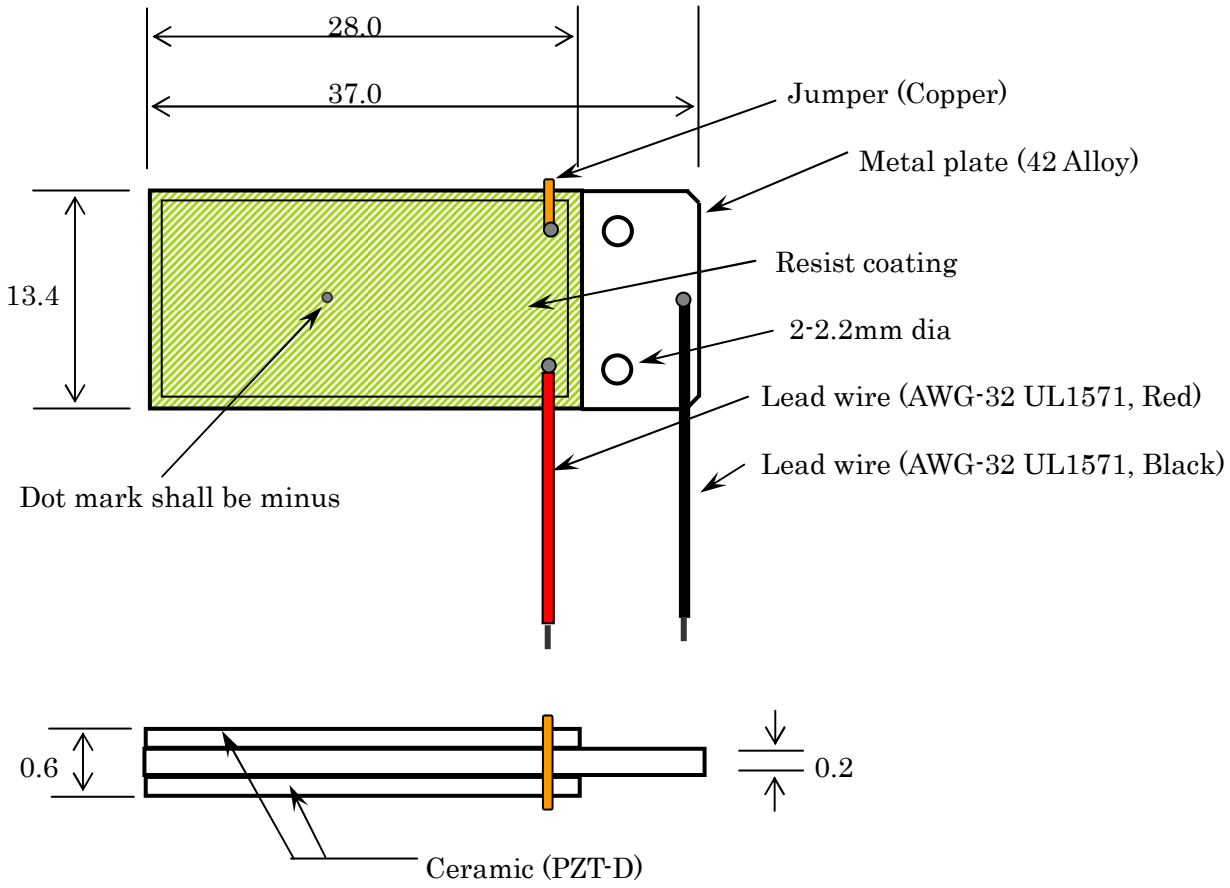
(1) Do not disassemble, repair or modify the product, to maintain the initial performance and safety standard of it.

(2) The products contain the lead so that the disposal of industrial wastes has to be required.

9. General requirements

(1) In the case of different interpretation in this specification, discussions shall be made to agree each other.

(2) With the worrying which exerts an influence on the efficiency being under for the material and the process change, which is thought of, we make to cope after contacting(in the eye place of 2 months before) beforehand to you.



Electrical Characteristics

(1) Resonant Frequency (fr) : 11.0 ± 1.0 KHz

(2) Resonant Resistance (Ro) : 500 Ω max

(3) Static Capacitance (Cd) : 110,000 pF ±30%

(4) Max Input Voltage (V) : 140 Vp-p max

3				
2				
1				
	Date	Modify	Drawing	Check

Scale	Free			Model Name PIEZOCERAMIC ACTUATOR
Dimensions	mm			
Drawing	Desing	Check	Approved	Part No. LPD3713X
				Drawing No.