

CLAIMS

What is claimed is:

1. A piezoelectric actuator, comprising:
 - a ceramic substrate being long in one direction, the ceramic substrate comprising
 - a vibrating plate,
 - a common electrode disposed on the vibrating plate, and
 - a piezoelectric ceramic layer disposed on the common electrode and having a plurality of first through holes connected to the common electrode;
 - a plurality of individual electrodes disposed in a region of the piezoelectric ceramic layer opposed to the common electrode; and
 - a plurality of first surface electrodes respectively disposed inside a plurality of the first through holes in the piezoelectric ceramic layer and on a circumference of a plurality of the first through holes, wherein
 - a plurality of the first through holes are arranged along the one direction at a central part of the ceramic substrate in a direction orthogonal to the one direction, and
 - the first surface electrodes are long in the one direction.
2. The piezoelectric actuator according to claim 1, wherein
 - the first surface electrodes comprises one first surface electrode row and the other first surface electrode row, and
 - the first surface electrodes constituting the one first surface electrode row and the first surface electrodes constituting the other first surface electrode row are shiftedly arranged in the one direction.
3. The piezoelectric actuator according to claim 1 or 2, wherein
 - a second through hole penetrating through the piezoelectric ceramic layer and being connected to the common electrode is disposed at least one of end parts of the ceramic substrate in the one direction, and

a second surface electrode is disposed inside the second through hole in the piezoelectric ceramic layer and on a circumference of the second through hole, the second surface electrode being long in a direction orthogonal to the one direction.

4. The piezoelectric actuator according to claim 3, wherein an arrangement is made so that the single second surface electrode is overlapped with the two or more second through holes.

5. The piezoelectric actuator according to any one of claims 1 to 4, wherein an arrangement is made so that the single first surface electrode is overlapped with the two or more first through holes.

6. A liquid discharge head, comprising:
the piezoelectric actuator according to any one of claims 1 to 5; and
a passage member comprising a plurality of discharge holes and a plurality of pressurizing chambers respectively connected to a plurality of the discharge holes, a plurality of the pressurizing chambers and a plurality of the individual electrodes being overlappedly stacked one upon another on a side of the piezoelectric actuator located closer to the vibrating plate.

7. A recording device, comprising:
the liquid discharge head according to claim 6;
a conveyance section for conveying a recording medium to the liquid discharge head; and
a control section for controlling a voltage applied to a plurality of the individual electrodes.